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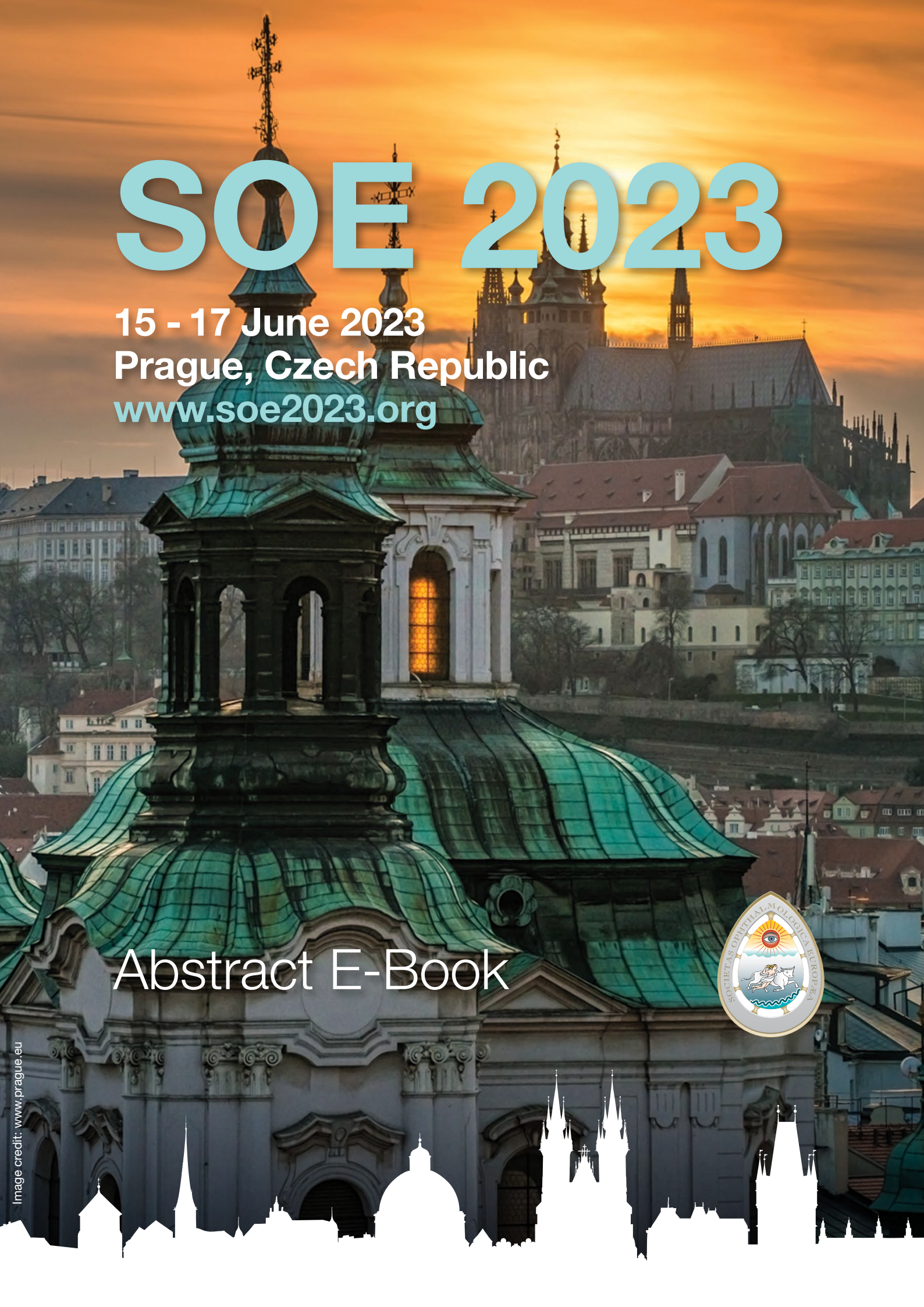

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European Society of Ophthalmology

Congress of the European Society of Ophthalmology (SOE) 2023

15-17 June, 2023, Prague, Czech Republic

Abstracts

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Congress of the European Society of Ophthalmology (SOE) 2023

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Contents

FREE PAPER PRESENTATIONS
FP01: Retina

FP01-1

Quality of life after pars plana vitrectomy, scleral buckle, or pneumatic retinopexy for rhegmatogenous retinal detachment: a meta-analysis

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Purpose: Comparisons of the surgical and anatomic results of rhegmatogenous retinal detachment surgery have been investigated previously. A systematic evaluation of the available evidence comparing quality of life outcomes of either pars plana vitrectomy, scleral buckling, pneumatic retinopexy has not been evaluated to date. The outcome of this study was to analyze whether pars plana vitrectomy, scleral buckling, or pneumatic retinopexy for the treatment of rhegmatogenous retinal detachment result in differing quality of life outcomes.
Methods: In February of 2022, a comprehensive search of MEDLINE, EMBASE, CINHAL, and Cochrane Library was conducted for studies on patients treated surgically for rhegmatogenous retinal detachment and included follow-up measurements of quality of life outcomes. Meta-analysis was completed using STATA v. 14.0.
Results: Thirteen studies with a sample range between 25 to 176 (total n=1063) published between 2004 to 2020 were identified. Meta-analysis found a better correlation between higher quality of life outcomes with scleral buckling than with pars plana vitrectomy (SMD = 0.62, CI: [0.31, 0.93]).
We also found no difference in quality of life outcomes between pneumatic retinopexy and pars plana vitrectomy (SMD = 0.08, CI: [-0.07, 0.22]). There was insufficient data available for an analysis comparing scleral buckling with pneumatic retinopexy.
Conclusions: This meta-analysis of a limited number of studies identified scleral buckling as resulting in better quality of life outcomes for patients when compared to pars plana vitrectomy. Pneumatic retinopexy did not show a difference in quality of life outcomes compared to pars plana vitrectomy.
The study was limited by the small number of available studies for analysis. Overall, these results emphasize that quality of life outcomes between different types of rhegmatogenous retinal ought to be considered by ophthalmologists in determining which procedure to perform.

FP01-2

Real-world outcomes of intravitreal bevacizumab using a treat-and-extend regime for cystoid macular oedema secondary to central retinal vein occlusion

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Purpose: The purpose of this study was to report the real-world treatment outcomes using a treat-and-extend intravitreal bevacizumab protocol in cystoid macular oedema (CMO) secondary to central retinal vein occlusion (CRVO).
Methods: We conducted a retrospective case series of consecutive adult patients with CMO secondary to CRVO treated with bevacizumab, using a treat-and-extend protocol, who presented between 1stJanuary 2019 and 31stDecember 2021. Patients underwent Ultra-widefield fundus fluorescein angiography (UW-FFA) within 3 months of presentation, were followed up for a minimum of 6 months and had a clinical examination including best-corrected visual acuity (BCVA) and optical coherence tomography (OCT) at every visit. The primary outcome measure was mean change in BCVA.
Results: 33 eyes of 33 patients were included in the study. The mean change in BCVA from baseline was +24.5 (Median 18, SD 21.5) letters, with a mean follow-up duration of 18.5 (SD 8.9) months. The mean number of injections was 9.5 (SD 1.9) in year 1 and 7.8 (SD 2.8) in year 2. 12.1% of patients successfully completed treatment. 87.9% of patients were still requiring active treatment, with a maximum interval achieved of 4-weekly in 18.2%, 6-weekly in 42.4%, 8-weekly in 6.1%, 10-weekly in 15.2%, and 12-weekly in 6.1%. The mean maximum interval achieved of those requiring ongoing treatment was 6.8 (SD 2.4) weeks. Multiple regression analyses showed that a higher baseline BCVA was negatively associated with mean visual acuity gain (P<0.001) and positively associated with final BCVA (P<0.001).
Conclusion: The use of intravitreal bevacizumab in a treat-and-extend regimen is effective in treating CMO secondary to CRVO, in a real-world setting.

FP01-3

The DAVIO trial: a phase 1, open-label, dose-escalation study of a single injection of EYP-1901 (vorolanib in Durasert® platform) demonstrating reduced treatment burden in wet AMD

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Purpose: Undertreatment of wet age-related macular degeneration (wAMD) with anti–vascular endothelial growth factor (anti-VEGF) therapies may account for a significant proportion of unsatisfactory visual outcomes in the real world. The DAVIO trial was a phase 1, multicenter, open-label, dose-escalation trial evaluating the safety of EYP-1901, a sustained-delivery therapy supplying the tyrosine kinase inhibitor vorolanib in a bio-erodible form of Durasert® given via intravitreal injection.
Methods: Previously treated eyes with wAMD received EYP-1901 with up to 48 weeks of follow-up. The primary endpoint was the rate of ocular and systemic adverse events (AEs). Secondary endpoints included best-corrected visual acuity (BCVA) and optical coherence tomography (OCT) measurements.
Results: Seventeen eyes received 440 µg (n=3), 1,060 µg (n=1), 2,060 µg (n=8), or 3,090 µg (n=5) of EYP-1901. Investigator-reported AEs were mostly mild in nature and related to the intravitreal injection procedure; no reported AEs were related to EYP-1901.

The mean (SD) change in BCVA from baseline was –2.5 (12.66) ETDRS letters at 6 months and –4.1 (13.59) letters at 12 months. The mean (SD) change in OCT central subfield thickness (CST) from baseline was –3.4 (89.83) µm at 6 months and –2.8 (94.99) µm at 12 months. There was a 75% reduction in anti-VEGF treatment burden at 6 months and a 73% reduction at 12 months. After 1 injection of EYP-1901, 53% of eyes were supplemental anti-VEGF injection–free up to 6 months and 35% up to 12 months.

Conclusions: EYP-1901 had a favorable ocular and systemic safety profile at the doses evaluated. More than half of eyes treated with EYP-1901 demonstrated control of wAMD for up to 6 months after 1 treatment. Sustained delivery of vorolanib was achieved in this trial, and EYP-1901 will progress to a larger phase 2 clinical trial.

The full 12-month study results will be presented along with an ad hoc analysis of eyes with no excess fluid on OCT at baseline.

FP01-4

Amniotic membrane graft for the treatment of large refractory macular hole

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Purpose: Study off-label human amniotic membrane (hAM) use outcomes for giant refractory macular hole closure.

Materials and methods: The study was performed at Lahore General Hospital, Lahore, over 52 months on patients who had undergone standard MHs surgical procedures for treatment, but the hole failed to close. Refractory MHs dimensions ranged from 824 µm to 1568 µm.

Before surgery, patients underwent slit-lamp examination, fundus photography, and OCT for macular scan. AMG used in surgery was harvested from a human placenta 24 hours prior.

Before AMG application, enough internal limiting membrane peeling was done to ensure perfect fitting and recovery. All holes were plugged with AMG and SF6 gas tamponade.

Results: 29 patients, 20 male and 9 female, were included in this study. Mean age of patients was 58±6. Patients had refractory holes of average 1237.48±151.25 µm. Post-op, 100% MH closure was achieved in all patients. Type 1 closure was found in patients (37.93%) who underwent AMG surgery within 3 months after primary surgical failure.

Type 2 closure was found in patients (62.07%) who were operated on 3 months after primary surgical failure.

Conclusion: Refractory MHs treated by AMG with SF6 gas tamponade achieve anatomical type 1 closure if performed within 3 months of primary surgical repair.

FP01-6

Macular detachment in Morning glory syndrome

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Purpose: To study the possibility of treatment the patients in cases with morning glory syndrome and retinal detachment.

Method: There were analyzed 4 cases with morning glory syndrome and retinal detachment. In 4 cases morning glory syndrome was complcated with macular detachment and in one case the rhegmatogenous retinal detachment with peripheral retinal break was observed.

In two cases with macular detachment it was managed by intravitreal injection of 0.8 mL of pure perfluoropropane followed by face down position for 3 weeks. In the case with rhegmatogenous retinal detachment standard three-port vitrectomy with air-fluid exchange, endolaser and gas perfluoropropane tamponade was performed.

Results: In the cases with macular detachment treated with intravitreal gas injection we observed the noticable flattenning of RD in macular area with visual improvement after 1 month.

After 3 months this process was continuing with some increase of VA and decrease of RD. After 6 months the retina was almost attached in 3 cases. In other one the follow up period made up 1 year and we observed significant flattenning of retina in posterior pole.

In the case with rhegmatogenous retinal detachment managed with standard three-port vitrectomy retina was attached on the follow up period of 4 years till now with visual improvement.

Conclusion: Despite the small case series because of very rare pathology it was shown that intravitreal gas injection can be the choice of treatment in morning glory syndrome complcated with macular detachment.

FP01-7

Mutational spectrum and clinical findings in Czech patients with leber congenital amaurosis and early onset severe retinal dystrophy confirmed at the DNA level

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Introduction: Leber congenital amaurosis (LCA)/ early onset severe retinal dystrophy (EOSRD) is a group of very rare retinal diseases with an estimated prevalence of 2-3/100,0000.

Materials and methods: 17 patients (9 women, 8 men) underwent a complex ophthalmic examination in the Department of Ophthalmology, General University Hospital in Prague between the years 2010–2022. Clinical diagnosis of LCA/ EOSRD was confirmed at the DNA level.

Results: The mean age at the first examination was 17.8 years (range 2 to 42 years). The mean age of symptoms onset was 1,99 years (range 6 weeks to 5 years). In 6 patients the disease was caused by biallelic mutations in the RPE65 gene, in 4 patients in the CEP290 gene and in 3 patients in the CRB1 gene. Biallelic mutations in the GUCY2D, LCA5, RPGRIP1 and CLN3 genes were the cause of the disease in one patient each.

As for probands suffering from LCA/EOSRD and examined elsewhere two were documented carriers of pathogenic variants in the *CEP290*gene, two in the *CRB1*gene and one in the*GUCY2D* gene.

Three patients with biallelic mutations in*RPE65* underwent gene therapy.

Conclusions: A thorough characterization of clinical findings in rare retinal disease is important for the possibility of enrolling patients in clinical trials and for current and future targeted therapies.

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FP01-8

Using 3D-MRI imaging to quantitatively analyze the shape of eyeballs with high myopia and to investigate relationships between myopic traction maculopathy and posterior staphyloma

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Purpose: To quantitatively analyze the shape of eyes with high myopia using high-resolution three-dimensional (3D) magnetic resonance imaging (MRI) and investigaterelationships betweenmyopic traction maculopathy (MTM) andthe morphological changes ofposterior staphyloma (PS).

Methods: This prospective study enrolled 105 patients with high myopia at Beijing Friendship Hospital. All participants underwent a comprehensive ophthalmic examination. MTM was divided into different types by optical coherence tomography, and ocular shapes were categorized by 3D-MRI.

Results: A total of 105 patients (105 eyes) were studied, with a mean age of 60.4 ± 13.3 years and mean axial length of 28.71 ± 2.78 mm.

Spheroidal shape was observed in 35 eyes (33.3%), ellipsoidal shape in 11 eyes (10.5%), conical shape in 17 eyes (16.2%), nasally distorted shaped in 18 eyes (17.1%), temporally distorted shape in 16 eyes (15.2%), and barrel shape in 8 eyes (7.7%).

PS was identified in 84 eyes (80%), and the proportions for the elliptical, conical, nasal torsion, temporal torsion and barrel shapes were 27.9%, 23.1%, 12.9%, 9.5%, 17.1% and 9.5%, respectively.

In eyes without PS, MTM accounted for 23.8%, while with PS the proportion increased to 53.8%.

The proportion of MTM in spheroidal was lowest, and nasal and temporal torsion shapes were highest. 45.5% of the nasal torsion shapes were with MTM, and for nasal torsion shape were 83.3%.

Conclusions: Not all highly myopic eyes are deformed. Spheroid was the predominant ocular shape. Eyes with PS display more severe myopic maculopathy. Moreover,nasallyand temporally distorted eyes present significantly high percentage of MTM.

FP01-9

Investigation of the role of LRP5 in hereditary eye diseases: Zebrafish disease model

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Purpose: The *LRP5*gene encodes a transmembrane protein involved in Norrin/β-catenin signaling pathway which has a fundamental role in the retinal vascular development. Some variants reported in *LRP5 are* associated with diseases affecting the eye, such as Osteoporosis Pseudoglioma Syndrome (OPPG), Familial Exudative Vitreoretinopathy (FEVR), or Retinopathy of prematurity (ROP). Despite several clinical and preclinical research in the literature, the mechanisms of eye pathologies related to *LRP5* variants are still unclear.

The purpose of this study was to evaluate whether zebrafish can be used as a model organism for investigating the mechanisms underlying *LRP5*-related eye diseases.

Method: *Lrp5*sa11097 zebrafish line, carrying c.851C>A mutation in *lrp-5*causing a premature stop codon in exon 5 at amino acid position 284, was crossed with transgenic (Tg[fli1:EGFP]AB) zebrafish line which has a reporter gene to visualize blood vessels.

The survival rate, gross morphology, the structural and functional integrity of the retina and retinal vasculature were compared between *lrp5* knock-out (KO) and wild-type (WT) zebrafish.

Results: *Lrp5* KO zebrafish larvae showed decreased survival rates when compared to WT. During the larval period only head size showed a significant difference between KO and WT.

However, *lrp5* KO adult zebrafish demonstrated significantly smaller eye size in addition to head size. The analysis of retinal vasculature in adult zebrafish showed closer and more branched retinal vessels in *lrp5*KO when compared to WT. The dark-flash response assay showed no detectable functional visual defect in *lrp5*KO larvae.

Conclusion: This study was the first that revealed Lrp5-related eye pathologies in zebrafish. *Lrp5* mutant zebrafish could be further evaluated to understand the role of LRP5 in the retinal vascular pathologies. Besides, *lrp5*mutants may provide useful models to study small-eye-related problems such as axial hypermetropia and nanophthalmos.

FP01-10

Automated detection of plus disease in retinopathy of prematurity using deep learning: a retrospective cohort study

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To develop and validate bespoke and code-free deep learning-based classifiers for plus disease, a hallmark of retinopathy of prematurity, in an ethnically diverse population in London, United Kingdom.

This retrospective cohort study used 7414 Retcam-acquired images from 1370 newborns admitted between 2008 and 2018. Images were graded by two junior ophthalmologists with disagreements adjudicated by a senior paediatric ophthalmologist.

Bespoke and code-free deep learning models (CFDL) were developed for the discrimination of normal, pre-plus and plus disease. Performance was assessed internally with majority vote of three senior paediatric ophthalmologists as the reference standard. External validation was on four datasets from the US, Brazil and Egypt with images from two devices.

For the discrimination of normal versus other, the bespoke and CFDL models had an area under the curve (AUC) of 0·986 (95% CI: 0·973, 0·996) and 0.989 (95% CI: 0.979, 0.997) on the internal test set respectively. Both models generalised well to external validation test sets acquired using the Retcam for discriminating normal from abnormal (bespoke range: 0.975-1.00, CFDL range: 0.969-0.995). The CFDL model was inferior to the bespoke model on discriminating pre-plus disease from others in the US dataset (bespoke 0·943, 95% CI: 0·892, 0·982, CFDL: 0·808, 95% CI: 0·671, 0·909, p=0·007).

Performance also reduced when tested on the 3nethra imaging device (bespoke: 0·891, 95% CI: 0·783, 0·977, CFDL: 0·865, 95% CI: 0·742, 0·965).

Both bespoke and CFDL models conferred similar performance to paediatric ophthalmologists for discriminating normal retinal images. CFDL models may generalise less well with minority classes. Care should be taken when testing on data acquired using alternative imaging devices from development data.

Our report justifies further validation of plus disease classifiers in ROP screening and supports a role for CFDL to help prevent blindness in vulnerable newborns.

FREE PAPER PRESENTATIONS
FP02: Neuro-Ophthalmology, Paediatric Ophthalmology & Strabismus

FP02-2

Retinal nerve fibers myelination: a review of recent literature and report of two clinical cases

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Purpose: Myelinated retinal nerve fibers (MRNF) are usually located around the optic nerve papilla and presented in a congenital, stable and generally isolated form, without any systemic disease associated.

It is believed that their appearance is related to defects in the barrier function of the cribriform plate, involving an abnormal migration of oligodendrocytes towards the retina.

Over the last years, the acquired appearance of MRNF has aroused the interest of the scientific community. The pathophysiology of their appearance is still unknown, but recently published cases show a close relationship with intracranial hypertension (IH).

The purpose of this communication is to review the latest literature about acquired MRNF, extract descriptive statistics, and to present two clinical cases followed up in our centre who developed MRNF secondary to IH.

One of the patients had Crouzon syndrome and the other had Alagille syndrome, both with IH, craniosynostosis and history of cranial surgeries.

Method: Descriptive statistics were assembled through a review of clinical cases of acquired MRNF published between 1980-2021. In our centre, routine follow-up of patients with IH and acquired MRNF was conducted via visual acuity test, automated refractor, eye fundus, papillary optical coherence tomography (OCT) and retinography examinations.

Results: After resolution of IH and papilledema presented by the two patients, in both cases myelinated retinal nerve fibers appeared unilaterally. No other episodes of IH occurred and these MRNF developed over years, remaining stable in the latest follow-ups. In neither of the cases visual acuity was affected.

Conclusions: The acquired appearance of myelinated retinal nerve fibers may be related to intracranial hypertension. It is important to consider MRNF in patients under optic nerve follow-up, since its appearance can difficult the diagnosis of minor papilledema and involve secondary affectations.

FP02-4

Treatment with lenadogene nolparvovec gene therapy results in sustained visual improvement in m.11778G>A *MT-ND4*-LHON patients: the RESTORE study

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Purpose: Two phase 3 clinical studies, RESCUE and REVERSE, assessed the efficacy and safety of an intravitreal injection of lenadogene nolparvovec gene therapy in patients with Leber hereditary optic neuropathy (LHON) due to the m.11778G>A mitochondrial DNA mutation in *MT-ND4*. Recruited patients were followed up for a period of 5 years post-treatment as part of the long-term RESTORE study.
Methods: In RESCUE and REVERSE, all patients were treated with lenadogene nolparvovec in one eye with a sham injection in the other eye. After 96 weeks, patients were invited to participate in RESTORE for another 3 years, corresponding to 5 years post-treatment administration. Quality of life was monitored using the National Eye Institute Visual Function Questionnaire-25 (NEI VFQ-25).
Results: Of the 72 patients who completed RESCUE or REVERSE, 62 participated in RESTORE. Patients were mostly male (79.0%) with a mean (standard deviation [SD]) age of 37.1 (15.3) years.
Five years after treatment, the bilateral improvement from nadir observed at 2 years was maintained with an absolute mean change (SD) in BCVA from nadir of -0.44 (0.46) LogMAR (+22.0 EDTRS letters equivalent) for lenadogene nolparvovectreated eyes and -0.39 (0.36) LogMAR (+19.5 EDTRS letters equivalent) for shamtreated eyes.
At 5 years, BCVA for most patients (80.7%) were on chart (*i.e.,* ≤1.6 LogMAR). A clinically relevant response from nadir was observed in 71.0% of patients.
Overall, quality of life improved in a clinically meaningful way with a mean gain of 7 points from baseline for the VFQ-25 composite score. The safety profile was favorable, similar to that observed in the first 2 years after treatment.
Conclusion: Long-term follow-up of *MT-ND4*-LHON patients who were unilaterally treated with lenadogene nolparvovec demonstrated a sustained improvement of BCVA in both eyes with an improvement of quality of life up to 5 years after treatment.

FP02-5

Indirect comparison of lenadogene nolparvovec gene therapy versus natural history in m.11778G>*A MT-ND4* Leber Hereditary Optic Neuropathy patients

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Purpose: To compare the visual acuity of *MT-ND4* Leber hereditary optic neuropathy (LHON) patients treated with lenadogene nolparvovec in clinical trials to the spontaneous evolution of visual acuity in an external control group of untreated *MTND4* LHON patients.
A previous analysis was performed on treated patients from three phase 3 studies. This updated analysis incorporates a fourth trial, REFLECT, in which patients received lenadogene nolparvovec unilaterally or bilaterally.
Methods: Visual acuity data of 174 *MT-ND4* LHON patients intravitreally injected in one or both eyes were pooled from four phase 3 trials: REVERSE, RESCUE, RESTORE and REFLECT. The external control group included 208 age-comparable (≥ 15 years old) untreated m.11778G>A *MT-ND4* LHON patients from 11 natural history studies.
Results: Both cohorts were predominantly male patients (81.2%) with a median age at onset of vision loss of 26.0 years. Eyes treated with lenadogene nolparvovec had better visual acuity at all timepoints when compared to natural history eyes.
Mean [95% confidence interval (CI)] difference versus natural history was 0.30 [0.39; 0.22] LogMAR (+15 EDTRS letters) at last observation ($p<0.01$) with a maximal follow-up of 3.9 years after treatment.
When adjusting for covariates, the estimated mean [95% CI] difference was 0.43 [0.53; 0.33] LogMAR (+21.5 EDTRS letters) versus natural history at last observation ($p<0.0001$).

Most treated eyes were on-chart (LogMAR ≤ 1.6) compared to less than half of natural history eyes at last observation (76.1% versus 44.4%; p<0.01). The size of the treatment effect was larger in eyes of patients who received bilateral treatment than those of patients who received unilateral treatment.
Conclusion: This comparison of treated patients with natural history patients confirmed a clinically meaningful and sustained improvement in visual acuity induced by lenadogene nolparvovec intravitreal injection in m.11778G>A *MT-ND4* LHON patients.

FP02-7

A first-in-human clinical trial of a digitally delivered light therapy for juvenile myopia control

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Purpose: There is a long history of research implicating dopamine in eye growth regulation, and the light-mediated release of dopamine is a leading hypothesis of myopia control. MyopiaX® is a digital application that delivers a blue light to the optic nerve head bilaterally to control juvenile myopia. It aims to engage the retinal dopaminergic system to regulate the eye's innate growth mechanism and slow myopia progression. The purpose of this clinical trial is to evaluate the safety, tolerability, and signals of effect of MyopiaX® on juvenile myopia progression.
Methods: The MyopiaX-1 trial is a multi-centre, randomised, controlled interventional study (NCT04967287). It investigates the effects of twice daily treatment with MyopiaX® on myopia progression. Children aged 6 – 12 with myopia between -0.75 and -5.00 Dioptres are planned to be recruited throughout Europe. Eligible participants are randomly assigned 2:1 to treatment with MyopiaX® or defocus incorporated multiple segments (DIMS) spectacles as an active control. The trial consists of a 6-month treatment period followed by a 6-month active follow-up period during which the MyopiaX® group will also wear DIMS spectacles.
Results: The primary endpoints of effect are change in axial length (AL) and spherical equivalent refraction (SER), from baseline to 6 months, as measured using cycloplegic autorefraction. Ophthalmological exams and frequency and severity of device-related adverse events will be used to assess clinical safety. Exploratory endpoints include change in SER and AL from 6 to 12 months, retinal and choroidal imaging parameters, and device usability.
Conclusions: The MyopiaX-1 trial will provide first-in-human data on the signals of effect of a digitally delivered blue light treatment in slowing juvenile myopia progression. It may also offer insights into the views of families toward such a treatment and could further contribute to scientific understanding of the role of light in myopia progression.

FP02-8

Rainbow study: ranibizumab for type I ROP treatment - 5-year outcomes

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Purpose: The Rainbow study compares the long-term efficacy of ranibizumab vs. laser and assess the long-term safety of ranibizumab.
Methods: Rainbow study - open label, randomized trial comparing intravitreal ranibizumab (0.1mg and 0.2mg) with laser therapy for the treatment of ROP in 201 infants <1500g birthweight, recruited from 26 countries. 180 infants entered the RAINBOW extension study with follow up to 5 years.
Primary outcome was visual acuity at 5 years.
Secondary outcomes included: safety; ocular structure; physical development, health status and cognitive skills; Children Visual Function Questionnaire composite and subscale scores; additional ocular data included, strabismus and the degree of peripheral retina vascularization.
Results: 156 (87%) children completed the extension study (ranibizumab 0.2mg: 54; ranibizumab 0.1mg: 55; Laser: 47).
124/156 (79.5%) of children provided ETDRS acuities. Difference: mean ETDRS letter score between ranibizumab 0.2mg compared to laser was 4.7 (95% CI: -1.1, 10.5). Difference between ranibizumab 0.1mg and laser arms was 2.5 (95%CI: -3.4, 8.3). Proportion with ETDRS score of ≥71 letters was 32.8% in the ranibizumab 0.2mg arm, 23.1% the ranibizumab 0.1mg arm and 20.4%in the laser arm.Structural retinal abnormalities were present in 11 children (ranibizumab 0.2mg: 1; ranibizumab 0.1mg: 4; Laser: 6). Median (IQR) refractive state (dioptres spherical equivalent) was 0 (-1.4 to 0-75; n-104) in ranibizumab 0.2mg; -0.25 (-2.13 to 1.0; n. 109) in ranibizumab 0.1mg and -0.50 (-4.0 to 0.81; n 90) in laser group. Structural retinal abnormalities were present in 11 children (ranibizumab 0.2mg: 1; ranibizumab 0.1mg: 4; Laser: 6).
Conclusion: The RAINBOW trial outcomes at 5 years confirm an excess of high myopia following laser compared to ranibizumab, but similar acuity and ocular and safety outcomes between groups. No differences between the 3 trial arms in developmental scores, growth attainment and vision-related quality of life.

FP02-9

Spontaneous consecutive exotropia

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Purpose: To investigate the ophthalmological characteristics of cases with spontaneous consecutive exotropia.
Method: The medical records of cases with the diagnosis of strabismus, between 2012 and 2022 were scanned retrospectively. The cases with consecutive exotropia, without any ocular surgery or botox injection, were included in the study. The age at presentation of the esotropia and the consecutive exotropia were extracted from the notes. The initial and final detailed examinations of all patients were documented.
Results: The study included 9 cases (2 females and 7 males) out of 3500 files. The rate of spontaneous exotropia development in 1750 patients with esotropia was 0.05%. The mean age ± standard deviation of cases was 11 ± 3.64 years. The presentation age of esotropia was 2.11± 0.99 years. The mean age at the time of appearance of exodeviation was 9.50 ±2.87 years. The mean period of spontaneous conversion to exotropia was 6.33±3.70 years after hyperopia correction. The mean spherical equivalent refraction was +5.00 ± 1.46 diopters (D) (range +2.50 to +7.00 D), and +5.00 ±1.38 D (range 2.50to +6.75 D) for right and left eyes, respectively. Only two of the nine cases had binocular vision.
Conclusion: All the cases had a refractive spherical equivalent of at least +2.50 D. The initial age at presentation of the esotropia, in all cases, was younger than three years. Lack of binocular vision was remarkable in most cases.
Keywords: consecutive; exotropia; spontaneous; hyperopia

FP02-10

Myopia, axial length and lens thickness: a corneal biomechanical analysis of older children and adolescents

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Objectives: To compare the corneal biomechanics of myopes with non-myopes in a sample of Portuguese children. In addition, we sought to evaluate their habits and background as well as to assess the potential relationship of axial length and lens thickness with their corneal biomechanical properties.
Methods: Observational cross-sectional study assessing healthy children (8 to 18 years old) conducted at a tertiary university hospital center (Centro Hospitalar Universitário do Porto, Porto, Portugal). Demographic and clinical data were retrieved from medical records and participants' and parents' interview.
After this interview, ocular biometry and corneal biomechanics were assessed using ZEISS IOL Master 700 (Carl Zeiss Meditec, Jena, Germany) and Corvis ST (Oculus, Wetzlar, Germany), respectively. Linear mixed-effects models adjusting for age and gender were built to assess the relationship between corneal biomechanical properties and myopia, axial length (AL) and lens thickness (LT).
Results: One hundred and fifty-six eyes (out of 78 children) were enrolled of which 100 had a spherical equivalent ≤ -0.50 and were classified as myopes. The mean±standard deviation age was 14.18±2.60 years, being significantly higher in the myopes (p=0.004). The proportion of myopes increased with age (p=0.019). LT presented a significant but weak negative correlation with intraocular pressure (r=-0.227, p=0.005). Almost half of myopes had a positive family history of myopia. Myopia was associated with higher amplitude of whole eye movement (p<0.001). Longer AL and thinner lenses were associated with a more deformable corneal behavior.
Conclusion: In this sample of Portuguese children, AL and LT, but not myopic status, were related with corneal biomechanical behavior. Longitudinal studies are warranted to elucidate the role of corneal biomechanics in the screening and follow-up of ocular diseases in children.

FREE PAPER PRESENTATIONS
FP03: Glaucoma, Oncology & Pathology

FP03-2

A Phase 3, randomized study of treatment outcomes with preservative-free latanoprost cationic emulsion and preserved-latanoprost solution in open-angle glaucoma and ocular hypertension

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Purpose: To assess the efficacy and safety of latanoprost preservative-free cationic emulsion (PF latanoprost CE) vs. Xalatan® (Pfizer) benzalkonium chloride (BAK)-preserved latanoprost (P-latanoprost) in open-angle glaucoma (OAG) and ocular hypertension (OHT).
Methods: OAG/OHT patients were randomized to PF latanoprost CE or P-latanoprost (once daily, 50 µg/mL) in a Phase 3, prospective, parallel, multicenter, investigator-masked, randomized, non-inferiority trial. Primary endpoint was intraocular pressure (IOP) change from baseline at Week 12 (peak [09:00] and trough [16:00]; non-inferiority margin: 95% confidence interval [CI] for between group-difference ≤1.5 mmHg).
Secondary endpoints included the change in mean corneal fluorescein staining score (CFS; modified Oxford Grade Scale) and ocular surface disease (OSD) symptom score at Weeks 4 and 12. Adverse events (AEs) and suspected adverse drug reactions (SARs) were reported.
Results: Each arm included 192 patients. Mean age was 63.1 years. Mean (standard deviation) baseline diurnal IOP was 24.13 (1.81) mmHg. At Week 12, mean (standard error) peak IOP reduction was 8.8 (0.25) mmHg (PF latanoprost CE) vs. 8.2 (0.26) mmHg (P-latanoprost). Least square (LS) mean difference was -0.6 (95% CI -1.2, -0.1). Week 12 trough IOP reduction was 8.6 (0.24) mmHg (PF latanoprost CE) vs. 8.1 (0.25) mmHg (P-latanoprost; LS mean difference: -0.5 [95% CI -1.0, 0.1]).
Non-inferiority was also seen at Week 4. Compared with P-latanoprost, PF latanoprost CE gave greater reductions in mean CFS score at Week 12 (p=0.0006) and OSD symptom score at Week 4 (p=0.0188). SARs occurred in 11 (5.7%) PF latanoprost CE users and 21 (10.9%) P-latanoprost users. No serious drug-related AEs occurred.
Conclusion: The IOP-lowering efficacy of PF latanoprost CE was non-inferior to that of P-latanoprost. Mean CFS (Week 12) and OSD symptom scores (Week 4) were significantly improved with PF latanoprost CE vs. P-latanoprost. Both treatments were well tolerated.

FP03-3

Aqueous humor lipidomic profile in primary open angle glaucoma patients

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Purpose: To identify the aqueous humor (AH) profile of lipid mediators in primary open angle glaucoma (POAG) eyes
Method: AH samples from eyes with and without glaucoma underwent lipidomic analyses using liquid chromatography-mass spectrometry (LC-MS). Glaucoma samples were obtained from 60-80-year-old POAG patients undergoing a glaucoma surgery with or without cataract surgery. Matched control samples were obtained from patients undergoing routine cataract surgery. From each eye, 100 mL of AH was collected using a 30 Gauge needle mounted on a 1-mL syringe.
The samples were snap frozen on dry ice and stored at -80C until assessment by lipidomic analyses of a panel of 40 polyunsaturated fatty acids (PUFA), metabolites and lipid mediators. All participants signed an informed consent. This study was approved by the University Health Network and Kensington Eye Institute Research and Ethics Boards.
Results: AH was collected from 16 and 18 eyes with and without glaucoma, respectively. The mean age was 68.7±6.4 and 71.0±4.7 years for the glaucoma and control groups, respectively (p=0.25). The mean preoperative intraocular pressure was 14.1±3.1 and 15.2±1.6 mmHg for the glaucoma and control groups, respectively (p=0.24). The cup-to-disc ratios were 0.9±0.1 and 0.3±0.1 for the glaucoma and control groups, respectively (p<0.001).
There were statistically significant differences between glaucomatous and control eyes for arachidonic acid (1328.0±322.0 vs 643.1±130.6, p=0.001), lipoxin A_4 (0.79±0.14 vs 0.32±0.10, p=0.01) and 12-hydoxyeicosapentanoic acid (0.35±0.17 vs undetected, p=0.04). Substantial levels, but no significant differences, were identified for docosahexanoic acid, eicosapentanoic acid, prostaglandin E_2 and prostaglandin D_2.
Conclusion: Increased levels of lipid mediators are present in glaucomatous eyes. Arachidonic acid metabolites may play a role in glaucoma pathogenesis.

FP03-5

Randomized control trial of the impact of Patient Decision Aid (PDA) developed for Chinese primary open-angle glaucoma patients

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Purpose: The aim of this study was to evaluate the impact of a Patient Decision Aid (PDA) on Chinese primary open angle glaucoma (POAG) patients.
Methods: This study is a mono-center randomized controlled trial (RCT). The eligible subjects recruited from the out-patient glaucoma clinic of Lo Fong Shiu Po Eye Centre, Grantham Hospital were randomized into treatment

(PDA) group and control group. Subjects in the PDA group were given a copy of our Chinese POAG PDA, which was developed by our team. Subjects were then instructed to read through the PDA at home.

All the subjects in the PDA and control were required to complete a questionnaire at baseline, and repeated at 3 and 6 months follow up to determine change in disease knowledge, medication adherence, and decision conflict.

The questionnaires included:

1. Glaucoma knowledge;
2. 8-item Morisky medication adherence scale (MMAS-8);
3. 10-item glaucoma medication adherence self-efficacy scale (GMASES-10); and;
4. 16-item decision conflict scale (DCS).

The difference of changes between the two groups was analyzedwith one-way analysis of covariance (ANCOVA),fitting the baseline data as a covariate.

Results: Totally, 156 subjects participated in this study, including 77 in the control group and 79 in the PDA group. Compared to the control group,PDA group showed around 1 point more improvement in disease knowledge at both 3 and 6 months (both $p < 0.05$), 2.5[95%CI(1.0, 4.1)] and 1.9[95%CI(0.2, 3.7)] points more improvement in GMASES-10 at 3 and 6 months respectively, and reduction in DCS by 8.8 [95%CI (4.6, 12.9)] points more at 3 months and 13.5 [95%CI (8.9, 18.0)] points more at 6 months. No difference was detected in MMAS-8.

Conclusion: PDA led to improvement in disease knowledge and self-confidence in medication adherence, and reduced decision conflict compared to control group for at least 6 months.

FP03-6

Safety and efficacy of the Hydrus Microstent during the initial learning curve

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Purpose: To examine the safety and efficacy of Hydrus Microstent during the learning curve of surgeons new to the procedure.

Method: A retrospective study including a consecutive series of the first 38 Hydrus procedures performed by 3 surgeons. Two were experienced cataract and glaucoma surgeons with previous experience of MIGS but not Hydrus and 1 a glaucoma fellow.

Patients were followed for a minimum of 3 months, with the primary outcomes, percentage and absolute change in IOP at time of listing for surgery compared to the visit after and closest to 3 months post-op. The relationship between order of surgery and IOP reduction was examined using regression analyses.

Results: 37 eyes were treated with combined phacoemulsification-Hydrus. Mean IOP at baseline was 20.5±6.5 mmHg (range 11 to 35mmHg), using an average of 2.0 topical medications for glaucoma. Average mean deviation (MD) was -9.9±7.4dB. Peak IOP prior to surgery was 26.3±5.8 mmHg.

Average IOP at 3 months was 14.8±3.6 mmHg, significantly lower than baseline (P<0.001). 29 of 38 eyes (81.6%) had ≥20% reduction in IOP on the same or fewer medications. The average reduction in IOP was 23.3±27.1% (5.7±6.7 mmHg), with an average reduction of 1.4±1.2 medications.

Eyes with higher baseline IOP had significantly greater reductions in IOP with Hydrus (0.9, 95% CI 0.7 to 1.1 mmHg, greater reduction in IOP per 1mmHg higher baseline IOP, P<0.001). Baseline MD and surgeon experience during the initial learning curve did not significantly influence efficacy. In one patient it was not possible to implant the device. Two patients had transient hyphaema which resolved by one week.

Conclusions: Surgeon experience during the initial learning curve for Hydrus had no apparent effect on efficacy or safety at 3 months. The study was limited by lack of corneal endothelial cell measurements however 5-year data from the HORIZON study indicated a high level of corneal safety even with long-term presence of the implant.

FP03-7

Structure function relationship in glaucoma using anatomically corrected OCT images

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Purpose: To investigate whether the structure function relationship in glaucoma can be improved by anatomical compensation of circumpapillary retinal nerve fiber layer (RNFL) thickness profiles for multiple demographic and anatomical factors.

Methods: In this cross-sectional study, 353 eyes from patients with early glaucoma (visual field [VF] mean deviation, ≥−6 dB) underwent Cirrus spectral-domain optical coherence tomography (OCT) imaging and Humphrey 24-2 VF tests. Compensated RNFL thickness profile was corrected for age, refractive error, optic disc (ratio, orientation, and area), fovea (distance and angle), and retinal vessel density.

Focal associations between VF losses at the individual VF test locations, original RNFL, and compensated RNFL thickness measurements were determined using nerve fiber trajectory tracings. Linear mixed models were used to model focal VF losses at each VF test location.

Results: The highest baseline correlation with VF losses was 0.30 (95% confidence interval [CI], 0.21-0.39) in the superior arcuate sector. Applying the compensated RNFL data increased the correlation substantially to 0.43 (95% CI, 0.34-0.51; P<0.001).

Twenty-two (43.1%) VF locations had a Spearman's correlation value of 0.25 or greater with focal VF loss using the compensated RNFL approach compared with 7 VF locations (13.7%) using the original RNFL model.

Conclusions: Compensating for demographic and anatomical characteristics in RNFL thickness profiles substantially improves the modelling of focal early VF losses, suggesting that structure-to-function maps accounted for demographic and anatomic variances may help unmask localized structural and functional loss in early glaucoma.

FP03-8

Brachytherapy or stereotactic radiosurgery for primary choroid melanoma treatment: comparative analysis

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The aim was to evaluate the level of local control, the rate of complications and the number of enucleations after the brachytherapy (BT) and stereotactic radiosurgery (SRS) of primary choroidal melanoma.
Methods: The prospective study group consisted of patients with primary choroid melanoma cT1-4 who underwent SRS between 2019 and 2022 (61 patient). The retrospective group consisted of 61 patients with the same tumor stage who underwent BT between 2017 and 2019. The groups were compareble in terms of tumor size and tumor location. The endpoints of the study were local control and registration of complications. SRS was performed on a Perfexion Gamma Knife gamma therapeutic unit (Elekta, Sweden).
The median prescribed dose per tumor margin at 50% isodose was 30 Gy, the maximum value was 35 Gy, and the minimum value was 23 Gy. Brachytherapy was performed using ß-ophthalmic applicators with 106Ru + 106Rh isotopes. The calculated dose at the top of the tumor was 110–120 Gy. The average basal diameter of the tumor in both groups was 12.22±3.6 mm, thickness - 6.5±2.4 mm.
Results: The median follow-up in the total cohort was 32 months. Two-year local control rate in the SRS group was 95.2±4.6%, in the BT group -- 63.9±6.1% (p log-rank = 0.001). Complications in the SRS group were registered in 33 (44.0%) cases, in the BT group - in 14 (22.9%) cases (p=0.027). The level of the eyeball preservation within two years after treatment was 84.0±6.1% and 82.0±4.9% after SRS and BT, respectively (p log-rank = 0.93). For category T2, two-year progression-free survival in the SRS group was 81.8±11.6%, in the BT group -- 94.9±3.5% (p log-rank = 0.23). For category T3, two-year progression-free survival in the SRS group was 79.1±11.1%, in the BT group -- 95.0±4.9% (p log-rank = 0.18).
Conclusion: There were no difference in local control, eye preservation and survival rates after SRS and BT of primary choroid melanoma cT1-4.

FP03-9

The burden of Conjunctival Melanoma in New Zealand (Aotearoa)

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Purpose: There are currently no reports on the current burden of conjunctival melanoma (CM) in Aotearoa-New Zealand (NZ), a country in the Southern Hemisphere with the highest global rates of cutaneous melanoma and high ultraviolet (UV) exposure, which this study aims to address.
We investigated incidence, trends, and survival of CM diagnosed in NZ between 2000 to 2020 and compared the results with countries in the Northern Hemisphere with high ultraviolet light exposure and cutaneous melanoma.
Methods: Data on histologically confirmed CM were retrospectively obtained from the NZ Cancer Registry for dates 1/1/2000 to 31/12/2020. Primary outcome measures were age-standardised incidence, trends, and survival.
Results: We identified 68 CM cases in the 21-year period of study with a median follow-up of 5.0 years (IQR 2.4-9.9). More females (n=40, 58.8%) were affected and CM predominantly affected European patients (n=63, 92.6%). The median age at diagnosis was 68.5 years (IQR 57.0-79.0), with non-Europeans presenting at a significantly younger age (-17.3 years [95%CI -31.3 to -3.2], p=0.019) than Europeans.
The annual age-adjusted incidence was 0.6±0.2 cases per million population per year and there was no increase in trend seen during the study period. 28 cases (41.2%) were deceased (from all causes) at time of follow-up and the median time to death was 3.76 years (IQR 2.1-5.7). The 5-year all-cause and disease-specific survival was 69% and 90%, respectively.
Conclusion: This is the first study to describe the burden of CM in NZ. The CM incidence was found to be in line with European and North American data, despite NZ having the highest rate of cutaneous melanoma. The incidence remained stable over two decades, likely reflecting a population change towards sun exposure following UV-related health campaigns that started in the 1980s.

FP03-10

Complications, treatments, and visual prognosis of choroidal osteomas

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Purpose: To report complications, treatments, and visual prognosis of choroidal osteoma.
Methods: Retrospective review of electronic medical records and multimodal images of 41 patients with choroidal osteoma.
Results: Visually significant complications included choroidal neovascularization (CNV) in 21 (47.7%) eyes and subretinal fluid (SRF) without CNV in 14 (31.8%) eyes. The most common treatment was intravitreal anti-vascular endothelial growth factor (VEGF) injection: 13 (61.9%) eyes with CNV received an average of 6.3 injections, and 6 (42.9%) eyes with SRF but without CNV received 1.8 injections. As the first-line treatment, intravitreal anti-VEGF injection induced complete or partial remission in 93.4% of eyes with CNV and 57.1% of eyes with SRF.
The probability of legally low vision estimated at 3 and at 5 years was 29.1% and 34.2%, respectively. The presence of CNV and outer retinal tubulation (ORT) was independent risk factors for vision loss (adjusted odds ratio, 8.08 and 6.94, respectively).
Conclusions: The development of CNV and ORT was strong risk factors for visual impairment. Due to the frequent recurrence of complications and poor visual prognosis, regular check-ups and appropriate treatment choices are warranted.

FREE PAPER PRESENTATIONS
FP04: Cornea, Ocular Surface

FP04-1

Addressing the use of different topographic and tomographic devices for keratoconus management in optometry and ophthalmology practices, a comparison of the Medmont-E300, Revo-NX and Pentacam-AXL

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Purpose: To evaluate the repeatability and agreement of a Placido disc-based videokeratoscope (Medmont-E300 topographer) typically used in primary care with spectral-domain optical coherence tomography (Revo-NX) and Scheimpflug corneal tomography (Pentacam-AXL) typically used in secondary-care.
Method: A prospective study where one eye from each subject was randomized to have central and thinnest corneal thickness (CCT, TCT) and maximum, mean, steep and flat keratometry (Kmax, Kmean, Ksteep and Kflat), measured with all three devices. Three measurements were completed per device to assess intra-observer repeatability.
Results: 110 eyes from 110 patients with keratoconus were analyzed. Repeatability was best with the Pentacam for CCT, Kmax, Kmean, Ksteep and Kflat parameters (precision=9.21,0.8,0.38,0.52,0.58). The Medmont had better repeatability than the Revo with Kmax, Kmean, Ksteep and Kflat (precision=1.41,1.35,1.43,1.59).
Revo had the best repeatability with TCT (precision=3.81). The intraclass correlation coefficient was >0.94 for all parameters in all devices. Agreement was generally poor between devices. However, there was good agreement between Pentacam and Medmont Kflat measurements (p>0.05).
Conclusion: Repeatability of keratometry parameters with the Pentacam and Medmont were greater than the Revo, suggesting a lower threshold for change for anterior corneal changes. There was poor agreement between devices.
The Revo had the greatest repeatability for TCT, suggesting a lower threshold for assessing thinning in disease progression and corneal-crosslinking safety. The Pentacam provided the best overall compromise between keratometry and pachymetry repeatability.

FP04-2

Keratoconus: intrastromal ring segments implantation in the topographic axis versus the comatic axis - a comparative study

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Purpose: Compare visual, refractive and topographic outcomes after ICRS implantation in patients with keratoconus, considering the coincidence of the topographic and coma axes.
Methods: A retrospective cohort study was designed. Sixty-one eyes with keratoconus were submitted to ICRS implantation at Hospital de Braga between 2011 and 2016.
Two groups were created: group 1 if coincident axes (K1 and comatic axis ≤30º) and group 2 if non-coincident axes (>30º). Several variables were evaluated: uncorrected visual acuity (UCVA), best corrected visual acuity (BCVA), manifest refraction (sphere, cylinder, and spherical equivalent), topography (asphericity, coma, K1, K2, maximum K and keratometric cylinder) and corneal paquimetry, pre and postoperatively. The follow-up was 6 months.
Results: We examined 61 eyes: 20 female, 41 male, 24 eyes with coincident axes, 37 with non-coincident axis. Medium age was 33.25 (SD=10.5), without significant differences between groups.
Postoperatively, there was an improvement in visual outcomes: increased levels ofUCVA (β=0.16) and BCVA (β=0.15)). Topographic variables improved with surgery: a significant decrease in anterior K1 and K2(β=-2.51), anterior Kmax (β=-2.88 and keratometric cylinder (β=-1.19) was observed. Coma (β =-0.75) and asphericity (β=0.39) also improved.
Refractive parameters revealed a reduction in sphere (β=2.09), cylinder (β=1.57) and spherical equivalent (β=2.88). No statistically significant differences were seen between the groups regarding refractive, visual and topographic parameters (p>0.05). No vision threatening complications were reported.
Conclusions: ICRS implantation is effective in improving visual, refractive and topographic outcomes in patients with keratoconus, with a good safety profile, apparently without significant differences when considering the coincidence of the topographic and comatic axes.

FP04-3

Clinical and confocal microscopy correlation in a pioneer experience of advanced cell therapy in keratoconus

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Purpose: Recently we described a new surgical approach based on advanced regenerative therapy, using autologous adipose-derived adult stem cells (ADASCs), and decellularized/recellularized human corneal stromal laminas with ADASCs into corneas with advanced keratoconus.
We report herein the safety and efficacy of the surgery, the clinical results of three years, and the corneal confocal microscopy evolution of the cell density during one year of follow-up.
Methods: Fourteen patients were randomly distributed into 3 experimental groups. Group-1 patients underwent implantation of autologous ADASCs. Group-2 patients received decellularized donor corneal stromal lamina. Group-3, patients received implantation of recellularized lamina with ADASCs.
Implantation was performed in a femtosecond-assisted. 36 months of follow-up clinical data are presented. Besides, one-year follow-up of the cell density evolution, and morphological changes of implanted cells using confocal microscopy.
Results: Three-year clinical outcomes were obtained in (G-1, G-2 & G-3) regarding the preoperative mean values: An increase of 1-2 logMar lines with the UDVA, CDVA. We obtained a statistically significant increase in CCT, as well as in the Thinnest-point in G-2, and G-3 when compared to G-1.
A significant increase was observed in the cell density in the anterior and posterior corneal stroma with all the groups, and in the implanted laminas in G-2 & G-3.
Conclusions: Intrastromal implantation of ADASCs and decellularized/ADASCs-recellularized human corneal stroma laminas did not have complications at 3 years in advanced keratoconus. The technique showed a moderate improvement in UDVA and CDVA and a significant increase in corneal thickness in the groups that received laminas.
Using corneal confocal microscopy, we observed a significant increase in cell density up to one postoperative year at the corneal stroma following the implantation of ADASCs alone, and in those cases with implanted laminas.

FP04-4

Intrastromal stem cell and telocyt implantation for advanced keratoconus

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Purpose: To investigate the development of new intrastromal histological structures using transmission electron microscopy after fresh myopic human lenticular implantation with stem cells and telocytes in advanced keratoconus with the SMILE module.
Methods: Sixty eyes with advanced keratoconus with corneal transplantation indication were included in this study. Fresh myopic lenticular implants (FML) were placed in all eyes with SMILE surgery. The patients were followed for 3 years. Three years after implantation, lenticular samples from three patients were examined under the electron microscope and compared.
Results: Demonstrated well-organized parallel lamellar structures. Healthy keratocytes and telocyte-like cells were observed in samples obtained three years after lenticular implantation. Thus, telocyte-like cells may be activated by appropriate stimuli, such as stem cells, and be involved in stromal regeneration. The preoperative CDVA improved from 0.86 ± 0.22 logMAR to 0.47 ± 0.09 logMAR (P< .001). The preoperative CCT increased from 399 ± 13.29 µm to 482.10 ± 8.12 µm (P< .001).
Conclusion: Fresh myopic intrastromal lenticular implantation is a safe, economical, and reliable technique that leads to increased corneal thickness, improved visual acuity, and the regeneration of healthy keratocytes and telocyte-like cells that are involved in stromal regeneration.
ClinicalTrials.gov Identifier: NCT04591587

FP04-5

A new approach in the treatment of keratoconus disease-stromal lenticule implantation using SMiLE surgery

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Purpose: To demonstrate an increase in vision and central corneal thickness after intrastromal fresh lenticule implantation in advanced keratoconus with the SMiLE module.
Methods: Thirty-five eyes with advanced keratoconus indicated for corneal transplantation were included in this study. Fresh myopic lenticular implants were placed in all eyes through SMILE surgery. Lenticular implants were extracted from patients with myopic refractive errors of the cornea, Visual acuity, corneal topography, and anterior segment optical coherence tomography were analyzed.
Results: All patients were followed for five years and all patients tolerated the procedure well. Slit-lamp examination performed on the day of surgery showed minimal corneal edema. No reaction, infection, epithelial defects, punctate keratitis, deep lamellar keratitis, or signs of allogeneic rejection were observed in any of the patients.

The preoperative CDVA improved from 1.44 ± 0.31 logMAR to 0.44 ± 0.06 logMAR (P < 0.001). The preoperative CCT increased from 335.35 ± 11.24 µm to 477.35 ± 4.31 µm (P < 0.001).
Conclusion: FML implantation is a safe, economical (does not require laboratory support), and reliable technique. This study showed that FML contains living stem cells and keratocytes, therefore it initiates the regeneration of corneal tissue, which leads to increased corneal thickness, and improved visual acuity.

FP04-6

Fresh human myopic lenticule intrastromal implantation for keratoconus using SMILE surgery in a long-term follow-up study: ultrastructural analysis by transmission electron microscopy

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Purpose: To investigate new intrastromal histological structures that develop after myopic human lenticular implantation in keratoconus with femtosecond laser-assisted small incision lenticule extraction (SMILE) surgery using transmission electron microscopy.
Methods: Sixty eyes with advanced keratoconus indicated for corneal transplantation were included in this study. Fresh myopic lenticular implants were placed in all eyes through SMILE surgery. Lenticular implants were extracted from patients with myopic refractive errors of the cornea, untreated keratoconus, and treated keratoconus following 1, 2, and 3 years of surgery.
These five lenticular samples were examined under the electron microscope and compared.
Results: Disorganized and thinned collagen fibers were observed in the stroma with degenerative stromal cells (telocyte-like cells and keratocytes) in the keratoconic cornea. Apoptotic bodies and cell debris were easily observed near the disorganized fibers.
In contrast, the myopic refractive error of the control and treatment groups demonstrated well-organized parallel lamellar structures.
Healthy keratocytes and telocyte-like cells were observed in samples obtained 1, 2, and 3 years after lenticular implantation. Thus, telocyte-like cells may be activated by appropriate stimuli, such as stem cells, and be involved in stromal regeneration.
Conclusions: Fresh myopic intrastromal lenticular implantation is a safe, economical, and reliable technique that leads to increased corneal thickness, improved visual acuity, and the regeneration of healthy keratocytes and telocyte-like cells that are involved in stromal regeneration.
ClinicalTrials.gov Identifier: NCT04591587

FP04-7

Long-term effect of intense pulsed light combined with low-level light therapy in the treatment of Meibomian Gland Dysfunction

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Purpose: To evaluate the efficacy of intense pulsed light (IPL) combined with low-level light therapy (LLLT) in the treatment of meibomian gland dysfunction (MGD).
Methods: Prospective, double-arm, non-randomized study. Patients with MGD were consecutively assigned to either IPL combined with LLLT (group 1, Eye-Light® + My-Mask® by Expansione Group, Italy) or IPL therapy alone (group 2, E>Eye® by ESW vision, France).
Evaluations at baseline and at 1st, 6th, 12th and 18th month after treatment. Outcomes were the variation of the validated Dry Eye Related Questionnaire (OSDI-12) and automated analysis of the ocular surface (IDRA® Ocular Surface Analyzer SBM Sistemi, Italy) such: non-invasive tear break-up time (NIBUT), blink rate (BR), meniscus height (MH) and lipid layer thickness (LLT). Schirmer's test (ST), tear film osmolarity (TFO) and superficial fluorescein corneal staining lesions (SFCSL) were also evaluated.
Results: Sixty-two patients (124 eyes) were included: 31 in group 1 and 31 in group 2, 30.6% were male, with a mean age of 65.7±10.1 years.
Comparing baseline with 18th month of follow-up, both groups showed a significant improvement in the Ocular Surface Disease Index (OSDI) ($p<0.001$) and decrease in NIBUT (group 1, $p=0.789$; group 2, $p=0.133$);
In BR and MH, there was a significant improvement in group 1 ($p<0.001$ and $p=0.040$, respectively) but not in group 2 ($p=0.618$ and 0.701, respectively);
Both groups had a significant improvement in LLT ($p<0.001$) and in ST (group 1, $p<0.001$; group 2, $p=0.029$); an increase in group 1 ($p<0.001$) and a decrease in group 2 ($p=0.005$) occurred in TFO;
No differences in SFCSL in both groups (group 1, $p=0.240$; group 2, $p=0.081$).
During the follow-up, 6 eyes (group 1) and 16 eyes (group 2) were referred for retreatment.
Conclusions: IPL is an effective and safe treatment choice for MGD. Both groups showed benefits. The benefits of combined therapy seem to be more persistent and wider, improving the aqueous layer of the tear film.

FP04-8

Investigation of Tool Like-4 Receptor (TLR-4) expression in the pathophysiology of ocular rosacea and its' clinical associations

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Purpose: The key role of tool like-4 receptor (TLR-4) expression in the pathophysiology of rosacea has been discussed in recent years, however no study has investigated the relationship between the expression level and patients' ocular findings.
In this study, we aimed to evaluate the conjunctival TLR-4 expression level and its relationship with ocular surface findings in ocular rosacea patients.
Method: Thisprospective study includes 30 eyes of 30 rosacea patients with ocular involvement and 30 healthy volunteers. After a complete ophthalmological examination, tear break-up time (BUT), Schirmer tests, Meibomoscore and ocular surface disease index (OSDI) scores were performed for all participants.
From conjunctival epithelium samples, TLR-4 expression levels were assessed with real-time-polymerase chain reaction (RT-PCR) analysis.
Results: According to RT-PCR results, the mean TLR-4 expression was significantly higher ($p<0.05$) in ocular rosacea patients compared to controls. There were negative correlations between TLR-4 and BUT and between TLR-4 and OSDI, while a positive correlation between TLR-4 and Meiboscore ($p<0.05$). No correlation was found between the TLR-4 and Schirmer results.
Conclusion: In this study, it was shown for the first time in the literature that conjunctival TLR-4 expression is closely related to the ocular surface findings of ocular rosacea.

FP04-9

Diabetic impact on post cataract surgery eye blinks, lid glands and tear-film: predictive factor analysis

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Purpose: To compare the morphology of meibomian glands (MG), the functional changes of the tear film and eyeblinks & its associations with diabetic and non-diabetic subjects who underwent uneventful phaco-surgery.
Methods: Cataracts with and without DM were grouped based on age as G-1(No DM, age<60; N=43), G-2 (DM, <60; N=39), G-3 (No DM >60; N=51), G-4 (DM >60 yrs; N=67). Preop meibography, and quantitative tear function studies, including noninvasive tear break-up time (NIBUT), and blink rate were analyzed & compared with 21 days and 3 months post-surgery. Ocular Protection Index (OPI) was calculated as a measure of ocular surface health by dividing NIBUT by inter-blink interval. OPI<1 is considered susceptible to OSD.
Results: NIBUT was 11.80, 9.50, 10.30 & 7.88 sec. across Gr 1-4, which reduced to 8.34, 7.31, 7.36, and 6.11 sec. by 21 days and restored to baseline by 3 months. ANOVA for OPI had a time effect, Wilk's Lambda=0.813, $p<0.0001$. Preop OPI was 1.88, 1.26, 1.67, 0.88 across Gr 1-4, reduced to 1.68, 0.91, 1.03, 0.75 at 21 days, and restored to baseline by 3 months. Gr-4 had poor OPI at all time points. DM influence on MG loss was 12.1% Vs non-DM 6.64%. Elderly, diabetics were 6.29 & 1.79 times more susceptible to surface damage post-cataract surgeries respectively.
Conclusion: This study predicted the relative risks of baseline factors like DM and increasing age contributing to ocular surface damage after uneventful cataract surgery. Diabetics over 60yrs require long-term surface protectors post-cataract surgery.

FREE PAPER PRESENTATIONS
FP05: Oculoplastics, Retina, Uveitis

FP05-2

Recovery of the ratio of closure time during blink time in lacrimal passage intubation

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Purpose: We aim to find a novel blink parameter in nasolacrimal duct obstruction (NDO) patients and analyze parameters that could reflect subjective symptoms and objective indicators at the same time through a blink dynamic analysis.
Methods: A retrospective study was conducted with 34 patients (48 eyes) who underwent lacrimal passage intubation (LPI) and 24 control groups (48 eyes). All patients' blink patterns were measured using an ocular surface interferometer before and after LPI, including total blink (TB) and partial blink (PB) and the blink indices blink time (BT), lid closing time (LCT), closure time (CT), lid opening time (LOT), interblink time (IBT), closing speed (CS), and opening speed (OS).
The tear meniscus height (TMH) was measured and the questionnaire "Epiphora patient's Quality of Life (E-QOL)", including daily activity restriction as well as static and dynamic activities, was completed.
Results: Compared to CT and the ratio of CT during BT (CT/BT) in control (89.4 ± 20.0 msec, 13.16 %), those in NDO's were longer (140.3 ± 92.0 msec, 20.20 %). They were also related to TMH. After LPI, CT, and CT/BT were recovered to 85.4 ± 22.07 msec, 13.29% ($p<0.001$). CT and CT/BT showed a positive correlation with the E-QOL score, particularly with dynamic activities.
Conclusion: CT and CT/BT, which are objective indicators associated with subjective symptoms of patients, are considered new blink indices for the evaluation NDO patients with Munk's score.

FP05-3

Periocular basal cell- and squamous cell carcinoma - when surgery would have been the best option

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Purpose: Basal cell- (BCC) and squamous cell cancer (SCC) are the most frequent malignant tumors in the periocular area. Treatment options include surgery, radio- and immunotherapy. As tempting a non-surgical approach might be, the long term results show disasters recurrences when treated first with radiotherapy or immunotherapy.
We present several patients with non-operable recurrences and discuss the chosen options including the pros and cons.
Method: We review the history of patients with recurrences of BCC/SCC and compare a primary surgical approach with the chosen non-surgical approach.
Results: Nine patients (six male, three female, aged 58-81y) in a 12 months period present with non-operable non-curative recurrences after primary non-surgical treatments of periocular.
Conclusion: A non-surgical approach is tempting for the patient. However, recurrences might be inoperable and finally untreatable. The primary surgical approach in operable cases should be prioritized. Radio- and immunotherapy should be kept for non-operable patients.

FP05-4

Quantifying functional vs. cosmetic blepharoplasty procedures following dermatochalasis referral

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Purpose: Indications for blepharoplasty (bleph) may be categorized as "functional" or "cosmetic". In the US, patients electing to proceed with functional blephs must demonstrate significant compromise of daily living activities due to visual impairment in order to qualify for insurance coverage. Patients who do not meet these requirements can elect to pay for the bleph, as it is considered cosmetic. The purpose of this study is to characterize the nature of the dermatochalasis evaluation (eval), indications for surgery, and subsequent functional vs. cosmetic bleph.
Method: A retrospective chart review was conducted from a single oculoplastic surgeon in the US. CPT (diagnosis code) was used to identify patients seen for dermatochalasis eval between 1/2019-1/2023. The primary outcome measure was whether the patient elected to proceed with functional or cosmetic bleph. Additional variables collected include age (stratified 20-39, 40-59, and 60+ years) and gender.
Results: 608 patients were seen for an eval between 2019-2023. 243 (40%) patients then elected to proceed with surgery. Of these, 196 (81%) patients received cosmetic bleph. 47 (19%) patients received functional bleph. Neither age nor gender were reliable predictors of whether patients elected to proceed with surgery ($p>0.5$). Of patients who did receive surgery, age was a significant predictor of whether the bleph was functional vs. cosmetic ($p<0.001$), and gender was not ($p=0.364$).
Conclusion: The data show that the majority (60%) of evals did not lead to bleph. The rate of eval leading to surgery may be partially explained by a discrepancy in the understanding of insurance coverage between patient, referring provider, and surgeon. False expectations of insurance coverage for both the eval and subsequent surgery may result in an excess number of evals and associated out-of-pocket expenses for patients. Both patients and referring providers should be aware of the insurance requirements for functional blephs.

FP05-5

The MOSAIC study: a clinical, humanistic, and economic burden of illness study among patients with geographic atrophy (GA) and their caregivers in Europe

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Purpose: To characterise the burden of GA in patients and caregivers in Europe.
Methods: We conducted a survey in Europe with 81 GA patients (35 in Germany, 34 in the United Kingdom [UK], and 12 in France) and 77 unpaid caregivers of GA patients (35 in Germany, 35 in the UK and 7 in France).
Results: The proportion of male and female patients was similar (53% female). The patient sample had a median (interquartile range [IQR]) age of 78 (71-82) years and was mostly retired (89%). Median (IQR) age at diagnosis was 69 (62-76) years, with visual changes due to GA reported by 72% of patients in both eyes.
Patients mostly received help from partners (49%), children (35%), family members (28%), and/or friends (27%). 37% of patients needed daily help due to GA. 49% of patients ranked loss of independence as their top concern. 62% of patients worried about their eyesight most or all of the time. 74% of patients did not drive, and of those who have previously driven, 96% gave up because of their eyesight. 30% of patients lost their ability to read. 37% of patients were concerned about the effect of GA on their finances in the future.
Most caregivers were female (74%) with median (IQR) age of 66 (54-74) years. The person with GA they cared for was mostly their partner (51%) or a parent (26%). 75% of the caregivers reported being afraid of what the future held for the person with GA. 62% felt that the person cared for was dependent on them. 26% reported the most inconvenient support was to drive their loved ones. 40% were employed and missed a mean (standard deviation) of 2 (3) hours from work in the previous week due to caregiver responsibilities.
Those caring for a parent (n=20) reported a higher burden than those caring for their partner (n=39): 15% vs. 3% of 'moderate to severe' or 'severe' burden using Zarit Burden Interview.
Conclusions: These results highlight the substantial burden of GA on patients, their caregivers and society in Europe.

FP05-6

Niche structure analysis of CD117+ cells in retinal degeneration microenvironment

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Purpose: To study the proliferation and differentiation of $CD117^+$cells in retinal physiological and degenerative microenvironment, as well as the effect and mechanism of abnormally proliferated Müller cells on $CD117^+$cells, and to further clarify the activation mechanism of CD 117^+cells.
Methods: 4-week-old wild-type and retinal degeneration mice were taken to test for immunofluorescence staining of CD117, Müller cell marker (GS), amacrine cell marker (GAD65&67, ChAT) and connexin43. Confocal focusing microscope was used to observe the cell types around $CD117^+$cells and to compare the changes of microenvironment cell composition.
Results: CD117 ligand stem cell factor (SCF) positive cells were surround $CD117^+$cells in adult mouse retina, and all SCF^+cells were Müller cells, but not all Müller cells were SCF positive. There was expression of connexin 43 between $CD117^+$cells and SCF^+cells. Laminin labeling of cell tight junction showed that $CD117^+$cells had a tight junction with surrounding cells. Generally, $CD117^+$cells in the inner nuclear layer were not double labeled with any kind of mature cells, but it was found that a small proportion of $CD117^+$cells and GAD 65&67 could be co-stained without the label of long process cells, suggesting that GAD 65&67 may be expressed in the intermediate transitional state during the differentiation of $CD117^+$cells.
In addition, we also found that some $CD117^+$cells in the mouse model of retinal degeneration could still express proliferating cell nuclear antigen (PCNA), indicating that they might continue to undergo low-level symmetrical division in adulthood. Some $CD117^+$cells were next to PCNA positive cells, suggesting that $CD117^+$cells may divide asymmetrically at the same time.
Conclusion: We found that the transitional state of $CD117^+$cells might express GAD 65&67 when they differentiated to the daughter cells. In the environment of retinal degeneration, $CD117^+$cells may have low levels of symmetrical division and asymmetrical division.

FP05-7

Digital exclusion, social deprivation and clinical outcomes of patients undergoing hyperacuity home monitoring

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Purpose: To measure the risk for digital exclusion and the social deprivation index among participants in a home monitoring programme using the Alleye app for retinal disease. To examine the association of these parameters with clinical outcomes and programme adherence to investigate digital exclusion.
Methods: Secondary analysis of 89 patients with diabetic maculopathy and retinal vein occlusions at Moorfields Eye Hospital participating in an Alleye home monitoring programme between June 2020-October 2022. Postcodes were used to determine the Digital Exclusion Risk Index (DERI) and the Index of Multiple Deprivation (IMD) for London.
Clinical information from the clinic information system and Alleye app usage data were extracted for each patient. Associations between the DERI/IMD, clinical parameters and app use were examined in multivariable regression models.
Results: Mean DERI was 2.56 (SD 0.36), IMD was 6.25 (SD 2.79), visual acuity in the better eye at study entry was 83.3 letters (SD 7.9), and mean follow-up was 344.4 days (SD 260.1). During the observation period, 36% received an intravitreal injection (IVI) and visual acuity fell by at least 10 letters in around 1 in 4 patients. In 87.5% of patients requiring IVI, use of the app increased. We found no association with clinical parameters and programme adherence for DERI or IMD.
Conclusion: This home monitoring programme for mostly diabetic patients included people with a high digital exclusion risk and high social deprivation. Interestingly, there is no association between these parameters, clinical course and monitoring adherence, suggesting that patients with high digital exclusion risk and significant social deprivation may benefit from such a programme.

FP05-8

Cannabidiol reduces para-cellular permeabilty in a model of the human inner blood-retinal barrier through PPARγ receptors

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Purose: The aim of this study was to investigate the role of cannabidiol (CBD) in a 2-D transwell model of the inner blood retinal barrier (iBRB) using 3 human primary retinal cell lines.
Methods: Human retinal vascular endothelial cells (HuREC), astrocytes (HuRAstro) and pericytes (HuRPeri) were co-cultured on 0.1µm pore transwell inserts.
Different combinations of the 3 cell types were compared to provide the optimal cell configuration, and integrity of the iBRB was measured by Transepithelial electrical resistance (TEER) with measurements before and at intervals after 10µM CBD added to the apical lumen. PPARγ antagonism was investigated by co-administration of 10µM GW9662 to the apical lumen.
The mean percentage change from baseline (3 samples in each 6 replicate experiments) was compared by one-way ANOVA with Dunnett's corrections using GraphPad software.
Results: The highest baseline TEER was achieved when HuREC and HuRPeri were co-cultured on the apical surface and HuRAstro on the baso-lateral surface of the insert.
TEER was increased at 1, 2, 3 and 24 hours with 10µM CBD (149.6%, 142.8% 158% and 117.1% respectively); significantly higher than the vehicle control and GW9662 alone ($p=0.0001$ at all points) and greater than CBD + GW9662 at 2, 3 and 24 hours ($p=0.0001$).
At 1 hour there was no significant difference in TEER between CBD with or without GW9662.
Conclusion: This is the first study to demonstrate CBD can increase iBRB properties in a 2-D transwell cell culture model using human cell lines. Co-culture of REC and Retinal pericytes is a more physiological configuration as direct contact allows 'Peg' formation between the 2 cells.
Increased iBRB integrity by CBD was mediated in part by the transcription factor PPARγ receptors. As there was incomplete and delayed inhibition with GW9662 there may be other pathways through which CBD can operate.
Conditions with a breakdown of the iBRB leading to macular oedema would benefit from further study with CBD.

FP05-9

Ocular autoimmune diseases & lessons from uveitis

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Purpose of presentation: It is not well understood how the ocular immune privilege is bridged in face of different systemic autoimmune diseases. However, ocular immune response in systemic autoimmune diseases may manifest with different arrays of eye disorders isuch as uveitis.
This presentation may cover and provide an overview of the altered ocular microenvironment in face of different autoimmune-mediated diseases with a concentration on uveitis as a challenging medical disorder to achieve a faster diagnosis and a more effective treatment for patients.
Recent findings: During the 20th century, Immuno-ophthalmology emerged as a subspecialty bridging ophthalmologists and immunologists. Literature reviews declare that the eye may be overwhelmed either as a bystander of unrelated autoimmune-mediated diseases or in certain instances the eye per se is the specific target affected by a certain inflammatory process such as uveitis. Uveitis can present as an isolated entity or associated with other systemic autoimmune diseases and continues to be a diagnostic conundrum attributed to its heterogeneous presentation.
However, suspicion of autoimmune-related uveitis with ocular or systemic manifestations should be considered challenging and clinically complex cases. Recent studies are focusing ON the pathogenesis of ocular inflammatory disease following autoimmune-mediated diseases and identifying new targets for immunotherapy that will not only improve efficacy but also minimize adverse effects from traditional therapy.

Summary: Ocular involvement may manifest with different arrays of eye disorders in which uveitis may be the main target manifestation. The majority of uveitis presented to the eye clinic are of the immune-mediated (noninfectious) category and ignored cases end with vision loss.
However, high suspicion of systemic autoimmune-mediated disease cases is critical since admirable results can be achieved with appropriate immunotherapy.

FP05-10

Differential dynamics of immune cell profiling in tubercular and non-tubercular uveitis

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Purpose: To explore the differences in immunopathology of tubercular and non-tubercular uveitis.
Methods: We conducted a prospective study from February 2021 to November 2022, recruiting patients diagnosed with uveitis at a tertiary eye centre. Clinical information, images and blood samples for immune cells profiling were collected at baseline (Visit 1) and 6 months (Visit 4).
The patients were classified into Group A (tubercular- interferon-gamma release assays (IGRA) positive) with 23 patients and Group B (non-tubercular-IGRA negative) with 24 patients.
Results: The CD4 and CD8 T cell mycobacterium tuberculosis (MTB)-antigen specific responses in blood was investigated. CD4 T cells formed the majority in both groups, with CD8 T cells noted in some. No significant differences were found between the groups or the 2 Visits.
At Visit 1, Group A had a significantly higher proportion of purified protein derivative (PPD) (p=0.04) as well as ESAT-6 and CFP-10 (p=0.01) responding cells than Group B. However, there was no difference in the proportion of cytokines, activation and memory marker expression of MTB specific CD4 T cells between the groups.
At Visit 4, Group A, had a reduced proportion of CD27 negative PPD specific CD4 T cells (p=0.04), and a significant decrease in percentage of CD38 positive cells on the ESAT-6 and CFP-10 specific CD4 T cells (p=0.04), as compared to Visit 1.
In Group B, similar findings were not observed. However, there was a significant increase in PPD specific CD4 T cells (p =0.01) and a corresponding increase in cells expressing GM-CSF (p=0.02) between Visit 1 and 4.
Conclusions: Immune cell profiling suggests a difference between IGRA positive and negative patients. Post-treatment profiling at 6 months also showed similar findings to treated pulmonary TB patients. A better understanding of its immunopathology allows us to potentially further discover better diagnostic and therapeutic options for ocular TB.

FREE PAPER PRESENTATIONS
FP06: Cataract, Refractive Surgery, Education

FP06-2

Systematic review on methods for calculating carbon footprint in telemedicine and development of a personalized carbon footprint calculator

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Background: The healthcare environment accounts for 4-10% of carbon dioxide emissions worldwide, of which travel-related emissions contribute about 22%. Telemedicine is a potential solution for reducing these emissions. However, literature on telehealth footprint is scarce and often lacks a comprehensive approach on emission estimations. A systematic way to report the environmental impact is essential.
Objective: To conduct a systematic review on how carbon footprint of telemedicine is evaluated in telemedicine, report the impact of our telemedicine program in postoperative cataract eye care, and propose an open-access calculator to estimate emissions for individual healthcare suppliers.
Methods: A search is conducted according to the PRISMA guidelines in PubMed, Medline, Embase and Scopus for articles that estimated the carbon footprint savings of telemedicine. Publications were evaluated in categories, of which the most important were travel distance and streamlined life cycle assessments (LCA). Travel by train and air are excluded.
Results: The search of 1,117 records included 23 articles about ground travel, mainly from North America and Europe. The median savings per visit were 131 km (IQR:52-386), translating to 26.3 kgCO2 (IQR:10.6-94.4). Calculations that included LCA had a mean emission of 2.5% less than estimates that excluded LCA.
We estimate in our remote eyecare example that 411,000 $kgCO_2$ per year can potentially be saved from travel alone, or 401,000 kgCO2/year when accounting for LCA.
Conclusion: To prevent overestimation of CO2 emission savings due to telemedicine, an LCA should be included, although travel distance as a variable is the biggest contributor. The precision of our estimate is limited by the number of studies.
Our model is a preliminary attempt at capturing this difference. By defining the contribution of telemedicine to carbon footprint savings, we gain perspective on its role in working towards our collective climate goals.

FP06-3

The use of a video-based telemedicine software for consultations and interactive visual acuity measurement after cataract surgery

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Purpose: This study assessed the feasibility, safety, accuracy, and patient satisfaction in the use of a novel telemedicine software for video consultations and interactive visual acuity measurement following routine cataract surgery.
Methods: This prospective cohort study assessed the use of video consultation in 65 patients two weeks after routine cataract surgery. We compared this cohort with face-to-face consultations two weeks after cataract surgery. The remote consultation included a subjective assessment of the patient's symptoms and compliance with medications, a visual evaluation of the external eye, an assessment of photos of the anterior segment obtained with a smartphone and sent via the software, a digital analysis of hyperemia and a remote interactive measurement of ETDRS visual acuity during the video consultation.
Results: Patients selected for video consultation were younger (median 73 years versus 85 years) with better general health conditions and were familiar with computer and smartphone devices. The video consultation allowed a reliable assessment of symptoms, compliance with medication, and examination of the external eye in all cases. 4% of patients seen by video consultation required a clinic review due to intolerance to postoperative medications.
There was no adverse effect in the group assessed by video consultation when they were assessed at the final review 5 weeks after surgery. 97% of patients were satisfied with the video assessment.
Conclusion: This study showed that the video consultation was effective, safe, accurate, and satisfactory in this cohort of patients following routine cataract surgery.
There were no adverse effects/complications missed in the group subject to video consultation at two weeks versus the patients reviewed in the clinic at two weeks.
The novel process of integrating remote video consultation to routine medical care has the advantage of reducing hospital attendance and the cost of traveling for patients.

FP06-4

Vitreous loss fire drills – ophthalmic simulation improves trainee surgical

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Purpose: Ophthalmic trainees have reported limited exposure and low confidence regarding the management of cataract complications such as posterior capsule rupture (PCR)/vitreous loss (VL). We wished to evaluate the impact of a simulation-based educational training event on these concerns.
Method: A mandatory educational "vitreous loss fire drill" was arranged for ophthalmic trainees in West of Scotland region, including a pre-course knowledge transfer video, and 4 practical simulation stations including performing an anterior vitrectomy, inserting a 3-piece lens, corneal wound suturing, and communication skills training and debriefing. A pre and post course questionnaire of self-reported competence and confidence was undertaken (Likert scale 1-10).
Results: 28 ophthalmic trainees participated (mean age 30 years; 54% male). All junior trainees (ST1-3) scored <6 in confidence and competence in all pre-course questions.
All participants reported significant improvements following the "fire drill", with median reported competence for anterior vitrectomy increasing from 2 to 7 ($p<0.00001$); 3-piece IOL techniques (3 to 7; $p<0.00001$) and corneal wound suturing (5 to 7; $p<0.00001$).
Median reported confidence improved for performing anterior vitrectomy (4.5 to 8; $p<0.00001$); 3-piece IOL techniques (3.5 to 8; $p<0.00001$) and corneal wound suturing (6 to 8; $p<0.00001$).
Conclusion: We have shown that a "PCR/VL fire drill" significantly improves trainee surgical competence and confidence in related surgical tasks, and reduced concerns.
Simulation-based activities enables development of essential skills and could be expanded for other intra-operative surgical complications. Such events should not be limited to trainees alone, but could form part of mandatory training in the future.

FP06-5

Results of uveitic cataract surgery in children at department of ophthalmology of First Faculty of Medicine of Charles University and General University Hospital in Prague

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Purpose: The purpose of the study is to present the results of cataract surgery in pediatric patients with chronic uveitis (CU) at our clinics.
Methods: Retrospective analysis in period 2/2018-3/2021. The group included 8 patients (6 girls and 2 boys) with CU (7 children anterior uveitis and juvenile idiopathic arthritis and 1 child panuveitis and Blau syndrome).
The standard surgical procedure included lens phacoemulsification with implantation of artificial intraocular lens (IOL) into the bag, posterior circular capsulorhexis and anterior vitrectomy. It was extended in some cases by additional procedures. Intracameral cefuroxime and subconjunctival dexamethasone were administered into all eyes.
All IOLs were monofocal, hydrophobic and acrylic. The nonparametric Mann-Whitney test was used to evaluate differences in best-corrected central visual acuity (BCVA). A significant p-value was $p<0.05$.
Results: The average age of the children at the time of surgery was 7.5 years (5-12 years). Systemic treatment: 4 children methotrexate, 3 children mycophenolate mofetil, 6 children adalimumab, 2 children corticosteroids (CS) and 1 child tocilizumab.
Cataract surgery was performed in 10 eyes under general anesthesia. The surgery was performed in the absence of uveitis activity lasting at least 3 months. Perioperatively intravenous pulses of CS were administered with following conversion to an oral form.

Preoperative BCVA was 0.12 (0.001-0.4) significantly improved after the surgery: at 1 month: 0.53 (0.2-1.0; p = 0.0002), at 3 months: 0.61 (0.5-1.0; p < 0.0001) and at 6 months: 0.71 (0.3-1.0; p = 0.002). In all patients, the activity of uveitis was reduced by postoperative treatment.
Conclusion: Our results suggest that surgery of complicated cataract in pediatric patients with CU with primary IOL implantation into the bag may be a relatively safe and effective method BCVA improvement if perioperative procedures are implemented.

FP06-6

Introducing e-health technology to routine cataract care: patient perspectives on a web-based eye test for postoperative telemonitoring

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Purpose: To explore cataract patients' experiences with an e-health tool for self-assessing visual function (i.e. a web-based eye test), and to formulate recommendations for its successful adoption in routine cataract care.
Methods: A mixed-methods study, including questionnaires and in-depth semi-structured interviews, was conducted alongside a multicenter randomized controlled trial evaluating the validity, safety and cost-effectiveness of remote care after cataract surgery (CORE-RCT). Results were analyzed thematically.
Results: A total of 22 participants were included in this study. In-depth interviews were conducted with 12 of them. Participants reported positively about performing the web-based eye test at home. Four overarching themes were identified in the interviews. First, participants were inventive in overcoming practical barriers encountered while conducting the test. Second, participants desired information on the meaning of the test results. Third, the ability to self-monitor visual function was appreciated. Fourth, most participants preferred to remain the option to contact their eye care professional postoperatively, especially when experiencing symptoms. Most would be satisfied with a phone consultation or an E-consult.
Conclusions: Participants reported positive experiences with the studied web-based eye test. Barriers for successful adoption were identified, including: insecurity about correctly performing the test, incomplete information on how to interpret test results, and a feeling that in-hospital assessments are superior to remote assessments. We propose recommendations to focus on building trust in remote eye care delivery, and acknowledging the need to retain access to the ECP when medically indicated or deemed necessary by the patient.

FP06-7

Exploring user engagement during a remote consent pilot at Moorfields Eye Hospital

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Recent increases in remote patient encounters, concerns regarding on-the-day consent detailed in the Paterson Inquiry, and a Trust-wide move towards carbon neutral paperless systems have necessitated an improved consent process.
We piloted a remote consent platform, Concentric, at Moorfields Eye Hospital. Patients attending virtual and face-to-face appointments in Cataract and Oculoplastic clinics were given instructions and an email or text message link for home access to electronic information leaflets and a consent form for their intended procedure.
Standard paper consent forms were available on the day of surgery for patients unable or unwilling to remotely consent. A 5-item questionnaire explored patient satisfaction and usability of the platform.
145 patients were sent a remote consent form – 63% were seen virtually and 37% face-to-face. 98% of patients seen virtually did not require face-to-face appointments until the day of surgery.
Of patients who consented remotely (average age 59.8y; 53% male, 47% female, n=97), 70% proceeded to have the operation. There was no significant difference in average age (65.8y, p=0.06; 37% male, 61% female, 2% transgender, n=48) of patients who did not consent remotely, compared to those who did. 67% of those who did not consent remotely proceeded to have their intended operation. Visual acuity of 0.3 LogMAR or worse in the better-seeing eye was associated with greater risk of not consenting remotely (RR 1.88, p=0.02; 95% CI 1.3-3.1).
43 patients provided feedback. 91% found the platform "Very" or "Somewhat" easy to use. 88% reported that they were able to remotely consent without issues. 94% were "Very" or "Somewhat" satisfied with the service, and 65% would recommend it to a friend/family member.
Remote consent platforms can complement virtual surgical pathways. Patients with worse visual acuity may be less likely to consent remotely. Strategies (e.g. text-to-speech functions) should be explored to mitigate this.

FP06-8

How to address near visual impairment

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There are different reports on the need to glasses for near visual impairment and presbyopia. The purpose of this study is to compare and identify the different estimates for the unaddressed need to near glasses and propose predictors from available data on eye health programmers and surveys that will improve the access and compliance.

Methods: We reviewed and compared the differences between the reports from Global burden of disease (GBD) and Lancet Committee in terms of the magnitude and distribution of the need depending on how the problem, population and regions are defined and how the data is collected and interpreted. We also reviewed the result of the Rapid Assessment of Avoidable Blindness (RAAB) surveys.
Results: The magnitude of the problem is so high, and the World Health Organization (WHO) has identified that unaddressed near vision impairment (NVI) affects more than 500 million people globally.However, there is also huge difference between difference sources.
Conclusion: There is need to find consensus in definitions and robust epidemiological data for quantify and monitor need to near vision glasses. There is also a huge need to the cost effective interventional and predictive studies that could address this predominant cause of visual impairment. Furthermore, there is a need to methodological framework for future studies on new interventions and how to predict end users' compliance with these interventions.

FP06-9

A standardised preoperative risk stratification system to facilitate safer training and reduce complications of cataract surgery: considering outcomes with surgeon and patient perceptions

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Purpose: To further validate a cataract risk stratification system: to enable safer training of eye surgeons and improved patient outcomes; to evaluate surgeon perceptions; and to explore patient attitudes towards ophthalmology trainee involvement in surgery.
Methods: Prospective cohort study: preoperative risk stratification of consecutive cases (M=500) in a public teaching hospital setting. Identification of higher-risk cases and recommendation to allocate these cases to senior surgeons.
Primary outcome: intraoperative complication rates relative to adherence to risk recommendations. A face-to-face, 16-question patient questionnaire was independently administered to assess patient perspectives of trainee involvement. A structured, anonymised, electronic 21-question survey of a sample of eye surgeons assessed knowledge and views of risk stratification systems.
Results: The stratification system scoring recommendations were adhered to in 98% of cases. Overall intraoperative complication rate was 5.4% (4.4% in those adhering to guidelines) with no statistical difference between surgeon levels. Post-op. mean best-corrected visual acuity was 6/7.5, cystoid macular oedema occurred in 3.6%. The patient questionnaire (N=84) revealed a number of viewpoints for discussion but 90% supported trainee surgeon involvement in surgery. The surgeon questionnaire (N=66) revealed 77.3% thought risk stratification useful, however, 56.1% had not used any stratification system. Reservations included: weighting of risk factors; scoring cataract density; increased clinic time; potential to reduce trainee experience.
Conclusions: This risk stratification system identifies high risk cases and reduces complication rates, allowing safer training. Most patients held positive views towards trainee involvement with minor reservations. Surgeons thought risk stratification useful, but further education in relation to acceptability, advantages and minimal drawbacks is required to improve uptake

FP06-10

Awareness and knowledge regarding diabetic retinopathy among non ophthalmic medical personnel of a tertiary care teaching hospital: a cross sectional study

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Background: Diabetic retinopathy (DR) is a microangiopathy and a blinding complication of Diabetes Mellitus (DM). It occurs due to poor control of DM and lack of knowledge about the complications of DM. Early referral of patients with diabetes to an ophthalmologist could help in the early detection, management and prevention of blindness due to DR. Awareness of DR among non ophthalmic medical personnel is essential for prompt timely referral to an ophthalmologist.
Aim: This study was conducted to assess the awareness and knowledge of diabetic retinopathy among resident non ophthalmic personnel in a tertiary care centre.
Methods: A hospital-based, cross sectional study was conducted using a pretested questionnaire. All the resident non ophthalmic medical personnel, at the medical college and hospital were recruited. Questionnaire was distributed to all the participants. The questionnaire contained questions to determine awareness of retinopathy and its risk factors, screening protocols and management. Data obtained was analyzed using the using SPSS Version 23.0 software. Results were expressed in form of percentages and proportions.
Results: A total of 157 residents were recruited. Only 86 participants (mean age of 25years) completed the questionnaire. 83% of participants were aware of DR. Only 76% were aware that regular retinal examinations are required in both type 1 and 2 DM and 75% were not aware what the treatment for DR is.
Conclusion: Although a large proportion of medical personnel are aware that diabetes can affect the eyes, there is little knowledge of its risk factors and prevention including screening protocols and treatment. Improving their knowledge will go a long way in guiding their patients. Implementation of awareness programme in their curriculum may improve their knowledge about the importance of prevention of DR related blindness. Awareness levels of medical personnel are vital in planning strategies to prevent blindness due to DR in Diabetes.

FREE PAPER PRESENTATIONS
FP07: Ophthalmology

FP07-1

Long-term efficacy of idebenone in patients with LHON in the LEROS study: analyzing change in visual acuity over time according to age

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Purpose: Leber hereditary optic neuropathy (LHON) is a mitochondrial disease leading to progressive, bilateral vision loss. Childhood-onset LHON has a relatively good prognosis, suggesting that age at onset influences disease progression and potential response to treatment. In LEROS, a Phase IV, open-label interventional study (ClinicalTrials.gov NCT02774005), visual acuity (VA) outcomes following 24 months of idebenone treatment were compared to those of an external Natural History (NH) cohort.
Methods: LEROS included patients aged ≥12 years and with a disease onset ≤5 years prior. Data from 181 patients were compared to retrospective data from the NH cohort (N=372), matched by time since symptom onset. Here, we compare the difference in VA change, or delta VA (least squares [LS]-mean differences), from baseline in treated eyes versus those in the NH cohort. Patients were stratified by time since symptom onset in the most recent eye: subacute/dynamic (≤1 year) and chronic (>1 year) phase, and by age at symptom onset (<18 years, ≥18 years).
Results: In subacute/dynamic eyes from the <18 years group (n=22 treated eyes vs n=22 eyes in the NH cohort), delta VA from baseline at Month 24 was 0.38 logMAR in favor of the NH cohort (p=0.0204). In the chronic phase (n=16 treated vs n=37 NH eyes), delta VA was -0.08 logMAR in favor of idebenone treatment (p=0.4047). In subacute/dynamic eyes from the ≥18 years group (n=99 treated vs n=53 NH eyes), delta VA from baseline at Month 24 was -0.18 logMAR in favor of idebenone treatment (p=0.0600). In the chronic phase (n=100 treated vs n=56 NH eyes, delta VA was -0.21 logMAR in favor of idebenone treatment (p=0.0001).
Conclusion: In eyes of patients ≥18 years, VA improvement at Month 24 was greater in idebenone-treated eyes versus those in the NH cohort. Treatment benefit was particularly apparent in the chronic phase, corresponding to >10 additional letters on the ETDRS chart. In chronic eyes from patients <18 years, a non-significant trend was observed in favor of idebenone; in subacute/dynamic eyes spontaneous VA recovery was unexpectedly high in the NH cohort.

FP07-2

Long-term efficacy of idebenone in patients with LHON in the LEROS study: analyzing change in visual acuity categories according to causative mutation and disease phase

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Purpose: Leber hereditary optic neuropathy (LHON) is a mitochondrial disease leading to progressive, bilateral vision loss. Stabilization or recovery of visual acuity (VA) are important therapy outcomes, increasing the likelihood of maintaining functional vision. In LEROS, a Phase IV, open-label interventional study (ClinicalTrials.gov NCT02774005), VA outcomes following 24 months of idebenone treatment were compared to those of an external Natural History (NH) cohort.
Methods: Patients with LHON and confirmed primary mtDNA mutation (m.G11778A, m.T14484C or m.G3460A) were stratified by time since onset: acute (≤1 year) and chronic (1–5 years). Data from 181 patients were compared to retrospective data from the NH cohort (n=372), matched by time since symptom onset. Clinically meaningful VA categories were defined as: On-chart (non-legally blind [<1.00 logMAR] and legally blind [1.00-1.68 logMAR]), and off-chart (>1.68 logMAR).
Results: Treated m.G11778A eyes were less likely to remain off-chart at Month 24 compared to those in the NH cohort in both the acute (33.3% [4/12] vs 64.7% [11/17]) and chronic phases (65.4% [17/26] vs 84.4% [27/32]). All [9/9] treated acute, m.T14484C eyes remained on-chart at Month 24 compared to 88.9% [8/9] in the NH cohort. Treated, chronic, m.T14484C eyes were less likely to worsen to off-chart compared to those in the NH cohort (0% [0/9] vs 11.1% [2/18]). Treated m.G3460A eyes were more likely to remain on-chart at Month 24 than those in the NH cohort (100% [15/15] vs 87.0% [20/23]) in the chronic phase of the disease but were more likely to worsen to off-chart (55% [11/20] vs 10% [1/10]) in the acute phase.
Conclusion: Idebenone treatment promoted a transition toward improved functional VA categories in eyes with the m.G11778A and m.T14484C genotypes, particularly by reducing the proportion of off-chart eyes. Results in m.G3460A eyes were limited by an unexpectedly mild disease course in the NH cohort; further study of the impact of idebenone treatment in this subgroup is needed.

FP07-3

Systemic intravascular large B-cell lymphoma presenting with bilateral multiple serous detachments followed by rapid systemic deterioration leading to death

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Purpose: To study a case of rare subtype of Lymphoma presenting with bilateral multiple serous detachments succeeded by fatal systemic deterioration.
Methods: A patient in his 6th decade of life presented to eye caualty with reduced vision. A clinical picture suggestive of bilateral Vogt Koyanagi Harada (VKH) syndrome was found and oral steroid was started. In few days, the patient was admitted to the hospital with a stroke and treated with thrombolysis. He was discharged after clinical improvement. Eye review showed improvement in the interim, and possible choroidal masses were found later. Lymphoma was suggested as a possibility. The patient has developed other strokes with progressive neurological symptoms. He had extensive investigations which were inconclusive. Sadly, the patient has passed away and post mortem autopsy confirmed intravascular large B-cell lymphoma which is a rare subtype of Lymphoma.
Results: The patient had unusual presentation of intraocular lymphoma resembling VKH with no medical history at presentation. However, developing new medical symptoms and signs not correlating raised questions about VKH diagnosis. The challenge of performing vitreous biopsy in an unstable patient added to the complexity. Also, having had a recent dose of COVID vaccine was a red herring to investigate for vaccine -related thrombosis.
Revisiting the diagnosis of VKH soon when associated with unexpected medical symptoms, was an important learning point from this case.
Conclusion: In summary, masquerading lymphoma can be very challenging to diagnose, and multidisciplinary team input is highly needed. intravascular large B-cell lymphoma is a rare subtype of Lymphoma which has been reported with ocular associations in a very small number of case reports in the literature.

FP07-4

Ocular coherence tomography findings in systemic lupus patients with and without lupus nephritis

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This is an observational case series (30 patients). The aim of this study is to determine OCT findings for patients with and without lupus nephritis and correlation with other systems affection. Mean age of the studied cases was 33.97 years ranging from 18 to 56 years. Median duration of systemic lupus was 3.5 ranging from 1 to 9 years and median duration of lupus nephritis was 3.5 months. Albumin / creatinine ratio, 24-hour protein in urine and serum creatinine positively correlated with macular thickness.
The correlation between them and the macular thickness was statistically significant. Both serum creatinine and albumin/creatinine ratio negatively correlated with retinal nerve fibre layer thickness in the temporal & nasal and inferior quadrants. The correlations were statistically significant. Regarding the eGFR, it correlated negatively with macular thickness and positively with retinal nerve fibre layer in the same 3 quadrants, namely; the temporal, nasal and inferior regions. There is statistically significant positive correlation between albumin/ creatinine ratio and central subfield thickness. SELDAI score correlated positively with macular thickness. The correlation was statistically significant.
Further analysis was done to the subgroup of patients with neurological affection. There was statistically significant higher mean macular thickness among cases with CNS affection than cases without affection (273.35 versus 256.51). In addition, all patients with neurological symptoms had reduced nerve fiber layer thickness in at least 1 clock hour sector.
There is statistically significant lower global RNFL thickness, superior and temporal quadrants RNFL thickness in the subgroup of patients with neurological SLE manifestations. OCT measurements can be a potential biomarker in lupus nephritis and neuropsychatric lupus patients.

SYMPOSIA FREE PAPER PRESENTATIONS
Teleophthalmology in Various Settings within Europe

S29-7

Safety and effectiveness of telemedicine/ remote screening for retinopathy of prematurity: retrospective departmental study

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Purpose: Retinopathy of Prematurity (ROP) is a disease of the retinal vasculature, remaining the worldwide leading cause of preventable childhood blindness.
In this study, we aim to assess the safety and effectiveness of screening services combining telemedicine and in person screening for ROP in premature infants in East and North Hertfordshire NHS Trust in the United Kingdom.
Methods: A retrospective review of our telemedicine practice in ROP screening from August 2022 to January 2023. All infants were screened at the neonatal unit according to the updated criteria set by the Royal College of Peadiatrics and Child health in collaboration with Royal College of Ophthalmologists (RCOphth) in March 2022. All babies were examined by an Ophthalmologist with indirect ophthalmoscope, diagnostic images were acquired with the NEO camera by Spectrum by the ophthalmologist and then posted on a secure server for evaluation by the Paediatric Ophthalmology consultant.
Results: 96 telemedicine examinations were performed during the study period. Only 6 babies had ROP and were followed up according to the guidelines. None of the babies with ROP required treatment and they were eventually discharged or given appointment for outpatient paediatric ophthalmology review.
There were no abnormal findings in the remaining examinations. All images were of high quality facilitating remote assessment by the Consultant. Although, our protocol included transfer to another unit if the images were not clear for remote assessment or if the baby required treatment, no infant required transfer for further assessment or treatment during the study period.
Conclusions: Use of telemedicine by trained Paediatric Ophthalmologists in combination with in-person examination and retinal photography is a safe and effective strategy that may allow for improved ROP care. Remote screening of at-risk premature infants detected ROP stages with high accuracy, no poor outcomes throughout our 6 month study.

S29-8

Application of telemedicine in the management of post-operative patients with adnexal diseases

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The visual nature of oculoplastic surgery, unlike other subspecialties enables the utilization of digital technology in the diagnostic assessment and management of post-operative patients. Such services do not require specialist equipment as patients possess a smartphone device with audio-visual capabilities.
The aim of this study was to investigate the effectiveness of utilising an asynchronous telemedicine questionnaire in assessing the need for face-to-face consultations in patients having oculoplastic procedures.
A 19-item questionnaire was distributed to patients undergoing uncomplicated routine oculoplastic procedures. A subset of questions required patients to upload facial photographs using their smartphone camera. These photographs were graded according to quality and were used to evaluate surgical outcomes and potential complications.
Patients also answered questions on concerns, pain scores and whether they required any further assistance. They were also asked to complete the questionnaire weekly for a total period of 5-weeks.
95% of patients invited (n=24) participated in the questionnaire with 33% completing the questionnaire fully and 63% partially. 100% of the quality of facial photographs submitted were graded as good (75%) or excellent. 50% requested further contact regarding post-operative appearance and care. 54% completed consecutive weekly questionnaires.
Findings showed that 95% of patients engaged with the post-operative questionnaire of which 33% successfully submitted good quality facial photographs to evaluate surgical outcomes. Of the 33% that submitted the questionnaire and photographs, 50% responded with concerns regarding bruising, suture removal and post-op care instructions.
Patient concerns were dealt with in a timely manner and circumvented unnecessary clinic or A&E attendances. Over half of patients submitted weekly questionnaire which allowed surgeons to monitor surgical outcomes which would not otherwise have been captured.

RAPID FIRE PRESENTATIONS
RF01: Contact Lenses, Education, Ocular Surface, Oncology & Pathology

RF01-2

Treatment of aphakia in babies with contact lenses

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Aphakia in babies is best treated with contact lenses. Fitting should be done as soon as possible after the surgery and ideally with the contact lens for prolonged wear.
Method: Retrospective overview of the medical documentation from October 2016 to dec 2021 (38 months). Only patients prescribed with contact lenses have been taken into consideration.
Results: In total 53 babies with 84 aphakic eyes have been examined. All have had congenital cataract apart from two (2) who have had secondary cataract after the eye trauma. Age at the moment of cataract operation was between 10 days and 18 months (average 4,2 months). All babies have been operated at the Eye clinic, Clinical center in Belgrade. Fitting with contact lens has been done empirically, 30 days to 11 months post cataract surgery (average 2.4 months). 46 were prescribed with Silsoft Super Plus (elastoflicon A, Bausch Lomb) and 7 babies were prescribed with the Oculolens soft individual (Contaflex GM advance 58, Opticus) contact lens.
Initial power was from + 32 Dsph to + 18 Dsph, depending on the age and the axial length. 42 have been referred to pediatric ophthalmologist for the treatment of amblyopia. Detailed education of parents has been conducted by the skilled and experienced nurse. By the end of 2020. Silsoft Super Plus was not available for the Serbian nor EU market.
From this period onward, parents have been individually purchasing this lens from USA market or have been using available aphakic lenses locally. Three (3) patients have undergone secondary implantation of IOL, 3 have been using glasses only and four (4) patients have not returned for the follow-up.
Conclusion: Initial correction of aphakia in babes with contact lenses is manageable even without keratometry. Regular follow up and treatment of amblyopia is needed. For successful wear as well as decrease of possible complications it is important to educate and support parents.

RF01-3

Ophthalmology clinic appointment non-attendance in New Zealand: analysis of 169,854 non-attended clinic appointments from 2009-2018

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Purpose: Clinic appointment non-attendances consume a significant proportion of healthcare resources and are associated with poor health outcomes.
This study evaluates ophthalmology clinic appointment non-attendances across New Zealand (NZ) and calculates the rates of non-attended first and follow-up appointments.
Methods: A nationwide retrospective study was performed from 2009-2018 of all public-funded ophthalmology clinic appointment non-attendances using NZ Ministry of Health datasets. The NZ Deprivation Index (NZDep) was used to evaluate regional socioeconomic disparities. Rates of non-attended first-specialist-assessment (FSA) and follow-up appointments/100,000-appointments/year were calculated.
Results: There were 2,803,350 (94.3%) attended and 169,854 (5.7%) non-attended ophthalmology clinic appointments from 2009-2018. Ethnicities included NZ-Europeans (n=85,431, 50.3%), Māori (n=41,893, 24.7%), Pasifika (n=26,155, 15.4%), Asian (n=10,313, 6.1%), and Other (n=6,062, 3.6%). Māori and Pasifika were nearly 2.5-fold more likely to not attend compared to NZ-Europeans.
Disparities in socioeconomic status existed with 61% of patients residing in the two most deprived quintiles (NZDep=7-10). The nationwide overall mean rate of FSA appointment non-attendance was 487/100,000 appointments/year and non-attendance at follow-up visits was 564/100,000 appointments/year.
Conclusion: This is the first nationwide analysis of non-attendance for ophthalmology clinic appointments. Similar rates of FSA and follow-up appointment non-attendance existed within each region but geographic variability nationally.
Identifying population groups more likely to not attend their appointment can aid in optimising service delivery, reduce health inequity, and improve health outcomes.

RF01-4

Self-reporting visual function: impact of personality traits and social determinants

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Purpose: To investigate if self-reported visual function in a 70-year-old population were influenced by social determinants, psychological aspects or vision.
Methods: Participants (born 1944) were asked a question about their own visual function (N=560): the population who misjudged their own vision capacity (N=48) was studied.
Group A (N=18) consisted of participants having low presenting visual acuity at the ophthalmic examination (<0.5 decimal, >0.3 logMAR) and reported having a good vision ability.
Group B (N=30) included persons having normal vision (presenting visual acuity ≥0.5 decimal, ≤0.3 logMAR) but reported low vision.
Social determinants questions involved marital status, education, household economy as well as question of smoking and alcohol consumption. Ophthalmic examination included near visual acuity test, both presenting distance visual acuity as well as BCVA, visual field test and contrast sensitivity test.
Psychometric test conducted the Neuroticism-Extraversion-Openness Five Factor Inventory, Sense of Coherence scale (SOC) and the Montgomery-Åsberg Depression Rating Scale. Statistical tests used were Chi-Square test, Mann-Whitney U-test and Logistic regression.
Results: The population who made the wrong assumptions about their vision ability had lower alcohol consumption (p=0.024) and lower household economy (p=0.034) compare to the control group.
Group A were mostly women (p=0.002) with unrefractive errors and more visual field defects compare to the controls (p=0.041). Group B lived without partner or spouse (p=0.036), had low educational level (p=0.012), were dissat-

isfied with social relations (p=0.004) and low SOC (p=0.002). They also self-reported more eye diseases (p<0.001) and had normal but lower CS (p=0.029). Differences in personality traits were not significant.
Conclusion: The risk of interpret the own visual function was influenced by social determinants like gender, marital status and educational level and by psychological aspects.

RF01-5

Auto-evaluation of phacoemulsification learning skills among ophthalmology residents

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Purpose: To auto-evaluate a one-year learned skills and progression in phacoemulsification cataract surgery steps among ophthalmology residents.
Methods: Written questionnaire by 16 ophthalmology residents from all different educational levels. The survey was divided in three sections (previous acknowledge and skills, learned skills after six months and skills after a year of internship).
Results: Twelve ophthalmology residents were on the 4th-5th year of residency. Residents thought that their skills were not good enough at the beginning of the internship (37.5% for corneal incision, 18.75% for the capsulorhexis, hydrodelineation and hydrodissection, 75% for the nucleus rotation, 68.75% for the divid, 93.75% for the chop, 62.5% for the craking and the segmental removal, 43.75% for the implantation, the cortex removal and the wound closure).
At the end of the first semester auto-evaluation revealed decrease of the number of skills judged as "not good" (12.5% for the corneal incision, 18.75% for the capsulorhexis, 31.25% for the hydrodelineation, 12.5% for the hydrodissection, 18.75% for the nucleus rotation, 43.75% for the craking and the divid, 62.5% for the chop, 18.75 for the segmental removal , 6.25 for the implantation, 18.75 for the cortex removal and12.5% for the wound closure).
Auto-evaluation at the end of one-year internship revealed yet a decrease of the number of skills judged as "not good" (6.25% for the corneal incision, 12.5% for the capsulorhexis, 12.5% for the hydrodelineation, 6.25% for the hydrodissection, 6.25% for the nucleus rotation, 12.5% for the craking and the divid, 18.75% for the chop, 6.25% for the segmental removal, the implantation, the cortex removal and the wound closure). All residents thought that their skills were "good" or "very good" at the end of the internship.
Conclusion: Auto-evaluation is essential to detect difficulties and failures and improve the competences of residents during phacoemulsification learning course.

RF01-6

Comparison of light-based devices in the treatment of Meibomian Gland Dysfunction

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Purpose: To compare light-based devices, namely, Intense Pulsed Light (IPL) and IPL with Low-Level Light Therapy (LLLT), in the treatment of Meibomian Gland Dysfunction (MGD).
Methods: Prospective study that included patients with MGD, divided into 3 treatment groups: Group 1 - 58 eyes treated with IPL (Eye-Light®), followed by LLLT (My Mask®); Group 2 - 60 eyes treated with IPL (E>Eye®); Group 3 - 58 eyes treated with IPL (Thermaeye Plus®).
Presence of symptoms (Ocular Surface Disease Index [OSDI]) and the ocular surface were evaluated before treatment, 3 weeks, and 6 months after treatment. Meibomian glands were assessed with infrared meibography (IDRA® Ocular Surface Analyser), followed by analysis with Image J®, to calculate gland area (MGA) and length (MGL). Corrections for multiple comparisons were performed, and a p-value <0.017 was considered statistically significant.
Results: At week 3, there was an improvement in the OSDI in all groups (p<0.001), without differences between them (p=0.339). The lipid layer thickness (LLT) increased in Groups 1 and 2 (p<0.001), with a similar variation (p=0.144). Patients with superior OSDI and lower LLT at baseline, had the greatest improvement in the respective parameter, at week 3 (p<0.001).
The basal tear flow increased in Group 1 (p=0.012), and the MGA (p<0.001) and MGL (p<0.001) increased in Groups 1 and 2. This increase in MGA (p=0.095) and MGL (p=0.081) was similar among both groups. Corneal staining (CS) significantly decreased in Groups 2 (p<0.001) and 3 (p<0.001).
At month 6, compared to week 3, there was an improvement in the OSDI (p<0.001) and the LLT (p=0.007), in Group 1, and an increase in the presence of CS, in Group 3 (p=0.011).
Conclusion: IPL treatment led to a sustained decrease in ocular symptoms, even after 6 months. Adding LLLT to IPL appears to have an additional long-term beneficial effect, as well as a positive effect on the lacrimal gland. Different IPL devices had different beneficial effects.

RF01-7

Evaluation of ocular surface findings in rheumatoid arthritis patients which have different systemic treatments

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Purpose: Comparison of ocular surface findings in rheumatoid arthritis patients which have three different systemic treatments.
Methods: The files of patients who were followed up in our cornea department between January 2019 and June 2022 with the diagnosis of Rheumatoid Arthritis (RA) were reviewed retrospectively.

According to the DAS-28 score, which shows RA disease activity, RA patients with similar severity of disease, according to their systemic treatment; those who received hydroxychloroquine treatment were determined as group 1, those who received methotrexate treatment as group 2, and those who received leflunomide treatment were defined as group 3.
In addition, ocular surface changes of the patients, ocular surface disease index (OSDI) questionnaire, Schirmer 1 test, tear break-up time (BUT), tear meniscus height (TMH), Oxford scoring according to staining of the ocular surface with fluorescein, conjunctival impression cytology (CIC) evaluating the stage of squamous metaplasia and goblet cell density were statistically compared between the groups.
Results: 49 patients with a mean age of 57.9±10.2 years, 39 were female, and 10 were male. The mean follow-up period for RA was 12.1±7.8 years, and the number of patients according to the groups was 19 in group 1, 15 in group 2, and 14 in group 3, respectively.
The OSDI questionnaire scores for the groups were 34.8±14.4, 35.2±14.4, and 46.03±14.3, respectively. Schirmer 1 test was 8.5±2.6 in group 1, 9.06±4.1 in group 2, and 7.8±2.6 in group 3 ($p>0.005$). BUT was measured as 6.4±1.9, 5.5±2.3, and 5.3±2.4 in the groups. The Oxford score was 0.94±0.97, 0.94±0.85, and 1.5±1.15 according to the staining of the ocular surface with fluorescein. According to the Nelson staging of CIC, it was 1.3±0.82 in group 1, 1.7±1.06 in group 2, and 1.7±1.3 in group 3.
Conclusion: There was no statistical difference was observed between the groups in ocular surface evaluation tests and pathological examinations.

RF01-8

The relationship between risk of obstructive sleep apnea and dry eye disease

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Purpose: Dry Eye Disease (DED) may lead to decreased visual function, chronic tissue changes, eyelid, conjunctival, and corneal abnormality. Several studies pointed out the relationship between DED and obstructive sleep apnea (OSA). In patients with OSA, oxidative stress, hypoxia, and ocular surface inflammation increase, leading to a decrease in the functions of meibomian glands, goblet cells, corneal sensitivity, and tear production as a response to the stimulations from the lacrimal glands. The loss of conjunctival meibomian glands and goblet cells are implications of damage to the tear film quality, which results in DED. The relationship between risk factors of OSA and DED has yet been sufficiently clear to this point and, even, controversial among the published studies to date. Therefore, this study attempted to identify the relationship between the two.
Method: This is a population-based cross-sectional study. Data were obtained from the database of Biomarker Smarthealth Research in Mendalanwangi, Sidorahayu, and Cepokomulyo Villages, which are located in Malang Regency, having risks of OSA (based on the STOP-BANG questionnaire), above ≥40 years old, involving a total of 518 participants. The available data were then processed according to the variables and went through DED examinations. This study employed the purposive sampling method.
Result: In this study, moderate risk of OSA suggests a significant influence on the occurrence of DED with an odds ratio (OR) 1.66 ($p<0.05$). In addition, moderate risk of OSA predisposes ADDE-type and Mix-type DED with OR 2.85 and 1.23 ($p<0.05$). High risk of OSA correlates with the occurrence of ADDE-type DED with OR 2.37 ($p<0.05$). The age group >60 years old shows a correlation with Mix-type DED with OR 2.09 ($p<0.05$). Women have a higher predisposition to ADDE-type with OR 2.58 ($p<0.05$).
Conclusion: Moderate risk of OSA influences the occurrence of DED, both ADDE-type and Mix type; whereas high risk of OSA only correlates with ADDE-type. Older age plays a role in the occurrence of Mix-type DED and women have a higher tendency to present with ADDE- type.
Keywords: ADDE, EDE, Mix, Metabolic Syndrome, population-based

RF01-9

Corneal epithelial thickness correlation with Dry Eye symptom severity: a cross-sectional study

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Purpose: To study the correlation between corneal epithelial thickness and the severity of symptoms in patients with Dry Eye Disease (DED).
Method: We conducted a cross-sectional study from the outpatient clinic of a tertiary hospital. Adult patients with a clinical diagnosis of dry eye disease were eligible for participation. Each patient underwent Swept Source Optical Coherence Tomography (OCT) Corneal Epithelial Thickness Mapping (by Heidelberg Anterion®) and automated ocular surface analysis (by IDRA® Ocular Surface Analyzer SBM Sistemi, Italy). Schirmer's test, tear film osmolarity (by TearLab® Osmolarity System) and Dry-Eye Related Questionnaire (OSDI-12) were evaluated separately. Patients were classified accordingly to OSDI-12 in group 1 (mild disease) and group 2 (moderate to severe disease).
Results: This study enrolled 200 eyes (of 100 subjects): 65 in group 1 and 135 in group 2. Median (range) OSDI and Schirmer's test in group 1 were 7 (22) vs. 46 (79), $p<0.001$ and 15 (25) vs. 11 (34) mm, $p=0.007$ in group 2.
Eyes from group 2 showed higher mean epithelial thickness (48.4 vs. 47.1, $p=0.027$) and lower mean stromal thickness (522.0 vs. 546.6, $p<0.001$) than group 1. Mean maximum epithelial thickness was higher in group 2 – 62.7 (11.5) vs. 58.5 (7.8) µm, $p=0.009$ in group 1 - and it was located inferiorly in most patients.
Overall, the OSDI score was positively correlated with mean epithelial thickness ($r=0.188$, $p=0.008$) and epithelial variability index ($r=0.277$, $p=0.004$) and negatively correlated with mean stromal thickness ($r=-0.313$, $p<0.001$). Patients in group 2 showed higher epithelial variability index (4.5 vs. 3.2, $p<0.001$).
Conclusion: Our study suggests that patients with more severe symptoms have thicker corneal epithelia, thinner stroma, and higher epithelial variability index. Since it considers each subject's epithelial thickness, it may be a predictor of Dry Eye Disease severity. We're currently working on new evidence to confirm these results.

RF01-10

Cyberknife stereotactic radiotherapy in choroidal hemangioma

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Purpose: To analyse clinical outcome of Cyberknife SRT in a series of patients with Choroidal Hemangioma.
Methods: 22 Patients with circumscribed or diffuse choroidal hemangioma who had visual deterioration due to choroidal lesion and had more than 12 months of follow-up have been included. The patients received 14-18 Gy Cyberknife SRT in single session. Clinical results were analyzed for tumor size, location, subretinal fluid, retinal detachment, visual acuity and visual improvement by Snellen lines. Parametric statistical tests were used for subgroup analysis.
Results: The mean age was 40 (10-78) years old; 17 cases were male and 5 female. The mean follow-up was 22 months. Mean radiation dose was 15 Gy (14-18 Gy). 5 cases (23%) had diffuse and 17 (77%) had circumscribed angioma. 4 cases (18%) had peripapillary and the others had macular lesions.
Before treatment, all cases had subretinal fluid (SRF) causing visual deterioration. 9 cases (41%) had serous retinal detachments; mean basal diameter (BD) was 8.6 (5-14) and tumor thickness (TT) was 3.7 (2.5-7) mm.
After Cyberknife, mean BD regressed to 5.6 (3-9) mm and TT to 1.7 (0.5-4) mm. SRF was totally disappeared in 18 cases (82%) and decreased significantly in the remaining 4 cases.Visual acuity improved in 21 cases (95%) and stayed stable in one case; the mean increase was 5 $\pm$ 3.3 snellen lines.
In subgroup analysis, tumors greater than 3.7 mm thickness (mean) had significantly more Snellen line increases compared to the tumors$\leq$ 3.7 mm (p=0.023).
Patients who were younger than 40 years old showed significantly higher increase in Snellen visual acuity compared to the older cases (p=0.001). None of our patients developed radiation retinopathy or radiation related complications during the follow-up.
Conclusion: Cyberkife SRT treatment with 14-18 Gy single session provided excellent visual outcome with absorbtion of subretinal fluid and tumor regression in circumscribed or diffuse choroidal hemangioma.

RF01-11

Imaging characteristics of idiopathic scleroma: a retrospective case series and review of the literature

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Purpose: Idiopathic scleroma (previously coined solitary idiopathic choroiditis or focal scleral nodule) is an innocuous lesion affecting the sclera with intraocular manifestations. It is often the basis of many misdiagnoses such as amelanotic choroidal melanoma, osteoma or metastatic lesions. Patients are often asymptomatic and the course is benign.
With increasing use of community based imaging, more of such cases are being identified. This paper is a retrospective case series investigating the multimodal imaging findings of idiopathic scleroma.
Methods: A retrospective analysis of prospectively collected data was analysed. Over the course of January 2008-January 2022, 44 patients diagnosed with idiopathic scleroma and imaged with wide field colour fundus photography, fundus autofluorescence, ocular coherence tomography (OCT) and B scan ultrasonography. Due to a poor image, only 43 images were included for OCT review. We also reviewed our patient's demographics, symptoms and baseline ophthalmic characteristics upon presentation.
Results: The mean age was 52 years (range 32-79) and there was no predilection towards gender. All lesions were post equatorial with the most common location being inferotemporal (n=16, 36%); 32 lesions (73%) were yellow on fundus photography. 82% (n=36/44) of lesions exhibited hyperautoflouresecence and 43 lesions (98%) showed hyperechogenicity on B scan ultrasonography. 100% of lesions originated from the sclera with no lesions showing active inflammation. 20 (47%) lesions had associated blood vessels overlying them on OCT.
Conclusion: Idiopathic scleroma is a yellow, hyperautofluorescent, hyperechogeneic scleral lesion that has no signs of active inflammation. These characteristics help define them from other more sinister cause of amelanotic fundal lesions.

RF01-12

Morning glory associated with optic nerve colobomatous cyst with a solid lesion

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We describe a rare case of a unilateral Morning Glory Syndrome combining with an optic nerve colobomatous cyst containing inside a solid lesion.
A 19 month old girl was referred to our clinic for a progressive exotropia in her left eye and a positive familiar history of retinitis pigmentosa.
She underwent a complete ophthalmological examination under general anesthesia, B-Scan ultrasound, ecodoppler and magnetic resonance imaging. The right eye was normal. The left eye presented a Morning Glory Sindrome, a retinal serous detachment and an optic nerve colobomatous cyst with a solid lesion inside.
Based on the findings of all the examinations we recommended continued observation for this patient, especially to monitor the solid lesion inside the cyst and clarify the type of lesion.
We want to underline the important role of ocular ultrasounds in combination with the ophthalmoscopy in these cases, (not expensive and without contraindications) that result to be fundamental during the diagnostic pathway.

RF01-14

Anterior segment ischemia following intra-arterial chemotherapy for stage E retinoblastoma: report of four cases

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Purpose: To report two new cases of anterior segment ischemia following intra-arterial chemotherapy alone and two cases after intra-arterial and intra-vitreal chemotherapy in retinoblastoma stage E1.
Method: Observational case series of four patients with stage E1 retinoblastoma. The clinical records of patients diagnosed with retinoblastoma were retrospectively reviewed. We obtained anterior segment and fundus photography (Panocam). We document the effects of anterior segment ischemia by MRI and histological examination.
Results: We registered anterior segment ischemia in 4 cases out of 304 who underwent intra-arterial chemotherapy; two of them have been treated also with intra-vitreal chemotherapy. All of them developed iris atrophy or subatrophy, cataract and neovascular glaucoma.
Conclusion: Only four cases of anterior segment ischemia after intra-arterial chemotherapy are reported in literature. We present two new cases of anterior segment ischemia following intra-arterial chemotherapy alone and two cases after intra-arterial and intra-vitreal chemotherapy. This is a possible complication that should be considered by the clinician in patients that undergo first- or second-line IAC.

RF01-15

Surgical treatment of iris lesions

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Purpose: The most frequent iris lesions seen in routine clinical practice are nevocellular nevi, iris melanocytomas, “suspicious” nevocellular nevi–melanocytic neoplasia of uncertain malignant potential, and iris melanoma. Due to their localization, iris lesions are easily observed by clinical ophthalmological examination. They grow slowly and usually require only documented and regular monitoring. However, if necessary, surgical excision is one of the preferred therapeutic modalities with good results.
Method: Forty-nine patients were surgically treated and monitored for iris lesions at the University Eye Hospital Clinical Center of Serbia. In patients who underwent surgery, the entire lesion was removed, and the iris and/or pupil was reshaped (iridoplasty and/or pupilloplasty). Simultaneous or (rarely) subsequent cataract surgery using phacoemulsification in combination with artificial intraocular lens implantation has also been performed.
Results: The most common histopathological findings included melanoma and melanocytic neoplasia with uncertain malignant potential, several nevocellular nevi, melanocytomas, and one iris varix. Excellent tumor control was maintained throughout patient follow-up while maintaining good visual acuity and vision quality in each case.
Conclusion: Iris lesions are easily accessible for clinical ophthalmological examination and are relatively easy to recognize and monitor. In some cases, surgical removal of these lesions is the preferred treatment option. This procedure usually gives excellent results in preventing recurrence, maintaining the structural integrity of the anterior segment, and maintaining good visual function.

RAPID FIRE PRESENTATIONS
RF02: Cataract, Refractive Surgery

RF02-1

IOL power calculation on its next level – the "LPCM" based on modern CASTROP formula

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Purpose: The new "Lens Power Calculation Module" (LPCM) for calculation of toric and non-toric intraocular lenses is based on the CASTROP formula and is available as online calculation tool via IOLCon's website. Hereby, modern online IOL power calculation support is provided for ophthalmic surgeons.
Methods: Close cooperation between the Institute of Experimental Ophthalmology, University Homburg/Saar (Germany) and the University Eye Clinic, Bogomolets National Medical University, Kyiv (Ukraine).
Results: The CASTROP vergence formula is based on a pseudophakic model eye with four refractive toric surfaces: a refractive correction at spectacle plane, a thick cornea with front and back surface, and a thin intraocular lens. The IOL position is predicted regressively using real historical measurement data. The prerequisite is the use of current techniques that precisely measure all distances of the eye, like axial length (AL), anterior chamber depth (ACD), lens thickness (LT, mandatory) and the central corneal thickness (CCT, optionally). The formula considers 3 formula constants (C, H, and R) to allow a more flexible adaption of the formula to a specific IOL geometry. With this data (in connection with modern formulae such as the CASTROP formula), even eyes that are outside the norm and which might cause difficulties when using classic formulae, can be calculated more reliably. The "LPCM" is based on the CASTROP formula and provides support in IOL power calculation as online tool. It can be accessed free of charge via www.iolcon.org.
Conclusions: IOLCon offers an online calculation tool based on the most disclosed IOL power calculation formula including the CASTROP formula. The support IOLCon is providing for ophthalmic surgeon is indispensable and will also meet future demands of ongoing developing ophthalmic-surgery.

RF02-2

War trauma in Ukraine. Traumatic cataract cases in Ukrainian militaries

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Purpose: In modern war trauma of eyes is very common and takes near 20% of all injures. Traumatic cataract is often complication of eye's trauma cases. All traumatic cataract cases, which we face during Ukrainian-Russian War we can divide on 3 groups:
1) Traumatic cataract without damage of capsular bag and ciliary zonules;
2) Traumatic cataract with damage of ciliary zonules;
3) Combined trauma of the anterior segment of eye with or without intraocular foreign bodies.
Patients of the first group need ordinary phacoemulsification with implantation of mostly multifocal EDOF IOL. Patients of the second group need mostly phacoemulsification with fixation of IOL in saved capsular bag or in the sulcus. Patients of the third group need combined cataract surgery with reconstruction of sclera, cornea or iris.
Method: Cases of traumatic cataract and surgical techniques.
Results and conclusion: In all represented cases of eye's injure we performed surgical removal of traumatic cataract with implantation of IOL. The quality of vision depends on character and level of eye's damage, terms of primary surgery and visual possibility of retina and optic nerve. In cases of possible high vision implantation of EDOF IOL is the best choice for militaries. It gives the opportunity for high quality vision on far and middle distances, that is very important for professional rehabilitation.

RF02-3

Comparison of the ocular ultrasonic and optical biometry devices in the different quality measurements

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Purpose: To compare the reliability and agreement of axial length (AL), anterior chamber depth (ACD), and lens thickness (LT) measurements obtained with an advanced optical-based biometry machine (IOL Master 700; Carl Zeiss, Germany) and an A-mode ultrasound biometry device (Nidek; US-4000 Echoscan, Japan) in different qualities of AL measurement.
Methods: A total of 239 consecutive eyes of 239 patients with a mean age of 56.1 ± 14.1(range 15 - 95) were included in the study. The quality measurements of AL using IOLMaster 700 were grouped according to the quartiles of SD of the AL. The first and fourth quartiles SD are defined as high and low-quality measurement, respectively, and the second and third quartiles SD is defined as moderate-quality measurement.
Results: The reliability between the two systems was excellent regarding AL (ICC= 0.999) and ACD (ICC=0.945) in all patients and in different quality measurements; however, there was poor (ICC=0.305), moderate (ICC=0.742), and good (ICC=0.843) reliability in measuring LT in low-, moderate-, and high-quality measurements, respectively. Analysis of Bland-Altman plots revealed that the bias line was close to zero for all parameters. In addition, analysis of the limit of agreement (LoA) in Bland-Altman plots also displayed narrow limits and clinically irrelevant differences in 95% LoA for AL, ACD, and LT measurements.
Conclusions: Measuring AL and ACD of the IOLMaster700 had outstanding agreements with the Echoscan US 4000-ultrasound in different quality measurements of AL and can be used interchangeably. But, in terms of LT, they should be used interchangeably with caution.

RF02-4

Swept source anterior segment optical coherence tomography findings in negative dysphotopsia following cataract surgery

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Purpose: To evaluate the anterior segment morphology of patients reporting negative dysphotopsia after cataract surgery with swept source anterior segment optical coherence tomography (SS AS-OCT).
Methods: This is a retrospective case-control study. The study group included patients with permanent negative dysphotopsia, and the control group included age- and sex-matched, uneventful postoperative cataract patients with the same in-the-bag acrylic monofocal intraocular lens implantation.
All patients underwent SS AS-OCT at 6 month postoperatively. Anterior chamber width (ACW), pupil diameter (PD), lens vault (LV), nasal and temporal iridocorneal angle (ICA), anterior opening distance from 500 µm (AOD500) and iris thickness (IT) from 1000 µm were compared.
Results: Eight eyes of 8 patients (62.5% female) in the negative dysphotopsia group and 18 eyes of 18 patients (56% female) in the control group were analysed. The mean age in negative dysphotopsia group was 59.2 and control group was 64.3 (p=0,16).
The SS AS-OCT findings for the negative dysphotopsia and control groups, respectively, were as follows: The mean (SD) ACW (mm) was 12.47 (±0.29) and 12.31 (±0.62) (p=0,53); PD (mm) was 4.49 (±0.44) and 5.26 (±1.03) (p=0,18); LV (µm) was 603.83 (±185.7) and 668.2 (±261.3) (p=0,54); nasal ICA was 36.6°(±7.1) and 41.8°(±6.5) (p=0,15); temporal ICA was 33.7° (±7.3) and 43.9°(±8.2) (p=0,02); nasal AOD500 (mm) was 1.29 (±0.2) and 1.35 (± 0.3) (p=0,69); temporal AOD500 was 1.24 (±0.3) and 1.40 (±0.3) (p=0,49); nasal IT from 1000 µm was 460.7 (±105.6) and 467.8 (±108.7) (p=0,97); temporal IT from 1000 µm was 440.2 (±97.5) and 397.7 (±99.2) (p=0,34).
Conclusions: Thepresent study shows that; PD, LV, nasal and temporal ICA and AOD500 values were lower in the negative dysphotopsia group than in the normal control group, this difference was statistically significant only for the temporal ICA. These findings might have clinical implications for the treatment of negative dysphotopsia.

RF02-5

Telehealth postoperative day one monitoring for uncomplicated cataract surgery: a retrospective review during the COVID-19 pandemic

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Purpose: To investigate the use of telehealth on postoperative day one (POD1) after uncomplicated cataract surgery in lieu of the standard in-office visit for routine monitoring of postoperative complications.
Methods: Patients reviewed served as their own controls, as their first surgery received the standard POD1 in-office visit, and their second surgery received a telehealth call with a symptom screening questionnaire by an experienced ophthalmic technician. In-office visits resumed at one week for both groups. The main outcome measures were corrected distance visual acuity (CDVA) at one month postoperatively, interventions, and postoperative complications.
The COVID-19 pandemic shed light on telehealth as a tool to promote social distancing while still providing medical care. Telehealth has now become an alternative to in-person visits for many fields of medicine. As many elective surgeries were postponed and in-office visits were limited, COVID-19 provided the uniqueopportunity to compare outcomes in the setting of an outpatient community ophthalmology clinic of uncomplicated cataract surgeries with a POD1 in-office visit versus cataract surgery with a POD1 telehealth visit.
Results: 122 eyes of 61 adult uncomplicated cataract surgery patients were included. The mean age at the time of operation was 70.85 years ± 6.97 (SD) (range 56 to 84 years) for the in-office group, and 71.28 years ± 6.87 (SD) (range 56 to 84 years) for the telehealth group. Average logMAR CDVA at one-month was 0.09 ± 0.12 (SD) in the in-office group and 0.10 ± 0.13 (SD) in the telehealth group, which was statistically insignificant (p = 0.64).
The number of postoperative complications and/or interventions when controlling for previous ocular pathology was also statistically insignificant (p = 0.90).
Conclusions: A telehealth visit one day after uncomplicated cataract surgery is a safe alternative to the in-office visit for the purpose of routine monitoring for postoperative complications.

RF02-6

Radiation induced changes in lens structure and its comparison with non-exposed individuals

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Aim: It is suggested that exposure to higher doses of radiation can cause migration of human lens epithelium cells towards the posterior cortex of the lens and not the nucleus, inducing formation of posterior cortex cataract. This research was carried out to evaluate radiation caused changes in lens structure and its effects on cataract formation. This research is particularly important given the political situation in the World today.
Methods: This study was carried out in a patient group aged 55 – 70 years of age. Three groups of patients were compared: 50 healthy individuals, 50 Chernobyl clean-up workers (who worked in the theritory but not inside/on the reactor) and 11 Chernobyl clean-up workers (who worked on the roof or inside the reactor). The thickness of posterior lens cortex was compared between these groups. All measurements were performed with Heidelberg Anterion and the data were analysed using software Jamovi.
Results: Tukey Post-Hoc Test showed that there is a statistically significant difference in posterior lens cortex thickness between healthy individuals and people who worked in Chernobyl city (p<0,001). However, there was no statistically significant difference in this measurement between Chernobyl clean-up workers who worked on the roof of the reactor and people who worked only in the city (p=0,459). There was no significant difference between total lens thickness between neither of the groups (p>0,05).
Conclusions: Exposure to increased amount of radiation can induce significant changes in patient health and cause differences in cataract lens morphology. Therefore it is important for our society to do our best to prevent any possible nuclear accidents.

RF02-7

Femtomatrix laser-assisted cataract surgery for medium to high-grade cataracts

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Purpose: Femtosecond laser-assisted cataract surgery was introduced to obtain more predictable surgical outcomes of capsulotomy and lens fragmentation, with recourse to less or no ultrasound energy. System is based on novel technology using phase-mask to modify laser wavefront allowing multi spots treatment resulting in the photoemulsification of the cataractous lens into thousands of 200µm side cubes. This study investigates the efficacy of this technology in medium to high-grade cataracts.
Methods: 21 medium to high-grade cataract patients (LOCS III Grade ≥3) of mean age 68.7±10 years underwent anterior capsulotomies and lens photoemulsification by the femtomatrix (FM) laser system with a robotic arm (Keranova, France) in single-center single surgeon open-label study. The mean nuclear grade of the FM eyes was 3.6±1.01. For 15 patients, the contralateral eye was operated on the same day by the conventional femtosecond (FS) laser system (Victus, Bausch+Lomb, Inc., USA). The mean nuclear grade of the contralateral eyes (n=15) was slightly lower 3.3±0.9.
Results: Zero ultrasound lens removal was achieved in 15 of 21 eyes (71.4%) in the FM laser-treated group while only 3 of 15 eyes (20%) in the FS laser treated group. There was 37 seconds difference in mean lens material aspiration time (112±69.4 sec in FM eyes vs. 75±47.2 sec in FS group). Mean Effective Phaco Time was 0.8±1.6 sec and 3±3.6 sec with a mean US power of 2% (±0.04) and 9% (±0.08) in FM and FS group respectively showing the efficacy of the FM procedure in reduction of the US energy. Tag-free capsulotomy was achieved in 19 of 20 FM eyes (95%). No treatment related adverse events were observed.
Conclusions: Lens photoemulsification can be performed effictively by the FM laser system in medium and high-grade cataracts. Easy aspiration of a laser photoemulsified nucleus in high-grade cataracts was achieved with zero ultrasound energy in 71.4% of femtomatrix cases vs. 20.0% with the femtosecond laser eyes.

RF02-8

Lens extraction device for low energy cataract fragmentation: 4 years follow up

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Purpose: The miLOOP (Carl Zeiss Meditec)is a micro interventional device designed to provide endocapsular lens fragmentation in dense cataract and complicated cases Single use device, finger controlled. Every cataract extraction is based on the needs to divide the nucleus minimum by two.
Methods: miLOOP was adopted 309 Eyes of 178 patients with medium/hard cataract to split the nucleus in two part or more.The metal loop was inserted in the capsular bag and open through the edge of idrodelineation rime. Once the loop is in the proper position the loop is retracted to split the nucleus. The learning curve needs 50 cases experience. Use of proper amount of viscoelastics is mandatory.
Results: The nucleus was split in two or more pieces in all patient. It is necessary a learning curve adotping the device in simple cases to be confident in the proper use to avoid device related complications. In one case the loop did not match the capsular bag and caused zonula damage with no important complication.
Conclusion: miLOOP adoption in medium dense cataract and in complicated makes hard nucleus cataract removal more controlled and safe A proper learning curve needed.

RF02-9

Pinhole intraocular lens to correct presbyopia and astigmatism in eye with regular and irregular cornea 7 years follow up

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Purpose: To demonstrate visual performance of the IC-8 small aperture IOL (AcuFocus, Irvine, CA) implanted in patients in whom a cataractous lens has been removed.
Pinhole IOLs technology demonstrated to be the best available technology to be implanted in patients that have experienced previous RK or with irregular corneal astigmatism.
Methods: 29 eyes with cataract, corneal astigmatism 1.50 ± 2.57, had IC-8 IOL implantation. 21 patients experienced IC-8 IOL in the non-dominant eye and a monofocal IOL in the dominant eye. 4 Patients had bilateral IC 8 IOL implantation. One pateint 20 years after RK.
Results: The IC8 musk decreases halos and glare in aberrate cornea At 6 years in the IC-8 eye, UDVA is 20/20,56 UIVA is 20/20 at 80cm and 67 cm and UNVA is 20/20.5.In the monofocal eye,
UDVA is 20/18,UIVA is 20/23 at 80cm 20/25.7 at 67cm and UNVA is 20/50. Binocular UDVA is 20/18,UIVA is 20/18.3 (80 cm and 67cm) and UNVA is 20/20.5.
Conclusion: Pinhole effect normally corrects up to two diopters of corneal astigmatism and overcome toric IOL management within this range. IC 8 is the most effective solution to correct presbyopia and astigmatism in eyes with irregular cornea.

RF02-10

SMILE for the treatment of residual refractive error after cataract surgery

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Purpose: We aimed to investigate the improvement in visual acuity and patient satisfaction after small-incision lenticule extraction (SMILE) in pseudophakic (trifocal intraocular lens, IOL) patients with residual myopic refraction after cataract surgery.

Methods: Seventy-six patients (82 eyes) who underwent cataract surgery with ZEISS AT LISA tri 839MP IOL implantation were included in this retrospective study.
The included patients were 56–79 years old, wanted spectacle independence, and had preoperative myopic refraction between − 1.0 and − 2.25 diopters (D) and astigmatism between − 0.75 and − 1.75 D.
The treatment status of these patients was defined as trifocal IOL (n= 82). SMILE was performed on patients who were dissatisfied after cataract surgery, and these patients were followed up for 1 year on average.
We evaluated visual acuity and satisfaction and further examined laser vision correction and satisfaction levels in patients who were dissatisfied after trifocal IOL implantation.
Results: The possible reasons for patient dissatisfaction were reading books, using a computer, and driving at night. After SMILE, the residual myopic refractive error (spherical) decreased significantly from − 2.08 ± 0.28 [− 2.25 to − 1.0] preoperatively to − 0.25 ± 0.20 − 0.5 to 0] 1 year postoperatively (p< 0.001).
Additionally, the uncorrected distance visual acuity increased from 0.65 ± 0.08 [0.52–0.7] logMAR preoperatively to 0.09 ± 0.02 [0.05–0.1] logMAR at 1 month postoperatively (p< 0.001), 0.09 ± 0.02 [0.05–0.1] logMAR at 6 months postoperatively, and 0.06 ± 0.02 [0.05–0.1] logMAR at 12 months postoperatively (p< 0.001). Patient satisfaction measures after SMILE (reading, night driving, and using a computer) were significantly improved.
Conclusion: SMILE is a reliable method for treating residual refraction after cataract surgery, as it provides results in the shortest time without complications and increases patient satisfaction.
clinicaltrials.gov (NCT04693663)

RF02-11

Use of pupil expansion devices is associated with an increased risk of post cataract complications

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Purpose: To assess the risk for uveitis, pseudophakic cystoid macular edema (PCME), andposterior capsular opacification (PCO) associated with the use of pupil expansion devices in cataract surgery.
Methods: This study included 39,460 eyes operated without a pupil expansion device and 699 eyes operated with the device. Odds ratios for uveitis and PCME when using a pupil expansion device were calculated using univariate and multivariate regression analysis, having age, gender, diabetes, pseudoexfoliation, and pupil expansion device as independent variables. Multivariate Cox regression controlling for age and gender was used to estimate hazard ratios (HR) for Nd:YAG laser capsulotomies.
Results: Postoperative uveitis and PCME were reported in 3.9% and 2.7% of the eyes operated with a pupil expansion device compared to 2.3% and 1.3% operated without the device (p=0.005 and p=0.002, respectively).
In univariate regression analysis, eyes with pupil expansion devices showed a higher risk of postoperative uveitis or PMCE after cataract surgery (OR 1.88, 95%CI 1.39-2.55, p<0.001).
In multivariate regression analysis, the risk for PMCE was greater among diabetic patients and in eyes with a pupil expansion device than in those without (OR 1.50, 95%CI 1.24- 1.83, P<0.001; OR 1.90, 95%CI 1.16-3.11, P=0.01).
In Cox regression analysis adjusted for the patient's age and gender, the use of a pupil expansion device was associated with higher Nd:YAG laser capsulotomy rates (HR 1.316, 95%CI 1.011-1.714, P=0.041).
Conclusions: In our large cohort study, the use of pupil expansion devices in cataract surgery was associated with an increased risk of major postoperative complications. Effective anti-inflammatory treatment and follow-up are warranted in eyes operated with a pupil expansion device.

RF02-12

The ideal near vision test: a survey of international expert opinion

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Purpose: 509.7 million people are estimated to have near vision impairment due to uncorrected presbyopia (age-related near vision impairment). Quick and accurate testing of near vision allows identification of unmet need.
The purpose of the survey was to assess whether currently existing near vision tests were satisfactory, whether a new digital near vision test could improve service, and what characteristics an ideal near vision test would have.
Methods: Between October and December 2020, a survey was sent to a selection of 16 international experts working in the context of vision screening. Participants included optometrists, ophthalmologists, public health researchers and software test developers working in global ophthalmology, from six continents. A subset of respondents were followed up with in-depth interviews.
Results: The most commonly described purposes of the near vision test were: to identify threshold for onward referral to an optometrist/refractionist (14/16), for prescription of ready readers (14/16), and to allow population survey data collection (13/16). 11/16 of respondents thought the test should be a single optotype chart. If single optotype, tumbling “E” was the most popular optotype (9/16). Most respondents (9/16) thought the chart should be presented one letter at a time with a surrounding border.
Conclusions: The most popular test design was a single optotype Tumbling “E” test, showing individual optotypes in a bounding box. These results have since been used to guide development of PeekNV, a new digital test of near visual acuity and impairment.

RF02-13

Smile module for the treatment of hyperopic residual refraction error and presbyopia after cataract surgery

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Purpose: To investigate the improvement in visual acuity and patient satisfaction after small-incision intrastromal myopic lenticule implantation (SMILE module) in pseudophakic (trifocal intraocular lens, IOL) patients with hyperopic residual refraction and presbyopia after trifocal IOL implantation.
Method: This study included 72 eyes of 36 patients (aged 41 to 61 years). Postop trifocal IOL implantation included hyperopic residual refraction. They had Phaco surgery in various clinics. Patients had residual hyperopia between +0.75 and +2.75 D and Astigmatism between +0.50 and +1.50 D. Intrastromal pocket 7.70mm was prepared with SMILE Module and Myopic lenticule implanted.
Results: Patients were followed for one year. No reaction, infection, epithelial defects, punctate keratitis, deep lamellar keratitis, or signs of allogeneic rejection were observed in any of the patients.
The UDVA increased from 0.68 ± 0.08 logMAR preoperatively to 0.07 ± 0.02 logMAR 12 months postoperatively (p< 0.001). And UNVA had an increase in J 2 one year after preop J 8.
Conclusion: SMILE module is a reliable method for treating hyperopic residual refraction and presbyopia after trifocal IOL implantation, as it provides results in the shortest time without complications and increases patient satisfaction.

RF02-14

Repeatability and agreement of PERAMIS wavefront-based autorefraction with dry, cycloplegic autorefraction and subjective refraction in myopic refractive surgery candidates

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Clinical relevance: Precise preoperative refraction is critical in refractive surgery's success and optometrists have an important role in this regard. Incorporating the appropriate refractive techniques will optimize the surgical results.

Background: This study was aimed to evaluate the repeatability of PERAMIS wavefront-based refractive measurement (WFR) and its agreement with dry autorefraction (DR), cycloplegic autorefraction (CR) and subjective refraction (SR) in myopic refractive surgery candidates.
Methods: One hundred eighty-nine eyes from 189 participants were evaluated. PERAMIS aberrometry (PERAMIS; SCHWIND eye-tech-solutions, Kleinostheim, Germany), dry and cycloplegic autorefraction, and subjective refraction were performed for all candidates. The repeatability of PERAMIS measurements was assessed and the Bland-Altman plots were used to test the agreement between different methods.
Results: Repeatability of the PERAMIS aberrometer was very high in the measurement of all refractive elements (Sphere, cylinder, spherical equivalent (M), J0, and J45) (interclass correlation coefficient (ICC)>O.980 for all).
A significant myopic shift was found with WFR compared to the CR (0.45 D) and SR (0.28 D) (p<0.05). For the M component, there was a significant difference between WFR and CR (P<0.05). There was a significant difference in the J0 component measured with WFR and SR, and WFR with CR (P<0.05). For the J45 variable, all three refraction methods were comparable (all, p>0.05).In M more than -5.00 D, a myopic shift of 0.79 D (limit of agreement (LOA): -3.50 to 1.90) was found between WFR and CR. When comparing DR, CR, and SR with WFR, a proportional bias was found for J0 and J45 components.
Conclusion: In the measurement of spherical error, WFR results are more similar to the manifest autorefraction. WFR, CR, and SR techniques are comparable in predicting the cylindrical component, especially in oblique astigmatism. WFR was also more accurate in measuring lower degrees of refractive error.

RAPID FIRE PRESENTATIONS
RF03: Retina

RF03-1

Evaluation of ganglion cell layer and retinal nerve fiber layer in flight personnel

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Purpose: The aim of this study was to evaluate and compare ganglion cell layer (GCL) and retinal nerve fiber layer (RNFL) thicknesses in flight personnel and healthy controls.
Methods: In this prospective study, 36 pilots and cabin crew (study group) and 43 healthy controls (control group) were enrolled. RNFL thicknesses in the superior, inferior, nasal, and temporal quadrants of the optic disc and GCL thicknesses in the superior and inferior areas of the macula were measured by the help of Cirus HD OCT-5000 unit (Carl Zeiss, Jena, Germany).
Results: No significant differences were detected in terms of sex and age between the two groups (P=0.3 and 0.2, respectively). The average cup disc ratio, vertical cup disc ratio, average RNFL thickness and RNFL thicknesses of superior, nasal, temporal and inferior quadrants of the optic disc did not differ between the two groups (all P>0.05).
No significant difference in the minimum, average and superior GCL thicknesses were documented (all P>0.05). The GCL thickness of the inferior quadrant of the macula was significantly thinner in the pilots and cabin crew group (P=0.03).
Conclusion: From the results of this study, it was concluded thatGCL thickness of the inferior quadrant significantly decreased in the study group. This change might be related with long term and recurrent high altitude, low oxygen and high ultraviolet radiation exposure.

RF03-2

Evaluation of differentiation status of stimulated adipose MSCs towards RPE phenotypes in co-culture conditions

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Purpose: Adipose derived mesenchymal cells (hADMSCs) are very promising to retina repair via the neuroprotection and/or the damaged retinal cell replacement. Retinal pigment epithelial cell layer (RPE) needs cell replacement in late stages of the disease such as AMD.
Method: In this research study, the hAD-MSCs were co-cultivated with mitomycin (MMC) inactivated RPE cells along with drugs/factors and their combinations (VIP, NIC, ATRA, VIP+NIC, VIP+ATRA, NIC+ATRA and VIP+NIC+ATRA) in standard culture conditions in trans-well system of 6-well plates in which both cells were not in direct physical contact.
Western blot technique was used to analyse differentiation status of hAD-MSCs by measuring amount of expression of MSCs-specific marker Thy-1 (CD90) and RPE marker proteins (RPE65, Ezrin, CK8/18, Tyrosinase, MerTK, MiTF, Pax6) in the hAD-MSCs under each stimulated condition.
Induction of epithelial characteristics of RPE in stimulated hAD-MSCs was evaluated by analyzing the expression of RPE specific epithelial proteins e.g. cytokeratin 8/18 (CK8/18),ZO1 and pan-cytokeratin (PCK).
Results: Results of significant comparative changes, increase or decrease, of all the markers in the hAD-MSCs under stimulated and unstimulated conditions are summarized in Table. WB results and summary Table showed expression of MSCs-specific marker Thy-1(CD90) decreased significantly in stimulated hAD-MSCs. This significant decrease was more prominent especially in case of combinations of factors. Expression of RPE65, Ezrin, CK8/18, Tyrosinase, MerTK, MiTF, Pax6 proteins increased significantly in stimulated hAD-MSCs in comparison to unstimulated hAD-MSCs.
Conclusion: The hADMSCs in indirect co-culture with inactivated RPE cells along with factors were found to differentiate towards RPE phenotypes to different extent, when stimulated by different combinations of factors. Combinations of factors were found better in stimulating the differentiation in comparison to individual factors.

RF03-3

Subretinal hyper reflective material (SHRM) morphology in neovascular age-related macular degeneration (AMD): a case-control study

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Purpose: To evaluate the association of morphological features of subretinal hyperreflective material (SHRM) with visual acuity, geographic atrophy (GA), and scar formation in eyes with neovascular age-related macular degeneration (neovascular AMD) and to compare with controls of neovascular AMD without SHRM.
Methods: Retrospective analysis of 157 wet AMD eyes with SHRM and 50 eyes without SHRM treated with Anti-VEGF. Baseline Spectral Domain-OCT characteristics (SHRM location, height, width, area, reflectivity, border definition) were collected and were correlated with visual acuity (VA) at baseline, 3,6,12 months and looked for development of scar and geographical atrophy (GA) and were compared to the control group.
Results: When compared to the control, baseline parameters with a significant predictive value of 12-month visual acuity were the presence of SHRM, foveal involvement of SHRM, high reflective SHRM, well-defined SHRM borders, and thick SHRM. VA was decreased with greater SHRM height, width, and area ($P < 0.001$). Decreasing reflectivity of SHRM lesions and disappearance of SHRM correlated with better VA at 12 months ($P < 0.05$). At 12 months, scar and GA were present more often in eyes with persistent SHRM than in eyes with SHRM that resolved and those without SHRM in the control group.
Conclusion: SHRM can be considered as a surrogate OCT biomarker in predicting the final visual outcomes in neovascular age-related macular degeneration. Baseline parameters predicting poorer vision at 12-month follow-up were the presence of SHRM involving the fovea, well-defined SHRM borders, greater SHRM height, width, area, and persistence of SHRM with Anti-VEGF therapy.

RF03-5

Cyberknife stereotactic radiosurgery for vasoactive proliferative tumor of the retina

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Purpose: To present three consecutive cases with unilateral vasoproliferative tumors of the retina treated by Cyberknife stereotactic radiotherapy.
Methods: Three patients who were initially treated by three intravitreal dexamethasone implants and/or intravitreal anti-VEGF with failure were included our study. We planned single session 14-16 Gy Cyberknife stereotactic radiotherapy in these cases. Visual outcome, clinical ophthalmic results and local ophthalmic effects were noted during the follow up.
Results: Regression of the exudative tumor was obtained in follow-up examinations at twelve and twenty-four months after the Cyberknife SRS session and the thickness of the lesions were markedly reduced in all cases. Visual acuity improved 2-5 lines with significant reduction in subretinal fluid in OCT imaging. None of the patients developed radiation related complications.
Conclusion: Vasoproliferative tumor of the retina is difficult to manage with conventional ophthalmic treatment methods. Our study suggests that Cyberknife stereotactic radiotherapy is a safe and effective tool in management of these vasoactive tumors.

RF03-6

LIGHTSITE III 24-month analysis: Evaluation of multiwavelength photobiomodulation in dry age-related macular degeneration using the LumiThera Valeda Light Delivery System

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Purpose: Dry age-related macular degeneration (AMD) is a contributor to visual impairment. The LIGHTSITE III study evaluated multiwavelength photobiomodulation (PBM) treatment using the LumiThera Valeda® Light Delivery System in dry AMD.
Methods: LIGHTSITE III was a prospective, double-masked, randomized, multi-center study to assess the safety and efficacy of PBM in dry AMD. PBM consists of low-level light exposure to selected tissues resulting in positive effects on mitochondrial output and improvement in cellular activity. Subjects were treated with six series of multi-wavelength PBM (590, 660 and 850 nm) or active Sham (3x per week/3-5 weeks) delivered every 4 months over a 24-month period. Subjects were assessed for clinical and safety outcomes. Independent OCT, FAF and color fundus outcomes at selected timepoints are analyzed by a masked imaging reading center. Data from the 24-month analysis are presented.
Results: 100 subjects (148 eyes) with dry AMD were randomized. The majority of subjects were female (n = 68; 68.0%) and Caucasian (n = 99, 99.0%), with a mean age of 75.4 years (SD 7.1) and a mean time since diagnosis of 4.9 yrs. LIGHTSITE III met the predetermined primary efficacy BCVA endpoint at 13 Months with a statistically significant difference between PBM and Sham ($p = 0.02$) and a gain of 5.4 letters following PBM treatment.
A total of 55% of PBM-treated eyes showed ≥ 5 letter gain (mean 9.7 ± 3.7), 26.4% showed ≥10 letter gain (mean 12.8 ± 2.7) and 5.5% showed ≥ 15 letter gain. A favorable safety profile was observed. The treatment showed a positive benefit-risk profile with high subject compliance. Clinical and anatomical outcome data from the 24-month analysis is presented.
Conclusions: LIGHTSITE III provides the largest randomized controlled trial in dry AMD showing improved clinical and anatomical outcomes following PBM treatment. PBM therapy may offer a new treatment strategy with a unique mechanism and modality for patients with dry AMD.

RF03-7

Efficacy and safety of intravitreal pegcetacoplan in geographic atrophy: 24-month results from the Phase 3 OAKS and DERBY trials

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Purpose: Pegcetacoplan, which targets C3 and C3b in the complement cascade, was studied in a broad geographic atrophy (GA) population in two 24-month Phase 3 trials.
Methods: OAKS (N=637) and DERBY (N=621) enrolled patients ≥60 years who had best-corrected visual acuity ≥24 ETDRS letters and GA lesion area 2.5–17.5 mm^2, with at least one focal lesion ≥1.25 mm^2 if multifocal GA at baseline.
Patients were randomised (2:2:1:1) to receive intravitreal pegcetacoplan monthly (PM) or every other month (PEOM), or sham monthly or every other month.
The primary endpoint was change in GA lesion area measured by fundus autofluorescence at Month 12. Secondary endpoints at Month 24 included change in GA lesion area and functional outcomes.
Results: Pegcetacoplan reduced GA lesion growth versus sham at 24 months (OAKS: 22% PM, $p<0.0001$; 18% PEOM, $p=0.0002$; DERBY: 19% PM, $p=0.0004$; 16% PEOM, $p=0.0030$). Treatment effects over 24 months were consistent regardless of lesion location (nonsubfoveal: 26% PM, $p<0.0001$; 22% PEOM, $p<0.0001$; subfoveal: 19% PM, $p<0.0001$; 16% PEOM, $p=0.0003$).
No significant differences between treatment arms were observed in prespecified key visual function endpoints at 24 months. Post hoc microperimetry analyses in the junctional zone of atrophy showed reduced loss of retinal sensitivity (mean threshold sensitivity: PM +0.564 dB, $p=0.0650$; PEOM +0.707 dB, $p=0.0202$) and fewer scotomatous points (PM –0.680 points, $p=0.1444$; PEOM –1.138 points, $p=0.0140$).

Most ocular study eye adverse events were considered mild to moderate. Intraocular inflammation and infectious endophthalmitis rates per injection were 0.20% (excluding four events in 2018 attributed to drug impurity) and 0.034%, respectively. Rates of new-onset exudative age-related macular degeneration (eAMD) were 12.2% PM, 6.7% PEOM and 3.1% sham over 24 months.

Conclusions: Pegcetacoplan slowed GA lesion growth and was well tolerated through Month 24. Rates of eAMD were higher with pegcetacoplan versus sham.

RF03-8

Early real-world outcomes following intravitreal Faricimab for wet age-related macular degeneration (nAMD) in a multi-ethnic UK cohort

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Purpose: Faricimab is the first bispecific agent to be approved for the management of nAMD. Benefit in a real world ethnically-diverse cohort is not yet determined. We report early real-world outcomes in patients treated with Faricimab for nAMD.

Methods: Consecutive patients presenting with nAMD or not responding to standard of care were initiated on Faricimab between July and December 2022. Functional and structural parameters 4 weeks after first Faricimab injection are presented in this interim analysis.

Results: 37 (mean age 79; 59% female; 32% Black, South Asian or Other) eyes were included.

20 eyes were switched from previous anti-VEGF therapy; the mean number of previous injections in this cohort was 33.95 (±30.8). Eylea was the most recent therapy in 65%, Lucentis in 20% and Beovu in 15%. 50% of eyes were switched for persistent CNV activity despite maximal treatment, 40% for inability to extend beyond 4-8 weeks and 10% for other reasons. Mean improvement in LogMAR BCVA 4 weeks after the first injection was -0.04 (±0.08), p=0.02. CSFT and PED height showed a mean reduction of -19.6 (±24.6) p=0.002 and -31.7 (±26.9) p<0.0001 respectively at 4 weeks post first injection.

17 eyes were naïve to any anti-VEGF treatment. Mean BCVA at baseline was LogMAR 0.61; mean central subfield thickness (CSFT) at baseline was 426.5µm; mean macular volume (MV) at baseline was 9.24µm and eyes with subretinal (SRF), intraretinal fluid (IRF) and SRF+IRF at baseline were 94%, 65%, 58.8% respectively. Mean change in BCVA was -0.16 (p=0.19), mean change in CSFT was -108.9 (p=0.0001), mean change in MV was -0.88 (p=0.002). Proportions of those with SRF or IRF both dropped by 35%.

No intraocular inflammation or endophthalmitis was observed.

Conclusion: Our results indicate a potential benefit of Faricimab therapy in a multi-ethnic cohort with nAMD. Longer term real-world analyses are required to assess efficacy and durability.

RF03-9

The optical density of subretinal fluid in the differential diagnosis of chorioretinal disorders

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Purpose: To investigate the diagnostic role of optical density ratio (ODR) in chorioretinal disorders with different pathophysiological mechanisms that present with subretinal fluid (SRF).

Method: Patients with acute central serous chorioretinopathy; CSCR (n=49), Vogt Koyanagi Harada's disease; VKH (n=34) and choroidal hemangioma (n=17) were included. Spectral-domain optical coherence tomography (SD-OCT) images were analyzed using ImageJ by three independent readers.

The ODRs were calculated using "region of interest (ROI)" and "entire region (TOTAL)" selection methods from the SRF to the vitreous, retinal pigment epithelium (RPE), and retinal nerve fiber layer (RNFL) reflectivity ratios.

Correlation analysis between age, central macular thickness (CMT), lesion size, and ODRs were obtained.

Results: The measurement of optical density was highly reproducible (intraclass correlation coefficient> 0.9). The optical density of the SRF, vitreous, RNFL, and signal strength were comparable (p=0.360, p=0.247, p=0.105 and 0.628, respectively), even though the mean age was significantly different between disease groups.

While there was no difference in SRF OD measurements between two methods (p=0.401), there was a significant difference for vitreous OD measurements (p=0.016) for all participants.

The ANOVA test of $ODR_{(ROI)}$, $ODR_{(TOTAL)}$, ODR-RPE $_{(ROI)}$ and ODR-RNFL $_{(ROI)}$ revealed no significant difference between acute CSCR, VKH disease and choroidal hemangioma groups (p>0.05 for all). The Pearson correlation analysis revealed a significant negative correlation between SRF height ($p < 0.05$) and CMT ($p < 0.01$) with $ODR_{(ROI)}$.

Conclusion: The optical density ratio measurements appear to be highly repeatable and thus may serve as a reliable SD-OCT parameter for chorioretinal disorders. Despite their distinct pathophysiology, the ODRs of SRF in acute CSCR, VKH disease, and choroidal hemangioma were not found to be statistically different.

RF03-10

Pathogenic implication from retinal events following COVID-19 infection

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Purpose: Coronavirus disease 2019 (*COVID-19*) infection had affected not only respiratory tract but also many other organs. In the retina, *COVID-19* is associated with vascular events.

The aim of this study was to report the retinal findings following omicron variants covid-19 infection and a better understanding of pathological retinal changes may help elucidate mechanisms of systemic thrombo-occlusive complications in patients affected by *COVID-19*.

Methods: Here we report retinal and OCT changes in 9 women adults (aged 18–42 years), examined within 7 days after COVID-19 symptom onset. All patients had fever, asthenia, and dyspnea and tested positive for COVID-19 by PCR (using nasal and oral swabs). 5 patients were diagnosed with Acute macular neuroretinopathy, 2 patients were diagnosed with paracentral acute middle maculopathy and 2 patients were diagnosed with retinal vein occlusion.Features on the retina were analyzed in combination with serum test to elucidate the common pathologic mechanism.
Results: Retinal findings including Purtscher-like retinopathy, intraretinal hemorrhages, acute macular neuroretinopathy.Microvascular ischemia of different layer of retina and choroid can lead to the above changes.
Conclusions: Retinal findings might indicate a predominantly hypercoagulable state. It would be useful toperform a fundus examination of patients with *COVID-19* to detect early asymptomatic retinal signs that could guide the treatment.

RF03-12

Colobomatous fossa of the papilla complicated by serous retinal detachment: about a case

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Purpose: The colobomatous fossa is a rare congenital anomaly visible on the fundus as a grayish depression of the optic nerve, located at the level of the cribriform plate.It can be complicated in 25 to 75% of cases by a retinal serous detachment and a macular retinal schisis responsible for a decrease in visual acuity.
Method: We report the case of a 40-year-old woman, without any particular history, who presented a rapidly progressive decrease in visual acuity over 1 month.
Results: The ophthalmological examination showed an acuity of 1/10 in the left eye and 10/10 in the right eye, with examination of the anterior segment without notable abnormalities. The ocular fundus of the left eye showed a grey oval lesion with an oblique long axis at the temporal edge of the papilla with the appearance of an inter papillo-macular serous detachment.
The OCT confirmed the serous detachment of the retina and intra retinal schisis and the diagnosis of colobomatous fossa was confirmed. The surgical indication was given and the patient underwent endocular surgery with vitrectomy and C3F8 gas tamponade. Patient underwent peripapillary photocoagulation postoperatively. The evolution was marked by a clear improvement of the visual acuity to 7/10th and a retina that remained flat.
The colobomatous fossa is a rare congenital pathology, most often unilateral and of temporal location. It remains asymptomatic for a long time, before manifesting itself by a decrease in visual acuity, which is the case of our patient. Optical coherence tomography remains the main diagnostic tool. The colobomatous fossa is complicated in two thirds of the cases by a serous detachment of the retina.The origin of the exudative detachment remains poorly elucidated, which explains the absence of a therapeutic consensus.
Conclusion: The colobomatous fossa is a rare pathology. Optical coherence tomography remains the main means of diagnosis, especially in case of complication by serous detachment of the retina.

RF03-13

Ocular manifestation in primary hyperoxaluria (Oxalate retinopathy)

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Primary hyperoxaluria (PH) is an autosomal recessive rare genetic metabolic disorder, characterized by accumulation of oxalate in the kidneys and other organs of the body (systemic oxalosis). Systemic oxalosis presented with ocular manifestation corresponds to severe retinal alterations and oxalate deposits and significantly reduced BCVA (best corrected visual acuity).
We present a case of a 6 year old Caucasian girl shown with systemic oxalosis and oxalate retinopathy. The child is with renal disorders since 6 months of age – clinically and genetically diagnosis of primary hyperoxaluria. After an ophtalmologic consultationan oxalate retinopathy was detected. Her visual acuity in both eyes was as follows VOD = 0.4 (20/50), VOS = 0.4 (20/50).
Ophthalmoscopy revealed scattered chorioretinal foci in both eyes. On native imaging, oxalate deposits are visualized as confluent black and whitish lesions, a type of geographic atrophy in posterior pole and middle periphery. We observe them in the central retina and middle periphery. The far periphery is not affected by the described changes. A subsequent optical coherence tomography (OCT) revealed an accumulation of oxalate deposits at the level of the pigment epithelium with the presence of degenerative changes in the overlying retinal layers. Arterial blood vessels are not affected. Fundus autofluorescence (FAF) performed showed extensive areas of atrophy.
Treatment was inniciated with hemodialysis and Lumasiran intake (FDA and EMA Approved prescription medication for the treatment of primary hyperoxaluria type 1).A six-month follow-up showed no dynamics in the accumulation of oxalate crystals in the retina. The visual acuity was the same VOD = 0.4 (20/50), VOS = 0.4 (20/50),and despite the lack of disease progression the BCVA remains low which is due to the fact that the Oxalate retinopathy is irreversible.

RF03-14

Central retinal artery occlusion secondary to *Streptococcus gordonii* endocarditis: case report and clinical implications

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Purpose: To report a case of central retinal artery occlusion (CRAO) associated with subacute *Streptococcus gordonii* endocarditis secondary to a dental infection.
Observations: A 27-year-old male presented with acute monocular vision loss in the setting of a stroke and seizure. Fundus exam revealed macular whitening and a cherry red spot. Edema of the inner retinal layers was confirmed on macular optical coherence tomography, consistent with CRAO. Initial imaging (carotid Doppler, EKG and transthoracic echocardiography) and a comprehensive laboratory workup did not reveal an etiology for the stroke or vision loss. Brain magnetic resonance imaging showed T1 hyperin-

tensity with surrounding edema, which prompted a workup for possible septic emboli versus occult malignancy. Subsequent blood cultures led to the detection and diagnosis of *Streptococcus gordonii* endocarditis. It was subsequently revealed that the patient had self-extracted his molar two months prior to the onset of symptoms.

Conclusions: Endocarditis has been associated with Roth spots and inflammatory findings of the posterior segment. However, CRAO caused by vegetal septic embolism is rare. To our knowledge, this represents the first reported case of endocarditic CRAO with *Streptococcus gordonii* confirmed as the causative microbe. Retinal vascular occlusion in a young patient with no distinct risk factors should prompt a comprehensive dental history and infectious workup, with consideration given to early transesophageal echocardiography.

RAPID FIRE PRESENTATIONS
RF04: Glaucoma, Uveitis

RF04-1

Esterman virtual reality visual fields in patients with glaucoma

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Purpose: Visual field damage has been shown to be related to impaired driving performance.The Esterman visual field test, traditionally performed using standard automated perimetry (SAP), is a method to detect visual field deficits that would affect driving performance.

The purpose of this study is to compare Esterman visual field test results using standard automated perimetry (SAP) to results obtained from a virtual reality visual field headset (VRVF).

Methods: Patients with mild to severe glaucoma ranging from 14 to 90 years were included. Subjects performed Esterman visual field tests on both VRVF and SAP. Order of testing was randomized. Duration of testing and the Esterman efficiency score (EES), defined as the number of points correctly identified divided by the number of total points displayed during the test, were recorded for each test.

Results: 22 subjects were included in the study with ages ranging from 14-78 years old. Eleven had mild glaucoma and 11 had moderate to severe glaucoma. Mean Esterman efficiency score (EES) using SAP was 85 and mean EES using VRVF was 76. Mean duration of SAP testing was 281 seconds while mean duration of VRVF testing was 299 seconds. Patients reported a more pleasant experience with the head mounted VRVF device.

Conclusion: Glaucoma has been found to be a leading reason for driver's license issues at a higher age. The Esterman visual field test performed using standard automated perimetry (SAP) can be useful in driver's license screenings; however, lack of portability and inability to accommodate multiple patients at once in current testing environments creates challenges of using SAP to implement the Esterman test.

Virtual reality visual field devices can be used in clinical practice to provide comparable results to standard automated perimetry for the Esterman visual field test, offering a portable and virtual alternative to SAP.

RF04-2

Comparison of calculated and measured ocular perfusion pressures (OPP)

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Purpose: With the Ocular Pressure Flow Analyzer (OPFA) ocular perfusion pressure (OPP) can be measured noninvasively on both eyes simultaneously without dilation of the pupils to compare OPFA data of measured and calculated (surrogate) OPP.

Method: In a retrospective observational clinical study OPP was measured with the OPFA device (tpm-GmbH, Lüneburg, Germany) at the point where the central retinal artery leaves the ophthalmic artery. OPP surrogate values were calculated with the conventional formulas: SOPP=SBBP-IOP; DOPP=DBBP-IOP; MOPP=2/3 [DBBP + 1/3(SBBP-DBBP)] – IOP.

Results:

Comparison of surrogate with measured OPP values:

117 untreated POAG patients (mean values and SD, mmHg):

Measured data Calculated data Differences Statistics

SOPP 87.3±12.8 127.3±20.9 +40.0 0.001

DOPP 40.2± 7.2 68.6±14.6 +28.4 0.001

MOPP 55.9± 8.0 50.9±10.1 -5.0 0.001

118 healthy subjects:

SOPP 77.3± 9.3 113.4±12.2 +36.0 0.001

DOPP 39.1± 5.9 67.6± 8.7 28.4 0.001

MOPP 51.8± 6.1 49.9± 5.9 -1.9 0.001

The Bland- Altman method showed no agreement between measured and calculated data and the pairwise Wilcoxon Signed-Rank-Test came to highly significant differences between measured and calculated data.

Conclusion: The difference between the measured OPP and the calculated surrogate values are substantial for both POAG patients and healthy subjects. The close correlation between calculated (so called) surrogate values and measured real ocular data shows a strong dependence of the ocular circulation on the systemic blood pressure.

However, surrogate values are not the same as ocular perfusion pressures and therefore local ocular (retinal and choroidal) blood flow cannot be assessed. Surrogate values, calculated as the difference between brachial blood pressure and IOP, and measured OPP are not identical.

RF04-3

Optic nerve head, peripapillary and macular microvascular characteristics in patients with unilateral pseudoexfoliation glaucoma

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Purpose: Evaluation of peripapillary and macular choroidal microvascularity and radial peripapillary capillary plexus (RPC) in both eyes with unilateral pseudoexfoliation glaucoma (PEXG) and healthy eyes.

Method: Ninety-six eyes of 48 patients with unilateral PEXG (PEX (+): 48 eyes with PEXG; PEX (-): 48 eyes without PEX) and the right eyes of 45 age- and sex-matched healthy controls were included in the study. Choroidal vascular index (CVI) was calculated on enhanced depth imaging optical coherence tomography (EDI-OCT) scans. RPC vascular layer were evaluated by OCT-Angiography (OCTA).

Results: Macular CVI (mCVI), temporal and nasal peripapillary CVI (pCVI) was significantly decreased in the PEX (+) compared to the PEX (-) and control group ($p<0.05$ for all). While there was a significant difference between PEX (-) and the control group in terms of mCVI and temporal pCVI, there was no significant difference between the two groups in terms of nasal pCVI ($p=0.008$, $p=0.036$ and $p= 0.604$, respectively). There was a significant difference in perfusion density (PD) and flux index (FI) between PEX (+) group, PEX (-) group and control group in all quadrants and average value ($p<0.05$ for all). Although the PD and FI values in all quadrants and average values of the PEX (-) group were less than the control group, this difference was not significant.

Conclusion: CVI in the macula and peripapillary region tends to decrease in eyes with PEXG. Similarly, PD and FI were lower in eyes with PEXG. Low mCVI and temporal pCVI can also be seen in eyes without PEX.

RF04-4

Sensitivity of ganglion cell complex and retinal nerve fiber layer thickness in open angle glaucoma

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Purpose: To compare the sensitivity and specificity of the retinal nerve fiber layer (RNFL) thickness and ganglion cell complex (GCC) analyses in patients with open angle glaucoma as measured by optical coherence tomography (OCT) and define which approach is more useful in diagnosing glaucomatous changes.

Methods: 40 patients with open angle glaucoma (study group, mean age 66 ± SD) and 40 healthy subjects (control group, mean age 63 ± SD) were included in the study. In all patients RNFL thickness and ganglion cell complex was measured by OCT (Cirrhus, Zeiss). The average RNFL and RNFL in four sectors of the optic nerve head was compared between both groups and the sensitivity of the method was assesed by ROC curves (Receiver Operating Characteristics). Similarly, for GCC analysis we compared both the average values of the GCC plus the individual six sectors and the ROC curves were calculated.

Results: There was a significant difference in average RNFL thickness and GCC between both groups ($p<0,01$) and both analyses showed a sensitivity and specificity of 100%. In sectoral RNFL analysis, a higher sensitivity was reached for the superior and inferior portions of the optic nerve head. In GCC, with regard to sensitivity, there was no signicant difference between the individual sectors.

Conclusion: Both methods showed high sensitivity and specificity in distinguishing patients with glaucoma from healthy subject. Sectoral analysis of RNFL thickness appeared to be more useful than GCC when concentrating of the superior and inferior sectors of the optic nerve head.

RF04-5

Systematic review of clinical practice guidelines for the diagnosis and management of open angle glaucoma

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Purpose: To assess the Clinical Practice Guidelines (CPG) for the diagnosis and management of open angle glaucoma (OAG).
Methods: A systematic review of CPGs for the diagnosis and management of OAG, published between January-2017 and November-2022, was carried out. A search in databases (Pubmed/Medline, Scopus, Web-of-Science, Embase), metasearch engines (Tripdatabase, Epistemonikos), CPG developer organizations, ophthalmology associations and CPG repositories/databases was performed. CPGs in English/Spanish were selected, and 5 authors assessed them independently, using the Appraisal of Guidelines for Research and Evaluation (AGREE-II) instrument. Individual assessment by domain (AGREE-II), overall evaluation, and its use with or without modifications was carried out for each CPG.
Additionally, a meta-synthesis of the recommendations for the most relevant outcomes of each CPG was performed.
Results: 6 CPGs were appraissed (National Institute for Health and Care Excellence-NICE 2022, European Glaucoma Society-EGS 2021, Preferred Practice Patterns-PPP 2020, Sistema Nacional de Salud Español-SNS 2017, Ministry of Health Malaysia-MaHTAS 2017 and EsSalud Peru 2021).
Most CPG scored high in domain 4 (clarity of presentation). NICE, SNS and IETSI, scored high in domain 3 (rigour of development). The EGS guide and the MaHTAS scored low in domain 3 (due to absence of available information), but scored high in domain 4.
All the CPGs used GRADE system for making recommendations. In the meta-synthesis, variability was found in risk factors such as diabetes, ethnicity, hypotensives drugs (Latanoprostene in the PPP, not available in Spain or Peru), IOP correction algorithms use(EGS), Selective Laser Trabeculoplasty (SLT) indication for initial treatment (EGS, NICE, MaHTAS), and minimally invasive glaucoma surgery indications(MIGS).
Conclusions: NICE, SNS and IETSI CPGs for the diagnosis and management of OAG have a high methodological quality, appraised with AGREE-II.

RF04-7

Correlation between Hemoglobin A1c with normal-tension glaucoma in rural population

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Purpose: To evaluate the correlation between Hemoglobin A1c (HbA1c) with normal-tension glaucoma (NTG).
Method: Cross-sectional population-based study taken from 3 villages involved 128 or 256 eyes, that devided into three groups consisted of normal, prediabetes and diabetes groups. All subjects underwent age, sex, body weight, and height assessments. HbA1c levels were measured by ELISA from subjects‘ blood.
Normal IOP measured by Tonopen confirmed the diagnosis of NTG. Mean Defect (MD) of visual field evaluated by Automated Humphrey Perimetry, Retinal Nerve Fiber Layer (RNFL) thickness and vertical cup-to-disc ratio (CDR) measured by Optical Coherence Tomography (OCT). The relationship between variables was tested by using the logistics regression test.
Results: There was a relationship between high HbA1c level (≥7%) and NTG (p = 0,03; OR = 3,33), RNFL (p = 0,04; OR = 2,22), and CDR (p = 0,05; OR = 2,05).
If the subjects have diabetes, the risk of NTG is three times higher, the risk of RNFL thinning is two times higher, and the risk of large CDR is two times higher than normal HbA1c.
Results show statistically significant relationships between BMI with NTG and MD, systole with NTG, and age with NTG, MD, and CDR.
Conclusion: Subjects with high HbA1c levels have an increased risk of NTG. Correlation between age, systole, and BMI with NTG were also identified.

RF04-8

To evaluate the outcomes of Ahmed Glaucoma Valve (AGV) in pediatric patients

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Purpose: To evaluate the outcomes of Ahmed Glaucoma Valve (AGV) in pediatric patients.
Methods: Case series of patients under 18 years-old, with glaucoma, submitted to AGV implantation, between 2010 and 2021, in Centro Hospitalar Universitário do Porto, a tertiary center in Portugal. Type of glaucoma, previous surgeries, pre- and postoperative intraocular pressure (IOP), surgical complications and need for additional IOP lowering agents or glaucoma surgeries, were recorded.
Results: Thirteen eyes (11 patients) underwent AGV implantation. Median follow-up time was 10 [1.5-11] years. Mean age at the time of surgery was 12.3±3.0 [7-17] years-old, and 64% were boys. Six eyes had congenital glaucoma, 2 had aphakic glaucoma, 2 had Sturge-Weber syndrome, 2 had uveitic glaucoma and 1 had glaucoma secondary to a congenital hemangioma.

Before AGV implantation, 2 eyes underwent cataract surgery, 1 had multiple vitrectomies and 7 required glaucoma surgeries (median number 4 [1-5]). Mean IOP before surgery was 30±8 mmHg. One eye developed postoperative athalamia and one eye developed choroidal detachment, that resolved with conservative treatment. Twelve eyes (92%) achieved a postoperative IOP inferior to 21 mmHg.

All eyes required additional IOP lowering agents, with a median time of 2 [1-20] months after surgery. Five eyes (38%) required additional glaucoma surgeries (median number 1 [1-4]) and 1 eye had valvular obstruction, that resolved after revision. One eye had 5 surgeries due to tube exposure, with subsequent tube removal after spontaneous exteriorization from the anterior chamber. Two eyes with congenital glaucoma developed phthisis bulbi. At last follow-up, 6 eyes (46%) were under their target IOP, with a mean number of 2 [0-3] topical antihypertensive classes.

Conclusion: Pediatric glaucoma is often of difficult management. AGV allowed 46% of our cases to maintain long-term IOP control, even though additional topical IOP lowering agents were needed.

RF04-9

The effect of prior medication use on IOP-lowering efficacy of netarsudil 0.02%/latanoprost 0.005% in patients with glaucoma: an exploratory analysis from MERCURY-3

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Purpose: MERCURY-3 assessed the IOP-lowering efficacy of netarsudil (NET) in fixed-dose combination with latanoprost (LAT) in people with ocular hypertension or open-angle glaucoma; this exploratory analysis examines the efficacy of NET/LAT in patients with or without prior prostaglandin (PGA) treatment (as monotherapy or in combination therapy), prior to washout in MERCURY-3.

Methods: MERCURY-3 was a head-to-head prospective, double-masked, randomized, parallel-group, non-inferiority study that compared NET/LAT 0.02%/0.005% (Roclanda®) with bimatoprost 0.03%/timolol maleate 0.5% (BIM/TIM; Ganfort®) [*submitted*].

This exploratory efficacy analysis in the subgroups with or without prior PGA treatment was performed in the intention-to-treat (ITT) population. Data are presented as mean IOP reduction at Week 2, Week 6 and Month 3; IOP was measured at 08:00, 10:00 and 16:00 at each visit.

Results: In the group without prior PGA therapy (47/218 [21.6%]), mean IOP (mmHg) reduced from 24.8 at treatment Day 1 to 15.9 at Week 2, 15.5 at Week 6 and 15.7 at Month 3.

In those with prior PGA treatment (171/218), mean IOP at Day 1 was 25.1 and descended to 15.3, 15.7 and 15.6, respectively. In those who received PGA as a monotherapy (158/218 [72.5%]) vs combination therapy (60/218 [27.5%]) mean IOP reduced from 25.0 vs 25.3 at baseline to 15.4 vs 15.6, 15.6 vs 15.6 and 15.8 vs 15.3 at 2 weeks, 6 weeks and 3 months, respectively. Similar trends were seen in the BIM/TIM arm.

Conclusion: In MERCURY-3, the IOP-reducing efficacy of NET/LAT was consistent whether a patient had received prior PGA (either as monotherapy or in combination) or not across a 3-month period.

These findings suggest that prior PGA use does not alter the trabecular responsiveness to Rho kinase inhibitors.

RF04-10

Direct selective laser trabeculoplasty: long-term safety and efficacy

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Purpose: Direct selective laser trabeculoplasty (DSLT) is a non-contact automated procedure performed directly through the limbus. There are currently no known studies with follow-up longer than six months. This study evaluates the long-term safety and efficacy of the DSLT treatment.

Methods: At the University of Genoa, between November 2018 and June 2019, as part of the GLAUrious trial NCT03750201, patients suffering from primary open-angle glaucoma (POAG), or ocular hypertension (OH) and treated with DSLT (120 spots on 360°, BELKIN Vision, Israel) were followed in the long-term. Intra-ocular pressure (IOP), IOP-lowering drugs, adverse events, and additional procedures were recorded.

Results: Seven eyes from 7 patients with POAG (86%) or OHT (14%) were treated with DSLT. All DSLTs were delivered without severe adverse events. Before treatment, the mean medicated IOP (sd) was 19.1 (4.4) mmHg with 1.4 (0.8) IOP-lowering drugs. After wash-out, the pre-treatment IOP was 28.5 (4.4) mmHg. At six months, the washed-out IOP was 20.6 (4.7) mmHg with a reduction of -8.0 mmHg ($p<0.01$). An IOP-lowering medication was reintroduced after 78 (74) days. Patients were followed for an average of 42.2 (5.5) months. At the last follow-up, the medicated IOP was 16.3 (3.0) mmHg with 1.3 (0.9) IOP-lowering drugs.

In one case, a perilimbal subconjunctival hemorrhage, noted immediately after DSLT treatment, was the only adverse event recorded. During follow-up, one patient was effectively retreated with traditional SLT.

Conclusions: DSLT reduces IOP with efficacy and safety profiles like those expected from conventional SLT. DSLT could ease the choice of trabeculoplasty as the first-choice treatment for patients suffering from OAG or OH.

RF04-11

Bilateral relentless placoid chorioretinis: a case report

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Introduction: Relentless placoid chorioretinitis, also known as *ampiginous* choroiditis, is a rare non-infectious chorioretinopathy which is thought to be an intermediate phenotype in severity between serpiginous choroiditis and acute posterior multifocal placoid pigment epiteliopathy (APMPPE) (hence the fusion name*amp-iginous* choroidits).

We report on a well-documented case with 4 years of follow-up where a presumptive diagnosis of bilateral ampiginous choroiditis was made on a 48 years old female.

Methods: Clinical case review.

Case report: She presented initially with bilateral panuveitis with a best corrected visual acuity (BCVA) of 20/30 in her RE and 20/40 in her LE. Fundoscopy revealed vitritis and numerous retinal whitish placoid lesions with macular involvement in the LE. OCT showed increased retinal and choroid thickness with irregularity and hyperreflectivity of the external retina.

An extensive workup to exclude several inflammatory and infectious conditions was done. OCT-A revealed a type 2 neovascular choroidal membrane in the LE. On the RE FA revealed leakage inferior to the fovea which corresponded to hypocyanescence in ICG. On the LE progressive staining of the placoid lesions was observed which corresponded to marked hypocyanescence in ICG. Autofluorescence revealed placoid hypoautofluorescent lesions with dotted hyperautofluorescent margins.

The extension of the placoid lesions and BCVA have been relatively preserved thus far in the follow-up period due to intensive treatment with imunosupressive drugs and antiVEGF injections in the LE. After being started on oral corticosteroids, the patient moved on to corticosteroid sparing imunosupressive drugs (first cyclosporin and later methothrexate) and now is controlled with a monoclonal antibody (adalimumab).

Conclusions: Ampiginous choroiditis is a primary inflammatory chorioretinopathy which requires intensive clinical monitoring and treatment in order to prevent disease progression and preserve BCVA.

RF04-12

Adalimumab in the treatment of refractory non-infectious scleritis: 6-month outcomes

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Purpose: Adalimumab is not routinely used in the treatment of refractory scleritis due to scarce scientific evidence in medical literature that would justify its high cost. The aim of this case series was to assess efficacy and safety of adalimumab after 6 months of treatment in the subset of scleritics previously refractory to conventional immunosuppressive agents.

Method: Our retrospective analysis included 15 adults with refractory non-infectious scleritis initiated on adalimumab between September 2014 and October 2021 at our tertiary referral centre. Data was collected from clinic letters accessed from the electronic records system. Patients' baseline characteristics and 6-month outcomes were analysed to determine the steroid-sparing effect, time to first scleritis flare-up since commencement of adalimumab, and presence of any adverse events during the follow-up period.

Results: The fraction of patients on ≤10mg of daily oral prednisolone on initiation of adalimumab vs at 6 months was 46.7% and 93.3%, respectively. A Wilcoxon matched-pairs signed rank test indicated that the prednisolone dose at 6 months of adalimumab was statistically significantly lower than the dose on initiation of therapy ($p < 0.0005$).

In terms of disease recurrence, the rate of reactivation on adalimumab was 0.62 flare-ups/patient-year, with 4 patients developing flare-ups in the initial 6-month treatment period. Four patients experienced adverse events, which included single episodes of: oral and genital thrush, bleeding gums, headache and nausea, and pain on adalimumab injection.

Conclusion: This case series demonstrates that adalimumab is effective and safe after 6 months of treatment in the majority of refractory scleritics. We hope that our findings can add valuable data that will further support routine implementation of adalimumab in patients with refractory scleritis.

RF04-13

Retinal mapping in idiopathic intermediate uveitis before and after topical steroid treatment in adult population

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Purpose: To analyze retinal thickness (RT) changes in patients with intermediate uveitis using The Heidelberg Spectralis optical coherence tomography (OCT), color-coded retinal thickness map before and after topical steroid treatment.

Method: Retinal maps were statistically analyzed for 26 patients with newly diagnosed intermediate uveitis before after topical steroid therapy. Twenty four eyes of 24 patients (only one eye) were followed until resolution of inflammatory activity (follow up in two weeks time and 4 weeks after the first follow up). Resolution occurred in all subjects within 6 weeks after the initial diagnosis. At each visit, thickness maps were generated. None of the patients had cystoid macular oedema. All patients were imaged by spectral-domain 840-nm OCT over a 6 × 6-mm field of view. The spatial distribution of retinal thickness was mapped and analyzed using the Early Treatment Diabetic Retinopathy Study (ETDRS) grid.

Results: The retinal thickness was found to be significantly decreased in eyes with intermediate uveitis after topical steroid eye drops with a mean change of 39 ± 6.7 µm (mean ± SD, Bonferroni correction,$\alpha = 0.0125$).

Conclusion: Eyes diagnosed with idiopathic intermediate uveitis demonstarted a decrease in retinal thickness map after topical steroid eye drops. Retinal thickness map could be beneficial as imaging marker in monitoring treatment response of patients with idiopathic intermediate uveitis.

RF04-14

Prevalance and course of ocular hypertension and glacuoma in uveitis

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Purpose: To evaluate the prevalance and clinical course of ocular hypertension and glaucoma in different types of uveitis.
Materials and methods: A retrospective chart review was performed for patients who were treated with any kind of uveitis in Ege University Ophthalmology Department between Jan 2003- Jan 2023. Patients with transient/permenant rise in intraocular pressure (IOP), patients who were under treatment with anti-glaucoma medications at the initial examination and patients with glaucoma diagnosis were included in the study. Demographic features, type of uveitis, the time interval between uveitis and OHT/glaucoma diagnosis, the time period in which IOP remained high/anti-glaucoma medications were needed as well as topical and systemic treatments for uveitis and OHT/glaucoma, and the surgeries were recorded.
Results: A total of 2176 patient files (1206 anterior, 247 intermediate, 165 posterior and 558 panuveitis) were reviewed and 661 eyes of 433 patients (200 F, 233 M [213 AU, 63 IU, 81 PU, 76 PaU patients]) were included in the study. According to the localization of inflammation, uveitis was anterior (AU) in 367 eyes, intermediate (IU) in 84, posterior (PU) in 94 and panuveitis (PaU) in 116 of the eyes. Mean age was 43.4 (6-89) years and mean follow up period was 19.8 (3-159) months. Mean IOP was 17.4±14.3 mmHg, mean c/d was 0.4±0.23 at the initial examination. Mean IOP when first measured high was 30.7±8.4 mmHg and the mean duration between increase in IOP and uveitis diagnosis was 4.1 (0-84.6) months. IOP was controlled by topical glaucoma medications in 325 (88.5%) eyes with AU, in 79 (94 %) eyes with IU, in 88 (93.6%) eyes with PU and in 109 (94%) eyes with PaU. Surgery was required to lower the IOP in 42 (11.4 %) eyes with AU, in 5 (5.9%) eyes with IU, 6 (6.3%) eyes with PU and 7 (6.0%) eyes with PaU.
Conclusion: Increase in intraocular pressure was most frequent in PU patients (49%) and the glaucoma surgery was most needed in eyes with AU (11.4%).

RF04-15

The importance of exploring the fundus in herpetic uveitis

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Case report: A 65-year-old woman referred from the emergency room due to an outbreak of AAU in her left eye (OS). The patient had suffered multiple episodes of kerato-uveitis on her right eye, leaving a central vascularized leukoma. At exploration visual acuity (VA) was 20/60 on her left eye . Biomicroscopy showed abundant keratic precipitates, Tyndall ++ and moderate nuclear opacity. Intraocular pressure (IOP) was 21mmHg. The fundus was not explored. The patient were treated with topical dexamethasone, acyclovir, and atropine archiving a good acute response.
After multiple recurrences over a year, the fundus were impossible to explore due to intense nuclear and subcapsular opacity of the cristaline. A phacoemulsification were performed what allowed to observe a large plaque of retinal and choroidal necrosis and fibrous proliferations anchored to the papilla and nasal arcades. She was diagnosed of progressive external retinal necrosis with macular involvement and papillary atrophy. The post-surgical VA shows amaurosis with her left eye and no signs of retinitis to date.
Conclusions: It is essential to perform exploration of the posterior segment in patients with AAU, at the beginning of the clinical picture as well as in successive revisions.
Aqueous humor paracentesis is very useful for the diagnosis of viral origin.
In retinal necrosis, the prognosis depends on the start time of antiviral treatment.

RAPID FIRE PRESENTATIONS
RF05: Neuro-ophthalmology

RF05-1

VRDN-001, a full antagonist antibody to IGF-1 receptor, in Thyroid Eye Disease (TED): results from Phase 1/2 clinical study

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Purpose: IGF-1R antagonism reduces TED-related inflammation and proptosis. VRDN-001, a full antagonist antibody to IGF-1R, is being evaluated in a phase 1/2 RCT (NCT05176639) at 3-20 mg/kg. We present results from the first cohort (10 mg/kg) of TED patients.
Methods: Adults with active moderate-to-severe TED with clinical activity score (CAS) ≥4 were randomized to 2 infusions 3 weeks apart of either 10 mg/kg VRDN-001 or placebo (3:1). Safety and efficacy through 12 weeks were assessed.
Results: Baseline characteristics were similar between VRDN-001 (n=6) and placebo (n=2). At 6 weeks, overall responder rate (% of patients with ≥2 mm reduction in proptosis and ≥2 point reduction in CAS) was 83% (5/6; VRDN-001) vs. 0% (placebo); proptosis responder rate (% of patients with ≥2 mm reduction) was 83% (5/6; VRDN-001) vs. 50% (1/2; placebo).
At 12 weeks, 80% (4/5) of VRDN-001 responders had maintained both overall and proptosis response. Mean proptosis reduction was 2.4 mm (VRDN-001) vs. 1.0 mm (placebo) at 6 weeks and remained consistent for VRDN-001 at 12 weeks (2.2 mm).
MRI analysis at both 6 and 12 weeks showed proptosis improvement for all 4 VRDN-001 patients with scans available and no improvement in both placebo patients. CAS decreased to 0 or 1 for 83% (5/6; VRDN-001) vs. 0% (placebo) at 6 weeks and was maintained for 80% (4/5) at 12 weeks. Mean reduction in CAS was 4.3 (VRDN-001) vs. 1.5 (placebo) at 6 weeks and remained consistent for VRDN-001 at 12 weeks (4.2). Of the 4 VRDN-001 patients with diplopia, complete resolution occurred for 3 by 6 weeks and all by 12 weeks. AEs were mostly mild, with no severe or serious AEs reported.
Conclusion: Two infusions of 10 mg/kg VRDN-001 were well tolerated in this cohort of TED patients. The rapid, clinically meaningful improvement across all efficacy measures by 6 weeks was sustained through 12 weeks. These results were achieved with a lower dose and fewer treatments than in prior RCTs of other anti-IGF-1R antibodies.

RF05-2

Optic nerve head vascular changes and optic neuropathy in carriers of LHON-causing mitochondrial mutations

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Purpose: In LHON the incitement to vision loss is not fully understood, as many carriers of the associated mitochondrial mutations do not manifest vision loss. Optic nerve blood supply may have a role.
Method: A group of LHON-affected, and their asymptomatic maternal relatives underwent examination including testing of visual acuity and visual-evoked-potential testing, and optic nerve imaging including optic coherence tomography angiography.
A control sample was used to derive a normal confidence interval (CI) for perpipapillary vessel density (VD), using the software imagej to derive VD and R to analyse data.
Results: We included four LHON-affected patients (four males, median age 21, interquartile range (IQR) 17-31), eleven asymptomatic carrier relatives (ten females, median age 56, IQR 45-63), and ten controls with normal eyes (seven females, median age 48, IQR 37-56). The normal 95% CI for peripapillary VD was found to be 6.7-16.7% (n=20 eyes).
Of the LHON-affected (n=6 eyes), one eye had reduced VD at 4.1%, and of the asymptomatic relatives (n=19 eyes), three eyes had reduced VD at 6% in each eye. Raised VD was found unilaterally in two asymptomatic relatives, at 17%, one of whom also had reduced VD in the contralateral eye.
In those eyes with reduced peripapillary VD, visual acuity was variable. In the LHON-affected individual and one of the asymptomatic carriers, VA was reduced to 1.6 LogMAR and 2.4 LogMAR respectively, and in the other asymptomatic carriers, VA was normal at 0.0 LogMAR. In these asymptomatic carriers with normal VA but reduced VD, VEP was prolonged in one carrier to 130 milliseconds.
Conclusion: Reduced peripapillary vessel density may be observed to a variable extent in those affected by LHON and also in their asymptomatic relatives, where it can be associated with signs of optic neuropathy, even in the absence of visual acuity reduction.

RF05-3

The incidence and prognosis of asymptomatic Idiopathic Intracranial Hypertension (IIH) diagnosis at the Ottawa Hospital

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Purpose: A subset of patients with IIH are asymptomatic and do not present with symptoms of increased ICP. The objective of this study is to understand if incidental IIH diagnoses is a predictor for better outcomes from a symptomatic and visual outcome perspective.
Methods: This is a retrospective chart review of all patients who received a diagnosis of IIH at the Eye Institute between the dates of 31-Aug-2000 and 31-08-2022. The demographics data, referring health care professional, visual symptoms, systematic symptoms, visual signs, visual fields data, OCT RNFL data, GCIPL data, and neuroimaging findings were collected. Descriptive statistics were performed.

Results: A total of 189 patients with a diagnosis of IIH were included in the study. The mean age is 35.0 ± 12.6 years with a F:M ratio of 11:1. The proportion of incidental asymptomatic IIH patients referred to the Eye Institute was 27.2% of all patients referred for IIH.

Out of all the asymptomatic patients, 29.4% became symptomatic and the average time to become symptomatic was 2.5 ± 2.1 months with 76.5% of them requiring medical treatment and none requiring surgical intervention. Of the asymptomatic patients, 53.9% received a lumbar puncture (LP) and of those 88.9% were subsequently medically treated.

Among those who did not receive an LP, 37.5% were medically treated. In terms of neuroimagining findings, 82.4% of the asymptomatic patients and 81.6% of the symptomatic patients had high ICP features. Of those who received a LP, 88.9% had findings of high ICP and 87.5% of those who did not receive a LP had high findings of high ICP.

Conclusions: The results of this study demonstrate that the disease course for asymptomatic IIH patients can vary. Patients with IIH present with optic disc swelling and tend to have high ICP features similar to their symptomatic counterparts, but respond better to medical treatment symptomatically and perform better on ophthalmological testing.

RF05-4

Pseudotumor cerebri and Chiari type I malformation – what is the link between these entities?

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Purpose: Pseudotumor cerebri (PTC) is a syndrome of increased intracranial pressure and normal cerebrospinal fluid. Chiari I Malformation (CM) is characterized by caudal displacement of cerebellar tonsils across the foramen magnum. Distinguishing between CM with papilledema and PTC is challenging due to common symptoms. Although CM and PTC coexistence has been reported, it remains controversial whether one entity predisposes to the other.

The aim of this study is to report different clinical cases and discuss this association along with probable triggering mechanisms.

Method: First clinical case refers to an obese 42-year-old man with smoking habits and obstructive sleep apnea, with 1-year history of headache and visual obscuration. Visual acuity (VA) was 20/20 bilaterally and bilateral asymmetric papilledema was observed. Second clinical case refers to an obese 47-year-old woman with 3-month history of intense occipital headache with physical effort, pulsatile tinnitus and bilateral visual obscuration with no diplopia or unsteadiness. VA was 20/20 bilaterally and bilateral florid papilledema was observed.

Results: Motility, ocular pressure and slit-lamp examinations were unremarkable in both cases and visual field testing was performed. Brain magnetic resonance disclosed, in both cases, CM with 7-mm tonsillar herniation.Venous sinus (VS) thrombosis was excluded, however in case 2 a dominant transverse VS stenosis was reported. Treatment in case 1 included acetazolamide and topiramate intake, and ventriculoperitoneal shunt implantation in case 2, showing symptomatic improvement.

Conclusion: PTC and CM may coexist. In the context of these cases, we suggest that PTC may work as an aggravating factor of a previously undetected CM. PTC risk factors were identified and symptom exacerbation triggered imaging investigation. Treatment choice in these cases was focused on PTC as a primary approach, once it may potentiate the damage caused by CM.

RF05-5

Mitochondrial dysfunction in Autosomal Dominant Optic Atrophy (ADOA) assessed in FALCON, a non-interventional, natural history study

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ADOA is the most common inherited neuro-ophthalmic disorder. Patients typically present in the first decade of life and up to 46% of patients progress to be legally blind. Up to 90% of ADOA cases are caused by a heterozygous mutation in the nuclear gene *OPA1*, often leading to OPA1 protein haploinsufficiency. Reduced OPA1 protein levels are associated with impaired mitochondrial function in retinal ganglion cells leading to apoptosis causing progressive and irreversible vision loss. The natural history of visual neurodegeneration in ADOA is understudied.

FALCON, STK-002-OA-901, is a multicenter, prospective natural history study of patients with ADOA who are ≥8 to ≤60 years old and have confirmed heterozygous*OPA1* gene variant. The study includes approximately 45 patients (~15 (8-17 years), ~20 (18-40 years), and ~10 (41-60 years)) and is comprised of clinical and ocular assessments, including retinal flavoprotein fluorescence (FPF) as measured by the Ocumet Beacon, at baseline, 6, 12, 18, and 24 months.

Mitochondrial dysfunction is well-established to be present in many ocular diseases but has not been studied in vivo in ADOA. In the presence of retinal oxidative stress, mitochondrialflavoproteins, when stimulated by blue light, display increased fluorescence measured as emitted green light. The Beacon leverages this phenomenon by quantitating this green light emission, generating an FPF score. FPF, therefore, functions as a biomarker of mitochondrial dysfunction in vivo and may be a measure of treatment response.

We present our initial baseline Beacon data from FALCON to establish a baseline in ADOA and the natural history of FPF over time. We will report FPF scores as well as correlations with measured visual parameters. FPF may add to current diagnostic tools for earlier detection of mitochondrial dysfunction and may help to inform future clinical studies of ADOA.

RF05-6

Visual dysfunction in relation to cobalt toxicity in mouse model

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Purpose: Exposure to cobalt may results in toxic effects. The aim of the study was to explore the pathophysiology of cobalt toxicity related visual impairment.
Methods: 104 wild type mice (WT, C57Bl6) were injected with cobalt-chloride in 3 different routes:single intravenous (IV) injection (high, medium, and low concentrations); single intravitreal (IVT) injection, or daily repeated intraperitoneal (IP) injections (high dose/3 days, medium dose/14 days, and low dose/55 days). Immunodeficient transgenic NOD SCID Gamma mice (NSG, n=13), were also injected IVT or IP, euthanized after 7d or 3d, respectively. WT IP injected mice underwent repeated ERG examinations.
Macroscopic, histological, immunohistochemistry, and apoptosis staining were performed for eyes and brain. Cobalt levels were measured in the blood, urine and tears by particle induced x-ray emission analysis (PIXE). IVT injected mice underwent magnetic resonance imaging (MRI) which was performed after 7 and 14 days of cobalt injection.
Results: IV injection of cobalt in high/medium concentrations was lethal in all 8 mice. Low concentration IV injections were tolerated. PIXE results showed complete cobalt elimination from the blood by 2 hours. ERG records showed decreased b-wave amplitude. Apoptosis involved all retinal layers, but mainly the ONL. There was thinning of the retina, with preservation of RGCs. The inflammatory reaction was mainly microglial affecting mainly the INL. Histological and immunohistochemistry analysis showed intensive activation of microglia in the dura and optic nerves as well. IVT injection induced decreased signal intensity in the optic nerve on MRI.
Conclusions: Our study demonstrated extensive involvement of the retina and optic nerves in cobalt induced toxicity, the later was also demonstrated on MRI. It also caused severe cerebral inflammatory reaction. ERG demonstrated post-synaptic dysfunction. High levels of cobalt detected in the blood are associated with optic neuritis.

RAPID FIRE PRESENTATIONS
RF06: Cornea

RF06-1

Evaluation of keratoconus with the ophthalmometric slit lamp

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Purpose: The surfaces of the cornea, its thickness and refraction can be evaluated with tomographic devices. We investigated whether corneal geometry can be characterized quantitatively by the slit lamp and also compare our findings to changes in biomicroscopy.
Methods: In 20 eyes with keratoconus and 20 normal eyes we carried out the tick test, which indicates tilt between the two corneal surfaces (A small light source projects obliquely at the level of the corneal equator onto the patient's eye. The tick sign is positive if - under slit lamp observation - the 2. Purkinje reflex veers downwards at least 0.2 mm). Also we looked for the presence of iron lines or Vogt's striae.
Furthermore in 33 eyes with keratoconus central corneal thickness was calculated from the visible width (w) of an 45° optical section through the pupil center and correlated to pachymetric measurements (m).
Finally the central corneal curvature was calculated from the size of the 1st Purkinje image of a stripe-figure with 4.5 mm width projected at a distance of 6 cm onto the pupil centre.
Results: Mean P2-deviation in the keratoconus group was much higher with 0.29 ± 0.12 mm than in the control group with 0.04 ± 0.03 mm ($p < 0.001$). In the keratoconus group the tick sign was present in 17 eyes while iron lines were present in 6 eyes and Vogt's striae in 5 eyes. Linear regression revealed the following formula for corneal pachymetry with the slit lamp: $m = 1{,}75\ w$ ($R^2 = 0{,}9977$). The size of the 1st Purkinje image could also be determined when the figures of Javal's ophthalmometer are too much distorted to be evaluated.
Conclusion: Few ophthalmologists are aware that - before the era of biomicrocopy - Allvar Gullstrand invented the slit lamp for ophthalmometric purposes. In keratoconus patients the renaissance of this original concept enables the general ophthalmologist without access to corneal tomography to carry out follow up examinations based on quantitative data collected with the slit lamp only.

RF06-2

Characterization of corneal topography in pediatric patients with keratoconus

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Purpose: Keratoconus is an ectatic and progressive corneal disease, usually more aggressive in children. The current study aims to describe a pediatric sample with keratoconus regarding demographic, clinical, refractive, and topographic characteristics.
Method: This retrospective study included all consecutive pediatric patients diagnosed with keratoconus between 2013 and 2021. Eyes that had undergone previous ophthalmic surgery, with history of infective keratitis or active inflammation were excluded. We evaluated clinical (pathological and family history), visual, refractive and topographic data obtained at the time of diagnosis of keratoconus. Topographic evaluation was performed with Pentacam HR (Oculus Optikgerate, Germany). The keratoconus stage was obtained using the Amsler-Krumeich classification.
Results: Forty-six eyes from 29 patients with keratoconus were included, with a mean age of 14,9 ± 1,8 years, with bilateral disease in 17 (58,6%) patients. Most eyes (58,7%) were in stage I keratoconus, while only 4,3% were in stage IV. Atopic/allergic disease was found in 31,0% of patients, but it was not associated with disease severity (p>0,05).
The variables age, sex and family history of disease were not statistically associated with any parameter (p>0,05). The nipple phenotype had the worst results in multiple parameters (p<0,05).
Conclusion: To prevent the progression of keratoconus in pediatric population, it is crucial to perform the timely treatment of atopic/allergic disease. The results for our cohort are similar in most parameters to those of other studies. However, more studies with bigger cohorts are required to better understand the particularities of the corneal topography and the specific characteristics of keratoconus in this age group, in order to more effectively diagnose and treat keratoconus and associated pathologies.

RF06-3

Biomechanical characteristics in atopic children without keratoconus

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Purpose: To study early tomographic and biomechanical corneal changes in atopic children without keratoconus.
Method: Across-sectional study including atopic children and non-atopic controls was performed. A total of 76 eyes from 38 subjects were divided into 2 groups with respect to atopy status, including history of asthma, rhinitis and dermatitis (group 1 (atopic) n=38; group 2 (non-atopic) n=38). Parents answered a questionnaire on their children eye rubbing habits. Tomographic parameters of the cornea were measured through Scheimpflug tomography (Pentacam HR, Oculus, Wetzlar, Germany) and biomechanical evaluation was made using Corvis ST (Oculus, Wetzlar, Germany). Subsequent comparison between subgroups was made.
Results: Subgroups did not differ significantly in gender (group 1: 68.4% male; group 2: 63.15% male; p=0.629) and age (group 1: 15.26±2.3 years old; group 2: 15.31±2.29 years old; p=0.922). Eye rubbing was more prevalent in atopic children (84.2% vs 63.2%; p=0.037), who also exhibited a smaller refractive spherical equivalent (-0.19±1.49D vs -1.16±1.80D; p=0.012) and absolute refractive cylinder (0.30±0.74D vs 0.74±1.02D; p=0.038).
In regard to tomographic parameters, atopic children revealed smaller posterior surface astigmatism (0.34±0.10D *vs* 0.40±0.15D; p=0.032), higher keratoconus index (1.02±0.02 *vs* 1.01±0.02; p=0.021) and thinner minimum pachymetry (539.03±42.55µm *vs* 559.45±31.14µm; p=0.02), pachymetry at the corneal apex (544.18±41.93µm *vs*564.37±31.24µm; p=0.02) and pachymetry at the pupil center (542.89±42.12µm *vs* 563.39±21.11µm; p=0.019). Regarding corneal biomechanics, a higher CBI (0.395±0.28*vs* 0.22±0.20; p=0.003) was observed in atopic children.
Conclusion: Atopic children reported more frequent rubbing habits. In children of comparable age, concomitant atopic disease appears to relate to thinner and less rigid corneas. Atopy in children may increase the susceptibility to the spectrum of corneal ectatic disease, namely keratoconus.

RF06-4

Corneal stroma densitometry evolution in a clinical model of cellular therapy for advanced keratoconus

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Purpose: To report the corneal stromal densitometry (CD) evolution studied by Scheimpflug tomography, anterior segment optical coherence tomography (AS-OCT), and confocal microscopy changes, in keratoconus patients included in a clinical experience of advanced cell therapy using autologous humans adipose-derived adult stem cells (ADASCs), and corneal decellularized or ADASCs-recellularized human donor corneal laminas in advanced keratoconus.
Setting: Division of Ophthalmology, Miguel Hernandez University, Alicante-Spain. Vissum Instituto Oftalmologico (grupo Miranza), Alicante- Spain. Lebanese University, Doctoral School of Sciences and Technology, Haddath-Lebanon. And Optica General, Saida-Lebanon.
Methods: Interventional prospective, consecutive, randomized, comparative series of cases. Fourteen keratoconic patients were randomly distributed into three groups for three types of surgical interventions: group 1 (G-1), autologous ADASCs implantation (n=5); group 2 (G-2), decellularized human corneal stroma (n=5); and, group 3 (G-3), autologous ADASCs + decellularized human corneal stroma (n=4). Participants were assessed with Scheimpflug-based Oculus Pentacam CD module, AS-OCT (Visante, Carl Zeiss), and confocal microscopy (HRT3 RCM Heidelberg).
Results: The central and total CD were statistically significantly higher in G-2 compared with G-1, and G-3 compared with G-1 at the studied annular zones centered on the corneal apex (0-2mm, 2-6mm, and 6-10mm). There was statistical significance higher in G-3 compared with G-2 at the central corneal stroma at (0-2mm, 2-6mm). The confocal microscopy findings, as well as the AS-OCT reflected the densitometry changes.
Conclusions: The intrastromal implantation of ADASCs produced very subtle changes in CD at the level of the central corneal stroma. However, the intrastromal implantation of decellularized corneal laminas increases it slightly, but with lower values than the implantation of recellularized laminas with ADASCs.

RF06-5

Examination of corneal stromal regeneration by immunofluorescence after Keratoconus treatment

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Purpose: To examine both the patient's cornea and the implanted lenticule with the immunofluorescence method after the lenticule was implanted with a SMILE in a patient with Keratoconus.
Methods: Forty-five eyes with advanced KC indicated for corneal transplantation were included in this study. Fresh myopic lenticular implants were placed in all eyes with SMILE surgery. After two and three years of surgery, small pieces of both the patient's cornea and the implanted lenticule were removed from the normal corneal stroma, untreated KC, and treated KC. These samples were examined and compared by immunofluorescence.
Results: The fragments were analyzed by the immunofluorescence method. Well-organized parallel layered structures were seen in all samples taken, and healthy keratocytes and regenerative cells and stem cells, and telocytes were observed.
Conclusion: Fresh myopic intrastromal lenticular implantation is a safe, reliable technique that leads to increased corneal thickness, improved visual acuity, and the regeneration of healthy keratocytes and telocytes, and it contains stem cells and telocytes that are involved in stromal regeneration.
ClinicalTrials.gov Identifier: NCT04591587

RF06-6

Diabetic corneal neuropathy and nephropathy, in patients with and without peripheral neuropathy: a systematic review and meta-analysis

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Purpose: The aim of the current study was to evaluate corneal microstructural changes and nephropathy in patients with diabetic peripheral neuropathy (DPN+) and without (DPN-) in each of Type 1 (T1DM) and Type 2 diabetes (T2DM).
Method: A systematic review of studies that quantified corneal sub-basal nerve parameters using laser scanning*in vivo* corneal confocal microscopy (CCM) and DPN+ in those with diabetes was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. CCM parameters examined were corneal nerve fibre density (NFD), nerve branch density (NBD) and nerve fibre length (NFL). Meta-analysis was done in RevMan 5.4.
Results: 49 studies met inclusion criteria- 20 were included in this meta-analysis (11 for T1DM, 9 for T2DM) with further data pending from 29 studies. This comprised 999 patients T1DM (314,313,372; DPN+,DPN-,controls) and 913 with T2DM (455,265,193; DPN+,DPN-,controls). Compared to T2DM, T1DM patients had larger differences in NFD (8.37±1.18 vs 3.50±0.61), NBD (9.86±1.63 vs 2.44±0.92) and NFL (4.15±0.34 vs 1.65±0.18) between DPN+ and DPN- groups. T1DM patients also had larger differences than T2DM patients in NBD (-17.49±3.60 vs -3.46±0.77) and NFL (-3.40±0.76 vs -2.77±0.29) between DPN- and controls, but insignificant difference, in NFD (-5.48±1.15 vs 5.56±1.31). eGFR was not significantly different between DPN+ and DPN- in T1DM (p=0.06) and T2DM (p=0.50). When comparing DPN- to controls, eGFR was reduced by 4.27ml/min (p=0.02) in T2DM.
Conclusion: Corneal sub-basal nerve changes and nephropathy precede peripheral neuropathy in both T1DM and T2DM but more in T1DM. In the presence of peripheral neuropathy, corneal neuropathy is associated with nephropathy more in patients with type 2 than type 1 diabetes.
Future studies should refrain from grouping patients of different diabetes types together. CCM may be useful for monitoring progression of diabetic neuropathy and nephropathy.

RF06-7

Correlation of corneal endothelial parameters with advanced glycation end products in diabetes mellitus patients

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Purpose: To analyze the association between advanced glycation end-products and corneal endothelial structural parameters in type 1 (T1D) and type 2 (T2D) diabetes mellitus patients.
Methods: 95 eyes (95 patients, 73.7% female, median age 65 years (49.0-71.5)) were included in this cross-sectional study. There were 50 patients without diabetic retinopathy (DR) (80% T2DM, median diabetes duration 15 years (8.0-25.0)) and 45 patients with DR (44.4% T2DM, median diabetes duration 25 years (18.0-31.0)). Corneal endothelial cell analysis was performed using Konan CellCheck20 specular microscope.
Images were processed in auto trace mode and quantified for cell density (CD), coefficient of variation (CV), hexagonality (HEX), pachymetry (Pachy).AGEs risk groups (0 - normal, 1 - mild, 2 - moderate, 3 - high) were determined using a skin autofluorescence AGE reader (Diagnoptics). Statistical analysis was performed using Rstudio: Wilcoxon, Kruskal-Wallis, Fisher, Chi square tests.
Results: Correlation was found between:
1. CD and patient age (r=-0.381), diabetes type (p=0.036) T1D median (Q1-Q3) CD=2747 (2502-2836) mm^2, T2D CD=2523 (2347-2667) mm^2;
2. CV and AGEs risk group (p=0.008);
3. Pachy and DR group (p=0.008).
There was no significant correlation between:
1) CD and AGEs risk group (p=0.052), diabetes duration (r=-0.002), albumin-to-creatinine ratio (ACR; r=-0.013), DR group (p=0.68);
2. CV and patient age (r=0.257), diabetes type (p=0.19), diabetes duration (r=0.13), ACR (r=0.14), DR group (p=0.42);
3. HEX and patient age (r=-0.11), AGEs risk group (p=0.58), diabetes type (p=0.26), diabetes duration (r=-0.15), ACR (r=-0.23), DR group (p=0. 39);
4. Pachy and patient age (r=-0.17), AGEs risk group (p=0.20), diabetes type (p=0.21), diabetes duration (r=0.18), ACR (r=0.03).
Conclusions: Quantitative evaluation of corneal endothelial cells and AGEs levels can be used as an non-invasive biomarkers of corneal and vascular health.

RAPID FIRE PRESENTATIONS
RF07: Paediatric Ophthalmology & Strabismus

RF07-1

Axial length, retinal vessel density and choroidal thickness of macula in myopic children

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The purpose of this study was to evaluate the associations between retinal vessel density and choroidal thickness of macula in pediatric myopic eyes, using OCT angiography correlation with axial length.
Methods: 96 eyes of 48 subjects with myopia and 40 eyes of 20 age-matched, emmetropic volunteers (control group) were enrolled in this study. Myopia was defined as spherical equivalent >-1.0 diopter. Emmetropic subjects were defined as having spherical equivalent from + 0.5 to − 0.5 diopter. The mean AL in myopic patients was 24.58 mm and 22.88 mm in the controls.
The patients aged 6–16 years who underwent complete ophthalmic examinations. Retinal vessel density and choroidal thickness of macula were measured SS-OCTA DRI triton (Topcon Tokyo Japan) as well. Ultrasound biometry performed to obtain the AL.
Result: The whole and parafovea RVD were significantly higher in controls than in the myopic subjects. Similarly, in this group the spherical equivalent also correlated with age, whole and parafovea RVD . Such correlations were not confirmed in the nonmyopic group. Statistical significant difference was found between AL and different measured areas revealing that CT tend to decrease as the AL increase except at central subfoveal line and superior outer ring. Statistical significant difference was found between SE and CT at different measured subfields except that of the temporal outer ring. Axial elongation becomes the dominant determinant of ChT in this age group.
In conclusion, we found a significant relation between axial length; choroidal thickness and retinal vessel density of macula in myopic children using SS-OCT. Our results suggest that superficial retinal vessel density is decreased in the entire group of the myopic children compared to emmetropic subjects. In children, increasing axial myopia was associated with choroidal thickness of macula.

RF07-2

Automatic measurement of strabismus angle using an innovative computerized prototype of the Strabiscan device for evaluating the angle of eye deviation in strabismic disease

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Purpose: The aim of the study was to compare the results of strabismus angle measurements made with the innovative automatic strabismus angle measurement device to the standard prismatic cover test. The gold standard for measuring strabismus angle is the prismatic cover test, which is a subjective test that requires experienced personnel to perform it, and often third persons (holding the child‘s head, holding an additional prism bar when measuring vertical deviations, or oblique deviations coexisting together with horizontal ones).
Methods: 41 subjects with manifest strabismus (esotropia n=13, exotropia n=28) were included in the study. All subjects completed a questionnaire on anthropometric data and medical history, and underwent ophthalmologic examination including: visual acuity assessment, refractive error assessment after cycloplegia, anterior and posterior ocular assessment with the use of slit lamp and indirect ophthalmoscopy, and measurement of ocular deviation in a prismatic cover test and using a prototype of an innovative device, the Strabiscan.
Results: There were no statistically significant differences in the obtained results of strabismic angle measurements between the methods used in the esotropia group or the exotropia group ($p>0.05$). In the above analysis, the results of both near and far measurements were evaluated. There were no significant differences in the assessment of discomfort during both research methods for patients, which they were asked in the survey after the end of the tests ($p>0.05$).
Conclusions: Measurement results with the prototype of the innovative strabismus angle device are comparable to traditionally used methods. The automatization of the measurement allows the objectivity of the result and minimizes the operation of the device to 1 person even without experience in strabology. This is a modern solution that can have applications in telemedicine.

RF07-3

Juvenile idiopathic arthritis associated uveitis (JIA-U): demographic and clinical predictors of ocular involvement and visual prognosis

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Purpose: To characterize a Portuguese population of patients with Juvenile Idiopathic Arthritis (JIA) and to evaluate possible associations between clinical factors and ocular involvement.
Design: Retrospective, observational cross-sectional study.
Method: Patients diagnosed with JIA in the previous 20 years in Hospital Garcia de Orta were included. Data were assessed from Reuma.pt database. Associations between demographic (age and sex), clinical (articular involvement, extra-articular manifestations, biological therapy), laboratory data (anti-nuclear antibodies, anti-CCP antibodies, rheumatoid factor, HLA-B27, c-reactive protein, erythrocyte sedimentation rate) and ocular involvement were assessed.
Statistical analysis was performed using Chi-square for categorical variables and Mann-Whitney test for continuous variables. P-value < 0.05 was considered statistically significant.
Results: 91 patients were included, 11 (12%) with previous episodes of uveitis. There was a statistically significant preponderance of early age at JIA diagnosis (mean 4.73 vs. 9.58 years, p-value=0.008), anti-nuclear antibodies positivity (p-value=0.01), and oligoarticular subtype (p-value=0.04) in the uveitis group. Ocular complications occurred in 36% of patients (n=4): cataracts (n=2), band keratopathy (n=1) and posterior synechiae (n=1).
The occurrence of complications was corelated with a shorter period between JIA diagnosis and the first JIA-U episode (mean 0.67 vs. 4.88 years, p=0.012) but not with age at JIA diagnosis or articular involvement. There was an erythrocyte sedimentation rate (ESR) elevation in the12 months before uveitis (mean 40.5 mm/hr, 13-83).
Conclusion: These results are concordant with literature. The occurrence of JIA-U shortly after JIA diagnosis was shown to be a potential risk factor for ocular complications. ESR could be a potential biomarker for JIA-U, but larger multicentric studies are needed to corroborate this finding.

RF07-4

Transposition surgery outcomes and effectiveness in correction of pattern deviations

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Purpose: The aim of this study is to compare surgery results before and after rectus transposition operations which were indicated due to pattern strabismus.
Method: The files of patients who had strabismus surgery between January 2021 and June 2022 were reviewed. 48 eyes of 38 patients with pattern esotropia or exotropia were included in this single center, retrospective study. The patients with systemic or ocular diseases other that refractive errors were excluded. The angle of deviations (AD) before surgery, postoperative one month and 6 months were noted. AD measurements were made while the patient's head were positioned in chin down, primary and chin up position. Successful outcome was defined as ocular alignment equal or under 10 prism diopters (PD) and also if the pattern deviation was corrected.
Results: The mean age of 38 patients (18 males,20 females) included in this study was 27,32±18,38 years. 32 of them had exotropia (84%) and 6 of them had esotropia while 28 (74%) of them had V pattern and 10 (26%) had A pattern deviation. The mean AD of the patients before surgery in superior gaze, primary position and inferior gaze were 42,63±14,18 PD; 32,42±12,66 PD and 22,95±15,98 PD, respectively. The mean AD after 6 months was 4,84±9,27 PD in primary position and the pattern deviations were corrected in 84,2% of cases. Most frequently performed operation was lateral rectus recession with supraposition (78,9%) for exotropia with V pattern. Only two of the cases with residual pattern deviations required reoperation.
Conclusion: Transposition of rectus muscles is an effective way for treatment of pattern deviations. While correcting the deviation in primary position, the ocular alignment in superior and inferior gaze can be effectively obtained.

RF07-5

Our experience with ocular trauma in pediatric population

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Introduction: Ocular trauma is very serious condition that could lead to vision loss and vision impairment in children. Currently there is no known study of pediatric ocular trauma in Bosnia and Herzegovina. Purpose is to study the epidemiology, mechanism, causes and outcome of serious ocular trauma requiring hospital admission at University Clinic Center Tuzla, in children below 16years of age.
Methods: Each file was studied to find out the demographic data, mechanism and cause of injury. The definitions and classifications of ocular trauma in our study were modified from the Ocular Trauma Classification Group guidelines and Birmingham Eye Trauma Terminology Presenting and final visual acuity were recorded along with details of anterior and posterior segment evaluation. All patients were followed up to 6 months.
Results: This study included a total of 37eyes from 37 patients. Most injuries occurred in boys while playing outside without parent supervision. There were differences between rural and urban children. Most of the injuries occurred in rural locations of Tuzla Canton.
Conclusion: We emphasize that in this major study of pediatric eye injuries in Bosnia and Herzegovina the majority of pediatric eye injuries were outside of the home and most of them were preventable. We believe strongly that is necessary to work more on health education, adult supervision and application of appropriate measures to reduce the incidence and severity of trauma.
This is the first study to provides a detailed insight into epidemiology and socio-economic characteristics of pediatric patients hospitalized for ocular injuries.

RF07-6

Subretinal abscess complicated by post-infectious retinal vasculitis following strabismus surgery: case report

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Purpose: To report a case of subretinal abscess after strabismus surgery, which was complicated by post-infectious retinal vasculitis after surgical management.
Methods: This was a case report of an 8-year-old patient who presented with ocular pain and conjunctival injection two days after undergoing bilateral medial rectus recession surgery. Dilated fundus examination under anesthesia demonstrated a subretinal abscess with associated endophthalmitis.
Results: Clinical improvement was noted following medial rectus suture removal, pars plana vitrectomy, and three series of intravitreal injections.
However, extensive perivascular sheathing manifested shortly after cessation of high-dose steroids. An extended taper of high-dose steroids was required to resolve the reactive vasculitis, in consultation with the pediatric endocrinology service. At final follow-up, the subretinal abscess had cleared and visual acuity in the affected eye was 20/20.
Discussion: This represents the first report of acute retinal vasculitis following withdrawal of systemic steroids after surgical treatment of a pediatric subretinal abscess. Subretinal abscess following strabismus surgery represents a rare but severe complication which is subject to further inflammatory sequelae after the infection has been cleared.
We recommend an aggressive multidisciplinary treatment based on the tenets of:
1. Early diagnosis,
2. Early suture removal and vitrectomy,
3. Early PICC line placement, and;
4. A slow steroid taper with close surveillance.
Based on this clinical episode, the surgical protocol at our institution has also been modified such that all needles are dipped in Betadine immediately prior to suture passage during strabismus surgery.

RF07-7

Holding tight: a case of traumatic strabismus

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Penetrating orbital injury is a serious but rare condition that can affect several anatomical structures, resulting in varied clinical situations such as strabismus.
When following trauma, it can occur through disinsertion or laceration of the extraocular muscles, cranial nerve disfunction, soft tissue swelling, but also because of muscle contusion or damage to surrounding tissues causing mechanical restriction.
We present a case of a healthy 50-year-old man that comes to the emergency department the day after penetrating left orbital trauma. On our observation he showed a divergent strabismus with a left exotropia and limited adduction of that eye, referring worst diplopia with dextroversion. Anterior segment and fundoscopy were normal. The patient underwent a CT scan of the head and orbits and MRI, revealing a blow-out fracture of the internal orbital wall affecting left lamina papyracea, with protruding postseptal fat in the middle ethmoid cells originating retraction of the medial rectus, and a large periorbital hematoma.
The patient underwent surgery the week after. Forced Duction Test showed restriction in adduction, and then we were surprised by the absence of initial presumed internal rectus rupture. Instead, we found numerous adhesions next to the referred muscle that were causing mechanical restriction with a probable inverted leash machanism. Those adhesions were then released.
On the day after he presented improvement of diplopia and left eye exotropia. Unfortunately, he never showed up to any following appointments. The treatment of orbital trauma can be a surgical challenge since the usual anatomy is usually distorted and with associated hemorrhages, fat prolapse and soft tissue fibrosis, which in this case was evident at an early stage with secondary intention healing.
A careful examination should always be done to rule out associated injury and prompt surgery should be then taken to get the best postoperative results and less complications.

RAPID FIRE PRESENTATIONS
RF08: Cornea, External Eye

RF08-1

Surgical outcomes of the artificial endothelial layer "Endoart®" implantation, in patients with chronic corneal edema

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Purpose: To evaluate short term clinical safety and efficacy study of the EndoArt® implantation in patients with chronic corneal edema, which is a synthetic biocompatible artificial endothelial layer.
Methods: 17eyes of 17patients with chronic corneal edema , 14 pseudophakic bullous keratopathy and 1 Fuchs disease, received EndoArt® implantation in three different clinics.Central corneal thickness, change in best corrected distance visual acuity (BCDVA) from baseline, and complications were assessed and analyzed in6-9months postoperatively.
Results: 17eyes showed marked reduction in CCT measured by anterior segment OCT (mean 246μm) improvement of BCVA (mean 0.11).Complications include implant graft decentration, detachment, pain due to transient IOP elevation, conjunctival hyperemia.
Conclusion: The EndoArt® demonstratingsimplicity of the surgical procedure, while exhibiting corneal thickness and pain reduction, and improved VA over time. Although no severe adverse events were observed, further studies should be conducted to investigate the safety and efficacy of the novel device.

RF08-2

Deep anterior lamellar keratoplasty versus penetrating keratoplasty for macular corneal dystrophy

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Purpose: To compare the postoperative outcomes of deep anterior lamellar keratoplasty (DALK) and penetrating keratoplasty (PKP) for macular corneal dystrophy (MCD).
Methods: A Single-center, retrospective, interventional case series. A chart review was performed of 100 patients (157 eyes) who underwent primary DALK (DALK group) and PKP (PKP group) for histopathologically confirmed MCD for whom at least 12 months of follow-up was available. Between-group comparisons were performed of visual acuity (VA), graft survival, and postoperative complications.
Results: There were 22 eyes in the DALK group and 135 in the PKP group. The mean postoperative follow-up was 7.2 ± 6.20 years for the DALK group and 9.7 ± 4.1 years for the PKP group. Postoperative best-corrected visual acuity (BCVA) of 20/40 or better was achieved in 90.9% of the DALK group and 76.3% of the PKP group (P=0.12). At last visit, graft survival was 95.5% (21 eyes) and 91.1% (123 eyes) in DALK and PKP groups, respectively (P=0.69, log-rank test). Corneal graft rejection episodes occurred in 1 (4.5%) DALK graft and 19 (14.1%) PKP grafts. Microbial keratitis and cataract occurred in 6 (4.5%) and 15 (11.1%) PKP eyes. One (4.5%) eye in the DALK group had cataract and none of the DALK cases developed microbial keratitis. Clinically significant recurrence was observed in 4 (2.9%) PKP eyes and 1 (4.5%) DALK eye (P=0.69), respectively.
Conclusion: DALK is a viable option for MCD without Descemet membrane involvement. DALK had comparable medium-term visual and survival outcomes to PKP. DALK has the advantage of lower open sky intraoperative complications and lower graft rejection episodes.

RF08-3

Successful treatment of myopic lenticular implantation by changing the corneal Q value, using the Smile module in patients with high hyperopia and astigmatism

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Purpose: To show that allogeneic lenticular implants removed by Smile surgery from patients with myopic refractive error in the cornea were implanted in high hyperopia patients with high astigmatism, changing the shape of the cornea (Q value), increasing visual acuity, intermediate and near vision, and decreasing high astigmatism.
Methods: Forty eyes of 30 patients between the ages 20 to 50 with and corneal thickness minimum of 450 μm and a maximum of 550 μm were included in this study. Fresh corneal lenticular implantation as an allogenic implant that we took from myopic patients (-4.50 D) to implant in hyperopic patients (+4.0 D to +6.50, astigmatism between +1.0 D and +3.0) according to Corneal corneal topography. The stromal pocket diameter was 8 mm, 2 mm super incision, and 130-μm cap thickness
Results: After the myopic lenticular implantation, patients were followed for 1 year the uncorrected distance visual acuity increased from 0.70 ± 0.08 logMAR preoperatively to 0.04 ± 0.02 [0.05–0.1] logMAR at 12 months postoperatively ($p < 0.001$).Qvalue decreased from − 0.50 ± 0.04 preoperatively to − 0.78 ± 0.05 1 year postoperatively. Preoperative UNVA (35 cm) J6 and postoperative UNVA (35 cm) J2.Preoperative UNVA (70 cm) J5 and postoperative UNVA (70 cm) J3.
Conclusion: Intrastromal myopic lenticular implantation is a safe and effective treatment method in patients with high hyperopia and astigmatism. Patients were an increase in distance visual acuity, intermediate and near vision.
ClinicalTrials.gov Identifier: NCT04616144

RF08-4

Corneal endothelial cell therapy from the transition zone

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Purpose: In vitro expansion of corneal endothelial cells (CEC) is a promising alternative to donor tissue for corneal endothelial regeneration. The objective of this study was to direct the differentiation of transition zone (TZ) cells into CECs.
Method: TZ cells were cultured and characterised by protein and gene expression of pluripotent stem cell, neural crest cell, periocular mesenchyme and CEC markers. TZ cells were treated with 8 different media to drive their differentiation into CECs. Assessments include morphology, protein expression levels of stem cell and CEC markers, and protein by immunohistochemistry.
Results: TZ cells expressed low-medium levels of neural crest and periocular mesenchyme genes, and medium-high levels of CEC genes. The combination of Y-27632 and SB431542 produced maximum morphological change towards a CEC phenotype, followed by Y-27632 alone, SB431542 alone, and Y-27632 and DKK-2.
Some treatments increased the expression level of CEC markers and reduced the expression of neural crest marker as expected. Protein levels of CEC markers ZO-1, Na+/K+ ATPase and CD166 were maximally increased by 3 combination treatments (Y- 27632 + SB431542, H-1152 + SB431542, H-1152 + DKK-2). Protein expression of the neural crest stem cell marker Nestin was decreased by 3 groups (Y-27732 + SB431542, SB431542, and H-1152). ZO-1 and Na+/K+ ATPase were localised to the cytoplasm in all groups.
Conclusion: TZ cells have the potential to be a source of cells for CEC cell therapy. The combination treatment with ROCK inhibitor Y-27632 and TGF-β inhibitor SB431542 seems to be the most promising in driving the differentiation of TZ cells into a CEC-like phenotype.

RF08-5

Evaluation of acanthamoeba keratitis cases in the West of Scotland: a 11 year study

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Purpose: To evaluate the characteristics of Acanthamoeba Keratitis (AK) over a 11-year period managed at a tertiary ophthalmological unit in the West of Scotland.
Methods: Data included clinical features, diagnostic tests, contact lens use, topical steroid use prior to diagnosis, treatments and clinical outcomes. Clinical stages were classified into epitheliopathy, epitheliopathy with radial keratitis, anterior stromal disease (stromal haze), deep stromal infiltrates and ring infiltrate.
Results: 67 eyes of 64 patients (3 bilateral infection) between January 2009 to December 2020 were analysed. Mean age at presentation was 40.2 ± 15.8 years (18–77 years). Contact lens use was in 59 of 67 eyes (86.8%). Symptoms at initial presentation were pain (58/65, 83.1%), photophobia (43/65, 64.6%) and subjective decreased vision (20/65, 30.8%).
At presentation, morphological findings were: epitheliopathy (22/67), stromal infiltrates (22/67), stromal haze (22/67), ring Infiltrate (14/67) and radial keratitis (9/67). Diagnosis was mainly confirmed with polymerase chain reaction (PCR) (53/65, 81.5%). Six eyes had co-infections with other microorganisms. Standard treatment was with dual therapy (biguanide and diamidine). Median time from symptom onset to initial visit was 6.2 (0–94) days. Median follow-up was 14.9 ±16.7 months (1- 74.3 months). Best corrected Visual Acuity (BCVA) improved in 46/62 (63.9%) eyes, remained unchanged in 5 eyes (16.7%) and deteriorated in 11/62 (19.4%) eyes.
Conclusion: PCR was the main diagnostic modality. Most diagnoses were made at the stage of epithelial or superficial stromal disease. This sub-group maintained or improved their BCVA. Those patients who presented at the stage of deep stromal or ring infiltrates had multiple surgical procedures and final BCVA of less than 6/60. PCR and high index of clinical suspicion was key to early diagnosis in this cohort.

RF08-6

Development and validation of scoring system for predicting fungal keratitis in patients with microbial keratitis using a nomogram: a 25-year retrospective data analysis

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Purpose: This study aimed to develop a fungal keratitis prediction score system that can predict fungal infection in microbial keratitis by nomogram.
Methods: We retrospectively analyzed microbiologically-proven bacterial keratitis (BK) and fungal keratitis (FK) among patients hospitalized with microbial keratitis from 1998 to 2022. The epidemiologic and predisposing factors and initial clinical characteristics were analyzed between the FK and BK group.
The entire group was divided into training and testing data subgroups at a ratio of 8:2; the training data were used to develop a nomogram and the testing data to validate the nomogram. The nomogram was created by performing multivariate logistic regression analysis on the training data, selecting significant factors for the FK group, and obtaining score values. The created nomogram was validated through ROC curve and calibration plots.
Results: Of the total 560 eyes, 134 eyes were FK and 426 were BK. The variables finally included in the nomogram and their scores were age (40-59 years: 65.68, ≥70: 86.01), symptom duration (4-7 days: 23.14, 8-21: 81.64, ≥22: 100), water exposure (55.30), vegetative matter trauma (56.01), previous topical steroid use (35.13), irregular margin (66.17), and feathery-like margin (86.76).
In the ROC curve of the constructed nomogram, the area under the ROC curve was 0.8287 in training data and 0.8148 in testing data. Based on the training data, the optimal cut-off point for predicting the FK group was set at 231.33 points, and the accuracy, sensitivity, and specificity were 81.45%, 47.66%, and 92.08%, respectively. In the calibration plot, the coefficient of determination showed an appropriate value of 0.9645 in training data and 0.8733 in testing data.
Conclusions: The model using the nomogram prediction for FK group showed good predictive power and high accuracy. In clinical practice, this scoring system can help predict the likelihood of fungal keratitis in microbial keratitis.

RF08-7

In vitro evaluation of the antimicrobial activity of antiseptics against clinical *Acinetobacter baumannii* strains isolated from combat wounds of the eye and eyelids

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Health care-associated infections (HCAIs) are among the most prominent medical problems around the world. In the context of increasing antibiotic resistance globally, the use of antiseptics as the main active agent and potentiator of antibiotics for the treatment of purulent-inflammatory complications of traumatic wounds, burns, surgical wounds can be considered to tackle opportunistic infections and their prevention during war.

Purpose: This study presents a comparative investigation of the antimicrobial efficacy of antiseptics used for surgical antisepsis and antiseptic treatment of skin, mucous membranes and wounds against multidrug-resistant clinical isolates of*Acinetobacter baumannii* as a wound pathogen of critical priority (according to the WHO).

Methods: Clinical strains of*A.baumannii* (n=42) were isolated from patients with infectious complications of combat burn wounds of eye and eyelids, received during war conflict in Ukraine. The activity of antiseptics was determined using double serial dilutions against clinical antibiotic-resistant strains (42 isolates, 74%) determined by the disc diffusion method.

Results: The highest activity against clinical strains of *A.baumannii* among the studied antiseptics was found in decamethoxine (0.1% and 0.02%) and octenidine (0.1%)It was found thatstrains of *A.baumannii*, which have natural and acquired resistance to antimicrobial drugs, remain susceptible to modern antiseptics. Antiseptic drugs based on decamethoxine, chlorhexidine, octenidine, polyhexanide, povidone-iodine 10% and 2% provide effective bactericidal activity against*A. baumannii* within the working concentrations of these drugs.

Conclusion: Modern surfactant-active antiseptics (decamethoxine, chlorhexidine, octenidine, polyhexanide) povidone-iodine (10%, 2%) provide effective antimicrobial activity against planktonic multidrug-resistant *A. baumannii* clinical strains colonizing combat wounds and burns.

RAPID FIRE PRESENTATIONS
RF09: Oculoplastics

RF09-2

Clinical outcomes of mixed injection of steroid and botulinum neurotoxin A in the upper eyelid retraction patients with Graves's ophthalmopathy

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Purpose: We aimed to find the clinical outcomes of mixed injection of steroid and botulinum neurotoxin A (BoNT-A) on the upper eyelids in the GO (Graves's ophthalmopathy) patients and to analyze the clinical factors according to the response after injection.

Method: 37 eyes from 23 patients were enrolled for upper eyelid retraction (UER) with GO. They were taken orbital computed tomography scan (CT) and measured the cross-section area of the orbit and each extra ocular muscle at the apex. A mixed injection consisted of triamcinolone (40mg/ml), dexamethasone (5mg/ml), 5-FU and BoNT-A (2.5 unit) 0.1cc each transconjunctivally.

After the injection, the photographs were analyzed based on MRD1, IPF and lid lag at down gaze by Image J program. And the patients were divided into two groups; Responders (decreased amount of MRD1 after injection was more than 1mm) versus Non-responders. Any side effects were monitored during the follow up (11.0±11.6months).

Results: After injection, CAS decreased from 3.0±0.8 to 1.4±0.5 and MRD1 decreased from 5.0±0.9mm to 4.5±1.3mm in the total patients. Responders accounted for 60.9% of the patients. The difference of IPF and MRD1 before and after injection were 0.60±1.1mm and 0.90±0.90mm in the responders, while that of IPF and MRD1 were -0.57±0.88mm and -0.15±0.75mm in non-responders. Pre-injection IPF and FT4 in the responders were significantly higher ($p<0.05$).

The cross-sectional area of EOM (153.5±18.0mm^2) and the lateral rectus muscle (37.6±9.7mm^2) were bigger in the responders than in non-responders(132.0±27.9mm^2, 29.8±8.1mm^2). At the last follow up, the treatment effect on IPF maintained as 1.2±3.4mm and on MRD1 as 1.2±3.4mm in the responders.

Conclusion: Mixed injection comprising steroid and BoNT-A would be effective, especially for the patients who is at the hyperthyroid condition and whose IPF is big. And increased EOM cross-sectional area on CT up to 150mm^2 could be another favorable indicator of mixed injection in UER with GO.

RF09-3

Ocular adnexal diseases treatment with botilium toxin in pandemic period

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Purpose: Botulinum toxin has a wide field of application in oculoplasty, which has proven to be very useful during the pandemic period. We describe our experience.
Methods: Retrospective study in 33 patients with ocular adnexal diseases treated with botulinum toxin in a single center during the years 2020-2021.
Results: We treated 6 blepharospasm, 4 eyelid myokimia, 10 non obstructive epiphora, 11 spastic entropion, 2 non flaccid facial palsies.
Mean age was 68 (range 45-92) and sex ratio was 17woman/16man. In all of them we used Allergan botulinum toxin A 50UI/ml, applied in office room. Dilution was made with 2ml of saline solution. A 30G needle, 1ml insulin syringe, 10% betadine solution and lidocain gel was all the equipment required. Each procedure required a different dose of toxin: blepharospasm (15UI/eye), eyelid myokimia (5 UI/eye), epiphora (5UI/eye), spastic entropion (10UI/eye), facial palsy (20UI/side).
The application of 5 IU of botulinum toxin to the lacrimal gland was the procedure with the highest number of complications, 7/10 patients presented ptosis for 4 weeks after application and one case a 2 week diplopia.
No other complications were reported in the other procedures. Patients were reviewed 48h after application and at 3 months. The mean duration of the effect was 3.7 months for all cases. Palpebral myokimia required only two applications of toxin, after which they remained asymptomatic for more than 6 months. The same occurred in 2 cases of spastic entropion.
Conclusion: Botulinum toxin makes it possible to treat patients on an outpatient basis, leaving the operating theatre slots for other kind of pathologies. Easy to master and apply in patients who do not desire surgery. It usually requires a new dose every 3-4 months, although in some cases a single application is enough.

RF09-5

Lower eyelid reconstruction – surgical approaches

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Purpose: The purpose of this study is to report the results of different surgical lower eyelid reconstruction techniques in cases with full-thickness defects as a result of tumor excision.
Methods: We conducted a retrospective study between 2018 and 2021, in the Ophthalmology Clinic of the Emergency Hospital"Sfantul Spiridon", Iasi. Forty-eight eyes from forty-eight patients aged 48 to 91 were included.
Lower eyelid tumors were resected and full thickness defects were treated as follows: cantholysis and direct suture (n=3), complex reconstructions such as Tenzel (n=9) and Hughes (n=15), combinations of advancement flaps with or without free skin grafts (n=21). Most of the cases were basal cell (n=36), or squamous cell carcinomas (n=5) , but two malignant melanoma cases were also reported.
Results: The follow up period was between one and three years. Two of the patients needed surgical reintervention and oncological evaluations for tumor recurrence. Postoperative complications requiring surgical reintervention were present in 7 of the 48 cases. The most common complication was flap necrosis; two of them were a result of the Hughes technique, one after a flap and graft reconstruction, and one after the use of free overlay grafts. Other complications were lagophthalmos and corneal ulcers, and one case of suture dehiscence after initial direct closure.
Conclusions: Choosing the optimal reconstruction technique in cases with large palpebral defects is difficult. During the pandemic, most patients preferred techniques requiring only one intervention; however, the Hughes technique was the most used due to its applicability in cases with very large defects. In our study tumor recurrence and complications rate was relatively low, with good esthetic and functional results. When possible, direct suture has the lowest rate of complications and the longest remission period, and the Tenzel technique is safer than the Hughes procedure when the correct indications are followed.

RAPID FIRE PRESENTATIONS
RF10: Electrophysiology, Retina

RF10-1

Evaluation of the eye in myopic adolescents by electrophysiological and structural tests

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Purpose: Even with 20/20 best corrected visual acuity(BCVA) structural and functional changes may occur in the retina and optic nerve depending on the refraction error in myopic adolescents. It was aimed to evaluate these changes with pattern electroretinography (pERG), optical coherence tomography (OCT), optical coherence tomography angiography (OCTA).
Methods: 100 eyes of 50 children (aged 10-18) without myopic degenerations were included in the study prospectively. All patients have a BCVA of 20/20 bilaterally. Patients were divided into 3 groups according to the cycloplegic refraction. Height, weight, blood pressure (BP), pulse, intraocular pressure (IOP), spherical equivalent, axial length were measured for all.
Retinal nerve fiber layer (RNFL), central macular, choroidal thicknesses were measured by OCT; vascular densities of superficial capillary plexus (SCP), deep capillary plexus (DCP), choriocapillaris, peripapillary capillary plexus were measured by OCTA. PERG measurement was performed. SPSS 21.0 was used for analysis, $p<0.05$ was accepted as significant.
Results: Age, height, weight, BP, pulse, IOP showed no difference between groups. P50 implicit time was longer and N95 amplitude was lower in myopic groups in PERG. No significant difference was found in P50 amplitudes. RNFL was found to be thinner in myopia except temporal quadrant. There was no difference in central macular thickness and choroidal thickness between the groups.
Significant loss of SCP and DCP were detected in myopic groups.No significant difference was found in the peripapillary plexus, except from the temporal quadrant. In addition to the literature a statistically significant positive correlation was found between deep retinal capillary plexus density and P50 amplitudes.
Conclusion: In axial myopic adolescents,changes in retinal vascular density and electroretinogram responses correlate with each other and begin before myopic degenerations and vision deteriorations. OCTA and ERG may be used in follow-up of myopia progression.

RF10-2

Improving the diagnostic ability of multifocal electroretinogram in macular telangiectasia type 2

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Purpose: In a previous study (Ledolter et al. 2022), the multifocal electroretinogram (mfERG) in patients with macular telangiectasia type2 (MacTel) showed inner retinal dysfunction in areas with MacTel-related retinal pathology. That analysis has now been extended to determine whether the sensitivity of mfERG can be increased by evaluating individual mfERG components including N2 as well as including analysis of the central mfERG hexagon.
Method: Thirty-five eyes of 18 patients with MacTel and 20 controls underwent mfERG. The scalar product (SP) was calculated for three mfERG components: N1, P1 and N2 for each of 103 mfERG responses. Optical coherence tomography (OCT) was performed. MfERG hexagons corresponding topographically to the retinal changes seen on OCT (MacTel area) were analyzed and compared to the corresponding hexagons in controls. A Wilcoxon test was used for statistical analysis. A bootstrapped area under the receiver operating characteristic (AUROC) was calculated to predict the groups.
Results: MfERG responses of the central 15° were analyzed. P1 and N2 of the central hexagon response (N52) and of the adjoining temporal (N51) and nasal (N53) hexagon responses showed the strongest difference in patients compared to controls. The greatest difference was observed in the central hexagon response (N52) ($p=0.001$ for both P1 and N2 and $p=0.01$ for N1). The central hexagon response (N52) had an AUC value of 0.86 for P1. Pooling P1+N2 did not further improve the AUC (0.84).
Conclusion: P1 and N2 components of the mfERG responses are more affected than the N1 component confirming inner retina involvement in MacTel (bipolar and ganglion cells) and to a lesser degree photoreceptor involvement. This supports the concept of Müller cell involvement in the disorder. The inclusion of analysis of the central mfERG responses improved the sensitivity of the mfERG to detect focal macular dysfunction in MacTel and confirms the value of mfERG as a biomarker in this disease.

RF10-3

Deep learning neural networks for the classification of retinal disorders using full-field electroretinography (ffERG)

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Purpose: Deep neural networks have recently been successful in tasks such as image classification using ophthalmological images, but there has been no studies thus far that have examined their use utilizing full-field electroretinograms (ffERGs) data. The objective of this study is to assess the diagnostic accuracy of a deep learning neural network in the detection and classification of disease using ffERG.

Methods: This is a retrospective chart review of the demographics, diagnosis and ERG classification of all patients who have received ffERG testing at our center between 01-Jan-2011 and 01-Aug-2021.
The study was divided into a detection phase (normal vs abnormal waveforms) and classification phase (diagnosis of pathologies). ffERG waveforms were extracted from the Espion Visual Electrophysiology System and preprocessed followed by min-max normalization of the data. A convolutional neural network (ResNet model) was used for time series classification using our custom dataset with 80% of scans allocated as training and 20% for validation.
Results: 1568 waveforms from 787 patients were included in the analysis, where the mean age was 43.5±22.1years with a F:M ratio of 1.5. 1073 of the waveforms were normal (68.4%),13 rod dysfunction (0.8%), 112 cone dysfunction (7.1%) and 369 rod-cone dysfunction (23.5%).
For the detection phase of the study, the deep learning ResNet model was able to detect normal from abnormal ffERG waveforms at an accuracy of 92.1% for training and 91.1% for validation. For the classification phase of the study the algorithm was able to differentiate between normal, rod dysfunction, cone dysfunction and rod-cone dysfunction at an accuracy of 89.7% for training and 88.1% validation.
Conclusions: Deep learning techniques show promise in detecting and classifying ffERG. The results of this study may one day be applied clinically to serve as an adjunctive tool to assist clinicians in the diagnosis of various retinal disorders using ffERG responses.

RF10-4

Full thickness macular hole and dry AMD: review of the pathogenesis and management through a case report with a 10-year follow-up

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Purpose: To ascertain the pathogenesis of macular hole (MH) associated with age-related macular degeneration (AMD) and its surgical outcomes.
Case presentation: A 77-year-old female presented with loss of vision in her left eye without any other symptoms. Best corrected visual acuity was 9/10 in her right eye and 5/10 in her left eye. Slit lamp examination revealed only early stages of nucleus cataract sclerosis in both eyes.
During fundoscopy we identified a full thickness macular hole in her left eye along with findings of early-intermediate AMD in both eyes. Optical Coherence Tomography (OCT) confirmed the diagnosis of a stage 2 with no posterior vitreous detachment full thickness macular hole (272μm).
Bilateral small drusen, reticular drusen and pigment abnormalities were also depicted on the OCT. From her past medical history the patient suffered from Hypertension and Sjogren syndrome. Patient underwent a 25-gauge pars plana vitrectomy with internal limiting membrane peel and tamponade with C3F8 gas.
One month after the surgery a type 1 closure of the macula hole was achieved, visual acuity increased to 8/10 and patient remained stable for 12 months. A progressive thinning of the intraretinal layers was observed in the upcoming follow-up visits due to degenerative phenomena.
After a 10-year follow-up with OCT images a degenerative lamellar macula hole has been produced and patients' visual acuity dropped at 1/10 in the left eye.
Conclusion: The pathogenetic mechanism of a full thickness macular hole plays a crucial role in the management of the disease especially when it is combined with AMD findings. Tractional macular holes produce better outcomes regarding post-surgical visual acuity and anatomical restructuring than degenerative macular holes. There are still no specific guidelines regarding the management of lamellar macular holes especially when macular degeneration co exists.

RF10-5

Central retinal artery occlusion after routine phacoemulsification: two cases report

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Case 1: A 59-year-old woman was diagnosed with central retinal artery occlusion (CRAO) on the third post-operative day, with left visual acuity of hand motion. Fundoscopy showed a pallor and resembled cherry-red spots at the macula. Fluorescein angiography was unremarkable and the spectral-domain optical coherence tomography (OCT) showed local thickening of the inner layers of the retina.
Magnetic resonance angiography (MRA) of the brain and neck exhibited atherosclerosis and stenosis of less than 50% of the internal carotid artery. After one month, the vision had a minor improvement to counting fingers, with fundoscopy exhibiting a pallor of the optic nerve and temporal retina, and thinning of temporal vessels.
Case 2: A 72-year-old woman presented with right visual acuity of counting fingers on the first post-operative day. Fundoscopy exhibited mild pallor of the retina. MRA of the brain and neck depicted the reduced flow of ophthalmic segments of the internal carotid artery due to atheromatosis and stenosis of less than 50%. Control OCT showed macular atrophy and ganglion cell loss.
Discussion: CRAO is an infrequent and dreadful complication of phacoemulsification cataract surgery. Although peribulbar anesthesia is considered safe, several cases of CRAO after ophthalmic procedures are described. Postulated pathogenesis includes a mechanical effect of the volume of the anesthetic, vasoconstriction caused by the aforementioned agent, and a rise in lOPs related to manipulation. Vascular occlusion or spasm could, in turn, culminate in different degrees of vision loss, depending on the extension of these events. In both cases, there was poor visual recovery and a similar finding of atheromatosis in the angiography exams.
Although this finding is commonly observed in older patients, it could be hypothesized that pre-existing tissue hypoperfusion could have been aggravated by increased intraorbital pressure.

RF10-7

Independent predictive factors of anatomical and functional success in rhegmatogenous retinal detachment

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Purpose: Rhegmatogenous retinal detachment (RRD) is a major cause of ocular morbidity and requires urgent treatment. Current surgical techniques provide high rates of anatomical success, but functional outcome remains uncertain. Here we attempt to identify factors associated with anatomical and functional outcomes in RRD surgery.
Methods: Retrospective, cohort study including 496 eyes from 496 patients submitted to RRD surgery from 2012 to 2017 in Hospital de Braga. Data included best corrected visual acuity (BCVA), macula status (on/off), presence of myopia (≤ -3 diopters); phakia status and previous RRD. Time to surgery, surgical technique, and deleterious factors (hemovitreous, macular hole and retinal dialysis) were also obtained. Anatomical success was defined as complete application of the retina at the end of follow-up. Functional success was defined as a BCVA<0.4 logMAR. All subjects were evaluated preoperatively and at 1, 3, 6 and 12 months postoperatively.
Results: Mean age at diagnosis was 61 years. Seventy-eight percent presented macula-off and 23% macula-on. Preoperative and 12 months BCVA was 2.0±1,2 and 0,2±0,4 logMAR, respectively. Isolated PPV was carried in 92% and median time to surgery was 4 days. Anatomical success was obtained in 87% and was associated with the presence of myopia. Functional success was observed in 64% and was negatively associated with the presence of deleterious factors. The presence of macula-off, ILM peeling, and silicone oil tamponade were associated with worse surgical outcomes. Preoperative CDVA and time to surgery revealed significative association as predictive factors in univariate analysis but not in the multivariate model.
Conclusion: The presence of certain clinical and surgical factors can be used to predict functional and surgical success in RRD surgery. Given its substantial visual morbidity, the definition of independent predictive factors for RRD surgical correction is fundamental for a personalized care.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Cataract

EP-CAT-01

To evaluate the clinical outcomes of diffractive type extended depth of focus multifocal IOL

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Purpose: To evaluate the clinical outcomes of diffractive multifocal extended depth of focus IOL (Artis symbiose, Crystalens)
Methods: 35 patients were underwent phacoemulsification and implanted with Artis symbiose (Crystalens, France). Uncorrected and corrected distant, intermediate and near visual acuity were measured at 2, 6 months postoperatively. Patient satisfaction for dysphotoptis and spectacle independence was assessed at 6 months postoperatiely.
Results: 92% of patients shows ncorrected distance visual acuity of 20/20 or better at 2, 6 months. Mean uncorrected intermediate and near visual acuity (UIVA) was 0.03 LogMar and 0.02 respectively. 2 patients had complaints about dysphotopsia about halo and starburst at nights.
Conclusion: Phacoemulsification with artis symbiose results in good visual outcomes for far, intermediate, near vision with low incidence of dysphtopsia.

EP-CAT-02

Extended depth of focus intraocular lenses implantation in patients with previous refractive laser surgery

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Purpose: To evaluate visual performance after bilateral implantation of two extended depth of focus (EDOF) intraocular lenses in patients who had a history of prior refractive laser surgery.
Setting: Smahliou Eye-Clinic, Athens, Greece.
Methods: This prospective study included 10 patients who had a previous laser vision correction and secondary underwent bilateral cataract surgery involving implantation of an EDOF IOL, either Tecnis Symfony (Johnson&Johnson Vision, USA), or Vivity (Alcon Laboratories, USA). Data collected included patient demographics, best corrected distance visual acuity (BCDVA), manifest refraction reported as spherical equivalent and steep and flat keratometric readings.
All patients were evaluated preoperatively and 1, 3 and 6 months, as well as 1, 2, and 3 years postoperatively. No intraoperative or postoperative complications were occurred.
Results: 20 eyesof 10 patients (6 females, 4 males) were evaluated from 6-36 months after EDOF IOL implantation. Mean age of patients was 63,27±5,62 years. Mean follow-up time was 24,10±11,34 months.
Postoperatively, 14 eyes (7 patients) were evaluated at 2 years and 10 eyes (5 patients) at our last follow up at 3 years. Mean BCDVA was improved significantly from 0,28±0,59 (SD) logarithm of minimum angle of resolution (logMAR) to 0,05±0,14 logMAR ($p<0,001$) 3 years postoperatively. Mean manifest spherical equivalent improved significantly from 1,64±3,26 D to -0,23±0,76 D at the 3rd postoperative year. Mean steep K and flat K keratometry readings did not show any statistically significant differences ($p>0,05$), compared preoperatively and at each postoperative exam period. 3 patients underwent YAG laser capsulotomy throughout our postoperative evaluation.
Conclusions: In conclusion, EDOF IOL implantation after corneal refractive surgery demonstrated effecrive refractive and visual outcomes in patients with a history of refractive surgery.
Financial disclosure: No author has a financial interest in any material or method mentioned in this study.

EP-CAT-05

Safety and efficiency of hydroimplantation of foldable intraocular lens

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Objective: To describe the safety and efficiency of implanting foldable intraocular lens (IOL) using a gauge 23 irrigating cannula without ophthalmic viscoelastic device (OVD).
Method & results: This is a retrospective study of 525 patients who underwent phacoemulsification surgery from January 2020 to January 2022 and were subsequently implanted with intraocular lens using the hydroimplantation technique. A gauge 23 irrigating cannula attached to the irrigating solution of the phacoemulsification machine is inserted through the side port and is used as a modified anterior chamber maintainer during intraocular lens implantation.
The irrigating cannula provides stability and is used to manipulate the intraocular lens during unfolding, rotation and placing the intraocular lens in the bag. The use of irrigating solution during intraocular lens implantation decreases surgical time and cost, reduces instrumentation and manipulation to remove ophthalmic viscoelastic devices behind the IOL.
There were no observed injury to the posterior capsule during the intraocular lens implantation and manipulation. The use of BSS during implantation reduces the risk of ophthalmic viscoelastic device related intraocular pressure spike after cataract surgery. The average time of cataract surgery is 4 minutes 37 seconds and mean intraocular pressure is 12.543mmHg.
Conclusion: The hydroimplantation technique is safe alternative to viscoelastic devices in implanting intraocular lenses in uncomplicated cataract surgery. It has advantages over the ophthalmic viscoelastic device assisted intraocular lens implantation in reduce surgical time, lesser cost, decrease manipulation and instrumentation lower risk of post cataract intraocular pressure spike.

EP-CAT-07

Quantification of droplet aerosol generation during phacoemulsification and pars plana vitrectomy

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Purpose: To quantify the number of droplet aerosols sized between 0.12-8.00µm that are generated during phacoemulsification cataract surgery in human cadaveric eyes, using 2.2mm and 2.75mm incisions, and if aerosol production is reduced by coating the corneal surface with hydroxypropyl methylcellulose (HPMC), and to quantify aerosol production during the different steps of 23-gauge pars plana vitrectomy.
Methods: A printed optical particle spectrometer (POPS) was used to measure droplet aerosol generation during surgery on human cadaveric eyes for phacoemulsification surgery with either 2.2mm or 2.75mm main incision; both with and without usage of HPMC and during various stages of 23-gauge pars plana vitrectomy.
Results: The maximum measured mean particle number concentration (PNC) without HPMC was 88/cm^3 which reduced to 66/ cm^3 with HPMC using 2.2mm corneal incisions (P<0.05). With 2.75mm corneal incisions the maximum measured mean PNC without HPMC was 493/cm^3 which reduced to 61/ cm^3 with HPMC (P<0.05). No droplet aerosol generation was detected during pars plana vitrectomy apart from during air infusion through a leaking trocar valve (mean PNC of 123/cm^3).
Conclusion: This is the first study to quantify size and number of droplet aerosol production during phacoemulsification and vitrectomy surgery in cadaveric human eyes. The amount of droplet aerosols produced during cataract surgery can be reduced by using a 2.2mm incision and using HPMC to coat the cornea. Droplet aerosols may be generated during vitrectomy surgery during air infusion, in the setting of a leaking trocar valve.

EP-CAT-08

The effects of music and television on intraoperative hypertension in cataract surgery: a prospective, randomized controlled trial

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Purpose: Patients undergoing ophthalmic surgery routinely experience anxiety and stress. Music has been shown to diminish anxiety for cataract surgery, but the role of television (TV) has not been examined. The aim of this study is to evaluate the effects of music versus TV on anxiety and hypertensive events in cataract surgery.
Methods: Patients undergoing cataract surgery were randomized to one of three groups: music (classical), TV (home improvement), or control (ambient noise) for 20 minutes prior to surgery. Blood pressure (BP), heart rate (HR), and anxiety level (Visual Analog Scale [VAS]) were measured before and 20 minutes after the start of the intervention. The incidence of intraoperative hypertensive events (IOE), defined as SBP ≥ 160 or DBP ≥ 100 with HR ≥ 85, was recorded.
Results: Of 409 total patients, 138 were randomized to the music arm, 133 to the TV arm, and 138 to the control arm. There were no significant differences in baseline characteristics between the three groups, with respect to age, sex, or pre-operative blood pressure. The music and TV groups had significantly lower anxiety levels (VAS) after the intervention compared to controls (p <0.05), with music showing the greatest decrease in VAS (Med=0, [IQR -2 to 0]).
No significant reduction in BP or HR was observed in either intervention group. Patients undergoing first-time cataract surgery in the music and TV groups had significantly less intraoperative hypertensive events than those in the control group (2 [2.4%] and 0 [0%] vs 6 [7.9%], p<0.05).
Conclusion: This is the first prospective, randomized study to examine the effects of listening to music, watching TV, and a control prior to cataract surgery. Each showed significantly decreased subjective anxiety levels in those undergoing either first or second eye cataract surgery. Music and TV also decreased the incidence of intraoperative hypertensive events in patients undergoing first-time cataract surgery.

EP-CAT-10

Intraocular foreign body removal combined with lensectomy: case report

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Introduction: Intraocular foreign bodies (IOFB) are a major cause of morbidity and even blindness in young population. IOFB can lodge and damage any structure of the eye depending on its way through the eye. The most frequent defects caused by foreign body (FB) are traumatic cataract, retinal and subretinal hemorrhages, retinal detachment and endophthalmitis.
Visual prognosis after treatment depends on different factors such as the time of diagnosis, treatment options, size and location of the trauma, tissue damage and inflammation.
Case presentation: A 32-year-old man sustained injury of the left eye with a metal foreign body after repairing pipes at home without using protective equipment. On admission best-corrected visual acuity (BCVA) was 0,15 and intraocular pressure (IOP) was 12 mmHg. Under slit-lamp examination, a full-thickness corneal wound with localized corneal edema at the nasal lower area was revealed.
Also, the clouding of the lens and lens masses were present in anterior chamber. Ultrasound of the left eye was done but the FB was not reliably visualized therefore CT scan of the orbits was done, which confirmed IOFB inside the lens. Extraction of IOFB was done using forceps and aspiration-irrigation was used to remove traumatic lens opacification. Intraocularlens was implanted in the posterior capsular bag. Three corneal sutures with Nylon 10/0 were used to close the wound. BCVA on discharge was 0,2 and IOP 13 mmHg. Patient was prescribed eye drops Sol. Levofloxacin 6x per day and Sol. Dexamethasone-Chloramphenicol 4x per day. On 5-months follow-up visit the patient's BCVA was 0,7 and IOP was within normal limits.
Discussion: Intraocular penetrating injuries require detailed and scrupulous examination of all eye structures. Early diagnosed damage can be treated adequately and therefore serious complications of IOFB such as endophthalmitis, visual impairment and disability can be prevented especially in patients of working age.

EP-CAT-11

Temporary IOL retrieval suture helps preventing intra-operative dislocations in scleral fixation surgeries: a surgical case series

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Purpose: To evaluate the usefulness of a simple additional surgical procedure of having a temporary retrieval suture on the IOL (optic haptic junction) to prevent complications of IOL displacement into the vitreous cavity while performing scleral fixation in eyes with deficient capsules.
Methods: A series of 64 unique surgical cases with deficient capsular support for fixation of IOL within the bag or the ciliary sulcus, which required intrascleral haptic fixation by Glued IOL or Yamane's techniques were included in this study. A temporary retraction suture of 10-0 nylon or prolene was fixed at the edge of the optic of IOL or its dialing hole or the optic-haptic junction of IOL.
The other end of the suture is left to lie outside the wound, which acted as a retrieval measure in circumstances of IOL displacements during grabbing and or exteriorization of its haptics. The temporary suture was truncated, as close to the optic finally after securing haptics successfully.
Results: The retraction sutures at the edge of the optics of IOL helped in retrieving the IOL when haptic or the entire lens inadvertently slipped during externalization in 3 cases out of 64 (4.68%), thus a stitch in time prevented major complications and vitreoretinal interventions of PPV and IOL removal. Temporary IOL retrieval suture was possible both with rigid and foldable IOL techniques.
Conclusion: A temporary retrieval IOL suture is the very simplest way by which an IOL drop into the vitreous cavity could be avoided, in addition to assisting identification and re-grabbing of IOL haptics when inadvertently lost during the externalization process in scleral fixations. This technique would improve surgeons' confidence.

EP-CAT-12

Adaptive fluidics with dynamic fluid infusion boosts efficiency of phacoemulsification: results of a randomized controlled study

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Purpose: To compare the key phacoemulsification attributes of fluid volume and ultrasound parameters between variable infusion pressure system (adaptive fluidics) and gravity-fed fixed infusion pressure system.
Methods: An interventional randomized controlled trial. 108 cataract surgeries were randomized in 1:1 into Group 1, in a variable infusion pressure system (that maintains fluidics stability within the eye by dynamic infusion linked to real-time vacuum levels), and in Group 2, with a gravity-fed fixed infusion pressure system. In both groups, the same venturi-based phaco machine was employed with differently specified disposable cassettes, operated by a single surgeon with identical ultrasound and vacuum settings. Outcomes of used fluid volume within the eye, average phaco power (U/S AVE), absolute phaco time (APT), and elapsed phaco time (EPT) were analyzed.
Results: The baseline parameters of cataract grades and axial length were comparable between groups (p=0.442, 0.605). The mean fluid level in Group 1 was 90.2+/-19 ml against Group 2 which is 129+/-44 (p<0.0001).
The mean vacuum in Groups 1 and 2 were 311.4 & 322.4mm Hg (p=0.115). U/S AVE was comparable between groups (18% in Group 1, 20.4% in group 2; p=0.087), however, EPT was significantly greater in Group 2 (9.5+/-4.9 sec) compared to Group 1 (5.3+/-3.6 sec, p<0.0001).
The total phaco energy delivered into the eye, represented by APT in Group 1 was significantly less, 21.79+/-8.65 sec compared to Group 2, which is 31.27+/-7.3 sec (p<0.0001).
Conclusion: Real-time vacuum-linked dynamic fluid infusion in venturi-based phaco systems uses lesser fluid volume and phaco energy within the eye, compared to gravity-fed fixed infusions, which could translate clinically as less traumatic and possibly more endothelium friendly.

EP-CAT-13

Non-steroidal anti-inflammatory drugs versus steroidal eye drops; frequency of macular edema after uncomplicated cataract surgery in diabetic patients?
5 years of monitoring

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Purpose: Investigate whether there is a difference in the incidence of postoperative macular edema in diabetic patients depending on whether they have received only non-steroidal anti-inflammatory drug in the operated eye or the combination non-steroidal anti-inflammatory drug and corticosteroid drop postoperatively.
Method: A retrospective study witth a total of 265 eyes, 99 women (37.5%) and 166 men (62.64%) were included. The average age was 73.24 years (range 44–92 years). The patients have been identified via the Swedish National Cataract Registry.
Two different groups that have been operated by two different surgeons have been compared. Surgeon 1 routinely uses the combination of postoperative Nevanac 3mg/ml and Dexafree (alternatively Isopto®-Maxidex) and surgeon 2 uses only postoperative Nevanac 3 mg/ml.
This study has compared the best corrected visual acuity (BCVA) and central retinal thickening (CRT) values before and six weeks after cataract surgery.
Results: Vision analysis: BCVA improved postoperatively for both groups. Because the p-value is 0.1041, it can be concluded that there is no statistically significant difference in visual acuity postoperatively between the two different groups.
CRT according to OCT analysis: The CRT is greater postoperatively compared to preoperatively in both groups. The p-value is 0.6799. Thus, treatment with NSAID in combination with cortisone is as successful as treatment with NSAID alone for postoperative macular edema.
Conclusion: Based on the statistical Mann-Whitney U test, there is no significant difference in the effect of NSAID + corticosteroid compared to NSAID alone, neither in terms of changes in visual acuity nor in the CRT of the macula.
In other words, both treatments may be considered equally successful in preventing postoperative macular edema in patients with diabetic retinopathy. Based on this research, it is conceivable to give NSAID only postoperatively.

EP-CAT-14

Family case of Weill–Marchesani syndrome

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Presentation of the case of 2 patients, female, first degree relatives (mother, daughter) with progressive decrease of visual functions, who were examined and underwent surgical treatment in the Ophthalmology department of the Republican Clinical Hospital "Timofei Moșneagă".
In all cases, a progressive decrease of visual acuity occurred in childhood. In case of daughter examination, a pupillary block has been found, iris bombe, anterior synechiae, secondary glaucoma and pseudophakia in the right eye and subluxation of the IOL in the vitreous body in the left eye. She underwent laser-iridotomy on the right eye, which had positive results. IOP decreased.
After that anterior synechiolysis has been performed. Reposition of the IOL with scleral fixation has been performed on the left eye. In mother's case, an inferior subluxation of the lenses on both eyes has been found. She underwent surgical treatment on both eyes – extraction of the lens with IOL implantation with scleral fixation.
In both cases short stature, brachycephaly and brachydactyly has been observed. In mother's case stiffness in the elbow joint and interphalangeal joints has been observed.

EP-CAT-16

Assessment of results of Lentis Comfort IOL implantation

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Objective: To assess visual acuity and patient satisfaction after Lentis Comfort intraocular lens (IOL) implantation.
Methods: The review followed 171 eyes of 133 patients implanted with Lentis Comfort (LS-313 MF15) IOL. The patient's visual acuity was evaluated for far, intermediate and near (0.3, 0.5 and 5 meters), refractive error, contrast sensitivity were recorded. Patients were provided with a questionnaire to assess the severity of photopsia, spectacle dependence, and satisfaction with visual function.
Results: Uncorrected distance visual acuity (UDVA)was 0.08 ± 0.12 (logMAR) and uncorrected near visual acuity (UNVA) was 0.13 ± 0.16 logMAR. Contrast sensitivity (FACT 100) was 20/20 for distance and 20/25 for near. All patients expressed high level of satisfaction with the lens and reported no photopsia.
Conclusion: Lentis Comfort IOL performed well for far and intermediate distance, most of the patients did not require glasses for their daily near distance needs.
Keywords: Oculentis Comfort; IOL, EDOF

EP-CAT-17

Correlation between Metabolic syndrome components with lens thickness: populational study in Malang District, Indonesia

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Purpose: Metabolic syndrome (MS) might induce escalation of oxidative stress, inflammation, and endothelial dysfunction which might impair the lens structure and trigger cataract. Previous study has shown that lens thickness was related to incidence of cataracts, and this study was to determine which component of the metabolic syndrome that consists of body mass index, blood pressure, diabetes mellitus, and dyslipidemia, has the most influence on lens thickness.
Method: This is an analytic observational study with a cross-sectional design. The sample was citizens from Malang district, Indonesia, with risk factors for suffering from metabolic syndrome of those who are over 40 years old, overweight, active or passive smokers, having a history of hypertension or diabetes.
The independent variables measured include body mass index (BMI), systolic blood pressure (systole), diastolic blood pressure (diastole), fasting blood sugar level (FBS), HDL cholesterol (HDL), and triglycerides (TG). Lens thickness is the dependent variable measured in cycloplegic conditions, and was previously confirmed that there were no ocular abnormalities such as cataract, pseudofakia, afakia, or congenital abnormalities.
Results: 116 participants were identified as MS and 155 as non-MS. Linear regression analysis show that lens thickness was affected significantly by systole (coefficient 4.30, SE 1.61, $p<0.05$) and FBS (coefficient 1.36, SE 0.59, $p<0.05$). Only these two components of MS that have a considerable effect on the lens thickness, however outside from these variables, age >60 years was also proved to affect lens thickness significantly (coefficient 229.11, SE 76.34, $p<0.05$).
Conclusion: Systole is the component of MS that primarily affects lens thickness, and might play a role in the presence of cataract. I suggest to conduct more study to determine the effect of systole on cataract formation.

EP-CAT-18

Improving theatre efficiency for bilateral cataract operations in a high-flow hub

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Purpose: Cataract is the most frequently performed surgical intervention in the UK with 452,000 performed in England in 2018/2019. Demand is rising due to an ageing population, with an added severe disruption to services from the pandemic. Immediate Sequential Bilateral Cataract Surgery (ISBCS) is safe and effective and recommended by RCOphth and the National Institute for Health and Care Excellence [NG77], yet <1500 ISBCS operations were performed in 2021/2022 and <1% of NHS patients undergo ISBCS.

Methods: Theatre efficiency is evaluated and optimised in a High-Volume Mixed-Complexity list. Aims include improving theatre efficiency, fostering a real-time win-loss culture, and developing an improvement strategy. Targets were set for preparation (3-min) and turnover (5-min), and a QIP change was made: the iodine and drape were placed as first task for the scrub nurse priming the phaco machine. PDSA, Driver Diagram, Pareto, SPC Run charts and other tools were used.
Results: 70-minutes were saved in a day list (pre: 31m25, n=10; post: 24m21, n=11); preparation time was reduced by 43% (pre: 4m53, n=10; post: 2m52, n=11); turnover time was reduced by 31% (pre: 7m07, n=10; post: 4m55, n=11); delay rates were reduced by 51% (pre: 16 Delays, n=10; post: 3 Delays, n=11); case variation reduced and team communication improved through qualitative analysis.
Briefings may have improved team awareness, and manual timing data collection may have led to the Hawthorn Effect of increased productivity due to direct observation, both of which may have led to improvements in excess of the intervention. Automatic data collection and an observer period could address observational bias and the before-after design in future work.
Conclusion: The NHS is undergoing a challenging period of increased demand. A strategic approach to theatre utilisation, as well as continual volume and quality improvement, may benefit both planning and implementation of high-flow bilateral cataract lists.

EP-CAT-20

Ab interno goniotomy with the Kahook Dual Blade in a monocular patient with mucous membrane pemphigoid and refractory open angle glaucoma: a case report

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Purpose: To describe the case of a monocular patient with ocular mucous membrane pemphigoid (MMP) and open angle glaucoma refractory to medical treatment, who was successfully managed with ab interno goniotomy at the time of cataract surgery.
Method: A 63-year-old woman with a history of severe MMP presented with exacerbation of the disease in both eyes. Vision was 20/80 in the right eye and light perception in the left eye. Symblepharon formation, trichiasis and forniceal foreshortening were present in the right eye, while the cornea of the left eye was completely conjunctivalized. Following aggressive systemic immunosuppressive therapy with corticosteroids and cyclophosphamide, the disease was brought under control. However, the patient developed a mature cataract and high intraocular pressure (IOP) of 28 mmHg on maximal medical therapy. Due to the high risk of ocular MMP exacerbation with glaucoma filtration surgery, the decision was made to proceed with cataract extraction combined with ab interno goniotomy with the Kahook Dual Blade.
Results: There were no intraoperative complications. The IOP has remained in the 12-14 mmHg range without any topical glaucoma medications over a total follow up of 3.5 years.
Conclusion: Ab interno goniotomy using the Kahook Dual Blade can significantly reduce IOP and medication burden in MMP cases, where any type of conjunctival incisional surgery could induce disease flare up. In this case, it represented a safe and effective surgical procedure for ocular MMP with concomitant refractory open angle glaucoma.

EP-CAT-21

Pearls for Cataracta Nigra

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An 87year old male patient with hypertension and chronic kidney disease presented in routine ophthalmic OPD. On evaluation, one eye had good Pseudophakia while other eye could Perceive light well and could correctly identify projection of light in all four quadrants and had Cataracta Nigra.
Patient underwent small incision cataract surgery with IOL implantation in the bag under local anaesthesia. Large hard black nucleus was delivered by sandwich technique. Surgery and postoperative course were uneventful.
Patient could self ambulate for the first time in last 6 months and was found to be highly satisfied with the recovery. This video demonstrates the importance of performing SICS with precision at every step to ensure good outcome in such challenging cases.

EP-CAT-22

Management of eye trauma associated with cataracts and intraocular foreign bodies

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Cases with penetrating eye injuries with intraocular foreign body and traumatic cataract are very challenging because they require a very serious and complex approach.
The purpose of this paper is to present our experience in the treatment of eye trauma of a 28-year-old patient through video presentation.
The patient was admitted in our hospital because of acute loss of vision of the right eye caused by ocular trauma.
On slit lamp examination the patient had a corneal penetrating wound with traumatic cataract. CT images showed a metallic intraocular foreign body (IOFB).
In this case we performed the following surgery on the affected eye: cataract extraction, primary posterior capsulorhexis, Pars Plana Vitrectomy 23-gauge, removed the IOFB and implanted an intraocular lens (IOL) in the capsular bag.
Postoperative treatment included topical antibiotic and steroid eye drops. We didn't note any serious postoperative complications.
In conclusion we think the primary posterior capsulorhexis in some cases is a possibility that allows the removal of intraocular foreign bodies through anterior chamber without the need for an extended sclerotomy. This prevents wound healing related problems, postoperative astigmatism and secondary cataract.

EP-CAT-23

Use of mechanic dilatator in small pupils during routine cataract surgery

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Purpose: To investigate outcomes and complications of using a mechanic pupil dilatator (Malyugin ring) during cataract surgery in small pupils.
Methods: Retrospective case- series reviewing. Best corrected distance visual acuity was recorded before and after the surgery. Patients were asked about concomitant medication. Measuring of pupil diameter at the beginning and at the end of the surgery was done by computer analysis. Total time of surgery was recorded. Signs of intraocular inflammation, iris defects and intraocular pressure were monitored.
Results: Total 42 eyes (7 women, 32 men) operated between 5/2021 and 5/2022 were included. In 18 eyes of 9 patients the ring was used during surgeries of both eyes, 11 eyes (11 patients) underwent planned surgery of just one eye and in 13 eyes the device was used in second operated eye based on first eye surgery experience.
Totally 3 surgeons performing surgeries used ring in 15, 13 and 14 cases respectively. 32 men patients were using systemic alpha-1- antagonists, in 5 eyes pseudoexfoliation syndrome was present and 2 eyes suffer from posterior synechiae. Average time of implantation of the ring was 1:53 minutes (from 58 seconds to 3:10 minutes).
Average explantation time of the ring was 32 seconds (from 20 seconds to 1:35 minutes). Average time of the surgery was 17:43 minutes (median 15:20 minutes).
There were 2 cases of posterior capsule rupture during surgery. Corrected distance visual acuity before surgery was 0.54 LogMar and 0,15 LogMar after the surgery. No inflammation signs and elevation of intraocular pressure were observed at the first check-up. In 3 cases pigment dispersion was recorded.
Conclusion: Malyugin ring help to maintain sufficient mydriasis during surgery time. No complications connected to ring use or manipulation were recorded during surgery. The Malyugin ring is one of the options of pupil expansion techniques which could be safely used in patients with poor dilated pupil.

EP-CAT-24

Late postoperative opacification of a hydrophobic acrylic intraocular lens AcryNova™PC 610Y

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Purpose: Intraocular lens (IOL) opacification may cause severe visual impairment. The pathogenesis remains unclear. The aim is to report the case of late postoperative opacification of a hydrophobic acrylic intraocular lens AcryNova™PC 610Y and its clinical consequences and laboratory characteristics.
Method: Lens replacement was indicated for an 82-year-old patient, 9 years after uncomplicated bilateral cataract surgery, in 2005. Opacification led to a significant reduction in best corrected distance visual acuity (to 0.63) and contrast sensitivity. The relative opacity of the lens material was 21% (OCULUS Pentacam HR). One explanted IOL was analysed using anterior segment OCT in vitro and spectroscopic method EDX (Energy-dispersive X-ray spectroscopy). Macroscopical photo documentation, light and electron microscopic analysis were also done.
Results: Best corrected distance visual acuity (BCDVA) after the surgery improved to 1.00. We did not find signs of non-homogeneity (i.e. micro glistening – vacuoles) in the material with the aid of SEM upon 20 000x enlargement. Using the EDX method we did not record the presence of calcium or phosphorus, and therefore calcification of the material was excluded. Anterior segment OCT of AcryNova hydrophobic lenses with symptoms of opacification shows homogeneous light dispersion (scattering effect), in contrast with lenses from transparent PMMA or hydrophobic acrylate. In the explanted IOL we have documented structural changes of primarily hydrophobic material leading to features of hydrophilic one.
Conclusion: Some batches of AcryNova™PC 610Y may have been produced from material of poor quality which is the cause of its structural changes and its progressive opacification. Susceptibility of the IOL to opacification is caused by a multifactorial combination of material and processing properties as well as individual conditions of the patient.

EP-CAT-25

Corrective replacement of calcified hydrophilic acrylic intraocular lens LENTIS Mplus

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Purpose: To present the case of a patient with LS-313 MF30 (Lentis Mplus, Oculentis) intraocular lens (IOL) opacification, in which due to symptoms of visual disturbances IOL exchange was necessary.
Method: We describe our experience of postoperative opacification of multiphocal Lentis Mplus IOL, onset 6 years after cataract surgery. Nowadays diagnostic imaging methods were used. The literature was reviewed to summarize the diagnosis, classification, use of diagnostic aids, and the current treatments for IOL opacification.
Results: A 82-year-old man presented with decreased visual acuity and blurred vision 6 years after phacoemulsification with continuous curvilinear capsulorhexis (CCC) and in-the-bag IOL implantation. After the slit lamp examination, patient was investigated with Scheimpflug camera(OCULUS Pentacam HR)and anterior segment spectral domain OCT(Optovue, Avanti RTVue XR), which confirmed the diagnosis of IOL opacification. Patient underwent IOL exchange surgery in both eyes, first in left eye and then in right eye.
Conclusion: Since the global market demand and supply of multifocal IOLs have increased markedly, it is possible that cases with opacification may continue to increase over the next few years. Clinicians must be aware of the potential for opacification of this IOL design, despite hydrophobic surface modification.

EP-CAT-26

Comparative accuracy of intraocular lens power calculation formulas when targeting myopia

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Purpose: The accuracy of the latest IOL power calculation formula when myopia was targeted was compared to when it was targeted to emmetropia.
Methods: 225 patients with the target of emmetropia and 225 patients with myopia of about -2.00 diopters were included, a total of 450 patients.
The study was conducted with only one eye of each patient. Preoperative biometric measurements were performed using IOL Master 700. The formulas used in this study were Barrett Universal II, Haigis, Hoffer Q, Holladay 1, Holladay 2, Kane, and SRK/T. An unpaired t-test and a 1-tailed chi-square test were performed to compare the accuracy of each IOL power calculation formula in the two groups, and a multiple regression analysis was performed to predict the variables affecting the accuracy of the IOL power calculation formulas.
Results: All of the IOL power calculation formulas compared in this study tended to show a larger refractive error when targeting myopia than when targeting emmetropic eyes. Haigis, SRK/T, and Holladay 2 formulas were found to be highly influenced by this trend.
On the other hand, the Barrett and Kane formulas were found to be less affected. Also, the Kane formula showed the highest accuracy, and the Holladay 2 formula showed the lowest accuracy.
Conclusion: The accuracy of the intraocular lens power calculation formula tends to decrease when myopia is targeted compared to when emmetropia is targeted. Therefore, when targeting myopia, it is necessary to use the Kane formula or the Barrett Universal II formula, which is less affected by this tendency.

EP-CAT-27

Improving patient visual outcomes with toric intraocular lens astigmatic correction in cataract surgery

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Purpose: Toric intraocular lenses are effective in reducing the astigmatic burden in contemporary cataract surgery. However, most studies are conducted under ideal research settings such as single-surgeon, single lens-model and/or patients with no other ocular comorbidities.
This study evaluates whether high quality published results on astigmatic correction are replicated in a "real life" unselected, diverse, patient population in a multi-surgeon practice.
Method: Retrospective review by two independent observers of 200 cases, selected from a consecutive series in a high volume ophthalmology practice. Outcomes included: preoperative and postoperative visual acuity; vector analysis (ASSORT Group Analysis Calculator, Alpins method), preoperative axial length, anterior keratometry, total corneal astigmatism; IOL power, cylinder, and target axis; IOL A-constant; and postoperative refraction. Vectors were used to calculate astigmatism correction index, magnitude of error, and angle of error.
Results: Ocular comorbidities were frequent (42.0%) Preoperative visual acuity was a mean 6/9.5-2. Magnitude of surgically induced astigmatism was 1.25D ± 0.63, target induced astigmatism was 1.17D ± 0.49, magnitude of error 0.08D, and difference vector 0.48D ± 0.31. Intraoperative complications were rare (0.5%). Postoperative visual acuity was excellent: at a mean 6/7.5 unaided in emmetropic targets.
Overall, visual acuity was 6/7.5 or better in 95%. Despite challenges in calculating IOL power in a subgroup of eyes with prior refractive surgery, good visual outcomes were also achieved
Conclusions: Results highlight that despite using a number of toric IOL models and alignment techniques, with frequent ocular comorbidities, mean visual outcomes after cataract surgery with astigmatic correction using toric IOLs in real world settings are typically good, mirroring what has been reported in the literature in ideal, standardised, clinical research settings.

EP-CAT-28

Efficiency of immediate simultaneous bilateral versus monocular cataract surgery

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Purpose: To compare the results of monocular phacoemulsification (MPE) and immediate bilateral phacoemulsification (BPE).
Material and methods: Prospective study with inclusion and exclusion criteria was conducted in 2022. The analysis included BPE data in 74 eyes (37 patients, group I) and MPE data in 76 eyes (51 patients, group II). Age range from 19 to 85 (61.6±11.15) years. Phacoemulsification was performed according to standard method using Centurion, Constellation, Infiniti (Alcon Laboratories, USA). The corneal incision was 1.8-2.2 mm. The best corrected visual acuity (BCVA) was determined 6.4±0.33 months after surgery.
Results: In the early postoperative period, significant corneal edema was in 8 (10.8%) eyes after BPE and in 10 (13.2%) eyes after MPE. Hypertension was noted in 6 (8.1%) eyes after BPE and in 10 (13.2%) eyes after MPE. The lower incidence of complications after BPE is due to more careful selection of patients.
Significant increase of visual acuity was noted ($p<0.001$). Increase BCVA after BPE from 0.28±0.09 to 0.83±0.11 units was established; after MPE - BCVA from 0.24±0.07 to 0.81±0.13. There was decrease in spherical refractive equivalent from -2.56±1.81 D in the preoperative period to -0.17±0.06 D in group I and from -1.96±0.08 D to -0.23 ±0.09 D postoperative in group II. Postoperative refraction in both groups did not differ significantly from the target. In group II, due to anisometropia, additional spectacle were required between operations in 22 (43.1%) patients.
Conclusion: Comparative study found no significant differences between two types of operations in the main criteria for clinical effectiveness: the frequency of intraoperative and postoperative surgical complications, and BCVA.
The effectiveness of immediate simultaneous bilateral phacoemulsification is determined by quick rehabilitation, the need for only one pair of glasses, decrease in visits to the clinic, the absence of anisometropia between operations.

EP-CAT-29

Selective laser capsulotomy in pediatric cataract surgery

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Purpose: To demonstrateselective laser capsulotomy and thestabilityof the anterior capsule, proper positioning and accurate sizing during cataract surgery in children.
Methods: This caseconcerns a 6-month-old child with congenital cataract, diagnosed by standard methodology. The intervention was performed under general anesthesia, mechanical dilatation of the pupilwith the use or iris retractors due to the impossibility though the means of medication.
We used a specific solution of trypan blue to stain the anterior capsule, a 4.2 mm selective laser capsulotomy was performed because of the small size of the eye. This step was followed by an eventful standard irrigation-aspiration of lenticular masses.
Results: The selective laser capsulotomyachieves anterior chamber stability, correct anterior capsulotomy positioning, accurate sizeand improves capsule-elasticity and completeness.
Conclusion: The use of laser capsulotomy in children in cataract surgery leads to improved safety during the intervention, reduces the risk of inaccuracy of the capsulotomy size, leads to subsequent adequate and correct treatment in time to prevent amblyopia.

EP-CAT-30

Visual outcomes after bilateral implantation of a Miniwell proxa EDOF IOL

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Purpose: To evaluate the visual performance, patient satisfaction and clinical outcomes after bilateral implantation of Miniwell Proxa EDOF IOL with cataract surgery in Indian eyes.
Method: 20 eyes of 10 patients in the age group of 55 to 70 years with demand of spectacle independent vision for distance and reading were included in this study. All eyes underwent Slit lamp examination, OCT for Cornea and Macula, apart from routine clinical examination for cataract. eyes with any ocular pathology and with astigmatism more than 1D were excluded. IOL power was measured with Optical biometry (AL Scan, Nidek, Japan) using Barrett Universal 2 formula.
Both eyes were operated either same day or within a week apart under topical anaesthesia with Femtosecond laser (Zeimer, Switzerland) creating a temporal incision,5.5 mm capsulorrhexis and six nuclear segments. None of the eyes had any complications during surgery. They were examined on day 1, 7, 30 and 90 postoperatively for visual acuity for distance and near.
Results: 11 patients were females and 9 patients were males. The mean preoperative BCVA was 20/60.
Post operative uniocular distance UCVA was 20/40 a1 month and was 20/30 at 3 months.
Binocular postoperative uncorrected visual acuity was 20/30 at 1 month and 20/25 at 3 months.
Binocular near visual acuity was N 8 at 1 month and N6 at 3 months.
1 month postoperatively 70% of eyes had a cylinder value <-0.5 which remained same up to 3 months postoperatively.
3 months postoperatively 40 % (8) eyes had emmetropic spherical equivalent.
Discussion: This is the initial results of use of near dominant EDOF IOL implant in both eyes of a patient. This the first study of use of near dominant EDOF IOL in both eyes of a patient needing good near vision for reading but not much of computer work.
Conclusion: Bilateral implantation of Miniwell Proxa EDOF IOL in a patient provide good functional vision for distance and near in patients.

EP-CAT-31

A case of non-expulsive traumatic total iridodialysis?

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Introduction: Traumatic aniridia is a condition where the whole iris is torn from the ciliary body after blunt force trauma. While in surgically naïve eyes this condition usually accompanies other injuries such as commotio retinae, lens dislocation and scleral/limbal rupture, in eyes with previous ocular surgery the surgical wound is likely the weakest point through which the high IOP is released and sometimes the iris is expulsed.
Several cases of expulsive iridodialysis without IOL dislocation have been reported following clear corneal phacoemulsification. We report on a possible case of non-expulsive traumatic total iridodialysis.
Methods: Clinical case review.
Case reports: An 87 y.o. pseudophakic male on anticoagulation drugs presented after cranioencephalic traumatism due to a fall. He had a best corrected visual acuity (BCVA) of hand motion in his left eye (LE) and normal eye movements. Slit lamp exam revealed subconjunctival haemorrhage, hyphema, and a complete absence of iris tissue with visible ciliary processes and IOL in the capsular bag, without pseudophacodonesis.
Fundus exam was difficult due to media opacity and echography documented vitreous haemorrhage (VH). The fellow eye exam was unremarkable but it was noticed that the patient had a blue colored and slightly atrophic iris. At 2 weeks post-trauma there was complete reabsorption of hyphema but he still maintained significant VH even at 1.5 months post-trauma. The patient underwent pars plana vitrectomy to clear the VH with good result and a final BCVA of 20/25.
Conclusions: We present a case of traumatic total iridodialysis in a pseudophakic patient. While we can't indisputably exclude that the iris was, at least partially, expulsed through the prior cataract wound which then self-sealed, we found no evidence of it such as episcleral pigmentation or presence of iris remnants in the ocular surface. We therefore hypothesize that the remnant and probably necrotic iris tissue was completely reabsorbed.

EP-CAT-33

Comparing the efficiency of two prophylactic approaches in patients at risk of developing Intraoperative Floppy Iris syndrome

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Purpose: The aim of our study is to identify and compare the efficiency of using 1% atropine in preoperative period and the application of intracameral epinephrine during cataract surgery for the purpose of prophylaxis of Intraoperative Floppy Iris Syndrome (IFIS).
Our intention is to evaluate the development of IFIS and its grade between the two prophylactic approaches.
Methods: We identified prospectively a risk group of patients on chronic medication intake of alpha1-adrenergic receptor inhibitors during biometric measurement before cataract surgery.
The study consists of 164 eyes of 164 male patients using alpha1-adrenergic receptor inhibitors (116 patients used tamsulosin, 18 doxazosin, 2 terazosin, 1 silodosin, 27 used the combination of tamsulosin and 5alpha-reductase inhibitors). 83 eyes were treated with 1% atropine drops twice a day for one week (Group 1) while 81 eyes received an injection of epinephrine to the anterior chamber at the beginning of a cataract surgery (Group 2). The average age was 75 ± 7,5 years in Group 1 and 76,3 ± 6,7 years in Group 2.
Results: The occurrence of IFIS was in 37 eyes (44,6%) in Group 1 and in 29 eyes (35,8%) in Group 2 (p=0,269). Our results showed that epinephrine can better reduce the development of mild form of IFIS, but the difference was not statistically significant.
However, there was a statistically significant higher incidence of moderate and severe forms of IFIS in Group 2 when compared with Group 1 (p<0,0001). There was no statistically significant difference between the groups in the development of surgical complications (p=0,165).
Conclusions: The instillation of epinephrine to the anterior chamber during cataract surgery was more effective in preventing mild form of IFIS.
Nevertheless, the occurrence of IFIS in its moderate and severe forms was statistically significantly lower in the atropine group.
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EP-CAT-34

Bilateral ectopia lentis: an unusual presentation

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Purpose: To report a case of bilateral ectopia lentis in a patient without past ophthalmological history.
Setting: Ectopia lentis can be aquired or congenital. The most frequent cause is trauma, either direct trauma or blunt trauma to the head. Systemic pathologies such as connective tissue disorders are a common cause. Ocular disease such as pseudoexfoliation syndrome are also a frequent cause.
Report of case: A 59-year-old man presented to the emergency clinic with a 3-day history of left eye floaters. Best corrected visual acuity (BCVA) was 20/80 in the right eye and 20/63 in the left eye. Anterior segment slit-lamp examination was unremarkable except for anterior bulging of the superior iris and a slight tilting of the lens in the left eye. The right eye was unremarkable. Both lenses revealed grade 1 nuclear sclerosis. The intraocular pressure was within normal limits in both eyes. A dilated fundus examination was performed. Following mydriasis both lenses were noted to be subluxated: a superior subluxation in the right eye and an infero-temporal subluxation in the left eye.
Fundus examination revealed a posterior vitreous detachment. No rhegmatogenous defects were seen. The patient revealed a history of poor vision in both eyes since childhood. On further questioning he revealed a history of head trauma in the context of car accident. He reported to have made a full recovery with no known sequelae. Since the patient had no clinical evidence of a connective tissue disorder or any other ocular abnormalities, a diagnosis of bilateral ectopia lentis secondary to trauma was made.
Conclusion: Bilateral ectopia lentis is relatively rare. Care should be taken to exclude systemic diseases. Trauma, although, the main cause should be a diagnosis of exclusion. Ectopia lentis may cause several complications such as pupillary block, lens-induced uveitis or corneal edema. The surgical treatment in these cases remains a challenge.

EP-CAT-35

3 Point Formula for succssful management of IFIS

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Purpose: To demonstrate the successful management of Intraoperative floppy iris syndrome for achieving cataract surgery without complications.
Method: In a case of severe IFIS where the previous surgeon had created iris atrophy and could not start the cataract surgery, this video demonstrates the successful management with use of pharmacological agent, pupillary dilator device along with high density and cohesive viscoelastic.
Results: The video demonstrates the successful management of IFIS with the 3 tools.
Conclusion: The vision threatening condition of IFIS can be managed with the 3 steps shown in the video with excellent results.

EP-CAT-36

Retro pupillary iris claw lens implantation in aphakia– Is it a viable alternative?

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Purpose: To evaluate the Indications, surgical outcomes and complications of implantation of Retro pupillary Iris Claw intra ocular lens (RPIC –IOL).
Method: This is aprospective, interventional, hospital based study**.**This study-included 42 patients with various indications for RPIC-IOL implantation at a tertiary care centre from September 2020 to August 2021. Informed consent was obtained and the study followed the guidelines of the Declaration of Helsinki. A comprehensive preoperative assessment was done. All the patients underwent RPIC-IOL fixation by a single experienced surgeon using the same standard technique.The patients were examined on postoperative day 1st, 7th day, at one month and three months.
Statistical Analysis**:** P-value <0.05 was taken as significant. Data entry was done in Microsoft excel. Medcalc 12.2.1.0 version software was used for all statistical purpose.
Results: The most common indication was posterior capsular tear in 23 patients (54.76%). When BCVA was compared pre- and post-operatively at 3 months,*P*value was found to be <0.001, and a significant increase in BCVA was noted in 39 patients between pre- and post-operative values.
The mean postoperative IOP at 3 months was 14.21+2.14 mmHg with a range of 10–20 mmHg. Most common postoperative complication was distorted pupil (35.71%).
Conclusion: RPIC-IOL implantation is a viable option for management of aphakia in complicated cases. The technique is safe with short learning curve and good functional outcomes.
Keywords: Retro pupillary, Iris claw lens, Aphakia

EP-CAT-37

Is surgical eye care becoming an environmental scare?

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Purpose: Healthcare is one of the major contributors of greenhouse emissions. It is estimated that one-quarter to half of all hospital waste is produced in the operating room. Recycling of surgical waste is uncommon, even though there are many recyclable materials.
The objective of this study was to determine the amount of waste produced in different ophthalmic surgical procedures over a period of one month, in order to gauge the probable adverse environmental impact.
Method: We conducted a waste audit of all ophthalmic surgeries, from one unit of a moderately busy tertiary care hospital over a period of one month. Waste was categorized into 3 streams: clinical waste, general wastes and sharps. The mean weight of waste per case was obtained by dividing total weight of waste produced by total number of cases in each category.
Result: The total waste produced from 24 different ophthalmic surgeries over a period of one month in ophthalmic unit was 18.704 kgs. Out of this, 12.270 kg comprised of clinical waste and 5.725 kg of general waste. The mean waste production per case was highest for vitrectomy (2.420kg), followed bymanual small incision cataract surgery (MSICS) (0.796 kg) and phacoemulsification (0.668kg). The general waste per case, out of the total waste generated was 35% (235gms) and30.9% (246gms) in phacoemulsification and MSICS respectively. The average waste generated per case per month is 0.779kg.
Conclusion: Eye surgeries contribute to a significant amount of waste generation and contribute towards green house emission.

EP-CAT-38

Subjective vision-related quality of life and visual performance of 3 intraocular lenses: an enhanced monofocal, extended-depth-of-focus and trifocal

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Purpose: To compare subjective vision-related quality of life (QoL), visual performance and spectacle independence of 3 intraocular lenses (IOLs): enhanced monofocal, extended depth of focus (EDOF) and trifocal.
Method: 40 patients without ocular comorbidities undergoing cataract surgery with implantation of an enhanced monofocal (Tecnis Eyhance), EDOF (Tecnis Symfony) or trifocal (Alcon Panoptix) IOL were included. 3 months postoperatively the following parameters were analyzed: uncorrected visual acuity (VA) (logMAR) for distance (6 meters), intermediate (66 cm) and near (40 cm) distance, halometry (Halo v1.0 programme), halo and glare perception, QoL (National Eye Institute Visual Functioning Questionnaire-25) and spectacle independence.
Results: Post-operative distance and intermediate VA were similar between IOLs (p=0.92, p>0.05). Near VA was significantly better for Panoptix than other IOLs (p<0.05). Halometry results were similar for Eyhance and Symfony IOLs (p=0.72) but showed worse results for Panoptix IOL (p=0.01). Patients with Eyhance and Symfony IOLs had less subjective halos and glare perception than Panoptix IOL group (respectively p=0.005, p=0.018).
Subjective visual disturbance correlated with halometry results (p<0.001). None of the patients reported the need to use spectacles for distance. 50% of Panoptix IOL group occasionally needed spectacles for intermediate distance (p=0.052). Near-distance correction demand was highest and constant for 75% of Eyhance IOL group (p=0.273). QoL questionnaire results showed high and similar results for all IOL groups (93.1±6.9) (p=0.247).
Conclusion: Spectacle independence is successfully achieved with Symfony and Panoptix IOLs for all distances, while with Eyhance IOL spectacles are usually needed for near-distance. Panoptix IOL induces most objectively seen photic phenomenon, which are also noticed by the patients. Overall patients were highly satisfied with the outcomes of the surgeries and chosen IOL.

EP-CAT-39

Refractive cataract surgery and proper preoperative tests. A new method for IOL power calculations for postoperative refractive outcomes within -0.50 D spherical equivalent

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Purpose: Refractive cataract surgery is replacing standard high-volume, low-cost cataract surgery with monofocal IOL implantation. The goal is to correct refractive defects, myopia, hyperopia and astigmatism and overcome presbyopia limitations. It is necessary to change the preoperative patient procedures and to manage Meibomian gland dysfunction in all patients.
Normally two treatments should be applied: BlephEx (Alcon) and LipiFlow (J&J) to eliminate *Demodex*blepharitis and MG obstrution associated with multiple biometry exams at days 1, 15 and 30 to get postoperative refractive outcomes within 0.50 D.
To evaluate results in cataract eyes implanted with trifocal IOLs to get distance intermediate and near vision. New centre organization is key point to spread the use of trifocal lenses.
Method: 737 eyes were implanted with trifocal IOLs.346 eyes with ATLISA tri 839MP-Carl Zeiss Meditec AG Jena and 391 eyes were implanted with AT LISA tri 939MP. Mean Age: 66.49 ±11.66. Biometry was performed with IOL Master 700 RK and astigmatism axis alignment performed with Callisto system. Blephex and Lipiflow were applied.
Results: At 7 years monocular Trifocal IOLs results are UCDVA 20/22 ± 2.40 UCIVA 20/24 ± 3.13 UCNVA 20/27 ± 5.37, monocularToric Trifocal IOLs are UCDVA 20/20 ± 3.25 UCIVA 20/35 ± 4.75 UCNVA 20/29 ± 2.56 Binocular results (178 patients) are UCDVA was 20/20, intermediate 20/20 and near vision 20/24.97.
Conclusion: AT LISA tri and tri toric trifocal IOLs provide glass free vision after cataract surgery. Data show that it is possible to adopt them in the majority of patients.

EP-CAT-40

Lid Scrub and thermal pulsation treatment to improve tears film quality and biometry accuracy to adopt presbyopic iols routinely

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Purpose: To evaluate two systems Blephex for Lid Scrub (Alcon – Fort Worth Texas) and LipiFlow (J&J - Santa Ana Ca) for the thermal pulsation treatment of Meibomian Gland Dysfunction (MGD) to improve quality of the surface of the cornea to get better IOLs power biometry calculations.
Methods: Since 2017, 378 patients (mean age 66.58 ±11.55 years) were treated for MGD. Patients received a LipiFlow treatment to remove obstructions and restore meibomian gland function. 123 of these patients received also Blephex treatment immediately before since September 2019.
Results: Postop quality of vision improved in all patients, and regular cornea surface provided more precise and stable biometry results. The adoption of lipiflow and blephex treatments provided 97% of eyes inside the planned refractive postoperative outcome.
Conclusion: These treatments have a priority role in adopting implants to correct refractive defects and treat presbyopia in cataract patients

EP-CAT-41

Precision pulse capsulotomy to perform capsulorhexis with automated method with easier control and superior outcomes 5 years follow up

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Purpose: Radial tears in the manual capsulorhexis increase the rate of surgical complications. Zepto precision pulse capsulotomy (PPC) technology (Centricity Vision-Fremont, California) is compared with manual continuous curvilinear capsulorhexis (CCC) outcomes by the reproducibility, uniformity, circularity, diameter size and complications rate. Also with FLACS.
Methods: A novel mechanical capsulotomy method and technology called PPC and trade named Zepto was adopted on 526 consecutive eyes with cataract. Incision size 2,4 mm. Suction time 10 seconds. Minimum Anterior chamber depth 2mm.Callisto system adoption to better center the cup
Results: Preoperatevely the ACD was 2.77 ± 0.43. ECC preop was 2378 ± 443 and 6 months postop 2268,20 ± 241 with a 4.61 % lost cells. We experienced 30 anterior radial tears (5.7%) during the learning curve and later in difficult cases.
Conclusion: The Zepto PPC technology creates a precise circular anterior capsulotomy. This technique allows cataract surgeons to reduce the rate of capsulorhexis and cataract surgery complications.

EP-CAT-42

Trifocal IOLs implantation in cataract patients that have experienced previous laser vision correction

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Purpose: To evaluate visual performances of trifocal IOLs AT LISA tri 839 MP and AT LISA tri toric 939MP trifocal IOLs (Carl Zeiss Meditec AG - Jena - Germany) in patient that experienced previous laser vision correction.
Methods: Only eyes with regular cornea were included in this study:
36 eyes of 21 patients mean age:
56.57 ± 8.76 years. Preop SE was -0.91 ± 3,31 BCDVA 20/21.40 ± 3,18.
Postop were measured: distance (5m) near (40cm) and intermediate (80 cm) VA, corneal topography and aberrometry, contrast sensitivity and defocus curve and quality of vision. Follow-up examinations were performed at day 1 2 7 30 90 180 360 and yearly.
Results: At six months BCDVA was 20/20,65 ± 2,51. SE was -0,20 ± 0,45. Residual astigmatism was 0,02 ± 0,42.83% of eyes after trifocal IOLs implantation achieved postop refractive results within ± 0.75 diopters.
Conclusion: Trifocal IOLs provided good visual performances also with patients that experienced laser vision correction decades ago. To be selected for surgery eyes biometry needed to be applied with no difficulties and hav to demonstrate no significant differences related the perfect IOLs power also after multiple attempts.

EP-CAT-43

Paulus Aeginetus, a Byzantine physician of the 7th century and his contribution to ophthalmology

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Purpose: This presentation is to exhibit the work of the Byzantine physician Paulus Aeginetus and especially his contribution to treating ophthalmic conditions such as cataract, glaucoma, trauma, and other diseases. It is believed that he was born on the Greek island of Aegina c. 625 A.D.
Methods: A classic medical text of the middle Byzantine period was a valuable source for medieval medical knowledge, but very little was known about its author. The work is 'The Seven Books of Paulus Aegineta' or 'Epitome Medicae' This work is a compendium of ancient and byzantine medical knowledge, and it was the basis for the development of the knowledge of late Arabic Medicine.
This presentation was based mainly on the Sixth book of this 3-volume compendium of English Edition in 1834, published by Francis Adams, which includes the Ophthalmologic issues.
Results: 'πιτομαί ιατρικαί' is the original title of Paulus Aegineta's work. Three manuscripts from Paulus›s work are kept in the Megisti Lavra monastery of Mount Athos library. This library was established around 963 A.D. by St. Athanasius, founder of the conventus life of Mt. Athos. Fragments of Paulus's work are also in the monastery of Iviron on Mt. Athos. Paulus Aeginetus was the only physician of the ancients who described the cataract operation. He also described burns of the eyelids by drugs and the subsequent creation of a symblepharon (Συμβλέφαρον).
Conclusion: Paulus Aegineta's life is entirely unknown, but his monumental work gives us a rich encounter with Medicine not only during the 7th century but also before and after him and is one of the main sources of medical knowledge for the upcoming generations of physicians.
The 6th book of this work includes several ophthalmological conditions such as eyelid disorders, chalazion, pterygium, trichiasis, cataract, glaucoma, and the diagnosis, medications, and treatment for them. Paulus Aeginetus (625-690 A.D.) was considered one of the great compilers of Medical Knowledge.

EP-CAT-44

Central macular thickness changes following laser posterior capsulotomy measured by optical coherence tomography

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Purpose: Neodymium-doped yttrium aluminum garnet (Nd: YAG) laser treatment is considered the gold standard for posterior capsule opacification (PCO) treatment. However, it can lead to complications such as increased intraocular pressure (IOP), retinal hemorrhage, iritis, vitreous prolapse, corneal injury, vitritis, pupil blockage, hyphema, retinal detachment, IOL dislocation, exacerbation of endophthalmitis, and cystoid macular edema.
Our study aimed to access changes in the central macular thickness (CMT) at different time points following Nd: YAG laser capsulotomy using optical coherence tomography (OCT).
Method: This study included 112 eyes (59 males and 53 females) from pseudophakic patients with PCO. Patients with other anterior or posterior segment pathologies were excluded from this study. The CMT values were measured at baseline, one week, one month, 3 and 6 months following Nd: YAG capsulotomy. The preoperative and postoperative measurements were compared. SPSS 21.0 was used for statistical analysis, and a difference was considered significant if $p<0.05$. All values are expressed as means ± SD.
Results: The mean age of all patients was 76±9.12 years. After treatment, best-corrected visual acuity was significantly higher than baseline values ($p<0.05$).
On the other hand, significant changes related to age, gender, total laser shots, total laser energy, and time between cataract surgery and Nd: YAG laser capsulotomy was not observed ($p>0.05$).
The mean CMT values at baseline, one week, one month, 3 and 6 months following Nd: YAG laser capsulotomy were 256.11 ± 16.001, 267.69 ± 17.012, 266.08 ± 16.015, 260.08 ± 16.015, 257.08 ± 16.015 µm, respectively. Cystoid macular edema developed in 2 patients (1.78%).
Conclusion: Significant changes in CMT values following Nd: YAG laser capsulotomy was not observed compared to the baseline. However, cystoid macular edema remains one of the possible causes of visual reduction following Nd: YAG laser capsulotomy.

EP-CAT-45

EDOF IOL in challenging cases

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Report of four cases of cataract surgery with EDOF IOL including short videos for each surgery, examination documents before, and results after surgery.
First case: cataract surgery with EDOF IOL after PRK.
Second case: cataract surgery with EDOF IOL after Lasik.
Third case: cataract surgery with EDOF IOL after PKP.
Fourth case: cataract surgery with EDOF IOL in traumatic cataract with zonules dialysis.
Take home message at the end of introducing all cases.

EP-CAT-46

Cataract surgery complications between different pupil expansion methods: comparison of 1266 eyes

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Purpose: To assess the risk for cataract surgery complications and compare clinical outcomes according to using different pupil expansion methods.
Methods: This study included 1266 eyes of adult cataract patients operated on with pupil expansion. Incidences and odds ratios for intra-operative complications and clinical outcomes were compared between sphincterotomy (N=339), stretching (N=242), hooks (N=391) and rings (N=294).
Patient age and gender, surgeon seniority and diabetes were included as confounders in multivariate analysis.
Results: The use of iris hooks was associated with the highest incidence of posterior capsular rupture (P=0.016). Zonular dehiscence tended to be higher among eyes operated with iris hooks and pupil expansion rings, compared with iris stretching and sphincterotomy (P=0.058). No differences were observed for post-operative uveitis, intraocular pressure and pseudophakic cystoid macular edema.
Best-corrected visual acuity gain was similar between the groups. In multivariate analysis, none of the intra- and post-operative complications were significantly associated with a specific mechanical pupil expansion method.
Conclusions: In our cohort study, iris hooks had the highest incidence of posterior capsular rupture. There was no difference in intra-operative complications or clinical outcomes between the 4 four groups.

EP-CAT-47

DLI the importance of preoperative cataract evaluation

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Purpose: To highlight the importance of Dysfunctional Lens Index (DLI) in preoperative evaluation of cataract surgery patients and its correlation to logMAR corrected distance visual acuity (CDVA) and lens grading opacification according to the Lens Opacities Classification System III (LOCS III).
Methods and patients: The Dysfunctional Lens Index (DLI) feature of the iTrace wavefront aberrometer (Tracey Technologies, Houston, TX) was recorded in a total of 35 patients aged 60-years or older (mean age of patients: 77 years).
Twenty-one of 35 patients were female while 14 were male. Measurements of logMAR corrected distance visual acuity (CDVA) and lens grading opacification according to the Lens Opacities Classification System III (LOCS III) were performed in all of the patients.
Seven of these patients had been diagnosed with type 2 Diabetes Mellitus while none of the other patients reported any other significant past medical history.
Results: A total of 35 patients had low DLI (mean: 4,12), a number that showed negative linear correlation with the patients' lens opacification degree (mean: 2) without taking into consideration the cornea abnormalities. The DLI additionally showed a higher negative linear correlation with the corrected distance visual acuity (mean: 0,3 logMAR) compared to lens opacification degree.
Conclusion: The DLI was correlated with the LOCS III nuclear opalescence score and CDVA.
Modalities such as lens densitometry, wave front aberrometry and light -scatter assessment can quantify optical aspects of cataract and may prove clinically useful in surgical evaluation. The iTrace DLI is precise as a numerical representation of the visual quality of a patient's crystalline lens and it can help us to track the progression of nuclear cataract.

EP-CAT-48

Single-pass four-throw pupilloplasty for iris atrophy and cataract case

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Single-pass four-throw pupilloplasty (SFT) is a technique for performing pupil reconstruction.
We are reporting a case with iris atrophy and nuclear cataract on the right eye. Both pupilloplasty and cataract surgery were done. Iris atrophy was reconstructed by single-pass four-throw technique and cataract with phacoemulsification at the same time.
The results were promising, the patient's visual outcome was improved, the pupil was in good shape and contour. The patient was satisfied from the outcome both visually and cosmetically.

EP-CAT-49

EDOF IOL for bilateral cataract in young patient with previous PRK

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Purpose: To report a case and surgical results of unknown reason bilateral cataract in young patient with history of refractive surgery (PRK) seven years ago.
Method: Private ophthalmology practice.
Report of case: A 32-year-old male patient arrived at the author clinic complaining from blurry vision in both eyes. He underwent photorefractive keratectomy PRK surgery for mild myopia & astigmatism about 7 years ago by author. The PRK procedure was uncomplicated and both eyes were stable with 10/10 visual acuity in both eyes after 3 months of surgery.
On routine follow up every 6 months for three years the patient did not suffer from any problem except intermittent dryness managed by lubricant eyedrops. Patient come back on January 2021 complaining from poor VA in both eyes in last six months.
With examination the diagnosis was bilateral nuclear cataract. performing full evaluation (VA, BCVA, TONOMETRY, CORNEAL TOMOGRAPHY, OCT, BIOMETRY.) The decision was cataract surgery with EDOF toric IOL for both eyes. The refraction was (OD: -6.50 sph-1.75 * 50) and (OS: -6.25 sph-0.75* 98). VA was 0.3 OU.
The challenge was choosing the right IOL power, so after doing calculation with Haigis-L formula and Barrett true-k formula we choose +21 D with 1.50 cylinder for right eye and +22 D with 1.00 cylinder for left eye. After one-month of surgery the refraction was (OD: -0.25 sph-0.25 * 80) and (OS: 0.00 sph-0.50* 67). UCVA was 10/10 in both eyes with good independent glasses VA for near vision with both eyes.
Conclusion/take home message: A history of patient's refractive surgery will help to avoid refractive 'surprises' after cataract surgery. In young patient it is better to choose the most glasses independent IOL with less aberrations and halos. Measurements of the posterior corneal surface are mandatory as the corneal refractive index changes. To choose the right IOL power it's necessary to apply at least two formulas of the third generation (Barrett True-K, Haigis-L… etc).

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Contact Lenses

EP-COL-01

The impact of advanced surface moisturizing technologies on on-eye performance and comfort with contact lenses

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Purpose: To comparatively evaluate the on-eye performance and comfort with two lotrafilcon B contact lenses manufactured using different surface moisturizing technologies in lens wearers with daily digital platform use longer than 3 hours.
Methods: Twenty-nine asymptomatic habitual contact lens wearers were randomly assigned to wear either AirOptix Aqua or AirOptix HydraGlyde contact lenses for 1 month each in a randomized, double-masked crossover study.
The Contact Lens Dry Eye Questionnaire 8 (CLDEQ-8) scores, biomicroscopic examination, tear function tests, and blink rates were recorded at baseline, and at the end of month-1 and month-2. To assess comfort scores with the two lenses, the patients completed a questionnaire that includes questions to score the first impressions and experiences (visual acuity, comfort, dryness) with each lens and a Likert-Type questionnaire.
Results: The mean age of patients was 25.5±7.2 years. Tarsal papillary grade was significantly lower, tear-film break up time was higher with AirOptix HydraGlyde lenses compared to AirOptix Aqua ($p<0.05$) lenses.
There were no significant differences between the two lenses in terms of slit lamp findings, Schirmer`s test, blink rates, or CLDEQ-8 scores ($p>0.05$). AirOptix HydraGlyde lenses performed significantly better in terms of blurred vision, end-of-day comfort, dryness and tiredness ($p<0.05$).
Although more than 80% of patients agreed or strongly agreed that both lenses provided excellent visual acuity and comfort, higher percentage of patients preferred to continue with AirOptix HydraGlyde contact lenses at the end of the study.
Conclusion: AirOptix HydraGlyde lenses with advanced surface moisturizing technology were superior in terms of end-of-day and end-of-month comfort and visual quality which are common complaints related with contact lens discomfort.
Technological advances in silicone hydrogel lens surface treatments seem to be helpful in improving contact lens comfort in lens wearers with moderate daily exposure to digital devices.

EP-COL-02

Why is it a bad idea to buy contact lenses on the internet

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More and more online shopping is becoming a popular practice even when it comes to health products. We present a case report of acute corneal hydrops as a form of presentation of a corneal ectasia in a patient that bought its contact lenses (CL) on the internet.
A 20-year-old-man, contact lenses user, presented to the emergency department with sudden-onset vision loss, photophobia and a painful red left eye (LE).
On examination he presented a central corneal ectasia with corneal pseudocysts and intrastromal clefts. Epithelium was impaired. He was diagnosed of acute corneal hydrops and topic treatment with antibiotics and hypertonic sodium chloride drops was initiated.
He bought his contact lenses online and referred these usually felt tight, causing the urge of rubbing his eyes. For both eyes, these were Hilafilcom B contact lenses, with an equilibrium water content of 59%, a 14.20 mm total diameter, a base curve radius of 8.60 mm and a refractive power of -4,50D. LE's scheimpflug-based tomography was not reliable, however, he presented a mean K of the anterior corneal surface of 44.9D on the adelphos eye.
We believe that these contact lenses might have been too wide for our patient, so that if a subclinical ectasia was present, the CL would have been rubbing its apex and hence contributing to the progression of the ectasia.
Patients should undergo an ophthalmologic examination and a correct fitting before wearing CL. They should be advised against their use without the supervision of a professional, since serious ophthalmologic complications are at stake.

EP-COL-03

Rigid gas permeable aspheric toric contact lens fitting after DALK for macular corneal distrophy

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Female, 24-years-old, presents macular corneal dystrophy in both eyes and underwent deep anterior lamellar keratoplasty (DALK) in the right eye 4 years ago. Anatomopathological examination of the specimen revealed interstitial edema, epithelial hyperplasia, and positivity for alcian blue dye.
The best corrected visual acuity (BCVA) was:
OD: 20/100
OS: 20/400
Biomicroscopy:
OD: Stromal opacity, ghost vessels.
OS: Grayish macules with indistinct borders; without areas of clear cornea between them.
Keratometry
44,43 x 47,16 @ 7
43,27 x 46,67 @ 1
Rigid Gas Permeableaspheric toric contact lens (CL) fitting was performed in the right eye.
The CL parameters were: Base Curve 46.50 D x 49.50 D; Dioptric Power -4.00 D; Diameter 9.6 mm. The patient achieved visual acuity of 20/30 with the CL.
This case shows the importance of trying to improve visual acuity with CL, even though the cornea presented opacities after DALK.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Cornea

EP-COR-01

Desperate measures for desperate times - a case of simultaneous bilateral keratoplasty for mooren's ulcer

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A 65 year old male patient with uncontrolled diabetes first time presented in 2019 with complaints of pain, redness, watering in both eyes. On slit lamp examination it was 360 degree peripheral ulcerative keratitis, with corneal thinning and overhanging edge with iris incarceration in right eye and left eye inactive PUK. All rheumatological laboratory tests were negative, so it was diagnosed as Mooren's ulcer. Treated with right eye tectonic keratoplasty and left eye with conjunctival resection with Cynoacrylate glue and bandage contact lens.
Patient lost subsequent follow ups and presented with Right eye failed graft and left eye worsening of condition. Right eye regraft done under immunosuppressant and also referred to rheumatologist for adjusting immunosuppressant dose. On further follow up left eye worsening so that eye also treated with tectonic keratoplasty.
Patient was doing well after surgery improved vision but again lost follow ups and again came with both eyes failed grafts. So patient posted for right eye 3rd tectonic keratoplasty and left eye re-glue and BCL. Proper consent was taken, but on operation table it is found that only glue and bandage contact lens was not able to give enough tectonic support to left eye, so decision was changed and we decided aggressively to do tectonic keratoplasty for left eye also in same sitting.
Discussion: There are only few case reports published in literature for simultaneous bilateral keratoplasty.
Conclusion:
1. Despite absence of underlying immune condition it often requires systemic immunosuppressants to get control of inflammation,
2. As bilateral mooren's is aggressive condition, aggressive treatment is required,
3. Hand in hand cooperation of both ophthalmologists and rheumatologist is mandatory to deal with such kind of situation,
4. At times we have to change our preoperative plans on operation table and take agressive action,
5. Need for strict follow up after any keratoplasty slould be explained.

EP-COR-03

In vivo confocal microscopy analysis of corneal subbasal nerve plexus before and after surgical treatment of rhegmatogenous retinal detachment by pars plana vitrectomy (PPV) vs PPV/Scleral Band(BE)

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Purpose: To evaluate in vivo confocal microscopy (IVCM) features of corneal subbasal nerve plexus (SNP) before and after surgical treatment of rhegmatogenous retinal detachment using fully automated software ACCMetrics.
Methods: Observational prospective study, including 6 patients were in PPV/BE and 4 patients in the PPV group. IVCM exams of SNP were performed using Heidelberg Retina Tomograph. Corneal nerve fiber density (CNFD), corneal nerve branch density (CNBD), corneal nerve fiber length (CNFL), corneal nerve total branch density (CTBD), corneal nerve fiber area (CNFA), corneal nerve fiber width (CNFW), and corneal nerve fractal dimension (CNFrD) were analysed before surgery and 3 months after treatment using fully automated software ACCMetrics.
Results: The mean value of corneal nerve fibers density (CFND) in PRE-VPP group was 15,63±10,82 compared to 15,62±3,6 in POST-VPP. The mean value of CNFD in PRE-VPP/BE group was 8,331±5,1 compared to 9,37±5,2 in POST-VPP/BE group, there was a non significative increase of 1,04±6,14 in POST-VPP/BE. The mean value of corneal nerve fibers length (CNFL) in POST-VPP was 0,12±4,2 less than in PRE-VPP; this value was in POST-VPP/BE 0,38±3,85 less than in PRE-VPP/BE group, both p>0,05.
Conclusion: The present study represents the first pilot evaluation of corneal SNP before and after rgehmatogenous retinal detachment surgery. Our first results doesn't confirm any significant change in the corneal SNP parameters but the results may suggest a higher reduction of CNFL in VPP/BE group. A higher sample size will be necessary to increase the significance level of the study.

EP-COR-04

2 case presentations of Cogan's syndrome with different ocular manifestations

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We would like to describe typical and unusual presentations of Cogan's syndrome. Cogan's syndrome is a rare autoimmune disease. There are 2 forms of Cogan's syndrome. The diagnosis of classic Cogan's syndrome is made on the basis of non-syphilitic interstitial keratitis, acute-onset sensorineural hearing loss and vestibular symptoms such as Meniere's disease, and progressive hearing loss up to deafness within 2 years.
Diagnosis of atypical Cogan's syndrome can also be made when the classic pattern of autoimmune-type vestibule-auditory symptoms is associated with inflammatory eye disease other than interstitial keratitis or when the interval between onset of ophthalmologic and the onset of vestibule-auditory symptoms is more than 2 years.It most commonly affects young adults between 20-30 years old but can be seen at any ages.

Our first case report refers to classic Cogan's syndrome, associated with interstitial keratitis with past medical history of hearing problems. But the patient still haven't had diagnosis. So the differential diagnosis of interstitial keratitis is very important and an early diagnosis of Cogan's syndrome is essential to initiate an early treatment in order to prevent damage of eye, ear and systemic complications.
The second case refers to atypical Cogan's syndrome associated with intermediate uveitis. The literature review revealed few cases with anterior uveitis and only one case with intermediate uveitis. With these presentations we would like to share our experience in the diagnosis and management of this rare disorder.

EP-COR-05

The use of human amniotic membrane-derived material in ocular surface healing promotion: a 2.5-year retrospective study

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Purpose: The human amniotic membrane (hAM) is the inner, foetal-derived, avascular layer of the foetal membrane. It has a number of biological properties that promote ocular surface healing, including anti-inflammatory, anti-angiogenic, anti-scarring and pro-epithelisation effects. Omnigen (NuVision Biotherapies, UK) is a dried and stable hAM-derived material that can be stored between 2-25ºC, which can be applied to the ocular surface via bandage contact lens in an outpatient setting.
This study reviews its use in a Tertiary Corneal Unit, including patient characteristics and their clinical outcomes.
Method: Retrospective case review of all patients who received Omnigen implants between March 2020 and August 2022.
Results: 22 eyes of 21 patients received Omnigen during this period. The mean age was 53+/-19 (range 21-84). 38% (8) were female and 41% (9) were right eyes. Most common indication for its use was persistent corneal epithelial defect (PCED) (18, 82%).
Other causes were corneal graft melt, surgically induced necrotising scleroker-atitis, decompensating cornea and post repair of globe rupture. Of the PCEDs, 5 had a background of neurotrophic corneas, 3 post-collage crosslinking, 2 OCP, 2 chemical injuries, 2 acanthamoeba keratitis and 4 had other causes.
PCED sizes were recorded in 9 eyes, with mean area of 5.9+/-4.4mm2 (range 1.2-15.6mm2). Mean PCED closure rate post-Omnigen was 0.24mm2/day (range 0.008-0.71mm2/day).
In terms of concomitant medications, 95% also received topical antibiotics, 77% received topical steroids and 55% received oral anti-proteases. 68% (15) eyes have healed (duration 44.6+/-41days). Of the 18 eyes with documented final visual acuities, mean LogMAR was 0.82+/-0.29 (plus 1 CF, 3 HM and 1 NPL).
Conclusion: This study summarises the patient characteristics, indications and largely favourable outcomes of Omnigen use over a 2.5-year period.

EP-COR-06

Superficial reticular degeneration of Koby: rare case presentation

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We present a rare case of corneal degeneration, first described by Koby in 1927, known as Superficial Reticular Degeneration of Koby. With only four reported cases in literature, this condition is a highly uncommon manifestation of band keratopathy, characterized by a central, fine, white reticulum at the level of Bowman's layer.
Band keratopathy almost always has an underlying cause like systemic disease, chronic intraocular condition, medications, or can be idiopathic. Our patient is a 42-year-old female complaining of gradual decrease of visual acuity in both eyes.She is being followed by us already 10 years. Initially she had 20/20 VA that gradually decreased to 20/40 in 10 years.
This case provides valuable insight into the progression and management of this rare disorder. This report highlights the importance of careful and thorough diagnostic evaluation and management approach for such unique and uncommon conditions.

EP-COR-07

Managing a difficult case of fungal corneal ulcer

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Purpose: To present the management of an interesting fungal corneal ulcer.
Methods: The case concerns a 48-year-old male gardener with infectious keratitis in his left eye. He reported injury on the same eye caused by plant debris. Slit lamp biomicroscopy revealed a corneal ulcer 1mm proximal to the limbus, accompanied by a fibrous stromal infiltrate and endothelitis. Anterior chamber (AC) reaction was severe, however, B-scan revealed no evidence of intraocular inflammation.
Upon admission, corneal scrapings were obtained and sent to microbiology for culture of common pathogens (aerobic, anaerobic), fungi, acanthamoeba, gram and giemsa stain and polymerase chain reaction (PCR) for fungi.
Results: Topical and systemic (per os) treatment with voriconazole was initiated and within 2 weeks the ulcer margins shrinked and the AC became quiet. Corneal scrapings came back positive for Aspergillus Tereus. However, an increase in IOP and reemergence of AC inflammation led to the suspicion of a herpetic co-infection.
Additional therapy with topical ointment ganciclovir and per os valacyclovir was given. The clinical picture steadily improved and the patient continued observation at an outpatient basis at the cornea department.
Conclusions: Managing a fungal corneal ulcer is incredibly challenging. An important take home message from our case is that unlike bacterial ulcers, epithelial healing in fungal keratitis is not always a sign of positive response, as healing impends the penetration of topical medication into the deeper corneal layers extending the pathogen's life.

EP-COR-08

Halting a hot therapeutic Penetrating Keratoplasty (PKP) in a patient with corneal melting and impending perforation

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Purpose: To present the management of a compelling case of gram-negative microbial corneal ulcer, accompanied by corneal melting and impending perforation.
Methods: A 39-year-old otherwise healthy female contact lens wearer without any previous ocular history was referred the emergency department with pain and redness in her left eye (OS) ongoing for 5 days. She was already receiving treatment for her condition, but without any improvement. Slit lamp biomicroscopy of OS yielded conjunctival hyperemia with corneal melting.
Corneal ulceration was evident near the limbus, measuring 6,6mm high and 5mm wide, accompanied by significant melting at the center of the lesion, stromal infiltration, and generalized corneal edema. Pentacam Central Corneal Thickness maps displayed thinning at 43 and 81 μm. Anterior Chamber (AC) was deep, with significant inflammation (Tyndall +4), and a 3mm high hypopyon. B-scan ultrasound displayed no signs of intraocular inflammation.
All topical and systemic medications were discontinued for 6 hours as preparation for corneal scraping collection for culture. We switched treatment to Amikacin instilled every 15 minutes as a loading dose and then to hourly. Moreover, vancomycin was added. Owing to a strong suspicion of Pseudomonas being the offending agent intravenous (iv) Ceftazidime 2gr x3 was incorporated into the regimen.
Results: On a 5-day follow-up corneal melting subsided, the hypopyon had minimized, and the anterior chamber reaction had downgraded to +2. Corneal scraping cultures yielded Pseudomonas.
Therefore, we kept the same regimen while closely monitoring the patient. Epithelization of the ulcer was initially evident 5 days later and the patient was discharged.
Conclusions: Post-discharge, she was followed in outpatient, scheduled for Deep Anterior Lamellar Keratoplasty (DALK) since the endothelium and Descemet membrane were left intact. By these means we avoided a therapeutic penetrating keratoplasty and the risks that it entitles.

EP-COR-09

Results of corneal cross-linking for post-LASIK ectasia: a prospective study

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Purpose: Post-LASIK ectasia (PLE) leads to visual loss, corneal warpage and may require corneal transplantation. Corneal cross-linking (CXL) halts progression of PLE and may improve visual function. This prospective study determines the safety and efficacy of CXL for PLE.
Method: Of 97 eyes of PLE patients who underwent CXL, 59 eyes were evaluated at 1 year, 42 eyes at 2 years, 30 eyes at 3 years, 20 eyes at 4 years and 17 eyes at 5 years post-CXL.
Main outcome measures were uncorrected distance visual acuity (UCVA), best-corrected distance visual acuity (BCVA), maximum keratometry (Kmax) and minimum pachymetry.
Results: LogMAR UCVA improved at most postop time points, but not significatntly. LogMAR BCVA improved at most postop time points, but only significantly at 1 year post-CXL. Kmax decreased significantly at 1, 3 and 4 years post-CXL. Minimum pachymetry decreased significantly at all post-CXL time points.
Conclusion: CXL for patients with PLE is safe and efficacious in halting progression of disease. Visual function is maintained or may improve post-CXL. Patients with PLE should be encouraged to stop progression of the disease by early CXL.

EP-COR-10

Evaluation of ciclosporine effectiveness in severe dry eye disease using anterior segment optical coherence tomography

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Purpose: The aim of our study is to assess the efficacy of topical ciclosporin in severe dry eye disease (DED) patients.
Patients and method: We conducted a prospective study including six patients followed for various Severe dry eye syndromes. Treatment resorted to ciclosporin 0.05% (Restasis®) in addition to hyaluronic acid. Efficacy of treatment was assessed from symptomatolgy using OSDI, slit lamp examination, visual acuity, possible complications. Anterior segment optical coherence tomography was performed to study tear film thickness (TFT), tear meniscus area (TMA) and height (TMH) for each patient, before and after treatment.
Results: Etiologies in severe DED were various in our series involving Lyell syndrome (1 patient), Gougerot Sjogren syndrome (3 patients), Ocular Cicatricial Pemphigoid (1 patient) and Graft versus Host Disease (1 patient). Ciclosporin allowed the regression of functional and physical signs with most of the time improvement
of visual acuity. There was a statistically significant difference in TFT, TMA and TMH before and after treatment. Our best results were obtained with Gougerot Sjogren syndrome.
Discussion: Ciclosporin in topical form has an immunomodulatory role without systemic effect. This molecule acts by its anti-inflammatory, immunosuppressive and regulating action of apoptosis. It may represent an alternative to local corticosteroid therapy in case of failure or corticoid-dependence. Several studies highlighted the effectiveness of the molecule in moderate or severe dry syndromes, especially Gougerot Sjogren syndrome.
Conclusion: Cyclosporine is an innovative immunosuppressive agent, used for many years in the treatment of several auto-immune or inflammatory diseases. Its indications in ocular surface pathologies are susceptible to expand. A study with larger cohorts ought to be conducted in severe DED in order to better identify them.

EP-COR-11

Infectious keratitis with perforation and corneal hydrops as an initial presentation of keratoconus in a child

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Purpose: To describe a rare case of infectious keratitis with perforation and corneal hydrops in a child.
Method: Case report.
Results: A 14-year-old boy of Maori ethnicity presented with 1-day history of pain and blurred vision to the acute eye clinic. There was no history of trauma or contact lens wear. He had past medical history of asthma, eczema and hayfever. The left eye had corneal hydrops with perforation and vision of light perception. Streptococcus dysgalactiae was cultured from swab. The perforation was initially managed with cyanoacrylate glue along with topical and systemic antibiotics. As the infection cleared, there was increasing oedema from hydrops, followed by severe stromal neovascularisation.
Conclusion: The combination of infectious keratitis, corneal hydrops and perforation is an extremely rare presentation of keratoconus. This case demonstrates the severity of disease possible in children, particularly in indigenous peoples of New Zealand, and the difficulties in managing severe keratoconus in children.

EP-COR-12

Interface fluid after uneventful DSAEK: the role of intraoperative OCT

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Purpose: To report an interesting case of interface fluid after uneventful Descemet Stripping Automated Endothelial Keratoplasty (DSAEK) and highlight the role of intraoperative Optical Coherence Tomography (OCT) in the detection of similar cases.
Method: A 68-year-old female suffering from pseudophakic bullous keratopathy in her right eye (BCVA=20/400) underwent uneventful DSAEK. During surgery, the intraoperative OCT depicted a slight accumulation of fluid in the central interface between host and graft, which did not resolve completely after a full anterior chamber fill with air and subsequent massaging on the corneal surface.
On the first 2 postoperative days, the central interface fluid remained stable in OCT examination, while the peripheral graft was 360° attached. Five days after surgery the patient reported a further decrease in her vision and the examination revealed a complete detachment and dislocation of the graft in the inferior anterior chamber.
Results: The graft was surgically repositioned on the same day and kept in place with an 80% anterior chamber fill with air. Upon rebubbling, no interface fluid was noted in the intraoperative OCT. The graft remained attached with an uneventful postoperative course and her BCVA increased to 20/100 and 20/30, 1 week and 3 months after surgery, without any other adverse events.
Conclusion: Intraoperative OCT is a useful tool in detecting interface fluid and other complications during endothelial keratoplasty. Its application could reduce the rate of graft detachment and the need for further interventions, which could jeopardize the viability of the graft.

EP-COR-13

Polychromatic dystrophy with stromal and lens involvement, case presentation

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Purpose: To present the case of a 47 y.o. male patient diagnosed with polychromatic dystrophy. In addition to the involvement of the deep stroma, polychromatic deposits were also found in the anterior lens capsule. Two of the patient's direct relatives were included for ophthalmologic evaluation.
Method: Slit lamp examinations, anterior segment-optical coherence tomography (AS-OCT) and anterior pole photographs were performed to assess the exact location of the lesions. Visual function tests were performed in all subjects.
Results: A total of 3 patients presented bilateral deposits of different sizes with multicolored sparkles located in the posterior corneal stroma. The Descemet membrane, the epithelium and the endothelium were unaffected. The same deposits were observed in the anterior lens capsule. The AS-OCT allowed to accurately locate these deposits and observe the alteration of the corneal microarchitecture. The deposits were identified as punctiform or linear hyperrefringent foci and/or sectorial thickenings at different levels within the superficial and deep stroma. Neither of the patients presented alterations in visual function or other associated ocular/systemic symptoms.
Conclusion: Polychromatic dystrophy is a rare posterior corneal dystrophy with few cases published due to its usually asymptomatic course and little known pathophysiology. Although itIt is does not require treatment and has no visual impact, it's important to identify this dystrophy to establish a differential diagnosis with other entities that may require specific therapeutic approach. In our patients the AS-OCT revealed the involvement of the entire stromal thickness instead of exclusively the posterior stroma.
Additionally, the deposits were present at the level of the lens, which was not previously described in published literature, indicating that it could be a disease with a more extensive component than previously reported.

EP-COR-14

Drug-depository contact lens hasten healing and minimize antimicrobial loading doses in bacterial keratitis: a randomized controlled trial

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Purpose: To evaluate the efficacy of a novel therapeutic drug-depository contact lens (DDCL) for bacterial keratitis (BK) treatment. The lens was designed to increase the corneal lesion-antimicrobial drug interaction time.
Methods: 40 BK patients were randomized (1:1) into two groups as topical antimicrobial treatment only (Group 1) and DDCL (with dual base curves resulting in a central reservoir along with fenestrations to enable capture of applied drugs) plus antimicrobial treatment (Group 2). Both groups received standard 0.5 % moxifloxacin in a frequency of 2-Hrly for 2 days (during wak-

ing hours) and 4-Hrly for next 12 days. We evaluated BK recovery clinically and with cornea OCT, anterior chamber (AC) reactions, corneal haze and pain (on a 10-point scale) 12 hours and 1, 3, 5 and 14 days after treatment. A separate drug retention study (DRS) over time in DDCL was performed.

Results: The baseline corneal-infiltration (i.e., BK severity) values were comparable for Groups 1 (18 cases) and 2 (17 cases) (P = 0.92). After 12 hours, the scores improved in both groups and continued to improve throughout the follow-up period; the improvements were more pronounced in Group 2 than in Group 1 (all P <0.05). Complete recovery occurred on Days 14 and 5 in Groups 1 and 2, respectively.

Furthermore, the AC reaction resolved by Day 3 in Group 2. The baseline pain scores were also comparable between Groups 1 and 2 (P = 0.52) and decreased throughout the follow-up period (all P <0.05); the decrease was more pronounced in Group 2. DRS established an extended drug-corneal availability for up to 4-Hours.

Conclusion: Novel DDCLs augment the drug-lesion interaction time by prolonging corneal antimicrobial availability, which hastens corneal healing in BK. Thus, a DDCL may decrease the antibiotic regimen and improve patient tolerance, eliminating the necessity for a loading dose.

EP-COR-15

A phase-2 study on novel endothelial keratoprosthesis in chronic endothelial dysfunction: interim trial reports

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Purpose: To evaluate the safety and effectiveness of implanting a novel synthetic corneal endothelial substitute (endothelial keratoprosthesis) in cases of chronic endothelial dysfunction.

Methods: A prospective open-label clinical safety & efficacy evaluation. Cases of chronic corneal edema due to endothelial dysfunction, not associated with systemic diseases like Herpes Simplex or prior corneal surgeries were subjected to a central 6 mm synthetic endothelial implantable substitute after a central 7.0mm descemetorhexis & attached under gas similar to endothelial keratoplasty. Pre & post-op central pachymetry (in mic.), vision (ETDRS characters), pain scores were analyzed in addition to re-bubbling rates & toxic reactions due to implants or any adverse events.

Results: 12 cases were enrolled. The longest follow-up is 8 months and lowest is 6 months. Vision at baseline was 9.75+/-1.7 ETDRS characters, which improved to 41.75+/-8.7 by Month-1, and retained after 6-mon. at 55.59+/-7.1. Mean Central pachymetry reduced from 715 mic, to 504 mic by Mon-1 & maintained at 492.5 mic by Month-4. Pain, out of a scale of 1 -100, at presentation was 90.5+/-2.3 & 68.25+/-4.03 at 1- Mon, further improved by Mon-4 (p=0.0001). No immunologic reactions to the synthetic implants or any other adverse reactions to the surgeries were noticed. None of the implants were explanted. 3 cases needed re-bubbling (D7, D7, D12 & 21). For one subject who died after 6 months, post-mortem HPE reports revealed dense fibrous adhesions of the implant edges to the cornea, favoring long-term retention of the device.

Conclusion: Endothelial keratoprosthesis improved vision, reduced chronic edema caused by endothelial dysfunction & was not associated with adverse events or implant toxicities until month 6, & are continuously been monitored for safety. Endothelial keratoprosthesis could be an alternative to EK procedures with no risks of associated rejection events.

EP-COR-16

Corneal endothelial toxicity following over-dosed concentrated optical Nepafenac: a case report

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Purpose: To report an unusual and extensive corneal endothelial toxicity due to over-dosed high concentration topical NSAIDS (Nepafenac 0.3% eye drops QID) in post-cataract surgery.

Methods: A pharmacovigilance case report from a Tertiary Eye Care Institution. A 58-year-old female underwent uneventful micro-phacoemulsification with hydrophobic IOL surgery in her LE with an improved vision of 20/20 till the 3rd POD. Post-operative medications prescribed were a topical fixed combination of Moxifloxacin 0.5% with Dexamethasone 0.1% QID and topical 0.3% Nepafenac suspension OD.

Results: On POD-3 presented with severe corneal edema, pain & vision of CF-2M, immediately following application of Nepafenac 0.3% eye drops. Diagnosed as endothelial toxicity due to concentrated topical Nepafenac (0.3%) which she was using QID, instead of advised OD dosing after excluding other possibilities. Underwent FS-DSAEK 3 months post cataract surgery.

Ocular topical NSAIDs are known to cause several ocular surface toxicities, perhaps this is the first case of endothelium compromise of its over-dosed concentrated forms. The probable mechanisms are either diffusion into the AC through a partially open cataract incision or trans-corneal absorption.

Conclusion: This case is reported as a pharmacovigilance measure to emphasize the rational use of concentrated topical NSAIDS by cataract surgeons. Patients need thorough counseling on post-operative medications, their dosage, and possible drug toxicities after cataract surgery, to avoid such disastrous complications, even though very rare & unusual in occurrence.

EP-COR-17

Corneal stroma regeneration with cellular therapy: confocal study

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Purpose: Recently we described a new surgical approach by regenerative medicine using autologous adipose-derived adult stem cells (ADASCs) and decellularized corneal tissue with advanced keratoconus.

We report herein the confocal microscopy in vivo evolution of the injected ADASCs into the human cornea along one-year follow-up into keratocytes, as well as the evolution of the corneal decellularized or ADASCs-recellularized human donor corneal laminas in advanced keratoconus.

Methods: Confocal microscopy was performed in an experimental, prospective consecutive series of cases. Fourteen patients were randomly distributed into 3 experimental groups.

Group-1 patients underwent implantation of autologous ADASCs.

Group-2 patients received decellularized donor corneal stromal lamina.

Group-3, patients received implantation of the recellularized lamina with ADASCs. Implantation was performed in a femtosecond-assisted.

An original method of quantitative confocal microscope study cell counting was used. We also studied the morphological evolution of the implanted cells and the decellularized/recellularized laminas during the follow-up.
Results: A significant increase (P<0.001) was observed in the cellularity in the anterior and posterior stroma in (G-1, G-2&G-3) at one year/preoperative density level, the same result was obtained at the mid corneal stroma in G-1, also at the anterior, posterior surfaces and within the laminas in G-2&G-3. The cell density of the patients with recellularized laminas was statistically significantly higher than in those implanted with decellularized laminas.
Conclusion: Confocal corneal microscopy shows to be an essential tool in the assessment and "in vivo" follow-up of the corneas implanted with ADASCs for corneal regeneration purposes. We were able to observe a significant increase in the cellularity of the corneal stroma following the implantation of ADASCs alone, as well as with patients implanted with decellularized/recellularized laminas.

EP-COR-18

Cost analysis of screening Fuchs endothelial corneal dystrophy among patients presenting with cataract in the TIPS trial cohort

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Purpose: Coexistence of Fuch's Endothelial corneal dystrophy (FECD) & cataract can influence cataract management. With advent of new treatments that slow FECD progression, early diagnosis becomes key. As specular imaging is not routinely performed in most low/mid-income countries in every cataract case, early FECD can be easily missed with a cursory examination. We report the cost of introducing specular imaging before all cataract surgeries and the cost of identifying a case of FECD in India.
Methods: TIPS trial (phaco**TI**p position during clear corneal **P**hacoemulsification **S**urgery) is a multicentre-RCT that recruited adults with cataract. FECD was diagnosed using standard criteria on slit-lamp/specular microscopy. Participant with/without FECD were compared with t-test/chi-square/Fischer Exact test (for continuous/categorical data).
We used a micro-costing approach from the eye care provider's perspective. Variable cost (technician's time, electricity per procedure) & fixed cost (equipment, maintenance etc) were included . We performed sensitivity analyses for different scenarios (300-1000 surgeries/year), assuming same number of technicians, overhead and capital equipment were required at all levels of capacity utilization.
Results: FECD proportion in TIPS trial was 3.7%(n=17/460; 95%CI: 2.3-5.87). Mean endothelial cell density (2248 ± 701 vs 2511 ± 324;p=0.006) & hexagonal cell% (44.5±17.7% vs 52.7±13.3; p=0.03) were significantly lower among FECD. The cost of a single specular image was $1.7- 5.5. Based on the FECD proportion, we need to screen about 27(range:17-43) cataract patients to detect one FECD. The cost of detecting one FECD ranged from $29.2-235.9 at various levels of capacity utilization.
Conclusions: One in 27 cataract patients in the TIPS trial had FECD. The cost of procuring a single specular image was 1.7 to 5.5 USD, and cost of detecting one FECD, ranges from 46-148 USD at various levels of capacity utilization (300-1000 cataract surgeries/annum).

EP-COR-19

Fungal keratitis with plaque formation on corneal surface: a case series

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Fungal keratitis remains a significant cause of corneal blindness globally. Its incidence has been estimated at 1-1.4 million cases, and about 100000 eyes are surgically removed annually. Majority of fungal keratitis are caused by filamentous fungi Fusarium and Aspergillus spp and yeast Candida spp. Fungal plaques can form superficially and on the endothelial side. We hereby present 3 cases of fungal keratitis with superficial white plaques, with AS-OCT and slit-lamp imaging.
Case 1: A 61-year-old CL wearer woman was started on hourly G.Levofloxacin at the first visit for presumed microbial keratitis. Her corneal ulcer did not improve and two superficial white plaques were noted. Confocal microscopy demonstrated multiple pseudo-hyphae with yeast cells. She underwent surgical debridement and Arthrographis kalrae was identified from the plaque. She was started on hourly anti-fungal eyedrops. 2 weeks later, the white plaque recurred. She received intrastromal Voriconazole and another plaque debridement. Over the next 6 months she recovered with an organized scar.
Case 2: A 59-year-old woman was noted to have left corneal abrasion. She was given antibiotic and lubricant eyedrops. One month later she returned with infective keratitis. Corneal scrape was performed and PCR sequencing identified Saccharomyces cerevisiae. G. Amphotericin B was started. Two weeks later the patient developed a superficial white plaque. She underwent plaque debridement and intrastromal Voriconazole injection. Her cornea healed with a paracentral scar over the next 2 months.
Case 3: A 70-year-old woman was a monthly-CL wearer who reported possible foreign body from gardening activity. Initially, G. Levofloxacin was given with good effect, but epithelial defect recurred when G. Dexamethasone was added. Her cornea scrape grew Chaetomium. Three weeks later she developed a superficial white plaque which was removed in theatre. She was started on G. Natamycin and slowly recovered.

EP-COR-20

Assessing the keratoconus management in community based primary care optometry practices

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Purpose: Defining the patterns of practice and referral criteria of optometrists to identify therapeutic and diagnostic management of keratoconus in the community.
Methods: Optometrists in New Zealand were invited to complete an anonymous online survey evaluating patterns of practice and referral criteria to ophthalmology. Optometrists were recruited through New Zealand Association of Optometrists (NZAO) and Cornea and Contact Lens Society of New Zealand (CCLSNZ), as well as private practices via email.
Results: Responses from 168 optometrists showed 47.6% had ≥15years experience, 21.7% prescribed soft and 6.4% prescribed rigid gas permeable (RGP) lenses daily. Main barriers to prescribing RGPs was suboptimal fitting experience, low demand, and patient discomfort. Majority (41.1% referred on progression of corneal parameters.

Practice size or location was not associated with the number of newly diagnosed cases. Optometrists with greater experience were more likely to prescribe RGP lenses and co-manage patients with ophthalmologists. Topographic unit ownership suggested an increased likelihood of prescribing RGP lenses but did not alter referral patterns.
Conclusion: Our survey provides an indication of current practice and highlights the important role of optometrists in the diagnosis and management of patients with keratoconus. Our results identify substantial variability in diagnostic and referral patterns, and we propose that patients would benefit from the development of standardised guidelines for referral and co-management with ophthalmologists.

EP-COR-21

Barriers, including systemic, demographic and socio-economic factors, to accessing tertiary keratoconus care

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Purpose: Determine the barriers to gaining access to the crosslinking service in Auckland particularly among Māori and Pacific Peoples.
Methods: Data from patient records at Auckland District Health Board was collected prospectively over 12 months. Parameters included age, gender, BMI, ethnicity, NZ Deprivation score of residence (NZDep; area-based measure of socioeconomic status, 1=low deprivation - 10=high deprivation), disease severity (maximum keratometry and thinnest corneal thickness), attendance, distance travelled to clinic, car ownership, employment, and visual outcomes.
Results: 454 subjects with keratoconus had a mean age of 24.1±0.8years, mean BMI of 33.0±9.7 and 43% were female. Pacific People consisted 40.2% of the population, Māori 27.2%, Europeans 21.2%, Asian 9.9% and MELAA 1.3%.Mean distance travelled was 12.5±9.5km, NZDep was 6.8±2.6 and attendance was 69.0±42.5%.
Lowest attendance was in Pacific People and highest was in Asians (58.88% vs 90%,p=0.02). Mean worst-eye visual acuity at attendance was 0.75±0.47logMAR(6/35).
Unemployment was associated with worse best-eye visual acuity at FSA ($p=0.01$) and follow-up ($p<0.05$). Māori and Pacific People had the highest NZDep ($p<0.001$), presented younger ($p=0.02$), had higher disease severity ($p<0.001$) and worse visual acuity ($p<0.001$).
Conclusion: A low rate of attendance was seen in this patient cohort attending a keratoconus clinic. Pacific People and Māori presented younger with worse disease severity and visual acuity but also had the highest non-attendance rate. Our results suggest that deprivation, ethnicity, and unemployment were found to be active barriers to clinic attendance.

EP-COR-22

Engineering disease microenvironment of pterygium to elucidate the roles of cell-matrix interaction in cellular dysfunction during disease progression

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Purpose: Cells can mechanosense the mechanical properties of their microenvironment and convert them into chemical signals to regulate various cellular functions such as proliferation, apoptosis, differentiation, and migration, known as mechanotransduction. We aim to understand the underlying molecular mechanism of pterygium pathogenesis.
Methods: Transcriptome analyses using human pterygium epithelial cells and fibroblasts isolated from primary pterygium tissue. Quantitative polymerase chain reaction (PCR) and wound scratch test were performed to compare characteristics between pterygial and normal conjunctival cells.
Traction force microscope (TFM) analysis and migration ability in different matrix stiffness conditions (matrix stiffnesses to mimic normal (~2.5 kPa) and pterygial (~60 kPa) tissue) were compared between pterygial and normal conjunctival cells.
Results: Transcriptome profiles showed significantly upregulated cell adhesion and migration-associated signaling pathways in the pterygial cells and which were validated by qPCR (MMP, integrin alpha) and wound scratch assays. TFM analyses revealed that pterygium cells showed significantly higher levels of mechano-sensitiveness to their microenvironment and underwent mechanotransduction.
Cells cultured on a stiff matrix exhibited increased growth, elongation, and numbers of vinculin, and furthermore, the same cell behaviors were significantly increased in both pterygium-derived cells.
Conclusions: These results indicate both pterygium-derived fibroblasts and epithelial cells are much sensitive to the mechanical properties of their microenvironment suggesting that fibrotic nature of pterygium tissues could play a significant role in regulation of pterygium cell migration and pathogenesis.
These findings may offer insight into the important roles of cell-matrix interactions in pterygium pathophysiology, which could provide a valid tool to develop potential therapeutic candidates.

EP-COR-25

Acute bilateral toxic endothelitis in binge alcohol consumption: a case series

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Endothelitis has a vast range of etiologies including infective, chemical-induced, drug-induced, systemic and toxic causes. Toxic endothelitis secondary to alcohol binge consumption is rare and is reported less frequently in literature.
We report a series of three cases with bilateral defective vision due to corneal edema and endothelitis following alcohol, binge drinking. Specular microscopy revealed a decreased endothelial count along with polymegathism and pleomorphism. All cases showed dramatic improvement with frequent topical steroid application alone.

We hypothesis the cause for corneal edema as transient suppression of corneal endothelial cells instead of total apoptosis which later regained functions following alcohol cessation and control of further inflammatory insults with intensive steroids. Nevertheless, chances of recurrence of corneal edema and permanent endothelial cell loss are highly expected in the future if alcoholism is continued.

EP-COR-26

Corneal thinning due to cetuximab during combined chemotherapy in patient with history of herpetic keratouveitis

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Epidermal growth factor receptor (EGFR) is expressed in corneal epithelial cells and plays a crucial role in corneal wound healing and its homeostasis, thus, there have already been reported cases of corneal alterations related to anti EGFR drugs, such as cetuximab, especially when the cornea already has previous alterations, such as a history of herpetic keratitis.
A 79-year-old man with a history of colorectal cancer undergoing chemotherapy (5-fluorouracil) combined with cetuximab every 15 days and an episode of herpetic keratouveitis in the right eye (RE), was attended by the authors because of tearing, increased secretions, foreign body sensation and blurred vision since the herpetic episode.
On examination of the right eye, a reduction in corrected visual acuity (VA) was observed, and in the slit lamp were observed signs of conjunctivitis in addition to a temporal peripheral area of corneal thinning with underlying endothelial folds, without infiltration nor edema and with fluor+ deposit but without uptake. Suspecting probable herpetic conjunctivitis and corneal thinning, treatment with intense hydration and acyclovir ointment 5 times a day was prescribed. Serial OCT were performed every week and progressive corneal thinning was perceived.
Due to the risk of perforation, cetuximab was suspended, a contact lens was placed and amniotic membrane (AM) repositioning surgery was made, in addition to this, oral treatment with doxycycline 100 mg every 12 hours, prednisone 30 mg daily and vancyclovir 400 mg 5 times a day and topic aureomycin ointment was prescribed.
During the follow-ups, a good post-surgical evolution was verified with a progressive increase in corneal thickness and neovascularization of the area. Currently, with adecuate corneal thickness and undergoing hydration treatment.
Whenever a corneal deffect is observed in patients undergoing cetuximab cicles it's important to do a close monitoring due to risk of progression even corneal perforation.

EP-COR-28

An unusual case of a fully reversible bilateral progressive corneal ectasia

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A 24-year-old girl was referred to our clinic due to decreased vision and the recent onset of astigmatism in both eyes (OO). The patient reported a history of Bell's palsy and a recent treatment with isotretinoin. She complained about photophobia, foreign body sensation, and itching, causing frequent eye rubbing. Her distance best-corrected visual acuity (VA) was 20/20 and 20/25 in the right and left eye. Corneal topography showed irregular astigmatism and an abnormal Surface Asymmetry Index (SAI) in OO. The elevation and complex aberration indices were compatible with KC.
The instrument statistical analysis software classified the map as 40% KC similarity and 60% KC severity in the best eye. The pachymetry map detected KC's eccentric corneal thinning characteristics in OO. Slit-lamp examination revealed conjunctival injection and upper tarsal giant papillae in OO. The patient was instructed to avoid eye rubbing. Preservative-free tear substitute and 0.1% cyclosporine ophthalmic emulsion quid were prescribed.
At 3, 6, 9, and 12-month follow-ups, slit-lamp findings revealed a regression of hyperemia and giant papillae and improved tear stability with an uncorrected VA of 20/20 in OO. The topography showed a regression of the corneal ectasia in OO. The KC screening application did not detect any anomalies. Unrecognized Vernal keratoconjunctivitis (VKC) can lead to anatomical and refractive consequences. The prevalence rate of KC is 26.8% among VKC patients, whereas abnormal topography may appear in up to 71% of them.
In our case, the association between corneal ectasia and VKC may reflect the eye-rubbing-related corneal response. Treatment with 0.1% cyclosporine led to a favorable evolution in clinical and anatomical indices, proving to be a good treatment. Proper recognition of the VKC complications is crucial, as most of these can be managed or prevented. Despite the accuracy of diagnostic tools in diagnosing KC, they cannot replace an accurate clinical examination.

EP-COR-29

Amniotic membrane transplant in a case of idiopathic band keratopathy

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Purpose: To expose an alternative treatment for band keratopathy using EDTA chelation combined with amniotic membrane transplant.
Case study: A 53-year-old male diagnosed of band keratopathy and no response to EDTA eye drops presented at the clinic. Visual Acuity was 20/40 and 20/60. In the slit-lamp examination a severe subepithelial calcic band was found including the visual axis.
The patient had no ocular disease history and a systemic workup did not find another cause. Due to no PRK available, combined EDTA chelation plus Amniotic Membrane Transplant was proposed. Under topical anesthesia: epithelial keratectomy was made with alcohol 16% and cotton swabs. Posteriorly, EDTA application during 3 minutes allowed the complete removal of subepithelial calcium.

Finally, with the purpose of faster and non painful recovery an Amniotic Membrane Transplant was made using a 10-0 Nylon to secure amniotic membrane to conjunctiva. Two layers were used, the first one with the epithelial side up and the second one with epithelial aspect face to the cornea. A treatment with therapeutic contact lens plus topical 0.1% Dexamethasone and 0.5% Moxifloxacin three times per day were prescribed.

Conclusion: EDTA chelation is one of the most extended options used to treat Band Keratopathy. After removal of epithelium usually a therapeutic contact lens is placed to support the growth of new epithelium.

However, that is only a physical support without biological regenerative properties. Amniotic membrane not only provides a wide range of growth factors but also decreases the inflammatory response and risk of infection with a relatively simple procedure.

Because of the previously exposed, patients can get a faster and non painful recovery after the surgery which is crucial in this pathology since most of the cases are bilateral. In this case, our patient gets an asymptomatic full recovery by the first month postoperative gaining three lines of vision.

EP-COR-30

Deep anterior lamellar keratoplasty following Gundersen flap surgery: a two-step approach for Acanthamoeba keratitis

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Purpose: We report the successful management of Acanthamoeba keratitis through Gundersen flap surgery followed by Deep Anterior Lamellar Keratoplasty. This study reviews the surgical management and outcomes of a patient with severe Acanthamoeba keratitis not responsive to empiric antibiotic therapy.

Methods: A 35-year old female presented with severe corneal ulceration associated with intense conjunctival hyperemia, neovascularization and thick purulent discharge. She had a history of contact lens wear. No clinical response was observed with standard empiric antibiotic therapy, Hexamidine diisetionate 0.1% coll q.i.d and PHMB 0.02% coll q.i.d. Gundersen flap surgery was performed and topical antimicrobial therapy was continued resulting in clinical resolution of the infection and inflammatory response. Upon clinical resolution, 9mm DALK was successfully performed.

Results: The surgery was uneventful and vision improved.

Conclusions: For Acanthamoeba keratitis, a two-step approach involving conjunctival flap surgery followed by deep anterior lamellar keratoplasty can achieve infection control and improve surgical outcomes, thereby, potentially lowering the risk for corneal graft rejection and subsequent graft failure.

EP-COR-31

A case of keratitis caused by infection of *Acinetobacter lwofii* in a patient with ulcerative colitis

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Purpose: To report a case of keratitis caused by Acinetobacter lwofii in a patient with ulcerative colitis using oral steroids for an extended period of time.

Case summary: A 32-year-old male patient, using oral prednisolone for an extended period of time for ulcerative colitis, with significant visual impairment, ocular pain, conjunctival injection, and discharge in his right eye was consulted in emergency room.

Prior, he was given topical antibiotics - tobramycin 0,3%, ciprofloxacin 0,3% q.i.d. and topical diclofenac 0,1% t.i.d for 3 weeks without any improvement. On slit-lamp examination, a 6.0 × 7.5-mm dense round stromal infiltrate with an overlying epithelial defect, hypopion and endothelial plaque was observed. The bacteriological culture revealed A. lwofii.

According to the susceptibility result, the patient was treated with topical 0.5% levofloxacin hourly and intracamerular vancomycin 1.0 mg/0.1ml. The corneal ulcer healed gradually with corneal opacity remaining after 12 weeks of treatment.

Conclusions: This study reports a case of a rarely ocular involvement with Acinetobacter lwofii in a patient using oral steroids for an extended period of time.

EP-COR-32

Bilateral subconjunctival haemorrhage. More than meets the eye?

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Purpose: To share an uncommon presentation of disseminated Kaposi sarcoma presenting with bilateral subconjunctival haemorrhage.

Methods: Case report with photo-documentation.

Results: A 34-year-old Malay man, with poorly controlled HIV infection, chronic hepatitis C, secondary syphilis, and childhood asthma, was diagnosed with COVID-19 and admitted for isolation following 3 days of respiratory symptoms and a positive PCR test.

He also complained of red and teary eyes for a month's duration. Multiple subconjunctival hemorrhages were seen bilaterally. Lower lid eversion revealed violaceous vascular masses hidden in the inferior fornices extending up to the bulbar conjunctiva. Further lesions in the left upper gum, stomach, duodenum and rectum were found. There was generalized lymphadenopathy corresponding to hyper-attenuating enlarged lymph nodes on CT scan. Biopsies of the stomach lesions and inguinal lymph node were positive for Kaposi sarcoma.

After compliance with antiviral treatment and improvement in HIV viral load, Paclitaxel was started. Conjunctival lesions showed good resolution with treatment.

Despite reports linking kaposi sarcoma with COVID-19 infection, the timeline of events suggests HHV-8 viral reactivation due to COVID-19 infection is unlikely in our patient.

Conclusion: Bilateral conjunctival kaposi sarcoma is rare. This case shows the importance of close examination of the conjunctiva including the fornices in high risk patients. This is especially so given the larger number of patients lost to follow up during the COVID-19 pandemic.
Financial disclosures: Nil

EP-COR-33

Prospective one year study of corneal biomechanical changes following high intensity, accelerated cornea cross-linking in patients with keratoconus using a non-contact tonometer

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Purpose: To characterize corneal biomechanical properties utilizing a dynamic ultra-high-speed Scheimpflug camera equipped with a non-contact tonometer (CorVis ST, CST) in keratoconic corneas following continuous high-intensity, high irradiance corneal cross-linking.
Design: Prospective longitudinal single-centre study at a tertiary referral center.
Methods: Corneal biomechanical properties were measured in patients with progressive keratoconus undergoing high intensity (30 mW/cm^2), high irradiance (5.4 J/cm^2), accelerated corneal cross-linking with continuous exposure to ultraviolet-A for 4 min. CST was used to assess corneal biomechanical properties pre-operatively and at 1, 3, 6 and 12 months post-operatively. CST output videos were further analyzed using several previously reported algorithms.
Results: A total of 25 eyes of 25 participants were examined. The mean age of participants was 20.9 ± 5.3 years; 56% were male and 80% were of Māori or Pacific Island origin. Energy absorbed area (mN mm), was the only significantly changed parameter compared to baseline at all time points measuring 3.61 ± 1.19 preoperatively, 2.81 ± 1.15 at 1 month (p= 0.037), 2.79 ± 0.81 (p= 0.033) at 3 months, 2.76 ± 0.95 (p= 0.028) at 6 months and 2.71 ± 1.18 (p= 0.016) at 12 months.
Conclusions: The significant difference between the pre and post-operative energy absorbed area appears to reflect changes in corneal viscous properties that occur following corneal cross-linking.

EP-COR-34

Improving inequity in access to post-crosslinking care and visual rehabilitation for patients with keratoconus in Auckland, New Zealand – preliminary results

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Purpose: To determine if ophthalmic care following corneal crosslinking (CXL), both to monitor treatment efficacy and the provision of visual correction, can be provided more equitably in a community optometry setting through appropriate training and equipment use with ophthalmologist oversight for patients with keratoconus in Auckland.
Method: Standard post-CXL model; first specialist assessment, CXL procedure, 1-month follow-up, 3-month follow-up including referral to separate service for visual correction. Community clinic, patients that reside <10Km from the optometry practice transferred to clinic; 3-month follow-up (including assessment of visual needs and correction). Data compared between services; age, gender, ethnicity, proportion of appointments attended, worse-eye habitual VA (WHVA) and best-potential VA (WBPVA).
Results: Demographics were similar between standard (n=69) and community clinic (n=27); age, 24.4±7.2years and 24.4±5.9years, ethnicity, Pacific Peoples (47% and 56%), Māori (16% and 19%), European (20.7% and 11%), Asian (15% and 15%), gender, female (38% and 52%). Attendance was significantly higher in the community clinic 81% vs. 60% (p<0.001). WHVA was similar between standard and community clinic 0.71±0.41(6/31) vs. LogMAR0.74±0.41(6/33). WBPVA (LogMAR0.4±0.3(6/14)) was significantly better than WHVA in the community clinic group (p<0.001). Assessment of WBPVA did not occur in the standard group at 6-month follow-up.
Conclusion: Māori and Pacific Peoples are over-represented in both standard and community clinics, however, appointment attendance was significantly higher in the community clinic and patients attending this clinic had their visual potential determined promptly. With appropriate training, equipment and ophthalmology support, a community optometry-based service has the potential to provide more equitable post-CXL care by combining assessment of treatment efficacy and visual correction assessment at the 3-month post-op time point.

EP-COR-35

A unique series of keratoconus in five siblings of a single Tongan family

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Purpose: To describe a case series where all five siblings in a family of Tongan ethnicity were affected by keratoconus. The aetiology of keratoconus has both complex genetic and environmental elements. We describe the disease characteristics in all five individuals.
Method: Patients were assessed through the keratoconus and crosslinking (CXL) service of Te Whatu Ora, Auckland Region. Four of the five siblings

were referred to the service following an eye examination by an optometrist. The fifth sibling also underwent a clinical assessment as the clinician was suspicious of keratoconus due to high prevalence in their siblings. A standard clinical examination including history, unaided vision (UVA), corneal tomography (Pentacam AXL) was conducted.

Results: The five siblings were aged 5, 7, 8, 10 and 12 years. The second and third oldest were female, and the remaining, male. The two oldest siblings had moderate keratoconus with an oval-cone pattern. UVA in right and left eyes was 6/120, 6/19 and 6/30, 6/19, respectively. Both were waitlisted for bilateral CXL. The other siblings had mild keratoconus, demonstrating an asymmetric bowtie, inferior steepening and reduced corneal thickness bilaterally, but 6/7.5 or better UVA. All siblings reported eye-rubbing with only one reporting atopy. No other family history was noted.

Conclusion: This case series represents an unusually high occurrence of keratoconus among siblings. The fact that all five siblings had either frank or subclinical keratoconus highlights the need to investigate siblings, particularly younger siblings, for the disease in Māori and Pacific Peoples, among whom keratoconus is known to have a higher prevalence. This may allow for earlier detection and treatment with CXL, preventing moderate to severe vision loss.

EP-COR-36

Severe keratitis with endophthalmitis

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Objective: The incidence of severe keratitis with endophthalmitis is approximately 0.5% in the population. Mostly the source is fungal infection and the prognosis is very poor. Surgical intervention and enucleation are required in more than 70% of cases. Initial visual acuity (VA) is considered the main factor determining the prognosis. In this case report, we presented a patient with severe keratitis and endophthalmitis whose stability was achieved without surgery.

Method: Case report.

Results: The 80-year-old male patient was referred to our clinic with the diagnosis of severe keratitis with endophthalmitis in the right eye. The VA was light perception in the right eye and 20/20 in the left eye. Biomicroscopic examination revealed total corneal ulcer in the right eye, shallowness and hypopyon in the anterior chamber, vitreous opacities and bands on ultrasound.

Corneal scraping and vitreous sample were taken and intravitreal, subconjuntival and topical fortified voriconazole + amphotericin B + vancomycin + ceftazidime treatments were administered. In the first week, it was observed that the vitreous opacities decreased and the corneal lesion started to shrink.

Topical fortifying treatment was gradually decreasing with the arrival of the culture(-), amniotic membrane was applied and renewed as needed, and lateral tarsorrhaphy was performed and then removed at the 3rd week. In the 8th week, the keratitis area disappeared and was replaced by scar tissue and vascularization, however VA did not increase.

Conclusion: Although the lesions regressed and surgery was not needed in our case, VA did not increase, which proves the negative effect of initial VA on prognosis.

As a result, it has been shown that even though there was no growth in culture with this case, continuing with the agents whose efficacy we have observed and application of amniotic membrane and tarsorrhaphy can provide stability without going to surgery even in such cases with poor prognosis.

EP-COR-37

Smile for the treatment of residual refraction error and presbyopia after Photorefractive Keratectomy (PRK) and LASIK

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Purpose: We aimed to investigate the improvement in visual acuity, presbyopia, and patient satisfaction after small-incision intrastromal myopic lenticule implantation using (the SMILE module) with residual hyperopic refraction after PRK And LASIK surgery.

Methods: This included 54 eyes of 22 patients (aged 43 to 52 years).

Postop PRK and Lasik included hyperopic residual refraction. Patients had residual hyperopia between +1.0 and +3.25 D and Astigmatism between +0.75 and +1.75 D. The cap thickness was set to 130 µm from the corneal surface and a 2.0-mm incision. The pocket was dissected using a blunt spatula washed with normal saline and a 7.70 mm intrastromal pocket was prepared with SMILE Module and a Myopic lenticule implanted.

Results: Patients were followed for 12 months. No reaction, infection, epithelial defects, punctate keratitis, or signs of allogeneic rejection were observed in any of the patients. The UDVA increased from 0.70 ± 0.06 logMAR preoperatively to 0.05 ± 0.02 logMAR 12 months postoperatively ($p< 0.001$). And UNVA had an increase in J 2 one year after preop J 7.

Conclusion: SMILE module is a reliable method for treating residual refraction and presbyopia after PRK and Lasik, as it provides results in the shortest time without complications and increases patient satisfaction.

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EP-COR-38

Correlation of corneal curvature and central corneal thickness with refractive errors in school age children population

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Purpose: To determine and investigate the correlation between corneal curvature, central corneal thickness (CCT) with refractive errors, age and gender among school age children population in Malang district, Indonesia.

Methods: A population based consecutive cross sectional study was conducted in 13 orphanages in Malang district, Indonesia. This study involved 772 eyes of 386 respondents who met the inclusion criteria included in this study.

After receiving approval and informed consent, following examinations were performed for all the respondents, measuring best-corrected visual acuity by Logarithmic Visual Acuity Chart (LVRC), corneal curvature by handheld autorefractometer, central corneal thickness (CCT) by handheld pachymetry devices.

All patients underwent a complete slit-lamp examination. Correlation between corneal curvature, central corneal thickness (CCT) with refractive errors, age, and gender was studied using One-Way ANOVA, Pearson, and Independent t-test correlation coefficient.

Results: The mean age of the overall study population was 13-15 years old. The mean central corneal thickness (CCT) of our study population was >573 µm. Astigmatism has the highest average corneal curvature 7.78 ± 0.29, followed by myopia 7.72 ± 0.34. Corneal curvature in women was steeper than in men. Myopia has the thinnest average central corneal thickness (CCT) 566.66±38.20, while hypermetropia was the thickest 618.00±54.18.
Central corneal thickness (CCT) has a positive correlation with age, i.e., as the age of respondents increases, the central corneal thickness (CCT) decreases, and vice versa. Central corneal thickness (CCT) in men was thicker than in women.
Conclusions: Corneal curvature was significantly associated with refractive errors and gender. However, there was no significant association corneal curvature with age. Central corneal thickness (CCT) was significantly associated with all variables, refractive errors, age and gender.

EP-COR-39

Visual recovery after Boston Type 1 KPro procedure in monocular patient with phthisical eye

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We present a case of 72 yo monocular patient previously diagnosed with type 2 diabetes, MMP, and phthisis bulbi. The patient was pseudophakic and had a total opacified, vascularized cornea at presentation. The VA was LP, IOP was 5 mmHg, axial length was 17,0mm.
Retina was attached by B-Scan. The patient was given an intravitreal injection of Healon5 4,5 weeks prior to the KPro surgery which increased the IOP to 15mmHg. 1 month after KPro surgery, the patient's visual acuity improved to 20/200.
The follow-up period is 14 months, the condition of the eye is still stable.
Our case suggests that the combined treatment of an intravitreal injection of Healon5 and KPro surgery proves to be a promising approach in the management of phthisical eye for regaining useful vision.

EP-COR-40

Corneoscleral cyst-induced high astigmatism: a rare case and its management

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Purpose: To describe a case of corneoscleral cyst-induced astigmatism and its management.
Methods: A 15-year-old boy with a chief complaint of increasingly blurred vision and white spot at the center of the eye came to the outpatient clinic. Patient had a history of penetrating corneal trauma and cataract extraction 5 years before presentation. High degree of astigmatism and hyperopia was found.
Slit lamp examination followed with ancillary test was performed. Aphakia and corneoscleral cyst were assumed to be the cause. The cyst was incised and irrigated using balanced salt solution through limbal incision.
Results: Post-operative follow-ups showed improving vision. No sign of recurrences was documented within 2 months of follow-up. However, due to still unstable visual acuity, longer follow-ups are needed before prescribing rigid gas permeable contact lens.
Conclusion: This minimally invasive surgical approach followed by plan of giving rigid gas permeable contact lens may be a good alternative to young post-trauma patients with aphakia and corneoscleral cyst-induced astigmatism.

EP-COR-41

Down Syndrome keratopathy; corneal profile phenotype

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Purpose: The main objective was to analyze and classify corneal alterations, both topographic and wavefront, in patients diagnosed with Down Syndrome and to establish different corneal phenotypes in this cases.
Method: This is a retrospective study, based on the review of medical reports and topographic maps of Down's Syndrome patients. All patients underwent a complete ophthalmological examination, topography and wavefront study with the MS-39 device (CSO, Florence, Italy).
Patients with history of eye surgery and/or poor quality in the topographic image acquisition were excluded from the study.
Finally, 3 experts classified the topographic maps as "strictly normal topography", "atypical topography" and "abnormal topography".
Results: 52 eyes of 28 patients were included (15 men, 13 women). The mean age was 34.5 (SD 12.92) years. The mean spherical equivalent was -1.98 (SD 8.43) diopters and the mean best corrected visual acuity was 0.44 (SD 0.36) logMAR. Mean SimK values were 45.96 (SD 5.77), 48.65 (SD 7.82) and 47.22 (SD 6.51) diopters for flat, steep and mean keratometry respectively.
The mean anterior maximum keratometry was 58.08 (SD 21.24) diopters and the posterior; -8.18 (SD 2.99) diopters. The mean minimum epithelial thickness was 41.8 (SD 9.14) microns, and the mean corneal thinnest value was 471.84 (SD 72.13) microns.
Regarding the wavefront values, the mean total RMS was 2.91 (SD 2.70) microns, the mean HOA was 1.78 (SD 2.29) microns and the mean comatic aberration was 1.12 (SD 1.32) microns.
Finally, 88.46% of the topographies were classified as "abnormal topography" and 11.54% as "atypical topography"
Conclusion: According to our study, patients with Down Syndrome presented a large percentage of corneal alterations, establishing different corneal phenotypes suggestive, to a greater or lesser degree, of ectatic corneal pathology.

EP-COR-42

Mystery of corneal dystrophy - a rare case of granular dystrophy

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A case of 11 year old girl and 13 year old boy brought by their mother to hospital with complaints of whitish opacity in both eyes which was gradually progressing, painless and associated with diminution of vision, photophobia and glare. No other ocular complaints and no similar complaints in family but there is 2 nd degree consanguineous marriage. Birth history and antenatal history uneventful. Slit lamp examination shows white crumb like opacities with clear intervening spaces, posteriorly going upto midstroma extending to periphery sparing limbus. Necessary investigations like B scan to rule out any posterior segment pathology,anterior segment OCT to see extent of depth of opacity and plan surgery accordingly.
The first male child posted for left eye DALK, then after a week a female child also posted for left eye DALK. Both corneal buttons sent for histopathological examination as well as special stains like congo red and mason trichrome, of which Masson trichrome stain was came positive. Postoperatively started on antibiotic and steroid eye drops and now doing well. Postoperative Anterior segment OCT done to see thickness of graft
Discussion: Granular dystrophy is rare epithelial stromal dystrophy autosomal dominant linked to TGFB1 gene on chromosome number 5.Histopathologicaly diagnosed by special stains like mason trichrome.
Conclusions:
1. Early intervention leads to better visual prognosis.
2. Manual Deep anterior lamellar keratoplasty, helps in baring of descemets membrane reduction chances of endothelial rejection post operatively.
3. As it is lamellar keratoplasty earlier the visual recovery and suture related complications are eliminated, and;
4. Counselling about consanguineous marriages reduces chances of inheritable diseases.

EP-COR-43

Changes in corneal Q value (corneal shape) after intrastromal lenticule implantation in advanced keratoconus

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Purpose: To investigate Corneal Q value changes after Fresh myopic lenticular implantation in keratoconus with femtosecond laser-assisted small incision lenticule extraction (SMILE) surgery.
Methods: Fifty eyes with advanced keratoconus indicated for corneal transplantation were included in this study. Fresh myopic lenticular implants were placed according to corneal topography in all eyes through SMILE surgery. Lenticular implants were extracted from patients with myopic refractive errors of the cornea.
Results: All patients were followed for five years. No reaction, infection, epithelial defects, punctate keratitis, deep lamellar keratitis, or signs of allogeneic rejection were observed in any of the patients. Q value improved from − 0.82 ± 0.04 preoperatively to − 0.60± 0.05 five years postoperatively (p< 0.001). The pre-operative CDVA improved from 1 ± 0 logMAR to 0.55 ± 0.09 logMAR (P< .001). The preoperative CCT increased from 398 ± 13.29 µm to 481.10 ± 8.12 µm (P< .001).
Conclusion: The intrastromal lenticule implantation procedure was clinically effective in improving corneal shape (increasing Q value) and vision in patients with keratoconus. The addition of fresh myopic lenticule increased corneal thickness while transforming the cone into an ellipsoid shape.

EP-COR-44

Calcific band keratopathy

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Introduction: The case report is about an 83-year-old female patient with calcific band keratopathy.
Methods: A patient with history of atrophic form of age related macular dystrophy, glaucoma, after cataract surgery, with zonular keratopathy, was referred to our clinic by the district ophthalmologist because of several months of pain in both eyes, especially in the right eye, significant photophobia. The patient almost did not open her eyes in daylight for the last six months, in the last months she was repeatedly treated with ATB + KS, but after these treatments there was only a slight decrease in the difficulties.
Initial BCVA in both eyes was hand movement, after application of local anaesthetics was 0.05, corneal findings of zonular keratopathy with epithelial integrity disorder in the center, other findings on the anterior segment were normal, funduscould not be seen.
In the operating room after abrasion of the corneal epithelium on the right eye, a layer of calcium deposits was gradually dissolved and abraded using 3% EDTA. After the procedure, a contact lens was fitted and local antibiotic therapy was administered 5 times a day.
At regular follow-ups, the cornea is reepithelialized and the fundus shows an advanced stage of dry form of age related macular degeneration.
Conclusion: Despite the fact that we did not expect a visual benefit in the patient due to the presence of the atrophic form of ARMD, the removal of the calcific band keratopathy using EDTA had a significant subjective benefit for the patient, and the elimination of pain and photophobia resulted in an improved quality of life.

EP-COR-45

A case of chronic chemosis in a patient with Fabry Disease

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Purpose: Fabry disease (FD) is an inherited severe multi-system disease characterized by a deficiency lysosomal hydrolase alpha-galactosidase A leading to intralysosomal accumulation of glycosphingolipids. We describe the case of a patient with a diagnosis of FD who presented to the outpatient department with chronic chemosis secondary to FD.
Methods: A 54 year old gentlemanwith a known background of FD with cardiovascular complications was referred to the outpatient department with a 6 week history of irritation and chemosis in his right eye. Visual acuity was preserved (6/6) while ocular examination revealed conjunctival chemosis temporally, nasally and inferiorly in addition to Dellen degeneration. Vortex keratopathy was noted in the left eye. Fundus examination demonstrated suspicious optic disc changes.
Systemic evaluation was carried out including computed tomography (CT) of the head and orbits which did not show any gross intra or extraorbital abnormality. Visual field testing (30-2) showed no visual field deficit. Serum testing did not reveal any biochemical abnormality. Fabry disease was felt to be the likely culprit for the conjunctival chemosis and was managed successfully with regular use of ocular lubricants.
Discussion: Corneal verticillata is the characteristic finding and is noted in almost patients. Whilst other ocular manifestations such as periorbital oedema, vessel tortuosity and lens opacities are recognized, cases of conjunctival chemosis in FD have only been described on 3 other occasions.
Studies have demonstrated that FD may cause deposition of storage material in vascular endothelial cells leading to local damage of vascular fluid homeostatic mechanisms resulting in extravasation of fluid.
Conclusion: While the exact aetiology of chemosis in FD is not yet apparent, due to its wide-reaching systemic implications, FD should be considered as a possible cause of chronic conjunctival chemosis where the aetiology is not characterised.

EP-COR-46

A corneal conundrum: an unusual cluster of Moraxella Keratitis Cases

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Purpose: To analyse the clinical presentation, predisposing risk factors and outcomes of a cluster of 5 cases of Moraxella catarrhalis keratitis.
Methods: Retrospective analysis of culture-proved cases of Moraxella keratitis from hospital records and slit-lamp photos during a 2 year period from June 2020 to June 2022.
Results: Moraxella keratitis was identified in 5 patients. The mean age of the patients was 61 years (range 49–74), 2 females, 3 males. Visual acuity at presentation was counting fingers or less in all cases. Common predisposing factors included alcohol dependency (3/5), heavy smoking (3/5), malnutrition (3/5), gardening/DIY work (3/5), herpetic disease and dry eyes (3/5). Common features included: large infiltrates at presentation (average 4x7mm), infero-central location, severe stromal loss and Descemet's folds (5/5), corneal perforation (3/5), hypopyon (5/5) and intrastromal bleeding (3/5).
All patients received a combination of fluoroquinolone and cephalosporins, topical steroids were started within the first 48 hours due to severe stromal loss. Adjunctive procedures with tissue adhesive and bandage contact lens (3/5) and surgical intervention with penetrating keratoplasty and/or cataract surgery (2/5) were necessary for visual rehabilitation.
Conclusions: This rare infection presents challenging features with a high incidence of early complications requiring surgical intervention and a poor visual outcome attributable to the nature of the infection and the predisposing factors. Early initiation of topical steroid appears a critical factor in the prevention of stromal melt.
More research on the antimicrobial susceptibility of Moraxella infections is required to prevent sight-threatening complications of this type of keratitis.

EP-COR-47

A challenging journey through the diagnosis and treatment of Acanthamoeba keratitis

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Purpose: To report a case of delayed diagnosis of Acanthamoeba keratitis, complicated by chronic scleritis, persistent uveitis and required enucleation.
Methods: Clinical records and slit-lamp photos review, laboratory investigations, imaging and histological review of a case that resulted negative for Acanthamoeba on multiple testing.
Results: A 76 years old female with previous history of right Bell's palsy and monthly contact lens wear for hypermetropia presented with a red and painful right eye for 5 days, a clear cornea, no visual loss, no scalp tenderness, no jaw claudication. She reported similar self-resolving episodes affecting left eye during the previous 6 months.
After the first month of topical antibiotics and lubricants she developed an epithelial defect that progressively enlarged to 5x7mm and became associated with anterior uveitis, corneal oedema, progressive stromal neovascularisation, hypopyon, intense pain and light sensitivity. She underwent vitreous and anterior chamber biopsy, the corneal biopsy resulted negative on three occasions, the in vivo confocal microscopy resulted negative.
Due to the persistent uveitis and intense ocular pain, the patient was initiated on oral prednisolone and methotrexate. 13 months after presentation, due to the progressive loss of vision and persistence of pain, the patient underwent enucleation and histology. The immunohistochemistry showed acanthamoeba cysts in the posterior cornea associated with reactive scleritis.
Conclusions: This case shows many important learning points on the clinical management of this infection and the challenges of false negative diagnostic testing.

EP-COR-48

Unilateral ectasia with sudden onset and rapid progression in an adult patient with history blepharitis and atopy

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Keratoconus is a bilateral and asymetric corneal disease which results in progressive thinning of the cornea. Environmental factors promote its emergence and progression.
A 55 year old man, with a history of allergy and atopy and a normal ophthalmology examination 2 months earlier (irrelevant refraction and opitmal visual acuity), came to the ophtalmology emergencies complaining of a 1 month history of blurred vision in his left eye and itching, increased secretions and foreign body sensation in both eyes (BE).
On examination, we verified a best corrected visual acuity (BCVA) in the right eye (RE) of 0.8 and count fingers in the LE. In the slit lamp, signs of severe blepharitis, allergic conjunctivitis and gutta were found in BE, while in the LE an inferior corneal thinning associated with iron lines and possible Munson's sign was observed.
As a corneal ectasia was suspected, artificial tears were prescribed and after 2 weeks a review was performed in the anterior segment section. A LE keratometry (+49.25 at 170º,cylinder -12.25x80º) and sheimpflug topography (Oculus Pentacam®) was performed. He presented a mean K of 45.2D, a maximum K of 60.7D, a thinnest corneal thickness of 415 micrometers, a posterior elevation (PE) of +119 microns and a high-risk crab claw pattern consistent with *de novo ectasia* on LE, while parameters were normal on the RE.
Treatment to stabilize the tear film with descending corticosteroid eye drops, palpebral hygiene and oral doxycycline, was prescribed and avoid eye rubbig was recomended. One month later, an endothelial count was performed in LE with 1768 cells and a Pentacam® was repeated, evidencing progression with an increase of 1.5D and PE of +17 microns for which crosslinking was carried out. Currently follow-up with serial topography reveals stability.
Environmental factors affecting ocular surface cancause unilateral sudden onset and rapid progression of keratoconus in adulthood, requiring early treatment for its stabilization.

EP-COR-49

Dry human amniotic membrane-derived matrix for the treatment of persistent corneal epithelial defects

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Purpose: To present the use of dry human amniotic membrane-derived matrix (AMDDM) in the treatment of persistent corneal epithelial defects (PEDs)
Methods: Retrospective review of 45 patients (63 to 94 years) treated at Queen Mary's Hospital, King's College Hospital NHS Foundation Trust with AMDDM (Omnigen) for PEDs. The main outcome measures were time to heal the corneal epithelial defect, the safety of the procedure (safety was defined as lack of complications and no need for further intervention), the final visual acuity (VA), and the patient's comfort.
Results: A total of 45 cases (26 females and 19 males) were followed up for up to six months following the resolution of the corneal pathology. The majority of patients presented non-healing epithelial defects secondary to neurotrophic keratitis (63%) and the remaining patients had persistent defects due to infective causes (13% herpetic keratitis, 24% bacterial keratitis).
The mean time to heal was 29 days (range 18 to 48 days), the mean time for removal of the bandage contact lens was 18 days (range 14 to 26 days), the safety of the procedure was demonstrated in 44 cases not requiring further procedure, 1 case required tectonic corneal graft due to microbial keratitis.
The total time for resolution of the pathology to discontinue the topical antimicrobial therapy was 32 days (range 29-49 days). The VA remained stable from baseline at the first assessment of the corneal epithelial defect in 67% of patients and improved by an average of 2 Snellen lines in 27% of patients, the vision resulted in the loss of an average of 2 Snellen lines from baseline in 6% patients.
All patients reported improved comfort following the AMDDM.
Conclusions: The use of dry human amniotic membrane-derived matrix resulted in an acceleration of the time to heal the corneal defect in all cases, the procedure resulted safe and led to an improved level of comfort in all patients.

EP-COR-50

Treatment of corneal infection by an antibiotic drug eluting contact lens

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Moxifloxacin is a fourth-generation fluoroquinolone, commonly used by ophthalmologists due to its increased activity against Staphylococcus aureus as well as gram negative organisms compared to earlier fluoroquinolones such as ofloxacin and ciprofloxacin. For this reason, moxifloxacin is often a first-line choice by ophthalmologists for the treatment and prevention of anterior ophthalmic infections. To treat ocular infection more effectively than standard eye drops Glint Pharmaceuticals has developed a moxifloxacin releasing contact lens.
A safety study was performed on 20 subjects with healthy eyes. The protocol design was a contralateral study with 5 mg/ml antibiotic (USP Moxifloxacin and 0.5% Providone (PVP)) Tocopherol sterile bandage contact lens (senofilcon A) labeled ACL5 (antibiotic contact lens) versus a Tocopherol bandage contact lens (senofilcon A) labeled TCL (tocopherol contact lens. Both lenses were plano with a base curve of 8.8. The lenses were worn continuously for 48 hours.
Primary study objectives were:
1. Confirm that the 5 mg/ml antibiotic (USP Moxifloxin) sterile bandage contact lens (senofilcon A) ACL5 has no adverse results on eyes;
2. Confirm patient comfort with wearing ACL5 as compared to the control lens (TCL) over time.
Study results: All participants completed the study without adverse events and or discomfort over a 48-hour period. Based on the study results clinical developed of ACL5 will proceed with a larger cohort with clinical grade infection.

EP-COR-51

Perception of trifocal IOL performance in young adults with high astigmatism and hyperopia and its improvement using Small Incision Lenticule Extraction

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Purpose: This study aimed to present the latest approaches to planning trifocal intraocular lens (IOL) and toric trifocal IOL implantation for residual refractive errors in young adults with high astigmatism and hyperopia and increase the patients' best visual outcome and satisfaction using Small Incision Lenticule Extraction (SMILE) after implantation.
Methods: Eighty eyes of 40 consecutive patients who underwent refractive lensectomy were included in this retrospective study. It included patients aged 20–45 years seeking spectacle independence with pre-operative high spherical hypermetropia of 4D or higher and astigmatism of 3D or higher. Patients' treatment status was categorized as trifocal IOL (n=40) and toric trifocal IOL (n=40). The mean patient follow-up time was six months after IOL implantation.
First, we assessed visual acuity and satisfaction for both groups and then examined laser vision correction results of patients who were dissatisfied after IOL implantation (trifocal IOL group) and underwent SMILE surgery to increase their satisfaction level.
Results: There were no statistically significant differences between trifocal IOL and toric trifocal IOL for near (UNVA), intermediate (UIVA), and distance (UDVA) uncorrected visual acuity. Comparisons related to patient satisfaction six months after IOL implantation were statistically significant for using a computer and night driving. In the trifocal IOL group, compared to pre-operative values, sphere and cylinder at six months were significantly improved.
Conclusion: In young adults, toric trifocal and trifocal IOL provided sufficient results in visual acuity; however, patients were dissatisfied after implantation. This study reported patient satisfaction levels, including quality of life and life without glasses by using Small Incision Lenticule Extraction (SMILE) surgery.
ClinicalTrials.gov Identifier: NCT04468022

EP-COR-52

The new approach of residual corneal astigmatism after penetrating keratoplasty by changing the corneal Q value with the Smile module

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Aim: The study aims to present the effect of implanting intrastromal fresh corneal lenticule by SMILE module to correct the corneal shape on purpose to reduce astigmatism and increase visual acuity after penetrating keratoplasty.
Method: Eighteen patients (18 eyes) were aged 19-29 years, in all eyes, lenticular implants were removed from patients with myopic refractive errors in the cornea and placed intrastromal according to topography. The stromal pocket diameter was set at 7.60 mm and cap thickness was set to 140 μm from the corneal surface and a 2mm superior incision was. The hinge position flap was set at 90°, with an angle of 50°, and width of 2 mm, side cut angle of 90°. The pocket was dissected using a blunt. The lenticule was held with lenticule forceps and gently inserted into the pocket through the 2 mm superior.
Results: Astigmatism was reduced,1 year postoperatively ($p<0.001$). Additionally, the uncorrected distance visual acuity increased from 0.66±0.08 logMAR preoperatively to 0.061±0.02 logMAR at 12 months postoperatively ($p<0.001$). Q value improved from -0.63±0.04 preoperatively to -0.41 ±0.05 1 year postoperatively, and the total RMS improved from 0.84±0.06 preoperatively to 0.82±0.08 μm postoperatively.
Conclusion: SMILE is a reliable method for treating Corneal Astigmatism After Penetrating Keratoplasty, as it provides results in the shortest time without complications and increases patient satisfaction.
ClinicalTrials.gov Identifier: NCT04987060

EP-COR-53

A new approach to aphakic patients by changing the corneal Q value by implanting the intrastromal lenticule with the Smile module

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Purpose: To investigate patient satisfaction and vision improvement by changing the shape of the cornea (Q value) in aphakic patients by implanting the intrastromal myopic lenticule using the SMILE module.
Method: 16 eyes of 16 patients aged 18 and 35 years. Corrected and uncorrected visions were obtained preoperatively. When calculating diopters in aphakic patients, we determine the lenticule thickness to be added by considering variables such as AC (anterior chamber distance), K values, lens bag distance, and cornea thickness. Since there is no lens in the eye, all the task falls on the cornea.VisuMax femtosecond laser created the stromal pocket with a diameter of 7.60 mm and cap thickness set to 120 μm from the corneal

surface and with a small opening - 3 mm superior incision at 90° and side cut angle 50°. The pocket was dissected using a blunt spatula. The lenticule was held with lenticule forceps and gently inserted into the pocket through the 3 mm superior incision.

Result: The patients were followed up for one year. There were no complications. Q value decreased from -0.53±0.04 preoperatively to -0.81 ±0.05 one year postoperatively ($p<0.001$). Postoperative uncorrected vision increased to 4 lines in 7 eyes and improved to 5 lines in 9 eyes. Patient satisfaction has increased.

Conclusion: Intrastromal lenticule implantation is a feasible and no-complication treatment method in aphakic patients. By changing the Q value, both vision improvement and patient satisfaction were observed.

EP-COR-54

Case report of three degenerations in one eye

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We would like to submit an atypical case presentation of three different types of degenerations in one eye. Corneal degenerations are changes or gradual deteriorations in the tissue of the cornea. They can negatively impact the function of the cornea, limiting its ability to help the eye focus properly. Corneal degenerations can be caused by disease or by aging. In most cases, degenerations have nothing to do with genetics.

Age-related degenerations are known as “involutional” corneal degenerations, while degenerations caused by disease or exposure to certain conditions are “non-involutional.” The symptoms of corneal degeneration can vary depending on the type of degeneration.

In most cases, patients experience both cosmetic and sight-related symptoms. Treatments for corneal degeneration can vary depending on the exact diagnosis. Our case report represents a patient with three degenerations in the left eye and one degeneration in the right eye. The patient was admitted to the eye clinic with complaints of poor vision and visited for only a prescription for glasses.

During slit lamp examination, we discovered crocodile shagreen in the right eye and crocodile shagreen, Salzmann’s nodular degeneration, and Terrien’s marginal degeneration in the left eye.

We did a literature review and didn’t find cases like this, where three different types of degenerations occurred simultaneously.

EP-COR-56

Mooren`s ulcer case presentation in elderly patient

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Mooren`s ulcer is progressive, painful, superficial corneal ulceration, starting at a corneal margin and spreading circumferentially and centripetally: A 73-year-old female patient applied to Malayan Eye Center complaining of photophobia, pain, redness, and tearing in her left eye. No systemic disease was found, a limbal conjunctival injection with 90% stromal lysis was revealed in the left eye. The patient reported no other illness and was completely healthy.

The following treatment was prescribed: antibiotic eye drops q.i.d., cycloplegic eye drops q.i.d., corticosteroid eye drops t.i.d., sodium chloride 5% eye drops q.i.d., lubricant eye drops q.i.d., doxycycline 100 mg p/o b.i.d., subtenon`s injection of betamethasone 0.5 ml. After seven days the corneal ulcer was in the same size and no positive dynamics was observed, so a subtenon`s injection of betamethasone 1.0 ml was performed, and an oral immunosuppressant drug: azathioprine (imuran) 50mg/day was added.

After two weeks, due to no positive dynamics, a surgical intervention was performed: amniotic membrane transplantation and conjunctival resection, as well as in addition to the prescribed drugs, oral glucocorticosteroid tablets were added: metipred 32 mg/day, and also imuran 100 mg/day, doxycycline tablets 50 mg/day b.i.d. After two weeks, the ulcer started to heal, stromal lysis became 60%, metipred was decreased to 24mg/day whereas the other drugs remained the same.

Two months after the first visit, the eye was completely healed, the corneal epithelial layer was intact. Thus, Mooren’s ulcer remains a diagnosis of exclusion with uncertain pathophysiology.

One should always look for associated scleritis, limbal involvement, to rule out other causes of peripheral ulcerative keratitis, including infectious, collagenous and degenerative processes. Advances have been made in the treatment, but significant percentage of cases still remain refractory to available therapies and result in severe visual morbidity.

EP-COR-57

Malignant glaucoma after DSAEK caused by trapped gas bubble behind the iris

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Purpose: The aim is to describe a case of a 67-year-old female with malignant glaucoma after Descemet Striping Automated Keratoplasty (DSAEK) due to a trapped gas bubble behind the iris and to present a problem-solving pathway in the management of this complication and the intraocular pressure (IOP) rise.

Methods: Uncomplicated DSAEK in the right eye was performed in a 75-year-old female with Fuchs’ endothelial keratopathy. At the end of the surgery anterior chamber in 80% was filled with a mixture of SF6 and air.

Results: 12 hours after uncomplicated surgery patient complained about severe ocular pain and headache. IOP was 50 mmHg. In slit lamp examination anterior chamber (AC) was very shallow with peripheral iridocorneal contact and reduced gas bubble to 10% of the AC.

The lower edge of the trapped gas was noticed behind the iris in the slit lamp examination. Topical and systemic antiglaucoma medications, cycloplegic did not decrease IOP. In the operating theatre, the trapped bubble was removed with a needle, and peripheral iridocorneal adhesions were lysed with a flush of basic salt solution.

At the end of the surgery filtered air was injected into filling 70% of the AC. IOP was 16 mmHg. Iris regained its normal anatomy configuration. During and after surgery graft remained attached to the host cornea. In the post-surgical period and 3 months, follow-up increased thickness of the graft and host cornea was noted without any signs of graft rejection, which may indicate endothelial cell damage due to highly increased IOP.

Conclusions: Although rare, malignant glaucoma may occur after DSAEK. If not recognized promptly, the graft endothelium can become damaged and peripheral anterior synechiae can form. Management of this complication may induce other problems such as endothelial cell loss, graft detachment, and/or rejection.

Early recognition and immediate surgical treatment are essential in the prevention of visual acuity loss and graft failure.

EP-COR-58

Infectious crystalline keratopathy in a 94-years old patient

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Female, 94-years-old, presented with bullous keratopathy in the left eye after phacoemulsification with intraocular lens (IOL) implantation. The best corrected visual acuity (BCVA) in the OS was counting fingers.

We performed penetrating corneal transplantation in the left eye, and the patient achieved uncorrected visual acuity (UCVA) of 20/100. After 4 months of the surgery, the patient presented with infectious crystalline keratopathy (ICK). Culture of the lesions: positive for Staphylococcus epidermidis.

The infeccton was treated with gentamicin (14mg/ml) and cefazolin (50mg/ml) eye drops and oral prednisone (40mg/day). After treatment, there was total regression of the corneal deposits, but the edema remained.

BCVA in the OS: counting fingers at 1.5 meters.

Infectious Crystalline Keratopathy (ICK) is a rare infection of the cornea that results in stromal opacities and can lead to low visual acuity.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Education

EP-EDU-01

Developing digital inclusion at Moorfields Eye Hospital for patients and staff

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Purpose: Digital exclusion has had significant exposure since the start of the Covid-19 pandemic (Bowyer et al, 2020). Although being in existence for many years, the pandemic put spotlight on digital exclusion, highlighting the crossover with social exclusion and poverty (Stone, 2021). 21% of the UK adult population lack essential digital skills, and 36% of the UK adult workforce lack essential digital skills for work (Lloyds Bank, 2021).

In response to the pandemic, to provide healthcare to citizens, the NHS accelerated the use of remote care and consultations (Morris, 2020). The use of video consultations was initiated urgently in our organisation due to the pandemic.

Methods: Data over 1 year of video consultation appointments that had been offered to patients was analysed, with particular focus on patient-initiated cancellation. In-depth interviews with patients and staff were also conducted in order to gather rich data about why they felt digitally excluded. Following analysis of respective data and interviews, conclusions were drawn on solutions to create digital inclusion for patients and staff.

Results: From 12763 video consultations that were offered to patients at Moorfields Eye Hospital between December 2020 to November 2021, 86 patients had cancelled due to 3 main factors of digital exclusion: lack of resources (52%), lack of skills (21%), lack of trust in the video consultation model (16%), or a combination of these factors (10%). 'Virtual Pods' were trialled in Moorfields satellite sites, to help support patients log onto Moorfields virtual A&E service. Solutions were also developed in the organisation towards digital inclusion for staff.

Conclusion: The reasons for digital exclusion are complex, but need to be understood and addressed, if we are to continue to scale digital services in the health sector and without widening health inequalities. Further research of digital exclusion may enhance digital healthcare equality.

EP-EDU-02

Dame Ida Mann: the prototypical modern woman

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Purpose: Dr. Ida Mann (6. February 1893, London (UK) – 18 November 1983, Perth (Australia) was the pre-eminent ophthalmologist of her era. Her career is reviewed in the context of the evolution of attitudes and practices in modern society.

Methods: Selective literature search in books and journal articles in close co-operation with Institute of Experimental Ophthalmology, Saarland University Homburg/Saar (Germany) and Department of Ophthalmology, University of New South Wales at Prince of Wales Hospital, Sydney (Australia).
Results: Ida Mann was one of the first female clinician-scientists to conduct pioneering research in ophthalmology. On the foundations of a strong basic science knowledge base and early adoption of the new technology of her era (including the slit lamp, contact lenses, toxicology and cancer medicine), she built an impressive career as an academic ophthalmologist.
Her achievements are all the more remarkable given the then strong resistance for women to entering medicine as a career, even from her own family: She passed the matriculation examination in 1914. She finished her exams in 1941, was appointed Margaret Ogilvie Reader in Ophthalmology in Oxford in 1941, managing her activities in research, teaching and medical practice she was granted a personal chair at the University of Oxford in 1944, being the first female professor at Oxford. She was a private advisor to Winston Churchill during WWII. In 1949 she moved to Australia where she continued doing research and practicing medicine almost until her passing.
Conclusions: Through her outstanding contributions and achievements in ophthalmology and medicine she achieved international recognition in an era before the internet.
In recognition of her numerous contributions she received honorary degrees, prizes and medals from many countries. She was appointed as Dame Ida Mann of the order of the British Empire on June 14, 1980 for her services to the welfare of Aboriginal people.

EP-EDU-03

Audit ensuring quality of care for patients seen only once and discharged from Moorfields Eye Hospital clinics, using a telemedicine questionnaire as a follow up consultation

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Purpose: To consider patient reported outcomes from 3 audits, using a telemedicine questionnaire, of 3 different General Ophthalmology clinics. Patients selected have been seen only once and discharged with or without treatment. In many cases we don't hear from these patients again unless referred back by their GP. This new audit was developed for this specific group.
Method: 174 patients were surveyed by an ophthalmologist (Fellow or junior doctor) by telephone using a standard seven question survey and the results were analysed.
The questionnaire covered presenting symptoms, severity, diagnosis and explanation, improvement, completion of treatment, asking if the patient was told what to do if condition worsened and waiting time.
The doctor had discretion to take action if required.
Results: Reported severity of symptoms – very bad 22 (12.6%), bad 26 (15%), medium 48 (27.6%), mild 37 (21.2%), no symptoms 41 (23.6%)
Improvement: 96 patients (55%) said better or much better
68 patients (39%) said condition the same.
7 (5%) patients said worse and 3 (1%) no symptoms
Did not take treatment: 2 patients (0.1%)
Not knowing what to do if symptoms worsened: 42 patients (24.1%)
Diagnosis not explained: 2 patients (0.1%)
Waiting time: 142 (81.6%) patients were happy with the waiting time
Conclusion: It proves the value of regular audit cycles covering this type of consultation to ensure care quality is maintained and enhanced and allows for benchmarking between sites.
To ensure that all advice given is also written in the consultation letter and consider giving other explanatory material during the consultation.
To include specific advice on what to do if the condition worsens.
The patients reporting worse had conditions such as floaters, retinal haemorrhages, corneal scar, blunt trauma and dry eyes. In two cases patients were directed to A&E.
The patients reporting no change generally had chronic conditions, dry eyes, floaters, myopic degeneration, corneal scars.

EP-EDU-04

Can Indie dogs be trained as guide dogs for the blind?

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Breeding and training guide dogs is a rigid and costly process. They are bred and reared for key behaviours such as minimal distraction, docility, trainability, low aggression and lack of fear. Indie dogs are strays and are plentiful in India, posing a public health risk and animal welfare concern. The Indie dog could be suitable as a guide dog due to high intelligence, having learnt to survive in difficult environments. They have strong immune systems and lack the predisposition to certain genetic conditions found in some European breeds.
A pilot study on two Indie puppies has been done under the aegis of National Association for Blind Goa and Welfare for Animals Goa. Muskie and Aramis were street dogs, rescued by a co-author at three weeks old, fully vaccinated, neutered/spayed and fostered in his home. Their intelligence was assessed by teaching them skills with a reward feedback mechanism. They were tested for intelligent disobedience, a crucial guide dog skill, where a dog independently disobeys a command in a dangerous situation. A literature review has been written to investigate dog behaviour, breed and importance of a puppy's early life experiences. Another study in Kochi is proposed, which will test 15 Indie puppies using games and social interaction with Blind volunteers to assess behavioural suitability. If successful, recommendations will be made to train these puppies as guides.
The pilot study found the puppies to be highly intelligent but further studies are needed with larger samples and a scientific assessment of suitability. The review found that breeding guide dogs increases the chance of desirable behavioural traits, but a complex interplay of genetic and environmental factors shape a dog's personality.
There is no evidence that Indie puppies would not make good guide dogs. A selection tool would help identify the puppies with the highest chances of success. This would help solve the stray dog crisis and avoid expensive breeding of guide dogs.

EP-EDU-05

Ophthalmology input and ocular findings in patients with candida bloodstream infections

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Purpose: The main aim of this study was to delve into the need for ophthalmology input in patients admitted with systemic candidaemia in a major clinical teaching hospital in south county Dublin, Ireland. Internationally, the incidence of ocular candidiasis has been declining among candidaemia sufferers with recent estimates showing an incidence of less than 2%.
There is conflict between varying international institutions with the Infectious Disease Society of America (IDSA) and European expert opinion recommending that all patients admitted with bloodstream candidaemia requiring a dilated fundal examination to rule out intraocular involvement.
By contrast, the European Society of Clinical Microbiology and Infectious Diseases released a publication involving the diagnosis and management of candida disease with no mention of ocular involvement.
Method: A retrospective chart review was carried out over a one year period. The specific dates detailed: 1/11/21-1/11/22. The review looked at patients admitted with bloodstream fungal infections during this timeframe with a serious of data points generated.
Results: 28 patients were admitted with candidaemia infections. Of these, 6 ophthalmology requests were noted. Ophthalmology input was undertaken on 4 patients. 2 patients had passed away in ICU prior to ophthalmology input. Of the 4 patients consulted on, none had significant ocular findings. Visual acuity was measured in 2 patients with the other 2 intubated. None of the patients had symptoms suggestive of candida endophthalmitis or chorioretinitis.
Conclusion: There were no cases of candida endophthalmitis or chorioretinitis. The mainstay of treatment was the azole class of anti-fungal agent. This local study mirrors the findings of other studies which suggest that routine ophthalmology input may not be justified in candida bloodstream infections. Selective screening of patients on a case-by-case basis may represent a more efficient use of resources.

EP-EDU-06

Prevalence and risk factor assessment of digital eye strain among medical students using online learning during the COVID-19 pandemic

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Purpose: The aim of the study was to investigate the influence of prolonged computer work on the condition and function of the organ of vision of medical students during the COVID-19 pandemic.
Method: Ninety three Polish medical students were enrolled in this prospective study. All of them have completed a questionnaire about their visual complaints and their knowledge about digital eye strain also known as computer vision syndrome.
Ophthalmological examination consisted of an two consecutive measurements of autorefractometry with keratometry before and after cycloplegia with 1% tropicamide, along with the best-corrected visual acuity (BCVA), uncorrected visual acuity, a detailed slit lamp examination, binocular vision testing including determin-ing a near point of convergence (NPC), Cover Test, and Randot Stereotest.
Results: Only 15 of the 93 surveyed students were familiar with the concept of CVS, and only 12 of them knew how to prevent this condition. Mean digital screen time was 7.32 ± 2.62 hours/day. For 38% students, screen time has been between more than 4-12 hours longer from before the pandemic. The prevalence of headaches after computer screen use was 39.78%.
Conclusions: Online education had a negative impact on the state of vision among the surveyed medical students. It was possible to prevent the negative effects of computer vision syndrome by using appropriate preventive techniques. Student's knowledge of this subject is unsatisfactory and therefore its supplementation is strongly advised.

EP-EDU-07

Digital eye strain in medical students and health professionals

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Purpose: Prolonged and repeated exposure to digital screens causes a number of eye and musculoskeletal issues. Not only adults, but also children, are at risk of developing Digital Eye Strain, also known as Computer Vision Syndrome. This study aims to investigate whether there are differences in ocular and musculoskeletal symptoms between occupational groups.
Material and methods: This paper represents a cross-sectional study, which included 407 participants from different occupational groups: academic staff, students, physicians, nurses and pharmacists. The research took place between December 2021 and March 2022 and the study protocol was approved by the Research Ethics Committee of the "Grigore T. Popa" University of Medicine and Pharmacy from Iasi. Questionnaire CVS-F3, adapted for our research, was filled via Google Forms by all participants in the study.
Results: The frequency of female participants was higher (68.1% vs 31.9%). The most frequent ocular symptoms found in students were dry eyes (73.3%), and focusing difficulties (72%), in physicians were near vision discomfort (48.3%) and blurred vision (24.4%), in nurses was blurred vision (5.6%), and in pharmacists and in academic staff were focusing difficulties (5.6% and 2.8%). The most frequent musculoskeletal symptom, regardless of profession, was pain in the neck, shoulders and back. In our study, the most used electronic device was smartphone (83.8%).
Conclusion: The ocular symptoms are different depending on the occupational group, while the musculoskeletal symptoms are the same.
Keywords: Digital Eye Strain, gadgets, medical students, health professionals

EP-EDU-08

Hypotensive and hypertensive athalamia after bilateral glaucoma surgery. Importance of differential diagnosis

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Case study: 82-year-old patient with primary bilateral open-angle glaucoma in maximum treatment, and cataract in both eyes (BE).
His medical history included branch thrombosis in the right eye (RE) 20 years ago, atrial fibrillation under treatment with Sintrom Ò, and polymyalgia rheumatica.
Combined surgery with Preserflo Microshunt implantation is indicated in both eyes. The RE surgery was performed first, which failed after three weeks; therefore, it was decided to review it at the time of performing the left eye (LE) surgery. Both surgeries were uneventful.
In the immediate postoperative period, visual acuity is less than 0.1, presenting a grade 2 athalamia in BE. The IOP of the RE is 2 mmHg and that of the LE is 13 mmHg. A wide filtration bleb is evident in RE, and flat in LE. The fundus revealed nasal and inferior serous choroidal detachment (CD) in the RE, and thrombosis of the central retinal vein in the LE. It is classified as hyperfiltration in RE, and glaucoma with vitreociliary block in LE. We performed a YAG capsulohyaloidotomy in the LE, with good formation of the anterior chamber, and cyclopentolate and topical corticosteroids were prescribed in the BE, and oral corticosteroids at a dose of 1 mg/Kg/day.
The evolution of both eyes was adequate. The CDs resolve at 10 weeks in RE, currently presenting an IOP of 6 mmHg. Likewise, the IOP in the LE is 10 mmHg, and the patient is being treated with antiangiogenic agents.
Discussion: The management of athalamia is essential in the postoperative period of glaucoma surgery. Intraocular pressure, the shape of the blister and the fundus of the eye are crucial when diagnosing its cause, and its management will depend on this.
On the other hand, bilateral surgery has its advantages, but also its risks. Among them is the threat of bilateral vision loss, as in this case, where the complications are different in each eye, aggravated by the fact that a thrombosis is presenting in a single functional eye.

EP-EDU-09

Carl Wilhelm Von Zehender, a pioneer in ophthalmic microsurgery, founder and editor of "Klinische Monatsbleätter für Augenheilkunde," and a great educator

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Purpose: Carl Wilhelm v. Zehender was born in Bremen in May 1819. He studied medicine in Goettingen, Jena, Prague, Paris, and Vienna. During this period, he developed a friendship with Albrecht v.Graefe. In 1863 the first edition of "Klinische Monatsblaetter für Augenheilkunde" was published as a review. This presentation will unfold the details of his life and academic work.
Method: In 1863, the first edition of "Klinische Monatsblaetter für Augenheilkunde" was published. In the pages of this medical review, the evolution of Ophthalmology in Germany is present with the progress in diagnosing and treating many ocular conditions.
We used this volume for this presentation to compose the epoch, the environment, the personality, and the work of Carl Wilhelm von Zehender, the founder, and reformer of Ophthalmology in Germany.
Results: Carl Wilhelm von Zehender was a pioneer of German Ophthalmology and a great teacher. He established the Heidelberg Ophthalmological Society, and from the pages of "Klinische Monatsblaetter für Augenheilkunde," and his work at Rostock University educated several young physicians.
We reviewed Volume XXVII, published in Stuttgart by Verlag von Ferdinand Enke in 1889, including scientific announcements, examining methods, complications after surgical procedures, etc. The book contains plates to enrich the articles, anatomical engravings, and even a color lithographic plate of ophthalmoscopic findings.
Conclusions: In the second half of the 19th century, Ophthalmology was established as a separate surgical specialty. Carl Wilhelm von Zehender was a man who led in this. His writings and experience were valuable for this decision. He worked hard to build the Ophthalmologic Clinic of Rostock University and was a founding member of the Heidelberg Ophthalmological Society. Von Zehender invented two ophthalmoscopes in 1854 and an auto-ophthalmoscope in 1863. All these reveal the genius and the inspiring route of Carl Wilhelm von Zehender in Medicine.

EP-EDU-10

Eye injury risks and safety level in welding and carpenter workshops

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Purpose: Work-related injuries and illnesses can have significant impacts on the health and safety of workers, particularly in industries with inherent hazards such as welding and carpentry. We aimed to assess the safety of the workshops, using safety score system and risk assessment using a risk ranking matrix for eye injuries at small-scale industrial enterprises.
Methods: Data from 71 welding shops and 24 carpenter shops were included. A safety checklist was employed to verify whether the required PPE was available and note the critical characteristics of the workshop environment. MS Access was used to collate the data and transferred to IBM-SPSS.
Results: 8 of 76 welding workshops scored 20 out of 60 (11%), and 68 scored 30 (89%). None of the welding workshops had proper ventilation, cleanness nor shields/screens used to confine welding process.
Furthermore, 15 of the 19 carpenter workshop (79%) scored 30 out of 50, and 4 workshops (21%) scored 20. All worker carried out cleaning, hammering, and manual handling. Arc welding, gas welding and grinding were the frequent activities carried out in welding workshops. Drilling, chipping, sanding, hand sawing, chiseling were the regular activities performed in carpenter workshops. Airborne dust/fumes/gases, flying particles, and sharp objects were observed to be the very common hazards that workers are exposed to in both carpenter and welding workshops.
Intense light and extreme heat were found in all welding workshops, vibrations were noted to be a usual activity in carpenter workshops. In welding workshops, workers were using face shields (82%) and welding helmets (32%). None of the workers were using filter lenses.
Conclusions: This study has shown low safety score at small-scale industrial enterprises. it is critical that workplace injuries are reduced through the implementation of effective risk control and prevention interventions.

EP-EDU-11

Trainees' perspectives on the educational environment

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Purpose: Ethics and professionalism are recognizedas core competencies in medical practice worldwide.The aim of this study was to assess the professional attitudes and behaviors that exist in the health care environment as perceived by clinical clerks.
Methods: An anonymous paper questionnaire was distributed to a total of 134 final year clinical clerks.Standard descriptive statistics, unpaired t-test to evaluate differences between male and female groups were used.
Results: 114 (86%) completed the survey. Students frequently identified Health professionals whom that they consider role models (mean=6.68±2.126 on a scale of 0 to 9; and 6.62±2.17 respectively).
They very frequently observed that health professionals place the needs of their patients ahead of their own self-interests 7.25±1.69 and 6.87±2.095 respectively. Students reported seldomly being urged by medical colleagues and allied healthcare workers to copy their history and physical exam rather than gathering their own information from the patient (mean 3.26±5.14 versus 2.83±3.19) or observing health professionals scheduling tests or performing procedures at times that are more convenient for themselves than for the patient (mean 3.37±-2.96 and 3.32±3.043 respectively).
Male students more often observed unprofessional behaviors such using inappropriate reference to patients and making derogatory statements about other medical/surgical specialists ($P < 0.05$) compared to female counterparts.
Conclusion: Students viewed physicians and allied healthcare workers positively, however, academic attention needs to be directed at ethical and professional dilemmas that are encountered during their training.

EP-EDU-12

Ferdinand Ritter von Arlt and his work, Clinical Studies on Diseases of the Eye, his personality, life, and role in the evolution of Ophthalmology

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Purpose: In this work, we present the life and the achievements of the great reformer of Ophthalmology, Dr. Ferdinand Ritter von Arlt, a 19th-century physician who played a critical role in the progress of our science.
Methods: His monumental work 'Die Krankheiten des Auges' is the main source for the work, along with data from his autobiography.
Results: Arlt was born on April 18th,1812, in Obergraupen in northern Bohemia. He had hard youth but revealed qualities such as a sense of duty and deep sympathy for the poor and misery. 'Primum Medici est humanitas' became his guiding principle and the basis for friendships with the g.p. Arlt, Donders, and Albrecht von Graefe. He studied medicine in Prague, then chose ophthalmology under Prof Johann Nepomuk Fischer (1777-1847) at the University of Prague. Arlt's most important research was his work on myopia.
Conclusion: He had many works, but of greater importance was Arlt's 3-volume textbook: Die Krankheiten des Auges. Bernard Becker writes 'Epoch-making' has been the term used to describe the first appearance of this title in 1851. It is one of the most important works of the greatest figure in the history of the Vienna school of ophthalmology in the 19th century.
Jokl, in 1957 wrote the following concerning Arlt's textbook: Although more than a hundred years have passed since its first appearance, and many changes have occurred in the conception of different eye diseases and their treatment, it remains a book that can be read with interest even today. Clinical facts were strictly correlated to anatomical and physiological principles for the first time. Numerous case histories illustrate almost all the diseases described. They bear witness to Arlt's excellent power of observation and ability to describe what has been observed in clear, simple language.
Arlt had a tragic end; after an accident, he broke his left arm, and then he suffered from depression and insomnia and died from hypostatic pneumonia on March 7th, 1887.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: External Eye

EP-EXE-01

Case report: orbital compartment syndrome in the setting of periorbital necrotizing fasciitis

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Introduction: Periorbital necrotizing fasciitis is a rare, but rapidly progressive, vision-threatening infection of the tissues surrounding the eye. This unusual case presentation highlights the necessity of prompt treatment to prevent permanent vision loss secondary to orbital compartment syndrome.
Case presentation: A 55-year-old female presented to the emergency department with left periorbital edema and ophthalmoplegia one day after recovering from four days of sore throat. She denied history of trauma. CT scan revealed an intact globe and inflammatory changes without abscess, consistent with orbital cellulitis.
Upon admission, her initially intact vision rapidly declined. She developed fulminant orbital compartment syndrome with a tense globe and difficulty opening her lids; intraocular pressure (IOP) was above 50 mmHg. Lateral canthotomy with cantholysis of the lower eyelid was performed to prevent permanent vision loss. Post-procedure IOP was 24 mmHg. Intravenous vancomycin and ceftazidime, acetazolamide, brimonidine, and Maxitrol ointment were given to prevent infection and IOP elevation.
The next morning, erythema surrounded the left eye with increasing swelling and pain. Ice packs and intravenous solumedrol were provided to relieve inflammation. Periocular bullae were noted. By 13:00, IOP exceeded 50 mmHg and lateral canthotomy with cantholysis of the upper lid was performed.
Post-procedure IOP was 34 mmHg. Cultures grew *Streptococcus pyogenes*, with a final diagnosis of necrotizing fasciitis of the left orbit. Patient was admitted to the intensive care unit for management of sepsis and transferred for surgical debridement upon stabilization.
Discussion: This rare clinical presentation of orbital compartment syndrome secondary to *S. pyogenes* necrotizing fasciitis, including disease course and therapeutic management, represents an important consideration for clinicians when developing differential diagnoses.

EP-EXE-02

The multiple ocular manifestations of a neglected newly diagnosed multibacillary leprosy with grade II disability

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Purpose: To describe multiple ocular manifestations of a newly diagnosed multibacillary leprosy with grade II disability.
Method: A case report.
Result: A 71-year-old woman complained of visual loss with protruding solid intraocular material and redness on the left eye about one week. There were also decreased visual acuity and redness on the right eye. Incomplete closure on both eyes were reported the past 30 years. The ophthalmologic examination revealed the visual acuity of the left eye was no light perception and the right eye was 6/24. Conjunctival and peri corneal injections, ocular discharge, and significant intraocular structures prolapse were observed in the left eye. Corneal hypoesthesia and madarosis on both eyes, peripheral ulcerative keratitis, neurotropic ulcer, and dry eye on the right eye were also noted.
The Dermatovenereology consultation revealed the systemic abnormalities such as claw hand, ulnar nerve thickening on both upper extremities, and hypoesthesia on both upper and lower limbs. The acid fast bacteria were identified from both earlobes skin scraping specimens with +3 bacterial index and 75% morphological index.
The patient was diagnosed with LE severe corneal ulcer with iris and lens prolapse, RE peripheral ulcerative keratitis, RLE lagophthalmos, and multibacillary leprosy with grade II disability newly diagnosed.
Evisceration of the left eye under general anesthesia was performed due to corneal perforation with iris and lens prolapse after initiated the multidrug therapy for leprosy.
Conclusion: The advanced ocular complications manifested at the time of leprosy diagnosis found in this case are corneal ulcer with perforation, iris and lens prolapse, peripheral ulcerative keratitis, neurotropic ulcer, corneal hypoesthesia, lagophthalmos, and madarosis. The classic leprosy deformities in endemic area were left untreated and causing the preventable monocular blindness.
Keywords: leprosy, ocular manifestation, corneal perforation, blindness

EP-EXE-03

Challenges in the treatment of Ligneous conjunctivitis: a report of two cases with long term follow up

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Purpose: Ligneous conjunctivitis is a membranous or pseudomembranous conjunctivitis that causes pronounced thickening of tarsal and palpebral conjunctival surfaces. The ocular manifestations are a consequence of congenital severe plasminogen deficiency a disorder with accompanying recurrent membrane formation in several mucous membranes all over the body. Treatments is challenging with universal regrowth of the membrane following excision in the absence of adequate topical and systemic therapy.

Case 1: A 7-month-old child was referred with persistent eye swelling for the last 4 months progressively worsening resulting in difficulty in opening both eyes. He was diagnosed with congenital hydrocephalus and had VP shunt done at his local hospital requiring a revision twice. Both upper and lower palpebral conjunctival surfaces showed hard woody membranes. Type I Plasminogen Deficiency and Ligneous conjunctivitis were suspected and confirmed with laboratory investigations. Systemic and topical therapies were started to control disease manifestations as well as membrane peeling once the disease was controlled.
Case 2: A 2-month-old girl presented a week after noting increased head circumference and history of bilateral eye redness. A shunting procedure was planned and an Ophthalmology referral requested. Ocular exam showed bilateral external eye swelling with woody membranes of the palpebral conjunctiva. Diagnosis of severe Type I Plasminogen Deficiency with Ligneous Conjunctivitis was confirmed. She underwent membrane peeling and started systemic therapy. Eighteen years later she still has good control of her condition with mild occasional recurrences documented in periods of non-compliance.
Discussion: PLGD is a lifelong disease that significantly affects quality of life. Ligneous conjunctivitis is the most common manifestation and may lead to visual impairment or loss if untreated. Treatment of LC is extremely difficult no satisfactory permanent cure exists.

EP-EXE-04

An interdisciplinary approach towards the diagnosis of haemolacria

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Purpose: To investigate the cytological composition of tears to determine the potential diagnostic criteria of endometriosis.
Method: Tear samples obtained from the lower fornix of the conjunctiva using a glass capillary tube were examined by microscopy in 100 people: 60 healthy women who made up the control group and 40 patients with endometriosis.
Results: The proportion of women with endometriosis, in whose tear erythrocytes were determined was significantly higher, 32.5%, compared with the control group - 25.0%. In 69.2% of women with endometriosis, latent haemolacria was detected in the follicular phase of the menstrual cycle, which significantly exceeded the 30.8% of people with erythrocytes in tears detected in the luteal phase.
Epitheliocytes were found in tears in 97.5% of patients with endometriosis versus 75.0% of healthy women, at the same time, in 100.0% cases, - in the follicular phase of the menstrual cycle, compared with 74.3% of healthy women in the same phase of the cycle.
The proportion of women with epitheliocytes in the tear in the amount of "++" was 56.4%, which was significantly more compared to 20.0% of people from the control group with epitheliocytes in the same amount; at the same time, group accumulations of epitheliocytes were found in 15.0% of patients with endometriosis, which was significantly higher than in healthy women - 8.3%. In 90.0% of cases in the group with endometriosis, glandular cuboidal epithelial cells were found in the tear, morphologically resembling endometrial cells.
Conclusion: The revealed features of the cytological composition of tears in patients with endometriosis, which differed from those in the control group, reflected certain links in its etiopathogenesis, so the study of tear parameters can be useful for predicting the prevalence of "endometrioid disease" and developing pathogenetically substantiated treatment.

EP-EXE-05

Demographic characteristics of patients with nasolacrimal duct obstruction

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Purpose: The purpose of this study is to address the demographic characteristics of patients with nasolacrimal duct obstruction (NLDO) and its complications.
Methods: For this retrospective observational study were used the registers from the Department of Ophthalmology of the County Emergency Clinical Hospital "St. Spiridon", which contained the names of all discharged patients, their age, diagnoses and discharge date, from April 2017 to June 2022, as well as the medical records of patients under the age of 18.
Results: 120 patients with NLDO, dacryocystitis and dacryopericystitis were identified: 56 children under 18 years old (29 males, 27 females) and 64 adults (51 females, 13 males). 49 patients were under 2 years old, 7 patients were between 3 and 17 years old, 5 between 18 and 39, 6 between 40 and 49, 4 between 50 and 59, 14 between 60 and 69, 24 between 70 and 79 and 11 over 80 years old.
The average age of patients younger than 2 years old was 11 months. 30 children came from urban areas (53%) and 27 from rural areas (47%). 14 out of 56 pediatric patients developed complications: dacryocystitis (11), dacryopericystitis (2), mucocele (2), preseptal cellulitis (1).
The majority of adult patients (49 out of 64) had complications: acute dacryocystitis (30), dacryopericystitis (11), acute episode of chronic dacryocystitis (8), cellulitis (1), canaliculitis (1).
Conclusions: NLDO occurred most often in children under 2 years of age and the elderly over 60 years old. Pediatric patients showed roughly equal gender distribution and fewer complications, while adult patients were mostly female and had more complications.
There was no significant difference between the number of pediatric patients living in urban locations and the ones living in rural locations. The most common complication in both children and adults was acute dacryocystitis.

EP-EXE-06

Reactivation of a 19-year inactive severe thyroid-associated orbitopathy post SARS-CoV-2 vaccine: a case report

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Purpose: We present a rare case of reactivation of thyroid-associated orbitopathy (TAO) after SARS-CoV-2 vaccine in a patient with a 19-year history of inactive disease. We also discuss possible immunological context.
Case report: A 74-year-old woman presented in March 2022 with clinical signs and symptoms of TAO (preseptal edema and erythema of eyelids, conjunctival hyperemia, retrobulbar pain, and pain on eye movement) and with a new onset of diplopia. Her eye problems began in early January 2022, approximately 2-3 weeks after the second dose of the SARS-CoV-2 vaccine (Pfizer-BioNTech).
The diagnosis of Graves disease was made more than 20 years ago. She underwent thyroidectomy in 1999 for developing moderate to severe TAO, immunosuppressive treatment, and bilateral orbital decompression in 2003.
Since the disease was inactive, the patient had no diplopia and was satisfied with the result of the treatment. TAO reactivation was diagnosed based on the clinical signs and MRI findings (confirmed activity). The endocrinological status was stable, and no residuum of the thyroid gland was found. Phenotyping of circulating immune cells revealed higher expression of the chemokine receptor CCR4 on T cells associated with Th2 immune response and higher expression of the check-point inhibitor CTLA-4 on T-cells, which leads to inhibition of T-activated lymphocytes.
Immunosuppressive treatment was indicated (methylprednisolone, cumulative dose 4.5g), and the patient recovered fully. Three months later, the CCR4 and CTLA-4 expression on T-cells and distribution of immune cell subpopulations was within normal values.
Conclusion: The possible association between COVID-19 vaccination and TAO is currently known, however reactivation of TAO after almost 20 years is very rare. Clinicians should remain vigilant for recurrence or aggravation in all patients with a history of TAO. Supported by MH CZ, grant nr. NU21J-01-00017.
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EP-EXE-07

Pseudomonas putida blepharoconjunctivitis: case report

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Case presentation: A 47 years old female presented with complaints of epiphora, hyperemia, and mucopurulent discharge of the right eye for 11 months. Her past ocular history included dacryocystorhinostomy of the right eye and previous penetrating corneal trauma, with subsequent surgery 25 years ago. She denied former contact lens use, recent hospitalization, and systemic diseases.
Examination revealed hyperemic bulbar and palpebral conjunctiva, edema of eyelids, and mucopurulent discharge of the right eye. There was no involvement of cornea and no palpable lymph nodes. A chronic blepharoconjunctivitis diagnosis was made, and a swab culture revealed the growth of *Pseudomonas putida*. CT scan of orbits showed thickening of the conjunctiva of the right eye and dacryocystography evidenced obstruction at the level of the Krause's valve.
Treatment consisted of topical gentamicin, vancomycin, and a single oral dose of Azithromycin. The symptoms gradually improved until resolution within eight weeks of treatment. The control swab culture exam was negative.
Discussion: *Pseudomonas putida* is a gram-negative bacteria of the *Pseudomonas* species, recognized as a sporadic cause of systemic infections in hospitalizations, and infrequently, of keratitis. Ocular infection rarely occurs without predisposing factors, such as immunocompromised status, corneal trauma, and contact lens use.
The first case reporting spontaneous ocular infection by *P. putida* highlighted it as a possible emerging ocular pathogen, a topic of particular relevance since *P. putida* is reported as a contaminant of daily practice ophthalmic solutions.
In our search, we did not find any case of *P. putida* infection related to lacrimal system obstruction, which possibly played a role as a predisposing factor to this long-lasting unilateral blepharoconjunctivitis. This report may provide further evidence of the clinical behavior of this pathogen.

EP-EXE-08

Neonatal conjunctivitis with an unusual etiological agent

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A 3-day-old baby girl was admitted to our service with mucopurulent secretion in the right eye for about 48 hours, with worsening in the last 24 hours.
Ocular examination:
OD: mucopurulent secretion, hyperemia of the bulbar conjunctiva hyperemia of the tarsal conjunctivae, upper eyelid edema.
Hospitalization was carried out for laboratory tests and intravenous antibiotic therapy with Ceftriaxone (single dose of 125mg), in addition to instillation of Tobramycin 0.3% eye drops q.i.d..
Her parents were treated Azithromycin 500mg per day for 05 days.

The eye-discharge sample tested positive to Klebsiella pneumoniae, sensitive to the antibiotic used.
After 48 hours, the patient presented total remission of the infection.
This case is interesting because of the etiological agent, unusual in this condition.

EP-EXE-09

Merkel cell carcinoma of the eyelid mimicking preseptal cellulitis

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Introduction: Merkel cell carcinoma (MCC) is uncommon but highly aggressive primary skin cancer of neuroendocrine origin with high mortality rate around 30%. The estimated incidence is 2 per 1 million people, with median age 75-80 years old. It should be considered for any rapidly growing, painless, solid lesion.
Up to 5-10% of the cases involve periocular region. Ultraviolet light (UV) exposure and Merkel cell polyomavirus are thought to trigger the cancerogenesis. Tissue biopsy with immunohistochemistry is a gold standard of diagnosis following surgical resection and/or radiotherapy.
Methods: Case study, histopathological verification and literature review.
Results: We present a case of 79-year-old Caucasian man with a picture of a red livid furuncle in the temporal part of his right eyebrow that was treated for a week with Amoxicillin/clavulanic acid. Since the furuncle still grew, therapy was changed to Clyndamicin and a tissue biopsy was performed. The patient was without fever or pain. The swelling of his right eyelid continued to rapidly worsen with a picture of preseptal cellulitis.
Antibiotics were changed again to Linezolid. CT scan showed preseptal process in the right eyebrow, the upper and the lower right eyelid. Immunohistochemically stained tissue showed a characteristic dot-like CK20 staining pattern which confirmed MCC. PET-CT excluded metastatic process. With no waste of time, he began with radical radiotherapy. In case of residual disease, surgical therapy will be performed.
Conclusion: Diagnosis of highly malignant MCC in the periorbital region is oftentimes challenging given its low incidence and variable presentation, such as preseptal cellulitis.
With our case, we would like to emphasize the importance to keep the diagnosis in mind with any rapidly growing lesion. It is crucial not to delay histopathological confirmation and to start immediate treatment.

EP-EXE-10

A curious episcleral nodule! The first case of ocular dirofilariasis in Slovenia

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Purpose: Dirofilariasis is an arthropod-borne parasitosis caused by filarial nematode of the genus Dirofilaria. The disease is endemic in rural areas of Eastern and Southern Europe, Minor and Central Asia. From its natural host being dogs, cats and foxes, the parasites can be transmitted through mosquito bites to humans and cause infection.
The species Dirofilaria repens mainly causes subcutaneous and ocular involvement. In this case report we describe the first case of ocular dirofilariasis caused by D. repens in Slovenia.
Method: Case report.
Results: 69-year-old male presented with 2-day history of foreign body sensation and redness in the right eye. In recent years, he did not travel abroad. Slit-lamp biomicroscopy showed a localized nodule on the temporal part of the bulbar conjunctiva and a generalized conjunctival injection.
Underneath the nodule a motile thread-like structure was observed, with parts of it rising above the conjunctiva. Visual acuity was 20/20 in both eyes and the rest of the ocular examination revealed no further pathology. Complete blood count revealed no eosinophilia.
Following topical anesthesia, an 8 cm long, thin, whitish worm was surgically removed. Morphological and PCR analysis confirmed a nematode of the D. repens species. Ocular symptoms disappeared promptly after surgical excision, and the condition never recurred.
Conclusion: Ocular dirofilariasis is a rare manifestation of infection with D. repens. It seems that climate change contributed to the expansion of the parasite to non-endemic regions of Europe. Reported ocular localizations have been subconjunctival, orbital, intravitreal, or rarely in the anterior chamber. Conjunctivitis and nodular episcleritis or scleritis are the most common mimics. The only treatment of choice is surgical removal of the parasite. Ophthalmologists can make the right diagnosis with the use of knowledge about this parasite.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Glaucoma

EP-GLA-01

Comparison of latanoprost 0.005% and travoprost 0.004% in patients with primary open angle glaucoma and ocular hypertension

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Purpose: To compare the hypotensive effect of latanoprost 0.005% and travoprost 0.004% solutions in primary open-angle glaucoma or ocular hypertensive patients.
Method: In this prospective, multicenter, clinical trial, 100 patients received latanoprost once daily in the evening (n = 50), or travoprost once daily in the evening (n = 50). Efficacy was compared across treatment groups over 6 months.
Results: Mean IOP at the first visit in latanoprost 0.005% group was 26.2 mmHg (SD ± 1.9 mmHg), and in travoprost 0.004% group was 26.3 mmHg (SD ± 1.9 mmHg). Mean IOP at the fifth visit (after 6 months) in latanoprost 0.005% group was 17.5 mmHg (SD ± 1.2 mmHg) and in travoprost 0.004% group was 18.4 mmHg (SD ± 1.5 mmHg). There was statistically significant difference of IOP in both eyes on fifth visit by groups.
Both latanoprost 0.005% and travoprost 0.004% showed similar hypotensive effect with the first one being slightly more potent in reducing the IOP.

EP-GLA-02

Incidence and therapy of the elevation of intraocular pressure after intravitreal and/or sub-tenon administration of various steroidal agents

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Purpose: For the treatment of macular edema, in addition to the use of anti-vascular endothelial growth factors, also steroids are used. Side effects include among others cataract formation and elevation of intraocular pressure (IOP). The aim of this retrospective study was to elicit the IOP elevation after administration of steroidal agents, the time of onset, and the efficacy of administered eye pressure-lowering therapies.
Methods: We included 428 eyes with a postoperative (n = 136), diabetic (n = 148), uveitic macular edema (n = 61), and macular edema after retinal vein occlusion (n = 83). These patients were treated with one or more diverse steroidal agents once or multiple times. These drugs included: triamcinolone acetonide (TMC) as intravitreal injection (TMC IVI) or sub-tenon (TMC ST), as well as dexamethasone (DXM) and fluocinolone acetonide (FA) intravitreally. An increase of IOP of ≥25 mmHg was designated as pathological.
Results: Of 428 eyes, 168 eyes (39.3%) had IOP elevation to a mean of 29.7 (SD±5.6) mmHg, which occurred at a median of 5.5 months. Steroids most often leading to rise of IOP, with statistical significance of $p<0.001$, included DXM (39.1% of all eyes getting this drug), TMC IVI (47.6%), TMC ST combined with DXM (51.5%), DXM with FA (56.8%), and TMC IVI with DXM (57.4%). IOP rise was treated as follows: 119 conservatively (70.8%), 21 surgically (12.5%; cyclophotocoagulation 8.3%, filtering surgery 1.8%, drug carrier removal 2.4%), and 28 eyes received no therapy (16.7%).
Sufficient IOP regulation was achieved in 82 eyes (68.9%) with local therapy. In 37 eyes (31.1%) with persistently elevated IOP, topical therapy had to be continued.
Conclusions: IOP increases after any type of steroid application are not a rarity. Regular IOP checks are necessary after each steroid administration, with possible initiation of conservative and/or surgical therapy if necessary. It is important to actively inform the patient about this side effect preoperatively.

EP-GLA-05

Factors affecting adherence to glaucoma medication: patient's perspective

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Purpose: Adherence to anti glaucoma medication is the key factor in achieving target Intraocular pressure to prevent glaucoma progression.To determine factors affecting medication adherence in glaucoma patients.
Methods: A cross-sectional study was conducted on 200 patients attending glaucoma services in a tertiary referral hospital of North India. Adherence to medication was determined subjectively by questionnaire and objectively by counting the number of used bottles at end of a month or during refill, whichever was earlier. Patient related parameters in adherence towards glaucoma medication were studied based on demography, knowledge, attitudes and practices (KAP). The statistical techniques of bivariate and multivariate logistic regression were adopted to test the objective.
Results: Population was statistically homogeneous based on gender and income. A large proportion of patients hadbilateral disease (87%) and were on two or more medications (62.5%). Adherence to anti glaucoma medication was 68%, with 58% having knowledge about glaucoma.
Deterrents to drug adherence were identified as forgetfulness (71%), unavailability of drugs (19%) or funds to purchase the same (26%), polypharmacy (21%), and side effects (5%). Dependence on an escort by 44% and presence of living spouse emerged as key aspects, highlighting the need of family counselling.
Disease misconceptions (53%) were prevalent and drug instillation practices unsatisfactory (57%). Suboptimal counselling was highlighted with the need to demonstrate how to put drugs.
Conclusions: The study offers insight into patients' perspectives regarding the lifetime use of anti-glaucoma medications and focuses on key issues linked to drug non-adherence.

EP-GLA-06

Functional and structural outcomes of primary congenital glaucoma in the tertiary medical centre

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Purpose: The aim of the study was to evaluate functional and structural outcomes of all patients diagnosed and treated for primary congenital glaucoma (PCG) in the tertiary medical centre from 2003 till 2020.
Methods: The retrospective study was conducted to evaluate long-term outcomes related to the optic nerve function and structure. An optic nerve head was examined with spectral domain optical coherence tomography (OCT) and visual field testing with standard automated perimetry was performed when possible.
Results: Twenty-seven patients (35 eyes) were diagnosed and treated for PCG during this period.
The mean IOP was 15.6±6.4 mmHg and the visual acuity was LogMAR 0.46±0.56 at the last follow-up.
Reliable visual field testing was possible to obtain only for 20 eyes. The mean deviation was -2.67 dB (the range -0.27 to -14.91 dB). Four eyes were excluded due to very low visual acuity, 8 eyes – due to patient's young age, 3 eyes - due to unreliable outcomes.
The observed excavation of optic nerve head (ONH) was 0.4±0.3. Evaluation of RNFL with OCT was performed for 27 eyes. Four eyes were excluded due to very low visual acuity and other 4 eyes – due to patient's young age. The mean RNFL was 77.92±21.28 micrometres and for 37.03% of eyes it was within normal limits.
The mean Bruch's membrane opening (BMO) was 1.96 $mm^2$and 37.03% of discs were classified as microdiscs. Mean value of minimum rim width (MRW) was 324.94±89.99 micrometres and for 74.07% of eyes it was within the normal range.
Conclusions: OCT reflected changes of RNFL for about 2/3 of the patients. Visual field testing was very challenging for young children with many factors affecting possibilities to perform the examination at all. OCT data were available more patients with PCG comparing to visual field testing. Regular follow-ups are mandatory for PCG and advanced technologies like OCT in paediatric population could assist to control these patients even better.

EP-GLA-07

Intraocular pressure variability measured by an iCare tonometer in primary open angle glaucoma

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Purpose: To assess variability in intraocular pressure (IOP) measurements obtained before and after surgery for primary open angle glaucoma (POAG) using an at-home iCare tonometer.
Methods: Two patients with bilateral POAG were trained on using an iCare tonometer and obtained intraocular pressure measurements for at least one year. During this period, one patient underwent OD trabeculotomy while the other obtained an OD aqueous shunt to an extraocular equatorial plate reservoir. Mean and standard deviation of the IOP measurements from the iCare device were evaluated before and after glaucoma surgery for each patient.
Results: Subject 1 obtained 46 measurements before OD trabeculotomy with IOP of 15.6±3.4 mmHg. Seventy-seven measurements were obtained after glaucoma surgery with a mean of 9.2±1.3 mmHg. Variability decreased by 62% during the post-operative period ($p<0.001$). Subject 2 obtained 84 pre-operative measurements with IOP of 22.1±2.4 mmHg. Post-operative mean was 6±1 mmHg with a total of 113 total measurements. Variability decreased by 58% ($p<0.001$).
Conclusion: Low variability in IOP measurements has been considered a significant factor in long-term glaucoma management. Variability decreased by >50% in two POAG patients following surgery with IOP measurements obtained from an at-home tonometer. At-home tonometry allows for an avenue to obtain a greater number of IOP measurements and better assess IOP variation in patients with POAG.

EP-GLA-08

Hyphema after subcyclo laser procedure: a rare complication

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Introduction: A 74-year-old man, with an amaurosis left eye and a history of neovascular glaucoma treated in the past with anti-vascular endothelial grow factor (anti-VEGF), retinal argon photocoagulation and Ahmed valve implantation. Nowadays the patient has an uncontrolled intraocular pressure (IOP) (35 mmHg) despite using two combinations of hypotensive eyedrops andpoor tolerance treatment.
Methods: Subcyclo laser treatment was performed to decrease the IOP, reduce the necessity of drops, and as a result, to increase the life quality of the patient. The procedure was assessed under retrobulbar anesthesia block, and we followed the recommendations and treatment settings of the producer (Vitra 810, Medicalmix ®).
Results: The IOPdecreased one day after the procedure. After four weeks the pressure was 15mmHg. The patient had a grade 2 hyphema that was rebleeding during postoperative follow-up, and finally needed a surgery intervention for removing it.
Conclusion: Subcyclo laser treatment in patients with glaucoma is a good option because avoids the side effects of the transscleral cyclophotocoagulation (TSCPC), which uses a continuous diode laser and diminishes aqueous secretion by the destruction of the ciliary body. Ocular hypertonia, mydriasis after the procedure, inadequate IOP control after the first laser treatment or pain are common complications. As we showed in this case, hyphema can be a complication after this laser treatment. Subliminal TSCPC has a good profile in terms of safety and efficacy but, in our opinion, we need more studies to optimize the profile of this treatment.

EP-GLA-10

Relationship of ocular hemodynamic parameters, intracranial pressure and structural changes in glaucoma

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Purpose: To predict the course of primary open-angle glaucoma (POAG) using hemodynamic parameters, intracranial pressure (ICP) and structural changes.
Method: Participants diagnosed with POAG (50-67 years) were randomly selected from the Department of Ophtalmology, Lithuanian university of health sciences. Prospective study included 34 patients (17 in each group), they were divided according to the mean deviation into early (up to -6 dB) and advanced (from -6 dB to -27.57 dB) POAG groups.
OCT images were taken using an swept-source optical coherence tomography instrument. Orbital doppler device was used for non-invasive ICP measurements. Colour Doppler imaging was used for retrobulbar blood flow measurements in the ophthalmic artery (OA), central retinal artery (CRA) and short posterior ciliary arteries (SPCA).
The results were collected using MS Excel 2010 program. The obtained data were processed with the "ImageJ" program and using the statistical analysis program SPSS 25.0 package. The chosen level of statistical significance was ($p < 0.05$).
Results: According to the area under the ROC curve, diagnostic significance of thicknesses to predict the course of glaucoma was estimated in optic nerve head (ONH) retina (R) 1 and 7 sectors, retinal nerve fiber layer (RNFL) 11, 12, 1, 2, 4, 6, 7, 10 sectors, superior (S) and inferior quadrants, ganglion cell layer (GCL) 3 sector and of ONH vessel density (VD) was found in all layers of inferior temporal (IT) sector. The mean ICP was 7.85 mmHg ± 2.63 mmHg in the early and 7.71 mmHg ± 2.43 mmHg in the advanced POAG group ($p > 0.05$).
No significant difference was found between the groups in retrobulbar blood flow in peak systolic velocity (PSV), end-diastolic velocity (EDV) and resistance index (RI) ($p > 0.05$). ICP was significantly associated with ONH VD in choriocapillary layer of superior temporal sector. The moderate correlations which coincidence with the most significant ONH thicknesses and VD loss were found between OA EDV and R 1, RNFL 12, GCL 3 sectors, OA RI and R 1, RNFL 1, 6 sectors and S quadrant, GCL 3 sector, CRA RI and RNFL 12 sector, OA PSV and deep plexus layer IT, CRA EDV and choriocapillary layer IT, CRA RI and superficial plexus layer IT, SPCA RI and avascular retina layer IT sectors.
Conclusion: Clinical application of OCT-A, ICP and retrobulbar blood flow measurements algorithm may help predict the course of POAG and prevent irreversible vision loss. Further longitudinal studies are needed to evaluate the importance of these results.

EP-GLA-11

Anterior chamber angle status at the time of neovascular glaucoma diagnosis

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Purpose: Many medical and surgical therapies exists for neovascular glaucoma (NVG), but their efficacies largely depend on the anterior chamber angle anatomy, with open angles more responsive to medical or angle-based therapies as compared to synechially closed angles. However, little data on this topic exists, so this case series was created to describe the angle status of NVG eyes on presentation.
Methods: A retrospective chart review was performed for all NVG patients from 2010-2022 with a gonioscopy at the time of presentation. Complete angle closure was defined as having >75% peripheral anterior synechiae (PAS), partial angle closure as having 1-75% PAS, and open angles as having 0% PAS.
Results: Of 206 NVG patients, 134 (68 men, 66 women, mean 65.6 years) had a gonioscopy and were included in the analysis. Underlying etiologies included PDR (N=70), RVO (N=40), chronic RD (N=10), RAO (N=9), OIS (N=3), radiation retinopathy (N=1), and idiopathic (N=1).
Presenting IOP was 33mmHg in 32 eyes (23.9%), 44mmHg in 43 eyes (32.1%), and 49mmHg in 59 eyes (44%) with open, partially closed, and completely closed angles, respectively.
Presenting VA ranged from 20/20 to LP, 20/25 to NLP, and 20/60 to NLP in the three groups respectively. The proportion of eyes that were phakic and that presented to the emergency room setting (instead of outpatient clinic setting) were 47% and 6%, 47% and 19%, and 64% and 24% in open, partially closed, and completely closed angles, respectively.
Conclusion: This case series describes the angle status amongst patients presenting with NVG. While there is a trend towards higher IOPs and worse BCVAs in eyes with increasing degrees of angle closure, all groups exhibited a wide range of IOPs and BCVAs.
Eyes with closed angles also trended towards being phakic, presenting to the ED, and being new patients. Future prospective studies are needed to determine the optimal treatment plan in NVG eyes, which may differ according to the angle anatomy.

EP-GLA-12

Childhood glaucoma-clinical algorithm

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Purpose: The aim of the investigation is to elaborate the right surgical approach for different forms of childhood glaucoma.
Methods: Retrospective analysis of 12 cases of childhood glaucoma for a period of three years; meta-analysis of the literature. Case by case analysis was done including IOP, corneal diameter, axial length, cup to disc ratio, type of operation, complications and success rate.
All patients were followed for at least three years. Deep sclerectomy was the operation of choice for congenital forms and trabeculectomy –for uveitic glaucoma cases.

Results: 8 cases of congenital glaucoma (age at diagnosis between 1 month and 2 years), one case of megalocornea with glaucoma (diagnosed at 3 months with megalocornea and developed glaucoma at 4 years), three cases of secondary uveitic glaucoma. In six of 12 cases the disease was bilateral. IOP at diagnosis varied between 13-58mmHg; Disc cupping varied between 0,3-0,8; corneal diameter ranged between 11-15mm; Axial length at the diagnosis was between 20.40-22.70 mm. There was asymmetry between eyes even in the bilateral cases and was over the average for the certain age. The treatment success rate was over 90%.

Success was defined as achieving IOP less than 15 mm Hg and stabilization of ocular parameters (corneal diameter, C/D, axial length) as well as amblyopia control. All of the uveitic cases needed several reoperation where trabeculectomy was done. One of the uveitic cases lost vision. Three of the congenital glaucoma cases also needed reoperation.

Conclusions: Clinical algorithms for surgical approach in Childhood Glaucoma were developed based on personal results and meta-analysis of the literature: Deep sclerectomy is the right choice for congenital glaucoma. Lensectomy is the right one for megalocornea cases. Trabeculectomy is prefirred for uveitic cases.

Keywords: congenital glaucoma, deep sclerectomy, function, complications

EP-GLA-13

Influence of anti-VEGF intravitreal treatment in patients with glaucoma

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Purpose: The aim of this study is to describe the evolution of glaucoma in patients undergoing unilateral antiangiogenic (anti-VEGF) intravitreal (IV) treatment who eventually required filtering surgery or MPGS due to uncontrolled intraocular tension.

Method: We collected patients who had unilateral filtering surgery or MPGS between 2020 and 2022, and selected those whose surgical indication was an uncontrolled disease in the eye undergoing anti-VEGF IV treatment (from now on "the surgical eye").

We then performed a retrospective study of the evolution of their glaucoma in both eyes from the start of the IV treatment to the glaucoma intervention in the surgical eye, gathering data related to the intraocular pressure (IOP), the overall thickness in the nerve fiber layer in the OCT (NFL-OCT), and the median deviation (MD) on the visual field (VF).

Results: We found a total of 10 patients, but we had 4 losses due to missing data. In the end, 6 patients were included. Only one patient received IV-treatment in both eyes. The average IV-treatment time before the surgical intervention was 56 months (14-87), with 8,7 (3-16) IV injections on average for the surgical eye and 2,5 (0-15) IV injections for the adelphos eye.

At the time of surgical intervention, the surgical eye had an IOP average of 22,5mmHg with a decrease in both the thickness in NFL-OCT and the MD in the VF of 37,67 mm and 5,36dB respectively. On the other hand, the adelphos eye had an IOP average of 16,6mmHg with a drop of just 1,35 mm in the thickness NFL-OCT and 0,43dB in the MD of the VF.

Conclusion: Complete ophthalmologic examination with IOP measurement, clinical examination of the optic nerve head and NFL-OCT is crucial in patients with concurrent glaucoma and anti-VEGF IV treatment.

EP-GLA-14

Ocular hypo-pressure treatment effect on refraction and neuroretina of rat eyes with chronic glaucoma

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Purpose: To evaluate the effect of ocular hypo-pressure treatment on refraction and neuroretina of rat eyes with chronic glaucoma by sex over 24 weeks, as compared to glaucomatous rats non-treated and healthy controls.

Method: One hundred and fifty five Long-Evans rat's eyes were analyzed retrospectively. 25 glaucomatous rat's eyes, 60 glaucomatous eyes treated with a hipo pressure formulation of Brimonidine- LAPONITE® (G-B) and 70 healthy eyes. Intraocular pressure (IOP) was measured with rebound tonometer, retinal ganglion cells functionality with electroretinography (ERG), and diopter power (D) and neuroretinal estructure with peripapilary retinal nerve fiber layer (pRNFL) and ganglion cell layer (GCL) protocols using non-invasive technology of optic coherence tomography, over 6 months.

Results: G-B cohort presented lower IOP values during weeks 1, 4 and 8 ($p<0.001$) compared to glaucomatous cohort no treated, and even to healthy eyes during first week (10.36±1.21 vs 13.37±2.58 mmHg; $p<0.001$).

All cohorts both sexes experienced a trend to emmetropia throughout the follow-up, especially throughout the first 8 weeks of the study and in males ($p<0.033$).

Glaucomatous cohort showed the lowest diopter value (1.06±3.94 D; $p<0.035$), G-B cohort showed the biggest value and no differences in refraction compared to healthy eyes (3.67±0.00 vs 3.61±1.90 D; $p>0.203$) in week 24. pRNFL thickness differences were mainly found in the inferior sectors.

G-B cohort showed bigger thickness in pRNFL ($p=0.034$) and GCL ($p=0.038$) compared to glaucomatous cohort at week 24. G-B cohort registered higher ERG signal compared to glaucomatous cohort (41.20±8.75 vs 18.68±24.77 µV; $p=0.012$) and even healthy eyes (41.2±8.75 vs 26.00±22.50 µV; $p=0.001$) at week 24.

Conclusion: Ocular hypo pressure treatment slowed the trend of diopter power and neurorretinal thickness loss, and preserved better functionality compared to glaucomatous eyes non-treated.

EP-GLA-15

New models of chronic glaucoma in experimental animals

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Purpose: To explain the creation and characterization of four different experimental animal models of chronic glaucoma over 6 months.

Methods: A total of 138 Long-Evans rats were injected in their right eye to increase intraocular pressure (IOP): 25 rats received biweekly episcleral vein sclerosis injections (EVS cohort); 25 rats received an intraocular injection

with a suspension of biodegradables no-loaded microspheres (Ms) at 0-2-4-8-12-16 and 20 weeks (Ms20/10 cohort); 45 rats received Msloadedwith dexamethasone at baseline and week 4 (MsDexa cohort); 43 rats received Ms co-loaded with dexamethasone and fibronectine at baseline (MsDexaFibro cohort), in the anterior chamber of the eye. These 4 cohorts of experimental animals were comparted to 43 healthy rats (healthy cohort). IOP, functionality of neuroretina by electroretinography (ERG), structure of neuroretina and vitreous interface by optical coherence tomography (OCT) were analyzed.

Results: The EVS cohort showed the steepest and strongest increase in IOP, whereas the Ms models had a more progressive increase. Each model showed a specific retinal damage and vitreous signal in OCT. The EVS cohort experienced the highest vitreous intensity and percentage loss in ganglion cell layer, MsDexa in the retinal nerve fiber layer and MsDexaFibro in total thickness of the retina at 24 weeks of the study. Ganglion cells' signal using ERG was bigger in the glaucomatous cohorts compared to healthy rats.

Conclusions: Modulable degeneration was generated using models by the injection of biodegradable Ms. The biodegradable Ms models simulated accurately the neurodegeneration seen in human chronic glaucoma. Our results reinforced the multifactorial condition of glaucoma according to several noxa.

EP-GLA-16

Influence of sex on chronic glaucoma neurodegeneration in rats over 6-month follow-up

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Purpose: To evaluate if sex influences on retinal neurodegeneration in rats with chronic glaucoma, steroid-induced glaucoma and healthy controls over 24 weeksof follow-up.

Methods: A total of 220 Long-Evang rats (87 males/133 females) were evaluated. Glaucoma was induced using 4 models: sclerosing the episcleral veins (9 males/ 14 females), injecting into theeyeanterior chamber poly(lactic-co-glycolic acid) microspheres (Ms) non-loaded (9 males/14 females), Ms loaded with dexamethasone (20 males/23 females) and co-loaded with dexamethasone-fibronectin (18 males/ 28 females). As controls, 85 healthy animals were analysed (31 males/ 54 females). Intraocular pressure (IOP) was measured biweekly using a rebound tonometer (Tonolab®).

Neuroretinal function was analysed using dark- and light-adapted electroretinography (ERG Roland consult RETIanimal®) at 0, 12 and 24 weeks; and structure using optical coherence tomography (OCT Spectralis,Heidelberg Engineering®) at 0, 8, 12, 18 and 24 weeks.

Results: Males had higher IOP ($p<0.05$) in all cohorts. In both sexes and all chronic glaucoma models neuroretinal thickness decreased over time compared to healthy controls ($p<0.05$). Males showed a higher percentage of retinal nerve fiberlayer thickness loss in chronic and steroid models. However females receiving Msdexamethasone-fibronectin experienced larger fluctuations in thickness, and the highest loss rate by mmHg. Malesalso exhibited worse neuroretinal functionality in chronicglaucoma models.

Conclusions: Female rats with chronic glaucoma and steroid-induced glaucoma experienced lower IOP levels, lower neuroretinal structural loss and had preserved neuroretinal functionality compared to males. Neuroretinal degeneration was influenced by sex and by the ocular hypertension-inducing model used.

EP-GLA-17

Immune analysis of vitreous humor in rats using optical coherence tomography

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Purpose: To study immune response by characterizing vitreous opacities using optical coherence tomography (OCT) and computational analysis in different glaucoma models.

Methods: Glaucoma models were generated in rats, based on episcleral veins sclerosis (n= 25) and injection of biodegradable microspheres non loaded (n=25), loaded with dexamethasone (n=45) or co-loaded with dexamethasone and fibronectin (n= 43) and compared to healthy animals (n=43). Intraocular pressure, neuroretinal structure and vitreous interfaceusing OCTwere evaluated over 6 months.

Vitreous images were exported as AVI videos (n=463). A bioinformatics analysis was designed, which characterized the opacities according to size, into isolated ($10\mu^2$), non-activated ($10\text{-}50\mu^2$), activated ($50\text{-}250\mu^2$) and complexed ($>250\mu^2$) cells. Total area, mean number of opacities, intensity, eccentricity and orientation of each vitreous opacity were analyzed, and a histological study performed.

Results: All glaucoma models presented greater vitreous intensity and number of opacities with dynamic fluctuations in the percentage of activated cells, compared to healthy rats ($p<0.05$). The episcleral veins sclerosis model presented the highest intensity, total area and mean number of vitreous opacities. Both steroid-induced models showed lower intensity and an anti-inflammatory profile with higher population of non-activated cells ($p<0.05$).

The smallest opacities ($10\mu^2$, isolated cells) appear to be the first to respond to noxa, as they were the most rounded (recruitment), showed the highest mean intensity (intracellular machinery) and the greatest change in orientation (motility). Vitreous opacities were identified as hyalocyte-like Iba-1+ microglial cells.

Discussion: Immune changes in glaucoma could be analyzed using OCT imaging. Immune response differed according to the glaucoma model induced. Vitreous immunity could be a biomarker of onset, progression and monitoring of future immune-targeting therapies for glaucoma.

EP-GLA-18

Assessment of quality of life in patients with primary open-angle glaucoma

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Purpose: To evaluate the quality of life of patients with primary open angle glaucoma (POAG) using the questionnaire 'National Eye Institute Visual Function Questionnaire' (NEI-VFQ-25).

Methods: Were included POAG patients who were ≥ 40 years old at the time of recruitment and had minimal cataract or underwent cataract or trabeculectomy surgery at least 3 months prior and were on medical treatment.

The study consisted of two steps. The first was translation of the NEI-VFQ-25 and its cross-cultural adaptation to the Tunisian dialect (Tu-VFQ-25). The second step consisted of evaluating the quality of life in patients with POAG using the Tu-VFQ-25 with one-on-one interview.

Results: We collected 38 glaucomatous patients; the mean age was 58 years old (range 46-82 years old). There was a female predominance (57%) with a sex ratio (M / F) of 0.72. We noted that 76 % of patients resided in urban areas and 41.2% of them were illiterate. The mean follow-up duration of glaucoma was 6.23 years and the best corrected visual acuity was 0.63 LogMar. The global mean score (GMS) score was 65.1 ± 15.5%. The highest missing values were identified in the questions regarding 'Driving'.

The dimensions with the highest score was the social functioning (D6). Educational score and urban residence was associated with a better total score (P=0.005). A higher number of glaucoma medications and the duration of the glaucoma had a negative impact on the total score (P=0.0002). Patients with advanced glaucoma had significantly lower subscale scores than early-stage glaucoma patients (p = 0.011).

Conclusion: The NEI-VFQ-25 questionnaire is the most commonly used patient-reported outcome measure to assess vision-related quality of life in patients with glaucoma. Customization of quality of life questionnaire according to custom and culture of the community will provide better insight to the functional impairment of glaucoma patients.

EP-GLA-19

Direct selective laser trabeculoplasty: first results

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Purpose: To evaluate the safety and efficacy of direct selective laser trabeculoplasty (DSLT) in lowering intraocular pressure (IOP) in patients with open-angle glaucoma and ocular hypertension.

Methods: A prospective case series of 28 eyes of 14 patients with open-angle glaucoma and ocular hypertension were treated with DSLT. The IOP was measured at baseline and at follow-up visits on day 1, and 1-month post-treatment. All complications and adverse reactions were documented.

Results: The mean IOP at baseline was 22.4 mmHg. At the 1-month follow-up visit, the mean IOP was significantly reduced to 17.3 mmHg ($p<0.05$). All of the patients showed a reduction in IOP of at least 20% without additional topical glaucoma medication. No serious adverse events or complications were reported.

Conclusions: DSLT is a safe and effective treatment reducing the IOP in patients with open-angle glaucoma and ocular hypertension. The procedure resulted in a significant reduction in IOP at the 1-month follow-up visit, with a high success rate and great safety profile. Further prospective randomized studies, with more extended follow-up periods, are needed to determine the long-term efficacy and safety of DSLT.

EP-GLA-20

Outcome of scleral fixation intraocular lens combined with virna glaucoma implant in aphakic eye with elevated intraocular pressure after silicone oil evacuation: a case report

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Introduction: The most common complication in silicone oil tamponade is secondary glaucoma. This condition is one of the indication for surgical implant glaucoma drainage device (GDD).This case presented an uncontrolled glaucoma coexists with aphakic complicated case that underwent a several interventions, thus a combined surgical approach may be required.

Case Illustration: A 21 year-old female was referred to Glaucoma Unit of Undaan Eye Hospital following a high intraocular pressure (IOP) on the left eye with previous history of ocular injury on the left eye caused corneal and scleral laseration, luxated lens in posterior chamber and retinal detachment. The patient has undergone three surgeries.

The first surgery was corneal and scleral hecting. The second surgery was lens extraction and pars plana vitrectomy (PPV) with silicone oil tamponade. Two years later, the third surgery was done to evacuate the silicon oil. One week after, the IOP increased and remained high.

Examination of the left eye, the IOP was 31,8 mmHg and the visual acuity (VA) was 1/60 using Snellen chart. The anterior segment showed scarring in the superior half of cornea, mid-dilatated pupil and aphakia with inadequate capsular and iris support.

There was no response to anti-glaucoma medications. The patient then underwent GDD surgery using Virna Glaucoma Implant (VGI®) and scleral fixation intraocular lens (SFIOL). Post-operatively, IOP was 8 mmHg with VA 3/60. Six weeks post-op,the IOP was 10 mmHg with deep anterior chamber and the best corrected visual acuity (BCVA) was 3/10.

Discussion: Studies proved that GDD is effective in treating glaucoma where previous medications or filtration surgery fail.For aphakic eye with inadequate capsular bag and iris support, SFIOL is one of treatment options and provides favorable visual outcome.

Conclusion: This combination of scleral fixation intraocular lens and Virna Glaucoma Implant showed good success for intraocular pressure control and vision preservation.

EP-GLA-21

Relationship between risk of obstructive sleep apnea syndrome with normal tension glaucoma

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Purpose: To evaluate the correlation between the risk of obstructive sleep apnea syndrome (OSAS) and normal-tension glaucoma (NTG)
Method: A total of 128 respondents or 256 eyes underwent age, sex, body weight, and height assessments. The independent variables measured were OSAS risk measured using the STOP-Bang questionnaire, systolic-diastolic blood pressure, and body mass index (BMI).
The dependent variables that measured were NTG status, mean defect (MD) measured with Perimetry as well as retinal nerve fiber layer (RNFL) thickness, and vertical cup-to-disc ratio (CDR) measured with optical coherence tomography. The relationship between variables was tested using the logistics regression test.
Results: There was no relation between STOP-Bang scores and NTG, MD, RNFL, or CDR although when we stratified the sample to obese (BMI ≥30 kg/m²) respondents, it was found that high OSAS risk had a significant effect on CDR (p = 0.02; OR = 4.22). If the respondents have a high OSAS risk, the risk of large CDR is four times higher than those with mild OSAS risk.
Results show statistically significant relationships between BMI and either NTG or MD, systole blood pressure and NTG, as well as age and either NTG, MD, or CDR.
Conclusion: In obese respondents, high OSAS risk increased the risk of large CDR. Association between either age, systole blood pressure, or BMI and NTG were also identified.

EP-GLA-22

Screening fundus photography predicts and reveals risk factors for glaucoma conversion in eyes with large optic disc cupping

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Purpose: This study aimed to investigate the risk factors for glaucoma conversion and progression in eyes with large optic disc cupping without retinal nerve fiber layer defect (RNFLD).
Methods: Five hundred forty-two eyes of 271 subjects who had a vertical cup-to-disc ratio (CDR) ≥ 0.6 without RNFLD were enrolled. Characteristics for optic disc configuration (including CDR, vertical cupping, ISNT rule, disc ovality, peripapillary atrophy [PPA]-to-disc area [DA] ratio, and lamina cribrosa pore visibility) and blood vessels (including central retinal vessel trunk [CRVT] nasalization, bayoneting of vessels, baring of circumlinear vessels, history of disc hemorrhage [DH] and vessel narrowing/sclerotic change) were evaluated.
A Cox proportional hazards (PH) model was fitted to assess the risk for glaucoma conversion and RNFLD progression after controlling for the confounding effects of covariates. To develop a scoring system for assessing the risk of glaucoma conversion, baseline factors were included in the multivariable Cox PH model.
Results: From a median follow-up of 11.3 years, 26.6% of eyes (n = 144) developed RNFLD within a median of 5.1 years. Baseline factors, including vertical CDR ≥ 0.7 (hazard ratio [HR] = 2.12), vertical cupping (HR = 1.93), ISNT rule violation (HR = 2.84), disc ovality ≥ 1.2 (HR = 1.61), PPA-to-DA ratio ≥ 0.4 (HR = 1.77), CRVT nasalization ≥ 60% (HR = 1.77), vessel narrowing/sclerotic change (HR = 2.13), DH history (HR = 5.60), and baseline intraocular pressure ≥ 14 mmHg (HR = 1.70) were significantly associated with glaucoma conversion (all Ps < 0.05). An HR-matched scoring system based on initial fundus photography predicted glaucoma conversion with specificity of 90.4%.
Conclusion: Careful examination of the optic nerve head and vascular structures can help to predict the risk of glaucoma conversion in eyes with large optic disc cupping.

EP-GLA-23

General and disease specific quality of life in glaucoma patients: a qualitative study

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Purpose: To assess visual impairment and quality of life (QOL),relationship between visual function and health-and vision-related QOL, and identify factors significantly impacting QOL for glaucoma patients.
Method: Participants were 169 patients (PAOG),73 men/96 women,mean age 70.43±9.01 years. One-on-one interviews were performed from January to April 2019. Data collected included demographics,clinical examinations and treatment status. QOL data collected utilized Greek version of MOS SF-36 and NEI VFQ-25. Written informed consent was obtained from all subjects.
Results: The higher health-related QOL scores for both questionnaires,the fewer difficulties experienced by patients.Glaucoma patients had significantly lower scores of both SF-36 (physical health 34.60±12.99, mental health 32.06±1218) and NEI VFQ-25 (77.75±1555).
The domains mostly affected were driving (30.53±4087),general health (4689±2532), general vision (68.11±15.84), mental health (75.27±19.96), role difficulties (77.73±29.58) and peripheral vision (78.55±23.51). Increasing severity of glaucoma correlated significantly with worsening QOL(p=0.001). Strong correlation was found between SF-36 and NEIVFQ-25 (p<0.0001). SF-36 was significantly correlated with gender (p<0.0001), number of comorbid diseases (p=0.005 for physical health), number of non-glaucoma medications (p=0,005 for physical health) and visual field defect of better eye (p=0.012 for physical and p=0.021 for mental health).
NEI VFQ-25 was significantly correlated with gender (p<0,0001), number of anti-glaucoma medications (p=0.014), number of instillations of topical anti-glaucoma medication/day (p=0.046), visual acuity and visual field defect of better eye (p<0,0001).
Conclusion: Combination of demographic data, clinical examination and QOL questionnaires may help clinicians better ascertain impact of disease severity on glaucoma patients' QOL. This information may help in patient education, treatment compliance and selection of treatment options.

EP-GLA-24

Prevalence of secondary glaucoma in patients with thyroid associated orbitopathy

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Purpose: Thyroid associated orbitopathy (TAO) is the most common extra-thyreoidal complication associated with Graves disease (GD). Increased retrobulbar pressure can result in increased intraocular pressure (IOP). This might lead to secondary glaucoma, which affects 6.8% of TAO patients. Our aim was to evaluate the prevalence of secondary glaucoma among GD patients presented at our department. We suggested that temporary IOP elevation is frequently diagnosed as secondary glaucoma and these patients can be over-treated with anti-glaucoma therapy.
Methods: In this study 24 patients with GD were examined. A routine examination was performed, IOP was measured with Goldmann tonometry. Besides that, perimetry was performed with a Humphrey Visual Field Analyzer (24-2 SITA Standard) and optic nerve fiber layer thickness (RNFL) was measured by optical coherence tomography (OCT). Due to the outbreak of the COVID pandemic, not all patients could return on the previously planned checkups. The average follow up time was 16 months.
Results: The mean age of the patients was 50.75±17.45 years. At first presentation the mean IOP was 15.0±2.7/15.7±2.6 mmHg. Mean deviation (MD) in visual field analysis was -1.37±2.36/-0.06±4.90; visual field index (VFI) was 96.43%±3.97/95.67%±6.82. 9 patients (37.5%) used anti-glaucoma eye drops at first visit.
We could withdraw anti-glaucoma drops from 2 patients, because no manifest glaucoma was present. On follow up examintaions the average IOP was 15.6±2.5/15.5±2.7 mmHg. MD was -1.82±2.03/-1.79±1.99; VFI was 95.95 %±5.197/96.17 %±6.3.
Conclusions: The proportion of TAO patients who used anti-glaucoma therapy was significantly higher than reported in the literature. Differentiation of secondary glaucoma caused by TAO and ocular hypertension is challenging. Anti-glaucoma treatment can also cause side effects, which are able to mimic the symthoms of TAO and might alter clinical signs, that can lead to the false positive assesment of patients.

EP-GLA-25

Prevalence of pseudoexfoliation syndrome, its associations with glaucoma and gene polymorphism in Caucasian population

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The aim of the study to analyze the prevalence of pseudoexfoliation syndrome (PEX), and it's associations with glaucoma (GL) and gene single nucleotide polymorphism (SNP).
Methods: At follow-up study (2016) 631 Kaunas resident aged 55-83 years old were examined. All study subjects underwent (1262 eyes) full ophthalmological examination. PEX was diagnosed by slit-lamp examination. Genetic tests were done: SNP of lysyl oxidase-like 1 (LOXL1), transforming growth factor beta 1 (TGF-β1) gene, frequency of deletion of glutathione S transferase (GST) M1 and T1.
Results: PEX was diagnosed in 216 subjects. The prevalence of PEX was 34.2%. The biggest prevalence of PEX was in the eldest (76-83 y) group – 45.3% regardless of gender. GL was diagnosed in 113 eyes (9.1%) out of 1262 eyes, 63 (6.8%) GL cases were in no PEX group vs. 50 (15.7%) in PEX group ($p<0.001$). According to multivariate logistic regression analysis (LR), PEX increases the probability of developing GL by 1.982–fold ($p=0.021$), female gender has a bigger risk to develop GL by 1.980-fold ($p=0.034$).
We found that *LOXL1rs1048661*GT genotype increased the odds ratio (OR) of PEX 8–fold compared to the GG genotype. The combination of GT + TT genotypes increased the chance of PEX 7–fold compared to GG genotype. *LOXL1rs2165241* CT genotype increased the OR of PEX 13–fold compared to TT genotype, and CT + CC genotypes together increased the OR of PEX 7–fold compared to TT genotype. *GSTT1* T0/M0 genotype and T1/M1 genotype increased the chance of PEX 4.5–fold compared to T0/M0 genotype and to T1/M1 + T1/M0 +T0/M1 genotypes.*GSTM1* genotypes significantly increased the likelihood of PEX in all genetic models.
Conclusion: A further spread of PEX was found in the study contingent and especially in the older age group. Glaucoma was twice as common in PEX group. *LOXL1 (rs1048661 and rs2165241), GSTT1*, and *GSTM1* may cause a higher risk of developing PEX.

EP-GLA-26

Measurement of intraocular pressure (IOP) before and after surgical treatment of rhegmatogenous retinal detachment by pars plana vitrectomy (PPV) vs PPV/Scleral Band(BE)

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Purpose: To the intraocular pressure (IOP) before and after surgical treatment of rhegmatogenous retinal detachment.
Methods: Observational prospective study, 11 patients were in PPV/BE and 8 patients in the PPV group. IOP was measured by Goldmann Application Tonometer. We also used the PubMed database to find other prospective or retrospective studies.
Results: The mean value of IOP in PRE-VPP group was 12,37±3,11 compared to 15,50 ±2,77 in POST-VPP. The mean value of IOP in PRE-VPP/BE group was 11,63±1,74 compared to 16,27±3,37 in POST-VPP/BE group where we found a significative increase of 4,63±3,13 ($P<0,05$). There was a non significative increase of IOP of 3,12±3,13 in POST-VPP compared to PRE-VPP ($P>0,05$).
Conclusion: Our first results confirm a significant rise of IOP in the group treated with scleral band; the study suggests a lower increase of IOP in the VPP group but a higher sample size will be necessary to increase the significance level of the study.

EP-GLA-27

comparing surgical outcomes of cataract surgery alone versus combined surgery in pseudoexfoliative glaucoma

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Purpose: Pseudoexfoliation glaucoma(XFG) is often associated with higher complication rates and less surgical success. Studies comparing long term outcome of cataract surgery alone versus combined surgery in pure cohort of XFG is lacking in literature. This study aims to compare the long-term surgical outcomes of cataract surgery alone versus combined surgery in XFG in terms of intraocular pressure(IOP) reduction.
Design: Retroprospective comparative case series.
Methods: All patients with XFG who underwent either cataract surgery alone (group1-either phacoemulsification-PHACO/SICS, n=35) or combined surgery (Group 2-phacotrabeculectomy, PHACOT or SICS +trabeculectomy,n=47) from 20132019 by a single trained surgeon, were screened and recalled for a detailed clinical examination, including Humphrey visual field analyzer at 3 monthly intervals for a minimum of 2 years.
Results:A total of 81 eyes of 67 patients with XFG were included in this study. (group 1-35eyes and group2-46 eyes each). Both groups achieved 26-40% IOP reduction from pre-operative IOP levels, p<0.001, with cataract surgery alone achieving >23% IOP reduction at final follow up.
Surgical success rates were similar in both groups (complete success 66% in group1 and 55% in group2, p=0.4), and qualified success 17% in group 1 versus 24% in group2, p=0.8).
Group 2 eyes had more post-operative transient and late complications than group1.Kaplan-Meier analysis showed a marginally better survival rate for group1 (75% (55-87%) than group 2, 66% (50-78%), at 2 years which was not significantly different.
Conclusion: Cataract surgery can be as effective as combined surgery in moderate XFG eyes. The final visual acuity, IOP profile, and complication rates are comparable between the two procedures.

EP-GLA-28

Not every cupping in disc with visual visual defect mean Glucoma

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34 years old male patient come to the clinic for renewal his glasses and follow, there no history Hypertension or diabetes or any systemic disease, he was diagnosed as Glucoma patient since 2018 and take Glucoma medical ttt eye drops since he was diagnosed as Glucoma and stopped it since 6 month by himself.
Ophthalmic examination:
Free anterior segment in both eyes
Clear cornea in both eyes
van herick grading 4 in both eyes
Pupil: round regular reactive in both eyes
Fundus
Iop: right eye 12, left eye 14
Normal macula in right eye
CD 0.6
Left eye funds
CD: 0.7
Lt Elevation from para macular region till optic disc in left eye,
Previous investigations 2018:
2018 oct nerve fiber layer show
Right eye within normal value
Left eye focal defect affecting 3 clocks
2018 visual field show
Right eye normal visual field
Left eye sever visual field changes (upper actuate Scotoma
2022 investigations show:
Oct nerve fiber layer:
Right eye: within normal RNFL thickness in all quadrants, with normal border area and vertical C/D ratio = 0.62, associated with normal GCL analysis. Left eye: focal decrease of the RNFL involving the lower quadrant and borderline thickness of the RNFL involving the nasal quadrant, with normal border area and vertical C/D ratio = 0.73, associated with focal affection of the lower GCL.
Visual field:
Normal visual field findings on the right.
Severe left visual field changes .
Oct macula:
Right normal macula
Left para macular Retinoschisis with optic dis pit
Conclusion: Optic Disc Pit With Peripapillary Retinoschisis Misdiagnosed as Glaucoma

EP-GLA-29

Microshunt-Preserflo implant study of efficacy and safety with 2-year follow-up

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Purpose: Present our experience with Microshunt-Preserflo implant in the treatment of glaucoma by minimally penetrating surgery.
Material and methods: We analyzed a sample of 54 operated eyes in our center. They have an average age of 72.5 years and females predominate (53.7%). 77.7% of our patients are Caucasian. The most frequent type of glaucoma is the primary open-angle glaucoma (61.1%), followed by pseudoexfoliative glaucoma (9.2%). 48.1% of the cases were performed standalone.
Presurgical intraocular pressure (IOP) is 17.5mmHg with a mean use of 2.4 antiglaucomatous drugs. In the surgical technique we used 0.2% Mitomycin C for 2 minutes. IOP control is performed by Goldman applanation tonometry.
Results: Postoperative IOP at 6 months is 14.6mmHg with 0.7 antiglaucomatous drugs, at 12 months IOP is 16.7mmHg with 0.6 drugs and at 2 years of follow-up IOP is 15.5 mmHg with 0.6 antiglaucomatous drugs. 10 cases postsurgical reoperations are required, 2 caused by endothelial contact of the device, 2 due to vitreous obstruction and 6 due to excessive conjunctival fibrosis that resulted in increased IOP. No other postoperative complications occurred. There were no cases with permanent hypotonia or extrusions of the device.

Conclusions: Minimally penetrating surgery is an effective alternative in the management of glaucoma. The main benefit would be a reduction in both intraocular pressure and the number of antiglaucomatous drugs. This objective is achieved safely allowing an adequate control of the disease.

EP-GLA-30

Non-perforating deep sclerectomy as surgical treatment of inflammatory glaucoma. Results at 5 years

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Purpose: To determine the effectiveness and safety of non-perforating deep sclerectomy as a surgical treatment in cases of inflammatory glaucoma.
Material and methods: Observational, retrospective study that evaluated a sample of 24 eyes diagnosed with inflammatory glaucoma that underwent a non-perforating deep sclerectomy with adjuvant cytostatics and ESNOPER implant, with a minimum postoperative follow-up of 5 years.
Results: 43.5% of the patients were women and the mean age was 52.13 ± 16.4 years. 65.2% of eyes were right. Preoperative intraocular pressure (IOP) was 34.48 ± 7.6 mmHg, and at the 5-year follow-up, it was 14.07 ± 5.2 mmHg, with a mean reduction of 19.15 ± 5.12 mmHg ($p<0.01$).
The mean number of pre-surgical drugs was 2.74±1.5. Pre-surgical Visual Acuity on a decimal scale was 0.46 ± 0.25 and at 5 years 0.52 ± 012 ($p>0.05$).
The most frequent post-surgical complication was persistent inflammation (defined as Tyndall greater than ++ beyond 3 weeks) in 43.5% (10 eyes).
The most used cytostatic was 5 Fluoruracil in an application time of 3 minutes in 73.9% of the cases. To achieve the target IOP at 5 years, defined as IOP below 16 mmHg, hypotensive medication was reintroduced in 12 patients (50%), 5 (20%) of them with 1 drug, 7 (29.1%) with two drugs, mean number of drugs being 1.6 ±0.53. Needling was performed in 30.2% (7 eyes) and goniopuncture in 37.5% (9 eyes). A second surgery was necessary for 16.6% (4 eyes).
Conclusion: Non-perforating deep sclerectomy is an effective surgical technique with few postoperative complications in the surgical management of inflammatory glaucoma, but at 5 years in 50% of patients it had been necessary to restart antihypertensive treatment and a third of the cases required needling and goniopuncture to achieve the target IOP.

EP-GLA-31

Suprachoroidal hemorrhage in glaucoma drainage devices

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Purpose: One of the most feared complications of glaucoma drainage device (GDD) surgery is suprachoroidal hemorrhage (SCH).
Material and methods: We present the cases of SCH that have occurred in our hospital between 1991 and 2021. Of 292 DDG implanted, SCH has occurred in 8 cases – 2.7%. Three of them in the 1990s, 5 between 2001 and 2008, and none in the last 13 years.
Results: We have not found differences depending on the mean age (56.9 vs 59.9), gender (men: 51.4% vs 37.5%), or operated eye (right: 46.8% vs 37.5%). The incidence has been higher in neovascular glaucoma (3 of 65, but without significant differences), aphakic (3 of 32), patients with higher preoperative IOP (mean IOP 40,250 vs 29,920), and those receiving treatment with acetazolamide (71, 4 vs 39.9%, p= 0.094). There were no differences in the number of drugs (mean 2.83 vs 2.90), or previous surgeries (mean 1.28 vs 1.08).
It has been much more frequent in free-flow implants, with 7 cases out of 131, than in the Ahmed valve, with 1 case out of 161, (p=0.014), as well as in patients with multiple procedures (4.2% vs 2 %), being less frequent in surgeries performed by experienced glaucomatologists (2.3% vs. 5.3% in residents and 4.2% in non-expert assistants).
All cases were presented on delayed presentation; 4 in the early postoperative period (between 2 and 4 days) and 4 in the late postoperative period (16 to 50 days), the latter being related to sudden hypotonia, due to the resolution of tube obstructions by blood or fibrin, and in one case removal of the restriction mechanism.
In the last 4 patients, vitrectomy with drainage was proposed, but 2 rejected it, and it was only done in the other 2, who were the only ones who maintained light perception.
Conclusion: Based on our experience, we consider that the most important risk factor is the sudden reduction in IOP and persistent hypotonia. We present the preventive measures that we apply to avoid this complication.

EP-GLA-32

Glaucoma treatment adherence behaviour using Glaucoma Treatment and Compliance Assessment Tool-Short (GTCAT-S)

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Purpose: To determine the health behaviour factors related to glaucoma adherence using Glaucoma Treatment and Compliance Assessment Tool-Short (GTCAT-S).
Method: Patients who had glaucoma for more than a year were given the Glaucoma Treatment and Compliance Assessment Tool-Short (GTCAT-S) form to fill in when they attended the glaucoma clinic from July 2022 to December 2023. We calculated the barriers and benefits, knowledge and severity and their relation to adherence to medications.
Results: The mean adherence was 77.42%. The GTCAT-S had a good overall fit. Multiple GTCAT statements were associated with adherence, which represented increased knowledge, increased cues-to-action, decreased barriers, less depression, and increased self-efficacy. It identified more than 32% of patients who wanted more education about glaucoma. More than 50% did not use reminders and 25% reported difficulty in using the eye drops.
Conclusion: The GTCAT-S identified multiple factors associated with adherence. Clinicians and allied medical staff could use this tool to identify specific barriers to adherence and develop potential interventions to improve adherence.

EP-GLA-33

XEN® stent implantation: efficacy and safety at 2 years

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Purpose: To evaluate the efficacy and safety of XEN® implantation in the treatment of glaucoma, with a follow-up of up to 2 years.
Methods: This retrospective study included patients with glaucoma that underwent XEN® implantation with or without combined phacoemulsification. Changes in IOP and number of IOP-lowering medications, surgical success rate (IOP ≤ 18 mmHg and ≥ 30% reduction) and incidence of complications during the 2-year follow-up were evaluated. Cases that required additional glaucoma surgery were also reported and automatically classified as complete surgical failure (excluding needling).
Results: Thirty-four eyes of 30 patients were included. Most cases (70,6%) underwent isolated XEN® implantation. Most cases were primary open-angle glaucoma (44,1%) followed by pseudoexfoliative glaucoma (35,3%).
Preoperatively, mean IOP was 26,26 +- 8,84 mmHg, dropping to 16,34 +- 7,00 mmHg at 6-months, 15,07 +- 3,24 mmHg at 1-year, and 16,12 +- 4,77 at 2-years postoperatively, corresponding to a reduction of 37,2%, 40,7% and 34,4%, respectively (p<0,001). The number of IOP-lowering medications was 2,82 +- 1,11 preoperatively and dropped to 1,06 +- 1,34 at 2-years (p=0,001).
Surgical success was achieved at 2-years in 55,6%, and 38,9% achieved complete surgical success (same criteria, without medications). Four eyes (11,8%) were classified as complete surgical failure and 11 eyes (32,4%) underwent needling due to bleb failure. Most common complications were IOP spikes ≥ 30 mmHg (17,6%) and hyphema (20,6%).
Conclusion: XEN® implantation is an effective and safe alternative to significantly reduce IOP and the number IOP-lowering medications over a period of at least 2 years.
The high incidence of bleb failure requiring needling reinforces the need for longer follow-up in order to determine the long-term surgical success rate.

EP-GLA-34

Morbidity caused by exfoliative glaucoma in Finland

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Purpose: To investigate the incidence and the prevalence of exfoliative glaucoma (XFG) in the catchment area of the Oulu University Hospital in Finland, and the morbidity related to XFG.
Methods: The population of Northern Ostrobothnia was 372 639 in 2000, and 413 830 in 2020. During the years 2000-2020, a total of 1520 patients with XFG living in the catchment area of the Oulu University Hospital (Northern Ostrobothnia) were diagnosed and followed up for XFG.
The clinical diagnosis of glaucoma is based on typical defects in the nerve fiber layer, the optic disc and/or the visual field (2 of the 3 criteria required, Finnish Current Care Guideline for Glaucoma), and all subjects had pseudoexfoliation detected in biomicroscopy.
Results: Of the study patients, 37% were men. 29% had been diagnosed before year 2000, 38% were diagnosed during 2000-2009 and 33% during 2010-2020. The mean age at the diagnosis of XFG was 71 ± 8.9 (SD), range 40-92 years. Women were somewhat older than men, 72 ± 8.9 years vs. 69 ± 8.7 years, respectively.
At onset, 67% of the patients had unilateral XFG, and 33% bilateral. 64% of the patients had been followed up for 5 years or longer, and 36% had a shorter follow-up or a single visit. At the end of the individual follow up, 50% had bilateral disease. The mean follow-up time was 13 ± 8.1 years. 45% of subjects deceased before 31.12.2022 at a mean age of 86 ± 7.1 years.
According to these figures the incidence of XFG was 15/100 000/year in 2000-2009, and 11/100 000 in 2010-2020, and the prevalence 170/100 000 during the study period. The true incidence and prevalence may be higher, but not lower, as some individuals may not have been referred to the hospital or have not been diagnosed in the first place.
Conclusions: XFG affects elderly people, and it commonly becomes bilateral by time. It is more common in women than men, and at the time of diagnosis women are 3 years older than men.

EP-GLA-35

Association between Serum Creatinine and Hypertension with Normal Tension Glaucoma (NTG)

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Purpose: To evaluate the association between Serum Creatinine and Hypertension with Normal Tension Glaucoma (NTG).
Methods: This Cross-Sectional Population-Based Study involved 122 subjects taken from 3 villages. History taking and physical examination were carried out to determine age, gender, height and weight. Independent variable consist of Serum creatinine evaluated using Cobas e501 automatic analyzer, and hypertension measured using digital sphygmomanometer. The dependent variables consist of NTG, mean defect (MD), retinal nerve fiber layer thickness (RNFL), and vertical cup-to-disc ratio (CDR).
A perimetric examination was performed to determine MD, and an optical coherence tomography scan was performed to determine RNFL, and CDR. NTG was obtained based on these three parameters. The association between variables is then tested by using logistic regression test.
Results: Hypertension was not significantly associated with NTG, MD, RNFL, and CDR. Serum creatinine was not significantly associated with NTG, MD, RNFL, and CDR, although there was a significant difference in serum creatinine levels between large CDR group and normal CDR group (p=0.008).
As secondary outcomes, we revealed an association between increased age and NTG (p=0.041, OR = 3.93). Association between aged 50-59 years with abnormal MD (p= 0.039, OR= 5,977), and those aged ≥60 years with Large CDR (p= 0.024, OR= 6,822) were also confirmed.
Conclusion: Subjects with hypertention and increased level of Serum Creatinine had no risk of developing NTG. The association between age and glaucoma parameters was also identified.

EP-GLA-36

Relationship of pupil size with refractive error in metabolic syndrome and non-metabolic syndrome: among rural population in Malang

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Purpose: The aim of this study to evaluate the relationship of pupil size with refractive error in metabolic syndrome population and non metabolic syndrome population among rural populations in Malang.
Methods: A descriptive study was carried out in 2019 in three villages in Malang districts. A detailed ocular examination including pupil size was conducted on all participants who attended a research facility.
We defined pupil abnormalities beyond the normal diameter of 2- 4 mm in bright light and clinically important refractive error as follows: hyperopia, SphEq value of 0.25 diopters (D) or greater; myopia, SphEq value of −0.25D or less; and astigmatism, cylinder of 0.25D or greater in either eye.
Blood samples were obtained to determine serum fasting glucose, high density lipoprotein cholesterol, and triglyceride levels. Waist circumference, systolic and diastolic blood pressure were recorded. The diagnosis of Metabolic Syndrome was based on International Diabetes Foundation 2006 criteria.
Subjects were classified into 2 groups by Metabolic Syndrome status and non metabolic syndrome.
Results: 953 participants completed the examination which consists of 944 right eyes and 942 left eyes. The results of visual acuity on the right eye obtained emmetropia in 434 eyes. Myopia is the most common with 252 eyes, hyperopia with as many as 141 eyes, and astigmatism with as many as 117 eyes where if it is associated with pupillary abnormalities the results are not significant with P-value 0.893.
On the left eye, the emmetropia results were 444 eyes, while for myopia the most results were 244 eyes, hyperopia as many as 138, and astigmatism in 116 eyes and if associated with pupillary abnormalities, the result also not significant with P-value 0.864.
The result of pupil size with metabolic syndrome 499 eye and non syndrome metabolic 454 eye are not significant p- value 0.649.
Conclusion: Refractive error didn't relate pupil size in metabolic syndrome and non metabolic syndrome.

EP-GLA-37

Acute glaucoma attack after general anesthesia

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Purpose: To present 2 clinical cases of female patients with acute glaucoma attack after surgery under general anesthesia and our treatment approach.
Materials and methods: We present two cases of patients with acute glaucoma attack after gynecological surgery with general anesthesia. Both are females and with family history for glaucoma.
In our clinic they were fully examined and it was conducted emergency and follow up treatment.
Results:
Case 1: Seventy-one years old lady started complaining of blurred vision and pain of the left eye three days after general anesthesia. Eye consultation was performed and IOP up to 50mmHg was measured. An anti-glaucoma therapy has been initiated. Two weeks later she was submitted to our clinic. Bilateral acute closed angle glaucoma was diagnosed and YAG iridotomies have been performed. We achieved normal intraocular pressure.
Case 2: Fifty-three years old lady complained of acute decreased vision of the right eye after general anesthesia. She was treated for iridocyclitis. Two months later she was examined elsewhere and IOP up to 64mmHg was measured of the right eye. Treatment with Pilocarpine, Brinzolamide and Timolol has been started. A prophylactic YAG-iridotomy of the left eye has been performed. In our clinic we measured IOP TOD=50mmHg and TOS=23mmHg. We performed YAG-iridotomy of the right eye, combined therapy and achieved intraocular pressure TOD= 22mmHg TOS=14mmHg.
Conclusion: Most of the medicines used in the general anesthesia (atropine, fentanyl, propofol) may provoke acute glaucoma attack. The predisposed patients have shallow anterior chamber, exfoliative syndrome, narrow/closed angle. In order to prevent eye complications and loss of vision associated with general anesthesia. It is strongly recommended ophthalmology consultation especially for patient with family history for glaucoma.

EP-GLA-38

Examining the characteristics of conjunctival hyperaemia: associated with ROCK inhibition and prostaglandin treatment

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Purpose: A fixed combination of the Rho kinase inhibitor (ROCKi) netarsudil (NET) with latanoprost (LAT) has been developed for the treatment of glaucoma. Conjunctival hyperaemia (CH) has been reported as a relatively common adverse event in previous clinical trials and real-world studies with these agents.
This analysis examines the characteristics of CH in a population with ocular hypertension or glaucoma from the MERCURY-3 trial.
Methods: MERCURY-3 was a head-to-head six-month prospective, double-masked, randomized, parallel-group, non-inferiority study that compared NET/LAT 0.02%/0.005% (Roclanda®) with bimatoprost 0.03%/timolol maleate 0.5% (BIM/TIM; Ganfort®) [*submitted*].
Results: The NET/LAT safety population included 218 patients, of which 67 (30.7%) patients had treatment-related CH. The mean time of onset of CH was 57.8 days (median, 42; range, 1–185). CH resolved in 27 of 67 (40.3%) patients in the NET/LAT arm during the study; mean time to event resolution (duration) after onset was 42.1 days.

In patients without CH (n=34 [50.7%]) at baseline, mean times to onset (50.1 days) and duration (41.4 days, n=13) were similar to those with CH at baseline (n=33 [49.3%]; onset, 65.8 days; duration, 42.9 days [n=14). In the BIM/TIM arm 19 of 212 (9.0%) patients had CH; the mean onset of CH was 61.7 days with a resolution (in 10 [52.6%] patients) duration of 21.8 days, and 9 (47.4%) had no CH reported at baseline.

Conclusion: CH was expected to emerge as a treatment-related AE in a therapy combining both a ROCKi and prostaglandin, as both agents have been associated with CH in previous studies. The severity of CH in MERCURY-3 was mild and resolved (in those that achieved this) around a month after onset.

This characterisation of treatment-related CH, in conjunction with emerging real-world experience with NET/LAT, helps to contextualise the risk and expected severity and duration of CH in patients treated with NET/LAT.

EP-GLA-39

Outcomes of micropulse transscleral laser therapy (MP-TLT) in glaucoma patients - a comparison of two treatment protocols in a six-months observation period

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Purpose: The purpose of the study was to compare the efficacy of MP-TLT performed with two protocols in patients with glaucoma over a six-months observation period.

Methods: Patients with various stages of glaucoma and insufficiently controlled intraocular pressure despite maximally tolerable antiglaucoma therapy were selected to the study. We included 8o adult patients with various glaucoma subtypes, without prior glaucoma surgeries except SLT, LPI, and / or uneventful cataract phacoemulsification. Patients were assigned to two groups. All of them underwent MP-TLT in 2021 and had at least 6-months of follow-up. Patients were treated with the Micropulse P3 device powered by the CYCLO G6 (Iridex, Mountain View, CA, USA) at 2500 mW, with a duty cycle of 31.3%, using different treatment duration time.

The first group had a duration of 50 seconds per hemisphere (five 10-second sweeps), while the second 80 seconds per hemisphere (four 20-second sweeps). Both hemispheres were treated. Patients were followed up 1 day, 2 weeks, 1, 3 and 6 months after surgery.

On each visit we assessed the IOP, BCVA and the number of antiglaucoma medications. The qualified success was determined as an IOP between 6-21 mmHg and ≥20% reduction of IOP from the baseline without additional surgeries, with or without the use of anti-glaucoma medications.

Results: The mean IOP before the procedure was 19.62 ± 3.59 mmHg and 19.15 ± 5.08 mmHg in group 1 and 2, respectively, and in month 6 was 15.6 ± 3.29 mmHg and 16.32 ± 3.49 mmHg in group 1 and 2, respectively. Average IOP reduction was 17.91 ± 19.72 % and 10.77 ± 23.73 % in group 1 and 2, respectively.

Qualified success was 40% and 37.5% in group 1 and 2, respectively. In the study population, the distribution of success was the same for both protocols (p=1.0, Fisher's exact test) at 6 months.

Conclusions: MP-TLT appears to be a safe and effective treatment for glaucoma using both protocols. Further studies are required.

EP-GLA-40

Long term success rate of selective laser trabeculoplasty (SLT) following failed incisional glaucoma surgery

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Purpose: Trabeculectomy (Trab) & deep sclerotomy (DS) success rate around 80%, and failure rate increases over the years, following which patients either put back on medication or surgery will be repeated. SLT tried following failed glaucoma surgery, success rate was modest and short lived.

Method: Retrospective review of all cases underwent SLT following failed Trab or DS in our institute, calculating initial success; as 20% reduction of IOP, or reduction in their medication with maintaining target IOP for 6month with no further intervention, then late failure was defined as any glaucoma intervention needed later (adding medication or undergoing glaucoma surgery), repeating SLT was not considered as failure.

Results: 112 eyes suffered from glaucoma , 46 POAG, 37 pseudoexfoliation & 24 pigmentary glaucoma, with mild disease in 15%, moderate in 22% & sever in 63%, all underwent incisional glaucoma surgery, 106 Trab (4 had bleb revision) & 6 had DS. 92months later (6-360) another intervention needed, glaucoma was uncontrolled in 38%, or intolerant to medications in 62%, so SLT was done.

Initial success rate was 69.6%, with IOP reduced from 21.3±5.7 to 16.9±5.8mmHg 6months after SLT, and number of medication reduced from 3.2±2.3 to 2.8±1.4

IOP maintained around 17.3±6.9mmHg, with the use of 2.9 ± 1.4 glaucoma medications over a period of 17.3±19.6 months (some cases followed up for 5-7years), over the years 27.6% of the cases needed further intervention (late failure).

Failed SLT cases had more medications added (n=39) or underwent glaucoma surgery (n=24).

Conclusion: SLT has a good initial success rate following failed glaucoma incisional surgery, and failure over years was relatively low, which will delay further surgical interventions

SLT is a low-risk procedure, that should be offered for the patients with uncontrolled glaucoma or intolerant of their glaucoma medications even after failed incisional glaucoma surgery.

EP-GLA-41

Outcomes of Gonioscopy-assisted Transluminal Trabeculotomy (GATT) surgery in patients with glaucoma

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Purpose: To report outcomes of gonioscopy-assisted transluminal trabeculotomy (GATT) surgery in patients with glaucoma.
Methods: A retrospective review was performed for all patients who underwent GATT surgery in a third level hospital. Main outcome measures were IOP, number of glaucoma medications and IOP reduction.
Results: 84 eyes were treated. The mean age was 69.34 years (15.98 standard deviation). 65.5% of surgeries were performed in males. Most procedures were performed during 2022 (39.3%) and 2019 (28.6%). GATT surgery was performed, most frequent like a combined surgery (67,9% Phacoemulsification + GATT), mainly in patients with open angle glaucoma (70.2%) and angle-closure glaucoma (17.9%).
For all eyes, the mean preoperative intraocular pressure (IOP) (SD) was 22.95 (8.47) mm Hg, and 2.69 (0.07) glaucoma medications. Mean postoperative IOP was 13.81 (3.44) at 6 months. There were just 5 complicated cases (2 hyphema, 1 descemet detachment, 1 hemovitreous, and 1 uveitis). Visual acuity changed from 0.4 to 1 post surgery.
When the groups were divided based on combined (PHACO + GATT) or GATT surgery, there were no statistically significant difference in age, pre surgical number of glaucoma medications, pre- and post-surgical visual acuity, mean IOP.
Conclusions: GATT is a safe and successful surgery for different types of glaucoma, especially in open angle glaucoma. GATT offer an important IOP decrease in patients at 6 months follow-up.

EP-GLA-42

Changes in peripapillary retinal nerve fiber layer thickness in chronic glaucoma and non-glaucoma patients after phacoemulsification cataract surgery

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Purpose: The effect of cataract surgery on the retinal nerve fiber layer (RNFL) and central macular thickness (CMT), causing their alteration, has been shown in a few previously published reports.
Our study aimed to determine changes in the RNFL and CMT in primary chronic glaucoma patients and healthy subjects following uncomplicated phacoemulsification surgery.
Method: This study included 65 eyes from primary chronic glaucoma patients whose intraocular pressure (IOP) had been treated for a long term with or without medications (IOP≤20mmHg) and 59 eyes from healthy controls. The average RNFL thickness and CMT were assessed using spectral-domain optical coherence tomography (SD-OCT). Statistical analysis was performed using SPSS21.0, and the difference was considered significant if $p<0.05$. All values are expressed as means ± SD.
Results: The mean age of all patients was 69±10.62 years. The average RNFL thickness in glaucoma patients preoperatively, at one week, one month, and six months postoperatively were 96.8±19.0, 99.9±20.1, 98.3±19.2 and 96.4±21.1 μm, respectively.
On the other hand, the average RNFL thickness in control group patients were 100.9±10.4, 102.3±7.7, 103.0±5.6, and 100.3±4.1 μm, respectively. The mean CMT values in glaucoma patients preoperatively, at one week, one month, and six months postoperatively were 255.11 ± 16.001, 266.69 ± 17.012, 264.09 ± 18.055, 255.08 ± 16.015 μm, respectively. The corresponding values of the control group were 255.16 ± 16.111, 265.59 ± 16.003, 265.12 ± 17.066, 255.08 ± 15.021 μm, respectively.
Significant differences in the average RNFL thickness and CMT values between these two groups preoperatively and at all three-time points postoperatively were not observed ($p>0.05$).
Conclusion: Phacoemulsification increased peripapillary RNFL thickness and CMT in both groups at one week and one month postoperatively. However, these values were not significantly different between these groups.

EP-GLA-43

Clear as mud - a diagnostic and therapeutic challenge

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We describe a case of a 44-year-old Caucasian man with an ophthalmological history of LASIK (only OD) 15 years ago for a high myopia (OD-9.00D and OS-8.00D) and mild astigmatism (OD-1.75D and OS-2.25D), currently wearing contact lenses. He has history of controlled hypertension, Ischemic Stroke, Obstructive Sleep Apnea and reports eye steroid use for 6 months 20 years ago for a condition he couldn't remember. He was referred to the Glaucoma department because of bilateral total disc cupping with a corresponding floor effect on SD-OCT.
On our examination he presented a MAVC OU of 0.1 LogMAR and a wide anterior chamber with no pathological findings. Intraocular Pressure (IOP) on Goldmann's tonometer was 15/16 mmHg, and gonioscopy showed an open angle (Grade IV Shaffer) with no posterior convexity of the iris. Fundoscopy of both eyes showed an optic disc with total but apparently shallow cupping, with no such pallor; and temporal peripapillary atrophy.
US Pachymetry was 544μmOD and 542μmOS. Macular SD-OCT was normal as well as the macular Ganglion Cell Complex (GCC) of the right eye, but left eye showed a diffuse loss of the GCC. Automated standard static perimetry (30º) revealed an inferior nasal step OD and OS and an upper arcuate scotoma OS, with deficits not sparing vertical axis. His ophthalmological history (refractive laser surgery influencing pachymetry and measured value of IOP; high myopia with alterations of the disc and retina that may influence interpretation of the OCT, history of topical steroid drops and past stroke) and the degree of agreement between the exams (OCT and Perimetry) make this case a complex diagnostic and therapeutic challenge.
Assuming a possible normal-pressure glaucoma, ABPM and CT of head and orbits scans were requested (without alterations), and an IOP measurement curve was performed for 12 hours with no peaks or oscillations(mean IOP16/17 mmHg). The patient is currently being followed up, without therapy and with no disease progression.

EP-GLA-44

A retrospective study of the clinical efficacy and safety of the PreserFlo MicroShunt

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Purpose: The Preserflo Microshunt is a minimally invasive shunt inserted which lowers intraocular pressure (IOP) through the formation of a filtering bleb. This study aims to quantify the efficacy of the Preserflo in lowering IOP and evaluate its safety profile.
Method: A retrospective, single-centre cohort study of 100 consecutive eyes followed up for at least 3 months post Preserflo implantation within a period of two years.
The primary outcome measures were IOP control with or without the need for IOP-lowering medication and surgical success rates as per the World Glaucoma Association guidelines.[1]
Secondary outcome measures were the incidence of complications and reinterventions to determine the safety profile of the procedure.
Results: A total of 100 procedures were performed on 94 patients, with a mean age of 72.5 ±13.6 years. Primary open-angle glaucoma was the leading cause of glaucoma, accounting for 62% of cases. From the pre-op cohort's baseline IOP of 30.2 ± 12.1 mmHg, 57 eyes were followed up to one year, achieving a significant reduction in IOP to a mean of 14.4 ± 6.41 mmHg ($p<0.01$). 63.2% of patients met the complete success criteria and 87.7% achieved qualified successes. The use of anti-glaucoma medication was reduced significantly from 3.10 ± 0.94 to 0.81 ± 1.14 ($p<0.01$).
Complications encountered were eight cases of hyphaemas, four cases of hypotony, two cases of corneal oedema, four cases of macular oedema, one vitreous haemorrhage, two cases of scarring and one shunt extruding through the conjunctiva.
Conclusion: The Preserflo Microshunt is an effective and minimally invasive option for managing glaucoma surgically. The procedure was successful in achieving significant reductions in IOP and reducing the need for antiglaucoma medication in the majority of patients. While some complications and reinterventions were required in a minority of cases, the overall safety profile of the procedure is very strong.

EP-GLA-45

Prevalence of glaucomatous appearing discs in patients undergoing artificial intelligence screening for diabetic retinopathy

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Purpose: Artificial intelligence (AI)-based image analysis allows high-volume screening for diabetic retinopathy (DR), identifying referable patients by disease severity. However, replacing manual screening with platforms optimized for a single condition decreases the ability to detect additional ocular diseases such as glaucoma. The purpose of this retrospective cross-sectional study was to determine the prevalence of optic disc changes suspicious for glaucoma (OCSG) in a representative population of diabetic patients who underwent AI-based DR screening.
Methods: High-resolution images were retrieved for 677 consecutive automated DR screening exams. These were reviewed independently by two ophthalmology resident readers for evidence of OCSG which included increased vertical cup to disc ratio (VCDR), beta-zone peripapillary atrophy, optic disc hemorrhage, vessel bayonetting, rim thinning, and/or central vessel nasalization. The prevalence of OCSG was reported and compared between subjects designated as referable for DR versus non-referable for DR.
Results: In total, 823 eyes in 413 subjects were included. The classification reliability of ophthalmology resident graders was moderate to substantial compared to a glaucoma specialist. The total OCSG prevalence was 5.8% to 20.6%, with no statistically significant difference between patients designated referable versus non-referable on AI-based diabetic retinopathy screening.
Conclusions: This pilot study demonstrated a significant prevalence of OCSG in diabetic patients undergoing AI-based retinopathy screening. Reliance on single-disease screening modalities may risk missing OCSG which would warrant further workup if detected on manual screening. These findings emphasize the need for AI-based platforms capable of screening for multiple high-prevalence ophthalmic conditions.

EP-GLA-46

Outcomes of inferotemporal XEN gel stent implantation

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Purpose: The purpose of this study was to determine the efficacy and safety of inferotemporal placement of the XEN gel stent.
Method: A retrospective study was performed on twenty patients who underwent stand-alone XEN gel stent implantation in the inferotemporal quadrant via ab-externo approach without conjunctival incision or tenonectomy. A mixture of 40 µg of Mitomycin C (0.1 cc of 0.04% solution) and preservative free lidocaine (0.1 cc) was injected subconjunctivally posterior to the bleb. Follow-up ranged from postop day one to seven months. Factors analyzed included number of medications, intraocular pressure (IOP), need for additional procedures, and complications.
Results: At the most recent follow-up visits, mean IOP had a reduction of 47%, from 20.35 mmHg preoperatively to 10.68 mmHg ($p < 0.001$), and the number of medications reduced by 81%, from 4.05 preoperatively to 0.75 ($p < 0.001$). Complications included bleb leak (one eye), persistent cystoid macular edema (one eye), and postop day one hypotony with grade 1 anterior chamber shallowing (one eye). One patient required additional tube shunt surgery after failed bleb needling. There were no patients with blebitis, stent exposure, persistent hypotony, or bleb dysesthesia.
Conclusion: Newer literature is emerging illustrating the viability of an inferior approach to XEN gel stent implantation. Our results show ab-externo inferotemporal approach is efficacious and safe.

EP-GLA-47

Sturge–Weber syndrome (SWS) and bilateral juvenile glaucoma

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Introduction: Sturge–Weber syndrome (SWS) or encephalotrigeminal angiomatosis is a non-inherited congenital disorder characterized by neurologic, skin, and ocular abnormalities. The characteristic facial port-wine stain, involving the first branch of the trigeminal nerve and the embryonic vasculature distribution in this area, leads to several ocular complications of the anterior segment and can involve the eyelids and conjunctiva.
Purpose: The correct diagnosis and timely treatment of the patient with the surgical approach and the aim of preventing progressive damage of optic nerve head.
Case description: We report a case of a13 year old boy with Sturge-Weber syndrome and discuss its clinicopathological features, medical and surgical therapy. The classic pathognomonic manifestations of the case include bilateral port wine stain, epileptogenic activity and Bilateral Juvenile Glaucoma. After ineffective medical treatment for months, we decided to take a surgical approach. The procedure of choice was Trabeculectomy.
Conclusion: SWS glaucoma is complex and often requires a multidimensional approach to maintain effective management. We have presented a case where the intraocular pressure was controlled by surgical approach without topical medical therapy in a long postoperative follow up.

EP-GLA-48

Traumatic glaucoma with late onset of treatment as a cause of permanent significant visual impairment - a case series report

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Introduction: Traumatic glaucoma with permanent loss of vision may be the result of an eye injury. It may reveal itself even many years after the trauma. It can be rapid and untreatable. The aim of the study is to present a series of two cases of traumatic glaucoma with late onset of treatment.
Case reports:
Case No. 1. A 68-year-old man referred to the Department of Ophthalmology due to pterygium of the right eye (RE). Diagnostics revealed traumatic glaucoma of the fellow eye. In an anamnesis, the left eye (LE) was injured by an arrow in childhood and treated surgically. In the LE examination: distance BCVA 0.6, IOP 26mmHg without medication, local pupillary sphincter damage, local lens ligament tear, cataract.
Case No. 2. A 56-year-old woman referred to the Department of Ophthalmology due to visual impairment of RE for 4 months. There was a history of blunt trauma of the RE with a ball in childhood and a condition after the implantation of the Ex-PRESS glaucoma shunt 9 years ago. In the RE examination: distance BCVA hand movements, IOP 38mmHg with 3 antiglaucoma drugs, local anterior synechiae, Ex-PRESS shunt in the correct position, intumescent cataract.
In both cases significant glaucomatous visual field defects and glaucomatous optic disc damage of the affected eye were revealed (c/d ratio 0.89 and 0.73, mean RNFL thickness 56µm and 40µm respectively). Due to the failure in achieving the target IOP, cataract phacoemulsification with IOL implantation was performed in both cases. Moreover in case no. 2, cyclodestructive procedures were performed. In both cases, the target IOP was achieved. Patients remain under outpatient observation.
Conclusions: Education of the patient after eyeball injury regarding possible complications such as traumatic glaucoma and the need for regular ophthalmological examination is crucial for the prevention of potential blindness. Careful diagnosis and individualized treatment are necessary in cases of traumatic glaucoma.

EP-GLA-49

Glaucoma and Parkinson's disease: an epidemiologic and physiologic association

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Purpose: To demonstrate an association between Glaucoma and Parkinson's Disease.
Method: Both Parkinson's disease (PD) and primary open angle glaucoma (POAG) are deemed to be associated with autonomic system dysfunction. While PD is better understood in the context of autonomic system dysfunction [1], POAG's association with autonomic system has been elucidated only recently and with limited clarity [2]. In this paper we explore the association between PD and POAG through two facets of epidemiologic evidence: (a) Prevalence of PD and POAG using 2014-2015 Medicare CMS data review in the United States [3, 4] and (b) Prevalence of these diseases through a review of the utilization trend of the medications to treat them [5].
Results: Prevalence of Primary Open Angle Glaucoma and Parkinson's Disease have shown to be positively correlated through their Prevalence Data by the two methods adopted. These epidemiologic data are juxtaposed with the known dopamine physiology in the human eye [6] and the substantia nigra [7] indicating their close association.
Discussion and conclusion: This analysis forms the basis of extension of recently presented machine learning model for autonomic system dysfunction [8]. Such a correlation between PD and POAG would not only support either disease as a marker for the other, but also potentially present a new treatment modality for POAG through the Dopamine pathway.
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EP-GLA-50

Results of micropulse cyclophotocoagulation in patients with early open-angle glaucoma

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Pupose: To evaluate the possibilities of transscleral micropulse cyclophotocogulation in patients with early stages of glaucoma.
Material and methods: 38 patients with early stages of primary open-angle glaucoma underwent micropulse cyclophotocogulation as the primary procedure. For the operation, modified laser parameters were used on the SUPRA 810 device (Quantel Medical, France). The laser parameters were at 2.0 W for a duration of 100 s per hemisphere at a 31.3% duty cycle, fluense was 121,8 J/m2. Best corrected visual acuity (BCVA) before surgery averaged 0.88. The follow-up period averaged 17±11 months (from 6 to 30 months). The Kaplan-Meier scale was used to assess the cumulative success of laser treatment after surgery.
Results: The postoperative period was uneventful. A month after the micropulse cyclophotocogulation, was noted hypotensive effect averaged 41.5%. The mean pre-operative intraocular pressure was 25.5 ± 5.5 mm Hg and the mean post-operative intraocular pressure at 12 months was 16.0 ± 3.5 mm Hg (hypotensive effect -31%). No changes in BCVA were detected during the observation period. IOP reduction was achieved in all cases. The parameters of the state of the ONH (OST, perimetry) remained stable, or their improvement. The mean number of intraocular pressure-lowering medications used preoperatively was 2.4 ± 1.1; the mean number of medications used at the 12-month post-operative visit was 1.4 ± 1.0.
Conclusion: Micropulse cyclophotocogulation in patients with early stages of glaucoma leads to a pronounced stable hypotensive effect during the follow up period, avaraged 31%(up to 21% to 50%). An improvement in the quality of life was noted due to the refusal or reduction in the number of instillations. To develop practical recommendations on the indications and regimens of micropulse cyclophotocogulation in the early stages of glaucoma, further monitoring of patients is carried out.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Neuro-ophthalmology

EP-NEO-01

THE optic nerve OCT analyses in traumatic optic neuropathy

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The case of 52 years old patient that found visual disorders due to craniocerebral injury and chest injury with clavicle fracture.
Methods: OCT of optic nerve was made twice in 2 days and in 3-month after injury.
Results: In 3 months after the injury, the average thickness of the layer of nerve fibers in the right eye was 100 mm, compared to 141 mm on the third day after the injury, and decreased by 41 mm, 41%, in the left eye - from 142 mm to 91 mm, by 36%.
The volume of excavation of the right eye on the third day after the injury was 0.08 mm^3, on the third month - 0.19 mm^3, that is, it increased by 0.11 mm^3, 58%. In the left eye, the excavation volume on the third day after the injury was 0.15 mm3, on the third month - 0.76 mm^3, that is, it increased by 0.61 mm^3, 80%.
The area of the neuroretinal band of the right eye on the third day after the injury was 1.95 mm^2, on the third month - 1.15 mm^2, that is, it decreased by 0.8 mm^2, 41%. In the left eye, the area of the neuro-retinal belt was 1.64 mm2, on the third month - 1.29 mm^2, that is, it decreased by 0.35 mm^2, 21%.
Spectral analysis of the macular cube three months after the injury showed the spread of a zone with a reduced thickness of the ganglion cell layer ($p<0.05$) over the entire upper temporal segment in comparison with the previous period.
Conclusion: Traumatic optic neuropathy leads to dystrophic disorders in the form of a progressive decrease in the thickness of the layer of nerve fibers and ganglion cells of the retina, as well as to changes in the architecture of the optic nerve head.

EP-NEO-03

Non-functional pituitary tumor presenting with an unusual visual field defect

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Background: Pituitary adenomas are classified as either functional or non-functional, depending on their hormone-secreting capabilities. These tumors can cause visual loss by compressing the optic chiasm. Such compression produces the characteristic bitemporal hemianopia. Asymmetric growth of tumors and different optic chiasm configurations can contribute to uncommon visual field disturbances.
Objectives: To present a case of a pituitary tumor presenting with an unusual visual field defect, and describe how the anatomical relationship of the sella turcica with the chiasm can cause such defects.

Case: We are presented with a 24-year-old-male with a two-year history of painless, progressive blurring on both eyes. Interval history showed episodes of headache localized to the periorbital region, with reports of decreased alertness and change in the behavior of the patient. Visual acuity was 20/200 OD and 20/400 OS with no RAPD. On confrontation testing, there was right homonymous hemianopia.
Optic nerve examination showed bow-tie atrophy of the right eye and diffuse optic nerve pallor markedly noted on the temporal disc area of the left eye. Perimetry showed incongruous right homonymous hemianopia. P100 on VEP was not identified on both eyes.
CT scan with contrast revealed a 6.4 x 4.5 x 5.5 cm homogenous sellar/suprasellar mass between the lateral ventricles significantly extending more on the left side.Frontoparietal craniotomy with excision of tumor through an interhemispheric, transcallosal, transcultural, transvertical, transseptal approach septostomy, third ventricular cisternostomy was done. However, patient expired.
Conclusion: Visual field loss often accompanies pituitary diseases. Homonymous hemianopia is an infrequent visual field deficit secondary to pituitary tumors. The different configurations of the optic chiasm relative to the pituitary gland can contribute to this unusual visual field loss.

EP-NEO-04

Fussy eaters and vision loss

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This is a rare and interesting case of a 21-year-old male with a bilateral optic neuropathy secondary to vitamin B12 deficiency. This gentleman was initially consulted in 2016 by gastroenterology due to having a macrocytic anaemia.
6 years later he presented to us in eye casualty with progressively worsening vision for the past month. He had no other symptoms. Visual acuities were 6/30 in the right eye and 6/60 in the left eye, with no improvement on pinhole. On examination bilateral disc hyperaemia and swelling was seen and it was noted that his diet consisted solely of rice, chips, curry and dry bread rolls and he did not eat any vegetables or meat.
On presentation, vitamin B12 levels were noted to be significantly reduced and it was deemed that he had a bilateral optic neuropathy secondary to vitamin B12 deficiency.
He was reviewed 1 month later and noted to have had a significant improvement in his vision. His visual acuities were 6/12 in his right eye and 6/19 in his left eye. Do we need to do more to advise fussy eaters of the impact their diet can have on their vision?

EP-NEO-05

OCT in neurodegenerative diseases of the central nervous system

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Purpose: The aim of the present study is to provide direct evidence of retinal structure abnormalities and retinopathy in patients with Alzheimer's disease (AD), Parkinson's disease (PD) and Schizophrenic disorder (SD) using OCT.
Methods: A total of 48 consecutive patients with neurodegenerative diseases and 23 age-matched healthy controls were examined with the Topcon 3D OCT 1 Maestro 2.
Statistical processing includes descriptive analysis and nonparametric tests. A p- value < 0.05 was set as statistically significant. The statistical analysis was conducted with IBM SPSS (Version 19).
Results: A statistically significant reduction of the total pRNFL thickness was found in patients wit AD (97+/-9µm, range: 82-110) and PD (93+/-21µm range: 64-149) compared with values observed in control eyes (104+/-9µm, range: 86-118) (p = 0.042; p= 0,002 respectively, Mann-Whitney U test) as well as in pRNFL nasal, temporal and inferior quadrants.
A reduction of GCL+ (63+/-6µm, range: 53-76) and GCL++(98+/-10µm, range: 77-118) in PD patients when compared with controls GCL+(69+/-8µm, range: 38-77) (p = 0.002, Mann-Whitney U test); GCL++(107+/-4µm, range: 95-116) (p = 0.002, Mann-Whitney U test) was also registered.
No statistically significant differences were observed between the control group and schizophrenia patients with regard to optic nerve measurements, macular thickness and volume.
Conclusions: Our OCT measurements demonstrate thickness reduction in retinal layers of patients with neurodegenerative diseases.
In the context of current research of promising neuroprotective therapies, our results provide further information about the connection between structural changes seen in the brain of patients and retinal involvement and highlight the potential of a noninvasive approach to the diagnosis of selectedcentral nervous system diseases, and the use of the eye as a valuable model to study the central nervous system.

EP-NEO-06

What can we tell patients about visual recovery following pituitiary apoplexy

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Purpose: Pituitary apoplexy may lead to dramatic presentations with life-threatening neuroendocrine abnormalities and significant visual field disturbances. Common causes of sellar presentations and mismatch presentations include macroadenomas, trauma, post-cardiac bypass surgeries. Mismatched blood supply to sellar contents can lead to apoplexy and necrosis. In these scenarios chiasmal fibres lead to conduction block, and antero/retrograde disruption.

The classical loss of temporal fields have been reported in various studies. We looked at data from various neurosurgical centres in the world looking at data about the recovery rate of visual field to help our patients understand the pace of recovery of visual field following trans-sphenoidal surgeries.
Method: Literature search of patients who presented with symptoms of pituitary apoplexy who had undergone trans-sphenoidal decompression or those treated medically. Data regarding early surgery (within 72 hours), severity of presentation, and level of vision loss were gathered.
Results: Majority of patients had CNIII palsy. Early surgeries lead to better symptom control and earlier visual recovery of patients. Patients generally recovered vision if they presented shortly after symptom onset. Patients who presented following months of chiasmal compression did not recover their vision as much as the early surgery group. Diffusor tensor imaging following surgical approach showed early axonal signal recovery. In the months to years following surgery remyelination and diffuse axonal thickness was measured although the recovery was not complete.
Conclusion: Oculomotor palsies in cases of apoplexy developed in a definef sequence- mydriasis, gaze limitation, and ptosis. These will improve in reverse order. 90% of patients who undergo early surgery will recover 90% of visual function and visual field.

EP-NEO-07

Radial nerve fiber layer (RNFL) and choroidal macular thickness (CMT): markers of severity in Multiple Sclerosis (MS) patients

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Purpose: To investigate whether vascular changes (choroidal thickness and macular vascular plexus) as well as changes in the thickness of retinal nerve fibre layers and retinal ganglion cells occur over one year in patients with multiple sclerosis.
Methods: We analysed 104 eyes of MS patients (divided into 2 groups: patients with primary progressive MS and subject with relapsing-remittent MS). Patients were also divided according with their disability (low disability and high disability). Anatomical parameters: RNFL and ganglion cell layer (GCL) were studied using optical coherence tomography. Vascular parameters were also analysed: CMT (studied by OCT) and vascular macular plexus with OCT-angiography (OCTA). Any subject has optic neuritis history.
Results: RNFL was thinner with the highest degree of disability and in patients with PPMS. MCT showed significant decreased in the group, which has moderate severe disability and showed a decrease in the group that their disability worsened during the year of the study. Retinal macular plexus showed no difference in any group.
Conclusions: The study of the RNFL and MCT are objective and valuable indicators in these patients, especially with regard to the progression of their disability and to remark the worst subtypes of the disease.

EP-NEO-08

"Parinaud syndrome": a case report

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Childhood intracranial tumors are rare, with only 3-4% in East Asia.The clinical presentations often vary depending on the size, location, and invasiveness of the tumor. These children usually present with non-specific signs and symptoms causing delays in the diagnosis of these patients. This significant delay poses a great challenge to physicians to maintain a high index of suspicion by having a more aggressive approach for earlier diagnosis and intervention.
This is a case of an 11-year-old male who presented with a progressive headache accompanied by limited upgaze in both eyes. The patient complained of generalized headache, throat pain, and low-grade fever, and was initially diagnosed with Acute Tonsillopharyngitis. Due to persistent headache and an episode of projectile vomiting, patient sought a consult with an Ophthalmologist where prescription glasses were given, which did not afford relief.
Due to worsening symptoms, the patient sought another consult and was diagnosed with Urinary Tract Infection. A few days later, another episode of projectile vomiting associated with headache, diplopia, and seizure occurred which prompted admission. Cranial MRI revealed a heterogeneously enhancing mass at the pineal region. An emergency ventriculoperitoneal shunt was done. The patient underwent adjuvant radiotherapy, chemotherapy, and an incision biopsy. Despite optimal therapy, the patient passed away as a result of multi-organ failure.
Detailed history taking, comprehensive physical examination, and appropriate radiological evaluation along with a multidisciplinary team are imperative in the prognosis of children with rare intracranial malignancies. Tumor markers may aid in determining the type of intracranial tumors, and avoid the morbidity and mortality associated with an upfront neurosurgical intervention. Adjuvant chemo and radiotherapy along with excision of residual tumor is still the recommended treatment modality for better prognosis and survival.

EP-NEO-09

Dural carotid-cavernous fistula fed from contralateral side complicated with CRVO successfully treated with endovascular embolization

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Purpose: To describe a rare case of an endovascular embolization of chronic dural carotid-cavernous fistula (CCF) complicated with central retinal vein occlusion (CRVO).
Methods: A retrospective case report.
Results: A 68 year old women with hypertension presented with mild left orbital pain, redness and proptosis of 5 days duration. She had a similar but milder episode 1.5 year ago, which resolved spontaneously. She had no history of a head or ocular trauma. BCVA was 0.2 (Snellen) due to exposure keratitis. Proptosis was present (Hertel OD 15mm, OS 26mm), on left eye fundus exam tortuous vessels were present. CT angiography showed enlarged medial and inferior rectus and mild venous congestion.

At the time pseudotumor was suspected and the patient was started on oral steroids and topical antibiotics for keratitis. After two weeks subjective symptoms had improved, exposure keratitis resolved, BCVA was 1.0, but proptosis remained accompanied with increasing episcleral venous congestion and peripheral intraretinal hemorrhages.
Orbital doppler ultrasound and MRA showed left orbital venous congestion and enlarged extraocular muscles. Low flow arteriovenous fistula was suspected. Diagnostic cerebral angiography was planned, but the patient asked to postpone due to personal reasons. While waiting, she developed CRVO with macular edema and anterior segment ischemia (BCVA 0.1).
Eventually, after 2 months following her first presentation, cerebral angiography was done followed by successful embolization of the left CCF fed by vessels from contralateral side. The patient is improving, however still requiring anti-VEGF treatment for macular edema due to CRVO.

EP-NEO-10

Progressive bitemporal hemianopia as a rare manifestation of ethambutol toxicity

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A 22 year old male presented with diminution of vision since 1 month. BCVA was 20/40 with -0.25 DS in both eyes. Patient was on Antitubercular treatment with 4 drugs (Isoniazid, Rifampicin, Pyrazinamide, Ethambutol) for the last 7 months and started having vision problems after 6 months of therapy. Humphrey Visual fields revealed Bitemporal Hemianopia and patient was advised to get MRI scan done.
Patient was lost to follow up but presented after 1 month with progressive vision loss with BCVA 20/120 in right eye and 20/60 in left eye with progressive Bitemporal Hemianopia fields on repeat Humphrey testing. MRI was done and it revealed slight enhancement of the optic chiasma with normal optic nerves. Ethambutol was stopped and patient reported immediate improvement in vision within 5 days and in 1 month time BCVA improved to 20/40 in both eyes with improvement in visual fields.
Although Ethambutol commonly causes central or cecocentral scotoma due to optic nerve involvement, however in this case it caused Bitemporal Hemianopia due to optic chiasmal toxicity and removal of the drug caused drastic improvement in vision and visual fields.

EP-NEO-11

Non-arteritic anterior ischemic optic neuropathy (NA-AION) and obstructive sleep apnea (OSA): an overlooked association?

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Purpose: The association of NA-AION and traditional cardiovascular risk factors such as high blood pressure (HBP), dyslipidaemia and diabetes mellitus (DM) is well known. More recently, OSA has been increasingly recognized as a strong risk factor and the non-compliance with CPAP therapy in patients moderate-to-severe OSA was identified as the strongest risk factor for fellow eye involvement. We describe a case series of patients with NA-AION diagnosis, identifying their associated risk factors.
Method: Retrospective analysis of patients seen in our hospital with the diagnosis of NA-AION in a two-year period.
Results: 42 patients with confirmed NA-AION diagnosis were identified. Of these, 37 had unilateral NA-AION, 3 unilateral NA-AION with later NA-AION in the fellow eye and 2 had bilateral NA-AION at presentation.
Average age at presentation was 63.36 ± 9.58 years and 73.8% patients were men. The most commonly identified risk factors were dyslipidaemia (32; 86.5%), HBP (30; 71.4%), OSA (15; 35.7%) and DM (10; 23.8%).
While the diagnosis of dyslipidaemia, HBP and DM were already known before the occurrence of NA-AION in most patients, 80% of patients diagnosed with OSA had no known diagnosis beforehand. Of the 15 patients with OSA, 8 had moderate-to-severe OSA and 7 had mild OSA. All 5 patients with bilateral NA-AION or unilateral NA-AION with later fellow eye involvement were diagnosed with OSA, which was moderate-to-severe in 4 patients.
Conclusion: OSA is an underdiagnosed condition which seems to be strongest risk factor for the occurrence of NA-AION and for fellow eye involvement, according to the literature. Pneumology consultation and sleep study should be considered in all patients with new diagnosis of NA-AION, particularly if suggestive signs or symptoms of OSA. The diagnosis and treatment of OSA might reduce fellow eye involvement and improve the patient's health and quality of life.

EP-NEO-12

Ophthalmic manifestations of giant cell arteritis

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Purpose: To study the spectrum of visual symptoms and ocular complications in patients with Giant cell arteritis (GCA).
Method: A retrospective case series of 27 patients diagnosed with GCA between 2015 and 2022. For each patient, anamnestic data, clinical signs, ophthalmological examination and laboratory results were collected.
Results: The study included 11 males and 16 females with a mean age of 74 years. The most common medical history was high blood pressure in 10 cases, type 2 diabetes in 5 cases and stroke in 5 cases. Four patients were treated for open-angle glaucoma. Decreased visual acuity was reported in 14 cases, monocular acute vision loss in 5 cases and eye pain in 9 cases.
General signs were present in 14 patients. Eight patients presented a decrease in the temporal pulse and one patient an abolition of it. Polymyalgia rheumatica was observed in 4 cases. The triad of headache–intermittent claudication of the jaw–hyperesthesia of the scalp was found in 2 patients.
High levels of ESR and CRP were reported in 25 and 12 cases respectively. The specialized ophthalmological examination objectified an anterior ischemic optic neuropathy in 21 patients, a posterior ischemic optic neuropathy in 2 patients and a central retinal artery occlusion in one patient. Cotton wool spots were seen in 2 patients, while retinal hemorrhage was noted in 4 patients. A temporal artery biopsy was performed in only 17 patients. It had shown giant cell arteritis in 5 cases. In the other cases it was either inconclusive or normal. The treatment was based on corticosteroid therapy in all patients with clinical and ocular improvement.

Conclusion: Making a prompt diagnosis of GCA is essential in order to start treatment without delay and therefore prevent the ocular morbidity associated with this disease.

EP-NEO-13

Biometry extraction and probabilistic anatomical atlas of the Anterior Visual Pathways using dedicated high-resolution 3D MRI

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Purpose: Anterior visual pathways (aVP) damage may be linked to diverse inflammatory, degenerative and/or vascular neuro-ophtalmological conditions. However, a standardized methodological framework to extract corresponding magnetic resonance imaging (MRI) biomarkers is currently unavailable.
Therefore, we developed a software algorithm for processing 3D high-resolution MRI data to generate a probabilistic anatomical atlas of the normal aVP and its intraorbital (iOrb), intracanalicular (iCan), intracranial (iCran), optic chiasm (OC), and tract (OT) subdivisions.
Method: By using a 3T MRI scanner and a dedicated imaging protocol, we acquired 3D sub-millimetre ($0.6mm^3$) "CISS" images from 24 healthy participants. aVP labels were obtained by manual segmentation of each aVP subdivision. Label straightening and normalization with cross sectional area (CSA) preservation were obtained using in-house scripts.
A probabilistic atlas ("aVP-24") was generated by averaging L and R sides of all subjects. Leave-one-out cross-validation with respect participants' interindividual variability was performed employing the spatial similarity index (DSI). Spatially normalized representations of the aVP subdivisions were generated.
Results: CSA values overlapped before and after normalization, demonstrating preservation of the aVP cross-section. Volume, length, CSA, and ellipticity index (Ei) biometrics were extracted. The aVP-24 morphology followed previous descriptions from the gross anatomy. Atlas spatial validation DSI scores of 0.85 in 50% and 0.77 in 95% of participants indicated good generalizability across the subjects.
Conclusion: The proposed MRI standardization framework allows for previously unavailable, geometrically unbiased biometric data of the entire aVP and provides the base for future spatial-resolved, group-level neuro-ophtoalmology investigations.

EP-NEO-14

Atipical forms of traumatic optic neuropathy

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Purpose: To present Two case of traumatic optic neuropathy (TON) with atypical symptoms.
Methods: OCT of optic nerve was made twice in 2 days and in 3-month after injury.
Results:
Case A. The injury was obtained as a result of a blow to the chest and a fracture of the clavicle.
Within three months after the trauma, there was a deterioration of vision in both eyes to 0.6, a slowing of the reaction of the right pupil to light.
OCT on the third day after the injury showed a thickening of the layer of nerve fibers in both eyes to 215 mm and a decrease in the thickness of the layer of ganglion cells in the right eye to 281 mm.
Three months after the injury, the thickness of the nerve fiber layer decreased to 55 mm, and the ganglion cell layer decreased to 285 mm in both eyes.
Right-sided hemianopsia was atypical for TON.
Case B. He received damage to the optic nerve as a result of surgical bite correction. He applied on the fifth day after the operation, when the vision in the right eye was 0, without the sensation of light, in the left eye - 0.8.
As a treatment, pulse therapy with corticosteroids was started. On the third day of treatment, he noticed that he was able to count fingers on his right eye, and after 2 weeks, the visual acuity of the right eye became 0.3, on the left eye - 0.8
However, according to OCT, bilateral multi-chamber detachment of the pigment epithelium in the macular area was revealed against the background of functional vision recovery.

EP-NEO-15

Some aspects of neuro-ophthalmological examinations in the diagnosis of visual disorders

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Patients with various vision disorders are referred to neuro-ophthalmologist perhaps more often than to ophthalmologist who deal with other ophthalmic disorders. This happens mainly in diseases that do not have a prominent ophthalmological finding.
Due to the specificity of neuro-ophthalmological work, a certain disease is more often suspected, which is further investigated, mostly using electrophysiological and imaging methods.
In this presentation brief descriptions of several neuropathies and retinopathies are given.

EP-NEO-16

Optic nerve head avulsion after door-knob blunt trauma

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Introduction: Optic nerve head avulsion is a rare and devastating injury where the optic nerve and lamina cribrosa are detached from their insertion in the eyeball and move back inside the optic nerve dural coverage. This injury usually happens after blunt trauma to the eyeball or eye socket and various mechanisms have been proposed to explain the dynamic forces behind it. We present a case of complete optic nerve head avulsion in an 8-years-old boy after blunt trauma with a door knob.
Methods: Case report review.
Case report: An 8-years old boy was brought to the emergency department after blunt trauma to the right periorbital region with a door knob in his kindergarten. The patient presented with right periorbital haematoma, anisocoria with a right mydriatic unresponsive to light pupil, limitation of all eye movements and with visual acuity of no light perception (NLP) in the afflicted eye. Slit lamp exam revealed subconjunctival haemorrhage, a fixed dilated pupil and 3+ cells in the anterior chamber and the lens was clear and in place.
Fundus exam and wide-field retinography revealed a papillary lacuna with an absent optic nerve head, peripapillary vitreous haemorrhages, retinal pallor and a boat shaped subhyaloid haemorrhage in the macula.
Head and orbits CT scan revealed orbital floor and medial wall fractures, entrapment and distension of the inferior and medial rectus muscles and enlargement and inferior deviation of the optic nerve insertion in the eyeball. Six weeks after the injury, functional status was non-change with NLP in the afflicted eye and funds exam revealed filling of the papillary cavity with fibrotic tissue.
Conclusions: Optic nerve head avulsion is a rare and severe disease that leads to permanent visual impairment due to the lack of therapeutic options. Its diagnostic can be challenging in cases where media opacities obstruct direct visualization and should be supplemented by imaging modalities.

EP-NEO-17

Linezolid associated bilateral optic neuropathy

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Introduction: Linezolid is an antibiotic which is normally reserved as a second- or third-line drug against multirresistent microorganisms such as MRSA, Vancomycin-resistant Enterococcus and MDR/XDR-Tuberculosis. Despite being a well-tolerated drug, in the long run it can interfere with mitochondria synthesis leading to dysfunction in very metabolically active tissues.
Linezolid associated optic neuropathy is an uncommon complication of this drug, with a described prevalence ranging from 1.3 to 13.2% and with average onset of 8 months after initiation of the drug.
Methods: Clinical case review.
Case report: 57 y.o. man presented with progressive vision loss bilaterally since 3 weeks prior. He was being treated for pulmonary MDR-tuberculosis and was in his 11th month of treatment with a regimen including linezolid. Best corrected visual acuity (BCVA) was 3/10 in both eyes (OU) and he failed 16 out of 17 Ishihara colour plates OU. Fundus exam revealed mild temporal optic nerve edema with hyperreflectivity of the peripapillary retinal nerve fiber layer (ppNFL) and increased thickness in the temporal-superior quadrant on OCT.
Linezolid was withdrawn from the treatment regimen and the patient started improving shortly after, with BCVA 5/10 OU just 1 week after suspension. At 8 months post suspension the patient had no visual complaints, had a BCVA of 10/10 OU, full Ishihara color plates and the ppRNFL OCT reverted back to normal. However, he had diffuse loss of macular cell ganglion layer thickness in both eyes as a sequelae of the optic nerve injury.
Conclusions: Linezolid associated optic neuropathy is a complication associated with the prolonged use of this drug which is partially reversible with discontinuation. Linezolid use is on the rise due to increasing incidence of multirresistant microorganisms and the commercial launch of generic formulations. Ophthalmologic surveillance is advised in patients undergoing prolonged treatment with linezolid.

EP-NEO-18

Surgery on long-term strabismus: functional and structural vision assessment

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Purpose: To evaluate eye deviation degree, visual functional and structural neuro-retinial changes after strabismus correction surgery performed on long term strabismus patients.
Methods: A prospective study is presented which included four patients with long-term strabismus, defined as more than twelve months of evolution. The patients were examined before surgery and three times in the postoperative period: one week, one month and three months after surgery.
Visual function exam was performed by measuring visual acuity using Snellen optotype, visual field test by automated perimetry, stereoscopic vision was evaluated by Titmus-Wirth and TNO tests, binocular fusion was assessed by Worth four light test. Eye deviation was studied with Maddox rod test and Cover Test. Prism correction needed was measured too.
Structural analysis consisted of measuring retinal nerve fiber layer, ganglion cell layer and inner plexiform layer thickness using optic coherence tomography (OCT Spectralis, Heidelberg Engineering®).
Results: No patient showed significant differences in visual acuity between the preoperative and postoperative period. Significant differences were found in stereoscopic vision measured with TNO test (0.00 ± 0.00 vs 1.20 ± 1.69; $p=0.03$) and in visual field points seen (0.95 ± 0.03 vs 0.99 ± 0.01; $p=0.009$). Also, prism correction needed (23.6 Dioptres vs 6.4 Dioptres) and binocular fusion were improved (0 patients vs 3 patients). No structural changes were found in the analysis of the neuro-retina.
Conclusions: Correction surgery performed on long-term strabismus improved binocular visual function: diplopia disappearance, stereoscopic vision improvement and visual field expansion were the result of a better eye alignment. Structural analysis suggests that neuro-retinal plasticity do not happened after three months after surgery.

EP-NEO-19

Visual and neuroretinal study in patients with fibromyalgia

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Purpose: To study visual parameters, retinal nerve fiber layer and macular ganglion cell layer (GCL) in patients with Fibromyalgia (FM) over 5 years and compare them with controls.
Methods: Eighty patients with FM and thirty-eight age and sex-matched healthy controls participated in the study. Only one eye per subject was randomly selected and included. Visual acuity (VA) with ETDRS chart, contrast sensitivity vision (CSV) with Pelli Robson, color vision with Farnsworth and Lanthony D15 tests and retinal evaluation using Spectral domain Optical coherence tomography (SD-OCT), were conducted in all of the subjects.
Visual function parameters, ganglion cell layer (GCL) and retinal nerve fiber layer (RNFL) thickness were re-evaluated after 5 years. Patients were classified into three different groups based on their phenotype and association between progressive ophthalmologic changes and disease severity was analysed.
Results: After 5 years of follow up, patients suffered from fibromyalgia presented variations in neuroretina thickness and in visual function parameters. They showed sectorial progressive decrease in RNFL and GCL thickness. Changes in GCL thickness were associated with disease severity. They showed worse low contrast VA and low frequency CSV. Correlations between structural changes and disease severity scores were only observed in the atypical and biologic phenotypes.
Conclusions: In patients with FM has been detected retinal neurodegeneration and visual dysfunction. The study of RNFL, CGL and visual parameters could be a non-invasive and useful tool for monitoring FM.

EP-NEO-20

Ability of optical coherence tomography in the early detection of Alzheimer's disease

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Purpose: Toevaluate visual parameters, retinal nerve fiber layer and macular ganglion cell layer (GCL) in patients with Alzheimer's disease (AD) and compare them with controls, in order to develop non-invasive biomarkers for the early diagnosis of this disease.
Methods: Twenty-five eyes of AD patients and 80 eyes of age and sex-matched healthy controls participated in the study. The group of AD patients presented a mean age at diagnosis of 65.26± 8.54 years and a mean disease progression of 5.85± 9.55 years. Visual acuity (VA) was measured with ETDRS chart.
Fast macular and N-site axonal protocols with Spectral domain Optical coherence tomography (Spectralis OCT, Heidelberg) and EDTRS and TSNIT protocols with Swept-Source Optical coherence tomography (Triton OCT, Topcon) were performed in all the subjects to study the retinal layers thicknesses.
Results: AD patients presented reduction in visual function parameters and thinning in neuroretina measurements. They showed worse low contrast VA, being the largest difference with healthy controls at 100% ETDRS contrast level ($p<0.001$). Patients showed sectorial decrease in RNFL and GCL thickness.
Studying the optic nerve, a significant reduction was observed in all sectors with Triton OCT, especially in the total thickness (269.67 µm in AD versus 285.32 µm in controls, $p<0.001$), and in the inferior nasal sector (291.83 µm in AD versus 315.84 µm in controls, $p<0.001$).
With Spectralis OCT, the reduction observed in the optic nerve was not significant. Regarding macular thickness, there was a decreased thickness in all regions of GCL using Triton OCT ($p<0.001$) and in the N2, S1 and T2 sectors, GCL and inner plexiform layer using Spectralis OCT ($p<0.001$).
Conclusions: A decrease in visual acuity and a thinning of retinal layers in AD patients was detected, greater with Triton OCT. The analysis of retinal layers with OCT could be used as a useful and non-invasive tool in the early diagnosis of AD.

EP-NEO-21

Evaluation of the retinal anatomy and visual function assessment in people with protanomally and deuteranomally

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Purpose: To determine whether subjects with normal color vision within the same age and gender distribution have differences in the retinal nerve fiber layer (RNFL) thickness, macular area, retinal ganglion cell complex, and retinal layers that contain photoreceptors (bastons and cones), as well as visual acuity, contrast sensitivity, and color visión; compared with subjects with color blindness.
Methods: 50 color-blind and 50 control subject's eyes were used in this cross-sectional and observational investigation. Visual function (visual acuity, contrast sensitivity and color vision) and neuroretinal structure were assessed in all subjects using optical coherence tomography (OCT).
Results: The retinal nerve fiber layer, ganglion cell layer, and retinal thickness were all noticeably thinner in the color blindness group. Additionally, layers that contain photoreceptor nuclei showed significant thinning (between the outer limiting layer and the Bruch membrane and between the outer plexiform layer and the outer limiting membrane).
Conclusions: The RNFL and various retinal layers (ganglion cell and photoreceptor layers) were discovered to have dramatically reduced thicknesses, proving that color blindness is linked to thinning of the retinal and RNFL thicknesses as well as the retinal layers that contain photoreceptor nuclei.
Therefore, it appears that an OCT study with retinal segmentation is a marker of color blindness that is useful in clinical practice in cases of diagnostic uncertainty. This study may be helpful in assessing the efficacy of future medicines like gene therapy.

EP-NEO-22

Superpixel segmentation algorithm for OCT image processing in neurodegenerative disease

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Purpose: In this study, a special technique based on superpixel segmentation (SpS) was used to compare the modifications of the choroid in patients with multiple sclerosis (MS) to those in healthy controls.
Methods: The Triton (Topcon, Japan) device was used to create swept-source optical coherence tomography (OCT) B-scan pictures. Two cohorts of people were represented by the images: MS patients and healthy individuals. To find boundary limits in the choroidal layer, 104 OCT B-scan pictures were processed using a customized SpS technique. In order to create clusters with similar significant qualities, the algorithm groups pixels with similar structural properties.
The choroidal optical image density (COID), the total choroidal area, and the choroidal density were evaluated.
Results: Compared to healthy patients, choroidal area and choroidal density were significantly lower in MS. COID significantly increased in MS patients compared to healthy controls (p 0.001).
Conclusions: When compared to healthy controls, MS patients exhibit significant reductions in choroidal area and density, as well as choroidal tissue boundary limitations. The SpS method applied to OCT images may serve as a non-invasive biomarker for the early detection of MS.

EP-NEO-23

Papillophlebitis: a case series of a not so well-defined entity

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Purpose: Papillophlebitis refers to an isolated optic disc edema with venous engorgement in asymptomatic patients as defined by Walsh in 1969. We report a case series of 3 patients who developed papillophlebitis related to SARS-CoV-2 vaccination, type 2 diabetes or idiopathic. A literature review was also performed.
Method: Observational case report of 3 patients and a review of the literature covering papillophlebitis cases was performed using Pubmed and Scopus. Cases presenting with visual loss, RAPD, visual field defect or retinal vascular occlusion were excluded.
Results: We report the case of 3 patients who did not have any visual complaints and presented a unilateral optic disc edema found by chance.
The 1st patient was 33-year-old and her past medical history was significant for SARS-Cov-2 vaccination.
The 2nd patient was 6-year-old and in general good health. The 3rd patient was known for type 2 diabetes with no complications.
For all patients, the visual acuity was 1.0, the intraocular pressure was normal, the anterior segment was quiet and the fundus showed a unilateral optic disc edema without any hemorrhage. The RNFL OCT confirmed the presence of an optic disc edema. The visual field was normal. An extensive blood test was negative for auto-immune, inflammatory and vascular disease. In our patients, the optic disc edema decreased spontaneously after a couple of months without any treatment and they retain 1.0 vision. A diagnosis of papillophlebitis was made.
In the literature, the term papillophlebitis is not well-defined and controversial. No treatment is required, and the condition resolves spontaneously. The visual prognosis is excellent as patients keep a 1.0 vision with a normal visual function. No recurrence has been reported.
Conclusion: Papillophlebitis is diagnosed after ruling out any inflammatory, infectious or auto-immune disease in asymptomatic patients who present a spontaneous recovery without any treatment as reported in our cases.

EP-NEO-24

Spectral filters reducing photophobia in patients with migraine

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Purpose: To highlight the neuro-ophthalmic features in patients with migraine,including determination of the photosensitivity threshold and the-light spectrum causing photophobia,and to lay down the directions for increasing the efficiency of treatment. Evaluation of photophobia threshold in migraine patients, and determine the effectiveness of some spectral filters in reducing of photophobia.
Methods: In study were included 150 patients with migraine and photophobia, whom it was proposed for use glasses with spectral filters for 4 months.
Results: The mean number of days with headache, before treatment was 13.5 per month. It was decreased to 3.4 days with headache per month. Headache intensity during the migraine attack was reduced from 8 to 3.0 points SVA. Also, the intensity of the photophobia was reduced from 5,8 to 2,3 points.
Conclusions: Some spectral filters are successfully used in migraine. They reduce the frequency of migraine attacks and reduce the intensity of photophobia during headache. The filters with low light transmission can cause the eyes disadaptation to light; spectral filters that block blue spectrum of light can reduce photophobia in patients with migraine, test with trigger - figures can be useful in the diagnosis of migraine.
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EP-NEO-25

Right homonymous hemianopia due to arteriovenous malformation of ambient cistern-left thalamus spletzer martin grade III: a case report

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Introduction: Homonymous hemianopia is a visual fields defect due to the lesion in retrochiasmal, anywhere from contralateral optic tract to occipital cortex. AVMs are responsible for visual impairment in young population.
Case: A 23 years old female complained the visual field defect in the temporal RE and the nasal LE since 7 years ago, along sudden onset with severe headache. Current examination shows the VA both eyes are 20/20. No anterior and posterior segment abnormalities. The OCT found GCL-IPL 68 (RE) and 71 (LE) shows thinning in nasal quadrant RE and temporal quadrant LE. The HVFA showed the right homonymous hemianopia.
The 3D TOF and MRV showed nidus with size AP1.9xLL1.9xCC1.7 cm on the left parietal region with feeding artery from left posterior cerebry artery, left communicating posterior artery, and draining vein into internal cerebral sinus which is spletzer martin grade 3 class B. The DSA showed nidus 1.5 cm, eloquent, and feeder in Galen venous which is SM grade 3. Therefore, the neurosurgery is giving advice for Gamma Knife Radiosurgery (GKRS) to resolve the AVM.
Discussion: Discovering a visual defect in relatively younger patient is a warning sign. AVM is a rare causative. A prevalence was 0.01 to 0.50 percent of the general population ranges 20 to 40 years old. The cause of visual field loss in AVM due to compression or infarction of the visual pathway, as well as haemorrhage from AVM.
The circulatory error and the malformation are leading to hypoperfusion and functional defects.This patient is classified SM grade 3. So, neurosurgery plans GKRS. The target is nidus obliteration to deprive the risk of intracranial haemorrhage, usually occurs in 1 to 5 years. The obliteration approximately from 60 to 70% with doses of 15-16 Gy up to 90% or more with doses of 20-25 Gy.
Conclusion: This case illustrates right homonymous hemianopia associated to AVM in the ambient cistern of the left thalamus in young female which is remarkable case.

EP-NEO-26

FALCON: a prospective natural history study of patients with Autosomal Dominant Optic Atrophy (ADOA)

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ADOA is the most common inherited afferent neuro-ophthalmic disorder. Patients typically present in the first decade of life and up to 46% of patients progress to legal blindness. Up to 90% of cases are caused by a heterozygous mutation in the nuclear gene *OPA1*, often leading to haploinsufficiency of OPA1 protein. Though ubiquitously expressed, reduced OPA1 protein levels preferentially impairs mitochondrial function in retinal ganglion cells leading to apoptosis and progressive, irreversible vision loss. The natural history of*OPA1*-related neurodegeneration in ADOA is poorly understood.
FALCON is a multicenter, prospective natural history study of patients with ADOA who are ≥8-≤60 years (y) old and have a causative heterozygous*OPA1* gene variant. The study includes ~45 patients (~15 (8-17y), ~20 (18-40y), and ~10 (41-60y)) and is comprised of clinical and ocular assessments at baseline, 6, 12, 18, and 24 months (m).
Primary endpoints include changes from baseline to 24m in best-corrected visual acuity using Early Treatment Diabetic Retinopathy Study optotypes; visual field changes (as assessed by automated, static perimetry), peripapillary retinal nerve fiber layer, and macular ganglion cell layer (ganglion cell complex) thicknesses as assessed by optical coherence tomography.
Secondary endpoints include changes in aforementioned endpoints at 6, 12, and 18m; contrast sensitivity; and retinal electrical activity. Exploratory endpoints include flavoprotein fluorescence.
These results will characterize ADOA clinical progression in absence of treatment to define vision loss magnitude and neuropathological, functional, and structural manifestations. Results will also identify endpoint(s) that change the most to inform clinical trial design. There are currently no approved treatments for ADOA. Comparative assessment of candidate outcomes measures and a comprehensive understanding of the ADOA clinical progression are essential to develop and test new potential therapies.

EP-NEO-27

Leber's idiopathic stellate neuroretinitis: case report

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In 1916, Leber's idiopathic stellate neuroretinitis (LISN) was described by Theodore Leber as a rare disease characterized by optic disc swelling associated with a macular star. This fundus appearance can have multiple causes but the etiology of Leber's idiopathic stellate neuroretinitis remains unknown.
A 20 year-old man consulted for a progressive decline in visual acuity and a blurred vision in his rightt eye. Corrected Visual acuity of the rihg eye was hand movement, Funduscopy of the left eye revealed a stellate maculopathy with loss of foveolar depression and a swelled optic disc. Laboratory investigations were normal. No infectious nor inflammatory etiology was found. Brain imaging was normal. Patient received 4 days of intravenous methylprednisoloneat 10mg/kg/D for 4 days in a row and an oral relay was started with a progressive degression over 2 weeks. The evolution after treatment was satisfactory, the visual acuity 3 weeks after the intravenous injection of corticoids increased to 6/12.
Leber's idiopathic stellate neuroretinitis (LISN) is a disorder characterized by disc oedema, peripapillary and macular hard exudates and, often, the presence of vitreous cells. The changes in the optic nerve are the primary cause of reduced vision in this condition. The more common treatable causes must be excluded wich are cat scratch disease (CSD) and vascular disease. 50% of cases have no identifiable cause and are labeled idiopathic neuroretinitis. There is no consensus regarding optimal treatment. The prognosis of Leber's idiopathic stellate neuroretinitis is good in most cases.
In conclusion, in any patient presenting with an optic disc oedema associated with stellate maculopathy, it is important to rule out all potentially treatable differential diagnoses before retaining the diagnosis of Leber's idiopathic stellate retinopathy. Complementary examinations must be oriented according to the data of the clinical examination.

EP-NEO-29

SARS-CoV-2 infection, a trigger for multiple sclerosis

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Purpose: The relationship between an acute onset of multiple sclerosis and infection with the SARS-COV 2 virus is a new entity that has not been fully explored. In order to dwell further into this matter, we will present the case of a young female patient with a sudden loss of visual acuity on her left eye, without any relevant patient history.
Method: BCVA for the RE was 20/20, while the LE was perceiving hand movements. The patient presented normal IOP, a normal aspect of the anterior and posterior segments. Due to the lack of any clinical signs that would justify the decreased VA, an MRI was recommended. The results were highly suggestive for multiple sclerosis. During this time a SARS-CoV-2 PCR test was performed and the result came back positive.
Therefore a multidisciplinary team of ophthalmologists, neurologists and infectious disease specialists had been assembled and emergency treatment with intravenous methylprednisolone was initiated.
Results: After 2 weeks the SARS-CoV-2 PCR test finally revealed a negative result, however the ophthalmological progression was not favourable, the BCVA on her LE having shown no improvement. After 3 months the patient is re-admitted in the ER with sudden vision loss on her RE, with a BCVA of 20/30. Emergency MRI was performed, and no new lesions were found, thus another round of methylprednisolone followed by oral prednisolone was prescribed, the patient recovering some of the vision loss in her RE, with a BCVA of 20/25.
Conclusion: The particularity of this case is represented by the aggressive onset of multiple sclerosis, during the infection with SARS COV-2 and by the permanent loss of visual acuity despite quick treatment administration. There is still an uncertainty whether an infection with SARS-CoV-2 in unvaccinated people could precipitate and accelerate the onset of a latent pathology.

EP-NEO-30

Horner syndrome: the importance of clinical suspicion

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Purpose: Horner syndrome occurs due to damage to the sympathetic pathway that supply the head and neck, typically leading to ptosis and miosis ipsilateral to the lesion. Prompt evaluation must be performed in order to treat potentially life-threatening conditions.
Method: We present a case of a 49 years-old man with a Horner syndrome and an unclear Computed Tomography Angiography (CTA).
Results: A 49 years-old man presented to the emergency room complaining of a small and asymmetrical left pupil since the day before, noticed after the onset of pain in the same eye. He also reported frontotemporal headache in the past 2 weeks, and flu-like syndrome with forceful coughing 1 month before. Apart from hypertriglyceridemia the patient was apparently healthy. Ophthalmic evaluation showed an anisocoria with the right pupil larger than the left (greater difference in scotopic conditions), with isoreactive pupils for both light and near. A discreet ptosis of the left upper eyelid was also noted. Oculomotricity, visual acuity, anterior segment and fundoscopy were unremarkable. Given the characteristic signs of Horner syndrome and ocular/head pain following a forceful coughing, CTA was performed. The CTA reported "no suggestive image of dissection", but there was an irregularity noted in the left internal carotid artery (ICA).
Clinical surveillance and further workup with a magnetic resonance angiography (MRA) were suggested, but the patient was discharged against medical advice and agreed to perform an MRA abroad. Two weeks later, he returned with an MRA report confirming the left ICA dissection, started antiplatelet therapy and follow-up.
Conclusion: Carotid dissection is a life-threatening cause for Horner syndrome. Even with one negative image report, upon clinical suspicion and a plausible trigger (in this case the forceful coughing), a thorough study must be performed to avoid serious complications.

EP-NEO-31

The management of sixth nerve palsy

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Purpose: To investigate and evaluate the medical records of patients who were referred with sixth nerve plasy to Strabismus Department.
Material/method: The medical records of patients with sixth nerve palsy were recruited. The course of patients, surgery and/or Botulinum toxin needs, etiological factors were evaluated.
Results: The records of thirty six patients were enrolled, retrospectively. The mean age was 45,74 years. Twenty- five patients had additional systemic diagnoses related with sixth nerve palsy. Presence of diabetes mellitus (n:6), essential hypertension (n:3), tumour (n:8), trauma history (n:2), intracranial hemorrhage (n:2), increased intracranial pressure (n:2), radiotherapy history (n:1) and sinus vein thrombosis (n:1) were potential etiological factors.
Of 36 patients, 4 patients had ipsilateral facial palsy and 1 had ipsilateral fourth nerve palsy. 18 patients did not need treatment, palsy resolved spontaneously. Prism lenses were prescribed four 3 patients.
Solely Botulinum toxin was injected to ipsilateral medial rectus muscle in 4 patients. Strabismus surgery (only recession, recess-resect procedure, modified Nishida, transposition procedures) was done in 11 patients with or without Botulinum toxin injections. Diplopia in primary position was resolved in 10 of all patients.
Conclusion: Etiological factors of sixth nerve palsy could be detected in 69,4 % of patients and the most commom factors was microvascular ischemia and presence of tumour. Palsy was resolved spontaneously in 50 % of patients. Diplopia in primary position was treated by Botulinum toxin injections and strabismus surgeries which were selected according to patients characteristics.

EP-NEO-33

"Apex Predator": a case of Orbital Apex Syndrome secondary to Invasive Fungal Rhinosinusitis in the setting of a COVID-19 pandemic

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This is a case of a 39-year-old female, diabetic with poor control, diagnosed case of COVID-19 treated symptomatically at home. After recovery, patient experienced left-sided facial numbness and anisocoria. Patient seen and admitted by neurology service at a tertiary medical institution. Orbit-MRI done revealed Cellulitis vs Pseudotumor of Left Orbit and Pansinusitis.
During admission, new onset of gaze palsies with mild proptosis of the left eye noted. Patient initially treated as a case of orbital cellulitis-left eye and treated with Intravenous antibiotics and steroids. No response to treatment noted. Lack of funds led to discharge against medical advice. Months passed and follow up done with new onset of decreased visual acuity (hand movement-left), yellow-green nasal discharge, and anosmia.
Patient admitted and imaging revealed a Polysinonasal disease, left maxillary, sphenoid sinuses with erosive changes. Functional Endoscopic Sinus Surgery (FESS) and Histopathology of Sinus specimen done revealing a diagnosis of Mucormycosis. Patient was started on Intravenous anti-fungal. Post-management, return of normal ocular motility and improvement of visual acuity achieved.
Only time will tell vision of the patient will return to baseline.
Socioeconomic factors contribute greatly to the outcome of our patients, and as physicians the challenge arises to be as concise and accurate as possible to get only the necessary tools for us to make an accurate and timely assessment. Limited resource settings make it difficult to have the necessary diagnostics done for patients, but keen observation and a good history may be the difference between life and death for patients.
Sticking to basics is always a good idea when managing patients.

EP-NEO-34

Incidental finding of a space-occupying intracranial vascular lesion secondary to visual field deffect

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Internal carotid aneurysms can show up with variable symptoms depending on their location, but is infrequent to do it ophthalmologically.
An 80-year-old woman with visual field loss in her left eye (LE) is referred by her primary care physician for ophthalmologic evaluation. As a cardiovascular risk factor, she has arterial hypertension under treatment and has aortic insufficiency under cardiology follow-up. In the ophthalmological examination of both eyes (BE), we found a visual acuity of 0.7 and diffuse pigmentary dispersion, guttas and stable pseudophakia in the slit lamp.
Intraocular pressure was 14 mmHg in BE and in fundoscopy and retinography exams we found diffuse papillary pallor, greater in the temporal quadrant of the right eye (RE) and in the nasal quadrant of the LE and excavation of 0.2, being normal the rest of the exam. A visual field was performed where a congruent left homonymous hemianopsia was evidenced, so he was priority referred to the hospital to complete the examination. The study was completed with a macular optical coherence tomography (mOCT) that was normal in BE, an OCT of the peripapillary fiber layer where was observed a decrease in temporal thickness in RE and in nasal quadrant in LE with a decreased mean thickness in BE.
Priority cranial computed tomography (CT) and CT angiography were performed, where a partially thrombosed giant right carotid aneurysm was detected with a mass effect on the adjacent brain structures. Also, was done a cerebral arteriography where aneurysms were observed in both carotids and in the right posterior cerebral artery and a Doppler ultrasound of the supra-aortic trunks that was normal. Due to the risk-benefit balance, the management was conservative.
The ophthalmologist plays an important role in the diagnosis of these lesions as they can cause a ophthalmological alteration as first symptom, furthermore it can manifest as an atypical campimetric alteration depending on the magnitude of the lesion.

EP-NEO-35

Perioperative ischemic optic neuropathy

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Ischemic optic neuropathy (ION) can be a consequence of some long-term surgical procedures. It is usually bilateral and can be anterior (AION) or posterior (PION). A number of possible risk factors are cited.
We present a case of male patient, injured in a traffic accident at the age of 35. After a four-hour operation for head injuries and a long recovery in a difficult general condition, the patient noticed bilateral vision problems. There is more prominent visual loss on his right eye with upper altitudinal visual field defect, and a lower altitudinal defect on the left, better eye. Findings correspond to the condition after AION.
The consequences are shown through the results of functional and morphological damage to the optic nerves. The paper also analyzes the possible contribution of other risk factors to the occurrence of this condition.

EP-NEO-36

Unilateral infiltrative optic neuropathy as a form of recurrence of angioimmunoblastic t-lymphoma: report of clinical case

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Introduction: Infiltrative optic neuropathy is a rare form of presentation or recurrence of lymphoproliferative processes. It implies involvement of the Central Nervous System, and its prognosis will depend mainly on the underlying process.
Clinical case: We present the case of a 72-year-old woman diagnosed with stage IV Angioimmunoblastic T-lymphoma, treated with three cycles of chemotherapy, and in complete remission for one month; that comes to the Emergency Department for sudden loss of visual acuity in the left eye, accompanied by headache and vomiting.
Her visual acuity in the left eye is of no light perception, and she presents a relative afferent pupillary defect. She also presents alteration in ocular movements, compatible with involvement of the III and VI cranial pairs.
Fundoscopy of the left eye shows a pale optic nerve, edematous and with 360º erased margins. In addition, there was retinal pallor with signs of decreased venous return, flame hemorrhages in four quadrants, and subretinal fluid at macular level. In the right eye, numerous microaneurysms were observed, with a normal optic disc and no other findings of interest.
Suspecting a possible infiltrative optic neuropathy with central artery occlusion and central retinal vein thrombosis, a lumbar puncture was performed, with no cellular findings; and Nuclear Magnetic Resonance, where neuritis and perineuritis of the optic fascicle were observed along with abundant cellularity, which supports the diagnostic suspicion. On the same day, corticotherapy was started, with no response.
A bone marrow aspirate in the following days confirms progression of the T lymphoma.
The patient started chemotherapy again and died one month after diagnosis.
Conclusion: Infiltrative optic neuropathy may be the only sign of recurrence in cases of lymphoproliferative disease after disease remission. Early diagnosis requires a multidisciplinary approach and could improve both the patient's visual and vital prognosis.

EP-NEO-37

Challenges in the diagnosis and treatment of bilateral exophthalmos in a young patient

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Purpose: Evidence of some diagnostic particularities of exophthalmos through paraclinical investigations and difficulties in the therapeutic conduct of secondary papillary edema. What do you do in front of such a case with high life expectancy?
Material and methods: We present the case of a patient, 24 years old, with bilateral exophthalmia, who was present for a routine evaluation without significant subjective simptoms, following to the ophthalmological evaluation we detect, a bilateral papillary edema, which is asecondary clinical sign to pathologies that involve ophthalmologic, neurological, and endocrinological investigations.
In order to differential diagnosis, there were performed several investigations: biological samples, Visual Field 30-2, 120/3, Ocular Computer Tomography, skull and orbits Computer Tomography with contrast substance, skull and orbits MRI with contrast substance, three-dimensional reconstruction of the skull bones, and angiographic explorations.
Results: In the case of this patient, it is necessary the differential diagnosis between the ideopatic intracranial hypertension and a constitutional aspect, associated with a degree of neuroasthenia. Neurosurgical evaluation comes with other question marks regarding the positive diagnosis, which makes it difficult to establish the best therapeutic conduct despite an unfavorable progressive ophthalmic functional evolution.
The evolution of the visual field shows the progression of the changes and the OCT shows the thinning of the retinal nerve fiber layers after 1 year of follow-up. Are we talking about benign HTIC or anatomical malformation of the skull bones? Axial exophthalmos associated with bilateral papillary edema, may be the second face of" NORMAL".
Conclusions: Not every bilateral exophthalmia is due to endocrinological or neurosurgical disease. This case represents a real challenge for the ophthalmologist in establishing the appropriate therapeutic conduct regardless of his expertise.

EP-NEO-39

Significant improvement of ganglion cell-inner plexiform layer in posterior segment optical coherence tomography after endoscopic endonasal pituitary surgery – case report

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Purpose: The aim of this report is to present a case of significant improvement of ganglion cell-inner plexiform layer (GC-IPL) in the course of pituitary macroadenoma treatment.
Methods: 59-years old male patient, a truck driver was admitted to the endocrinology department due to hyponatremia, diarrhea, and vomiting. MRI of the brain revealed pituitary macroadenoma 20x20x18mm.
Results: Ophthalmic examination revealed for both eyes 1.0 Snellen chart distance. The kinetic visual field was normal with III-4e isopter. The static visual field did not present typical pattern changes in the visual field as the relative scotomata were presented in both hemifields in both eyes.
However, the most affected was the lower temporal quadrant in the left eye (LE). Optical coherence tomography revealed significant thickness loss of GC-IPL in the nasal hemi-macula in the RE and the upper nasal sector in the LE. The retinal nerve fiber layer around the optic nerve head was normal in both eyes.
Photopic electroretinography (ERG), (RETeval, LKC, USA) was performed. Photopic negative response(PhNR) was normal while b-wave amplitude was decreased in both eyes.1 month after endoscopic endonasal pituitary surgery distance and near visual acuity remained stable in both eyes, and the kinetic visual field was normal.
Significant improvement was noted in the static visual field of both eyes. A remarkable increase in GC-IPL of the nasal hemi-macula in the RE and recovery to normal GC-IPL in the LE was observed.

Conclusion: GC-IPL revealed characteristic pattern changes in the nasal hemi-macula due to compression of the optic nerve by pituitary macroadenoma. Photopic ERG with PhNR was also helpful in the assessment of retinal dysfunction. The function of the ganglion cells was not selectively impaired, although the function of the inner layers of the retina was abnormal due to microvascular circulatory disorders caused by a pituitary tumor.

EP-NEO-40

Association between the statin use and diagnosed ischemic optic neuropathy: a nationwide matched case-contraol study in Taiwan

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Purpose: To evaluate the association between statin use and the risks of diagnosed ischemic optic neuropathy.
Methods: This retrospective, case-control study included 780,786 patients who received lipid-lowering agents in 2002–2016, of which 1,142 were newly diagnosed with anterior ischemic optic neuropathy (AION) during a ≥ 3-year follow-up period. These patients were matched 1:4 with control participants for age, sex, and comorbidities. Separate odds ratios (OR) were calculated for AION and statin use.
Results: Statin users did not have had significantly higher odds of AION (adjusted OR=1.02; 95% confidence interval (CI)=0.99–1.15, P =.22) than nonusers. The lipophilic statin users did not show higher odds of AION compared with the hydrophilic statin users (adjusted OR=0.99, 95% CI =0.94–1.02, P = .719). Among statin users, the odds of AION did not differ significantly between patients receiving statin therapy for >180 days vs. ≤90 days or patients receiving statin therapy for 91–180 days vs. ≤90 days (adjusted OR=1.00, P = 0.891; adjusted OR=0.95, P =0.621, respectively). The odds of AION were not statistically different among patients receiving low-intensity, moderate-intensity, and high-intensity of statin therapy.
Conclusions: Patients receiving statin therapy had a higher AION risk than patients not receiving statin therapy. The type of statin, the duration, and the intensity of statin use were not significantly associated with AION risks. Further studies are required to identify the relevant factors related to AION risks with statin.

EP-NEO-41

Compare the risks of ischemic optic neuropathy with ranibizumab and aflibercept intravitreous injection

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Purpose: To compare intravitreal aflibercept injection with intravitreal ranibizumab injection for the risk of anterior ischemic optic neuropathy (AION).
Methods: This retrospective, nationwide cohort study investigated 16 888 and 4862 patients aged >50 years with at least one pharmacy claim for intravitreal ranibizumab injection and aflibercept injection between 2011 and 2018, respectively.
The inverse probability of treatment weighting method was performed to adjust the baseline difference between the two groups and the hazard risk of AION was estimated using the Cox proportional regression model. AION was defined as at least three times of diagnosis based on international classification of diseases, ninth revision or tenth revision, clinical modification(ICD-9-CM, or ICD-10-CM) diagnostic codes.3 recorded visits should be with the same diagnosis code, and the 3 visits should be at least 28 days part. These cases of AION were all diagnosed by certified ophthalmologists Patients with any recoded visits for a diagnosis of AION before receiving the first intravitreal injection were excluded.
Results: During the 6-month follow up, the risk of AION development after intravitreal injection did not significantly differ between the two groups (adjusted hazard ratio: 0.83, 95% confidence interval : 0.56-1.01; P = .493).
Conclusions: No significant differences in the risk of AION were found between the patients receiving ranibizumab injection and those receiving aflibercept injection.

EP-NEO-42

Emotional eating in patients with idiopathic intracranial hypertension

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Introduction: Weight management is an important aspect of the management of idiopathic intracranial hypertension (IIH), as weight loss can lead to remission of IIH. In our clinic, people with IIH have shared that mood and mental health can affect their eating habits negatively. Due to the potential impact of this on service delivery, we performed a service evaluation to understand the extent of emotional eating in people with IIH under our care.
Methods: In 2019, we started a group consultation approach for our patients with IIH. Patients attended for their investigations and were followed up virtually in a group call on a later date. As part of their work up, they were sent a symptom questionnaire which included 10 questions regarding emotional eating, designed with the help of a health psychologist. We retrospectively reviewed their responses for those who attended their first group consultation between 2020 and 2022. Their responses were categorised into none, mild, moderate or marked emotional eating.
Results: Between 2020 and 2022, 187 patients completed a symptom questionnaire on their first visit to a group consultation. 184 (98%) were identified as having some degree of emotional eating. Of those 184, 75 (41%) were classified as mild, 75 (41%) moderate and 34 (18%) marked.
Conclusion: Emotional eating affects almost all of our IIH patients. Research suggests this negatively impacts weight management[1]. The majority of our patients were considered to be mild to moderately affected. Further analysis is required to establish the correlation between emotional eating severity and weight loss. Input from health psychologists may improve long term IIH management.
1. Braden A, Flatt S, Boutelle K, Strong D, Sherwood N, Rock C. Emotional Eating is Associated with Weight Loss Success among Adults Enrolled in a Weight Loss Program. J Behav Med. 2016 August; 39(4): 727–732.

EP-NEO-43

The role of neuroinflammation in traumatic optic nerve damages

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Purpose: Experimental study of the role of neuroinflammation in traumatic optic nerve damages.
Methods: Simulation of experimental traumatic damage to the optic nerve in rabbits and measurement the level of pro-inflammatory and anti-inflammatory cytokines.
Results: Damages of the optic nerve leads to activation of microglia, astrocytes, and Müller cells in the retina, also macrophages migrate to the injured area of the optic nerve. Microglia and astrocytes canbe classified into two phenotypes: neurotoxic and neuroprotective and divided into the M1/A1 (classical activation) and M2/A2 (alternative activation) phenotypes based on their activation status.
The pro-inflammatory phenotypes are neurotoxic, while the neuroprotective phenotypes are neuroprotective.These activated glial cellsreleases pro-inflammatory cytokines (such asTNF-α, IL-6, nitric oxide) and chemokines resulting inactivation pro-inflammatory astrocytes and induce a secondary inflammatory response.
In contrast, IL-4, IL-10, activate neuroprotective microglia, which leads to the release of diverse factorswhichmay be associated with neuroprotection and tissue healing.
It was discovered that after optic nerve injury microglia mostly adopt the pro-inflammatory phenotype and secrete proinflammatory cytokines such as TNF-α and IL-6, while anti-inflammatory microglia, which produce anti-inflammatory cytokines including IL-4 and IL-10, only represent a small part.
Conclusions: Neuroinflammation is a defense mechanism that initially protects the optic nerve. A balance between pro-inflammatory and neuroprotective mechanisms may be critical in the progression of neuroinflammation. The functions of microglia and astrocytes at specific stages of optic nerve damage need to be identified.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Ocular Surface

EP-OCS-01

Lipid, aqueous and mucin tear film layer stability and permanence within 0.15% liposome crosslinked hyaluronic acid versus 0.15% non-crosslinked hyaluronic acid

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Purpose: To evaluate the stability and permanence of the liquid film created after the instillation of 0.15% crosslinked hyaluronic acid with liposomes and crocin versus the effect of 0.15% standard hyaluronic acid.
Method: A prospective, longitudinal, single-blind, single-centre study was conducted in symptomatic populations with a novel non-invasive ocular surface analyser.
Limbal and bulbar redness classification, lipid layer thickness, tear meniscus height, and first and mean non-invasive break-up time (FNIBUT and MNIBUT) were performed before and 30 and 45 min after liposome-crosslinked hyaluronic acid (LCHA) and standard hyaluronic acid (HA) eye drop instillations.
Results: LCHA had a higher lipid layer thickness than HA (grades 2.00 ± 0.83 and 1.17 ± 0.63 on the Guillon pattern, respectively).
LCHA achieved a better tear meniscus height than HA (0.23 ± 0.02 and 0.21 ± 0.02 mm, respectively).
LCHA improved FNIBUT and MNIBUT more than HA (for FNIBUT, 6.30 ± 0.94 and 4.77 ± 0.89 s, respectively. For MNIBUT, 17.23 ± 5.11 and 12.41 ± 4.18 s, respectively).
Conclusion: Crosslinking hyaluronic acid with liposomes and crocin significantly increases the permanence and stability of the lipid, aqueous, and mucin tear film layers. In a short-term period, liposome and crosslinked hyaluronic acid achieved better first and mean non-invasive break-up times than standard hyaluronic acid.

EP-OCS-02

The impact of the COVID19 pandemic on computer vision syndrome

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Purpose: After the declaration of the SARS COV-2 pandemic, a period of mandatory containment followed in an effort to reduce the spread of the disease worldwide.
New measures were introduced to ensure business continuity through telecommuting and online courses.
Our study aims to assess the impact of the COVID-19 pandemic in Morocco on the duration of use of these screen-based devices, and consequently, its effect on eye health, specifically Computer Vision Syndrome.

Methods: In this Prospective and mono-centric study, we studied the impact of the pandemic on the computer vision syndrome in patients in Ophthalmology consultation at the Mohammed VI International University Hospital of Bouskoura from June 2021 to June 2022 through a pre-established questionnaire.
Results: Out of a total of 100 people who responded to the established questionnaire, the median age of the participants was 27 years with a slight female predominance which amounted to 55%. Among the electronic devices proposed, the smartphone was the most used (90%) followed by the computer (78%) mainly for entertainment in 80% of our participants. Screen time increased by 2.92h/d comparing the period before the pandemic and after and constituted an important risk factor, with a distance of eyes screens <50cm found in 61% of our patients, to develop CVS symptoms.
These symptoms tended to increase in our patients compared to the pre-pandemic period with currently 68% suffering from 2 to 4 symptoms at a time with the most frequently reported symptoms being visual fatigue (66.7%).
Of the proposed treatments, 15% received no treatment at all.
Conclusion: The global pandemic caused by COVID-19, especially the containment period, has shown a net increase in the use of electronic devices for entertainment, work, and online study and consequently.

EP-OCS-03

Evaluation of safety and efficacy in allergic rhinoconjunctivitis subjects treated with low dose tacrolimus eye drop solution

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Purpose: The RCT crossover trial was conducted to evaluate treatment efficacy and safety of a novel eye drop solution containing solubilized tacrolimus.
Methods: 32 adult subjects with proven grass pollen allergy were allocated to either 5µg tacrolimus/eye/day or placebo treatment for 8 days. Allergy symptoms were induced by 4h grass pollen challenges on day 1 and day 8. Subjects recorded ocular and nasal allergy symptoms every 15 minutes during the challenges.
Objective ocular safety parameters were assessed at challenge days. General adverse events (AEs) were recorded during the study period. On day 8 last treatment was taken 30 minutes before entering the challenge chamber.
Results: On day 8, treatment with tacrolimus eye drop solution reduced TOSS compared to placebo starting at 2h, which differed significantly after 3.5h ($p<0.05$).
Accordingly, intensity of the main single ocular symptoms (itchy eyes, redness, watery eyes) started to separate after 2–2.5h. Reduction of redness was significantly more pronounced compared to placebo treatment after 3.5h of the challenge ($p<0.05$).
A 26% reduction of baseline adjusted TOSS from day 1 to day 8 was observed in subjects treated with 5µg tacrolimus whereas placebo treated subjects showed no difference.
Interestingly, a significant reduction of total nasal symptoms, mainly itching and sneezing, was seen on day 1 and day 8 in subjects treated with 5µg tacrolimus ($p<0.05$).
No safety concerns were raised by the ophthalmologists investigating redness of the eye, cornea and conjunctival staining. In the tacrolimus treated subjects, 23% of treatment related AEs occurred in the eye; the most common being eye irritation with 14.5%. Placebo treated subjects recorded 30% AEs in the eye, thereof 20% eye irritation. All AEs were resolved within the study period.
Conclusions: Treatment with 5µg solubilized tacrolimus/eye/day is safe and exerts an anti-inflammatory activity in subjects suffering from allergic rhinoconjunctivitis.

EP-OCS-04

Transconjunctival injection of PRP on lacrimal gland for severe Dry Eye Disease - case report

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Purpose: The purpose of this study is to assess the efficacy of the injections of platelet rich plasma (PRP) for the treatment of severe dry eye disease (DED). and to compare with topical free preservative PRP in other eye.
Methods: This case report, included a patient with severe dry eye who had been diagnosed with Sjogren syndrome. the patient previously used artificial tears, autologous serum, but without improvement. We decide that in one eye we will inject transconjunctival every month for 3 months, while in the other eye we will prepare drops for topical application. The right eye received 1ml transconjunctivally injection at day 0, 30, 60 and 90 while in the other eye we applied PRP drops 5 times a day for about 3 months. Two eyes were measured at baseline and at 30, 60 and 90 days.
The primary outcome measures were changes in corneal staining according to the Oxford classification, results of the Schirmer test and tear break-up time (TBUT).
Results: Symptoms of dry eye, changes in corneal transparency and other changes were significantly improved in the injcetion plasma group compared to conventional topical PRP eye drops. The SCHIRMER test increased by several points.
Primary outcomes are fluorescein break-up time, Schirmer's I test, and TBUT. No complications were observed during short term follow-up.
Conclussion: It can be concluded from these studies that the therapeutic response with injection tranconjunctivally PRP was actually satisfactory in severe or moderate dry eye cases which comparing to conventional therapy with topical drops of PRP. Injection of PRP in lacrimal gland is simple, safe, and effective technique in treatment of severe dry eye; proved by improvement of tear film parameters through subjective and objective assessment.
This represent a novel alternative treatment for severe dry eye disease.

EP-OCS-05

The effect of topical heparin for the treatment of dry eye in primary Sjögren syndrome

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Purpose: To assess the effect of topical heparin on the symptoms and signs of Primary Sjögren Syndrome associated dry eye.
Method: Sjögren Syndrome patients with dry eye symptoms and not on treatment with artificial tears over the past 6 months were included. Left eyes were treated with 1mg/1mL of sodium hyaluronate (AT) whereas right eyes were treated with 1mg/1mL of sodium hyaluronate plus 1300IU/mL of sodium heparin (TH), 4 times per day for 4 weeks. Ocular Surface Disease Index (OSDI), Sjögren's International Collaborative Clinical Alliance Ocular Staining Score (SICCA OSS), Schirmer test 1 (ST1), tear break-up time (TBUT), tear meniscus height (TMH) and lipid layer thickness (LLT) were evaluated at the baseline and after treatment.
Results: Forty eyes were included. Twenty eyes received AT and twenty eyes received TH. There were no differences at the baseline. Unlike TBUT and TMH, ST1 and SICCA OSS improved in both groups ($p<0.01$). After treatment, SICCA OSS was inferior in TH compared to AT group ($p=0.01$). The majority of patients improved OSDI score and reported more improvement in the eye treated with TH. There were no relevant side effects.
Conclusion: Our study shows the benefits of treating patients, regardless of heparin use, with Sjögren Syndrome associated dry eye. Treatment with topical heparin seems to be safe, effective, and provided more objective and subjective improvement than artificial tear without heparin. Our results may herald a promising role of the heparin containing artificial tear in Sjögren Syndrome dry eye disease.

EP-OCS-06

Anterior segment optical coherence tomography findings in small iris primary cysts

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Purpose: To describe anterior segment (AS) optical coherence tomography (OCT) findings in small primary iris cysts.
Methods: Case series study of three iris cysts (2 patients) documented with anterior segment (AS) photos and AS optical coherence tomography (OCT).
Results: The first patient was a 58-year-old male and the second patient was an 18-year-old male. Anterior segment examination revealed at the level of the iris, the presence rounded and brown lesions in both patients. There were no associated tumors or foreign bodies and the rest of the exam was unremarkable in both eyes for both patients. AS OCT demonstrated that the lesions appeared as hyperreflective material in front of the iris associated with a posterior shadow cone. The lesions were stable during one year of regular follow-up for both patients.
Conclusion: Contrary to large size iris cysts, small ones appear in AS OCT as hyperreflective lesion with posterior shadow cone. As the liquid content appears secondarily during follow-up, the knowledge and the documentation in the early stages of the diagnosis is crucial to monitor the progression.

EP-OCS-08

Tenonplasty in acute ocular chemical injury - The unsung hero

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Purpose: This study describes importance and outcome of tenonplasty in globe survival in acute chemical injury.
Method: Retrospective case study conducted at tertiary care center in all patients with chemical injury between the period of 2 years. Chemical injuries were graded from I to IV (Dua's classification). Chemical injuries were segregated according to time of presentation, less than and more than 1 week respectively.
Out of 18 eyes presenting within a week of injury; 16 eyes without limbal stem cell deficiency (LSCD) underwent medical management.
Overall 28 eyes underwent surgical management. 22 eyes had LSCD out of which 17 eyes under went tenonplasty. Other procedures performed were amniotic membrane transplantation (AMT) with simple limbal epithelial transplantation (SLET) in 11 eyes and AMT alone in 9 eyes.
Results: 50 eyes of 36 patients were included in our study. Out of 36 patients, 22 (61.1%) patients had single eye involvement, while 14 (38.8%) patients had bilateral involvement. Male preponderance was noted, with only 5 (13.8%) female patients.
Eleven patients presented within pediatric age group. Males had more number of chemical injuries in their second decade (25%). In 69% of cases, causative agent was alkaline agent, most common being lime (38.8%).
Most common complication noted was symblepharon formation (4 eyes) followed by pannus and corneal scar (2 eyes each). Two eyes underwent symblepharon release. In our study, four cases were lost to follow-up.
Conclusions: We emphasize the need of tenonplasty in eyes with presence of scleral ischemia as these factors have poor prognosis in anatomical and visual rehabilitation. Also need of public awareness regarding protective gear use and harm by freely available lime packets in India.

EP-OCS-09

Bulbar oculosporidiosis associated with staphyloma and its management, will the balloon burst?

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Purpose: To describe surgical management of a case of bulbar conjunctival oculosporidiosis with large staphyloma and its 3 year follow up.
Method: Retrospective review of case record of 23 year old male patient with histopathology proven bulbar conjunctival oculosporidiosis. Case was managed with excision of growth in toto with staphyloma size (13 x 17 mm) repair and scleral patch graft. Followed by oral dapsone therapy for 6 months after ruling out G6PD deficiency. ENT referral to rule out any nasopharyngeal involvement.
Results: Scleral patch graft secured with fibrin glue along with sutures provide better tensile strength and tamponade. Scleral patch graft size (20mm x 15 mm) used is largest size used to the best of our knowledge. Post operative oral dapsone regimen after ruling out G6PD deficiency prevents recurrence by arrest of sporozoite maturation and fibrosis. No recurrence and graft related complication noted in follow-up of 3 years.

Conclusion: We describe successful management of oculosporidiosis and associated staphyloma with largest scleral patch graft size use documented in peer reviewed journal, to the best of our knowledge. Early diagnosis and surgical intervention is key to avoid globe perforation.

EP-OCS-10

Investigation of the anti-inflammatory effects of RCI001 as therapeutics for ocular surface diseases

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Purpose: We previously demonstrated that topical application of RCI001 had excellent anti-inflammatory and antioxidant effects in dry eye disease and ocular chemical burn model. In this study, we investigated the inhibiting effects of RCI001 on Rac1 and NLRP3 inflammasome in vitro and in vivo model.
Methods: We confirmed Rac1 activity by RCI001 treat in RAW264.7 cells and Swiss 3T3 cells by GST (glutathione-S-Transferase) pull-down assay and G-protein activation assay kit. And the production and gene expression changes of IL-1β, IL-6 and TNF-α by RCI001 were quantified by ELISA and real-time PCR on RAW264.7 cell stimulated by LPS.
In the mouse ocular alkali burn model, RCI001 was administered via eye drop (10mg/ml, twice daily) for 5 days. As a positive control, prednisolone acetate (PDE) ophthalmic suspension 1% was used. Corneal epithelial integrity (on Day 0, 3, 4 and 5) and histological changes were compared between RCI001 and PDE. Gene and Protein levels of Rac1, NLRP3, Caspase-1 and IL-1β were quantified by real-time PCR and western blotting in corneal tissues collected on day 3 and 5.
Results: RCI001 inhibited Rac1 activity and various inflammatory cytokines dose-dependently in LPS-stimulated murine macrophage. Additionally, RCI001 restored corneal epithelial integrity and thickness faster than PDE in chemically injured cornea. Activation of Rac1 and NLRP3 inflammasome/ IL-1β axis was suppressed in RCI001 group compared with saline group especially in early phase of ocular alkali burn model.
Conclusions: Topical RCI001 suppressed expressions of activated Rac1 and inflammatory cytokines in vitro and restored injured cornea quickly by inhibiting the activation of Rac1 and NLRP inflammasome/ IL-1β axis in vivo. We believe that RCI001 could be a promising therapeutic agent for ocular surface disease.

EP-OCS-11

Automated histopathological evaluation of pterygium using artificial intelligence

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Purpose: This study aimed to evaluate the efficacy of a new automated method for the evaluation of histopathological images of pterygium using artificial intelligence.
Methods: An in-house software for automated grading of histopathological images was developed. Histopathological images of pterygium (400 images from 40 patients) were analyzed using our newly developed software. Manual grading (I–IV), labeled based on an established scoring system, served as the ground truth for training the four-grade classification models.
Region of interest segmentation was performed before the classification of grades, which was achieved by the combination of expectation-maximization and *k*-nearest neighbors. Fifty-five radiomic features extracted from each image were screened via forwarding feature selection to select only the significant features. Five classifiers were evaluated for their ability to predict quantitative grading.
Results: Among the classifier models applied for automated grading in this study, the bagging tree showed the best performance, with a 75.9% true positive rate (TPR) and 75.8% positive predictive value (PPV) in internal validation.
In external validation, the method also demonstrated reproducibility, with an 81.3% TPR and 82.0% PPV for the average of four classification grades.
Conclusion: Our newly developed automated method for quantitative grading of histopathological images of pterygium may be a reliable method for quantitative analysis of histopathological evaluation of pterygium.

EP-OCS-13

The relation between ocular surface temperature and 0.1 % cyclosporine A in dry eye syndrome with meibomian gland dysfunction

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Purpose: To determine a relation between ocular surface temperature and 0.1 % cyclosporine A in dry eye syndrome with meibomian gland dysfunction.
Methods: Thirty-five eyes of 18 patients with dry eye disease (DED) with meibomian gland dysfunction (MGD) were analyzed retrospectively.
Group 1 was treated with artificial tears and eyelid margin scrub without anti-inflammatory eyedrops.
Group 2 was treated same as group 1 additionally using 0.1 % cyclosporine A. Ocular surface disease index (OSDI), tear meniscus height (TMH), non-invasive tear breakup time (NIBUT), lipid layer thickness (LLT), meibum quality score (MQS) and ocular surface temperature (OST) were measured at baseline and 1 month later.
Results: Nineteen eyes were group 1 and 16 eyes were group 2. Both groups showed significant decrease in OSDI and OST but group 2 was more significant. TMH, NIBUT and LLT had no significant differences except MQS in group 2.

Conclusions: In dry eye syndrome with meibomian gland dysfunction, 0.1 % cyclosporine A decreased ocular surface temperature and OST would be a good biomarker of ocular surface inflammation.

EP-OCS-14

Clinical characteristics of conjunctival pigmented lesions

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Purpose: To analyse the clinical characteristics of pigmented lesions of the conjunctiva.
Method: A retrospective analysis of cohort of 81 patients has been conducted. The study group included 32 males and 49 females, age range 4 – 95 years, median age 48. Following variables were included in multifactorial analysis: histological type of pigmented lesion, location, gender, age at the diagnosis and incidence of recurrence.
Results: The most common conjunctival lesion was intradermal nevocellular nevus (44.6%) followed by mixed nevocellular nevus (31.3%), nonspecific nevus (9.6%), junction nevus (8.4%), malignant melanoma (4.8%) and dysplastic nevus (1.2%).
Out of all patients with intradermal nevi, 37.8% were males, 62.2% were females and out of all patients with mixed nevocellular nevi, 53.8% were males and 46.2% were females. Regarding location, 71.1% lesions were on nasal side, out of these, 60.2% of lesions were on nasal caruncle. Significant difference in location on nasal caruncle was identified in males: 78.8% (p=0.005). 75.7% of the lesions on the caruncle were intradermal nevocellular nevi.
Out of the lesions located on temporal side, 35% were mixed nevocellular nevi. Most of the cases of intradermal nevi occurred in patients over 40 years (64.9%). Malignant melanoma appeared only in patients over 40 years old. Recurrence developed in 8.3% patients; all of them were >40 years old.
Conclusion: Females were more likely to develop intradermal nevocellular nevi than men and men were more likely to develop mixed nevocellular nevi. None of these variables reached significance.
The most common location for a pigmented conjunctival lesion was the nasal part of the conjunctiva, and specifically for males the lesion occurred mostly on the nasal caruncle. Supported by MH CZ – DRO (FNOL,00098892).

EP-OCS-15

Amniotic membrane transplantation in the treatment of neurotrophic keratitis associated with post-stroke trigeminal trophic syndrome

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Introduction: Trigeminal trophic syndrome is a process with involvement of skin structures (generally producing an ulceration of the nasal ala, and less common compromise of cheek, upper lip and forehead).
Clinical case: 78 years old woman, with previous history of lacunar left hemispheric ischemic stroke 10 years ago, subsequent memory problems, and several visits to emergency room for hemifacial pain and red eye in right eye.
Slight right facial central paresis and right hemifacial anesthesia up to the ear canal. Assessed by dermatology, because of an ulcer and loss of substance in right nasal wing and forehead excoriation, with no biopsy changes suggestive of malignancy.
Patient presented at urgency because of painful red eye (visual acuity: hands move) with mild mixed hyperemia 360º, and good palpebral occlusion. On slit lamp examination a central epithelial defect, with well-defined borders without infiltrates, and no slimming was found. Cornea presented some descemet folds, and stromal vascularization with nasal predominance.
Diagnosis of Mackie stage III neurotrophic keratopathy was stablished. Treatment with topical corticosteroids, antibiotics and artificial tears was started, with improvement and closure of the ulcer, although corneal anesthesia persisted.
Given the persistence of an extensive epithelial defect, a bilayer amniotic membrane graft was performed. Clinical course was variable due to treatment and follow-up issues (mnesic and social problems). In some visits, patient presented without therapeutic contact lens and ulcer reopened. Patient was treated with topical corticosteroids, cacicol®, and artificial tears, until the epithelial defect was closed.
Last control (8 months post-surgery), patient presented with stable VA, closed epithelial defect and persistent pancorneal vascularization.
Conclusion: In patients with Trigeminal trophic syndrome and neurotrophic keratitis (NK), Amniotic membrane transplantation is an effective treatment.

EP-OCS-16

Ocular involvement in pemphigus vulgaris

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Purpose: Pemphigus vulgaris is a rare autoimmune disease characterized by the appearance of small bullae on the skin and especially on the mucous membranes. We aim to describe ocular manifestations in this disease.
Methods: Descriptive case series of three patients with pemphigus vulgaris disease.
Results: Three women with an average age of 50 years were diagnosed with pemphigus vulgaris treated in one case with oral corticosteroids and referred for a systematic ophthalmic examination. Skin lesions were present on the face, neck, chest in all cases and eyelid involvement in one case. Slit-lamp examination showed conjunctival hyperhemia with large purulent secretions bilaterally and symmetrically, in 2 cases, related to bacterial conjunctivitis. Conjunctival swab test has been taken in one case and identified staphylococcus aureus. Bilateral dendritic keratitis was found in 2 cases. Intraocular pressures and fundus examination were unremarkable in both eyes for all patients. Two patients were treated with intravenous acyclovir and one patient was treated with lubricants and periocular antibiotics with ophthalmic improvement in all patients.
Conclusions: The most common type of ocular involvement in pemphigus vulgaris is conjunctivitis. Therefore, ophthalmological examination should be recommended, to make early diagnosis of opportunistic infections and dendritic keratitis.

EP-OCS-17

The role of citcoline in eye drops in reducing dry eye symptoms and improving tear volume in glaucoma treated patients

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Purpose: Dry eye and glaucoma commonly occur together. Tear meniscus has a great importance in the diagnosis of dry eye disease (DED). Coline, as a part of citicoline, might have a role in DED pathogenesis by it's parasympathetic effects on Meibomian glands and ocular surface as well as it's anti-inflammatory effects on ocular surface. Analyses the elements of tear meniscus (height and area by AS OCT), as well the degree of dry eye disease (evaluated by SPEED test score) in glaucoma treated patients who used citicoline in eye drops.
Methods: In this prospective observational study, during the period June 2022 - October 2022, 59 eyes of glaucoma treated patients were included. All patients underwent routine ophthalmologic examinations and tear meniscus parameters were measured and evaluated: tear meniscus height (TMH) and tear meniscus area (TMA) by AS OCT Optovue AngioVue, as well as the presence of DED symptoms (SPEED test score). All parameters were measured before and 4 months after the using citicoline in eye drops. The obtained results were statistically processed.
Results: In this study 59 eyes were analysed (24 men and 35 women, average age 67). The average TMH before was 363.59µm and after treatment with citicoline in eye drops in our patients was 394.98µm. The average tear meniscus area before was 0.034 µm² and 0.039 µm² 4 months after therapy.
There was statistically significant difference in TMH before and at the end of observation period (p=0.03, t test), unlike in TMA (p=0.17, t test). The average SPEED test score results was 6.81 before and 3.00 4 months after therapy. There was statistically significant difference in SPPED test score before and after therapy (p<0.001, t test). The most of our patients had an improvement in dry eye disease symptoms.
Conclusions: In addition to the neuroprotective effect this study showed that citicoline may reduce DED symptoms by lowering the average SPEED test score and improving the stability of TMH.

EP-OCS-18

The research of the effects of antiseptics and local anesthetics against clinical strains of *S.aureus* and their ability to form biofilms

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Today surgical site infections (SSIs) remain the second among hospital acquired infections in Europe and the USA. *Staphylococcus aureus* as a pathogen of nosocomial infections occur more frequently in surgical hospitals.
Purpose: The aim of the research was to study the *in vitro* formation of *S.aureus* monotype biofilms under the influence of local anesthetics (LA) and antiseptics.
Method: The antimicrobial activity of LA (0.5%, bupivacaine, 2.0% lidocaine, 0.5% proparacaine) and antiseptics (decamethoxine 0.02 %, chlorhexidine 0.05%, miramistine 0.01%) against clinical strains of *S.aureus* (the broth microdilution method in a 96-well microplate)and their ability to produce biofilms were studied. The ability of *S. aureus* to form biofilms and the effect of the studied antimicrobial agents on their film forms were investigated using the microtiter plate method with sterile 96-well flat-bottomed polystyrene trays.
Results: The results indicate that *S.aureus* cultures have a pronounced ability to form biofilms. Decamethoxine has a significantly higher antistaphylococcal effect compared to Chlorhexidine bigluconate. The antimicrobial effect of LA was lower compared to antiseptics, but we observed inhibition of growth and reproduction of *S.aureus* in their presence. The proparacaine solution and the lidocaine solution demonstrated almost the same activity against the studied microorganism isolates.
Along with this, bupivacaine solution had the highest activity against the studied microorganisms. The MIC of bupivacaine for *S.aureus* was 2.2 times lower than the MIC of lidocaine and 2.1 times lower than the MIC of proparacaine significantly ($p < .05$).
Conclusion: Local antiseptics and anesthetics posess antimicrobial activity against *S.aureus* and ihibit their biofilm formation. Scientific research on various aspects of the formation of bacterial biofilms is a relevant area that will change approaches to the prophylaxis and treatment of a number of infections, including SSIs.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Oculoplastics

EP-OPL-01

Association of demographic characteristics and behavioral risk with the type and severity of injury of ocular trauma among patients presenting in a provincial level III hospital

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Purpose: The purpose of the study is to determine the association of demographic characteristics and behavioral risk with the type and severity of the injury of ocular trauma among patients presenting in a level III provincial government hospital.
Methods: We did a 5-year retrospective chart review was done among patients who presented at the Jose B. Lingad Memorial General Hospital, in the Philippines among patients in the Outpatient Department, In-Patient and Emergency Room under the services of Ophthalmology, General Surgery, Otorhinolaryngology–Head and Neck Surgery, Orthopedics and Emergency Medicine.
Results: One thousand and nine hundred and ninety charts were reviewed and included in the study. Most patients were 18 to 59 years old (75.18%) and males (75.53%). Majority have a severity of OTS 5 (86.98%) and a high behavioral risk (83.22%). Working age group (18-59), elderly age group (60 and above), male gender, sharp injuries, and low behavioral risk have a significant odds of having an open globe type of injuries. The elderly age group (60 and above), workplace injuries, and sharp injuries have a higher odds of obtaining severe types of injuries (OTS 1).
Conclusion: The majority of the ocular injuries are mild (OTS 5). Age, gender, mechanism of injury, zone of the globe, and behavioral risk were significant predictors of the type of injury.

EP-OPL-02

Analysis of nano-structure of raising rabbit skin enhancing effect of collagenase before radiofrequency treatment

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Purpose: To morphologically investigate the enhancement of radiofrequency (RF) treatment effect through collagenase pre-injection in the rabbit dermal collagen fibrillary matrix.
Method: Coupling mono-polar RF energy was administered to four limb regions of 25 New Zealand white rabbits by a non-ablative skin tightening handpiece using a Surgitron Dual Frequency RF Device (Ellman International Inc., USA) under anesthesia. Each rabbit was treated with a power of 10, 20, and 30 W and a pulse duration of 1200 msec, receiving single and multiple (three) passes.
A total of 100 skin punch biopsies (Ø 4 mm) were harvested from all four limbs of a single control rabbit (n = 4), and 24 RF-treated rabbits (n = 96) at postoperative days 0, 2, 7, and 30. Fixed and paraffin-embedded tissues were undergone standard hematoxylin-eosin and Masson's trichrome staining and were evaluated by two pathologists using atomic force microscopy (AFM).
Results: After the collagenase injection, the collagen layer showed initial breakdown, and after radiofrequency treatment, the collagen rearrangement was shown. In the collagenase injection group, the collagen structure was rearranged earlier, and denser and more ordered collagen structure rearrangement was shown than in the group treated with RF alone.
Also, collagen diameter increased earlier in the collagenase injection group than high frequency-only group, and a larger change in collagenase injection was observed in the low energy 10 W group and single treatment group.
Conclusion: Collagenase successfully enhanced the effect of RF in rabbit dermal collagen. This combination therapy can improve skin wrinkles and restore skin tightness. Using RF and collagenase simultaneously, the therapeutic effect of RF will be enhanced and less power and treatment number will be needed.

EP-OPL-03

Deep lateral wall rim-sparing orbital decompression in spontaneous globe subluxation associated with shallow orbits and eyelids laxity

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Purpose: To share our experience on deep lateral wall rim-sparing orbital decompression for the prevention of further spontaneous globe subluxation, in patients with shallow orbits and eyelid laxity.
Methods: This is a retrospective, interventional case series review. We report the results of deep lateral wall rim-sparing orbital decompression in 7 patients with recurrent spontaneous globe subluxation, operated in our department between 2016 and 2021. The orbital morphology was established by computed tomography scan images, and all patients with shallow orbit configuration and who in addition had eyelid laxity were included. Patients with thyroid eye disease were excluded.
Results: No significant intraoperative and postoperative complications were encountered. In all cases, the patients were satisfied with the aesthetic result and none reported further episodes of globe subluxation.
Conclusions: Deep lateral wall rim-sparing orbital decompression is a safe and effective decompressive procedure associated with minimal complications, which can be performed successfully in patients with spontaneous globe subluxation associated with shallow orbits with enough eyelid laxity.

EP-OPL-04

Reconstruction of lower eyelid after excision of basal-cell carcinoma

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Purpose: Basal cell carcinoma is the most common tumour in the eyelid area. About half of its incidence is in lower eyelid. Eyelid anatomically consist of anterior and posterior lamellae. Every lamella has its own function and should be reconstructed in layers and separately. Anterior lamella consist of skin and muscle, posterior lamella of tarsal plate and conjunctiva. For posterior lamella, you can use tarsal plate or cartilage. Latter can be taken from ear conchae, nasal septum or you can take hard palate graft.
Methods: I will show the possibilities of tarsal grafts and explain the reasons for decisions, considering the position and the size of a tumour. One graft I will take from contralateral eyelid and two from upper eyelid. Cartilage grafts will be taken from ear conchae, nasal septum and hard palate.
Results: After excision a lid margin, you should reconstruct both lid lamellae. Posterior lamella supports the lid and helps with closure of the lid aperture. With those graft i will achieve lid stability and prevent lid malposition like ectropion.
Conclusion: Use the simplest technique for the best outcome.

EP-OPL-05

Cryosurgical extraction of orbital cavernous hemangiomas through different approaches: Serial cases report

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Purpose: Orbital cavernous hemangiomas (OCH) are the most common benign orbital tumours in adults and are classified as congenital low-flow vascular malformations. They can invade intraorbital or adjacent structures and be considered anatomically malignant. The purpose of this presentation is to illustrate various surgical approaches that can be used in ophthalmology to extract OCH using a cryotherapy probe. Cryoprobes represent a valuable tool in the orbital surgeon's armamentarium, useful in the extraction of fluid-filled intraorbital lesions. Numerous studies suggest that their use can ease the removal of OCH.
Methods: We report different cases of OCH that underwent surgery, choosing different surgical approaches to reach the tumour and using a cryoprobe for the surgical extraction. The main reason to indicate surgery in our patients was the proptosis, which is the most frequent symptom among this type of tumours. Some of the patients also presented with diplopia. A magnetic resonance imaging (MRI) with contrast was performed in all patients to establish the diagnosis, evaluate the tumour dimensions and analyse the appropriate surgical approach. We used four different surgical approaches: transconjunctival, transcaruncular, lateral orbitotomy and through superior eyelid crease. Location of the tumour guides the specific incisional approach. Large tumours or deep apex location usually required bone removal for optimal exposure.
Results: After undergoing surgery, all tumours were completely removed, no patient had any residual proptosis and none of the patients' visual acuity worsened. There were no severe intra- or postoperative surgical complications.
Conclusions: OCH can be safely removed through small soft-tissue incisions, sometimes even without bone removal. The combination of a minimally invasive surgery approach and the use of a cryoprobe for tumour extraction has demonstrated to improve surgical outcomes as it reduces morbidity and shortens surgery time.

EP-OPL-07

Surgical technique: Use of hypodermic needle to aid porous orbital implant removal

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Purpose: Bio-integrated or porous orbital implants are commonly used for volume replacement following evisceration and enucleation, either with or without external wrapping in materials such as sclera or mesh. The porous material allows for proliferation of tissues into the implant, improving motility and reducing the risk of migration. Paradoxically, porous implants are more likely to become exposed. Subsequent surgical removal made more challenging by the proliferation tissue ingrowth.
Method: We describe the technique of utilising a hypodermic needle, inserted perpendicularly into the exposed porous orbital implant, as a lever to rotate the implant to facilitate sharp dissection and removal.
Results: Use of a 23-gauge needle inserted at right angles to the area being dissected provides leverage on a mobile spherical surface, which otherwise can be difficult to manipulate. Before the first needle is removed a second needle is inserted at right angles to the first to rotate the implant further. This needle swapping is repeated in each quadrant being dissected to improve surgical access.
Conclusions: The exposure rate of porous implants has been reported as high as 2.1% to 7.1%.The implant removal surgery is challenging and takes considerable time because the implant is particularly adherent to underlying tissue. The technique we describe significantly improves surgical access, reducing surgical time, blood loss and tissue inflammation.

EP-OPL-08

A postoperative clinical analyze of 450 eyelid tumors

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Background: The eyelids are a small anatomical structure, yet they contain several histological layers from which benign and malignant tumors can originate. Compared to other parts of the face, the eyelids are often the first place where neoplasms or disease changes are noticed.
Purpose: To analyze eyelid tumors over a 10-year period.
Method: A retrospective study of 436 (450 eyes) patients operated on over a 10-year period. Descriptive, dispersion and correlation analyzes were performed.

Results: The results provide a clear assessment of the distribution and incidence of eyelid tumors according to the localization of the defect, involvement of the lash line, inflammatory response, etc.
Conclusion: The lower eyelid and the medial canthus are preferred locations for malignant tumors, and the upper eyelid for benign ones. The location of the tumor is a leading factor in the choice of the oculoplastic reconstructive procedure.

EP-OPL-09

A retrospective demographic analyze of 450 eyelid tumors

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Background: The eyelids are a small anatomical structure, yet they contain several histological layers from which benign and malignant tumors can originate. Compared to other parts of the face, the eyelids are often the first place where neoplasms or disease changes are noticed.
Purpose: To analyze eyelid tumors over a 10-year period.
Method: A retrospective study of 436 (450 eyes) patients operated on over a 10-year period. Descriptive, dispersion and correlation analyzes were performed.
Results: The results provide a clear assessment of the distribution and incidence of eyelid tumors according to age, size, histology and place of residence.
Conclusion: Age and malignancy are in a positively significant relationship and increase together. Benign tumors begin to increase in number after the age of 40, and malignant tumors after the age of 60. The trend in benign tumors continues until the age of 70, when the increase becomes 4-fold, after which they decrease again at the expense of malignant tumors, which by the age of 70 are already increased sixfold. 80% of all malignant tumors of the eyelids are diagnosed after 60 years of age.

EP-OPL-10

Reconstruction using autologous fat-free dermis grafts in anophthalmic socket contracted or with tissue loss: a case series

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Purpose: The main objectives of enucleation, evisceration or secondary orbital implants are to restore orbital volume and obtain good motility and adaptation of the implant and external prosthesis.
We describe our experience using autologous fat-free dermis graft, sutured to Tenon and conjunctiva after evisceration, enucleation, and any reconstruction requiring a primary or secondary orbital implant, with extensive tissue loss or with contracted tissues.
Methods: Retrospective case series of patients who received an autologous dermal graft to assist in the closure of Tenon's capsule and conjunctiva at the time of secondary orbital implant placement, evisceration ~~or~~ and enucleation with retraction of the fornices or stress on the tissues due to multiple previous surgeries, tumors and trauma, previous exposure/extrusion of large orbital implants or advanced pthisis bulbi. We also describe the surgical technique.
Results: 79 patients were included and all received porous polyethylene orbital implants: 35 patients had secondary orbital implants, 32 patients had evisceration, and 12 patients had enucleation. The size of the implant was from 20 mm, in most cases, up to 22 mm. Follow-up ranged from 3 to 36 months. No intraoperative complications were observed in the donor or recipient area. 8 cases presented incipient ischemia of the dermis graft, but they were treated and resolved with autologous serum. There were no reoperations.
Conclusions: Implant exposure may be due to poor surgical technique, inadequate implant size, or excessive suture tension. The autologous dermis graft has interesting advantages since it is a good matrix for conjunctival growth, replacing the surface for suturing Tenon and conjunctiva without tension, which allows placing an implant of adequate size, achieving a good adaptation of a thinner external prosthesis with better motility.

EP-OPL-11

Pedicled island flap in the reconstruction of large defects in the medial canthal area, secondary to malignant tumor excision

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Purpose: To describe the surgical technique and results of repair of medial canthal defects secondary to excision of malignant tumors using a pedicled island flap.
Methods: Review of a group of patients, between 2018 and 2021, whose defect after the extraction of basal cell carcinoma in the medial canthal area was repaired with a pedicled island flap. In some cases, it was necessary to combine it with additional flaps to completely repair the defect, such as horizontally advanced cheek flaps or glabellar flaps. The technique and postoperative results will be described.
Results: We present a group of 15 patients with infiltrative basal cell carcinoma in the medial canthal area. The tumor was removed with margins and with delayed reconstruction at 48 hours. The mean diameter of the defect was 24 mm and canalicular involvement was present in 5 cases. Median follow-up time was 42 months. There was no tumor recurrence in any case. Complications such as wound dehiscence, necrosis, or ectropion were rare and did not require secondary revisions.
Conclusions: The advantages of this technique include a well-vascularized pedicle, adequate volume to fill the defect, and good support when combined with other flaps. The pedicled island flap is a powerful and reliable technique for the reconstruction of large medial canthal defects and can be combined with other flaps if necessary and achieves a good natural contour with low rates of minor complications.

EP-OPL-12

Reconstruction of large full-thickness upper eyelid defects secondary to malignant tumors

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Purpose: We describe different reconstruction techniques in patients undergoing excision of large malignant tumors of the upper eyelid.
Methods: This is a review of 18 cases, aged 64-86 years (mean: 71.2 years ± 6.49) with malignant tumors of the upper eyelid, operated by the same surgeon (AB-G). The resulting defects were reconstructed using different techniques such as Cutler-Beard, hard palate graft, free tarsoconjunctival graft and a modification of Cutler-Beard's technique combined with a tarsoconjunctival graft.
We describe how the grafts are harvested and how the modification of the Cutler-Beard technique is performed. Follow-up ranged from 24 to 60 months (mean: 41.6 ± 9.87).
Results: The functional, cosmetic results and postoperative complications of each technique, such as upper lid retraction and lid margin entropion, were evaluated. The advantages and disadvantages of each technique are described.
Conclusions: One of the goals of reconstruction of full-thickness defects is to provide stability to the upper eyelid. The choice of the most suitable and safe tissue on the ocular surface is essential. Modification of the Cutler-Beard technique with a tarsoconjunctival graft provides sufficient blood supply, a stable margin and good contour.

EP-OPL-14

Neglected exposure keratopathy: surgical correction of upper eyelid retraction with skin graft

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Introduction: Exposure keratopathy refers to corneal damage that results primarily from prolonged exposure of the ocular surface to the outside environment.
Case report: A 54-year-old female presented with a chief complaint can't close her left eye, reddish and blurred vision. The patient has a history of fell in the bathroom five month ago. She received hecting procedure on the left eyelid and underwent craniotomy procedure. Approximately 3 month later, he developed a severe upper eyelid scar contracture that resulted in lagophthalmos. Left Eye examination: Lagophthalmos 6 mm(+), conjunctiva and ciliary injection, cornea exposure. Sclera was exposed 3 mm, cornea infiltrate, pannus. Lacerations were present over the upper eyelid with cicatricial and oedema along with lacerations.
Discussion: The woman in the present case was late diagnosed, which results in exposure keratopathy. The etiologies of lagophthalmos in this case is palpebral pathology-related causes. Abnormal eyelid closure caused by previous surgery or a traumatic injury. Grafts should be used when there is a suitable vascular bed to enhance their survival. Reconstruction of upper eyelid defect is very intricate, there is not enough available tissue around it. In this case the eyelid have reconstructed with a full-thickness skin graft from retroauricula.
Conclusion: Exposure keratopathy with lagophthalmos is challenging, The woman in the present case was late diagnosed. We hope this case may lead researchers to discuss more appropriate management plans to help prevent neglected lagophthalmos, which results in exposure keratopathy.

EP-OPL-15

Sebaceous gland carcinoma of the upper eyelid reconstructed with an auricular cartilage graft: a case report

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Introduction: Sebaceous gland carcinoma (SGC) is a malignant tumor of eyelid and ocular adnexa that originate from sebaceous gland. The main treatment of SGC is surgical excision followed by eyelid reconstruction to promote an adequate protection to the ocular. Reconstruction of full-thickness eyelid defect is challenging for ophthalmic surgeon considering the function of the eyelid is very important in protecting the eyeball and maintaining esthetic.
Adequate eyelid reconstruction requires a thorough understanding of various techniques for repair of the defect. In this case, we present a case regarding auricular cartilage graft as reconstructive surgery after wide excision of SGC.
Description: A 62-year-old woman was diagnosed with SGC on the left upper eyelid measuring 2.5x3x2 centimeters. The patient underwent wide excision and frozen section, followed by combination reconstructive surgery using an auricular cartilage graft, conjunctival and cutaneous advancement flap. This technique was used to reconstruct a large full-thickness defect of eyelid.
The reconstruction should be preceded by a detailed assessment of size and location of defect. Large defect more than half of length of the eyelid margin should be examined carefully to determine amount of residual tarsus.
Reconstructions of full-thickness defects include anterior, middle and posterior lamellar, and auricular cartilage graft was used to repair the middle lamellar as tarsus substitute. Auricular cartilage was chosen because has a thin and curved shape, thus can better support to the eyelid margin and the ocular surface.
Conclusion: Reconstruction with an auricular cartilage graft is a good selection for reconstructive surgery, resulting in excellent eyelid function and ocular protection, with minimal complications and good esthetics.
Keyword: Sebaceous gland carcinoma, full-thickness eyelid defect, eyelid reconstruction, auricular cartilage graft

EP-OPL-16

Arteriovenous malformation of the upper eyelid: the diagnosis approach and management

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Introduction: The Orbitalarteriovenous malformations (AVMs) are extremely rare, about 0.14%–0.5% among the population. The gold standard for AVMsdiagnostic is digital subtraction angiography (DSA). DSA is very helpful in detecting arterial feeding, nidus and venous return and obtaining vascularity mapping.
Whereas the most effective treatment for AVMs is transarterial embolization.
The purpose of this study was to report the clinical approach for diagnosis and management of eyelid AVMs.
Case Report: A 45-year-old woman presented with a swelling on her upper right eyelid, which had gradually progressed since 23 years ago. There was no history of facial of trauma. Ophthalmologyexamination revealed swelling covering most of the right eyelid which resulted in mechanical ptosis covering the upper pupillary region.
In palpation, the swelling was compressible and pulsating. Moreover, bruits were heard upon auscultation. The mass was 65 x 30 mm in size. The anterior segment and fundus examination of both eyes were otherwise unremarkable. Magnetic resonance imaging (MRI) and digital subtraction angiography (DSA) revealed an intracranial AVMs supplied by right middle cerebral artery and an upper eyelid AVMs supplied by right *superficial temporal artery*.
Embolization was performedand DSA after embolization showedvascularity in arterial feeder was reduced up to 90%. Unfortunately the patient complained a sudden vision loss after embolization and funduscopy showed retinal pallor with a cherry red spot leading to a central retinal artery occlusion (CRAO).
Conclusion: Diagnosis of AVMs in patient was made based on DSA as the gold standard for AVMs. Embolization procedure was performed considering the effectiveness and safety due to the high risk of bleeding. Nevertheless, we also considered the risk of embolization procedure, such as CRAO even though it is a rare complication.
Keywords: arteriovenous malformation, digital subtractif angiography, embolization

EP-OPL-17

Botox injection for a patient with lacrimation during micturition

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Purpose: To describe a patient that presented with lacrimation during micturition and her response to lacrimal gland botox injections.
Method: A Case Report.
Results: A 44 years old medically free female was presented to the oculoplastics clinic at our institution with a history of copious painless tearing during the day which increases with urination. Her symptoms started during childhood and remained stationary. It affected her quality of life by causing significant emotional burden, anxiety,and social embarrassment. She sought medical attention and was falsely treated as nasolacrimal duct obstruction. At our institution, a trial of lacrimal gland botox injections was offered. After multiple injections, a great improvement was noted.
Conclusion: Increased lacrimation can affect patients' quality of life and it is important to highlight that lacrimal gland botox injections can be used safely and effectively to treat patients with similar conditions. Few cases were found in the literature which shared the same condition as our patient. However,up to our knowledge,this is the first case that was treated successfully.

EP-OPL-18

Acute dacryocystitis by *Aspergillus* in an immunocompetent patient

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Purpose: To present the clinical evolution, surgical and medical management of a patient with recurrent episodes of acute dacryocystitis.
Methods: Retrospective clinical case and bibliographic review.
Results: A 28 years old male reported pain and inflammation of the nasolacrimal sac area, no medical history of interest.
On examination, a firm painful mild erythematous tender mass was noted above nasolacrimal area on the right side, suggestive of acute dacryocystitis that we treat with clinical treatment.
After several recurrences without complete improvement of the clinical condition, we decided to perform a right dacryocystorhinostomy.
At surgery, we found a dilated lacrimal sac with semisolid content and calcific fragments, so we performed a dacryocystostomy without osteotomy. The culture was positive for *Aspergillus sp.* and *niger.*
After surgery, we performed an immunosuppression screening and an orbital CT scan, which were negative.
Finally, after six months, the patient is asymptomatic and has a permeable lagrimal duct.
Conclusions: Dacryocystitis is an infection of the lacrimal sac, the usual cause being bacterial, with Gram-positive (coagulase-negative Staphylococcus, coagulase-positive Staphylococcus, pneumococcus), Gram-negative (Haemophilus, Pseudomona, Proteus, Citrobacter and Salmonella) and less frequently fungal.
Fungal dacryocystitis is usually secondary to recurrent lacrimal duct infections due to chronic obstruction for the formation of dacryoltihs which favours the frecuency of fungal dacryocystitis after cycles of antibiotics treatment or in immunocompromised patients. Specifically, dacryocystitis due to *Aspergillus niger* is rare and nothing has been found in the literature.
In addition, due to the etiology of Aspergillus it would be necessary to perform a clearance of due to immunosuppression to rule out systemic pathologies that facilitate the colonization of this organism.

EP-OPL-19

Does the area of the plica semilunaris vary in patients with Horner's syndrome?

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Purpose: Horner's syndrome arises from dysfunction of the sympathetic pathway, characterised by miosis, enophthalmos, and ptosis. In animals, protrusion of the nictitating membrane also occurs, corresponding to the vestigial structure that is the plica semilunaris in humans.
The aim is to study if the plica semilunaris area is altered in patients with Horner's syndrome, uncovering any of its remnant functions.
Methods: Patients suffering from Horner's syndrome registered at Arrowe Park hospital, UK were used for the purpose of this cross-sectional, retrospective case series review. Standardised anterior segment photos focusing on the plica semilunaris were taken using a Haag-Streit BX 900 slit lamp.
A 1mm x 1mm slit beam was used as a reference marker. The plica semilunaris and caruncular area were subsequently calculated. Measurements were taken without prior knowledge of the side affected by Horner's.
Results: Mean cohort age of 55 years. There was no statistically significant difference in the plica semilunaris and combined plica/caruncular area between effected and unaffected eyes (p=0.2014, p=0.2266 respectively).
Mean plica semilunaris area in affected patients and unaffected controls was 21.33mm and 53.55 mm respectively (p=0.0228). The inter-plica difference between effected patients and unaffected controls was statistically insignificant (p=0.5862).
Conclusions: To the best of our knowledge, no previous attempt has been made at assessing whether any variation exists in the plica semilunaris dimensions of patients suffering from Horner's syndrome.
We conclude that although there is no difference in the inter-plica area in patients suffering from Horner's syndrome, the average plica semilunaris area is smaller in patients with Horner's syndrome compared to unaffected controls.
Unlike our animal counterparts, the plica semilunaris does not prolapse when suffering from Horner's syndrome. To the contrary, a trend towards atrophy of the plica is shown.

EP-OPL-20

Botulinum toxin as a temporary treatment of senile lower lid entropium

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Purpose: To evaluate the clinical results and report the results of 20cases of senile involutional entropion of the lower lid treated with botulinum toxin.
Methods: Twenty patients with senile entropion were treated with an injection of botulinum toxin. The mean age was 67,4±6,5.
The toxin (Botox; Allergan Corporation, Irvine, CA) was supplied in a vial contained 100 units of freeze-dried botulinum toxin A. This was reconstituted and diluted with 2 ml of saline which resulted with a concentration of five units in 0.1. The reconstituted toxin was injected over the orbicularis oculi muscle subcutaneously 4 mm below the eyelash margin of lower eyelid at three sites with a 30-gauge needle.
Five units of the toxin were injected in each site (15 units total).
The patients were examined 7 days after the application, 30 days and then monthly up to 1 year.
Results: In all treated patients improvement of the eyelid margin was visible within three to four days after the injection with the duration which varied from 8 to 16 weeks. No complications or side effects of the treatment was recorded.
Conclusion: Botulinum toxin A can be effective temporary treatment for senile lower lid entropion.

EP-OPL-21

Fibrous dysplasia of the orbit in adults: case series

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Purpose: Fibrous dysplasia (FD) is a benign fibro-osseous disease that rarely affects the orbit and is usually detected by the age of thirty years. We present a case series of FD affecting the orbital region in three patients over 40 years, their associated complications and their different surgical approaches.
Methods: One patient with chronic headache and two patients with proptosis and vision loss were referred to our hospital. Clinical examination and radiological test were performed. A diagnosis of FD involving the orbit was made. We considered three different surgical approaches.
Results:
Case 1: A 74-year-old man with proptosis, blurred vision and superonasal quadrantanopia in the right eye (RE). Computerized Tomography scan (CT scan) showed an ethmoid bony lesion of 19 x 15 mm with orbital invasion. It was compressing the medium rectum (MR) and surrounding the optic nerve. We performed a transcaruncular approach to the mid orbit using an ultrasonic aspirator (SONOPET®).
Case 2: A 58-year-old man with ptosis, downward dystopia, ophthalmoplegia and ocular hypertension. CT scan confirmed the presence of a large fibro-osseus lesion affecting the frontoethmoidal sinuses, which invaded the orbit and caused a displacement of the globe. We chose a multidisciplinary management together with an otorhinolaryngologist, using an endonasal approach with ethmoidectomy.
Case 3: A 43-year-old woman with chronic left hemicranial headaches and a left ptosis. CT scan showed a thickening of the left orbital roof with a bony exostosis invading the superior orbital space. Via an upper eyelid crease incision, we approached the superior orbit and removed the lesion with SONOPET®.
Conclusions: The orbit is a rare localization for FD that can be found in older patients and causes serious ophthalmologic complications. There are different valid surgical approaches depending on its location, being an ultrasonic aspirator device of aid to avoid damaging surrounding tissues.

EP-OPL-22

Case of bilateral orbital cellulitis & cavernous sinus thrombosis

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Purpose: Orbital cellulitis is a severe, sight-threatening infection of the orbital tissues associated with high rate of morbidity and mortality. We describe the case of a gentleman who presented with rapidly progressive orbital swelling, proptosis and loss of vision in both eyes

Methods: A 47 year-old immunocompetent man presented to the Emergency Department with increased swelling and proptosis of the right eye along with pyrexia and systemic upset following recent upper respiratory tract infection. Ocular examination revealed reduced vision in the right eye (6/24) with severe proptosis, chemosis and limited motility.

Within a couple of hours, the left eye had become swollen with bilateral chemosis, injection, limited motility and reduction of visual acuity to hand movement and RAPD.

Computed tomography (CT) showed bilateral orbital cellulitis and cavernous sinus thrombosis while biochemistry demonstrated significant lymphocytosis and raised C-reactive protein. Blood cultures showed a growth of invasive Group A streptococcus (iGAS). Patient was initiated on high-dose intravenous antibiotics, anticoagulation and was referred to a tertiary neurosurgical centre.

Discussion: Group A streptococcus represents a minority of cases of orbital cellulitis, however is associated with rapid clinical and visual deterioration. iGAS is associated with a mortality of 40% in the presence of bacteraemia, and an overall mortality of 18%.

Anatomical connections between both cavernous sinuses can represent a track by which infection propagates. Embolization of bacteria within the cavernous sinus was thought to be the mechanism by which thrombosis developed.

Conclusion: Bilateral orbital cellulitis is very rare and represents a significant threat to life especially when superimposed with cavernous sinus thrombosis. Rapid recognition and treatment is critical. Early characterization of infections secondary to iGAS is essential in the prevention of significant morbidity and mortality.

EP-OPL-23

External vs. endoscopic DCR in pediatric patients: outcomes and complications

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Purpose: To compare the surgical outcomes and complications among endoscopic vs. external dacryocystorhinostomy (DCR) in paediatrics in single tertiary eye hospital in Saudi Arabia.

Methods: Retrospective comparable study included 70 patient (0-17 years old) who underwent endoscopic or dacryocystorhinostomy between 2014 and 2022.

The main outcome measures were patients' demographics, clinical presentation, etiology, surgical success, operative and postoperative complications, postoperative follow-up and resolution of epiphora.

Results: The etiology of the nasolacrimal duct obstruction was congenital nasolacrimal duct obstruction (NLDO) in 48.6%, acquired NLDO in 34.3%, trauma in 15.7%. 51.4 % of the patients had external DCR with success rate of 90% and 48.6% of the patients had endoscopic DCR with success rate of 100%.

Conclusion: Endoscopic and external DCR both effectively treated a variety of pediatric NLDO etiologies, with a low rate of complications.

EP-OPL-24

Is 'Patient Initiated Follow Up' the future for routine oculoplastic outpatient appointments?

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Purpose: Patient initiated follow up (PIFU)is an already established follow up pathway in some specialties, especially Oncology, where it forms a part of patients personalised stratified follow-up.

The COVID-19 pandemic brought about numerous positive changes to manage increasing outpatient care in Ophthalmology and the PIFU pathway is rapidly becoming one such change. We performed a retrospective review of patients seen in our tertiary centre clinic over 3 months and identified those with longstanding non sight threatening stable thyroid eye disease (TED) as suitable for enrolment into the PIFU pathway.

Method: We retrospectively collected data for patients seen in orbit clinic from January to March 2021 (n=157) and highlighted the patients with stable TED scheduled for routine follow up appointments. We analysed how many had their follow up appointments rescheduled and contacted them individually as well as a part of a patient focussed group to determine their views on the PIFU pathway.

Results: 14% of 157 patients (n=22) were identified as meeting the above criteria. On average, the follow upappointments had been rescheduled at least once (range 1-3 times) for 10 of the patients suitable for PIFU. 60% of these 10 patients (n=6) were keen on the PIFU pathway and 10% (n=1) expressed more comfort with the traditional physician-initiated appointments. We were unable to contact the remaining 30% (n=3).

Conclusion: Our audit demonstrated clinical potential and patient willingness in introducing the PIFU pathway as a safe and logistically convenient way to reviewlong standing stable TED patients.

We aim to run an antecedent PIFU pathway in the next year to determine its effectiveness in reducing the number of secondary out-patient appointments, assessing patient satisfaction and clinical outcomes.

EP-OPL-25

A rare case of pachydermoperiostosis and it's ocular menifestations

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A case of 56 years old Pakistani male visited OPD with complaint of thickening of both eyelids, ptosis and left lower lid ectropion caused by rare condition named pachydermoperiostosis (PDP). PDP is a rare autosomal dominant condition but autosomal recessive families probably can also occur. It is manifested by clubbing of digits, hyperhidrosis of palm and feet, peri-ostosis, acro-osteolysis and pachydermia.
Ocular features include blepharoptosis, floppy eyelids, eyelid and palpebral conjunctival hypertrophy, mechanical ectropion, meibomian gland dysfunction, tear film abnormalities, punctate epithelial erosions and ocular surface disease.
Surgical management was given by full-thickness wedge resection leading to horizontal tightening and this was done along with shortening of levator and its advancement. Histopathology demonstrated chronic non-specific inflammation and foreign body giant cell reaction.

EP-OPL-28

Effects of cyclosporine in the treatment of noninfectious proximal lacrimal drainage system inflammation

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Purpose: The aim of this study is to evaluate the clinical outcomes of treating noninfectious proximal lacrimal drainage system inflammation with topical cyclosporine with/without lacrimal stents.
Methods: A Prospective case series of 26 patients with various types and severity of lacrimal drainage system inflammation was conducted over a one-year period. All patients were diagnosed through biomicroscopy and lacrimal drainage system irrigation and probing. Treatment included topical cyclosporine (0.05 %) twice daily with some patients undergoing lacrimal stent implantation. Stents were removed after 3 months with cyclosporine treatment continuing for additional 3 months.
Results: Of the 26 patients 23 were female (88.5%), with the mean age of 51 years. 15 of the 26 patients (41.6%) were diagnosed with varying degrees of punctal stenosis, and underwent punctal dilation with punctal perforated plug implantation. 12 of the 15 (80%) showed complete resolution of epiphora. 8 of the 26 and 3 of the 26 patients were diagnosed with varying degrees of stenosis and obstruction of canaliculus respectively, all of whom underwent bicanalicular lacrimal stent implantation. 7 of 11 (63.6%) showed complete resolution of epiphora. 4 of the 26 patients with punctal stenosis were treated with topical cyclosporine alone, with all 4 (100%) showing complete resolution of epiphora.
Conclusion: Topical cyclosporine has a positive effect in the treatment of noninfectious proximal lacrimal drainage system inflammation. Patients with early stage inflammation had better outcomes than those who presented with severe obstruction at a late stage. Therefore, we recommend the use of topical cyclosporine eye drops in the early stages of noninfectious proximal lacrimal drainage system inflammation.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Oncology & Pathology

EP-ONC-01

Multimodal imaging and follow-up in an asymptomatic stromal iris cyst

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Purpose: To present the case of an asymptomatic 54-year-old patient with an incidental discovery of a stromal iris cyst upon a routine check-up.
Methods: The patient presented to our private clinic for an annual ophthalmological check-up. The ophthalmic examination revealed a best corrected visual acuity of 20/20 in both eyes. The slit lamp examination was unremarkable on the left eye whereas on the right eye it revealed a pseudo-tumoral mass in the temporal periphery of the iris. Goldmann applanation tonometry and direct and indirect ophthalmoscopy were normal in both eyes.
Multimodal imaging - anterior pole photography, gonioscopy – with photography, anterior pole OCT and UBM ultrasonography measurements were also performed, and they revealed a lobulated stromal iris cyst located at the basis of the iris.
Results: At the 1-year follow-up, UBM ultrasonography and anterior pole OCT were performed again, and the cyst appeared to be non-progressive.
Conclusions: Stromal iris cysts are rare benign tumors which are usually present during childhood and are a rare cause of angle closure glaucoma. They can also be and remain asymptomatic for years. Anterior pole OCT – a non-invasive investigation - is particularly useful in measuring and localizing the cyst in conjunction with UBM ultrasonography.
The particularity of the case is the incidental discovery of the stromal iris cyst during a routine check-up in a middle-aged patient who had documented prior normal ophthalmological examinations and no medical history that would indicate a secondary cause for the appearance of the cyst.

EP-ONC-02

How to diagnose a choroidal sarcoid granuloma - the story of a patient with an unclear isolated choroidal lesion

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A 61-year-old, male patient presented at the ophthalmo-oncologic ambulance with an unclear lesion in the left fundus. Examination demonstrated a prominent yellowish lesion in the upper half of the macular region. Echography revealed a iso- to hyporeflective choroidal lesion with a maximum height of 0.5 mm. OCT findings were changes in the outer retina without subretinal fluid or retinal edema. There were no signs of inflammation of the eye. Blood work (sIL-2, ACE, etc.) was within the normal range. A screening for systemic lesions was performed with PET-CT. It showed multiple metabolically active lymph nodes, however the examination was performed two days after the patient's first COVID vaccination and thus results were not applicable.
PET-CT was repeated 2 months later and revealed two active lymph nodes. The other focal uptakes were regredient. Meanwhile the choroidal lesion showed growth inducing further deterioration of vision in the left eye.
Therefore, the decision for a diagnostic fine needle aspiration biopsy was made. The first biopsy was unsuccessful. In the second biopsy the amount of tissue for histopathologic analysis was too low.
However, molecular genetic analysis with next generation sequencing showed a CDKN2A mutation with no further copy number variations. The lymphnode in the inguinal region was excised and showed changes consistent with sarcoidosis. The patient was treated with systemic corticosteroids and up to this date the lesion remained stable.
In patients with sarcoidosis up to 80% show associated ocular complications. Most common findings are uveitis and conjunctival nodes. A choroidal granuloma without any other ocular complications is a rare finding. Main differentials such as choroidal melanoma, metastasis, hemangioma and lymphoma have to be ruled out. This case describes the hurdles to diagnose sarcoidosis in a patient with an isolated choroidal granuloma and may help other clinicians to prevent visual deterioration in such cases.

EP-ONC-03

Clinical outcomes following fractionated radiotherapy for optic nerve sheath meningioma: a retrospective analysis

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Purpose or objective: Optic nerve sheath meningiomas (ONSM) are rare tumours that represent up to 2% of all meningiomas. Surgical resection is associated with a high risk of visual loss due to the close proximity between these tumours and the optic nerves.
Advances in radiotherapy (RT) techniques have allowed precision delivery of therapeutic RT doses to these tumours. We report on our institutional experience of treating ONSM with fractionated RT.
Materials and methods: Medical records were reviewed on ONSM patients treated with RT between 2011 and 2021. Follow-up ophthalmological examinations and orbital imaging was reviewed. Time to response was calculated from the end of RT to the minimum of date of response or last MRI. Time to improvement in VA was calculated from the end RT to the minimum of date of improvement or date of last assessment. The Kaplan-Meier method was used to estimate these times and the log rank test was used to compare times between groups.
Results: Twelve patients were identified. Median age at diagnosis was 44 years. One patient presented with sudden loss of vision whilst the rest (n=11) presented with gradual deterioration in visual acuity. Median dose of RT was 54 Gy (range 50.4 – 54). Median follow up from end of RT was 45.1 months.

Median time to tumour response on MRI was 25.3 months. Median time to documented improvement in VA (n=10) was 8.3 months. Two patients reported no further deterioration in VA. No late side effects were observed in our patient cohort.
Conclusion: Our study demonstrates that RT delivered with adequate dose (50.4–54 Gy) resulted in excellent tumour control with a high rate of the maintenance of visual acuity. The management of ONSM requires close cooperation between radiation oncologists, radiologists and neuro-ophthalmologists. RT treatment planning is complex due to the location of the tumour and the expertise of the radiation oncology team is an important factor in ensuring better treatment outcomes.

EP-ONC-04

Periorbital desmoplastic melanoma with orbital invasion: case report and review

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Purpose: Primary orbital melanoma and metastatic cutaneous melanoma to the orbit are extremely rare.
Desmoplastic melanoma (DM) is a rare variant of spindle cell melanoma, which can extend from a superficial location into deep tissues by neurotropic mechanisms. It has a strong association with chronic sun exposure and usually occurs later in life. Incidence is reported to be less than 4% of cutaneous melanoma.
Histology of DM is divided into pure and mixed types, and this classification plays an important role in prediction of clinical outcomes.
Established DM treatment options are surgical excision, sentinel lymph node biopsy, local radiotherapy and chemotherapy. Nowadays a number of genetic mutations associated with DM have shown better responses to treatment with targeted therapy.
Methods: This is a case report of a 78-year-old male with skin malignant melanoma (mixed type, spindle cell melanoma with desmoplastic reaction) in his left malar region, treated with local excision, parotidectomy, left cervical lymphadenectomy, local radiotherapy (RT) and immunotherapy (IT).
Despite the treatment, he presented a local recurrence with orbital and maxillary sinus involvement. The patient deferred further surgical treatment, but finally orbital exenteration and maxillectomy with a delayed reconstruction were performed.
Results: The patient remained disease-free for 18 months after orbital involvement, but he developed metastatic disease and died because of pulmonary progression. There are only ten reported cases of desmoplastic melanomas affecting the periocular region, four of them with orbital involvement.
Conclusions: Desmoplastic malignant melanoma is a rare histopathological distinct subtype of cutaneous melanoma, with a differential management, prognosis and survival of these patients. Furthermore, the treatment of a cutaneous melanoma arising in the periocular region is a challenging reconstructive problem and it may compromise the ocular globe and visual function.

EP-ONC-05

To evaluate the safety and efficacy of half fluence Photodynamic therapy for symptomatic peripapillary circumscribed Choroidal Hemangiomas (CCHs)

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Purpose: To evaluate the safety and efficacy of half fluence photodynamic therapy for symptomatic peripapillary circumscribed choroidal hemangiomas (CCHs).
Method: 11 patients with peripapillary CCHs were treated with half fluence PDT with fluence of 25mJ/cm2 (standard-50mJ/cm2). Patients were evaluated at 4 weeks, 12 weeks and 24 weeks post PDT with best-corrected visual acuity (BCVA), ultrasonography, SD-OCT & visual evoked potential.
Results: The BCVA significantly improved to 0.441+0.125 at 24 weeks (P=0.007) from baseline levels of 1.017+ 0.075um. Central macular thickness also showed improvement to 174.60+23.13um (P=0.001) at 24 weeks. A single session of retreatment was required in 2 patients (18%) which also showed complete resolution. No procedure related complications were observed.
Conclusion: Half fluence PDT can be an effective and safe treatment option for peripapillary CCHs which results in both anatomical and functional improvements with no observable complications.

EP-ONC-06

Retinal astrocytoma - a diagnostic “know-how” in 6 cases

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Purpose: We aimed to present a clinical presentation, diagnostics and differentiation of retinal astrocytoma in 6 cases.
Method: Clinical examination, color fundus photography (FP), optical coherence tomography (OCT), ultrasonography (USG), fundus autofluorescence (FAF) were used in the diagnostic process of the disease.
Results: Six patients with an atypical, amelanotic mass were evaluated. 3 young patients with a medical history of tuberous sclerosis and 3 older, generally healthy patients were diagnosed with retinal astrocytoma. Fortunately, none of them suffered from a visual loss due to localisation of the lesion, however in two cases bilateral and multifocal presentation of the tumor was observed. An OCT and USG were performed to confirm the diagnosis.
Conclusion: Presented case series revealed diagnostic challenges and clinical differences in retinal astrocytoma. According to the literature retinal astrocytoma is a relatively rare benign tumor. Both sporadic and associated with tuberous sclerosis manifestation of this lesion is observed. Usually treatment is not necessary. Systematic observation is required. Differential diagnosis include retinoblastoma, amelanotic uveal melanoma and choroidal metastasis.

EP-ONC-07

A rare case of parotid gland and breast metastases in uveal ring melanoma

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Aim: To describe the features of a rare subtype of uveal melanoma and unusual sites of metastases following enucleation.
Method: We identified 3 patients with uveal ring melanomas seen in Greenlane Hospital, Auckland, New Zealand over 5 years between 2017 and 2022. Clinical charts were reviewed for demographics, presenting features and tumour description including histopathologic parameters. Herein we describe the unusual presentation of one of these cases.
Results: Mrs X was a 51-year-old fit and well Chinese-Samoan female and ex-smoker, with no personal history of malignancy. She presented in 2019 with spontaneous macrohyphaema, elevated intraocular pressure (IOP 76mmHg) and iris distortion from a fibrovascular iris mass withendothelial surface involvement. Following multiple surgeries to control hyphaema and IOP, a biopsy of the lesion was carried out using a mini peripheral Descemetorhexis approach to excise the lesion from the endothelial surface alongside a biopsy of the iris lesion using the minimal iris touch biopsy technique. The histology confirmed spindle-cell iris melanoma and Mrs X eventually required an enucleation in 2021 after developing a painful blind eye. Histology demonstrated pT4d diffuse 360 degrees epithelioid uveal ring melanoma involving iris, ciliary body, and anterior choroid with scleral extension.
Within 12 months, Mrs X was found to have biopsy-confirmed regressed metastatic malignant melanoma in her right breast and in the right superficial parotid gland. She is currently undergoing further systemic treatment.
Conclusion: We describe a rare uveal ring melanoma case identified in a young patient of Asian/Pacific ancestry with aggressive disease and subsequent malignant metastases to breast and parotid gland, which has not previously been reported. Uveal ring melanoma represents a rare but aggressive subtype that requires careful evaluation and prompt treatment, with likely eventual enucleation.

EP-ONC-08

Misdiagnosed macular metastasis as a first sign of lung cancer

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Purpose: Report of a 41-year-old male with misdiagnosed macular metastasis as a first sign of lung cancer.
Method: Case report.
Results: Patient with 3-months history of blurred vision in his right eye (RE) was referred to the medical retina specialist as central serous chorioretinopathy (CSCHR) for further management. His RE vision was slowly worsening despite nepafenac drops and escin tablets.
He had no history of any diseases or medications and did not report any general health problems.
Initial best corrected visual acuity (BCVA) of RE was 20/25. Complete ophthalmological examination with spectral domain optical coherence tomography revealed flat pigment epithelial detachment with subretinal fluid (SRF) in macula. Fluorescein angiography showed a few ink-blot leakages and late hyperfluorescence, which was concluded as choroidal neovascularization associated with CSCHR. The finding on the left eye was physiological.
Intravitreal ranibizumab therapy combined with subthreshold macular laser was initiated. There was progression of whitish macular lesion with decrease in BCVA to 20/250. Therapy was suspended and diagnosis reevaluated.
Multidisciplinary work-up revealed hepatic, lung and bone nodules – an oncological disease was suspected. Bone and hepatic nodule biopsies confirmed metastases of lung adenocarcinoma. Systemic alectinib therapy was started, which caused tumour and metastases regression, including macular lesion with SRF resolution and BCVA improvement to 20/32. The patient is alive more than 2 years since diagnosis, his health and vision allow him to work.
Conclusion: Retinal metastases are rare and often misdiagnosed. The majority of patients with choroidal metastases are already diagnosed with primary cancer. In this case macular choroidal metastasis was the first sign of lung carcinoma in previously healthy young patient.
We must re-evaluate the diagnosis and rule out malignancy in the case of an atypical macular lesion nonresponsive to therapy.

EP-ONC-09

Juxtapapillary retinal capillary hemangioma-clinical algorithm

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Purpose: The aim of the investigation is to elaborate the approach and treatment strategies for juxtapapillary capillary hemangioma of the optic nerve.
Methods: Retrospective analysis of 1 case of bilateral juxtapapillary capillary hemangioma of the optic nerve in 28-years old male for a period of 1 year; Revue of the literature.
The patient was diagnosed and followed with fundoscopy, OCT and FA. Anti-VEGF medications were the choice of treatment. The medical history of two neurosurgical interventions for capillary hemangioblastoma of the small brain gives a clue to Von Hippel Lindau disease.
Results: Fundoscopy and OCT of the right eye showed tractional detachment of the retina in the papillo-macular region and visual acuity of 0,1. The left eye presented with vitreomacular traction as a result of a juxtapapillary capillary hemangioma with endophytic growth. FA demonstrated a pathologic hyperfluorescense "leakage" in both eyes. Monthly applications of intravitreal Anti-VEGF injections in the left eye were performed. This led to stabilization in the clinical course with no leakage and stabile visual acuity.
Conclusions: The pathogenesis of capillary hemangioma is linked to HIV (hypoxy inducible factor) accumulation and hence VEGF expression which is the reason for leakage and retinal complications. AntiVEGF has pathogenic role in suppressing the mechanism and thus maintaining visual function.

EP-ONC-10

Intense ocular pain as the first symptom of metastatic lung cancer

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Choroidal metastases are the first cause of malignant intraocular tumor and are usually multifocal. When symptomatic they present with decreased visual acuity and visual alterations. We present the case of a 76-year-old man with a painful choroidal mass as the first manifestation of a lung cancer.
He complained of a 1-month history of intense ocular pain and had a violaceous and painful sectoral hyperemia with no other signs of inflammation. The fundus examination showed a single large yellowish choroidal mass in the posterior-superior-nasal quadrant. No Kappa angle or subretinal fluid was seen on ultrasonography and there was no double circulation pattern on fluorescein angiography. Magnetic resonance imaging revealed a T1 and T2 hypointense choroidal mass, with heterogeneous contrast enhancement. In view of the presentation, giant nodular scleritis was considered and empirical treatment with corticosteroids was initiated.
Nevertheless, further studies were also performed to rule out an amelanotic melanoma or choroidal metastasis. In the end, radiological imaging tests revealed a lung mass that confirmed the diagnosis of choroidal lung metastasis.
A single painful choroidal mass can be the first manifestation of a lung cancer, urging the ophthalmologist to stay alert and perform the pertinent studies.

EP-ONC-11

Ocular toxicity following carboplatin chemotherapy for neuroendocrine tumour of the bladder – a case report

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Introduction: Carboplatin is a commonly used platinum analogue chemotherapeutic agent that is similar to cisplatin, however is known to be better tolerated. This case report outlines a case of Ocular Toxicity following Carboplatin chemotherapy used for the management of a neuroendocrine tumour of the bladder.
Case report: A 70-year-old man presented four weeks following his fourth chemotherapy cycle with a one-week history of right eye blurriness. The man was undergoing chemothrapy with Etoposide and Carboplatin for a neuroendocrine tumour of the bladder. Two weeks following his third chemotherapy cycle, the patient suffered a similar episode of visual changes in his left eye, raising suspicion for Carboplatin-Induced Ocular Toxicity. After cessation of the Carboplatin chemotherapy, the patient's vision remained stable.
Discussion: Although the current literature on Carboplatin-Induced Ocular Toxicity remains scanty, previous cases have reported symptoms beginning five days to two weeks following Carboplatin use. Metamorphopsia, altered colour vision and blind spots have been reported as forms of visual disturbance in previous literature. This case report discussed an example of bilateral sequential loss of vision following Carboplatin chemotherapy for a neuroendocrine tumour of the bladder.
Conclusion: It remains critical for ophthalmologists and oncologists to look out for ocular side effects of chemotherapy due to its devastating effects.

EP-ONC-12

Less is more: new one-step intracameral chemotherapy technique

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Purpose: To describe the feasibility of a new one-step approach to aspirate the aqueous and apply melphalan in a single-go without repeated entries into the anterior chamber.
Methods: This retrospective non-comparative study was conducted at a referral center and included 12 patients. The one-step approach is described in a step-wise manner. No complications were observed among the patients.
Results: One single injection of intracameral melphalan proved to be a successful treatment in nine cases. Two patients required a second injection, which was administered two weeks after the first one following the same technique.
Conclusions: This proved to be a reasonable technique for the smooth application of melphalan in the anterior chamber studded with retinoblastoma seeds. Our outcomes revealed that it is an effective, quick, and cost-effective technique. Longer-term data collection is underway, though initial findings are encouraging.

EP-ONC-13

Report of a case and review of iris vascular anomalies

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Purpose: Vascular lesions or anomalies of the iris stroma are generally considered to be quite rare and benign. They can be congenital or acquired, primary or secondary, isolated or with systemic associations, true neoplasms or simulating lesions, or hamartomas. Treatment choices for those vascular lesions are not standardized and should be tailored for each patient individually.
Case presentation: Vascular lesions of the iris stroma are generally considered to be quite rare and benign. A 77-year-old woman was referred to the hospital with a 6-month history of blurred vision and a mild discomfort in her right eye caused by spontaneous recurrent hyphema and a transient rise of intraocular pressure (IOP) due to a pigmented iris mass, as it was reported by a local ophthalmologist.
Anterior segment examination of the right eye revealed corneal epithelial edema, 2 mm of hyphema, and scattered/dispersed red blood cells in the anterior chamber. Right eye ultrasound biomicroscopy revealed an iris lesion at the

7-8 o'clock position, heterogeneous medium to high reflectivity, measuring 2,66x2,27 mm. The IOPs were 30 mmHg and 18 mmHg, on the right and left eye respectively. At first, she was treated conservatively. Hyphema was completely reabsorbed and IOP on the right eye dropped to 12 mmHg. It was decided to perform iridectomy with iridoplasty accompanied by phacoemulsification and intraocular lens implantation. During the 28-months follow-up period, there was no hyphema, rise in IOP or recurrence of the iris mass.
Conclusion: Iris varix is a rare condition that should be included with causes of spontaneous hyphema. If additional diagnostic tools are not provided, surgical approach should be considered as a primary choice due to the clinical similarities with iris melanoma.

EP-ONC-14

Intracranial capillary hemangioma with an intraorbital propagation in a three months old female infant

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Purpose: To present a case report of a female infant with an intracranial hemangioma expanding intraorbitally, treated by partial surgical removal followed by a medical therapy.
Case report: Otherwise healthy three months old female infant was referred for unilateral eyelid swelling, treated with local ofloxacin for a week with no effect. The examination showed unilateral proptosis, medial and inferior dislocation of the right eye without motility dysfunction, no changes on fundus and no signs of inflammation.
Further examination showed a small hemangioma of the right upper eyelid and the hip. A magnetic resonance imaging (MRI) of the brain and orbits revealed a large expansion arising from the right posterior skull base, crossing the middle cranial fossa and expanding through the optical canal into the lateral part and the roof of the right orbit. There were no signs of compressive neuropathy.
A thorough examination undertaken by the pediatric clinic excluded other systemic conditions. A neurosurgical radical resection of the orbital mass was performed along with a biopsy from the intracranial lesion. The histological examination confirmed a capillary hemangioma in a proliferative phase.
Since the tumor could not have been removed completely, a therapy with propranolol was indicated. Eight months later, the MRI showed complete regression of the orbital tumor and partial regression of the intracranial mass.
Conclusion: Once the intracranial and intraorbital capillary hemangioma was diagnosed, the urgent and interdisciplinary approach was carried out. The therapy of choice was partial surgical removal of the tumor, followed by the medical therapy with beta blocker propranolol. The next goal is to control the risk of amblyopia development and exclude the tumor reactivation.
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EP-ONC-15

Clinical presentations and outcomes of retinoblastoma patients in the Maltese population: an 11-year report

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Purpose: To investigate the clinical presentations, management and outcomes of retinoblastoma patients in the Maltese population. To our knowledge, this is the first documented study of retinoblastoma in Malta.
Methods: A retrospective study including all patients diagnosed with retinoblastoma from 2008 to 2019, in the Maltese population.
Results: The study included 12 eyes of 10 patients with retinoblastoma. Locally, the most reason for presentation was strabismus (46%), followed by leucokoria (31%). The median age at diagnosis was 19.6 months. 80% of patients had unilateral disease while only 20% developed bilateral retinoblastoma. No cases of trilateral disease were documented. The overall survival was 100%. Treatment included enucleation, transpupillary chemotherapy, systemic chemotherapy, intra-arterial chemotherapy and intravitreal chemotherapy.
Conclusions: All patients with retinoblastoma presenting within the time period of this study were included. Age at diagnosis was comparable to higher income countries worldwide. This is important as earlier diagnosis is a predictor of good visual and life prognosis. However, enucleation still remains an important life-saving procedure in cases of retinoblastoma.

EP-ONC-16

Aneurysmal bone cyst of the orbit: a rare cause of sudden exophthalmos

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Purpose: We present a rare case of a pediatric patient with unilateral recurrent orbital neoplasia.
Introduction: Aneurysmal bone cysts (ABCs) are non-malignant, tumor-like, vascular lesions. The average age at onset is 13 years. The incidence of ABC is 0.14 per 100,000 people per year.
Case report: A 15-month-old girl presented at the Department of Ophthalmology, University Hospital Olomouc, Czech Republic, with a sudden onset of a severe unilateral exophthalmos. There was no relevant past history, nor other accompanying symptoms.
An ophthalmological examination revealed axial proptosis of her left eye; other ocular findings were normal. An MRI scan of the brain and orbit showed a 23x17x15mm orbital, extraconal, solid lesion causing anterior displacement of the globe.
The patient was referred to the Department of Neurosurgery and underwent a transcranial superior orbitotomy for resection. The diagnosis of ABC was confirmed with histological examination and fluorescence in-situ hybridization (FISH).

Postoperative MRI showed partial decompression of the intraorbital contents with no distinct evidence of residual tumor.
At first, a gradual regression of exophthalmos was evident. However, four months later, an MRI scan showed a recurrence of the tumor in the lateral orbital wall. She underwent reoperation and the biopsy samples confirmed the recurrence of ABC. Unfortunately, the patient failed to show up for any scheduled appointments and was lost to follow-up.
Conclusion: Spheno-orbital ABC occurs very rarely in this age group. To our best knowledge, this is the second youngest patient reported to have this type of lesion. The proper management is complete surgical excision. Continued clinical and imaging surveillance is needed because of possible recurrence.
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EP-ONC-17

Modification of enucleation with using allograft

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Purpose: To evaluate the efficiency of modified enucleation with using allograft from subcutaneous fat with plantar aponeurosis (cadaver tissue).
Method: The novel technique of eye removal surgery by enucleation with using allograft from subcutaneous fat with plantar aponeurosis is developed (instruction of the Ministry of health of the Republic of Belarus from 26.03.2020N011-0320). The clinical study included 15 patients with the diagnosis of choroidal melanoma and 2 patients with retinoblastoma.
For clinical efficient evaluation of surgery we used a semi-quantitative method of assessment of surgical rehabilitation which includes 6 criteria of an objective examination (depth of ocular prosthesis position in an orbit in comparison with fellow eye, ocular prosthesis motility, symmetry of position of ocular prosthesis and fellow eye ("squint"), symmetry of palpebral fissure disclosure, assessment of cosmetic result by patient). The result has been estimated in points. 18 point is maximum number of points. The study was approved by the regional ethics committee.
Results: During the study the healing process was completed without significant complications in all cases. A moderate amount of postoperative inflammation (mild edema of conjunctiva) subsided within 5-7 days in all cases. Surgical complications as exposure, extrusion, infection of an orbital implant weren't noted. According to criteria of the semi-quantitative method of assessment of surgical rehabilitation high cosmetic and functional results (16-18 points in average) were noted.
Conclusions: Application of the modified enucleation with allograft provide high cosmetic, anatomical and functional result of surgery and improve the quality of life of patients with ocular tumors. In addition biomaterial is generally available in Belarus and doesn't require additional expense.

EP-ONC-18

Three years experience in Gamma knife radiosurgery for uveal melanoma in Lithuanian University of Health Sciences Kaunas Clinics

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Purpose: This study retrospectively analysed outcomes for patients undergoing Gamma Knife radiosurgery (GKR) for uveal melanoma (UM).
Methods: Patients who underwent GKR for UM between 07 2019 and 05 2022 at LUHS Kaunas Clinics, were retrospectively analysed. We evaluated patients' data (best corrected visual acuity (BCVA), intraocular pressure (IOP), UM diameter and thickness were measured by B-scan ultrasonography) before and after treatment every 6 months up to 40 months after GKR treatment. Divided patients follow-up groups were before and after GRK 6-12; 12-18; 18-24; 24-30; >30 months respectively. Patients with uveal melanoma were treated with Gamma-Knife-based stereotactic radiosurgery 25-30 Gy.
Results: Thirty-four patients (34 eyes) had primal UM. Patients with UM were followed for a mean of 21,84 ± 10,31 months after GKR treatment. A significant relative reduction of BCVA was not observed during follow-up.
The median of IOP before treatment was 12,45 [8,5 – 20,6] mmHg and in the18-24 months follow-up after GRK IOP was 16,8 [12,2-80,0] mmHg, p=,035).
The median of UM diameter preoperatively was 12,95 [9,09 – 18,8] mm vs. 12,45 [8,21 – 18,45] mm (p=0,182) postoperatively. A median of UM thickness preoperatively was 6,57 [3,5 – 11,58] mm vs. 5,25 [3,03 – 8,41] mm (p=0,026) postoperatively when evaluated 18-24 months after GKR.
Less than eighteen percent (6/34 patients) required enucleation after GKR.
Complications experienced by patients with UM after GKR include secondary glaucoma (9/34), secondary retinal detachment (5/34), radiation maculopathy (5/34), choroidal detachment (2/34), vitreous haemorrhage (2/34). Four patients experienced metastases (4/34) and four patients died (4/34).
Conclusions: Reduction of UM thickness was observed after Gamma Knife radiosurgery treatment, especially 18-24 months after. Increased IOP was observed after Gamma Knife radiosurgery treatment. Radiosurgery with Gamma Knife is a promising and advanced treatment for uveal melanoma.

EP-ONC-19

Comparison of two primary intraocular lymphoma experimental murine models

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Purpose: The research on experimental models of primary intraocular lymphoma (PIOL) helps to elucidate the pathophysiology of the disease and to find new therapeutical strategies. The purpose of this project was to compare the characteristics of two experimental murine models of PIOL.
Methods: PIOL was induced in immunocompetent mice by intravitreal injection of syngeneic DLBCL cell suspension. For mice strain C3H/HeN cell line 38C13 was used, for BALB/CaNn it was cell line A20. Following the injection, mice were monitored clinically 2 times per week. The experiment was terminated at the first signs of exophthalmos or on day 30. Eyes were collected post-mortem and histologically processed.
Results: Both mice strains show a high percentage of PIOL development. Disease progression is faster in C3H/HeN with exophthalmos occurring in all mice no later than day 21, on average on day 11. Vitreous involvement is a predominant sign in the clinical presentation of this group. In BALB/CaNn mice exophthalmos occurs on average on day 22.
At the same time, tumorous infiltration of the retina, tumorous infiltration of the optic disc, and tumorous retinal detachment are dominant signs. The difference in the development of exophthalmos is most probably due to the different affinity of cancer cells for orbital tissue.
Conclusion: PIOL has slower progression in BALB/CaNn strain with later or no occurrence of exophthalmos. The varying time of exophthalmos development is most probably due to the difference between the affinity of 38C13 and A20 cells for orbital tissue.
The primary affinity of the 38C13 cell line for orbital tissue can explain earlier development of exophthalmos in C3H/HeN mice. This and the fact that the PIOL progression is slower in BALB/CaNn strain predisposes the latter to be more suitable for therapeutic experiments planned in the future.
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EP-ONC-20

Uveal melanoma cells exhibit variable growth patterns and distinct mitochondrial respiration profile compared with primary human uveal melanocytes

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Purpose: Uveal melanoma is a deadly cancer with high metastatic potential. Mitochondrial metabolism and epigenetics are known to play a role in tumorigenesis, progression, and metastasis. However, primary human uveal melanocytes are difficult to obtain, and the metabolic state of malignant versus benign uveal melanocytes has not been well characterized.
We describe the morphologic patterns, growth rate, and mitochondrial function of uveal melanoma cell lines compared with successfully isolated primary human uveal melanocytes.
Methods: Primary human uveal melanocytes were isolated from six donor eyes and successfully propagated in 2D cell culture. Photographs were obtained using inverted microscopy. Growth curves were determined using timed seeding and counting. Oxygen consumption under four respiratory states was measured using Seahorse. These were compared with two uveal melanoma cell lines, MP46 (highly adherent), and MP65 (partially suspended). Student t-test and its derivatives were used for statistical analysis as appropriate.
Results: In 2D cell culture, uveal melanoma MP46 and MP65 cell lines formed primitive colonies with light to moderate pigmentation, while primary uveal melanocytes formed higher order patterns with heavy pigmentation.
In addition, uveal melanoma MP46 cells grew faster than PK3 and PK4 benign melanocytes. Metabolically, uveal melanoma MP46 cells showed a glycolytic metabolic profile with statistically significant decrease in basal respiration, increase in proton leak respiration, and decrease in coupling efficiency when compared with PK4 primary uveal melanocytes.
Conclusions: Uveal melanoma cell lines showed distinct morphological, physiologic, and metabolic characteristics compared with benign uveal melanocytes. Interestingly, despite increased growth rate, MP46 uveal melanoma cells showed decreased coupling efficiency compared with PK4 primary uveal melanocytes.

EP-ONC-21

Von Hippel-Lindau disease: a case report and review of literature

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Purpose: Von Hippel-Lindau (VHL) syndrome is a hereditary autosomal dominant disease which affects several organ systems. It is characterized by the development of multiple malignant and/or benign tumors in the central nervous system and internal organs, such as retina, liver, pancreas, reproductive tract, kidneys and adrenal glands.
Case report: Here we present a case report of a young male patient who was diagnosed with VHL syndrome based on the presence of several characteristic lesions affecting brain, kidneys and retina also positive family history for VHL-associated tumors. The patient was diagnosed with an optic nerve head

hemangioblastoma on the left eye. He was previously treated multiple times due to the presence of histopathologically proven cerebellar hemangioblastomas. CT scans of the abdomen and lower pelvis region revealed bilateral kidney changes in a form of multiple fat poor angiomyolipomas and renal cysts, also there was a focal mass in the right kidney which raised suspicion of renal cell carcinoma and needed further monitoring and treatment.

Conclusion: Due to the complexity associated with the management of various VHL manifestations, the diagnosis and the follow-up of VHL patients represents a challenge in the clinical practice and needs multidisciplinary approach.

EP-ONC-22

Management of conjunctival intraepithelial neoplasia with cyclosporine A and mitomycin C combination: a case series

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Purpose: We present clinical features and treatment results of 4 clinical cases of conjunctival intraepithelial neoplasia surgically and medically treated at our clinic.

Method: This was a prospective case series of 4 patients histologically diagnosed with conjunctival intraepithelial neoplasia. We collected data regarding the size and the characteristics of the tumor, the clinical and histological diagnosis, and the prognosis.

Results: We diagnosed four cases of conjunctival intraepithelial neoplasia in the study period. The median age of patients was 77 years (range: 58-84 years). All four of them were male. The widest diameter of tumors ranged from 2.5 mm to 10 mm (mean = 4.9 mm). The mean tumor thickness was 3,75 mm (range = 2-7 mm). All four patients in this series received the same surgical and medical treatment.

We preferred the "no-touch technique" for the surgical excision. The amniotic membrane transplantation stabilized the excised area with the fibrin glue (Tisseel). Postoperatively patients were treated with topical Cyclosporine A (CsA) and topical Mitomycin C (MMC). There were no recurrences after 18 months of follow-up.

Conclusion: A combination of topical CsA (0.05%) and topical MMC (0.01%) prevented tumor recurrence and resulted in excellent healing of the ocular surface as an additional treatment after surgical resection. The "no touch technique" prevented the seeding of tumor cells. The amniotic membrane technique should be preferred in patients with large scarring, symblepharon, or the possibility of future glaucoma surgery.

It has been shown that applying adjuvant treatments together with total surgical excision results in a lower recurrence rate in diffuse tumors with corneal involvement.

EP-ONC-23

The yield of cancer diagnosis in patients being referred to the adnexal periocular oncology service through the 2-week wait referral pathway

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Purpose: There are defined referral criteria for ocular and orbital. However, such standards are not defined for periocular tumours; currently 2-week wait referrals are being sent using forms which are not specific for adnexal skin cancers. As a result, referrals have been of poor quality which are difficult to triage, overburdening 2-week wait clinics.

The aim was to see how many patients currently being referred via the 2-week wait pathway were diagnosed with cancer and how we can enhance the utilisation of this pathway to increase the yield of cancer diagnosis coming through the service.

Method: We performed a retrospective review of all patients referred to the lid oncology service using the 2-week wait pathway between July 2019 to June 2022. Electronic records were reviewed to assess patient demographics, referral quality, and referral outcome.

Results: A total of 173 patients were reviewedwith an average age of 64. Most referrals only described the lesion as "growing in size". Only 35% of referrals stated whether there were risk factors for skin cancer.

Current 2-week wait referral pathways result in a 1 in 10 cancer diagnosis for patients being referred to the adnexal skin cancer service. The most common cancer diagnosis was basal cell carcinoma. The two most common non-cancer diagnoses were papilloma and chalazion.

Conclusion: The low cancer yield is due to poorly written and non-specific referrals forms. We have developed a bespoke periocular skin cancer referral proforma and will investigate the impact of its use on the 2-week wait pathway.

EP-ONC-24

Periocular sun awareness in the adnexal clinic

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Purpose: 5-10% of all skin cancers arise in the periocular skin, with basal cell carcinoma accounting for 90% of cases of malignant eyelid tumours. Whilst the link between skin cancer and sun exposure has been well established, patient awareness of periocular sun protection is not widely publicised.

We investigated the patient-specific variables increasing the risk of periocular skin cancer, to identify a role for the ophthalmologist to incorporate sun protective advice into the consultation.

Method: Patients presenting to the Adnexal clinic at Moorfields Eye Hospital from June-September 2022 were invited to complete a 29-question survey covering:

1. Patient demographics,
2. Risk factors for skin cancer,
3. Subjective awareness of sun protection and skin cancer,
4. Objective awareness of sun protection and skin cancer,
5. Level of advice received.

Significance was assessed by the Fisher Exact Test.

Results: 106 patients, 37.7% male (n=40) and 62.3% female (n=66) responded. On the face, sunscreen was applied most commonly to the cheeks (n=75), then forehead (n=69), nose (n=68), neck (n=52), ears (n=37) and finally the periocular region (n=26).
35.8% (n=38) of patients were aware of periocular skin cancer, and 10.4% (n=11) had received periocular sun protection advice from their ophthalmologist. Those who were informed by their ophthalmologist ($p<0.05$) and those who were already aware of periocular skin cancer ($p<0.05$) were significantly more likely to apply sunscreen to the periocular region. Prior awareness of periocular skin cancer correlated with increased use of hats or caps and reduced desire to seek a tan.
Conclusion: Patients attending the Adnexal clinic were insufficiently aware of periocular skin cancer. As awareness of the risk to the periocular region and information given by the ophthalmologist significantly correlated with improved sun protection behaviour, a simple informative intervention is likely to result in better periocular sun protection measures.

EP-ONC-25

Challenges in the treatment of squamous-cell carcinoma in monocular patients

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Purpose: Assessment of treatment options for patients with only one viable eye suffering of a corneoconjunctival tumor with a clinical highly suggestive aspect of a squamous-cell carcinoma.
Methods: A prospective study included 9 patients that were examined over the course of the year 2021. All patients underwent a complete ophthalmological examination, with photographs of anterior segment. 5 Fluorouracil 1%(5FU) instillations were applied 3 times a day for 3 weeks, followed by a week of artificial tears with hyaluronic acid. Surgical excision by a no touch technique was performed and mitomycin C 0,3% (MMC) was applied. The anatomopathological examination confirmed the positive diagnosis for squamous-cell carcinoma.
A week after surgery, treatment consisted in topical administration of 5FU, 1 drop 3 times a day for 3 weeks followed by a week of artificial tears with hyaluronic acid. This regimen was repeated 3 times. Anterior segment photographs were performed at 1, 2, 3 and 6 month and 1 year follow up. An independent team of 2 doctors have examined pre-op and post-op images of the anterior segment.
Results: All eyes included in this study underwent a reduction in tumor size from the initial regimen of 5FU drops. Of those 9 patients, only 7 have completed their 1 year follow up. During this time only 1 patient had developed corneal ulcer during their 3rd round of 5FU after surgery. Clinical examination at follow ups provides evidence of a favorable evolution with no tumor recurrence.
Conclusion: Treatment in ocular surface squamous-cell carcinomas in monocular patients is challenging. Many of these tumors are unable to be excised within oncological limits while maintaing the eye globe. The following study presents arguments for a conservative treatment in which the no touch excision technique combined with intraoperative administration of MMC and topical 5FU could represent a safe alternative to preserve a functional eye.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Paediatric Ophthalmology & Strabismus

EP-PED-01

Corneal Fourier and Belin/Ambrósio enhanced ectasia analysis in healthy 4-year old Caucasian children

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Purpose. We sought to provide normative databases of Fourier analysis (FA) and Belin/Ambrósio Enhanced Ectasia Display (BAD) in a cohort of healthy Caucasian four-year-old emmetropic children.
Methods. FA parameters analyzed were: spherical component (SRmin), spherical eccentricity (SEcc), maximal decentration (MD), regular astigmatism at the center (Astigm. C) and periphery (Astigm. P) and irregularity (I). The parameters obtained by BAD included: summary indicator BAD D, anterior corneal curvature (K1 and K2, D), maximal keratometry (Kmax, D), maximal Ambrósio Relational Thinnest (ART max), pachymetric and BAD indices.
Results. This cross-sectional study included 89 eyes of 89 four-year-old children. Mean values of FA parameters were as follows: SRmin 7.77, SEcc 0.600, MD 0.160, Astigm. C 0.070, Astigm. P 0.050 and I 0.019.
The mean K1 and K2 in our study group were: 42.92±1.29 D and 43.75±1.41 D, with the mean BAD D value 0.42±0.67.
Mean PPI min 0.629±0.117, PPI max 1.059±0.155, PPI avg 0.847±0.103, Kmax 44.10±1.39 and median of ARTmax 515.0 were recorded.
We found no statistically significant differences between genders in any of FA or BAD parameters.
Conclusion. This is the first study providing large normative data on FA and BAD in four-year-old Caucasian emmetropic children.

EP-PED-02

Parental involvement in shared decision making process in pediatricstrabismus treatment

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Objective: The aim of this study was to evaluate parental involvement in Shared Decision Making in children's strabismus care and the relationship be-

tween parents' satisfaction with surgery outcome and shared decision-making score, parental education level, children's age at time of surgery and motor surgery outcome.

Material and methods: A structured SDMQ9 questionnaire and the level of satisfaction with surgery results with a four point Likert scale was used for data collection from parents of children with concomitant strabismus. A mean score of 3.0 and above was used as an acceptable response for a high level of satisfaction.

Results: Parents of children with concomitant strabismus had a good perception of the SDM process with a high mean score of 32 (IQR = 5). Parental satisfaction with surgery outcome was good (median score of 3). The postoperative satisfaction was rated as excellent by 19 (15.6%; 95%CI 10-22.8) parents, good by 50 (41%; 95%CI 32.6-49.8), fair by 44 (36.1%; 95%CI 28-44.8) and poor by 9 patients (7.4%; 95%CI 3.7-13).

In keeping with our hypotheses, perceived SDM significantly correlated with the participants' education level. Parental satisfaction with the quality of health care was related to perceived shared decision-making and education level and unaffected by children age and postoperative motor outcome.

Conclusions: The education of the respondents are significant predictors of SDM score as well as of parental satisfaction with strabismus surgery results. When physicians encourage parents/relatives to be actively involved in making treatment decisions for their children through the SDM process while presenting a wide range of information at the start of strabismus therapy, parents' effective decision-making may improve; as a result, parents' overall treatment satisfaction may improve.

EP-PED-03

The long-term surgical outcomes of esotropic Duane retraction syndrome type 1

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Purpose: To evaluate the long-term surgical outcomes of esotropic Duane retraction syndrome (DRS) type 1.

Methods: Records of 25 patients with esotropic type 1 DRS who underwent strabismus surgery and were followed up for at least 2 years were retrospectively reviewed. Surgical motor success was defined as esotropia (ET) and exotropia (XT) of 8 prism diopters (PD) or less in the primary position.

Results: The 2-year postoperative success rate was 78% and the final success rate was 76% after an average follow-up of 5.6±3.4 years. Mean angle of deviation in the primary position changed from 20.8±19.2 PD ET to 1.6±8.6 PD ET at 1 year and 1.4±7.6 PD XT at 2 years, showing a mean exodrift of 0.98±3.8 PD per year.

The average grade of abduction limitation on the affected side improved from -3.7 to -2.0. Abnormal head position of less than 5 degrees was achieved in 21 patients (84%) and 5 patients (20%) required reoperation.

Different types of surgeries, including bilateral medial rectus (MR) recession (with or without lateral rectus Y-splitting), unilateral MR recession (with or without posterior fixation suture), and MR recession with superior rectus transposition were performed with success. However, unilateral MR recession was a risk factor for undercorrection (p=0.021).

Conclusion: DRS is complicated to treat due to its wide spectrum of clinical presentations and the treatment of choice varies among surgeons. In this study, the long-term surgical outcomes were favorable in esotropic DRS type 1 except for unilateral MR recession which showed significant undercorrection.

EP-PED-05

Pediatric cataract and congenital aniridia: Manifestations and Management

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Purpose: To report the improvement of visual acuity in a patient with cataract and congenital aniridia who underwent cataract surgery with intracapsular lens implantation.

Methods: Case report.

Results: A 16 years old girl with bilateral absence of iris structure since birth complained of worsening blurred vision in the last 3 years. This patient had a history of systemic lupus erythematous. Based on the ophthalmology examination, the visual acuity of the right eye was 1/300 and the left eye was 0.5/60. In anterior segment of both eyes there were ptosis, nystagmus, keratopathy, aniridia and lens opacity. The intraocular pressure was 25,5 mmHg for the right eye and 23,3 mmHg for the left eye. The posterior segment was difficult to evaluate because of the lens opacity.

Gonioscopy and perimetry examination showed an open angle in all quadrant and double arcuate pattern in both eyes. This patient was diagnosed with bilateral congenital aniridia, corneal opacification, ocular hypertension due to aniridia, immature cataract, nystagmus, and ptosis. Pediatric department diagnosed the patient with lupus nephritis.

Beta blocker eye drop twice a day and prostaglandin analogue eye drop once a day was given in both eyes to controlled the intraocular pressure. Cataract extraction and intracapsular lens implantation was performed and resulted in visual acuity improvement to 6/60 in both eyes. The foveal hypoplasia was found in posterior segment examination.

Conclusions: In this case, cataract extraction improve the vision. However, the visual acuity could not be optimally corrected due to the other ocular abnormalities including foveal hypoplasia and corneal opacification.

Keywords: Pediatric Cataract, Congenital Aniridia, Cataract Extraction

EP-PED-06

OCTA of superficial retinal and choriocapillaris vascular density in myopic children

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The purpose of this study was to evaluate the associations between retinal vessel density, choriocapillaris vasculardensity and choroidal thickness of macula in pediatric myopic eyes, using OCT angiography correlation with axial length.

Setting: Participants were recruited in Tbilisi State Medical University, Department of Pediatric Eye Diseases and Caucasus Medical Centre.

Methods: 96 eyes of 48 subjects with myopia and 40 eyes of 20 age-matched, emmetropic volunteers (control group) were enrolled in this study. Myopia was defined as spherical equivalent <– 1.0 diopter. Emmetropic subjects were defined as having spherical equivalent from + 0.5 to − 0.5 diopter. The mean axial length (AL) in myopic patients was 24.69 mm (SD ± 0,88) and 22.88 mm (SD ± 0.65) in the controls.

The patients aged 7–16 years underwent complete ophthalmic examinations. Retinal vessel density, choriocapillaris vasculardensity and choroidal thickness of macula were measured SS-OCTA DRI triton (Topcon Tokyo Japan)as well.Ultrasound biometry performed to obtain the AL

Result: The whole RVD and parafoveal RVDwere significantly higher in controls than in the myopic subjects. In overall subjects we found significant correlation between axial length and all the investigative parameters: age, whole RVD, parafovea RVD, fovea RVD. Similarly, in this group the spherical equivalent also correlated with age, whole RVD and parafovea RVD. The choroidal thickness of the more myopic eyes was signifcantly thinner than less myopic eyes (P≤0.001); the vascular density of choriocapillaris in the more myopic eyes was signifcantly less than the less myopic eyes

Conclusion: In conclusion, we found a significantrelation between axial length; choroidal thickness and retinal vessel density of macula in myopic children using SS-OCT. Our results suggest that superficial retinal vessel density and choriocapillaris vasculardensity are decreased in the entire group of the myopic children compared to emmetropic subjects.

EP-PED-07

Long-term changes in astigmatism of children with high astigmatism

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Purpose: To investigate the long-term changes in astigmatism and the factors related to the progression of astigmatism in children with high astigmatism.

Method: We retrospectively reviewed the medical records of children aged 2 to 10 who showed greater than 2 diopters monocular or binocular astigmatism and were followed up for more than 5 years. The astigmatism was measured at the first visit, 3 years and 5 years after the first visit by using cycloplegic refraction and auto-refractometer. Long-term changes in refraction were analyzed by linear regression analysis. The children were classified into two groups by the changes of astigmatism for the first 3 years.

Children who showed more than 1 diopter increase of astigmatism were the progressive group and those who showed less than 1 diopter were the stationary group. Demographics and clinical characteristics were compared between the two groups, and the factors related to progression were analyzed by logistic regression analysis.

Results: A total of 168 eyes were included, and the average age was 4.49 ± 1.34 years, and 73 (43.5%) eyes were male. Average astigmatism at the first visit, 3 years and 5 years after the first visit was -3.67 ± 1.07 D, -3.85 ± 1.14 D, -3.94 ± 1.13 D, there was a significant difference between the first visit and 3 years(p=0.005), but no significant difference between 3 years and 5 years. As astigmatism at the first visit was lesser, the 3-year astigmatism change significantly increased (p<0.001).

There was no significant difference in age, visual acuity, and astigmatism at the first visit between the progressive and stationary groups. The risk of progression of astigmatism was significantly higher in the presence of epiblepharon(OR 3.130,p=0.014).

Conclusion: In children with high astigmatism, astigmatism progressed until a 3-year follow-up, but did not change after that. Epiblepharon was associated with the progression of astigmatism.

EP-PED-08

The frequency and manifestations of ocular causes of abnormal head posture

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Purpose: To determine the frequency and manifestations of different ocular causes of abnormal head posture (AHP).

Patients and Method: This prospective, consecutive case series study was performed on 149 patients with ocular AHP from February 2020 to June 2021. The manifestation of AHP was determined by direct observation from three viewing angles during recording the best-corrected visual acuity. In front, above, and lateral gazes, observations were performed to find head tilt, face turn, and chin abnormal position, respectively. The amount of head tilt was measured by calculating the angle between the line that connects the lips center to the center of the eyebrows and the vertical line using the Corel Draw X7 computer software.

Results: The mean age of 149 patients with ocular AHP [101males and 48 females] was 16.2 ± 12.2 years. The most common ocular sources of AHP were found in 66 (44.3%) patients with superior oblique palsy (SOP), 54 (36.2%) cases with Duane's retraction syndrome (DRS), and 12 (8.1 %) patients with nystagmus. The most common manifestations of AHP in all cases were "pure face turn" (48.3%), followed by "pure head tilt" (24.8%), "simultaneous head tilt and face turn" (20.8%) and "chin up" (6.0%).

Conclusion: The most frequent ocular sources of AHP were SOP, DRS, and nystagmus. In addition, pure face turn and pure head tilt were the most common manifestations of ocular AHP. Patients with the same diagnoses might have different manifestations of AHP, and this issue should be considered in the disease's diagnosis.

EP-PED-11

Ophthalmology cases in Paediatric A&E Department

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Purpose: To analyse cases of patients seeking ophthalmologist's help in Paediatric Accident and Emergency Department (A&E).

Material and method: Records of 618 patients aged 0 – 17 years (mean age 9 years) consulted by an ophthalmologist for A&E were retrospectively reviewed. Presented symptoms, final diagnosis, need for treatment of hospitalization were analyzed.

Results: In the analyzed group 405 cases (66%) needed ophthalmic treatment, in 385 (95%) of those cases conservative treatment was sufficient. From the whole group only 35 (8,6%) patients were admitted to Ophthalmology Ward.

Surgical treatment was needed in 19 (4,7%) cases. The most common cause for seekeing help are eye or head injury, "red eye syndrome", foreign body sensation, palpebral oedema, headaches. Most of the patients (132) were diagnosted with conjunctivitis.
Other frequent diagnoses consisted of chalazion/sty, corneal foreign body, corneal erosion, subconjunctival haemorrhages. In 113 patients (18%) there were no abnormalities in ophthalmic examination.
Conclusion: Most of the patients seekeing emergency ophthalmic help didn't need urgent treatment. It can be related to unsufficient number of Eye Clinics for children, pediatricians being reluctant to treat ophthalmic diseases or low level of parents' education regarding ophthalmic problems of their children.

EP-PED-15

Change in choroidal thickness in Scandinavian myopic children during 6 months of single-vision spectacle use followed by 3 months of orthokeratology treatment

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Purpose: Treating children for myopic progression with orthokeratology lenses (ortho-k) induces short-term chance in choroidal thickness, which has been well described in children from Asian populations.
We investigated change in choroidal thickness in eyes of Scandinavian myopic children during 6-month of single-vision spectacle use followed by 3 months of ortho-k treatment.
Method: Eighteen myopic Scandinavian children (mean age 11 years and 6 months±1 year and 9 months, mean spherical equivalent -3,1±1,5 diopters) were included. Choroidal thickness was measured 6-months prior to initiation of ortho-k treatment, at baseline, day 3, day 7, 1 month and 3 months after initiation of ortho-k treatment.
During the pre-treatment period the children used single-vision spectacles. Macular choroidal thickness was assessed by swept source optic coherence tomography (ss-OCT) (Triton, Topcon, Tokyo, Japan) in nine segments according to Early Treatments Diabetic Retinopathy Study subfields.
Results: The mean choroidal thickness of all nine segments showed large inter-individual variation at study start (164 to 303mm) and after 3 months of ortho-k treatment (176 to 312mm). During the 6 months of single-vision spectacle use the mean choroidal thickness decreased significantly (change 8±12mm, $P< 0.02$, paired *t*-test) followed by a gradient increase of 9, 12, 16 and 27mm at day 3, day 7, 1 month and 3 months, respectively. The increase of 27±44mm at 3-months after initiation of ortho-k treatment was significant compared to baseline ($P< 0.02$, paired*t*-test).
Changes in choroidal thickness in all 9 segments will be presented.
Conclusion: Choroidal thickness significantly decreased during 6 months of single-vision spectacle use followed by a significant increase 3 months after initiation of ortho-k treatment in Scandinavian myopic children.

EP-PED-16

Helveston syndrome - a case report

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Background: Helveston syndrome is a combination of A pattern strabismus with DVD.
Case presentation: We report an rare syndrome of Exo"A" pattern, superior oblique muscle hyperfunction and dissociated vertical deviation. It refers to a 6-year old boy who presented with reading complaints and asthenopia. The orthoptic assesment revealed no stereopsis, Titmus test was negative, small exotropia in primary position and a 45 DP deviation in down gaze and adduction. After dissociation our patient presented a 16 DP DVD in the nonfixating eye and less in the fixating eye. The clinical assesment revealed BCVA both eye 1 and fundus incyclotorsion more in the LE. We performed both eyes SO tenonomy and 7 mm SR reccesion.
Conclusion: We present the surgical treatment of a very complex and rare syndrome.

EP-PED-17

Surveillance of vision and ophthalmic disorders in preschool children in early education and care settings

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Purpose: This study is to evaluate the accessibility and prevalence of refractive errors, amblyopia, stereopsis, strabismus, and eyelid disorders in preschool children receiving early education and care services.
Method: A total of 93 children aged 1-6 years from 2018 to 2022 with one or more of the following disorders were examined: autism spectrum disorder, emotional disorders, attention-deficit hyperactivity disorders, psychological development disorders, developmental disorders of speech and language, and developmental disorders of motor function.
Ophthalmic examinations include refractive errors, best-corrected visual acuity, stereopsis tests with Titmus test and random-dot stereograms, ocular alignment, and eyelid disorders.
Results: Among the 93 children, 6 children had strabismus (6.5%) and 8 children had eyelid disorders (ptosis in 3.2% and entropion with trichiasis in 5.3%). The accessibility of automatic refraction 68%, best-corrected visual acuity 26%, and stereopsis tests 45%. Among the 64 children with attainable refractive errors without cycloplegia, 16 (17.2%) children had myopia <0.5D, hyperopia >+3D, or astigmatism < -3D. Eight in 25 of the children who could tolerate visual acuity test had amblyopia (32%). Amongst the 42 children with attainable stereopsis test results, 8.6% children failed the exam. Only 8 children had visited an ophthalmologist prior to the surveillance.
Conclusion: To our knowledge, this study is the largest on vision and ophthalmic disorders in preschool children with developmental, behavioral, and emotional disorders. These children are less likely to cooperate the exams, and ophthalmic disorders are often neglected. A high prevalence of amblyopia was noted in these children.

It is suggested that children with developmental, behavioral, and emotional disorders should be examined for the eyes, and it is applicable to be combined with the early education and care settings.

EP-PED-18

Atypical ophthalmoscopic lesions and microcephaly in congenital Zika virus infection

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Congenital Zika virus (ZIKV) infection has been associated to microcephaly and ophthalmoscopic alterations, mainly macular hemorrhages and retinal atrophy. Being rare in our environment, the diagnosis can pose a challenge. Here we present a case report of congenital ZIKV infection in a low-birth-weight preterm infant, with microcephaly and retinal hemorrhages of atypical location that evolved into a hypertrophic lesion.
Our patient was admitted to the neonatal care unit with multiorgan failure after an emergency cesarean section. He had microcephaly and bilateral retinal hemorrhages. On opthalmoscopic examination, the right eye (RE) showed a foveal superficial hemorrhage and several intraretinal hemorrhages scattered throughout the 4 quadrants of the peripheral retina that resolved within 4 to 8 weeks.
The left eye (LE) presented with a large sub, intra and preretinal hemorrhage external to the posterior pole and next to the optic nerve head, that progressively turned into a chorioretinal hypertrophic scar with a pigmented, fibrosed and elevated border. The mother had travelled to Cuba during the first term of pregnancy. Metabolic disorders and different congenital infections were ruled out.
Laboratory tests came positive only for IgG, so congenital ZIKV infection was suspected based on clinical examination and epidemiological data. There are different possible etiologies for the retinal hemorrhages found in the RE, but neither retinal hemorrhages at birth nor microcephaly cause the lesion observed in the LE.
Therefore, even though chorioretinal lesions in congenital ZIKV infection typically affect the macula and are atrophic, lesions external to the arcades may also occur and can evolve into a hypertrophic cicatricial lesion.

EP-PED-19

Atypical strabismus and visuoperceptive disorder as a form of presentation of a complex cerebral malformation in a 9-year-old patient

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Thanks to prenatal ultrasound diagnosis, serious brain malformations rarely go undetected. However, we present the case of a complex brain malformation diagnosed in a 9-year-old girl with atypical strabismus and visuoperceptive disorder as the form of presentation.
The patient was facing difficulties at school and was referred to the ophthalmologist for suspected refractive error and strabismus. On examination, microesotropia with an inferior and lateral right rectus paresis was observed. She had no stereopsis despite the presence of binocular fusion and showed a low performance in the copy condition of the Rey-Osterrieth Complex Figure test.
While the magnetic resonance imaging (MRI) of the orbits was normal, the brain MRI revealed a complex cerebral malformation that affected mostly the right cerebral hemisphere, with corpus callosum agenesis and left hemimegalencephaly mainly at the expense of the ventricular system.
Whenever an atypical strabismus is observed, especially in patients with school difficulties or neurodevelopmental disorders, it is essential to perform an exhaustive organic and functional ophthalmological examination to rule out the presence of visuoperceptive disorders, as they are both red flags for brain malformations.

EP-PED-20

Visual and refractive outcome after 12 years of treatment of type 1 prethreshold retinopathy of prematurity (ROP) in Southeast Bulgaria

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Purpose: To present the best corrected visual acuity (BCVA) and refraction in prematures after 12 years of treatment of type 1 prethreshold ROP in Southeast Bulgaria and compare the results between laser and cryotherapy.
Methods: Since year 2010, 319 eyes of 164 prematurely born children were treated for type 1 prethreshold ROP and were prospectively followed up. Mean (range) gestational age was 28.6 wg (23 – 33), and mean (range) birth weight – 1143 grams (570 – 1990). Cryotherapy was applied on *76 eyes (23.2%)*, laser – in *215 eyes (65.5%)*, anti-VEGF – in *10 eyes (3%)* and surgery – in *18 eyes (5.5%)*.
Twelve children (*24 eyes (7.3%)*) were lost to follow up. BCVA was tested in 114 eyes and refraction – in 190 eyes. Due to the small number of eyes, treated surgically or with anti-VEGF (18 and 10 respectively), the eyes of these children were not included in the statistical analysis.

Results: Fifty eyes showed BCVA *between 0.6 – 1.0*; 25 eyes – *between 0.2 - 0.5*; 5 eyes – *between 0.04 – 0.1;*5 eyes *between light perception – 0.03*and 4 eyes were *totallyblind*. Laser treated eyes showed statistically significant higher BCVA compared to cryo treated eyes (*Fisher`s exact test, p=0.012*). Myopia (*any myopic refraction*) was found in 50 eyes; hyperopia (*> +2 D*) – in 20 eyes; astigmatism (*difference between the two principal meridians > 0.75 D*) – in 70 eyes and emmetropia – in 30 eyes.
Although in laser treated group more eyes showed emmetropic and hyperopic refraction compared to cryo treated group (25 eyes vs 7 eyes - emmetropia and 15 eyes vs 5 eyes - hyperopia respectively), the difference did not reach statistical significance (*Fisher`s exact test, p=0.106*).
Conclusion: Timely treatment of type 1 prethreshold ROP leads to very good anatomical and functional results. Laser treatment leads to significantly higher BCVA, compared to cryotherapy. Astigmatism is most common refractive error in our patients. Emmetropia and hyperopia are more commonly seen in laser treated eyes.

EP-PED-21

Botulinum Toxin A in Treating Cyclic Esotropia: Case Series and Literature Review

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Purpose: Cyclic strabismus is a rare entity with an incidence of 1 in 3,000-5,000 newly diagnosed cases of strabismus. It is unique as it follows variable but reliable time cycles where they alternate between orthotropia and strabismus, most commonly in the form of esotropia. Despite multiple theories its pathophysiology remains unknown.
Methods: A search for the diagnosis of “cyclic strabismus” or “cyclic esotropia” was performed in the medical records of patients treated by 2 senior Pediatric Ophthalmologists and Strabismologistswith a combined experience of more than 40 years.
Results: Four cases of cyclic strabismus were identified and all 4 cases were of cyclic esotropia. Ages ranged from 10 months to 8 years. Three were females and the fourth was a male. Presentation to an ophthalmologist ranged from 1 to 8 weeks from the onset of their cyclic esotropia with 3 out of the 4 patients presenting in the cyclic phase and the fourth presenting with a constant esotropia after a clear history and photographically documented cyclic esotropia for the preceding month.
The angle of esotropia on strabismic days ranged from 25 to 35 prism diopters in all 4 cases and cycle duration was 48 hours in all cases (24 hours of esotropia followed by 24 hours of orthotropia). All 4 cases were treated with Botulinum Toxin A injections to both medial recti and achieved excellent alignment up to last follow up ranging from 12-24 months.
Discussion: Cyclic esotropia is an elusive diagnosis that might be easily overlooked. When identified classical treatment is usually in the form of extraocular muscle surgery targeting the largest angle of deviation on strabismic days and yields excellent results. Many non-surgical treatments have been tried with no avail.
Recently a single report of successful treatment using prism therapy and multiple reports with variable follow up periods also demonstrated the efficacy of Botulinum Toxin A as an alternative treatment for cyclic esotropia.

EP-PED-22

Comparison between direct vision and microsurgical strabismus surgery

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Purpose: In the past, strabismus correction operations were mostly performed under direct vision, which caused more postoperative complications. In recent years, microsurgery has been used in strabismus surgery. The purpose of this study is to evaluate the difference between both procedures regarding complications and postoperative strabismic angles.
Methods: Medical and operating records of all 46 patients with concomitant strabismus who had undergone strabismus surgery at our department from January 2015 to January 2023 were retrospectively reviewed. All surgeries were performed under general anaesthesia. The mean age was 20,4 years (min. 6, max. 65). The male/female ratio was 23/23. The patients were divided into two groups. The first group included 20 patients undergoing direct vision surgery, and the second group included 26 patients undergoing the microsurgical technique. Follow-up was at least three months.
Results: During the follow-up, the total incidence of complications in the microsurgical group was lower than that in the direct vision group regarding muscle slippage, conjunctival congestion, and scar formation. The average postoperative angle was 6,1˚ in the first and 5,5˚ in the second group.
and not statistically significant between both groups during the follow-up of at least three months but were smaller in the second group.
Conclusions: With the continuous development of microsurgery technology, strabismus surgery under a microscope has been widely used in the clinic in recent years. Microsurgery has become safer, more precise and accurate, and it has overcome traditional surgical techniques.
Microsurgical strabismus correction can accurately and regularly share the depth of the position passing through the sclera. The results of our study confirm that microsurgical strabismus surgery should be the method of choice in the future.

EP-PED-23

The progression of myopia in school-aged children with prolonged screen time: a real-life sequel to the mandatory virtual learning during COVID-19 pandemic

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Purpose: To monitor the effect of prolonged screen time on myopic progression and its attributed factors among school-aged children due to mandatory virtual learning during the COVID-19 pandemic.
Methods: A retrospective cohort study on children aged 6 to 12 years attending regular visits to the pediatrics ophthalmology clinic was conducted in a tertiary eye hospital in Eastern Province, Saudi Arabia. The cycloplegic refraction was determined from three visits at least six months apart; two visits

before the start of the COVID-19 pandemic and one during the pandemic.
Data were collected regarding myopia risk factors such astime spent at near-work and outdoor activities, devices used during virtual learning, and others. Statistical analysis was conducted to compare myopia progression before and during the pandemic, with a P-value of 0.05.
Results: In total, 160 eyes were studied, 18% of which had myopia, and 81.9% had hyperopia. Most eyes had a hyperopic shift before the confinement; however, all eyes had a myopic shift during the confinement. when comparing both eyes of the same patient, the more myopic or the less hyperopic eye in the same patient had significantly more myopic shift than the other eye.
Participants using tablets were found to have more myopic shifts (p=0.03) than those using televisions (p=1.00) and personal computers (p=0.135). In addition, younger age, constricted living space, negative family history of myopia, and parents' education were positive factors for myopic progression.
Conclusion: Myopia progression was accelerating in children during the COVID-19 pandemic.Hours spent on digital screen devices at near distances might be a significant environmental contributor to the myopic shift in children.

EP-PED-24

Papillary cupping measured with OCT in children with a history of prematurity

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Purpose: To determine the papillary excavation in children with a history of prematurity.
Material and methods: A Cross-sectional study made up of premature children born between 2008 and 2011 and who were examined between 5 and 8 years of age. The criteria for entering the premature infant follow-up program were: being born at less than 32 weeks of gestational age or weighing less than 1500 g. All participants underwent a complete ophthalmological examination. The cup/disc ratio was obtained with the Topcon 3D-2000 Spectral Domain OCT (SD-OCT) (Topcon Corporation, Tokyo, Japan).
Results: 106 children were included in the study. The mean (±SD) C/D ratio was 0.25 (±0.14), while the horizontal cup/disc ratio was 0.48 (±0.15) and the vertical cup/disc ratio was 0.49 (±0.15). The P95 of the disc cup ratio difference was 0.25.
Conclusion: The papilla of the premature child is slightly oval in vertical diameter. Premature infants have an average excavation of 0.25. As in full-term children, a difference greater than 0.25 between the two eyes should make us look for another justification in addition to a history of prematurity.

EP-PED-25

Interocular symmetry of the anatomical parameters of the optic nerve in premature infants measured with optical coherence tomography

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Purpose: To determine the degree of interocular symmetry of the optic nerve in preterm school children measured with OCT.
Material and methods: A cross-sectional study made up of premature children born between 2008 and 2011 and who were examined between 5 and 8 years of age. All participants underwent a complete ophthalmological examination. Optic nerve analysis was performed with the Topcon 3D-2000 Spectral Domain OCT (SD-OCT) (Topcon Corporation, Tokyo, Japan).
For the analysis of interocular symmetry, the intraclass correlation coefficient (ICC) was obtained to analyze the agreement between the measurements in both eyes.
Results: 106 premature infants were included in the analysis. The ICCs for interocular symmetry thickness measurements were high (ICCs > 0.6), for disc area, cup area, cup volume, and horizontal diameter, and were medium (ICCs >0.4 and <0.6) for the rest. of parameters, except the horizontal C/D ratio, which was 0.34, and the vertical diameter, 0.14.
Conclusion: Premature infants present greater asymmetry in C/D ratios and ring volume. The degree of asymmetry is greater than in studies carried out in term infants. However, this asymmetry is not clinically relevant, other options in addition to prematurity should be explored when faced with papillary asymmetry.

EP-PED-26

Management of longstanding strabismus and low vision induced by a trauma: case report

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Purpose: The aim of our report is to present the case of exotropia induced by longstanding low vision due to trauma.
Methods: A 28-year-old male was referred to our clinic with complaints of right eye exotropia and decreased vision during the past 7 years. The best corrected visual acuity on his right eye was hand motion and 20/20 on his left eye. The angle of deviation by the Krimsky test was 45 degrees, and pupillary reflex tests showed leukocoria in the right eye. By slit lamp examination there was a sharp corneal scar, anterior chamber depth within normal ranges, posterior chamber artificial lens was dislocated, and there was anterior and posterior capsular fibrosis.
An ultrasound examination of the left eye showed hyperreflective vitreous turbidity.
Results: Pars plana vitrectomy (PPV) and strabismus surgery were done two months apart on the right eye. 1-month follow-up after PPV. The best corrected visual acuity on her right eye was 20/60 (0.3) and 20/20 on his left eye. 1-month follow-up after strabismus surgery. XT 90 PD was diagnosed before the surgery.10 mm recession and 6 mm resection was done on the right eye.

After 1 month following the surgery: the movement of the eye was free. XT 10-15 PD was visible. Due to anisometropia, the patient prefers to wear contact lens on his right eye.

Conclusion: Despite the longstanding strabismus and low vision, after appropriate intervention patient's clinical condition and quality of life has been improved. The patient regained his sight and squint has been corrected.

EP-PED-27

Surgical management of glaucoma associated with Sturge-Weber syndrome

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Purpose: To present our own experience regarding efficiency of surgical procedures concerning the treatment of glaucoma in children with Sturge-Weber Syndrome.

Methods: The study group included 52 eyes in 26 children with confirmed diagnosis of Sturge-Weber Syndrome and a mean diagnostic evaluation age of 26 months (±47) of which 14 were diagnosed with glaucoma. Measurements in group of patients that underwent surgical procedure were taken before surgery, 6 (±3) days after surgery and 15 (±9) weeks after surgery. The results were statistically analyzed at the assumed significance level α=0.05.

Results: The mean value of intraocular pressure (IOP) at the time of the first examination of was 13 mmHg (±9.5) in non affected eyes, and 28,7 (±11) in eyes with glaucoma. Six patients with glaucoma were not qualified for the surgery and were treated only with anti-glaucoma drugs including dorzolamide, timolol and brimonidine. In glaucomatous group six patients underwent trabeculectomy (3 with and 4 without mitomycin C), while 2 underwent cyclocryotherapy and transscleral cyclophotocoagulation (TSCPC).

After trabeculectomy mean IOP was 16.28 mmHg (±4.8), at 15 (±9) weeks 18 mmHg (±2.8). All patients treated with trabeculectomy without mitomycin C required subsequent additional surgical treatment or local anti-glaucoma drugs administration. In patients who underwent TSCPC or cyclocryotherapy the mean intraocular pressure was 23mmHg (±3.5), at 15 (±9) weeks 24mmHg (±2.6); the procedure had to be repeated several times and it was not possible to withdraw topical treatment.

Conclusions: The best results were observed in patients who underwent trabeculectomy with mitomycin C both in terms of lowering intraocular pressure and reducing the use of anti-glaucoma drugs. Procedures such as TSCPC or cyclophotocoagulation were less successful and required several repetitions, however, these procedures are less invasive than trabeculectomy.

EP-PED-28

Ocular chloramphenicol exposure in early childhood in Aotearoa/New Zealand

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Purpose: To quantify the paediatric utilisation of ophthalmic chloramphenicol across New Zealand.

Methods: This study analysed publicly subsidised community dispensings of ophthalmic chloramphenicol. This analysis included every child born in New Zealand in 2013, and every dispensing from birth to five years of age. This study quantified: cumulative prevalence of exposure, age at first dispensing, number of dispensings by five years of age and seasonality of dispensings.

These measures were also quantified following stratification by ethnicity, socio-economic deprivation and urban/non-urban health district. Statistical analysis was performed using the Kolmogorov-Smirnov test and binomial logistic regression.

Results: 50% of children were exposed to ocular chloramphenicol by three years of age. Children of Māori and Pasifika ethnicity (the indigenous peoples of Aotearoa/New Zealand and the South Pacific islands, respectively) had higher odds of younger age at first dispensing (OR (95% CI) of 1.18 (1.08,1.29) and 1.54 (1.40,1.69) respectively), and more dispensings by five years of age (1.39 (1.28,1.52) and 1.23 (1.13,1.35) respectively, all $p<0.001$).

In children aged 0-4 years, the number of dispensings were relatively stable throughout the year, with a peak in September. In contrast, in children five years of age, dispensings increased steadily throughout the year.

Conclusions: Paediatric utilisation of ophthalmic chloramphenicol across New Zealand varies with patient factors, such as age and ethnicity.

EP-PED-30

Clinical features in intermittent and constant exotropic patients

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Purpose: To evaluate the clinical features in intermittent and constant exotropic patient who underwent surgery.

Methods: We retrospectively evaluated the medical documents of 6490 exotropic patients who underwent surgery over a period of 10 years from 2012 to March2022. The pre-operative collected data werethe corrected distance visual acuity (CDVA), refractive error, angle of deviationand amblyopia.

Results: The mean age of allexotropicpatients was 22.0 ± 13.9 (range, 2-77) years. Constant and intermittent exotropia were observed in 4526 (69.7%) and 1964 (30.3%) patients, respectively (P-value<.001).

Our findings indicated that the mean CDVA in both eyes of patients with constant exotropia was significantly worse than in intermittent cases (both P-value <.001). Also, the cylindrical refractive error of patients with constant exotropia was significantly higher than in intermittent cases (bothP-values <.001). Moreover, the mean angle ofhorizontal and vertical deviation at near and far in patients with constant exotropia was significantly higher than in intermit-

tent cases (both P-values <.001). The frequency of amblyopia in patients with constant and intermittent exotropia was 1507 (33.3%) and 226 (11.6%), respectively (P-value <.001).

Conclusion: Constant exotropic patientswho underwent surgery compared with intermittent exotropic cases had lower CDVA, higher prevalence of amblyopia, higher cylindrical refractive error, and greater horizontal and vertical deviation atdistance and near.

EP-PED-31

Comparison of Cambridge Vision Stimulator (CAM) therapy with passive occlusion therapy in the management of unilateral amblyopia; a randomized clinical trial

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Purpose: To compare the effect of Cambridge vision stimulator (CAM) therapy with passive occlusion therapy in the management of unilateral amblyopia.

Methods: In this randomized clinical trial study,110 amblyopic children who had not been managed previously, were randomly divided into two groups of CAM therapy (n=55) and passive occlusion therapy (n=55). The uncorrected and best-corrected distance visual acuity (UDVA and CDVA) for all patients were measured before and 1, 2 and 3 months after starting the treatment. In the CAM procedure, 5 discs with different spatial frequencies (SF) were presented to the patient (30 minutes, twice a week). During the training, the non-amblyopic eye was occluded. In the passive occlusion therapy group, the standard occlusion therapy protocols were performed.

Results: The mean age of patients in CAM and occlusion therapy groups was 7.03 ± 2.08 and 6.90 ± 1.91 years, respectively. Comparisons of UDVA and CDVA in different follow-ups showed that the mean amount of UDVA and CDVA increased significantly in each follow-up (P<0.001) in both study groups. There was no significant difference in the mean CDVA improvement between CAM and occlusion therapy groups after one (P=0.796), two (P=0.222) and three months (P=0.643).

In addition, there was not any significant difference in the mean UDVA improvement between CAM and occlusion therapy groups after one (P=0.347), two (P=0.516) and three months (P=0.880).

Conclusion: CAM and conventional passive occlusion therapies resulted in a significant improvement of visual acuity in children with amblyopia and the differences were not significant, therefore they could be used as alternatives. However, CAM therapy requires cost and time for the amblyopic patient and parents. CAM therapy may be considered as a second treatment option in poor compliance of amblyopic patients to patching.

EP-PED-32

Visual function and visual perception in adolescents born moderate-to-late preterm

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Purpose: It is well known that individuals born extremely preterm develop ophthalmological complications and visual perceptual problems. Few studies have been focusing on moderate-to-late preterm (MLP), defined as birth at 32–36 gestational weeks. The aim was to investigate visual function and perception in adolescents born MLP and compare the results with controls born full-term.

Method: As part of a prospective cohort study, 50 MLP-born adolescents (24 boys, mean gestational age (GA) 35.0 weeks, mean age 16.5 years) and 50 controls born full-term (20 boys, mean GA 40.3 weeks, mean age 16.7 years), underwent a detailed ophthalmological examination including history-taking regarding perceptual visual dysfunction (PVD), and *Test of Visual Perceptual Skills 3rd edition* (TVPS-3) consisting of seven sub-tests; visual discrimination, visual memory, spatial relationships, form constancy, sequential memory, visual figure-ground, and visual closure.

Results: A difference in best corrected visual acuity, best eye, between the MLP group and controls (-0.09 vs -0.12 logMAR) was found (p=0.022). No differences between the two groups regarding strabismus, motility, near point of convergence and accommodation, subnormal stereo acuity, or PVDs were detected.

However, the MLP-group had a lower total TVPS-3 score compared with controls (mean 106.46±13.31 vs 112.79±10.05; p=0.005) with significant lower scores in 3/7 sub-tests; visual discrimination (p<0.001), spatial relationships (p=0.011), and visual closure (p=0.006). Among the MLPs, there was a weak correlation between TVPS-3 total score and having strabismus; r=-0.365, p=0.0099.

Conclusion: The results indicate that adolescents born MLP may have an increased risk of developing impaired visual perceptual skills compared with controls born full-term. Since visual perceptual skills are of importance in school and in everyday life, one should be aware of these findings in MLP-children, who account for 85% of all preterm birth.

EP-PED-34

Low dose 0.01% of atropine in to reduce progression of myopia in children

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Purpose: To show efficacy of atropine 0.01% in preventing myopia progression.
Methodology: This is a retrospective randomised study realized with 40 children, 20 of of who were treated with atropine 0.01% for a period of 2 years. The other 20 children that not took atropine served like control group. SE of the group with and without atropine at the first visit and after 2 years were analyzed in retrospective.
Results: SE in beginning of treatment of the group with and without atropine was respectively -0.75 to to -14.375 (-4.56±3.16) and -0.875 to to -7 (-3.31±1.63). The age at the beginning of treatment was 8-14 years old in group without atropine (10.5±2.04) and 6-15 years (10.2±2.23) in the atropine group.
The data were analyzed by ANOVA and it was observed that in group without atropine myopic progression after two years was -1.259 D, whereas in the atropine group myopic progression was -0.82D.
Conclusions: Low dose of atropine 0.01% was effective in preventing myopic progession in children involved in study for a period of 2 years. The changes were significantly important compared to the control group.
Keywords: Myopia, atropine, progression

EP-PED-35

Pigmented free floating retrolental space cyst

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Pigmented free-floating vitreous cyst in retrolental space is rare. It can represent its congenital origin after spontaneous detachment from the ciliary body epithelium or after trivial injury. We report a case of pigmented, free floating non-infective cyst in a 7 year old child which was noted during routine examination. The child was completely asymptomatic.

EP-PED-36

Ectopic eyelashes (isolated ectopic upper lid cilia)

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There is a wide spectrum of cilial anomalies. Ectopic cilia, or lash follicles situated over abnormal sites, are an extremely rare entity. Usually presented as a tuft of densely grouped hair on the lateral quadrant of the upper eyelid or conjunctival surface of the eyelid. The embryologic origin of this is unknown. We report a case of 6 month old child with isolated left upper lid ectopic cilia noted during routine exam and likely results from an event during embryogenesis.

EP-PED-37

The effects of topical 0.01% atropine on ocular biometrics over 1 year follow-up

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Purpose: To evaluate changes of ocular parameters in myopic children receiving 0.01% atropine eye drops over a one-year period.
Methods: Cycloplegic spherical equivalent (SE) refraction and tonometry were evaluated using TonoRef (III). Ocular axial length (AL), anterior chamber depth (ACD), lens thickness (LT), central corneal thickness (CCT) were measured using IOL Master.
Healthy children from 6 to 12 years old, whose cycloplegic SE refraction was from -0.5 to -5.5, astigmatism 1.50 D or less and known one-year myopia progression were included to the study and randomly assigned to the treatment or control groups. Only measurements of the right eye were included. The results are presented as average (±SD).
Results: 43 children were allocated to the control group and 42 children to the 0.01% atropine eye drops group. There was no statistically significant difference between the groups regarding the age (p=0.423) and gender (p=0.826).
Baseline AL and SE were statistically difference between the groups with longer AL and lower SE in atropine group: AL 24.04 (±0.94) mm and 24.61 (±0.68) mm (p=0.002), SE -2.10 (±0.87) D and -2.80 (±1.28) D (p=0.004).
Prior to the study, SE progression was -0.74 (±0.46) D/year in the control group and -1.00 (0.48) D/year in atropine group (p=0.004); over 1-year follow-up, SE progression rate in the control group was -0.59 (±0.50) (p=0.150) and decreased to -0.54 (±0.41) D in the atropine group (p<0.001).
Changes in ACD, LT, CCT and IOP remained similar in the groups: ACD 0.01 (±0.05) mm and 0.02 (±0.06) mm, LT -0.01 (±0.05) mm and -0.02 (±0.05) mm, CCT -0.24 (±6.39) µm and -0.50 (±6.30) µm, IOP -0.32 (±2.48) mmHg and 0.44 (±2.94) mmHg in the control group and atropine group, respectively (p>0.05).
Conclusions: Usage of 0.01% atropine eye drops reduced myopia progression based on changes in SE and had no effect on IOP, ACD, LT, CCT over the period of 12 months.

EP-PED-38

A case of retinal haemorrhages in covid positive preterm baby born to a covid positive mother

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COVID-19, causes severe acute respiratory syndrome coronavirus (SARS-CoV-2), affects people of all age groups. It can be encountered in pregnant women as well as new-borns. The infection can range from asymptomatic, mild to life threatening respiratory can range from asymptomatic, mild to life threatening respiratory distress. It can affect almost every organ of the body.
Ophthalmologists world over are reporting various manifestations of the infection in the eye.
Ocular manifestations of COVID19 are uncommon in children, especially preterm. We describe a case of isolated blot haemorrhages noted in one eye during routine screening of retinopathy of prematurity (ROP) of a Covid positive baby born to a Covid positive mother.

EP-PED-39

Large hyperopic shift observed during treatment of diabetic ketoacidosis in a 14 year old female patient, which resolved spontaneously

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Report of the case: A 14-year old female patient was admitted to hospital, presenting with a 3-week history of weakness, significant weight loss, polyuria, polydipsia, and recurrent faints and at that time she denied any visual disturbances.

Further examinations showed blood glucose concentration of 16.83 mmol/l, HbA1c 15,4%, acidosis, glucosuria, ketonuria and leukocytosis. The patient was diagnosed with type 1 diabetes mellitus and insulin therapy was instituted immediately.

Further on she complained of significant visual blur for near and distance. Visual acuity was 5/25 in each eye and cycloplegic refraction revealed a large hyperopic shift. Spherical equivalents varied among measurements and ranged between +8 to +11 diopters.

Fundus examination and OCT did not reveal any abnormalities despite subtle snowflake cataract in both eyes. At follow-up appointment, two weeks after the discharge from the hospital, she reported complete resolution of the visual symptoms and her cycloplegic refraction was OD + 0,75/+0,25 ax 75, OS + 0,75/+1,0 ax 95, snowflake cataracts resolved and ophthalmic examination was completely normal.

Presented case, in accordance with review of literature, proves hyperopic shift accompanying severe hyperglycemia treatment. Previously reported refractive error change has generally oscillated in the level between +0,5 to +3,25 diopters. There were no significant deviations in keratometry, anterior chamber depth, or biometric after treatment reported in analyzed publications.

Conclusions: In accordance with the author's best knowledge this is the largest reported refractive shift observed during the treatment of diabetic ketoacidosis. Follow-up of patients indicates a transient nature of refractive changes. Small refractive changes secondary to blood glucose levels may go unnoticed. Knowledge about maximal fluctuations and their transience may be helpful in an ophthalmological care of a diabetic patient.

EP-PED-40

Low-dose atropine for treatment of paediatric myopia progression: European refraction data from CHAMP, a double-masked, placebo-controlled, randomized phase 3 trial of 3-year efficacy and safety

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Purpose: No pharmacological therapy is approved for the treatment of childhood myopia progression in Europe. The CHAMP phase 3 study assessed the safety and efficacy of NVK002, a novel, preservative-free, low-dose atropine (LDA) formulation, in slowing myopia progression after 3 years of treatment in US and European subjects.

Methods: Subjects aged 3 to 17 years with −0.50 D to −6.00 D spherical equivalent refraction (SER) and ≤−1.50 D astigmatism were randomized in 2:2:3 ratio to receive once-daily placebo, NVK002 0.01%, or 0.02% eyedrop for 36 months.

Mean change from baseline in SER at Month 36 in a modified intent-to-treat (mITT) population (ages 6 to 10 years at baseline) was assessed in the European subset.

Results: 111 European subjects were randomized out of a total of 576. In the European subset, 109 received study treatment and 109 were in mITT. Both doses slowed myopic SER progression; at Month 36, compared with placebo, NVK002 0.01% and 0.02% significantly slowed mean SER progression by 0.47 D ($p<0.001$) and 0.35 D ($p=0.007$), respectively.

No serious ocular treatment-emergent adverse events (TEAE) occurred within the 489 subjects in the total US and European mITT population. Serious non-ocular TEAEs were reported in 2.3% of subjects (placebo, 2.5%; NVK002 0.01%, 0.6%; 0.02%, 3.2%); none were considered drug related.

The incidence of any TEAE across the entire study was similar across treatments, most commonly photophobia (4.5%), allergic conjunctivitis (3.3%), eye irritation (1.6%), and mydriasis (1.0%).

Conclusions: For the first time in a European sample over a three-year treatment period, it has been demonstrated that LDA at both NVK002 concentrations can safely and meaningfully reduce myopic SER progression compared to placebo.

If approved, NVK002 may offer the first clinically proven, pharmacological treatment option for children with myopia progression in Europe.

EP-PED-41

Topographic corneal changes in children with moderate to severe blepharokeratoconjuntivitis (BKC)

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Introduction: Pediatric blepharokeratoconjunctivitis (BKC) is a common chronic inflammatory disease of the ocular surface involving the lid margin, the conjunctiva, and the cornea. Severe BKC can result in corneal stromal thinning, scarring, and amblyopia.

Aim: We performed a retrospective case series to determine the corneal topographic characteristics of children with moderate to severe BKC.

Methods: Corneal topography of pediatric patients with moderate to severe BKC who had no other systemic or ocular diagnosis between March 2008 and June 2019 were reviewed. The diagnosis of moderate to severe BKC was determined according to the grading scale previously described (Hamada et al 2012). Corneal topography, pachymetry, and asymmetry indices were analyzed.

Results: 36 eyes of 21 children were included. The mean (±SD) keratometry value (K) was 44.21±2.61 Diopters (D). Mean flat K, mean steep K, and mean maximum K were 42.61±2.63D, 46.00±3.17D, and 51.00±5.29D, respectively. 67% of children had a maximum K ≥47.2D. Mean topographic astigmatism (TA) was 3.39±2.60D, and 61% of eyes had astigmatism >2D.

Using indices comparing the superior and inferior corneal topographic characteristics, the index of height decentration (IHD), index of surface variance (ISV) and index of vertical asymmetry (IVA) were found to be

abnormal in 83%, 69%, and 64% of cases, respectively.
In addition, mean corneal thickness (CT) at apex was 528.83±72.18 microns (μm). Mean thinnest CT was 487.00±88.28μm, and 47% of eyes had a thinnest CT <500μm.
Conclusions: Children with moderate to severe BKC have a high incidence of abnormal corneal topography with steep corneas and reduced corneal thicknesses compared to the healthy pediatric population. Corneal topography could be an important tool in the evaluation of visual function in children with moderate to severe BKC.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Refractive Surgery

EP-REF-01

Clinical outcomes of artificial tears with hyaluronic acid 0.3% concentration versus 0.1% concentration in promoting epithelial healing after photorefractive keratectomy

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Purpose: To evaluate outcomes of applying artificial tears with hyaluronic acid 0.3% concentration after transepithelial photorefractive keratectomy (tPRK).
Methods: 45 patients (90 eyes) were performed with tPRK on both eyes. 22 patients were administered with preservative free hyaluronic acid with concentration 0.1% and 23 patients were with 0.3%. Epithelial healing process was assessed at day 2, and 4 postoperatively. Uncorrected distant visual acuity (UDVA) was measured at day 4, day 7 and 2 month postoperatively.
Results: Complete epithelial healing time for bandage contact lens removal were same in both group. In eyes receiving hyaluronic acid 0.3% eyedrops, eminent central raphe significantly shows lower incidence. (8% vs 22%). Study group shows better UDVA at postoperative 4 day, but no difference at 7 day, and 2 months. Study group and control group reported same pain score.
Conclusion: After tPRK, applying artificial tear with hyaluronic acid 0.3% concentration yields slightly better visual recovery versus with 0.1% concentration with same subjective pain score.

EP-REF-02

Refractive results of photorefractive keratectomy comparing trans-PRK and PTK-PRK for correction of myopia

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Purpose: To compare refractive outcomes after transepithelial photorefractive keratectomy (tPRK) and combined phototherapeutic keratectomy (PTK)-PRK procedure using two different excimer laser platforms for correction of myopia and myopic astigmatism.
Method: In this retrospective monocentral study we compare the results of two different PRK methods of 154 eyes. First group received a tPRK treatment with the Amaris750 excimer laser (Schwind eye-tech solutions, Germany). The second group received a combined PTK-PTK treatment with the MEL90 excimer laser (Carl Zeiss, Germany). Preoperative spherical equivalent (SE), age and sex were matched among the two groups. All treatments were performed by same surgeon in the same clinic.
Results: There was no difference in predictability of SE between the two groups. Efficacy and Safety Indices were equally high in both groups. Similarly, no differences were seen in change of higher order aberrations between the two groups.

Conclusion: Both investigated methods provide safe and effective refractive results. The combination of PTK with PRK using the MEL90 excimer laser may be a suitable option to the already used one-step tPRK for myopia correction.

EP-REF-03

Clear lens exchange (CLE) in posterior microphthalmos: a refractive challenge

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Introduction: Posterior microphthalmos is defined by a short axial length (AL) in the presence of a relatively normal anterior segment (AS). This contrasts with nanophthalmos, where the AS is also reduced. Since these eyes have a disproportionately large AS this leads to a very posterior effective lens position and the need for very high dioptric power to achieve emmetropia, which might be insufficiently addressed with only one intraocular lens (IOL).
We present a case of posterior microphthalmos treated with bilateral CLE and supplementary sulcus IOL implantation.
Methods: Case report review.
Case report: 50 years old man with history of strabic amblyopia of the RE who pretended refractive surgery. VA was 20/125 +17.00 in the RE and 20/40 +18.75 in the LE. AS exam was normal and fundoscopy revealed absence of foveal depression with papillomacular wrinkes. The biometric measurements in the RE/LE were: 15.50/15.53 mm optic AL, 11.2/11.0 mm horizontal white-to-white, 3.13/2.97 mm AC depth, 48.77/49.34 D average central cornea keratometry.
Calculated IOL power ranged between +52.00 and +69.00 D across different formulas. Bilateral sequential CLE with +45.00 D IOL was done, but the patient remained highly hyperopic, with a VA of 20/125 +11.00 in the RE and 20/40 +11.00 in the LE. Bilateral sequential implant of a sulcus IOL with the highest power provided by the manufacturer (+10.0 D) was then done.
The final VA was 20/125 +5.75 in the RE and 20/40 +5.25 in the LE. Despite significant residual hyperopia remaining, the patient was reasonably satisfied since he could now perform some activities of daily living independent of spectacles.
Conclusions: CLE and cataract surgery in posterior microphthalmos are particularly challenging not only due to the higher incidence of complications but also due to the uncertainty about the best refractive strategy. In this case, despite the implantation of two IOLs with the highest available power significant residual hyperopia remained.

EP-REF-05

Role of Implantable Phakic Lens (IPCL) and Implantable Collamer Lens (ICL) in the correction of different refraction defects

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Purpose: To evaluate the results and possible complications of the implantation of ICL/IPCL lenses in patients with different refractive defects in a follow-up of at least 5 years.
Method: In 10 years, 61 ICL/IPCL lenses were implanted in the German Eye Clinic in Tirana, 10 of which were in patients with stabilized keratoconus, 5 eyes after keratoplasty, 6 eyes with hyperopia and astigmatism and 30 eyes with high myopia.
Before undergoing the surgical intervention, the patients underwent a detailed ophthalmological examination: uncorrected and corrected vision (BCVA) in miosis and cycloplegia, Autorefractometer/Keratometer (Huvitz HRK- 9000°), Corneal Topography and Vault measurement with Scheimpflug (Allegro Oculyzer WaveLight), Biometry, (Allegro Biograph), Pupilometry, Microscopia Speculare (Tomey EM-3000), Fundoscopy and OCT of NO and macula (OCT Optovue/Angiovue).
Patients who met all the criteria were subjected to the intervention for the implantation of phakic lenses. Patients were checked with SL, Goldman tonometer and ICL Vault measurement with Scheimpflug Tomography on day 1, 3 and after 1, 3 and 12 months.
Results: Visual acuity was at least 2 lines higher than BCVA before surgery in all patients and remained unchanged during the entire follow-up. In 10 eyes, TIO > 20 mmHg in the first week of surgery was managed with a local hypotonizer for a maximum of 2 weeks. Lenses were changed in 4 eyes due to Vault < 300 micron or >1000 micron. No patient had retinal complications.
One patient had a dislocation of the ICL 3 months after the intervention as a result of a blow to the eye, and the lens was repositioned without any complications after 2 days. The glare of the lights was complained only in the first post-operative period.
Conclusion: ICL or IPCL phakic lenses are very efficient in the treatment of high refractive errors or in cases where corneal laser treatment is contraindicated. They have long-term safety and stability, manageable complications and reversibility.

EP-REF-06

Traumatic dislocation of laser-assisted in situ keratomileusis corneal flaps is an uncommon postoperative complication that could occur any time after LASIK, and could be visually devastating

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Purpose: Traumatic dislocation of laser-assisted in situ keratomileusis (LASIK) corneal flaps is an uncommon postoperative complication that could occur any time after LASIK, and could be visually devastating.
We evaluated the visual outcomes, corneal sensation, tear function, and dry eye questionnaire results of patients with traumatic dislocation of LASIK flaps.

Methods: This is a retrospective casereport. Patientwho were diagnosed with traumatic displacement of the LASIK flap and underwent flap replacement surgery and followed-up during April 2022 and September 2022. During this period following investigations were performed like Patient's visual acuity, refraction, corneal sensitivity, non-invasive tear breakup time (NIBUT) results, and corneal slit lamp examination were evaluated.
Results: The patient's age was 42 years, and was female. The mean preoperative and postoperative six-month corrected distance visual acuity (CDVA) were OD=0.7; OS=1.0 respectively. The refractive data showed improvement. The corneal flap was clear and well-positioned at the final follow-up of the patients showed decreased corneal sensation in the right eye. Interocular OSDI discrepancy was less in those whose last visit was more than 6 months after the trauma.
Conclusions: Postoperative CDVA at six months was improved, and the refractive data also showed some improvement. The corneal nerve and tear function recovery peaked before 4 months, while the OSDI continued to show a strong trend of improvement beyond 6 months. The patient's follow-up is continuous. The last meeting with patient was on September 29.
Keywords: Corneal sensitivity; Flap displacement; Laser in situ keratomileusis; Non-invasive tear breakup time; Ocular surface disease index; Replacement surgery.

EP-REF-07

Rare complication after LASIK surgery: case report

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Purpose: Traumatic dislocation of laser-assisted in situ keratomileusis (LASIK) corneal flaps is an uncommon postoperative complication that could occur any time after LASIK, and could be visually devastating. We evaluated the visual outcomes, corneal sensation, tear function, and dry eye questionnaire results of patients with traumatic dislocation of LASIK flaps.
Methods: This is a retrospective case report. Patient who were diagnosed with traumatic displacement of the LASIK flap and underwent flap replacement surgery and followed-up during April 2022 and September 2022. During this period following investigations were performed like Patient's visual acuity, refraction, corneal sensitivity, non-invasive tear breakup time (NIBUT) results, and corneal slit lamp examinationwere evaluated.
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Keywords: Corneal sensitivity;Flap displacement; Laser in situ keratomileusis; Non-invasive tear breakup time; Ocular surface disease index; Replacement surgery

EP-REF-08

New surgical and clinical therapeutic approaches for treating presbyopia

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Purpose: To evaluate methods used to restore Dynamic Range of Focus (DRoF) in presbyopes. Comparison to include mechanism of action, invasiveness, binocularity, acuity at distance, intermediate and near, and binocularity.
Methods: A retrospective Literature review was performed to investigate current methods available to improve DRoF in presbyopic patients. Near vision acuity outcomes were compared using miotic drops, corneal inlays and Presbylasik/monovision, diffractive and EDOF IOLs, scleral inserts, and LSM.
Other visual quality metrics were compared including contrast sensitivity, Visual acuity at distance/ intermediate/ near, stereopsis, DOF curves, true versus pseudo accommodation, and duration of effect was examined.
Results: Greater than 75% of patients achieve 20/40 or better at 40 cm using laser vision correction (LVC), LSM, and Diffractive IOLS and miotic drops. Durability of LVC and LSM is sustained over time while miotics are limited to 3 hours. Distance acuity and stereo acuity is significantly reduced below 20/25 in all LVC and Diffractive IOLS but is not significantly affected by miotics or LSM. Complications including severe adverse events were reported with Smile, supracor/presbylasik, IOL implantation, and miotics while LSM has no severe adverse events reported.
Conclusions: Implants, inlays, and LVC procedures improve near visual acuity with side effects and a compromise of distance vision. Therapeutic solutions such as miotics and LSM offer low-invasive options to treat presbyopia disability that don't alter optics. LSM offers recovery of DRoF, while miotics are limited to pupil miosis.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Retina

EP-RET-02

Establishing the pathogenicity of a novel variant in *BBS5* in a Filipino family

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Purpose: Bardet-Biedl Syndrome (BBS) is a ciliopathy arising from pathogenic variants in 26 genes. It is rare and only one genetically confirmed case has been reported in the Philippines. For this case, we report a patient with clinical features of BBS found to have a homozygous variant of unknown significance (VUS) in *BBS5*, which was later reclassified to likely pathogenic after family segregation testing.
Methods: A 17-year-old-male referred to the Ocular Genetics service for poor vision and nystagmus since birth, underwent a comprehensive ophthalmic exam and work-up (ocular coherence tomography [OCT] of the macula, fundus autofluorescence [FAF], fundus photography, and electroretinogram [ERG]). An inherited retinal dystrophy panel with deletion/duplication analysis was done which showed a homozygous VUS in *BBS5*. Parents then underwent molecular testing and segregation analysis for that VUS.
Results: Fundus photography showed mottled retinas with peripheral bony spicule-like deposits, pale discs, attenuated vessels, and severe macular atrophy. Autofluorescence photos likewise showed profound pigmentary atrophy that was most advanced at the macula. Ocular coherence tomography revealed total loss of the macular photoreceptor layers and presence of epiretinal membranes. Electroretinogram showed extinguished responses in dark and light adapted conditions.
Molecular testing in the proband showed a homozygous intronic VUS in *BBS5*c.259-3C>G. Segregation testing was done on the asymptomatic parents which showed the variants to be in trans configuration, leading to their reclassification to likely pathogenic.
Conclusion: This is the second genetically confirmed case of BBS in the Philippines. This is also the first reported case of the variant involved to be associated with BBS and classified as likely pathogenic instead of unknown significance.

EP-RET-03

The influence of intravitreal anti-VEGF injections on retinal vein diameters in branch retinal vein occlusion

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Objective: To asses changes in affected trunk vein diameter and macular thickness after intravitreal Eylea injection in eyes with branch retinal vein occlusion (BRVO).
Methods: We examined 18 eyes of 18 patients who have been treated with intravitreal afibercept 2mg/0.05mL injection more than once because of recurrent macular edema secondary to BRVO. Best corrected visual acuity (BCVA), foveal thickness measured by optical coherence tomography, and trunk vein diameter were evaluated 1 week after the first and second intravitreal afibercept injections. BCVA was converted to the logarithm of the minimum angle of resolution and averaged. The mean diameter of three segments of the affected trunk vein located in an area of 1-3 disc diameters from optic disc border was calculated using digital fundus photography and computer software. We calculated the ratio of trunk vein diameter after the first injection, before and after the second injection. The mean interval between the first and second afeibercept injection was 74 days.
Results: The mean BCVA before and after 1 week after the first injection, and 1 week before and after second injection were 0.63, 0.30, 0.26 and 0.16 respectively. Mean foveal thickness before and 1 week after the first injection, and before and 1 week after second injection were 613 nm, 240 nm, and 467 nm, 202 nm respectively. The ratios of the mean trunk vein diameters before and 1 week after the first injection, and before and 1 week after the second injection were 1; 09,0;78, 0;95, 0;76, respectively.
Conclusions: Affected trunk vein diameter decreased after the first afibercept injection,increased again before the second injection, and then decreased after the second injection. These results demonstrate that intravitreal afibercept injections reduce not only macular thickness but also the diameter of the affected retinal vein in eyes with BRVO.

EP-RET-04

Novel pathogenic *CNGB1* mutation variants in siblings with retinitis pigmentosa

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Purpose: To report a case of two siblings with retinitis pigmentosa associated with novel mutations of the Cyclic Nucleotide-Gated Channel, Beta-1 (*CNGB1*) gene.
Methods: We present a case of two Filipino male siblings with nyctalopia since childhood and progressive peripheral vision loss. They were subsequently diagnosed with retinitis pigmentosa following routine ophthalmologic consult. Both patients underwent thorough phenotyping with fundus photography, fundus autofluorescence (FAF), macular optical coherence tomography (OCT) and perimetry. Genetic testing through next generation sequencing (NGS) revealed both siblings to be compound heterozygous for two variants in the *CNGB1* gene.
Results: Two novel missense mutations were found in the*CNGB1* gene of both siblings: c.2302 A > C and c.2965 G>A. Phenotypic profile of both patients show typical RP appearance with evidence of peripheral visual field constriction.
Conclusions: To our knowledge, these missense variants have not been reported in literature among individuals with *CNGB1*-related retinitis pigmentosa. This may also be the 1st reported case of genetically confirmed *CNGB1*RP in the Philippines. Knowledge of these novel pathogenic variants may aid in further understanding of the phenotypic profile and genetic mutation spectrum in retinitis pigmentosa.

EP-RET-05

Noninvasive intraocular administration of a novel specific anti-VEGFA bivalent nano antibody LQ015B under the mediation of penetratin for the treatment of pathological fundus neovascularization

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Purpose: To develop eye drops to treat or alleviate pathological fundus angiogenesis in a non-invasive way.
Method: Human VEGFA protein was first expressed by mammalian cell HEK293F, and then used for camel immunity after affinity purification. ELISAwere used to screen single domain antibodies that could block the interaction between human VEGFA and VEGFR2.
The blocking activity, proliferation inhibitory effect, cross reaction with VEGF family proteins were performed to evaluate the molecular biochemical activities of candidate nanobodies.
Repeated dose local irritability study andsingle dose pharmacokinetic study were performed to assess the safety and half-life period of the final selected nanobody (LQ015B) *in vivo*.
After conducting cytotoxicity and the stability of penetratin/LQ015B compounds, mice oxygen-induced retinopathy (OIR) model and laser-induced choroidal neovascularization (CNV) in cynomolgus monkey model were established to further assess the antiangiogenic efficacy of penetratin/LQ015B eye drops *in vivo*.
Results: In terms of molecular biochemical activities, LQ015B could specifically recognize and block VEGFA, but not VEGFB, C or D; LQ015B could recognize VEGFA of different species and genera;
LQ015B was able to block VEGF/VEGFR2 binding activity in mouse, rat and rabbit;
Compared with Abercept, Conbercept and Avastin, LQ015B had stronger blocking activity and proliferation inhibitory activity;
Besides, the novel eye drops prepared by mixing LQ015B with penetratin were presented with safety in cell and animal models;
Furthermore, the eye drops had significant anti-angiogenesis therapeutic effects in mice OIR model and cynomolgus monkey laser-induced CNV models.
Conclusion: The novelanti-VEGFA bivalent LQ015B nano antibody mixed with penetratin has potential applications in the non-invasive treatment of pathological fundus neovascularization.

EP-RET-07

When peribulbar injection of tri amcinolon acetonoid with cataract extraction are the only solutions

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Female patient 18 years old complaining of gradual diminution of vision six months ago with past history of systemic steroid medications up to Cushing syndrome symptoms with facial features with thick skin and other signs, with local examination VA is HM in both eyes, corneal edema and haziness with old KPs, AC flare, cells, PAS, muddy iris, complicated post sub caps cataract, hazy vitreous, with soft tension, cannot rxamine retina, by US we found hazy vitreous with high acoustically collection, moderate choroidal effusion, so we diagnose as chronic post. uveitis with chorioditis and choroidal effusion so we do plan of ttt as gradual decrease of systemic steroid, local eye drugs for uveitis, peri bulbar injection of steroid for post. uveitis, then cataract extraction.

EP-RET-08

Early spectral domain optical coherence tomography biomarkers to confirm fellow eye changes in asymmetric type 2 macular telangiectasia: a case-control study

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Purpose: To evaluate the earliest spectral domain OCT (SD-OCT) biomarkers in the fellow eyes of asymmetric Type 2 Macular Telangiectasia (MacTel).
Methods: A multicentered case-control study of SD-OCT images captured on SpectralisHeidelberg Engineering, Germany comparing features of fellow eyes of patients with asymmetric clinical presentation of MacTel to 50 age-matched controls.
Results: A total of 28/649 (4.3%) patients with MacTel presented with asymmetric features. The mean age of the MacTel patients was 63.5 (12.4) years with female predilection (4F:1M). The mean best corrected visual acuity of the unaffected eye was 0.2 (20/32 Snellen equivalent).
The mean central subfoveal thickness (CST) in the unaffected MacTel eyes was 194 (SD 38) μm and the temporal retinal thickness was 204 (SD 43) μm. These parameters were significantly thinner than those of controls in whom mean CST was 273 (SD26) μm (P=0.001).
The presence of hyperreflective outer retinal dots was found in 92.8% of the unaffected MacTel eyes. These hyperreflective dots were scattered, punctate, non-confluent, and confined to the outer retinal layers of the foveal and parafoveal region.
Conclusion: Although these cases presented with an advanced presentation of MacTel features in only one eye, temporal retinal thinning and the presence of hyperreflective outer retinal dots in the fellow eye can be considered as the earliest signs of MacTel.

EP-RET-09

Juvenile Retinoschisis with macular edema in a young female: response to topical brinzolamide and nepafenac

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A 21 year old female presented with gradual onset decrease in vision in both eyes since early childhood with complaints of photophobia and headache since 1 month. Patient had BCVA of 20/80 with refractive correction of -4 DS in both eyes. Complete ocular examination with fundus evaluation showed foveal schisis with SDOCT showing large cystic spaces in the fovea with splitting of the retinal layers and FAF showing a cartwheel pattern in fovea.
Patient was started on brinzolamide and nepafenac eye drops 2 times a day

each for 3 months. At the end of 3 months there was reduction in the macular edema on SDOCT with improvement in visual acuity to 20/60 in both eyes and complete resolution of headache and photophobia. Juvenile X linked retinoschisis is a rare condition seen exclusively in males and few reports show good response to carbonic anhydrase inhibitors.
However this is a case where a female patient had a similar presentation and showed good response to treatment with a combination of topical brinzolamide and nepafenac.

EP-RET-10

Visual prognosis of pneumatic displacement in submacular hemorrhage secondary to neovascular age-related macular degeneration and polypoidal choroidal vasculopathy

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Purpose: To demonstrate the visual prognosisof pneumatic displacement in submacular hemorrhage secondary to neovascular age-related macular degeneration (AMD) and polypoidal choroidal vasculopathy (PCV).
Methods: Retrospective study of 24 patients SMH with a size 2 disc diameters and ≥6 disc diameters and a duration of symptoms <15 days underwent intravitreal injection of expansible gas (0.2 - 0.4 ml 100% of C3F8) for pneumatic displacement. Intravitreal anti-VEGF was injected into patients eyes after confirmation the causes of SMH by fundus fluorescein angiography (FFA) and indocyanine green angiographic (ICGA).
Results: The submacular hemorrhage was successfully displaced from underneath the fovea in all except 3 cases (15%). 12 of 20 cases (60%) were inferiorly displaced. At 6 months, visual acuity improvement was seen in 18 patients (78.26%). 20 patients (86.95%) had final visual acuity equal to or better than 1.00 logMAR. 10 patients (43.47%) were gained visual acuity ≥2 lines. The major complication was mild vitreous hemorrhage by breakthrough mechanism occurring in 8 of 10 patients (33.33%) which is not related to the size of submacular hemorrhage.
Conclusion: The visual prognosis of the patients depends on the displacement of the blood from the macular area, size and thickness of the hemorrhage, scar or fibrosis formation at the macular complicated from blood itself also from the natural history course of AMD and PCV, and the response from the anti-VEGF therapy of the disease.

EP-RET-11

Fast and flat: a case of rapid resolution of macular edema

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One of the most common findings and also the main reason for decreased visual acuity (VA) in early Central retinal Vein Occlusion (CRVO) is development of macular edema (ME). Increase in levels of Vascular Endothelial Growth Factor (VEGF) is postulated to be one of the factors in the pathogenesis of this disease.
Thus intravitreal AntiVEGF therapy with agents like Bevacizumab provides an effective treatment against ME. We report a patient of early CRVO (secondary to open angle glaucoma) with ME who demonstrated dramatic resolution of ME within 24hrs with improvement in VA, following treatment with intravitreal Bevacibizumab (1.25 mg/0.05ml). Spectral Domain - Optical Coherence Tomography (SD-OCT APPA associates) was used as an investigative tool for measurement of the central macular thickness (CMT) before and after treatment. Early treatment of ME (related to CRVO) with antiVEGF injection resulted in faster visual recovery in this patient.
The significant reduction in the CMT demonstrated in 24hrs following intravitreal injections could pave the way in modifying current treatment protocols in CRVO.

EP-RET-12

Automatic diagnosis of retinal disease with retinal hemorrhage using ultrawide-field fundus ophthalmoscopic images by deep learning

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Purpose: We evaluated whether retinal diseases images with retinal hemorrhage (branch retinal vein occlusion (BRVO), central retinal vein occlusion (CRVO), diabetic retinopathy (DR) and age-related macular degeneration (AMD)), and normal fundus images of ultrawide-field fundus ophthalmoscopy could be classified by deep learning (DL).
Method: The study included 2709 images of ultrawide-field fundus ophthalmoscopic images with retinal hemorrhage (BRVO: 203 images, CRVO: 87 images, DR: 2282 images and AMD: 137 images) from 1064 patients (age: 68.3±10.9) and 2093 images of normal ultrawide-field fundus ophthalmoscopic images from 1289 healthy subjects (age: 68.5±10.8).
We constructed a convolutional neural network model called Visual Geometry Group-16 and performed binary classification of retinal disease images and normal fundus images. The trained model of DL was diverted from the neural network structure and verified by the K-Fold cross validation (K = 5). Sensitivity and specificity were calculated for the DL model.
Furthermore, receiver operating characteristic curve was prepared, and the area under the curve was calculated.
Results: The sensitivity of the DL model for automatic classification of retinal disease was 84.5% (95% confidence interval [CI]: 83.1-85.8%), specificity was 87.8% (95% CI: 86.3-89.1%), and the area under the curve was 0.924 (95 % CI: 0.914-0,935).
Conclusion: DL model can classify retinal hemorrhage disease images with BRVO, CRVO, DR and AMD, and normal fundus images. It may be helpful in diagnosing and screening various diseases associated with retinal hemorrhage.

EP-RET-13

The correlation between waist circumference and the pro-inflammatory adipokines in diabetic retinopathy of type 2 diabetes patients

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Purpose: Central obesity is one of the major risk factors for type 2 diabetes mellitus (DM), and the most common complications of DM is diabetic retinopathy.
However, the exact relationship between obesity and DR remains unknown. In this study, we evaluate the effect of obesity on DR by comparing the aqueous humor-derived adipokines.
Method: 37 DR patients and 29 non-DR-patients participated. To evaluate the obesity of the patients, body mass index (BMI) and waist circumference (WC) were used. By comparing the concentrations of adipokines obtained from the aqueous humor of the two groups, the relation-ship between DR and adipokines was analyzed.
In addition, by analyzing the correlation be-tween obesity and adipokines in patients, the relationship between central obesity and DR was finally confirmed.
Results: The WC was significantly higher in patients than non-patient group. The concentrations of all adipokines compared in this study were significantly higher in the DR group than in the non-DM group ($p<0.05$). Among them, adiponectin, leptin, TNF-α, Factor D(adipsin), Lipocalin-2 (NGAL), Serpin E1(PAI-1), and CXCL8(IL-8) were confirmed to have a positive correlation with central obesity (defined as WC).
Conclusion: The present study directly measured aqueous humor adipokines, which were significantly higher in the DR group.
Furthermore, our study showed the positive correlation between concentrations of adipokines and WC. These results suggest that central obesity is an important factor in the development of DR.

EP-RET-14

A case of MEWDS following COVID-19 infection

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Multiple evanescent white dot syndrome (MEWDS) is a typically acute-onset, unilateral syndrome that manifests with decreased vision, scotomas, photopsias, or a combination of all three. On fundoscopy, numerous gray, white, or yellow-white dots can be seen at the level of the outer retina or retinal pigment epithelium, most often in the posterior pole. A mild anterior chamber reaction and vitritis may also be noted in some patients. The etiology remains unclear; however, the syndrome most commonly affects healthy women from 15 to 50 years of age. When there is suspicion for MEWDS, multiple imaging modalities can help elucidate the syndrome.
A previously healthy 28-year-old White male patient presented to the retina clinic with a 1-week history of blurred peripheral vision in his left eye. He stated that everything was fuzzy in a specific area of his temporal visual field. Ocular history was remarkable for myopia, and medical history was unremarkable other than COVID-19 infection 2 weeks prior to the onset of his visual symptoms. He reported cough, chills, and myalgias for approximately 4 days while infected.
On examination, VA was 20/20 OU. There was no afferent pupillary defect and visual fields were within normal limits in each eye. Anterior segment examination was unremarkable; notably, there was no anterior chamber inflammation in either eye.
Fundoscopic examination revealed subtle deep, yellow lesions in the peripapillary retina of the left eye. OCT demonstrated attenuation of the ellipsoid and interdigitation zones in the nasal macula. Fundus autofluorescence (FAF) revealed a wreath-like configuration of hyperfluorescence around the optic nerve with numerous noncontiguous, smaller areas of hyperfluorescence throughout the macula and midperipheral retina. FA also demonstrated a confluent area of hyperfluorescence centered around the optic nerve, which increased in intensity in the later frames, consistent with staining.

EP-RET-15

Caffeine and vodka induced paracentral acute middle maculopathy

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49-year-old male presented with sudden onset blurred vision in the right eye. Visual acuity was 20/15 in both eyes, IOP was normal, there was no relative afferent pupillary defect, extraocular muscles were full in both eyes, and the anterior segment exam was within normal limits.
The dilated fundus exam was within normal limits as well without any signs of obvious retinopathy. Optos wide field fundus photo also showed no obvious retinopathy in either eye. Fundus autofluorescence (FAF) was within normal limits without hyper or hypo-autoflurescence. Intravenous fluorescein angiogram (IVFA) was within normal limits in early and late phases with normal vasculature and no hyper or hypo-fluorescence.
Humphrey visual field of the right eye showed a paracentral inferior depression. Optical coherence tomography showed distortion in the outer retina paracentral to the fovea more prominent superiorly.
Given the distortion present on OCT and focal visual field loss, the patient was diagnosed with Paracentral Acute Middle Maculopathy. He admitted to having drank several drinks of a mixture of Vodka and Red bull estimated around 7 drinks the night before symptoms started.

EP-RET-16

Our results and complications in the anti-VEGF treatment of patients with wet AMD

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Anti – VEGF therapy is the leading treatment strategy for AMD.
Purpose: The purpose of our study is to compare the results of the application of aflibercept (Eylea) and Brolucizumab (Beovue) in the treatment in AMD patients.
Methods: In our prospective study 64 patients with wet AMD were enrolled. They all underwent a complete ophthalmological examination including VA, fundus photography, structural OCT (Revue, Optovue) and OCT-A (Angiophlex, Zeiss).
All of the patients were treated either with aflibercept (Eylea) or Brolucizumanin the Treat and Extend regiment for a period of 1 year. They were evaluated for possible complications after the 1 year period.
Results: In the first group of patients treated with Elea mean VA was initially 0.1 (SD 0.2). At the end of the year the VA was raised with 6 ± 2 letters. Central retinal thickness was initially 400 ± 130 µm and at the end of the follow up period reduction of 294 ± 75 µm was found. The main complications after the treatment were retinal fibrosis and retinal atrophy – about 20% of all subjects. Cases of ocular inflammation and floaters were less than 1%.
In the Beovue treated group the VA gain was about 7 ± 2 letters.Central retinal thickness reduction however was more significant up to 288 ± 70 µm with a better drying effect. In 4% of the patients inflammatory complications as well as vitreous floaters, hindering the good visual outcome were found.
Conclusion: Both Eylea and Beovue have a good beneficial effect in AMD patients in regard to VA gain and decrease of CRT.Although with Beovue we had better drying effect on macula, the risk of intraocular inflammatory complications and vitreous floaters, damaging the good outcome were more common. That is probably due to the stronger immunogenic effect of the drug, causing inflammatory reaction in susceptible patients. In any case, anti-VEGF treatment has to be strictly individual, considering all the pros and cons when picking up a treatment drug for AMD patients.

EP-RET-17

Choroidal vascularity indices and coexisting morphological changes in polypoidal choroidal vasculopathy. A comparative analysis between two treatment strategies

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Purpose: Compare the effect of Combination therapy (PDT+Anti-VEGF) and Anti-VEGF monotherapy on choroidal vascularity indices and morphological parameters in Polypoidal Choroidal Vasculopathy (PCV).
Methods: Retrospective, cohort study involving 33 eyes with a diagnosis of PCV and had visible sclero-choroidal boundary on enhanced depth imaging. Cases were treated either with the combination (n=17) or Anti-VEGF monotherapy (n=16). Demographic details, visual acuity assessment, OCT analysis was considered from baseline to the 3rd and 6th month follow-up visits. Choroidal vascularity analysis including choroidal thickness, Total Choroidal Surface Area (TCSA), Total Stromal area (TSA), Total Luminal Area (TLA), and Choroidal Vascularity Index (CVI) assessment were done with ImageJ software using the technique of image binarization.
Results: Disease activity was significantly higher in the Anti-VEGF monotherapy arm compared to the combination therapy arm both at 3 and 6 months. When compared to baseline values, there was a statistically significant decrease in choroidal thickness, DLS width, TCSA, TSA, and TLA ($P<0.05$) in the combination therapy arm. Whereas, Anti-VEGF monotherapy arm showed an increase in the mean sub foveal choroidal thickness and DLS width at both visits.
Complete collapse of PED, reduction in DLS width which was achieved only in the combination therapy arm showed a significant positive correlation with the resolution of the disease. CVI did not show a statistically significant reduction in both arms.
Conclusion: The analysis of Choroidal Vascular parameters employing the technique of binarization provides insight into the vascular and morphological changes in the choroid and could be a useful tool to understand the effect of therapeutic intervention.

EP-RET-18

Central retinal artery occlusion in a patient with granulomatosis and polyangiitis at Pauls Stradins Clinical University Hospital (Latvia) in September 2019

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Purpose: To report a follow-up of CRAO in a patient with biopsy-verified Granulomatosis with Polyangiitis.
Methods: Patient complains of 2 week febrility, diarrhea, nosebleed, weight loss and rhinorrhea.
Diagnosis: acute renal insufficiency, nephritic syndrome, serologically high AntiPR3 antibodies. Renal biopsy revealed focal crescentic glomerulonephritis. Tests show severe end-organ damage (lung, kidney, nose, CNS).Diagnosis - granulomatosis with polyangiitis.
Therapy: Solumedrol 500mg i/v for 3 days, followed by Prednisolone 60mg SID from 23.09.19
On 24.09.19. (8 am) patient complains about painless blindness in the left eye. CITO ophthalmic examination (10 am): BCVA OD=0.6, OS=hand movements. Left eye has no direct pupil response to light.
Fundoscopy - CRAO signs. OCT - mild hyperreflectivity and increased retinal thickness in the inner retinal layers.
Due to severe end-organ damage, fluorescent angiography is not performed. Tab. Diacarb 250mg is prescribed and eyeball massage done.
Results: Patient receives s/c heparin 5000 IU for 6 days, first dose at 3 pm on 24.09.2019. Heparin administered till 30.09.2019. 4 times per day. MRI for the brain: acute micronuclear ischemic signs in the left hemisphere and parietal lobe.
On 26.09.19 vision improves slightly. On 30.09. patient's vision restores.
08.10.19: BCVA OS= 1.0. Optic disc with visible margins, pinky, slight paleness in temporal quadrant, narrowed retinal vessels. Macular region with no obvious pathology. OCT: light hyperreflectivity in the inner retinal layers, thickness slightly elevated as before.

22.11.19: BCVA OS=1.0, OCT: hyperreflectivity gone, visual fields reveal no pathology.
Conclusions: Treatment of CRAO caused byearlier detected vasculitis with prednisolone pulse therapy, plasmapheresis and early subcutaneous heparin administration in a patient with Granulomatosis/Polyangiitis and severe end-organ damage can lead to visual function recovery.

EP-RET-19

Optical coherence tomography angiography changes in macular area in patients with proliferative diabetic retinopathy treated with panretinal photocoagulation

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Purpose: To investigate the changes in macular microvasculature using optical coherence tomography angiography (OCTA) in association with functional changes in patients with proliferative diabetic retinopathy (PDR) treated with panretinal photocoagulation (PRP) in a follow-up of 12 months.
Methods: Participants in this study were 28 patients with PDR and no macular edema, who were eligible for PRP. All participants underwent best-corrected visual acuity (BCVA) measurement, optical coherence tomography (OCT) and OCT angiography (OCTA) at baseline (before treatment) and at months 1, 6 and 12 after completion of PRP treatment. Comparison of OCTA parameters and BCVA between baseline and months 1, 6 and 12 after PRP was performed.
Results: There was a statistically significant decrease in foveal avascular zone (FAZ) area at months 6 and 12 of the follow-up period compared to baseline (p=0.014 and p=0.011 for month 6 and 12 respectively). Of note, FAZ became significantly more circular 6 months after PRP (p=0.009) and remained so at month 12 (p=0.015).
There was a statistically significant increase in the mean foveal and parafoveal vessel density (VD) at all quadrants at the superficial capillary plexus (SCP) at month 6 and month 12 after PRP compared to baseline. No statistically significant difference was noticed in VD at the deep capillary plexus (DCP) at any time-point of the follow-up. BCVA remained stable during the follow-up period.
Conclusion: At months 6 and 12 after PRP, foveal and parafoveal VD at SCP significantly increased compared to baseline, while the FAZ area significantly decreased and FAZ became more circular. These findings suggest that re-distribution of blood flow may occur in hypo-perfused foveal area after PRP in patients with PDR.

EP-RET-20

Microvascular alterations in patients with central retinal vein occlusion: an optical coherence tomography angiography study

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Purpose: The purpose of this study was to evaluate the changes of foveal avascular zone (FAZ) area and vessel density (VD) in superficial (SCP) and deep capillary plexus (DCP) in association with functional changes in patients with central retinal vein occlusion (CRVO).
Methods: The study included 23 patients (22 eyes) with macular edema due to CRVO, and 25 control subjects (25 eyes). All participants underwent best-corrected visual acuity (BCVA) measurement, optical coherence tomography (OCT) and OCT angiography (OCTA) at baseline (before any treatment). Comparison of OCTA parameters between CRVO eyes and fellow eyes, as well as between fellow eyes and controls was performed.
Results: There was a statistically significant decrease in vessel density (VD) in the foveal and parafoveal area in both superficial and deep capillary plexus in eyes with CRVO compared to fellow eyes ($p<0.001$ for all comparisons) and compared to control eyes ($p<0.001$ for all comparisons).
Fellow eyes showed also a significant decrease in VD in both foveal and parafoveal area ($p<0.001$ for both comparisons) compared to controls. There was also a statistically significant increase in the foveal avascular zone (FAZ) area between eyes with CRVO and fellow eyes (p=0.049), as well as between CRVO eyes and controls (p=0.031). Fellow and control eyes did not differ significantly in terms of FAZ area (p=0.384). The FAZ area was associated with BCVA in eyes with CRVO.
Conclusion: The OCTA reveals that the VD and the FAZ area in CRVO eyes have been impaired compared to fellow eyes and control eyes, while fellow eyes have been also found to be impaired in terms of VD compared to control eyes, suggesting the influence of systemic factors in the development of RVO.

EP-RET-21

Anti-VEGF therapy for neovascular glaucoma following proton beam therapy for choroidal melanoma

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Introduction: Radiotherapy is the current standard for globe sparing treatment of choroidal melanoma, preserving a degree of visual function for such patients. Nevertheless treatment complications resulting in radiation retinopathy and neovascular glaucoma frequently compromise the good outcomes.
Case description: We present a case of a 40-year-old male from Bulgaria who underwent proton therapy in November 2019 in Berlin, Germany for a large, juxtapapillary choroidal melanoma. He subsequently had a lens exchange with IVI of triamcinolone and a PPV with endo-drainage, endo-laser and gas tamponade.
A recommendation was made for a follow up visit after 3 months and regular anti-VEGF IVIs every two months. He had 9 applications of Aflibercept in our

clinic for the period from January 2020 till April 2022. On follow up in the radiation therapy centre in May the tumour was found to be well controlled and no additional IVIs were recommended. In October 2022 however the patient returned to our clinic with pain and redness in the affected eye, engorged episcleral vessels, hyphema and IOP > 40mmHg. US and CT imaging excluded tumour recurrence and we presumed this was a clinical presentation of radiation vasculopathy. A new anti-VEGF IVI course was initiated, which lead to resolution of the hyphema and good IOP control.

Discussion: Radiotherapy is an effective eye preserving treatment of malignant uveal melanomas. However complications related to radiation retinopathy need precise monitoring and in severe cases prolonged anti-VEGF therapy. In cases of NVG with hyphema anti-VGF treatment with Aflibercept showed promising results.

EP-RET-22

Incidence rate of sterile endophthalmitis after intravitreal injection of triamcinolone acetonide

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Purpose: To compare the incidence rates of sterile endophthalmitis following intravitreal injections of three different triamcinolone acetonide preparations.

Method: Retrospective case series study of 332 intravitreal injections of 3 preparations of triamcinolone acetonide - Triam Injekt, TriamHEXAL, and Volon A for macular edema. We compared sterile endophthalmitis rates based on the preparation used, primary diagnosis, lens status, and history of pars plana vitrectomy.

Results: Triam Injekt was used 114 times, TriamHEXAL 190 times, and Volon A 28 times. The incidence of sterile endophthalmitis was 0%, 2.1%, and 14.3%, respectively. The result was highly statistically significant in the case of Volon A compared with the other two preparations ($p<0.01$).

Comparing the primary diagnoses, we found a significantly higher incidence rate in patients with postoperative macular edema (8.5%) compared to patients with macular edema secondary to diabetes (0.6%), retinal vein occlusion (3.3%), and uveitis (0.0%) ($p<0.05$). Other evaluated factors were not statistically significant.

Conclusion: The sterile endophthalmitis rate was higher with Volon A compared to Triam Injekt and TriamHEXAL and in patients with postoperative macular edema compared to other causes. The most likely reason for the significantly higher incidence of sterile endophthalmitis with Volon A injections seems to be batch-related.

EP-RET-23

Etiology and biological features of post-traumatic endophthalmitis causers

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Purpose: Retrospective analysis of the results of the identification of etiological spectrum and some biological features of the causative agents of post-traumatic endophthalmitis.

Method: The study was based on the results of a microbiological examination of 44 patients (44 eyes) diagnosed with "Posttraumatic Endophthalmitis".9 (20,4%) of them were children aged from 2 years to 11 years, 12 (27,3%) - women and 23 (52.3%) - men. The average age of adult patients: 37 - 66 years. Of these 44 patients, workinjury was observed in 12 (27,2%), agricultural in 18 (41%), and household in 14 patients (31,8%). An intraocular foreign body was diagnosed and removed in 19 cases out of 44 (43,2%). The average time interval from injury to treatment was 2,3 ± 1,2 days. 21 of 44 patients (47,8%) needed additional administration of intravitreal antibiotics.

Results: The results of microbiological microbiota research are the following: Gram-positive flora - 19 patients (Staphylococcus aureus - 9,1%, Staphylococcus epidermidis - 9,1%, Micrococcus – 5 11,4%, Propionebacterium acnes – 2,3%, Bacillus brevis – 4,5%, Bacillus cereus – 2,2%, Bacillusmegaterium – 4,5%), Gram-negative flora – 16 patients (Acinetobacter – 2,3%, Enterobacter cloacae – 9,1%, Pseudomonas aeruginosa – 13,7 %, Proteus mirabilis – 4,5%, Proteus vulqaris – 4,5%, Actinobacillus species - 2,2%), mixed infections (bacteria in combination with a fungal infection) - 4 patients (Fusarium - 2,3%, Aspergilius -2,3%, Candida albicans - 2,3%, Candida tropicalis -2,3%). The remaining 5 cases were sterile (11,4%).

Conclusion: 11,4% of cases that acute endophthalmitisthe intraocular content can not to give rise to the growth of microorganisms on nutrient media. 9,1% of the grown colonies consist of pathogen associations. The most severe transient inflammatory process is caused by the Pseudomonas aeruqinosa and Proteus vulqaris, which can even lead to death of the eye.

EP-RET-24

Real-world outcomes of early and deferred anti-VEGF treatment in diabetic macular edema in patients with type 1 diabetes

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Purpose: Intravitreal anti-VEGF injections have revolutionized treatment for diabetic macular edema (DME). The aim of this investigation was to evaluate the effect of timing and baseline visual acuity on outcomes of anti-VEGF-treatment in patients with type 1 diabetes (T1D) with DME.

Methods: Population-based real-world study of anti-VEGF-treated T1D patients with DME during 2010-2020. Data included age, gender, diagnosis of T1D and DME, stage of retinopathy, visual acuity, duration of DME, and the number of injections.

Results: A total of 266 anti-VEGF-treated episodes of DME in 153 eyes of 108 patients were included. An average age at T1D diagnosis was 25±17 years. Time from diagnosis of T1D to onset of DME was 25±13 years, and an average age at DME was 50±15 years. 68% of the patients had non-proliferative diabetic retinopathy and 32% proliferative diabetic retinopathy at the onset of DME.
An average of 5.7±0.5 and 6.6±0.4 injections were needed in the early treatment (baseline BCVA ≥75) and deferred treatment (<75 ETDRS letters) groups, respectively (p=0.207). The duration of DME was similar in both groups (10.4 vs. 10.7 months, p=0.813). No recurrences of DME were noted in 71% of cases. Final visual acuity was 4.9 ETDRS letters higher in the early treatment group compared to the deferred treatment (81.6 vs.76.8 ETDRS letters, respectively, p<0.001).
Conclusions: Early treatment of DME with higher baseline BCVA may indicate better visual outcomes in T1D patients, although duration of DME and the number of injections were alike in early or deferred treatment groups. Working-aged T1D patients with DME benefit from efforts to maintain proper visual function.

EP-RET-26

Marked growth in incidence and prevalence of neovascular age-related macular degeneration in 15 years

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Purpose: Neovascular age-related macular degeneration (nAMD) is a frequent cause for visual impairment and blindness in elderly. Intravitreal anti-VEGF agents have revolutionized the treatment and visual prognosis of nAMD during the past 15 years, but the increase in the number of affected individuals is comparable to the burden for health care.
We aim to evaluate the 15-year incidence and prevalence of neovascular nAMD in different age-groups and between the genders, and to estimate the number of the elderly in 2050.
Methods: A population-based epidemiological study. Data from ophthalmic examination, time of the diagnosis, gender, and age at the onset of nAMD were gathered. The incidence and prevalence rates were calculated using population data.
Results: 2121 patients with nAMD were included (62% women). The average age at the diagnosis of nAMD was 78±8 years. The incidence of nAMD per 100000 person years in the age groups of 44-96 years was 71 in 2006 (95% CI 55–90) and 102 (95% CI 88–118) in 2020. During 2006-2020, the incidence increased from 300 to 366, and from 200 to 471 in those aged 75-84 and 85-96 years, respectively.
The prevalence of nAMD was 862/100000 (95% CI 821–906) in adults aged 44-96 years in 2020. In the oldest age groups of 75-84 and 85-96 years, the prevalence was 2865/100000 (95% CI 2665-3079) and 2620/100000 (95% CI 2323-2956), respectively.The proportion of the inhabitants >75 years old is estimated to increase from 10% at 2020 to 17% by 2050.
Conclusions: Our results indicate constant 1.2- and 2.4-fold increases in incidence and 3% prevalence of nAMD in populations >75 years during the past 15 years. An almost 2-fold increase of the elderly by the year 2050 may predict the future burden of nAMD.

EP-RET-27

Bilateral eye trauma sustained in a rocket explosion during the Ukraine conflict: case report

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Purpose: We present the case of a 61-year-old patient who sustained facial and bilateral eye trauma during the conflict in Ukraine, along with their history and treatment.
Methods: A refugee from Ukraine came to our hospital with a history of eye trauma sustained in a rocket explosion during the war in Ukraine. She had been treated at a local hospital initially. Visual acuity was measured as 0 (zero) in both eyes. One eye was eviscerated, and the other was sutured. The patient had no prior history of eye issues or surgeries. After arriving in Latvia, she sought further eye care.
Results: After an ophthalmological examination, an ocular prosthesis was recommended for the patient's eviscerated right eye, and a phaco-vitrectomy was suggested for her left eye. The eye trauma score assessment yielded a score of 2. Due to the severity of the damage, the patient was advised not to expect much improvement. A phaco-vitrectomy was performed, including a 360* retinectomy, endolaser treatment, and silicon oil tamponade. The macular zone was attached after the surgery. Visual acuity improved from 0 (zero) to a Snellen fraction of 20/1500.
Conclusion: The war in Ukraine will continue to produce acute and chronic trauma patients for many years to come. In general, a vitrectomy is considered to be a successful and effective treatment for various eye conditions, and it often has a good prognosis. However, as with any surgical procedure, there are risks and potential complications, and some cases may have a poor prognosis. Patients with severe eye trauma should receive appropriate and timely treatment, and every effort should be made to improve their compromised vision and address any underlying eye problems.

EP-RET-28

Retinal microvasculature changes after repair of macula-off rhegmatogenous retinal detachment assessed with optical coherence tomography angiography

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Purpose: To describe swept source optical coherence tomography angiography (SS-OCTA) findings after successful macula "off" rhegmatogenous *retinal*detachment (RRD) repair.
Method: Prospective comparative study including 20 eyes of 20 patients with macula "off" RRD that were successfully repaired. The unaffected fellow eyes served as controls. Macular SS-OCT and 3x3 mm SS-OCTA scans were obtained within 3 months after surgery and analyzed in all patients.
Results: The mean age was 49 years. Presenting visual acuity ranged from 20/400 to hand motion (HM). After successful repair, the mean final best corrected visual acuity (BCVA) was 20/80. Post-operative SS-OCT images showed alteration of the external limiting membrane (6 patients; 30%), alteration of the ellipsoid zone (14 eyes; 70%), alteration of the interdigitating zone (16 patients; 80%), epiretinal membrane (5 patients; 25%) and macular schisis

(3 eyes; 15%). Perifoveal capillary changes included increased irregularities of the foveal avascular zone (FAZ) outlines (14 eyes; 70%), intercapillary spacing (17 eyes; 85%), capillary rarefaction and tortuosity (19 eyes; 95%), alteration of the superficial and / or deep capillary plexus (15 eyes; 75%) and capillary hypo-perfusion areas (10 eyes; 50%).
SS-OCTA quantitative analysis showed significant enlargement of the FAZ area in the superficial and deep capillary plexus in operated eyes compared to the fellow eyes (p= 0.002 and p=0.001, respectively). Postoperative VA was lower in eyes with alteration of ellipsoid zone (p <0.001) and interdigitating zone (p = 0.0015) and larger FAZ area (p = 0.002).
Conclusion: Macula-off RRD may cause retinal structural damage even after successful anatomical repair. Foveal capillary changes include FAZ enlargement, capillary rarefaction and tortuosity, intercapillary spacing and alteration of the superficial and deep capillary plexus.

EP-RET-29

Unexplained visual loss after silicon oil tamponade removal

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Background: Silicone oil (SO) is used as an intravitreal tamponade agent in vitreoretinal surgery. Usually, SO is left in the eye for at least 3 months. Although its use can lead to well-known complications, intraocular SO is generally well tolerated. There are few publications in the literature reporting unexpected central visual loss after SO removal.
Purpose: To investigate and analyze the reasons for unexpected visual loss after the silicon oil removal in patients who underwent uneventful pars plana vitrectomy for RRD.
Methods: A retrospective observational case series of 5 patients who reported visual loss after silicon oil removal. Investigations carried out included BCVA, tonometry, fundus fluorescein angiography, optical coherence tomography (OCT), Angio-OCT of the macula and optic disc, perimetry.
Results: Visual acuity levels dropped by at least 2 Snellen chart lines. Fundus fluorescein angiography was unremarkable in four of the cases. One of the cases was presumed a White-Dot Syndrome. The most remarkable finding was discrete thickening of the outer plexiform layer in the fovea and thinning of the Ganglion Cell Complex (GCC).
Conclusions: Visual loss is a rear but possible complication after SO removal. We presume an inflammatory or degenerative cause leading to loss of ganglion cells in the fovea giving a central positive scotoma with drop of central visual acuity.
Keywords: Silicone oil, Visual loss, GCC, OCT

EP-RET-30

Case report of a young patient with Coats disease

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Introduction: Coats disease was first described 1908 by George Coats, on a histopathological features of enucleated eyes with massive exudation. Coats disease is characterized by unilateral progressive development of abnormal vessels in the retina, mostly in young males.
Aim: Aim of our case report is to present a rare case of Coats disease in a young male patient, in stage III partial exudative retinal detachment (Gomez-Morales Staging).
Case report: Patient, T.S., male, born 2007, came to our Clinic with decreased visual acuity in the last month. His parents noticed that the right eye "goes in one side". He had not reported other diseases, or genetic disorders in the family. VOD: Hand motion, VOS: sc 1.0,TOD: 13 mmHg, TOS: 17 mmHg. Slit lamp examination showed on the right fundus exudative retinal detachment with multiple aneurysms and exudates and vascular abnormalities.
Because of solid mass that we saw on B scan, we ordered to do MRI, who showed lesion between 6 and 8 o clock with bleeding, differential diagnosis could be inflammation or tumor formation.
Laboratory results: antibodies for COVID-19 were high 0.189 ug/ml < 0.05, IgG 11.30, high IgE 362.00, and positive ANA antibodies.
Microbiology analysis: Toxoplasmosa gondii negative, HSV negative, CMV negative.
We performed fluorescein angiography that showed early hyperfluorescence of the teleangiectasis and macular edema, early and progressive perivascular leak and peripheral capillary non perfusion. We gave an anti-VEGF aflibercept intravitreal and performed PRP. Patient is still on the same regime, visual acuity on the right eye is improving and retinal detachment is localized.
Conclusion: In Bosnia and Herzegovina live around 3 million citizens, we do not have that opportunity to see a patient with Coats disease. Although our first thought was diagnosis of tumor (retinoblastoma), with diagnostic such as FA, gold standard for retinal vascular diseases, we came to the conclusion that it was Coats disease.

EP-RET-31

Idiopathic multifocal choroiditis (MFC): how the failure to establish an aggressive immunosuppressive therapy influences the progression of active disease and visual outcome: a case study

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Idiopathic multifocal choroiditis (MFC) is part of the group of choriocapillaritis entities not linked to a known infectious agent. It predominantly affects healthy myopic white women and is characterized by uni or bilateral chorioretinal lesions which often show a recurrent course with subclinical novel recurrent lesions and frequently complicated by choroidal neovessels (CNVs).
Herein we aim to report the 3-year course of disease in a 28-year-old myopic white woman with bilateral idiopathic multifocal choroiditis and second-

ary choroidal neovascularization. The activity of the disease was evaluated clinically with multimodal imaging. Choroidal neovascularization was treated with intravitreal Anti-VEGF injections. Our patient lacked systemic therapy for the first 13 months because of noncompliance.
This case demonstrates that progression of active disease through the number and size of lesions, CNV activity, and variations of RPE autofluorescence can develop without systemic treatment, even in the case of a temporary response to Anti-VEGF treatment, by not reducing the inflammatory stimulus.

EP-RET-32

A case of presumed endogenous candida endophthalmitis and its management in a patient with pulmonary malignancy during the lockdown of COVID-19 pandemic

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Endogenous fungal endophthalmitis is a rare disease commonly affecting individuals with predisposing conditions such as immunodeficiency, indwelling catheter, and prolonged hospitalization, and occurs secondary to hematogenous spread of an infectious source into the eye. Severe acute respiratory syndrome-coronavirus-2 (SARS[1]CoV-2) had its outbreak worldwide since December 2019.
Three months later, the first cases of SARS-CoV-2 were registered in the European countries. Severe cases rescued by mechanical ventilation were more likely to develop opportunistic superimposed infections, such as fungal ones, which could easily be missed or misdiagnosed in these very complicated circumstancies.
Herein, we report the case of a 58 years old Caucasian patient, who developed candida endophthalmitis, which had previously undergone left upper lobectomy due to early stage non-small-cell pulmonary lung cancer.
During the first lockdown in april 2020, 2 months following surgery, the patient was was admitted to intensive care for SARS-CoV-2 ARDS. Multimodal imaging was obtained. Full serological screening for infection was done resulting negative. A diagnostic vitrectomy was impossible due to the limited access at the surgery room.
Diagnosis of presumed candida endophthalmitis was made, and therapy with oral fluconazole was administered. At three months, we observed lack of vitreous opacities and atrophic scars with no active lesions.
This case highlights the challenging management in a limited access healthcare period where semeiology, collegial discussion, and multimodal imaging were the main clinical weapons in our armamentarium.

EP-RET-33

Acute macular neuroretinopathy associated with preocclusive retinopathy

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Acute macular neuroretinopathy (AMN) is a rare condition, characterized by wedge-shaped lesions pointing toward the foveal center and sparing the retinal pigment epithelium (RPE) and retinal vessels, resulting in bilateral or unilateral scotomas, typically with preserved central visual acuity (VA).
The pathogenesis remains unknown, although a vascular theory has been proposed, based on the vasoactive nature of the precipitating factors as well as the anatomical localisation of pathology. Approximately 10% of AMN patients appear to be complicated by intraretinal hemorrhages, which are inner retinal disorders.
We present a multimodal imaging analysis of a case of an uncommon unilateral AMN in the context of preocclusive retinopathy occurring in a 46-year-old man. FAF demonstrated multiple parafoveal hypoautofluorescent spots of granular appearance, while IR reflectance and corresponding SD-OCT scan showed parafoveal hyporeflective darker greyish lesions of varying intensity corresponding to hyper-reflectivity at the outer side of Henle's layer and outer nuclear layer (ONL) hyperreflectivity with attenuation of the EZ, and RPE, findings consistent with AMN.
AMN lesions and hemorrhages were significantly reduced 2 weeks after systemic corticosteroids employment. After 2 months the patient presented with central retinal vein occlusion and severe macular edema, subsequently treated with Anti-VEGF injections. It might be plausible that the onset of both AMN and preocclusive CRVO in the present case was due to circulatory disturbances in retinal vessels.
Inflammatory mechanisms are speculated because the functional and morphological abnormalities improved from the early stage after systemic corticosteroid administration, similar to findings in other reported cases. Being that actually there is a lack in literature regarding AMN treatment regimens, our case might indicate the potential efficacy of systemic corticosteroid therapy for specific AMN patients.

EP-RET-34

White dot syndrome – cause and clinical behavior

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Purpose: To present two cases of ocular Tuberculosis masquerading as White dot syndrome.
Methods: Both patients had complaints of painless central monocular blurring. Fundus examination demonstrated multiple small chorio-retinal foci in both eyes. OCT, Angio OCT and FA were done. OCT showed marked atrophy in the macula of the affected eye.
FA show disseminated areas of hypofluorescence in the posterior pole, middle and extreme periphery in the initial phases, progressing to hyperfluorescence in the late phases-characteristic finding in white dot syndrome. Qantiferon and T-spot tests as well as Serology for Lyme disease, Syphilis, HIV, ANA, ANCA were carried out.

Result: Laboratory tests were positive for tuberculosis. Tuberculostatic treatment was the therapeutic choice.
Conclusion: White dot syndrome should be a diagnosis of exclusion. Multiple ethiologies can lead to epitheliitis-like clinical presentation. Multiple imaging and appropriate testing are necessary to rule out possible neoplastic and infectious diseases.

EP-RET-35

Use of peri-operative Anti-Vascular Endothelial Growth Factor injection (Anti-VEGF) in combination with Pars-Plana Vitrectomy (PPV) for complications of Proliferative Diabetic Retinopathy (PDR)

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Purpose: Late (after 4 weeks) Post-operative Vitreous Cavity Haemorrhage (POVCH) remains a significant complication for VR surgeons due to the need of repeated surgeries. Our previous Cochrane review, established that use of peri-operative Anti-VEGF reduces incidence of Early POVCH (within 4weeks).However, our recent Cochrane review identifies new results for Late POVCH. Here, we aim to summarise the results of this review, to report the effects of Anti-VEGF use in reduction in Late POVCH after PPV surgery for PDR.
Method: We included all Randomised Controlled Trials (RCTs) that looked at use of Anti-VEGFs and the incidence of complications in people undergoing PPV for PDR. We searched Cochrane Central Register of Controlled Trials (CENTRAL), Ovid MEDLINE, Ovid Embase, ISRCTN registry, ClinicalTrials.gov and WHO ICTRP.
Results: We performed a Meta-analysis for Cochrane review. Emerging new results are as follows.28 RCTs (1914 eyes) were included in this review. One of the main findings reported in this review is perioperative anti-VEGF use was associated with a reduction in the incidence of late POVCH (10% versus 23%, RR 0.47, 95% CI 0.30 to 0.74 11 studies, 579 eyes, high-certainty evidence.
Eyes receiving peri-operative Anti-VEGF achieved better Best-corrected Visual Acuity (BCVA) at 6±3 months compared to eyes undergoing vitrectomy alone (mean difference (MD) -0.25, 95% confidence interval (CI) -0.39 to -0.11.
We found similar BCVA results for both administration of Anti-VEGF < 5 days preoperatively (MD -0.30, 95% CI -0.53 to -0.07) and ≥ 5 days preoperatively (MD -0.13, 95% CI -0.20 to -0.06).
Conclusion: Our Cochrane review meta-analysis results conclude that peri-operative use of Anti-VEGF prevents late POVCH and improves visual outcomes. The reported complications from use of Anti-VEGF appear to be low however, agreement on variables included and outcome standardisation is required in trials studying vitrectomy for PDR.

EP-RET-36

An atypical case of Vogt-Koyanagi-Harada disease

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Purpose: The aim is to highlight the importance of Contrast-Enhanced brain MRI in the diagnosis of Vogt-Koyanagi-Harada Disease.
Methods: Retrospective analysis of 1 case of Vogt-Koyanagi-Harada with an atypical presentation.
Results: 46-year-old man with presumed Vogt-Koyanagi-Harada disease, who presented with unilateral impaired vision and exudative retinal detachment. The patient had a history of PPV+sil.oil for retinal detachment and phacoemulsification for congenital cataract in the other eye 5 years ago. Brain MRI was attained that showed choroidal enhancement and white matter abnormalities that corresponded with typical Vogt-Koyanagi-Harada findings. The patient received steroid therapy.
Conclusion: This case emphasizes the role of contrast-enhanced brain MRI in disease detection despite of the atypical presentation.
Keywords: Vogt-Koyanagi-Harada, brain MRI

EP-RET-37

Patient acceptability of intravitreal therapies for Geographic atrophy: a mixed-methods study

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Purpose: Geographic Atrophy (GA) remains a significant unmet need, responsible for 1/4 of legal blindness in the UK and around 5 million people affected in at least one eye globally. Complement inhibitor therapies administered by intravitreal injection are in late-stage development. These slow down, but do not stop or reverse, GA progression. Patient acceptability of these emerging GA treatments is unknown.
We aimed to: determine patient acceptability; identify attributes of the treatments that are less acceptable; and explore factors that influence acceptability.
Methods: A mixed-methods qualitative study conducted in London, UK. 30 participants with GA responded to a structured questionnaire and open-ended questions. A discrete choice experiment (DCE)-style exercise was also conducted to evaluate how participants weigh up benefits and drawbacks of different treatment regimens.
Results: Of 30 participants, 20 (67%) were female, 19 (63%) were White and the mean (SD) age at interview was 83(6). 37% of participants had centre-involving GA and mean visual acuity in the better eye was 0.38 LogMAR. 18 of 30 participants (60% (95% CI: 41-79%)) would accept the treatment at any cost, despite potential drawbacks. 8 (27% (95% CI: 10-43%)) were ambivalent about treatment, and 4 (13%) (95% CI: 0-26%)) would be unlikely to accept treatment.
Participants with worse self-reported health (higher EQ5D score) were more likely to accept the treatment ($r(28)=0.42$, $p = 0.021$). Reducing the frequency of injections from monthly to every other month resulted in a sharp increase

in acceptability. Potential drawbacks identified were perceived limited magnitude of treatment efficacy, risk of neovascular AMD, and logistical burden of clinic visits.
Conclusions: A majority of participants are positive about these new treatments for GA despite potential drawbacks. This information, to be confirmed in a larger study, will help optimise service design and ongoing treatment development.

EP-RET-38

Idiopathic subfoveal choroidal neovascularization presenting with a circle-shaped scotoma with acceptable visual acuity following abortion

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Purpose: The aim of this work is to describe a case of idiopathic subfoveal choroidal neovascularization (CNV) following abortion with presenting a circle-shaped scotoma and acceptable visual acuity
Method: Case report
Results: A 26-year-old woman presented with a central circle-shaped scotoma in her right eye off and on for 19 months. Initially, the disturbed visual symptom was noted after the spontaneous abortion in her second pregnancy in January 2021. During this period, she experienced her third pregnancy and birthed her second child uneventfully.
After COVID-19 pandemic easing, she visited our hospital in September 2022 due to the circle-shaped scotoma lasting. Her best-corrected visual acuity (BCVA) was 20/32 in the right and 20/20 in the left eye. Axial length examination disclosed 24.53 mm in the right eye and 24.66 mm in the left eye.
Fundus examination revealed a grayish subfoveal nodule in the right eye. Fluorescein angiography (FA) showed an early phase hyperfluorescence and leakage in the late phase. Indocyanine green angiography (ICGA) showed a hyperfluorescent subfoveal nodule with surrounded by a dark rim.
Optical coherence tomography (OCT) revealed a hyper-reflectivity protruding nodule surrounded by a mild hypo-reflectivity rim. Optical coherence tomography angiography (OCTA) disclosed a close-knit formation of vessels at the level of the outer retina in the right eye. The multimodal images confirmed the diagnosis of idiopathic subfoveal CNV in the right eye. Due to acceptable BCVA and under breast feeding, no intervention and follow-ups were recommended.
Conclusions: The case report demonstrates an idiopathic subfoveal CNV following abortion, which suggests that abortion might be associated with idiopathic CNV. Besides, circle-shaped scotoma and acceptable visual acuity could be occurred in a case of subfoveal CNV.

EP-RET-39

Combined intravitreal alteplase, ranibizumab and pneumatic displacement with C3F8 in submacular hemorrhage secondary to wet AMD

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Introduction: Submacular hemorrhage (SMH) is an uncommon complication of choroidal or retinal vascular abnormalities such as choroidal neovascularization, polypoidal choroidal vasculopathy or retinal macroaneurysms. If left untreated or treatment is delayed, visual prognosis is very poor. There is currently no consensus regarding the best care for SMH and several monotherapy or combined approaches have been used, which can be divided in pars plana vitrectomy (PPV) approaches and intravitreal approaches.
We present two cases of SMH secondary to wet AMD treated successfully with intravitreal injection of alteplase, ranibizumab and pneumatic displacement with C3F8.
Methods: Clinical case review.
Case number 1. 85 y.o. female presented due to a sudden decrease in visual acuity in her left eye (LE) since 3 days prior. Best corrected visual acuity (BCVA) was counting fingers (CF) in her LE and an extensive macular hemorrhage was found on fundus examination with subretinal localization confirmed with OCT. Patient was treated with the combined intravitreal therapy and at 1 week post-op had remarkable improvement with LE BCVA 20/70 with almost no hemorrhage or subretinal fluid detectable on OCT.
Case number 2. 86 y.o male presented due to a sudden decrease in visual acuity in his right eye (RE) with less than 1 day of evolution. BCVA was CF and extensive SMH was diagnosed. At 1-week post-op vision improved to 20/100 and continued to improve with 20/60 BCVA 3 weeks post-op.
Conclusions: Combined intravitreal injection of alteplase, expansile gas and ranibizumab seems to be an effective approach to treat recent SMH in patients with exudative AMD. Compared with PPV approaches, it is less invasive, with a likely lower complication rate, and is more accessible since there is no need for a dedicated vitreorretinal surgery team. Accessibility is of paramount importance in SMH since delayed treatment leads to irreversible damage to the outer retinal layers.

EP-RET-40

Internal carotid artery occlusion with ophthalmologic presentation

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Introduction: Internal carotid artery occlusion (ICAO) is a troublesome clinical entity to diagnose due to the variety of signs and symptoms it can lead to. It can present with ipsilateral facial pain, ipsilateral ophthalmologic signs and contralateral neurologic signs. This variability is explained by the varying degree of collateral circulation that develops with the contralateral circulation. We describe a case of ICAO with ophthalmologic presentation due to ophthalmic artery occlusion and without other neurologic symptoms.

Methods: Clinical case review.
Case report: 74 y.o female presented with complaints of right eye (RE) vision loss and with no other symptoms. Her best corrected visual acuity (BCVA) was 20/50 in the RE and 20/30 in the left eye (LE). Tonometry, pupil and eye movements exam was unremarkable and she had bilateral cortical cataract.
Fundus exam (FE) revealed a slightly increased cup-to-disk ratio of 0.6 in her LE. Since she had family history of glaucoma it was decided to schedule an appointment 1 month after to do some exams. Surprisingly, her RE BCVA was now no light perception (NLP). FE revealed slight pallor of the right optic nerve.
An urgent workup including inflammatory markers, Neurology consultation and angioCT was ordered. The analytic parameters were normal and there were no other neurologic deficits but AngioCT scan revealed occlusion of the internal carotid from its proximal cervical segment until its communicating segment.
Two months after the diagnosis she maintained NLP, FE revealed optic disc pallor and arteriolar attenuation and OCT showed disorganization and thinning of the whole retina, findings compatible with ophthalmic artery occlusion.
Conclusions: Ophthalmic artery occlusion is a rare diagnosis which invariably leads to permanent visual loss in the afflicted eye. We describe a case where the investigation of unexplained monocular vision loss lead the diagnosis of ophthalmic artery occlusion due to ipsilateral ICAO.

EP-RET-42

Investigation of potential miRNA markers in myopia

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Purpose: To examine circulating miRNAs known to be responsible for myopia and to evaluate the prognostic potential of these miRNAs in myopia.
Methods: The study involved a total of 42 myopic and 70 healthy subjects, who were patients of the Eye Disease Clinic of the Lithuanian University of Health Sciences. RNA was isolated from the whole blood samples using the RIzol® LS reagent (Sigma-Aldrich, St. Louis, USA) according to the manufacturer's recommendations (Applied Biosystems, Foster City, CA, USA).
The ΔΔCt values of five miRNAs (miR-328, miR-204, miR-142, miR-29a, miR-let7i) were obtained by RT-PCR (Applied biosystems, Foster City, CA, USA). ROC curves were drawn, and AUC areas were calculated to determine miRNAs that could be used as biomarkers for refractive disorders.
After the solution, the refractive error was measured with an autorefractor (Accuref-K9001, Shin-Nippon, Japan). The mean spherical equivalent was calculated using the standard formula: spherical equivalent = sphere + (cylinder/2). Research data analysis was performed using the IBM SPSS Statistics 27 software.
Results: Comparing correlations between the refractive error and control groups we observed statistically significant differences between the OD and OS variables in the myopia and control groups (z_{obs} = -4.027). The mean of the ΔΔCt miR-328 values of the myopia group was -5.656, while that of the control group = -4.723. The expression of hsa-miR-328-3p did not statistically significantly differ between the myopia and control groups (p=0.543). For miR-328 as a potential biomarker for myopia, AUC = 1 - 0.444 = 0.556, p = 0.033. The AUC of other miRNAs (miR-328, miR-204, miR-142, miR-29a, miR-let7i) ranged between 0.532-0.724.
Conclusion: Based on the AUC areas of the ROC curves, ΔΔCt miR-328 is not suitable as a potential prognostic biomarker in myopia.

EP-RET-43

Multimodal investigations in macular telangiectasia - a case report

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Purpose: To report a case ofMacular Telangiectasia(MacTel)type 2.
MacTel,also known as IdiopathicJuxtafoveolarTelangiectasis(IJFT),is a term used to describe a heterogeneous group of clinical entities characterized by telangiectatic alterations in the macular capillary network of one or both eyes, withdifferentclinical featuresand management strategies.The most common one is MacTel type 2, also namedperifoveal telangiectasia.
Methods: Descriptive case report.
Results: A48year-oldmale presented to theophthalmology departmentaccusing progressive both eye (BE) visual deterioration, 0.6 on the decimal scale at the moment of intial examination.The anterior segmentand intraocular pressurewerenormalin BE.The eye fundus exhibited temporal small areas of parafoveolar capilary dilatation, grey in appearance.
Optical coherence tomographydisplayeda cystic apperance of the fovea, without associated subretinal fluid. Fundus autofluorescence showed slightly decreased foveal hypofluorescence, while fluorescein angiography revealed the small telangiectatic vessels, which leaked in late stages of the examination.
Using the Adaptive Optics (AO) Retinal Camera rtx1TM (Imagine Eyes, France) and the AOdetect mosaicTM software we tried to quantitatively characterize the paracentral cones in nine different points situated1°away from the center.
When compared to normals, fotoreceptors density in patients with MacTel type 2 appeared to be significantly lower in all approached areas.
Conclusions: MacTel is a rare and challenging diagnosis, which requires a multimodal approach. The current case exhibits standard clinical and imagistic features.
In addition to those, AO brings meaningful contribution in detecting early photoreceptor abnormalities in eyes with MacTel, even in areas with normal vasculature. It appears that cones loss may precede vascular changes appearance in idiopathic MacTel.

EP-RET-44

Paracentral Acute Middle Maculopathy (PAMM) during SARS-CoV-2 infection: a case report

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Purpose: To present a case of a patient with acute visual loss and PAMM during SARS-CoV-2 infection.
Methods: A 33-year-old male patient presented with acute vision loss in his right eye for the last 2 hours.His visual acuity was hand motion in his right eye (RE) and 1.0 in his left eye (LE). Fundus examination of his RE revealed retinal whitening in the macula while his LE appeared normal.
Optical coherence tomography (OCT) revealed hyperreflectivity of the inner retina layers. OCT-angiography demonstrated disruption mainly in the deep capillary plexus (DCP) while the superficial capillary plexus (SCP) appeared rather normal.
En-face structural OCT with segmentation at the DCP showed a well-defined whitish area corresponding to the area of retinal ischemia. Two weeks later fluorescein angiography revealed no definite signs of retinal ischemia or vascular occlusion.
Additionally, on OCT the hyperreflectivity was limited to a band in the inner plexiform, outer plexiform and outer nuclear layers.
Results: Following the above findings the diagnosis of PAMM was made. Laboratory PCR test for SARS-CoV-2 infection was positive. Cardiac examination revealed no signs of systemic hypertension or arrhythmias. Laboratory testing measured D-Dimer levels of 0.75μg/mL (limit <0.50) and homocysteine levels of 24.10μml/L (limits 5.46-16.20). Genetic testing revealed that he was heterozygote for MTHFR 677 C-T polymorphism.
Conclusions: PAMM and retinal vascular occlusions have been described in patients with COVID-19 infection and have been associated to the inflammatory and coagulation abnormities caused by the disease. Genetic mutations associated with hypercoagulability may also be implicated in such cases.

EP-RET-45

Purtscher-like retinopathy associated with carotid artery dissection

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Purtscher retinopathy is a rare condition classically described in patients with a history of trauma. Purtscher-like retinopathy includes the nontraumatic causes of this retinal disease, such as acute pancreatitis, renal failure, autoimmune diseases and thrombotic microangiopathies. We would like to present a case report of Purtscher-like retinopathy associated with carotid artery dissection, which to our knowledge is the second ever published.
A 42-year-old woman was admitted to the stroke unit with an ischemic stroke of her left middle cerebral artery secondary to a left carotid artery dissection. Computed tomography angiography confirmed the diagnosis. Three days later she complained of sudden-onset vision loss in her left eye (LE). Fundus examination of the LE showed multiple peripapillary Purtscher flecken and cotton-wool spots and an inferior-temporal retinal artery embolic occlusion. The patient had a good visual recovery at 3 months, but other neurological deficits persisted.
Although Purtscher-like retinopathy is very uncommon, ocular examination is mandatory in patients with sudden vision loss and history of carotid dissection.

EP-RET-46

Early real-world outcomes following intravitreal Faricimab for diabetic macular oedema in a multi-ethnic UK cohort

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Purpose: Faricimab is the first bispecific agent to be approved for the management of wet age-related macular degeneration and diabetic macular oedema (DMO). Benefit in a real world ethnically diverse cohort is yet to be determined. We report early real-world outcomes in treatment-resistant and treatment-naive patients treated with Faricimab therapy for DMO.
Methods: Consecutive patients presenting with centre-involving DMO or not responding to standard of care were initiated on Faricimab therapy between July and December 2022. Functional and structural parameters 4 weeks after first Faricimab injection are presented in this interim analysis.
Results: 35 eyes of 25 patients (mean age 66.6; 48% female;48% South Asian, 20% Black) were included in this interim analysis. Fourteen eyes were switched from previous anti-VEGF or steroid therapy; the mean number of previous injections in this treatment-resistant cohort was 14. Baseline BCVA was LogMAR 0.34 (±0.21), baseline central subretinal fluid (CSFT) was 425.9μm (±115.2).
The proportion of eyes with subretinal fluid (SRF) at baseline was 8/35 (23%) and 100% had intraretinal fluid (IRF). Mean change in BCVA 4 weeks after the first injection of Faricimab was -0.06 (±0.09) p=0.0006 . Mean CSFT and MV reduction was - 67.6 (±87.9) p<0.00001 and -0.53 (±0.6) p= 0.0001 respectively. 6 of 35 eyes (17%) had SRF and 34/35 had IRF 4 weeks after the first Faricimab injection. No intraocular inflammation or endophthalmitis was observed.
Conclusion: Our results indicate a potential benefit of Faricimab therapy in a multi-ethnic cohort with DMO. Longer term real world analyses is required to assess efficacy and durability.

EP-RET-47

OCT imaging of yellow dye laser spots using different physical parameters: a case report

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Purpose: We discuss the physical parameters of yellow dye laser that was used to treat a retinal break in the posterior pole, using the Optical Coherence tomography.
Case presentation: A 58-year-old male with no past ocular or medical history presented in the emergency department due to photopsia and floaters in his left eye. Best corrected visual acuity was 10/10 in both eyes. Slit lamp examination revealed no pathological signs except of Schaffer sign (+) in the left eye.
During fundoscopy we identified a retinal break, one optic disk diameter inferiorly to the optic nerve. The yellow dye laser was preferred for the management of this break due to its location.
The scattering of the yellow light is lower compared to green and it is also not absorbed from xanthophyllin, lowering the risk for any inadvertent damage in the macular and optic disk areas[1].
We measure the size of the thermal burns that were produced by the yellow dye laser using the OCT and compare the results of different laser parameters (power, pulse duration time, size spot)
Conclusion: The yellow dye laser is probably a safer choice for treating retinal breaks in the posterior pole due to lower scattering range and minimal xanthophyllin absorption.
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EP-RET-48

Ophthalmologic presentation of a rare peroxisome biogenesis disease

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Introduction: Heimler syndrome is a very rare condition (OMIM number #234580) which usually manifests with sensorineural hearing loss, nail and teeth abnormalities and retinal dystrophies. This autosomal recessive condition is caused by pathogenic variants in the PEX1 or PEX6 genes and is a part of the group of peroxisome biogenesis disorders.
We report on two new cases with confirmed diagnosis of Heimler syndrome and describe their systemic and ophthalmologic phenotype.
Methods: Medical records review of two siblings with the disease, a boy of 5 and a girl of 11 years old.
Case reports: Both siblings were diagnosed with sensorineural hearing loss from early on and later retinal dystrophy with exuberant intraretinal cystoid spaces, fundus abnormalities and cone-rod dysfunction was described. The older sibling also had amelogenesis imperfecta and neither had nail abnormalities.
Serum very long chain fatty acids were measured and a slight increase was found in C26:0, phytanic acid and pristanic acid, which is compatible with peroxisome dysfunction.
Genetic analysis identified homozygosity for the pathogenic variant c.2528G>A p.(Gly843Asp) in PEX1 gene in both siblings. The siblings were born from consanguineous parents, with a coefficient relationship of 1/8. The parents were heterozygous carriers of the variant.
Conclusions: We hereby report on new familial case of Heimler syndrome, a very rare autosomal recessive disorder, with the aim of expanding the knowledge about this disease and informing future diagnosis and management in other cases. In this case the disease was caused by biallelic PEX1 pathogenic variants with ophthalmologic manifestation as a retinal dystrophy characterized by cone-rod dysfunction and complicated by intraretinal cystoid spaces.

EP-RET-50

Acute bilateral Irvine-Gass syndrome following phacoemulsification

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Purpose: Irvine gass syndrome is a cystoid macular edema which become the most common cause of decreased vision following cataract surgery. The incidence of Irvine gass syndrome after phacoemulsification surgery is about 4%-11% but the incidence of bilateral irvine gass syndrome is unknown.
The purpose of this case report is to recognize sign and symptom, prevent and give an appropriate treatment to achieve a good visual outcome.
Methods: The diagnosis of Irvine Gass Syndrome was made based on history taking, physical examination and macular OCT examination.
Results: A 64 years old man came to hospital with blurred vision on the right eye for about 6 weeks and left eye for about 3 weeks after phacoemulsification. Visual acuity on his right eye was 0.30 LogMar and left eye was 1/60. On funduscopic examination, there were optic disc and macular edema. Macular OCT showed cystoid macular edema (RE 484µm, LE 466µm).
After giving potassium diclofenac orally and sodium diclofenac eye drop on the both eye, the macular thickness was decrease (RE 299µm, LE 355µm) and the visual acuity was 0.00 LogMar on the right eye and 1/60 on the left eye.
Posterior capsule opacity of the left eye was found in week 15. Then NdYag laser was performed on the left eye, resulted in increasing of macular thickness to 370µm and visual acuity 1/60.
After giving methylprednisolone orally and betamethasone eye drop on left eye, the visual acuity increased to 0.80 LogMar and the cystoid macular edema was become persistent.
Conclusion: Rapid and appropriate diagnosis and management of Irvine Gass Syndrome can give a good visual outcome. NdYag laser can induce and increase macular thickness. Consideration for giving proper therapy after NdYag laser and choosing a perfect timing to performed NdYag laser after phacoemulsification in macular edema patient are playing an important role in improving visual acuity.
Keywords: Irvine Gass Syndrome, Pseudophakic Cystoid Macular Edema, Posterior Capsule Opacity.

EP-RET-51

Treatment of submacular hemorrhage secondary to age related macular degeneration with pars plana vitrectomy with subretinal tissue plasminogen activator and subretinal bevacizumanb injection

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Purpose: To evaluate the outcomes of pars plana vitrectomy with subretinal tissue plasminogen activator and subretinal bevacizumab injection with intravitreal injection of SF-6 gas in patients with submacular hemorrhage secondary to age related macular degeneration (AMD).
Methods: This retrospective study included 7 eyes of 6 patients with submacular hemorrhage secondary to AMD. Main outcome measurements were postoperative visual acuity, surgical complications. Prognosis and size of the hemorrhage were observed.
Results: Mean duration of SMH prior to surgery was 14.5±10.9 (4-35) days. Preoperative best corrected visual acuity (BCVA) was 1.5±0.34 (1-1.8) logmar and mean central retinal thickness (CRT) was 640±157 μm. Postoperative BCVA improvement and reduction of CRT were significant (p = 0.039 and p = 0.001 respectively). All patients (100%) had submacular scar.
Conclusion: This study suggests that pars plana vitrectomy, subretinal tpa and subretinal bevacizumab injection and SF-6 gas injection may be an effective treatment for patients with SMH and AMD. Even though loss of deep retinal layers is limiting factor, baseline BCVA and preoperative CRT were important prognostic factors for the final visual outcome.

EP-RET-53

BNT162b2 (Pfizer/BioNTech) COVID-19 vaccination was not associated with the progression of activity of the exudative form of age-related macular degeneration during anti-VEGF therapy

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Purpose: Evaluation of the activity of the exudative form of age-related macular degeneration (AMD) during anti-vascular endothelial growth factor (anti-VEGF) therapy before and after administration of BNT162b2 (Pfizer/BioNTech) vaccination.
Methods: The optical coherence tomography and best corrected visual acuity (BCVA) records of the two previous visits before the first dose of BNT162b2 (first pre-vaccination visit marked as "V-1", the previous pre-vaccination "V-2"), and two subsequent visits after the second dose of vaccination (first visit after the second dose marked as "V1", second visit after the second dose marked as "V2") were collected for 63 eyes of 59 patients.
Results: The difference in the average retinal thickness was observed between the last and each other checkpoint for the aflibercept group and in the overall outcome.
The maximum thickness from the inner retinal surface to the inner border of RPE decreased during the observation; differences were observed comparing visits -2 and 1. Subretinal complex thickness decreased during follow-up, and the differences were observed between visits -2 and 2.
There were no statistically significant differences in the BCVA and the occurrence of intraretinal cystoid fluid, serous PED, subretinal hyperreflective material, and retinal hemorrhage.
Conclusion: In the present study, the activity of the exudative form of AMD did not deteriorate after the administration of the BNT162b2 vaccine.

EP-RET-54

Choroidal neovascularization after accidental laser-induced macular injury: case report

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Purpose: To describe a case of a 60-year-old male with choroidal neovascularization following laser induced macular injury.
Method: Case report.
Results: A 60-years-old caucasian male professor of physics was admitted to the emergency department after accidentally being hit by an 1 μm infrared laser beam in his left eye (LE). He complained about central scotoma and blurred vision in LE.
At presentation, best-corrected visual acuity (BCVA) in LE was 0.3. Before the injury, BCVA was 1.0. Anterior segment examination showed normal findings in LE but fundoscopy was blurry because of hemophthalmus and disclosed an elevated whitish parafoveal lesion with distinct vitreal destruction above it.
Optical coherence tomography (OCT) revealed an increase in retinal thickness and retinal pigment epithelium rupture and ablation in the size of 1-1.5 disc diameter. Patient received ambulatory treatment with Sol. Nepafenacum and Sol. Dexamethasonum - Chloramphenicolum. 2-days later, BCVA in LE was 0.5 and 2-weeks later BCVA was 0.6.
Fundoscopy showed unchanged lesion, resolvement of hemophthalmus and subretinal hemorrhage inferior from lesion. OCT showed (positive dynamics in LE with) decrease in retinal thickness, fibrosis and closure of RPE rupture. OCT angiography showed choroidal neovascularization (CNV) in the site of lesion. Patient received intravitreal injection with Bevacizumab the next day. One week later BCVA in LE was the same, OCT showed CNV regression into fibrotic scar. We recommended continued treatment with Anti- VEGF injections and dynamic follow up for three months.
Conclusion: Laser instruments are used in many spheres of human life and this increased use of lasers has resulted in many non-therapeutic injuries.The clinical course of significant retinal laser injuries is characterized by sudden loss of vision, often followed by marked improvement over a few weeks, and occasionally severe complications as choroidal neovascularization as in this case.

EP-RET-55

Plug the pit: a surgical technique for optic disc pit

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Purpose: To present a recently described surgical technique for the treatment of optic disc pit (ODP) and evaluate its outcomes.
Methods: A patient presented with refractory serous macular detachment and secondary full thickness macular hole associated with ODP, for which he had already undergone pars-plana vitrectomy with internal limiting membrane peeling and autologous serum application over the optic disc pit.
A recently described surgical technique was carried out to treat this case. In this procedure, a silicone punctal plug was used to close the ODP. The macular hole was closed with a human amniotic membrane graft. Endotamponade was carried out with 1000cs silicone oil.
Results: Postoperatively, the serous macular detachment subsided and the punctal plug and amniotic membrane graft were*in situ*. Patient's visual acuity improved from counting fingers to 6/38 at one year postoperative.
Conclusion: This technique appears to be safe and effective in resolving long standing serous macular detachment associated with ODP, which was refractory to the conventional intervention. However, more cases and longer follow-ups are needed to affirm the safety and efficacy of this recently described procedure.

EP-RET-56

Bilateral Ocular Ischemic syndrome - a case report

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Ocular Ischemic Syndrome (OIS), a disorder of ocular function which develops when the carotid artery or one of its branches becomes stenotic. Transient ischemic attacks and retinal artery occlusion are two examples of the disease's acute expression. Retinopathy and its sequelae, as well as neovascularization, are examples of chronic symptoms.
Males are twice as likely to develop OIS as females, and the average age of presentation is 65 years, with a range of 50 to 80 years. 20 percent of the time OIS is bilateral.
We submit a case study of a 49-year-old man who had been experiencing a noticeable bilateral vision loss for few months, Visual acuity in both eyes were 1/60 with no improvement with pinhole. He had a complicated medical background and seemed old for his age. He had a history of splenectomy, chemotherapy, and radiation for Hodgkin's lymphoma. He had post-radiotherapy cardiac fibrosis, which mandated a mitral valve replacement and pacemaker installation. Examination with Carotid Doppler and Retinal Fluorescein Angiography was carried out following ocular evaluation.
This case is reported for its rare bilateral presentation with dramatic pictures of hypo perfusion in both eyes. The importance of ocular implications of systemic pathologies is highlighted.

EP-RET-57

Gene polymorphism potentially associated with proliferative vitreoretinopathy

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Purpose: To investigate the associations of selected single nucleotide polymorphisms (SNP) in genes of some growth factors, cytokines as well as genes involved in inflammation and oxidative stress in patients proliferative vitreoretinopathy (PVR).
Method: A case-control study was performed in 192 patients with rhegmatogenous retinal detachment (RRD) who underwent pars plana vitrectomy (PPV). Enrolled as controls were 80 patients without PVR after PPV for RRD and 112 patients who developed PVR Grade C1 or higher within 3 months after surgery (enrolled as cases).
Genotype distribution was investigated within SNPs in: 4 genes of cytokines: IL-1A (rs17561), IL-2 (rs2069763), CCL2 (rs3760396), IL-6 (rs1800795); genes of 3 types of growth factors: TGF-B1 (rs1800471), FGF2 (rs9990554), TNF (rs1800629); 7 common putatively functional SNPs, located within the coding region or in the vicinity of 5 genes associated with response to oxidative stress or inflammation: SOD2 (rs4880), CAT (rs1001179), GPX1 (rs1050450), IL1B (rs1143623, rs16944, rs1071676); and MIR146A (rs2910164).
Genotype frequencies within SNPs, investigated in this study, were compared between cases and controls and statistically evaluated.
Results: Statistically significant associations within PVR were found in four polymorphisms: in rs1800795 of the IL-6 gene (OR 1.68; 95% CI, 1.02-2.77; p=0.04), in rs1800471 of the TGF-B1 gene (OR 2.14; 95% CI, 1.05-4.34; p=0.032), rs4880 of SOD2 (OR=2.31, 95% CI=1.01-5.27, P=0.046) and rs1071676 of IL1B gene (OR=0.50, 95% CI=0.26-0.95, P=0.034).
However, none of the associations reached the threshold for statistical significance after adjustment for multiple comparisons.
Conclusion: Our data revealed the potential association between SNPs in genes of IL-6, TGF-B1, SOD2 and ILB1B with PVR. Further studies, particularly larger multicentric population-based studies are necessary as well as to standardize the definitions of phenotypes and inclusion criteria for participants.

EP-RET-58

Reticular drusen-like lesions in a 18-year old female with eclampsia

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An 18-year-old female patient with a history of eclampsia one month ago applied to our clinic due to decreased vision in both eyes. Her best corrected visual acuity was 20/32 in both eyes and her anterior segment findings were normal. Subtle optic disc edema, multiple dark, old choroidal infarct areas in the

fundus periphery, and a drusen-like appearance in the macula were prominent in fundoscopy. OCT showed a reticular drusen-like appearance in the macula, a thickened choroid, and normal-looking inner retinal layers in both eyes.
Her past medical records at the time of the eclampsia episode were obtained and revealed a prominent optic disc edema and a massive serous detachment of macula in both eyes.
Reticular drusen has been associated to a nearly twofold increase in the incidence of geographic atrophy and choroidal neovascularization in age-related macular degeneration (AMD). To our knowledge and based on a careful search of the literature, reticular drusen-like lesions have only been documented after preeclampsia in a study by Otero-Marquez et al.
Similar to the findings of this study, our case demonstrates the significance of the association between hypertension-related choroidal ischemia and reticular drusen. We strongly believe that diligent monitoring of patients with a history of eclampsia is essential for early detection of possible AMD development.

EP-RET-59

Clinical and genetic assessment of USH2A-related disorders in Bulgarian population

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Puropose: To investigate the frequecy of USH2A mutation, the genotype-phenotype correlations and to compare the severity of the eye disease in patients with Usher syndrome type II (USH2) and Retinitis pigmentosa (RP).
Method: A prospective study was conducted. A total of 219 patients with inherited retinal disease(IRD) were tested, of whom 73 patients with RP, and 10 patients with USH2A-mutations were found. Genetic testing and ophthalmological exams were conducted in all of the patients.
Results: The prevalence of patients with USH2A-mutations was 4.56% for the whole group, and 13.69% for the patients with RP. Hotspot of USH2A-mutations was c.9424G>T,and c.12234_12235del, p.(Asn407Trpfs*19). Point mutations were the most common type of genetic mutations.
Collectively the 10 USH2A- positive patients displayed 17 distinct variants including 6 nonsense variants, 6 missense variants, 2 exon deletion variants leading to partial gene, 1 frameshift-inducing indel and 2 frameshift variants leading to stop codon expression. In USH2 group (n=6) nonsense variants were the main disease causative mechanism and the mean VA for the group was 0.365.
The first symptom in 66.67% of the cases was hearing loss dating since early childhood. In the RP cohort (n=3) the most common types of genetic mutations were exon deletion (33.3%) and frameshift variants (33.3%), with mean VA=0.45.
The first symptom in this group was nyctalopia dating since adolescence. One of the patients, the only one with heterozygous missense mutation, showed clinical features of macular dystrophy and no hearing loss, and does not comply for either of the aforementioned groups.
Conclusions: This study provides clinical and genetic assessment of Bulgarian patients with USH2A-mutations. Data analysis shows more severe eye disease in USH2 rather than RP, as well as worsening of the symptoms with age.

EP-RET-60

SIRE sign, a tool for early detection of non-exudative macular neovascularization using structural OCT

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Introduction: Pre-symptomatic non-exudative macular neovascularization (NE-MNV) confers an increased risk for exudative disease and potential irreversible changes to central macular function. Non-invasive structural OCT markers with good predictive value for the detection of NE-MNV are therefore of great usefulness in clinical practice.
Methods: Retrospective case series.
Results: Recently, the shallow irregular RPE elevation (SIRE) sign has been defined as a structural OCT sign with a good correlation to the presence of NE-MNV in vascular functional imaging such as OCTA. The terminology shallow irregular retinal pigmented epithelium elevations ("SIRE") has been defined as RPE elevations with a greatest transverse linear dimension of at least 1000 µm, an irregular RPE layer with a height of predominantly less than 100 µm and a nonhomogenous internal reflectivity with characteristic features of the "double layer sign". We report on a small case series with 7 eyes where RPE irregularities and SIRE sign were described on standard structural OCT, which led to further investigation with OCTA and diagnosis of a previously unknown NE-MNV, supporting the high positive predictive value of the SIRE sign.
Conclusions: Visual prognosis in patients which go on to develop exudative-MNV is strongly dependent on how early the diagnosis is made and if treatment is started before irreversible changes occur. SIRE is a structural OCT sign which is practical and easy to identify in clinical practice and its presence should warrant further investigation for a NE-MNV with OCTA.

EP-RET-61

HIV microangiopathy in wasting syndrome

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Purpose: To report a clinical case of HIV microangiopathy in a patient diagnosed with wasting syndrome.
Method: Clinical case report, wide-field retinal images, laboratory and radiology examinations and bibliographic review.
Results: A 31-year-old man in previous good health, presented to the emergency department with one-week history of fever up to 39° C, cough and chest pain and was diagnosed with presumed COVID-19 pneumonia due to the pandemic epidemiological situation at the time. After two SARS-CoV-2 negative PCR tests and after further anamnesis, laboratory and radiologic tests, he was finally diagnosed with a 3C stage HIV infection (AIDS) with a CD4+ T lymphocyte count <50 and p. jirovecci associated pneumonia.
He was referred to the ophthalmology consult to rule out the presence of opportunistic infections. The patient did not report any vision or ocular symptom, and visual acuity was 20/20 in both eyes.

On fundus examination he presented cotton-wool spots in the posterior pole of both eyes in number of 4 to 6. There were no haemorraghes or vascular abnormalities. A diagnose of HIV microangiopathy was made. Retinal findings disappeared after highly active antiretroviral therapy (HAART) was started within two months. No other ocular symptoms or vision loss were reported during follow-up.

Conclusion: HIV microangiopathy is the most common posterior pole presentation in HIV infection. It is characterized by cotton-wool spots in the posterior pole that might be accompanied by haemorraghes or vascular abnormalities such as telangiectasias. They usually self-resolve after initiation of HAART with no sequelae. Although ocular manifestations of HIV infection are infrequent due to the targeted therapy, ophtalmologist should be aware of these specific manifestations that can lead to diagnosis of a systemic and potentially life-threatening disease.

EP-RET-62

De novo development of bilateral multiple focal choroidal excavations in Sorsby fundus dystrophy with a novel mutation

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A 51-year-old Caucasian woman with Sorsby fundus dystrophy (SFD) was examined every 6 months. In addition to the fact that genetic testing revealed a novel mutation in TIMP3 (c.455A>G (p.Tyr152Cys)), de novo development of the focal choroidal excavation (FCE) appeared on optical coherence tomography (OCT) on the OS 4 years after initial visit. FCE on the OD was diagnosed 3 years thereafter.

First intravitreal injection of bevacizumab (IVB) was administered at that time due to active choroidal neovascularisation (CNV) and the patient was seen monthly since then. Second FCE on the OS and second FCE on the OD occurred on Month 8 and 15, respectively after that.

The patient underwent photorefractive keratotomy 20 years ago, when she had -3.0 dioptres on both eyes, spherical equivalent was -3.5 at the last visit. Best corrected visual acuity (BCVA) was 0.2 logMAR on ODS due to RPE atrophy in the beginning. BCVA gradually decreased to final 0.4 logMAR on the OD during last 3 years from a total follow-up time of 10 years and didn't change on the OS. She received a total of 15 IVB injections.

We performed standard examination and captured colour, red-free and autofluorescence images regularly. Perimetry, fluorescein and indocyanine-green angiography were indicated also. The OCT used was of a spectral domain type (Cirrus, Zeiss) in the beginning, and of a swept-source one (Triton, Topcon) in the last 3 years (including OCT-angiography). Although first FCE on the OD was located next to the CNV, no specific finding on any modality correlated with other FCE locations.

Only en-face imaging outside the choroidal-scleral interface showed that remaining 3 FCEs were situated close to the course of short posterior ciliary arteries. Their high perfusion rate together with a thinned choroid may be the pathogenic mechanism of FCEs development.

However, there is no explanation for their various times of onset. To the best of our knowledge this is the first published case of FCE in SFD.

EP-RET-63

Presumed herbal-induced bulls-eye maculopathy: a case report

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Purpose: Bull's eye maculopathy is a term given to describe the observation of a ring of pale-looking damage around a darker area of the macula. There are multiple causes for bull's eye, such as retinal dystrophies, neurodegenerative or hereditary diseases and drugs. Our purpose is to report a case of bull's eye maculopathy probably caused by herbal medicines.

Method: We present a case of a bull's eye maculopathy in a 61 years-old woman with a history of herbal medicine consumption.

Results: A 61 year-old woman attended an ophthalmology consultation with complaints of progressive decrease in bilateral visual acuity during the last year. She had no relevant family history (to note a lack of knowledge regarding the paternal family). Apart from high myopia, there was no ophthalmic history. She is apparently healthy, apart from a history of prolonged consumption of multiple vitamins and herbal medicines since many years ago. Best corrected visual acuity was 6/10 in the right eye and 5/10 in the left eye.

Biomicroscopy revealed a significant cataract in both eyes (OU). Fundoscopy showed a bull's eye macular appearance. There was a thinning of the outer retinal layers OU with loss of photoreceptors and ellipsoid zone in the perifoveal area (Spectral-Domain Optical Coherence Tomography), producing the flying saucer sign. Fluorescein angiography showed mottled hyperflorescence in the parafoveal region and around the optic disc OU. A list of medicines taken by the patient was obtained, but she was unable to specify all of them (Uva ursi was not part of it).

Conclusion: Bull's eye maculopathy has been reported in association with herbal toxicity from uva ursi. Despite the supposed absence of this compound, the prolonged intake of multiple herbals, combined with the exclusion of other causes, led to presumed herbal-mediated retinal toxicity.

In these cases, a complete list of drugs should be obtained in order to potentially broaden the list of drugs with retinal toxicity.

EP-RET-64

Cancer associated retinopathy (CAR) two years after ovarian cancer surgery: a case report

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Purpose: To document a case of a cancer associated retinopathy (CAR) that presented with blurred vision, narrowed visual fields, maculopathy, retinal pigment epithelium and photoreceptors degeneration, attenuated retinal vasculature, and abnormal electroretinogram (ERG) findings.

Methods: A 53-years old female presented to an outpatient ophthalmology clinic with a subjective decrease in night vision bilaterally, which has been progressing for past two years since the ovarian cancer surgery.

On clinical examination the visual acuity was decreased bilaterally, an OCT exam revealed a maculopathy in the right eye with pronounced thinning of the photoreceptor layer and degeneration of the retinal pigment epithelium (RPE)

in the macular region bilaterally. Subsequently a fluorescein angiography of fundus was performed revealing attenuation and sheathing of the retinal arterioles.
On the following visit the neurological visual field examination was performed revealing a severe narrowing of visual fields bilaterally with a ring scotoma surrounding the macula in the left eye. Next an ERG test was performed revealing silencing of both rods and cones signal output.
Results: The presented test results and clinical findings uniformly suggest the destruction of photoreceptors as the source of symptoms experienced by the patient. To confirm CAR the blood antibodies against retinal antigens were tested at increased levels indicating the pathophysiological mechanism of the photoreceptor destruction. A two-months course of oral and topical steroid therapy was administered resulting in a stabilization of symptoms over the course of one year follow-up.
Conclusions: CAR is a rare paraneoplastic retinopathy that leads to severe decrease in visual acuity, narrowing of visual fields and blindness. The shorter the time frame between diagnosis and start of treatment the better the outcome, therefore it is essential to suspect CAR whenever a sudden visual loss develops in a cancer patient.

EP-RET-65

Purtscher-like retinopathy: Ocular findings in a young patient with chronic kidney disease

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Purpose: To report a case of Purtscher-like retinopathy treated with systemic steroids in a young patient with chronic kidney disease.
Setting: Purtscher's retinopathy is a rare retinal disorder secondary to trauma. The clinical pattern seen in Purtscher's retinophathy has been attributed to several systemic non-traumatic conditions; namely acute pancreatitis, fat embolism syndrome and autoimmune and connective tissue disorders. The term "Purtscher-like" is the correct designation to describe this retinopathy occurring in non-traumatic situations.
Report of case: An 18-year-old female patient with chronic kidney disease (stage 3b) presented with bilateral, sudden vision loss during a upper respiratory infection (presumably an influenza-like syndrome). Best corrected visual acuity was 20/32 bilaterally and fundoscopic examination revealed cotton wool spots, Purtscher flecken and intraretinal haemorrhages. Flourescein angiography showed areas of retinal ischemia with vascular leakage and optical coherence tomography showed cystoid macular oedema.
The patient completed a short-course treatment with high-dose oral steroids. After 1 week, BCVA was 20/20 bilaterally. After 1 month, fundoscopy, OCT and angiography evaluation revealed complete resolution of the retinal injury. No recurrence was seen throughout the 1-year follow-up.
Conclusions: Purtscher-like retinopathy is a rare, sight-threatening retinal disorder. We described a case of retinal injury presumably related to chronic kidney disease and possibly triggered by an influenza-like syndrome, with a favorable visual recovery.

EP-RET-69

Treatment of retinal vein occlusion during COVID-19 pandemic: an unicentric database analysis

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Purpose: To analyse the management and clinical outcomes of retinal vein occlusion patients treated with intravitreal injections during the COVID19 pandemic.
Methods: Unicentric retrospective observational case series enroling patients diagnosed with retinal vein occlusion treated with at least one anti-VEGF intravitreal injection during the COVID-19 pandemic (from March 9, 2020 to October 10, 2022). All patients observed during this period at Ophthalmology Department of Centro Hospitalar de Leiria were included. Data regarding demographics, attendance rates to scheduled treatments, best corrected visual acuity (BCVA) and macular thickness were collected using national Retina Study Group database (retina.com.pt).
Results: 57 eyes from 57 patients met the inclusion criteria, including 23 central and 34 branch retinal vein occlusion. BCVA at the first and last observation was 46.5 and 56.9 ETDRS letters respectively ($p = 0.002$), representing a mean gain of $+10.4 \pm 23.0$ ETDRS letters. Macular thickness decreased significantly ($p<0.001$) from 559.4 to 320.3 μm (average decrease of 239.1 ± 251.3 μm). During the COVID19 pandemic period, patients were treated with a mean of 9.2 intravitreal injections per year (follow-up of 378.5 ± 185.5 days) and have attended an average of 3.4 visits.
Conclusion: During the COVID19 pandemic, a huge impact on healthcare systems has been reported worldwide, resulting in significant delay of scheduled treatments. Nevertheless, according with this analysis urgent care of retinal vein occlusion patients was kept, with numbers of mean of intravitreal injections and BCVA variation within expected pre-pandemic values.

EP-RET-71

Persistent pupillary membrane with Bergmeister's papilla: a rare case report

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We report a 15 year old female with unilateral Persistent Pupillary Membrane (P.P.M) associated with Bergmeister's Papilla (B.P), which was an incidental finding.
Introduction: PPM appears as iris strands. They are remnants of tunica vasculosa lentis. A BP is a remnant of the hyloid vascular system of eye.
Case report: A 15 year old girl child presented with visual deficits for unilateral visual deterioration in left eye since the last 4 years and the uncorrected visual acuity in RE was 6/6 and that of lLE was reduced to perception of light and projection of rays inaccurate in nasal quadrant.
The pupil in both eyes were equal in size, round and regular, reactive to light in right eye (RE) and sluggishly reactive to light in left eye (LE). On slit lamp: The membrane was attached to the iris anteriorly and to the anterior lens capsule posteriorly.
Fundoscopic examination of the LE shows a vitreous thickening in the inferior sector of the optic disc, seen as a greyish white glial tissue on the optic nerve head.

Sheathing of the infero-nasal & infero-temporal retinal venous vessels were seen. This glial tissue also led to dragging of optic disc and macula towards each other and this pulling force on the optic disc has led to striae like formation on the macula.

Discussion: This case report of PPM with BP was diagnosed clinically and confirmed by OCT. In a study, the overall prevalence of BP was found to be 0.8%.

Visual acuity range from 6/6 to <6/60. Acc. to Duke-Elder's classification our case had Type 2 PPM.

Conclusion: This case report of PPM with BP is a rare entity and has been reported once in a baby with Potter's syndrome few decades back who had other associated ocular and systemic anomalies.

This case report is a rare one from the perspective that failure of regression of both the embryological elements- tunica vasculosa lentis and hyaloid artery were present simultaneously.

EP-RET-73

Application of deep learning for automated detection of macular diseases and abnormalities of vitreomacular interface

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Purpose: To develop an automated segmentation algorithm for the detection of cystoid macular edema (CME), age related macular degeneration (AMD), vitreomacular interface abnormalities (VMA), central serous chorioretinopathy (CSR) using optical coherence tomography (OCT).

Methods: An artificial neural network model based on Feature Pyramid Network (FPN) architecture with modification (EfficientNetB0 as a backbone) was trained to segment the following pathological signs: intraretinal (IRF) and subretinal (SRF) fluid, retinal pigment epithelial detachment (PED), subretinal hyperreflective material (SHRM), retinal drusen (RD), epiretinal membrane (ERM), vitreomacular traction (VMT), lamelar (LMH) and full-thickness (FTMH) macular hole.

The training dataset consisted of 14000 OCT-images, while the testing dataset consisted of 1000 OCT-images. Accuracy, sensitivity, specificity and area under the receiver operator characteristic curves (AUROC) were calculated to assess algorithm accuracy parameters.

Results: The developed algorithm achieved the highest accuracy for the detection of FTMH (99.7%) with a specificity of 99.9% and AUROC of 0.97, following by SHRM (accuracy=98% / specificity=99% / AUROC= 0.99), VMT (accuracy= 98% / specificity=99% / AUROC=1.0), IRF (accuracy= 97% / specificity=98% / AUROC=1.0), SRF (accuracy= 97% / specificity=98.6% / AUROC=0.98), RD (accuracy= 94% / specificity= 96% / AUROC=0,98) and ERM (accuracy= 92,5% / specificity= 94% / AUROC=0,97).

Conclusion: The highly accurate algorithm of automated segmentation of retinal pathological signs was developed. Based on the designed segmentation algorithm we developed a differential diagnosis algorithm for detection of CME, AMD, VMA and CSR, which is currently approbed in a clinical trial.

EP-RET-74

Anti-VEGF treatment for retinal vein occlusion: Long-term morphological and functional assessment in a retrospective case series

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Purpose: To present the long term treatment outcomes (morphological and functional) in patients with macular oedema due to retinal vein occlusion (RVO) following anti-VEGF injections.

Methods: The medical records of 31 patients with macular oedema due to RVO were retrospectively reviewed since 2012.

The following data was retrieved at presentation (Visit A) and 2 months after their last injection (Visit B): Best-corrected visual acuity (BCVA), OCT data (central retinal thickness-CRT, presence of intraretinal fluid-IRF, subretinal fluid-SRF, hyperreflective foci-HF), type of RVO (Branch/Central). The number of anti-VEGF injections was also documented.

Results: We included 31 eyes: CRVO (7 patients), BRVO (24 patients).

Mean BCVA in CRVO: 0.18 (Visit A) (range 0.05-0.30), 0.39 (Visit B) (range 0.05-0.70).

Mean BCVA in BRVO: 0.36 (visit A) (range 0.1-1.0), 0.51 (visit B) (range 0.1-0.9).

Mean CRT in CRVO: 719μm (Visit A) (range 480-923), 301μm (Visit B) (range 220-642).

Mean CRT in BRVO: 559μm (Visit A) (range 262-999), 298μm (Visit B) (range 133-930).

In CRVO cases: presence of SRF, IRF and HF in 5,7,1 cases (Visit A) and in 0,4,1 cases (Visit B) respectively.

In BRVO cases: presence of SRF, IRF and HF in 13,24,10 cases (Visit A) and in 3,12,11 cases (Visit B) respectively.

Mean number of anti-VEGF injections administered: 4.29 in CRVO, 5.54 in BRVO. Mean follow-up time was 21 months for CRVO cases and 22 months for BRVO cases.

Mean increase in BCVA in BRVO was 0.15, and 0.21 in CRVO. CRT decreased by an average of 418μm in CRVO, 261μm in BRVO.

Conclusion: BCVA and CRT improved in most of CRVO and BRVO cases treated with anti-VEGF injections. SRF improved in most cases, while IRF resolved in almost half of the cases. No major change was recorded in the presence of HF.

EP-RET-75

Can salivary CRP be used as a non-invasive screening tool for diabetic retinopathy?

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Purpose: Although early detection & treatment of diabetic retinopathy (DR) can prevent blindness, numerous barriers exist in screening. We are attempting to identify a tool which is non-invasive, simple & does not depend on the ophthalmologist. Existing evidence suggests association between serum C-reactive protein and DR. In this study we aimed to compare salivary C - reactive protein (sCRP) & pH among diabetics with and without retinopathy.

Methods: We included 90 diabetics (with or without DR)) in a hospital-based cross-sectional study. After excluding all the potential confounding factors and a thorough oral examination, saliva was collected by unstimulated passive drool method and sCRP was estimated using ELISA. The discrimination threshold for sCRP for differentiating DR vs no DR was estimated using the Receiver Operating Characteristic (ROC) analysis.
Results: Significantly lower sCRP (119.78±31.58 vs 138.45 ± 47.4; p=0.031) and pH levels (6.19 ± 0.55 vs 6.79 ± 0.56; p<0.001) were seen in patients with and without DR, without any correlation with severity of DR. The discrimination threshold of sCRP in DR was ≤124.97pg/ml (79% sensitivity;74% specificity). There was also no correlation between the sCRP levels and duration of diabetes, HbA1c & BMI.
Conclusion: sCRP and pH were significantly lower in DR. sCRP was moderately sensitive & specific in differentiating DR vs no-DR at discrimination threshold of ≤124.97pg/ml. The potential of this screening tool in a large population-based setting needs to be studied.

EP-RET-76

Changes in choroidal neovascular membrane morphology during antiVEGF treatment

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Purpose: AntiVEGF therapy is the main therapeutical option for age related macular degeneration. In the course of this therapy choroidal neovascular membrane (CNVM) is undergoing changes. In our work we would like to descibe these changes and how they help us to decide how to continue the treatment and in which dosing regimen.
Methods: Documentation of patients undergoing long-term antiVEGF treatment all of which were treated for two or more years. Documentation of choroidal neovascular membrane changes on OCT angiography - reaction after switching an antiVEGF agent, ending the treatment and follow ups or extending interval between aplications. We will demonstrate each step by showing choroidal neovascularization in choriocapillaris and its changes.
Results: We were able to show morfological changes of choroidal neovascular mebrane during the course of antiVEGF treatment – changes in halo zone, changes of vessel density and their branching, reduction in CNVM size, reactivation or apperance of new smaller CNVM in a different part of choriocapillaris.
Conclusion: Based on our experience OCT angiography is a very useful tool when deciding about treatment regime. It helps us to determine when to change agent or when to end treatment. We can also use it to monitor retina after the end of treatment and prevent recurrence of activity by restarting the antiVEGF therapy early if need be.

EP-RET-77

24 months results of surgically managed optic disc pits complicated with maculopathy

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Purpose: Our purpose is to present the results of our 24 months follow up of the optic disc pit maculopathy cases which were surgically managed in Centro Hospitalar Universitário do Porto.
Methods: A retrospective longitudinal analysis of 13 eyes with optic disc pit maculopathy. Clinical data was collected and analyzed.
Results: All of the 13 eyes from 12 patients (10 women, 2 men) with optic disc pit complicated with maculopathy were submitted to pars-plan vitrectomy with induced posterior vitreous detachment and internal limiting membrane peeling. Mean age at diagnosis was 27.3 (SD=16.2).
All eyes had a neurosensorial detachment which involved the fovea and 1 of them had detachment beyond the vascular arcades. All but one patient had concomitant intraretinal fluid (in the internal retinal layers). Regarding optic disc pit localization, 6 eyes had pits located in the temporal disc, 6 inferotemporal and 1 superotemporal.
All patients were treated with endolaser in the temporal optic disc margin, in the area adjacent to the pit. Tamponade with SF6 was performed in 12 eyes and C3F8 in 1 eye.
Mean BCVA at baseline and after 1, 6, 12 and 24 months were respectively 0.24 (0.29), 0.28 (0.28), 0.36 (0.29), 0.49 (0.32) and 0.52 (0.35).
Time until resolution of the intraretinal intraretinal and subretinal fluid was 4.4 (3.09) and 7.2 (3.88) months.
Complete resolution occurred in 12 of the 13 eyes during the 24 months follow-up. In one eye there was a reappearance of neurosensorial detachment and need for reintervention. One of the eyes developed a macular hole during follow-up.
Conclusions: Optic disc pits may complicate with maculopathy and compromise visual acuity in many patients. Treatment options are multiple and success rate varies. Our experience show that, in cases of maculopathy, ILM peeling plus peripapillary laser and gas tamponade may be a good option in these cases.

EP-RET-78

Syphilis infection: acute zonal external occult retinopathy (AZOOR) as form of presentation

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Purpose: Ocular syphilis is known as “the great pretender” due to the multitude ophthalmological problems that may present. Early diagnosis and treatment are important to minimize visual sequelae in these patients. AZOOR as a form of initial presentation of syphilis disease is rare.
With this clinical case we try to expose an unusual form of presentation in patients with syphilis, as well as its correct evolution with the appropriate treatment.
Method: It is presented the clinical case of a 40-year-old man who debuted with acute zonal external occult retinopathy and serological tests positive for neurosyphilis.

Results: 40-year-old patient was attended in the emergency room due to decreased visual acuity in the right eye. After performing optical coherence tomography, autofluorescence and electroretinogram, AZOOR was suspected. A complete analysis and serology where done. The results where positive for treponema with RPR 1/64).
Given these findings, in conjunction with internal medicine service, the patient was admited for inpatient care. Treatment with benzylpenicillin 2M IU IV every 6h was started for 12 days, completing outpatient treatment (due to late secondariness) with another 2 doses of IM penicillin (penicillin G benzathine 2.4 M units).
In the subsequent explorations after treatment, the retinal alterations seen in the first exploration regressed, as well as it was documented animprovement of the visual acuity.
Conclusions: The most common form of ocular presentation for syphilis is ocular inflammation in form of uveitis. However, it can be present in multiple forms (papilitis, vasculitis, chorioretinitis, etc.).
AZOOR presentation is very rare (few cases described in the literature) but it must always be kept in mind in the differential diagnosis. It is important the adequate treatment due to the good evolution that these patients usually present.

EP-RET-79

Choroidal osteoma: 20 year follow-up

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Purpose: Description of a case of choroidal osteoma and its evolution over 20 years with the aim of reviewing clinical symptoms, diagnostic tests and its complications.
Method: We present the clinical case of a 31-year-old woman without medical history who was found to have a choroidal osteoma in the LE as a casual and asymptomatic finding in a farm. A follow-up is carried out in retina consultations for 20 years (up to the present).
Results: The initial funduscopic examination revealed an orangish subretinal lesion with pigmentary mottling with well-defined borders and 4x5 superior peripapillary papilla (PD) diameters. After 8 years of follow-up, we found significant growth of the original lesion and a new lower parafoveal 1x1 PD lesion similar to the original one.
As the years go by, the second lesion was found to have grown towards the fovea. This growth caused an increase in subretinal fluid after 12 years of follow-up and choroidal neovascular membrane (CNVM) after 14 years with decreased visual acuity (VA) despite intravitreal treatment.
Conclusions: Choroidal osteoma is a very rare benign tumor. It is important to carry out a long-term follow-up of these patients in order to identify possible complications and treat them, since the duration of this condition is a risk factor associated with vision loss.

EP-RET-80

Intraretinal edema after intracameral application of cefuroxime

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Introduction: The case report describes the case of two patients aged 66 and 67 years who underwent cataract surgery in our clinic in February and December 2022 and whose postoperative healing was complicated by intraretinal edema.
Methods: In cataract surgery, intracameral application of the ocular cephalosporin ATB Cefuroxime is recommended prior to wound closure to prevent the development of endophthalmitis.In both patients, the pre-operative findings on the anterior and posterior segment of the eye including OCT of the macula were without pathological findings. In both cases the surgery was without complications.
At second postoperative day check-up, the corrected visual acuity was decreased without corresponding findings on the anterior or posterior segment, and the OCT of the macula showed intraretinal edema to the image of serous retinal detachment.
Both patients had complete resorption of edema and improvement of corrected visual acuity to 1.0 the fifth day after surgery. No intraretinal edema was observed in other patients operated at the same day who received the same solution intracamerally.
Conclusion: In both patients operated on different days, weobserved a similar pattern of intraretinal edema, which was completely resorbed by postoperative day 5, and there was also an improvement in corrected visual acuity to 1.0. No dilution error of the solution was observed, it was probably a hypersensitivity to the substance.

EP-RET-81

Paracentral acute middle maculopathy following knee surgery

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Introduction: To present a case report of Paracentral Acute Middle Maculopathy (PAMM) following knee surgery and to show its clinical features revealed by optical coherence tomography (OCT) and perimetry.
Clinical case: Our patient is a 58-year-old female with no history of interest who 24 hours after undergoing a knee arthroplasty started with poor general condition, respiratory distress and decreased consciousness. Blood test revealed an elevation of acute phase reactants and a decrease in hemoglobin and platelet counts, being diagnosed with fat embolism syndrome. She also reported visual loss in her left eye (OS) so a complete ophthalmologic examination was performed.
She presented a visual acuity (VA) of 20/20 in her right eye (OD) and 20/40 in OS.
At funduscopic examination no significant alterations were found. An OCT was performed showing foveal flattening and irregular alteration of middle layers with normal thickness.

In 30.2 perimetry isolated temporal-inferior paracentral points with decreased sensibility were observed. With the clinical findings and medical history, a diagnosis of PAMM was made.
During follow-up both clinical and OCT stability are maintained with scarce improvement in VA, being 20/32 in OS.
Conclusions: PAMM is caused by ischemic hypoxia of the middle retinal layers, specifically the inner nuclear and outer plexiform layers, due to alterations in the vasculature of the intermediate and deep capillary plexuses. In fat embolism small fat droplets travel to retinal capillaries causing hypoxia.
Patients report blurred vision and paracentral scotomas with few funduscopic alterations, being necessary complementary tests such as OCT for diagnosis. Therefore, it is important to perform further exams in patients with visual loss and apparently normal ophthalmoscopic examination.
There is no current treatment for PAMM and the prognosis is uncertain, varying from irreversible damage to spontaneous improvement.

EP-RET-82

Case report on radiation retinopathy: multimodal imaging approach

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Introduction: Radiation retinopathy (RR), better defined as radiation chorioretinopathy, is an occlusive vascular pathology following radiotherapy, generally targeted on the eye or peri-ocular structures. The introduction of increasingly precise therapeutic techniques, such as stereotactic radiosurgery or proton therapy, has led to a decrease in the incidence of this pathology in the last years.
However, the inclusion of the retina in the radiation field is sometimes unavoidable. Its clinical presentation, occurs from 3 months to 3 years after radiotherapy, usually causing a slowly progressive and painless visual acuity loss.
Case presentation/discussion: We report the case of a 48 year old man who had been treated with radiotherapy due to an orbital cavernous hemangioma 3 years ago that related moderate visual acuity loss. We analyse the pathological findings of RR using multi-modal imaging, with special focus on the usefulness of the optical coherence tomography angiography (OCTA). The OCTA allows for evaluation of blood flow in deeper retinal and choroidal layers, which are usually masked by the overlying structures in fluorescein angiography (FA). Since the chorioretinal vasculature has a prominent involvement in RR, the OCTA is of great value in the early detection of anomalies due to this disease.
We describe the patient's evolution after treatment with retinal photocoagulation and intravitreal anti-vascular endothelial growth factors, and the main features detected by ophthalmoscopy, FA, OCT and OCTAduring follow-up.
Conclusion: It would be interesting to use OCTA in patients who have received orbital radiotherapy as it can detect vascular abnormalities that represent the earliest changes in the clinical course of RR.However, the role of OCTA is still to be defined and its outcomes should be analysed with caution when deciding on management and treatment of RR.

EP-RET-83

Structural and functional macular changes after primary retinectomy. Surgical indications and anatomical and functional outcomes

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Purpose: To report surgical indications, anatomical and functional outcomes of primary retinectomy, to assess structural macular changes following surgery.
Method: Retrospective multicentre cohort-study. Forty-three primary retinectomies in eyes undergoing initial vitrectomy between 1996-2021 were included.
Results: Surgical indications were macula-involving rhagmatogenous retinal detachment with proliferative vitreoretinopathy (PVR) grade C or D (70%), penetrating eye injury with retinal incarceration (16%) and tractional retinal detachment in proliferative diabetic retinopathy (14%). Anatomical success rate was 46.5% after one retinectomy and 63% after two retinectomies. Final BCVA≥20/200 was achieved in 12% of cases, one case gained≥20/80. Final mean postoperative BCVA of successes with oil in situ was 1.96 ± 0.69 logMAR (20/1824 Snellen equivalent) compared with 1.54 ± 0.74 logMAR (20/693 Snellen equivalent) of successes after oil removal (p=0.089).
Post-operative macular OCT was obtained from 70% of successes. Normal macular profile was found in 16%, the other cases demonstrated exudative maculopathy (58%), macular atrophy (16%), tractional maculopathy (10%). Final BCVA was significantly higher in eyes with normal macular profile compared to eyes with exudative maculopathy and macular atrophy (p=0.043).
Conclusion: Primary retinectomy may be used for selected vitreoretinal conditions. Anatomical and functional outcome are inferior than non-primary retinectomies for grade C PVR. Functional outcome was influenced by macular changes, positive prognostic factors include removal of oil without re-detachment and normal final macular anatomy.

EP-RET-84

The eye in systemic diseases: a window into pathology

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Purpose: Oculo-visual signs as presentation of a complex and severe pathology is not rare. With this case we want to show up the importance of knowing ophthalmological manifestations of systemic diseases and of making a correct differential diagnosis. Also a co-management with general practitioners can be critical for the patient.
Methods: A 58 years-old male, without any relevant medical history, came to our eye emergency department with a subacute bilateral nonspecific vision loss. His best corrected visual acuity was 20/25 and 20/20 respectively.

Fundoscopy showed nerve fiber layer infarcts (cotton-wool spots) and mild inner retinal hemorrhages with macular and peripheral subretinal fluid, similar images in both eyes. Optic coherence tomography (OCT) scanning showed macular subretinal fluid with fibrin deposition. Physical examination showed malignant hypertension, severe normocytic anemia (< 6.5 gr/dl) and signs of heart failure secondary to probable hypertrophic cardiomyopathy.
Results: The patient had a retinal microangiopathy (Purtscher-like retinopathy), and in our differential diagnosis we included pancreatitis, connective-tissue diseases, HIV-associated microangiopathy and infectious processes.
He was admitted to the hospital for further monitoring and management, resulting in the diagnosis of hypertension, cardiomyopathy (hypertrophic versus infiltrative), prerenal failure, thrombotic microangiopathy (TMA) on kidney biopsy, axonal polyneuropathy and HIV-1 infection with a CD4 cell count <200 cells/microL.
2 weeks later after systemic stabilization and antiretroviral therapy (ATR), the fundoscopy and OCT macular findings had mostly normalized.
Conclusions: Differential diagnosis should include diabetes, malignant hypertension, connective-tissue diseases, retinal vein occlusion and cytomegalovirus retinitis.This case aims to highlight a multidisciplinary approach to solve complex cases. An ophthalmologist's extensive knowledge helps to identify other health problems.

EP-RET-85

Intraocular foreign bodies: clinical characteristics and prognostic factors for visual outcomes

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Purpose: To evaluate the clinical presentation of patients with intraocular foreign bodies (IOFB) and establish prognostic factors for visual outcomes.
Methods: Medical records of all patients undergoing surgery for an intraocular foreign body at Centro Hospitalar Universitário do Porto in the last decade were retrospectively reviewed.
Results: This study included 108 eyes of 107 patients. Most patients were adult males (88.9%) of working age (88.9% were 18-64 years old). Retinal lesions were documented in 40.7% of the eyes and 17 (15.7%) eyes presented with retinal detachment. Seven (6.5%) eyes presented with endophthalmitis. The majority (78.7%) of IOFB were metallic and entered the globe mainly through the cornea (68.5%).
The median (interquartile range) time to first procedure was 1 (0-2) days, with most IOFB (72.2%), retrieved at that moment. Pars plana vitrectomy were performed in 74 eyes. In this study, good presenting visual acuity (VA), lens sparing, absence of hyphema and retinal detachment and the presence of vitreous hemorrhage were associated with good final VA.
Conclusion: Open-globe injuries with IOFB are a public health issue that impose preventable social and economic burden as it affects mostly working-age subjects. Hence, early intervention and preventive measure are of uttermost importance to prevent social and visual disability.

EP-RET-86

Visual deterioration due to Covid related delay in intravitreal Anti-VEGF injections - clinical study in patients with retinal vein occlusion (RVO) associated with macular oedema

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Purpose: Timely delivery of anti-VEGF injections in patients with retinal venous occlusion with macular edema was not possible due to the pandemic. The possible clinical and demographic factors that may have caused visual deterioration in such patients is presented here.
Method: The study included all patients undergoing delayed intravitreal Anti-VEGF injections for macular oedema associated with retinal vein occlusion, during the pandemic. The review was done over the period of 1 year from January 2022 to December 2022 in the medical retina clinic, eye department, at the University Hospitals Northamptonshire, Kettering. Data was collected from the clinical harm review forms, OCT, software e records, blood reports.
Results: Total of 126 patients of retinal vein occlusion who underwent Anti-VEGF treatment found to have delay due to pandemic. Out of 126 reviewed 69 were BRVO and 57 were CRVO. The number of patients found to have visual loss from the delay was 9 of which 7 were CRVO and 2 BRVO. Male to female ratio was 6:3. The clinical factors that were evaluated included lipid profile, renal profile, associated diabetes, patients on blood thinners.
Visual acuities were converted from Snellen to a letter scoring system for statistical purposes. The visual deterioration was divided into mild, moderate, and severe depending on loss of Snellen's visual acuity i.e., 1 line loss,1-3-line loss and >3 lines loss respectively (subjective errors were ignored).
Out of 9 patients, 4 found to have mild visual loss, 5 had moderate and none had severe visual loss. Attention was also paid to the initial response of the macular edema to the anti-VEGF injections as measured on the OCT scans.
Conclusion: This clinical study gives us a better understanding of predictability of visual deterioration in certain patients thereby giving us an opportunity to discuss their prognosis, avoiding any form of delay if possible and deliver timely anti-VEGF injections as clinical priority.

EP-RET-87

Spontaneous closure of a full-thickness stage 2 macular hole within 3 weeks

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Our purpose is to address a case report of a 71-year-old male patient with a stage 2 idiopathic macular hole that closed spontaneously. The patient visited our clinic complaining about a distorted vision in his right eye in the past week. On a fundus examination, we observed a macular hole with a posterior vitreous detachment.
Optical coherence tomography was performed and a stage 2 idiopathic macular hole was confirmed. The patient was then redirected to a vitreoretinal clinic for further analysis, however, subjective problems resolved spontaneously meanwhile. On a control optical coherence tomography imaging, the macular hole was completely closed and visual acuity improved notably.

Spontaneous resolution of a macular hole was obtained with a bridging of the retinal tissue across the hole. After a 2-month check-up, there was an improvement in best corrected visual acuity from 0,5 Snellen to 0,8 Snellen, and the patient no longer complains about metamorphopsia. Further follow- ups are planned with regular optical coherence tomography monitoring.

EP-RET-88

Central retinal thickness changes following uncomplicated phacoemulsification cataract surgery in diabetic patients without retinopathy and nondiabetic patients

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Purpose: The development or worsening of macular edema following cataract surgery in diabetic patients can be attributed to increased inflammatory mediators in the aqueous and vitreous after phacoemulsification. Our study aimed to assess changes in the central macular thickness (CMT) in diabetic patients without retinopathy and nondiabetic patients following uncomplicated phacoemulsification surgery using spectral-domain optical coherence tomography (SD-OCT).
Method: This study included 110 eyes from well-controlled diabetic patients without retinopathy and 99 from healthy controls. CMT values were measured using SD-OCT preoperatively and at one week, one month, three, and six months postoperatively. Statistical analysis was performed using SPSS21.0, and the difference was considered significant if $p<0.05$. All values are expressed as means ± SD.
Results: The mean age of all patients was 7510.52 years. The mean CMT values in well-controlled diabetic patients without retinopathy preoperatively, at one week, one month, and 3 and 6 months postoperatively were 255.02 19.002, 265.71 16.090, 264.13 17.072, 256.12 16.069, and 255.10 15.055 m, respectively. The corresponding values in control group patients were 255.00 17.811, 264.69 15.089, 263.11 16.069, 255.31 15.076, and 255.09 16.055 m, respectively. Significant differences in the mean CMT values between these two groups preoperatively and at all four-time points postoperatively were not observed ($p>0.05$).
Conclusion: CMT values increased following uncomplicated cataract surgery at one week and one month postoperatively. However, a significant difference between these groups was not observed.

EP-RET-90

Retinal hemorrhages in the context of thrombocytopenia secondary to azathioprine therapy

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Introduction: It should be noted that prolonged accumulation of blood between the layers of the retina releases biochemical compounds that can cause toxicity and damage to the photoreceptors resulting in permanent visual impairment.
Method: Case report and review of the literature.
Results: We present the case of a 34-year-old man with a diagnosis of Ulcerative Colitis treated with 5-asa, topical Budesonide and Azathioprine (Inmurel).
He was admitted to the Digestive Department on 3/9/22. Laboratory tests showed severe thrombocytopenia. It was suggested that the causative drug was Inmurel.
A few hours after admission, the patient reported blurred vision and myodesopsia in both visual fields. Fundoscopy revealed bilateral peripapillary haemorrhages.
On day 9, he reported a reddish stain, especially with his right eye. He was re-evaluated and pre-retinal bleeding was observed in this eye affecting the pre-macular region, with a similar appearance in the contralateral eye.
When the clinical situation improved , optical coherence tomography and retinography was performed. With visual acuity of 0.05 in the left eye and central scotoma in the right eye, it was decided to perform a hyalodectomy in the most affected eye, the right one, as the contralateral eye had a foveal haemorrhage that prevented laser drainage.
On the 20th day, visual acuity was 0.9 in the right eye. The same bleeding persisted in the left eye. After seven days, only subhyaloid blood remained in the right eye. The blood in the left eye decreased in size and was more dehaemoglobinised, so expectant management is maintained.
At one and a half months the acuity is 0.5 in the left eye, and the tomography shows the haematic remains in the fovea. The course is favourable and the patient can be discharged.
Conclusion: Retinal haemorrhages may occur in the context of severe thrombocytopenia, an early approach to laser hyalodectomy can avoid late vitrectomy and increased complications later on.

EP-RET-93

The role of glucose variability in the development of retinal microvascular changes in patients with type 1 diabetes mellitus

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Introduction and aim: The aim of the presentation is to emphasize the importance of glucose variability (GV) in the development of retinal microvascular changes in patients with Type 1 diabetes mellitus (T1DM). Using a subcutaneous glucose sensor, the concentration of glucose in subcutaneous tissue is monitored continuously, and the obtained data provide information on the GV over the sensor lifespan (7-14 days).
Methods: The correlation of glucose variability (usually calculated as standard deviation [SD] or coefficient of variation [CV]) with the development of diabetic retinopathy (DR) or its progression to more severe forms is documented on the cases of two patients with T1DM.
Results: A patient with lower GV (SD=2.4 with 82-84% time spent in the target glucose range between 3.9 and 10.0 mmol/l) has no signs of DR. A patient with high GV (SD=5.8 with 52% in the target glucose range between 3.9 and 10.0 mmol/l) developed severe proliferative DR with complications.
Conclusion: Patients not only with poor glucose control, but also with higher GV, have higher risk of developing DR. Continuous glucose monitoring (CGM) using a subcutaneous sensor contributes to better diabetes control

by allowing the patient to respond immediately to current glucose values and trends with food intake or insulin dosing. CGM can also be used with insulin pumps with automatic insulin delivery in advanced hybrid closed loops systems. Optimal glucose control and low GV is the best strategy to prevent DR.

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EP-RET-94

Temporary keratoprosthesis combined with vitrectomy for severe globe injury

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Purpose: To describe a case of a 44-year-old man with ocular trauma after a mine explosion. From the moment of the injury, the patient reported significant visual impairment (no perception of light in the right eye and a perception of light without localization in the left eye).
The patient was diagnosed with a double-sided penetrating corneal scleral wound and traumatic cataract, retinal detachment and intraocular foreign bodies after a battlefield mine explosion.
Methods: The three-stage procedure, consisting of using soft contact lens as temporary keratoprosthesis, vitrectomy, and penetrating keratoplasty, was performed in the damaged eye.
Results: A soft contact lens allowed for excellent visualization of the posterior segment during vitrectomy. At the one-month follow-up, the eye that was operated on could sense light. The corneal transplant remained translucent, and the retina was attached.
Conclusion: The described method, when performed by an experienced surgeon, may aid in simultaneously treating coexisting corneal opacification and vitreoretinal disorders.

EP-RET-95

Clinical parameter study in patients with visual deterioration associated with diabetic macular edema due to pandemic related delay in intravitreal anti-VEGF treatment

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Purpose: The study demonstrates delay in the delivery of anti-VEGF injections in patients with diabetic macular edema due to Covid pandemic and the possible clinical factors that may have caused visual deterioration in such patients.
Method: Patients included were during the period of 1 year from January 2022 to December 2022 at the University Hospitals Northamptonshire, Kettering. Data was collected from the clinical harm review forms, Medisight electronic notes including OCT measurements, mediviewer (digitalised previous notes local to the hospital) and blood/ result reports.
Results: There were a total of 889 patients who had a Covid related delay in their treatment. Of these, there were 71 patients found to have visual deterioration. The clinical factors evaluated included duration and grade of diabetic retinopathy, HbA1C and renal profile. Visual acuities were converted from Snellen to a letter scoring system for statistical purposes.
The visual deterioration was divided into low, moderate, and high depending on loss of Snellen's visual acuity i.e., 1 line loss,1-3-line loss and >3 lines loss respectively (subjective errors were ignored).
Out of 71 patients, 61 were found to have mild visual loss, 9 had moderate visual loss and 1 had severe visual loss. Attention was also paid to the initial response of the macular edema to the anti-VEGF injections as measured on the OCT scans.
Conclusion: This clinical study gives us a better understanding of predictability of visual deterioration in certain patients thereby helping in planning injection protocols for patients and help in tackling capacity issues to a certain extent.

EP-RET-96

Retinal detachment after myopic LASIK surgery-case report

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Purpose: To report two cases of unilateral retinal detachment (RD) after myopic LASIK.
Case presentation:
First case: A 17-year-old male with Axial Length (AL) 27 mm in right eye (OD) and 27.62 mm in left eye (OS) underwent Lasik. 43 days later he complained of sudden loss of vision in his left eye secondary to macula off RRD with superior temporal large horseshoe and inferior holes.
Second case: A 27-year-old female with Axial Length (AL) 25.50 mm in (OD) and 25.06 mm in (OS) complained after 8 months of LASIK surgery from sudden loss of vision in her right eye secondary to superotemponasally RD with macula off due to giant tears and many circular micro holes superiorly.
Both patients were managed by pars plana vitrectomy (PPV) with silicon oil tamponade which extracted after 3 months in both patients. The retina was attached post operatively and the BCVA was recovered to the same BCVA after Lasik surgery.
The other eye of both patients was treated with Argon laser photocoagulation around lesions were detected with fundoscopy after dilating the pupil.
Conclusion: Retinal detachment after myopic Lasik can be a serious complication; patients should be informed about possibility of this complication. Each patient should undergo a very thorough dilated fundoscopy and treatment of any retinal lesion predisposing for the development of RD before LASIK surgery is performed.

EP-RET-97

Relationship between the individual components of metabolic syndrome and their combinations and the development of retinal neurodegeneration in the absence of ophthalmoscopic signs of retinopathy

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Purpose: To assess the relationship between the individual components of metabolic syndrome (MS) and their combinations on retinal morphometric and functional parameters without ophthalmoscopic signs of retinopathy.
Method: 110 patients with MS components aged 40 to 62 years without ophthalmoscopically visible signs of retinopathy were examined. Optical coherence tomography in area of optic nerve and macula was performed to determine the thickness of retinal nerve fiber layer (RNFL), analysis of retinal ganglion cell complex (GCC), as well as the study of central field of vision (central threshold 30-2 test).
Results: In combination of high blood pressure (BP) and hyperglycemia on an empty stomach significantly smaller changes in mean GCC thickness, total and local GCC thinning compared to individuals without these factors ($p<0.05$).
In combination of abdominal obesity and elevated BP, there was a pronounced tendency to lower thinning of RNFL compared to persons without these factors ($p=0.057$).
In combination of hypertriglyceridemia, obesity and elevated BP, significant changes in threshold retinal sensitivity were observed according to pattern-standard deviation when performing the central threshold 30-2 test ($p<0.05$).
Combination of such components as high BP, hyperglycemia and obesity causes changes in both morphometric (average thickness of GCC, indicators of general and local thinning of GCC) and functional (threshold retinal light sensitivity) indicators, which can serve as a biomarker of retinal neurodegeneration, which precedes the appearance of visible ophthalmoscopic signs of retinopathy.
Conclusion: Studies have shown an interconnection of combination of hyperglycemia, obesity, elevated BP, with changes in retinal morphometric and functional parameters. The obtained results indicate the probable role of this combination of MS components in development of retinal neurodegeneration before the appearance of microvascular changes visible during ophthalmoscopy.

EP-RET-99

Case of Acute Posterior Multifocal Placoid Pigment Epitheliopathy (APMPPE) following COVID-19 illness

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Background: Acute Posterior Multifocal Placoid Pigment Epitheliopathy (APMPPE) is an inflammatory chorioretinopathy within the classification of White Dot Syndromes. Early symptoms of APMPPE include bilateral scotoma, metamorphopsia, and photophobia.
Case description: An 18 year-old Caucasian woman in good health until COVID-19 infection and with no prior ophthalmic conditions except myopia presented with acute vision loss in both eyes overnight. Four months previously, the patient had developed mild flue like symptoms including fever and cough. Two positive COVID-19 tests two weeks apart were documented.
Her symptoms progressed over the course of a few months and she went to the emergency department for severe headache, vomiting, and malaise. She did not have any vision symptoms. A head CT with contrast was normal. Four days later, the patient presented at the retina clinic with severe bilateral vision loss.
On fundus exam, there were multiple flat creamy white spots with indistinct margins distributed throughout the posterior fundus as shown in her color fundus photos. These corresponded to the abnormal hypo-auto fluorescent spots. The OCT imaging revealed segmented regions of loss of RPE reflections in both maculae. A diagnosis of APMPPE was made and the patient was referred to a regional uveitis specialist for COVID related tracking who confirmed the diagnosis.
The patient was prescribed oral Prednisone. At her last visit, six months later, visual acuity in the right eye improved to 20/30-1, but it remained at Hand Motion in the left eye.
Discussion: This case demonstrates that chorioretinopathies such as APMPPE may be yet another autoimmune sequalae of COVID-19. This is indeed likely since White Dot Syndromes (including APMPPE) are associated with flu-like illnesses.
We hypothesize that a hypersensitivity to the virus antigen appears to have induced APMPPE. To our knowledge, this appears to be the first report of APMPPE following a COVID-19 illness.

ELECTRONIC POSTER PRESENTATIONS
Electronic Poster: Uveitis

EP-UVE-02

Prevalence and correlates of cytomegalovirus retinitis among newly diagnosed HIV/AIDS patients in a level III government hospital in the Philippines

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Purpose: The Philippines is facing the fastest upsurge of HIV cases in Southeast Asia. In this study, we determine the prevalence and identify the association of demographic characteristics, personal and social risk factors, CD4 T-cell count, blood examination, ocular symptoms, and visual acuity to CMV retinitis.
Methods: This is a single center, analytical cross-sectional study of patients enrolled from December 1, 2021 to July 31, 2022 at the HIV Hub in the Philippines. A thorough history of the participants was gathered with a risk factor checklist. Laboratory examination, comprehensive ocular examination and baseline 5-field fundus photos were done to all participants. Fisher's Exact Test was utilized to test the association of variables to CMV retinitis. To determine the factors that are predictive of presence of CMV retinitis, bivariate logistic regression was used.
Results: A total of 91 patients were included from December 2021 to July 2022. There were 9 patients diagnosed with cytomegalovirus (CMV) retinitis in the right or left eye, with a prevalence of 9.89%. In the study, test of association showed that having a visual complaint, symptom of blurring of vision and visual acuity of less than 20/20 is significantly associated with CMV retinitis. On logistic regression analysis, having a visual complaint has 10.743 times odds of having CMV retinitis compared with those without symptoms. Moreover, having a blurred vision is 11.667 times more likely to have CMV retinitis compared to those without.
Conclusion: The significant predictors of CMV retinitis in the study were the presence of visual complaints, specifically, blurring of vision.It can be inferred that a good history taking is beneficial. Knowing such predictors would support a baseline CMV retinitis screening to all patients newly diagnosed with HIV regardless of clinical and immunological status.

EP-UVE-03

Anterior uveitis in a patient with anterior chamber synchysis scintillans 30 years after blunt trauma – a case report

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Purpose: Synchisis scintillans, is a rare condition occurring around the 3rd decade of life without gender predominance. Often asymptomatic and presenting as an incidental finding, it can occur after ocular trauma, vitreous hemorrhage, retinal detachment, diabetic retinopathy and chronic uveitis. The exact mechanism is unknow. The widely accepted theory is that cholesterol from lysed red blood cells deposits in the posterior segment of the eye. Rarer cases of anterior chamber cholesterol crystal deposition have been reported.
The purpose of our study was to describe a case of a patient showing to our department with anterior uveitis in association with anterior chamber synchysis scintillans.
Materials and Methods: Case report including past and current history, clinical findings and exams performed.
Results: A 40-year-old female from Cape Verde with a past history of blunt trauma in childhood to her left eye presents at our Department with complaints of sharp pain and redness of her left eye. Best corrected visual acuity (BCVA) on her right eye was 20/20 and hand movement perception on her left eye. Biomicroscopy revealed diffuse conjunctival hyperemia, tyndall ++, nasal synechiae and synchysis scintillans on the anterior chamber behaving in a snow globe-like effect in a phakic patient. Intraocular pressure measurement was of 10 mmHg on her right eye and 9 mmHg on her left eye. Fundoscopic findings were difficult to assess. Ultrasound biomicroscopy showed hyperechoic aspects resembling pseudohypopion that dislodge as the patient moves as well as anterior and posterior synechiae. Finally B-Mode ophthalmic ultrasonography showed hyperechoic motile aspects within the vitreous humour and inferior retinal traction due to vitreous collapse.
Conclusion: Anterior chamber synchysis scintillans is a rare condition and, although most often asymptomatic and not requiring any further treatment, in some cases it can be accompanied by complications that may require intervention.

EP-UVE-04

Development of a full-thickness macular hole during an episode of acute iridocyclitis treated with pars plana vitrectomy: a case report

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We describe a case of a 54-year old woman who is under treatment for bilateral recurrent anterior uveitis of unknown aetiology. She presented with a recurrence of acute anterior fibrinous uveitis in the right eye. The best-corrected visual acuity (BCVA) in that eye had dropped from 20/20 seven weeks earlier to hand movements only. The posterior segment could not be visualised by fundoscopy. She was treated with high dose topical steroids (Prednisolone Acetate drops and a subconjunctival injection of Betamethasone) and a short course of oral steroids (Prednisolone). The inflammation improved in the course of a few weeks but the central vision did not improve beyond 20/200 despite a significant clearing of the media opacities. A macular optical coherence tomography (OCT) scan was performed and she was found to have a full thickness macular hole (stage 4) in the right eye. In her history there had been no previous knowledge of cystoid macular oedema nor vitreomacular traction on OCT with the last scan being within normal limits. We treated her with an intravitreal injection of Triamcinolone Acetonide to further reduce posterior inflammation. After two weeks there was no improvement in macular hole on OCT scan. She then underwent a pars plana vitrectomy, internal limiting membrane peeling and sulphur hexafluoride (SF(6)) gas tamponade with simultaneous cataract extraction in the right eye. The macular hole was closed successfully and the BCVA improved to 20/50 at 4 weeks postoperatively.
To our knowledge this is the first report of a case with macular hole secondary to acute anterior uveitis without macular oedema as a precedent. The mecha-

nism for macular hole formation in uveitis is believed to be similar to idiopathic macular holes. Review of literature shows that uveitic macular holes have been managed conservatively or with pars plana vitrectomy. In our case the surgical procedure was deemed necessary because no improvement was seen on OCT during initial follow-up.

EP-UVE-05

Visual outcomes in children with idiopathic and JIA uveitis

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Purpose: Pediatric uveitis is typically asymptomatic and may lead to development of chronic disease and ocular complications. We aim to evaluate visual outcomes in children with either idiopathic uveitis (IU) or juvenile idiopathic arthritis (JIA) associated uveitis. Also, the effect of medication on uveitis activity is compared between the groups.
Methods: A retrospective, population-based cohort study of children with uveitis in Oulu University Hospital area in 2008-2017. The data for age, gender, age at diagnosis, laterality, chronicity, anatomical distribution of uveitis, etiology, systemic association, uveitis activity, medication, and visual outcomes were gathered.
Results: 119 patients aged <16 years with uveitis were included. Uveitis was IU in 23% and associated with JIA in 77% of the cases. 37% of IU, and 65% of JIA patients, were girls (p=0.014). The mean age at first uveitis was 10.0±3.4 years in IU, and 5.5±3.3 in JIA group (p<0.001). Anterior location of uveitis was noted in 74% in IU and 100% in JIA groups.
In most cases uveitis was chronic (59% in IUand 75% in JIA) and bilateral (56% in IU and 64% in JIA). Increased Ana-Ab (>320) were noted in 9% and 45% in IU and JIA groups, respectively (p<0.001). Most patients used topical corticosteroids (89% in IU and 99% in JIA). Systemic corticosteroids were used by 30% in IU, and 27% in JIA groups.
Disease-modifying antirheumatic drugs (DMARD) were used in 33% in IU and 86% in JIA patients. Biologic therapy was more common in patients with JIA vs. IU (42% vs. 8%, respectively). Uveitis activity by SUN classification was 0+ in 59% and 58%, 0.5+ in 37% and 28%, and 1+ in 4% and 14% in the IU and JIA groups. 84% had bilateral visual acuity >0.8 (Snellen), and 70% had vision >0.8 in the worst eye. Only 5 patients (4%) had visual impairment in one, but none in both eyes.
Conclusions: Children with uveitis have good visual acuity and low rate for visual impairment. In addition, modern treatment with DMARD and biological therapy seems to save vision.

EP-UVE-06

Pediatric uveitis: clinical presentations and etiologies

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Purpose: To describe clinical findings, etiologies and complications of uveitis in children.
Methods: A retrospective case series study was carried out between January 2020 and June 2022. Twelve patients (15 eyes) with pediatric uveitis were included. All patients underwent complete and detailed ophthalmic examination, swept source optical coherence tomography and etiological assessment.
Results: The median age of patients was 14 years (range, 4-16 years). Of the 12 patients, 3 were boys and 9 were girls. The uveitis was unilateral in 9 patients and bilateral in 3 patients. Delay in diagnosis was noted in 7 patients. Anatomically, anterior segment involvement was present in 4 patients, anterior and intermediate in 3 patients, posterior segment in 2 patients and panuveitis in 3 patients.
With regard to etiology, Infectious uveitis was present in 5 patients, including 3 cases of toxocarosis, one case of toxoplasmosis and one case of herpes simplex virus, followed by Fuch's uveitis in 2 patients, HLA B-27 uveitis, Vogt-Koyanagi-Harada disease, Tubulointerstitial Nephritis with Uveitis syndrome, juvenile idiopathic arthritis and idiopathic in one patient. The most common complication was cataract, followed by band shaped keratopathy, macular edema and vasculitis.
Conclusion: Although Pediatric uveitis is rare its diagnosis is usually made at the stage of complications leading to poor visual prognosis, therefore early clinical recognition and oriented etiological assessment remain crucial.

EP-UVE-07

Bilateral ocular syphilis

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Clinical case: We present the case of a 68-year-old patient, with AHT and DM II, who attended a consultation referred from another clinic.
He refers red eyes and blurred vision 3 months of evolution. He was diagnosed with vitritis in another center and treated with oral and local corticosteroids. He even underwent a therapeutic vitrectomy in LE without much improvement.
The ophthalmological examination confirmed a very significant decrease in visual acuity (CF 2 meters/HM) and detected: mixed conjunctival hyperemia, fine PKs, posterior synechiae, corticonuclear cataract +++, very dense bilateral vitritis, and EYE fundus was not assessable.
The indicated tests are requested and the analytical result is positive for Syphilis (positive RPR 1/64, VDRL 1/526), with no other alterations.
Hospital admission for assessment and treatment was decided. The patient was diagnosed with ocular syphilis and was treated with penicillin G 4 MU every 4 hours a day for 14 days, with favorable evolution and improvement in ocular symptoms.

Conclusion: The diagnosis of ocular syphilis is established when specific serological tests are positive in the presence of compatible symptoms, vitritis being the first manifestation in our case.
It is very important to avoid the use of corticoids until the infectious cause of uveitis is excluded.

EP-UVE-08

Unilateral retinal vasculitis after Covid-19 vaccination: a case report

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Purpose: To report a case of unilateral retinal vasculitis following COVID-19 vaccination.
Study design: Case report.
Results: A 20-year-old female complaining about blurry vision in her left eye. Symptoms appeared 2 week after recent second dose mRNA Covid-19 vaccination. Anamnesis: patient has Juvenil Idiopathic Artritis (ANA negative), chronic uveitis in right eye with recurrent exacerbation- mild macular and optic disc oedema, posterior synaechiae, epiretinal membrane. Last exacerbation was 2 years ago. Left eye all the time was intact - best corrected visual acuity (BCVA) 1.0. Last visit BCVA in the right eye 0.5, left eye 0.4.
Left eye ocular findings- optic disc and macular oedema, venous stasis, moderately dilatated, tortuous viens, intraretinal and preretinal haemorrage, optic disc and retinal neovascularisation, mild haemophthalmus. Retinal vasculitis treatment- local corticosteroid and non-steroid eye drops and oral prednisolone.
Treatment with intravitreal anti-VEGF administradion was recommended to avoid new neovascularisation but patient refused it. No systemic vascular or recurrent juvenile idiopathic artritis or uveitis episodes in the right eye were found.
Discussion: As we know that vaccination can cause increased autoimune reaction. In literature several cases of systemic vasculitis has described, especially, after mRNA Covid-19 vaccination.
Hovever, eyes are affected relatively rare. There are written that a short interval between COVID-19 vaccination doses might be a risk factor for the development of retinal vasculitis in adolescents, and clinicians should be aware to elicit vaccination history.
This case report show that in young people, after Covid-19 vaccination, ocular vascular complications can develop without involvement of any other systemic causes, despite of preveously diagnosed systemic disease.

EP-UVE-09

Diagnosis and management of endogenous endophthalmitis in immunodeficiency patient

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Purpose: To report comprehensive diagnosis and management of Endogenous Endophthalmitis in immunodeficiency patient
Methods: A Case Report
Case presentation: A 59-years-old female presented to the outpatient clinic of Dr. Saiful Anwar Hospital Malang with complaint blurred vision, redness, and pain on right eye suddenly since 2 weeks ago. The patient has predisposing factors such as diabetes mellitus, heart failure with history of heart catherization, pulmonary tuberculosis, and lung cancer.
On the eye examination, visual acuity of the right eye was light perception with bad projection and the left eye was 6/9. Anterior segment examination of right eye showed eyelid swelling,conjunctival and pericorneal injection, corneal haze, 4+ flares, 4+ cells and hypopion with less than one-third of anterior chamber volume.
Three-hundred sixty degree of posterior synechiae, iris neovascularization, and pupillary membrane were also noted. The patient was diagnosed with RE endogenous endophthalmitis.
The laboratory examination revealed was increased leukocytes and blood sugar. No organism found from blood culture. There was consolidation in the inferior lung lobe indicating infection and malignancy suggested found in chest x-ray. Pulmonology Department consultation result showed lung malignancy and tuberculosis from advanced examination.
She was hospitalized and received ciprofloxacin infusion,cefuroxime intracameral injection, betamethasone topical and aspiration of hypopion. Culture result from aqueous tap was *Stapylococcous coagulase negative*, this one of most causing organism.
Conclusion: In this case, prognosis of endogenous endophtalmitis related with diabetes mellitus, malignancy, and tuberculosis is poor, requires special care and comprehensive approaches such as laboratory and ancillary tests to determine the etiology and collaborative management to provide a holistic care.
Keywords: Endogenous Endophtalmitis, Diabetes Mellitus, Malignancy, Tuberculosis, Immunodeficiency

EP-UVE-10

Herpetic etiology in chronic panuveitis

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Purpose: Herpetic viruses are the leading cause of recurrent uveitis as a result of the phenomenon of latent infection. Our purpose is to analyze clinical manifestations in herpetic eye disease, and to describe a new entity in uveitis nomenclature: chronic viral panuveitis.
Methods: We present a series of 159 consecutive patients, referred to our eye hospital for a period of 1 year with varied clinical manifestations of herpetic eye infection (HSV, VZV, CMV). A broad differential diagnosis with workup

was conducted in order to exclude other probable infectious causes. It included detailed medical history, serological investigation and different imaging techniques. After confirmation of viral etiology immediate specific anti-viral treatment has been started, with follow up of 24-48 months.

Results: In this clinical series we identified 18 patients with specific form of intraocular inflammation - chronic unilateral panuveitis, with characteristic periodic exacerbations: decreased visual acuity, high IOP, anterior uveitis, vitritis, and retinal vasculitis (without evidence of retinal necrotic changes). Mean age of patients was 45 years (18-56).

We conducted active antiviral and anti-inflammatory treatment, including intravitreal application with gancyclovir. Despite of advanced stage of the disease and delayed treatment, we achieved significant functional and structural improvement with optimal doses and duration of antiviral drugs.

Conclusion: In our series of patients we describe a new form of intraocular inflammation with herpetic etiology – chronic viral panuveitis, and demonstrate our good treatment results. Active intraocular viral replication (with viremia and periodic relapses) has been discussed in pathogenesis of this entity.

We would like to emphasize that unilateral panuveitis (with chronic course and exacerbations) most probably has herpetic etiology. With prompt and adequate antiviral treatment it would be possible to save patients' sight in most cases.

EP-UVE-11

Outbreak of toxic anterior segment syndrome (TASS) associated with cataract surgery resulting in bullous keratopathy and Urretz-Zavalia syndrome

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Purpose: To present a clinical series of 4 patients with TASS developed after uneventful cataract surgery performed in ophthalmological surgery clinic in small town in Bulgaria.

Methods: We describe 4 patients who underwent phacoemulsification and implantation of two different monofocal IOLs. These patients present case 2, 4, 5 and 7 from all 8 performed surgeries at that day by the same surgeon. Same OVDs and the same BSS for all cases were used.

Same surgical instruments enzyme detergent, disinfectant solution and autoclave machine was used. All the patients had subconjunctival and parabulbar application of steroid at the end of surgery.

After diagnosed TASS in these patients detailed investigation of all possible causes was performed.

Results: On the first postoperative day 4 of all 8 patients presented with blurred vision, relatively high IOP, limbus to limbus corneal edema, mydriasis, white cells in the AC and painless anterior segment inflammation.

The patients were followed closely and managed accordingly the treatment protocols for TASS. Topical Moxifloxacin, Prednisolone Acetate, Brinzolamide tartarat and Pilocarpine hydrochloride were applied. Per oral Methylprednisolone 8mg per day and Diclofenac 100mg per day were prescribed. Although timely and correct management all the patients developed Urrets-Zavalia Syndrome and bullous keratopathy in affected eye. One of the patients underwent penetrating keratoplasty.

The surgical interventions in this ophthalmological clinic were suspended for 1 month.

As result of the search of cause – imprecision of instrument washing from the enzyme detergent solution by the surgical nurse was suggested.

Conclusions: TASS is rare complication after uneventful intraocular surgeries. These are the first cases of intraocular inflammation in this ophthalmology surgical center for 5 years and more than 600 operated eyes. The specific cause of the outbreak was not identified and no additional cases were reported.

EP-UVE-12

Unmasking ocular syphilis, the great masquerader

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Introduction: Syphilis is classically considered as one of the "great masqueraders" in ophthalmology, since it can present with a myriad of inflammatory manifestations. Ocular involvement may present anytime in the course of the disease, in both primary, secondary and tertiary syphilis. In this work we describe 8 cases of ocular inflammation eventually attributed to ocular syphilis.

Methods: Consecutive case-series report in the last year in our department.

Results: Average age at diagnosis was 53.75 years (range 29-78), with 6 men and 2 women. All patients had positive Anti-treponema pallidum IgM except a 78 years old lady which had negative IgM but positive anti-treponema pallidum IgG, anti-HSV2 IgM and anti-HSV2 IgG. Non-treponemal test with VDRL was positive in all the 5 patients it was requested. At the moment of follow-up, only 3 patients referred other systemic manifestations – cutaneous rash and inguinal adenopathy.

Case 1 manifested with bilateral anterior and intermediate uveitis and optic neuropathy.

Case 2 displayed with unilateral optic neuropathy.

Case 3 manifested with bilateral anterior uveitis and optic neuropathy.

Case 4 and 5 presented with unilateral neurorretinitis.

Case 6 presented with unilateral mixed arterial and venous retinal occlusive disease.

Case 7 manifested with panuveitis in one eye and optic neuropathy in the fellow eye.

Case 8 refers to a case with bilateral granulomatous anterior uveitis.

Conclusions: Ocular syphilis is a difficult diagnosis to establish clinically due to its heterogenous presentation and lack of pathognomonic signs. Therefore, syphilitic infection should be ruled out in all patients with unexplained recurrent or bilateral uveitis, optic neuropathy and other inflammatory situations.

In our department, patients with unexplained inflammatory pathology undergo a workup for multiple infectious and inflammatory aetiologies, which helps the relative high yield and frequency of syphilis diagnosis.

EP-UVE-13

Uveitis-Glaucoma-Hyphema (UGH) Syndrome, only in complicated cataract surgery with IOL in sulcus?

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Case report: A 63-year-old woman with recurrent episodes of blurred vision, floaters, redness, elevated intraocular pressure (IOP) vitreous hemorrhage and pain on the left eye during the last 3 years controlled by systemic and topical IOP-lowering and anti-inflammatory. Cataract surgery 8 years ago and high myopia as the only ophthalmological history.

At exploration visual acuity (VA) was 20/20 in both eyes. A slit-lamp examination revealed on left eye conjunctival hyperemia, endothelium blood deposit, tyndall (+++), depigmentation and atrophy of the iris. IOP was 18 and 36 mmHg in right and left eye respectively. Funduscopy examination showed a vitreous hemorrhage on left eye

The puncture of aqueous humor was negative for herpes virus.

Due to high suspicion of UGH syndrome, an explantation of the capsule with the intraocular lens (IOL) were performed, where it was possible to observe that the upper haptic of the lens was outside the capsule

After surgery no more episodes has been reported and the IOP has been controlled.

Conclusion: To be aware of the mechanisms of (UGH) syndrome:

• Mechanical irritation caused by IOL malposition or subluxation provoking mechanical and repetitive trauma to the iris.

• IOL well positioned with proximity of the edge of the optic IOL edge to the lower pupillary margin, pressing on the peripheral iris.

• Zonal laxity due to pseudoexfoliation caused by phacodonesis.

• Previously rotated iris, plateau iris and fibrosis configuration capsule around the optics caused by contact at various points.

To identify postoperative signs (transillumination, microhyphemas, dispersion of pigment, neovascularization of the iris, macular cystoid edema, recurrent vitreous hemorrhage…) to make a diagnosis as soon as possible.

To consider that UGHsyndromecan be caused by any type of pseudophakic lens and an intraocular lens in the bag should not rule out the diagnosis.

Author Index

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