GOS - SOE JOINT MEETING

ABSTRACT BOOK

JUNE 21-23, 2024. TBILISI, GEORGIA

SESSION I: CORNEA & REFRACTIVE SURGERY (09:35 - 10:40)
CUSTOMIZED OPTIONS FOR KERATOCONUS TREATMENT & CORRECTION (CORNEAL APPROACH)

Authors: Prof. Merab Dvali, M.D.; Dr. Nana Tsintsadze M.D.; Dr. Bella Sirbiladze, M.D.
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Purpose: The retrospective analyses of the patients with keratoconus treated with customized methods aiming to therapeutic and refractive effects: halting progression of keratoconus diseases and to achieve refractive effect (corneal approach); to access the efficacy and safety of those interferences.

Methods: The visual rehabilitation for keratoconic corneas requires addressing three concerns: halting the ectatic process, improving corneal shape, and minimizing the residual refractive error. From the year 2006 in our clinic, we have been performing CXL using Epithelium-off technique for deeper penetration of the riboflavin into the stroma; using hypotonic riboflavin in relatively thin corneas (less than 400 microns). In kertoconic patients we have been using Corneal Segments as well, two purposes: to halt the progression of the disease and to achieve refractive effect by flattening the central cornea and regularizing its asymmetry. Lasik also is considered in some cases to correct mild-moderate refractive error, followed by CXL. Any of these surgical options can be performed alone or combined with the other techniques depending on what the case requires. Individual approach – is of the most importance. After Therapeutic effect scleral lenses are an excellent option for patients living with keratoconus

Results: A total of more than 1400 eyes were assessed for retrospective analyses. Among them 52 eyes with combined treatment with Lasik Correction followed by CXL in planned manner. More than 1000 patients with ISCRS implantation; and up to 350 eyes with combined treatment with ISCRS implantation plus CXL in planned manner as well. The standard full ophthalmological examination with thorough topography data of the eyes were analyzed.

Conclusion: Corneal collagen crosslinking has proven to be an effective treatment used to strengthen the cornea for the most of the patients, and prevent further progression of Keratoconus. This minimally invasive procedure has been used globally with remarkable results over the past decade. It works to strengthen the collagen bonds with eyedrop medication and ul-

traviolet (UV) light from a special machine to produce a firmer cornea that doesn't bulge outward. It can also help prevent the need for future corneal transplant surgery. Its combination with ISCRS or Lasik can importantly improve the visual acuity and quality of life of the patients.

Financial Disclose: None of the authors has anything to declare.

CUSTOMIZED OPTIONS FOR KERATOCONUS TREATMENT & CORRECTION (COMBINED APPROACH)

Authors: Prof. Merab Dvali, M.D.; Dr. Nino Dvali, M.D.; Dr. Lia Jorjikashvili, M.D.
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Purpose: To assess the efficacy, stability, and predictability of vision correction with phakic Visian Implantable Collamer Lens (ICL, STAAR Surgical) implantation in keratoconus eyes treated with Intrastromal Corneal Ring Segments (ISCRS), Corneal Cross Linking (CXL) and/or Keratoplasty (PK/DALK).

Methods: Patients' age – 18-37 years, ICL after ISCRS – in 23 eyes, after CXL in 58 eyes, after PK in 4 eyes and after DALK in 2 eyes. Before treatment, each patient had a thorough evaluation including perfect general and ocular histories. The examination included visual acuity, refraction, tonometry, corneal topography, biometry, biomicroscopy and posterior segment evaluation by a retina specialist. The average spherical equivalent (SE) refraction ranged from +1.0 to -14.0 D, astigmatism from 1.5 to 7.5 D. UCVA 0.02-0.2; BCVA 0.09-0.6 before operation. ICL implantation was performed only in eyes with the corneal endothelial cell density (CED) 2.000 cells/mm2.

Results: At 1 month postoperatively, it was observed a significant increase in uncorrected visual acuity. At 6 months, no eyes lost any best-corrected vision. SE after ICL implantation was -0,24 ± 0,45; UCVA 0.4-1.0; The 81% of eyes saw 20/25 or better uncorrected. All eyes were within 1.25 D of the target refraction, and 76 percents were within ±0.75 D. The loss of endothelial cells after the ICL implantation was no more than 7-9%. There were no significant complications and the refractive effect remained stable during the follow-up period (ranged from 6 months to almost 20 years).

APPLICATION OF THE AVEDRO KXL SYSTEM IN PATIENTS WITH KERATOCONUS OF THE I-III DEGREE.

Authors: Mirana Mirishova, Jeyhun Nazarli, Sona Ibrahimova
Affiliation: National Ophtalmology Center named after acad. Zarifa Aliyeva, Baku, Azerbaijan

Purpose: To evaluate the efficacy and safety of Avedro KXL accelerated crosslinking technique with corneal impregnation with 0.1% Riboflavin.

Methods: The technique of accelerated Crosslinking using the Avedro KXL was performed in 37 eyes of 37 patients diagnosed with progressive Keratoconus (I-III Amsler Classification). Of the 37 patients, 19 were men and 18 were women. The age of all patients included in the study ranged from 19 to 33 years. Pachymetry in all patients varied from 433 to 481 μm. In the study was used riboflavin MedioCROSS M (Avedro). This riboflavin contains 0.1% Riboflavin, 1.1% hydroxypropyl methylcellulose. Riboflavin was administered by impregnation for 20 minutes and then processed UVA radiation (for 10 minutes (UV energy: 9 mW/cm2, Total energy: 5.4 J/cm2, pulsed treatment mode). All patients underwent a full examination at 1, 3, 6 and 12 months after surgery.

Results: Before the surgery, the following data were found in all patients: uncorrected visual acuity 0.2 $\pm$ 0.1, corrected visual acuity 0.5 $\pm$ 0.2, spherical equivalent -2.5 $\pm$ 1.25, cylindrical component -2.5 $\pm$ 0.75, pachymetry 457 $\pm$ 33.6 μm. 12 months after the surgery, the following results were achieved: uncorrected visual acuity 0.5 $\pm$ 0.2, corrected visual acuity 0.6 $\pm$ 0.2, spherical equivalent -1.5 $\pm$ 1.25, cylindrical component -1.5 $\pm$ 0.75, pachymetry 433 μm. The keratometric values decreased from 47.25 to 42.20 D and the Best Corrected Visual Acuity improved from 0.4 to 0.8.

Conclusions: The obtained results show the safety, effectiveness and stability of the Crosslinking technique using the Avedro KXL. This technique is an effective and safe method in the management of corneal ectasias. With this method, the duration of the procedure is reduced.

EXCIMER LASER SURGERIES IN PATIENTS WITH HIGER-ORDER ABERRATIONS

Authors: Safarova A.N.

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Purpose – evaluation of results of application of excimer laser correction by Lasik Extra method.

Material and methods: 12 eyes (6 patients) with moderate myopia were included in the study, 2 of them were men, 4 were women, their age range was 20-30.

Objective and subjective examination methods were used for the examination: biomicroscopy, refractometry, tonometry, keratotopography, visual acuity examination without correction and with correction. Uncorrected visual acuity was 0.02-0.09, average keratometry – 45-47, spherical equivalent – -4.0-7.0 D, cylindrical equivalent – -1.0-2.5D.

Operative technique – the standard lasik procedure (Moria) is performed under local anesthesia, then riboflavin is instilled into the cornea under the influence of ultraviolet rays (Avedro) for 2 minutes.The operation was carried out on the Wafe LightEX 500 device (ALCON, USA).

Result: Spherical, cylindrical indicators, keratometric and keratotopographic values of the patients were evaluated 1 day, 1 month and 3 months after the operation. After the operation, the visual acuity of the patients reached the same level as the visual acuity in glasses before the operation.

Conclusion: Conducted studies have shown that cross-linking applied during refractive surgery strengthens corneal collagens, eliminates the risk of ectasia, increases the effectiveness of the operation, and allows to achieve the expected final result.

POSTOPERATIVE ASTIGMATIC CHANGES AFTER FEMTOSECOND LASER AND PHOTOREFRACTIVE KERATECTOMY

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Purpose: To describe and compare postoperative astigmatic changes after femtosecond laser (FSL) and Photorefractive keratectomy (PRK) in eyes with moderate to high astigmatism error

Methods: This study comprised patients having PRK or (FSL)surgeries for astigmatism correction. All eyes had less than 6 diopter (D) preoperative cylinder and were analyzed at 3 months of follow up. One surgeon performed all procedures. Paired incisions were placed symmetrically on steepest corneal meridian according to Orb Scan results Results: forty- eight eyes (27 patients) were included. The mean manifest astigmatism decreased from -4.41Â± 1.73 D preoperatively to -2.33 Â±1.12 D postoperatively in FSL group ($p<0.001$) and in PRK group, it decreased from -3.10 Â± 1.22 D to -1.07 Â± 0.59 D postoperatively ($p<0.001$). The maximum amount of astigmatic correction after FSL and PRK surgeries was 4.5 D. 23.8%, 4.8% and 71.4% of eyes in FSL group had 0.5 D or less, 1 D or less or greater than 1 D astigmatism correction, respectively, compared with 29.6%, 70.4% 1 D or less or greater than 1 D correction after PRK.

Conclusions: The regression effect was comparable between two types of refractive surgeries. PRK is as effective as FSL for astigmatism error in cases with up to 6 D astigmatism. FINANCIAL DISCLOSURE: None

TRANSITIONING TO PDEK - BASICS TO COMPLEX CASES

Author: Preethi Naveen

Affiliation: Dr Agarwal Refractive & Cornea Foundation, Chenai, India

PDEK, a pioneering technique for Endothelial Keratoplasty, will be the focal point of this video-based course designed to guide corneal surgeons in adopting this advanced method. Notable advantages of PDEK include utilizing younger donors, resulting in increased specular count and enhanced tissue thickness for improved graft handling. Moreover, it is particularly suitable for vitrectomized eyes, an area where surgeons often exhibit hesitancy in performing DMEK. The visual recovery post-PDEK is notably accelerated compared to conventional DSEK.

The primary obstacle in PDEK lies in acquiring the essential PDEK bubble crucial for the surgical process. This course will deliver practical insights on achieving the optimal bubble, in addition to elucidating the fundamental steps for embarking on the PDEK journey. Furthermore, the course will address the management of complex scenarios.

Upon completion of the course, participants will possess comprehensive knowledge of this innovative technique and will gain a deep appreciation for its myriad benefits.

SESSION II: CATARACT SURGERY & IOLS

HAS THE UNIVERSAL LENS BEEN FOUND?!

Author: Mikheil Tevdoradze
Affiliation: Tbilisi, Georgia, Javrishvili Eye Clinic "Oftalmij"

Methods: Retrospective analysis.

Results: Analysis of the outcomes of different types of artificial lenses and their fixations.

Conclusion: The presentation discussed different types of artificial lenses and their fixations in difficult cases. It evaluated the positive and negative aspects of each. Based on many surgical procedures, the author presented in his opinion, the optimal lens design and the original and simple method for its fixation. Also, practical recommendations were offered.

Financial Disclosure: No financial interests

SUTURELESS POSTERIOR CHAMBER LENS IMPLANTATION IN PATIENTS WITH FUNDUS PATHOLOGY

Authors: George Chichua, Alexander Chichua, Marika Chachanidze, Tornike Otiashvili, Liza Chichua.
Affiliation: Chichua Medical Center Mzera, Tbilisi, Republic of Georgia.

> **Purpose:** The management of patients with insufficient capsular support and concomitant fundus pathology remains debated. The sutureless posterior chamber lens fixation is a very useful surgical option. The purpose of the study was to report the functional outcome and complication rate of sutureless transscleral intraocular lens (IOL) – Carlevale lens (Soleko, Italy) implantation in patients with fundus pathology.

Materials and Methods: 26 eyes of 26 patients were included in this study. All patients have been operated by the same surgeon from 2019 to 2023. The BCVA was evaluated in the 1st, 3rd and 6th month in every patient

and in 1 year after surgery, when possible. Intraoperative and postoperative complications were recorded.

Results: The most common indication of surgery was exchange of a posterior chamber intraocular lens and vitreous opacities (46,1%), subluxated traumatic or nontraumatic cataract (19,2%), retinal detachment (7,6%) and aphakia (27.1%). Concurrent pars plana vitrectomy (PPV) was performed in all eyes (100%). Visual acuity was improved in 84,6%. The most postoperative complications included vitreous hemorrhage (11,5%), hypotony (7,6%), IOP elevation (15,3%), corneal edema (19,2%), postoperative cystoid macular edema (3,8%) and retinal detachment (7,7%). There was no need to cover haptic part of the lens in scleral pocket or under the scleral flap. "Anchors" of the lens haptic were positioned under the conjunctiva in all cases and no cases of conjunctival erosion was reported. The IOLs were well centered and stable in every case during the follow-up period.

Conclusion: The use of a Carlevale IOLs seems to be a safe and effective to manage insufficient capsular support in patients with concomitant fundus pathology.

Financial Disclosure: Non

SIMPLIFIED INTRASCLERAL IOL FIXATION WITH 27G TROCARS AND SUTURELESS TECHNIQUE

Auhtors: Mitrofanis Pavlidis

Purpose: This study introduces a modified technique for intracameral fixation of dislocated intraocular lenses (IOLs) using a 27-gauge (G) trans-trocar approach. This approach aims to simplify the procedure and shorten the learning curve.

Methods: A large cohort (542 eyes, 540 patients) with IOL dislocation underwent IOL exchange with the novel technique between June 2017 and December 2022. The technique utilizes two 2-3 mm from limbus-parallel

scleral tunnels created with a 27G trocar positioned 180° apart and 3 mm from the corneal limbus. A three-piece IOL (Kowa Avansee Preset) was employed. Following 27G trocar removal, a 27G forceps (Ultrapeel DORC) externalized the PVDF haptic. The haptic tip was then fused with electrocautery to form an intracamerally fixated "nail head." Full 27g vitrectomy completes the surgical approach.

Results, outcomes: All patients were evaluated post-operatively at one month. Mean uncorrected and best-corrected visual acuity (BCVA) improved significantly ($p<0.01$ and $p=0.05$, respectively). Endothelial cell density exhibited a slight decrease (2303 vs 2014 cells/mm2, $p=0.09$). Mean IOL tilt and decentration were minimal (2.42° and 0.35 mm, respectively). No correlation was found between IOL positioning and BCVA. While some complications occurred (vitreous hemorrhage: $n=8$, hyphema: $n=1$, IOP elevation: $n=15$, iris capture: $n=4$, hypotony: $n=2$), no IOL redislocation was observed.

Conclusion: This intrascleral 27G trans-trocar IOL fixation technique demonstrates promising results with good visual outcomes, minimal complications, and a potentially rapid learning curve due to its streamlined approach.

INTRAOCULAR LENS (IOL) DISLOCATION TREATMENT & MANAGEMENT

Authors: Giorgi Petriashvili, Mzia Goisashvili
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> **Purpose:** Postoperative trauma, weakness of the zonules, in some cases develops IOL dislocation,

which leads to complications such as: impaired vision, diplopia, retinal detachment, hemophthalmos, macular cystoid edema, uveitis, secondary glaucoma.

Our goal is to select the appropriate surgical approach for IOL fixation to prevent or treat these complications.

Method: Pharmacological miosis is recommended before surgical treatment, then appropriate surgical tactics should be selected. Fixed arc (CTR) is usually used in conjunction with artificial crystal, but in recent cases only the arc is not a protective mechanism. We would like to offer you a technique in which a complex, IOL with a CTR, is fixed on a colored membrane

Results: Using a similar complex allows us to avoid artificial IOL dislocation.

Conclusion: Complicated cataracts (with or without lens dislocation) are common in the Georgian population, so the correct selection of surgical method of IOL implantation preoperatively may prevent its dislocation.

NEW TECHNIQUE OF IOL IMPLANTATION IN COMPLICATED CATARACT SURGERY

Authors: Prof. Dr. Hamed Nasr El Din Taha, Ibrahim El Kady
Affiliation: Al Azhar University, Cairo, Egypt

Purpose: Endoscopic imaging and ultrasound bio-microscopy (UBM) have enabled a better understanding of ciliary sulcus anatomy and measurements in the living eye, which help us to improve and discover new techniques with less complication.

This article reviews the current literature on new technique and challenges associated with complicated cataract surgery when no capsular support.

The different IOLs designed specially in complicated cataract surgery is an area of interest for the ophthalmic industry, currently the one-piece PMMA lens or a three-piece IOL are the best available options.

Methods: This study include patient age ranged from 54 to 69 years and 6 eyes of 6 patients, 4 aphakic eyes, have history of cataract extraction. Informed consent taken. Anterior and posterior segments examination done

with careful attention to the corneal clarity, integrity of the hyaloid face, anatomy of the iris and the presence or absence of capsular support.

The other 2 eyes: – One eye had a large defect of the capsular support during phacoemulsification. – One eye had a large dialysis of the posterior capsule, more than 270 degree during phacoemulsification.

Corneal tunnel incision 3mm with AC opening followed by Pupillary construction and AC formation by viscoelastic substance then make 2 peripheral iridotomies was done 180 degree apart (the far one was done by cystotome, microsurgery knife or the vitrectomy probe).

Three Pieces IOL acrylic hydrophopic injected in AC. During injection of IOL, the far haptic was directed to be pass through the peripheral iridotomy to the ciliary sulcus, the near haptic was grasped by forceps and passed through the near iridotomy to the ciliary sulcus followed by Lens centration.

Wound closure by hydration of corneal tunnel.

Results: Postoperative visual acuity was ranged from 0.5to 0.8. , Compared with preoperative best-corrected VA, two eyes had the same VA level, four eyes had improvement of more than two lines and There is no postoperative increase in IOP during the follow-up period.

The pupil was rounded regular reactive in all eyes with deep AC as the angulated haptics push the iris back. No cases of pupillary block. Mild pigment dispersion in four eyes, which disappear writhen 6 months, No post-operative uveitis or iritis. IOL was centralized and stable in all eyes.

Conclusion: We suggest that new technique can avoid many ACL and scleral supported PCL complications.

In this new technique sulcus supported ACL, there is no contact between lens haptics and the AC angle structures or the corneal endothelium which reduce the long-term risk of glaucoma or bullous keratopathy.

LATE CATARACT SURGERY. WHAT IT MEANS

Author: Komarova M.G
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Purpose: to assess the relationship of patient's visual acuity, lens pathologic anterior expansion and their effect on level of surgical complications and deviations from the routine Phaco+IOL procedure.

Methods. A tree-year retrospective study of 585 patients (187 men, 398 women) aged 50 – 92 was carried out. The patients underwent cataract surgery by one surgeon. The age at which patients turned for the first eye surgery and the eye condition were taken into account.

Exclusion criteria: secondary glaucoma, injury or eye surgery in the past, subluxation of the lens, keratopathy, retinal and optic nerve pathology, amblyopia, uveitis. The patients were divided into two groups by visual acuity (corr.): Group I included 396 patients (123 men, 273 women) aged 51-92, with vis > 0.1; Group II included 189 patients (64 men, 125 women) aged 50-90, with vis 0,1. The lens position and intraocular pressure were analyzed in each group.

The anterior expansion of the lens (ACD 3 mm) that induced angle-closure glaucoma was considered pathological lens position (PLP). Phaco+IOL in eyes with severe visual impairment or profound low vision (vis 0.1) and/or PLP was conventionally considered to be the late cataract surgery. The analysis of the number of surgical problems during Phaco+IOL (posterior capsule rupture, run-out rhexis, out-of-the-bag IOL fixation, enlargement of the incision) was conducted.

Barnard's test and Welch's t-test were used for the statistical analysis.

Results. Most often cataract surgery was performed at the age 65-85, the median was 73 years; for Group I the median - 72.6 years, for Group II - 73.9 years. Age difference between groups is not statistically significant (p-value 0.09 in t-test).

In Group I PLP was detected in 52 cases (13.1%) and in Group II - in 18 cases (9.5%), the difference is not statistically significant (p-value 0.21 in

Barnard's test). However, it can be assumed that when a severe visual impairment and PLP were combined, patients were less likely to enter the study due to terminal stage of glaucoma.

41.2% of patients (241) came late for the treatment: Group II - 32,3% (189) patients including 3% (18) with PLP, Group I – 8,9% (52) patients with PLP.

2% (12) cases of surgical problems were reported, all of them related to late cataract surgery: 10 cases in Group II (2 of them with PLP), 2 cases in Group I with PLP. Well-timed cataract surgery was performed as per normal. The connection of complication rate with late surgery is statistically significant (p-value 0.00003 in Barnard's test). Surgical problems were most frequent over age 75 (p-value 0.008 in Barnard's test).

Conclusion. Late cataract surgery can include patients with vis 0.1, as well as cases of pathologic lens anterior expansion inducing glaucoma, as these states increase the risk of complications and deviations from the routine course of cataract surgery.

The period of 20 years when most cataract patients come in for surgery can be determined - that's 65 to 85. Risk of surgical problems definitely increases with age. In our study, 41 percent of patients had late cataract surgery.

When determining the indications for cataract surgery, account should be taken not only of visual acuity and opacity of the lens, but also of the topography of the lens, which affects the risk of inducing angle-closure glaucoma and surgical problems. If the anterior chamber shrinks to 3 mm or less during cataract development, these patients should be operated on as early as possible, without having to wait for a significant reduction in vision and hydrodynamics disorders.

Financial disclosure: No author has a financial or proprietary interest in any material or method mentioned.

VISUAL OUTCOMES OF EDOF INTRAOCULAR LENS LUXSMART IN PHACOTRABECULECTOMY IN PATIENTS WITH CATARACT AND PSEUDOEXFOLIATION GLAUCOMA

Author: Yuliya Razhko
Afiliation: Republican scientific research center for radiation medicine and human ecology, Gomel, Republic of Belarus

Purpose: to evaluate effectiveness extended depth of focus (EDOF) intraocular lens (IOL) LuxSmart (Bausch+Lomb) compared with monofocal IOL Akreos Adapt AO (Bausch+Lomb) in phacotrabeculectomy in patients with pseudoexfoliation glaucoma (PEG).

Methods: Prospective, randomized study with inclusion and exclusion criteria was conducted at Republican scientific research center for radiation medicine and human ecology. Of the 59 patients (59 eyes) with PEG enrolled, 28 (47.5%) were implanted with the LuxSmart IOL and 31 patients (52.5%) with the Akreos Adapt IOL. Patient demographics, preoperative intraocular pressure (IOP), glaucomatous optic nerve damage, visual field loss, angle anatomy, and anterior chamber depth were similar between the groups. Uncorrected distance visual acuities (UDVA), uncorrected intermediate visual acuities (UIVA) and uncorrected near visual acuities (UNVA) were tested.

Results: No statistically significant difference for mean of IOP and number of glaucoma medications was found between groups. The median IOP values decreased postoperatively by 2.9 mmHg and 3.1 mmHg. At the 6-month follow-up, the groups demonstrated similar mean UDVA. Differences UNVA between groups were statistically and clinically significant, with a larger proportion (>50%) of the patients implanted with YSMART IOL. The postoperative UIVA were significantly better for YSMART IOL ($p<0.05$). The median values of contrast sensitivity were not statistically different at 1.5 and 3.0 cycles per degree under either mesopic or mesopic with glare lighting conditions. Eyeglasses wear was significantly lower for patients receiving the YSMART IOL ($p<0.01$).

Conclusions: Clinical results at least 6 months after phacotrabeculectomy showed that EDoF IOL LuxSmart provides patients with improved uncorrected intermediate and near visual acuity, comparable distance visual acu-

ity, increased depth of focus and less use of glasses compared to the monofocal control IOL in patients with pseudoexfoliation glaucoma. It was established that the PEG is not an exclusion criterion for the implantation of a new design IOL.

Conflict of interest: none.

EFFICACY AND STABILITY OF A NOVEL DUAL-OPTIC INTRAOCULAR LENS IN CATARACT SURGERY: TWO-YEAR CLINICAL FEASIBILITY STUDY OUTCOMES

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1Lions Eye Diabet Clinic-Georgia, 2Atia Vision Inc., California, USA, 3Tbilisi State Medical University, 4Agarwal's Eye Hospital in Chennai, India, 5Stanford University School of Medicine, California, USA

Purpose: The aim of the study was to assess the long-term visual performance and stability of the OmniVu modular shape-changing intraocular lens (IOL, Atia Vision) after cataract surgery.

Affiliation: The prospective, nonrandomized, interventional feasibility study was conducted at two international sites in Georgia and India.

Methods: A total of 29 eyes of 19 subjects were enrolled in the study. 9 subjects underwent monocular implantation, and 10 subjects were implanted bilaterally with the OmniVu IOL. Clinical endpoints included monocular and binocular best distance corrected visual acuity (CDVA) at distance (4 M), intermediate (DCIVA, 80 and 66 cm), and near (DCNVA 40 cm), monocular and binocular defocus testing with ETDRS charts, and mean refractive spherical equivalent (MRSE). Outcomes were evaluated 1, 3, 6, 12 and 24 months post-operatively. Acuity results are presented in logMAR ± standard deviation (Snellen equivalent).

Results: At 24 months, results for 14 eyes from 8 subjects treated monocularly and 4 subjects treated binocularly are available. Mean monocu-

lar CDVA, DCIVA, and DCNVA were -0.10 ±0.04 (20/16), -0.06 ±0.10 (20/16), and 0.09 ±0.11(20/25), respectively. For subjects with binocular OmniVu IOL implantation, mean CDVA was -0.16 ±0.04 (20/12), mean DCIVA was -0.06 ±0.10 (20/16), and mean DCNVA was 0.08 ±0.13 (20/25) at 24 months. Defocus testing showed that visual acuity was better than 20/32 over a total range of 3.50 D for monocular and 4.50 D for binocular defocus curves, respectively. The mean MRSE remained between ±0.50 D from 1 to 24 months postoperatively. Overall safety outcomes agreed with traditional cataract surgery. One posterior YAG capsulotomy was performed without incident.

Conclusion: Long-term clinical feasibility outcomes with the OmniVu modular shape-changing IOL show patients achieve and maintain good visual performance from far through near with predictable and stable refraction. Follow-up is ongoing, and additional study is warranted to further evaluate lens performance.

Financial Disclosure: No

SESSION III: MEDICAL RETINA

REVISITING FOCAL LASER FOR DIABETIC MACULAR EDEMA

Author: M. Karimov, A. Shahmaliyeva
Affiliation: National Ophtalmology Center named after acad. Zarifa Aliyeva, Baku, Azerbaijan

Introduction. Anti-VEGF agents have been shown to be effective treatment for diabetic macular edema (DME) in multiple studies and have become the mainstay of DME treatment worldwide today. But in real-world data, patients usually receive fewer injections than necessary, which reduces the effectiveness of treatment. The focal laser photocoagulation, which was the only effective treatment choice for DME before the introduction of intravitreal agents, still can be a good alternative when applicable. New imaging modalities such as OCT, OCT angiography (OCT-A) and microperimetry may be good tools for monitoring response to focal laser.

Purpose. To discuss the current status and the role of focal laser for DME in the anti-VEGF era and to share our own experience with laser treatment for DME.

Material and methods. The paper presents the results of focal laser photocoagulation for DME in 36 eyes (27 patients with type 2 diabetes mellitus, 14 males and 13 females). 10 eyes (27.8%) had a center-involving DME. The mean age of the patients was 60.9±7.2 years. All patients underwent fundus fluorescein angiography (FFA) before treatment, OCT and OCT-A before and after treatment. Microperimetry was performed in selected patients.

Results. The mean follow-up period was 3.9±3.2 years (min 1, max 13 years). Macular edema reduced in 31 eyes (86.1%), remained unchanged or increased in 5 eyes (13.9%). During follow-up, BCVA improved in 12 eyes (33.3%), remained stable in 19 eyes (52.8%) and worsened in 5 eyes (13.9%). Microperimetry revealed scotomas in some eyes, corresponding to treatment areas, but there were no subjective complaints.

Conclusion. Focal laser for DME can provide long-term stable results in DME, including eyes with foveal involvement. OCT mapping is an effective method for monitoring treatment results, however, FFA remains superior to OCT-A for detecting microaneurysms.

OPTIMIZING ORAL FLUORESCEIN ANGIOGRAPHY: A COMPARATIVE STUDY EVALUATING CONCENTRATIONS AND EFFICACY IN RETINAL IMAGING

Author: Guillermo Salcedo
Affiliation: Asociación Para Evitar la Ceguera en Mexico (Association to Prevent Blindness in Mexico [APEC]).

Purpose: To describe a novel technique featuring a pioneering implant—expanded polytetrafluoroethylene (ePTFE)—for macular indentation in Myopic Traction Maculopathy (MTM).

Methods: Retrospective, descriptive study. We share the evolutionary journey of this surgical method, providing insights into our own experiences. The presentation includes crucial recommendations on implant size, seamless implantation procedures, and the safety and efficacy of its impact on MTM complications.

Results: The evolution of the technique is described, featuring decision-making process on the improvement of the ePTFE implant. Twelve patients with MTM that underwent vitrectomy and macular buckle with the ePTFE are analyzed and described, based on their preoperative and postoperative features.

Conclusions: ePTFE implants for macular buckles to treat features of MTM seem to be safe and effective in the short-term. This implants could provide a faster, cheaper and probably safer way to indent the macular in patients with MTM.

Financial Disclosure: IOSA Health Speaker / Consultant

QUANTITATIVE ASSESSMENT OF THE CHORIOCAPILLARIS LAYER BY VARIOUS OCTA ALGORITHMS: A COMPARATIVE STUDY

Authors: Anna Stulova, Nataliya Semenova, Vladimir Akopyan
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With the widespread adoption of OCTA technology, the visualization of the choriocapillaris layer is increasingly utilized for research to detect early signs of impaired blood supply in the outer retinal layers. However, even a simple visual comparison of En face images obtained by different devices reveals significant heterogeneity, suggesting that the technical characteristics of a specific OCT machine and the features of its OCTA algorithm contribute significantly to the scanning results and, consequently, the quantitative assessment.

Purpose: To conduct a quantitative comparative analysis of choriocapillaris blood flow deficit on OCTA of different manufacturers.

Materials and methods: OCTA of the central macular zone (3x3 mm) was performed for a group of 11 healthy volunteers (9 females, 2 males, 26.3±4.3 years) using five different OCT machines (HRA+OCT Spectralis, Heidelberg Engineering; DRI OCT Triton, Topcon; Revo NX130, Optopol; Avanti, Optovue; Solix, Optovue). En face choriocapillaris 19 μm slab was selected for comparative analysis in two positions – directly adjacent to the Bruch's membrane and shifted 4 μm deeper into the choroid. The images were exported in an equal uncompressed format, resized, and standardized. All underwent the standard Phansalkar 3 and 4 pixels binarization procedure in ImageJ software. The threshold value for blood flow deficit zones was set at 5000 μm^2. The analysis included the flow deficit density, flow deficit number and mean flow deficit size. Correlation analysis was performed to compare these quantitative parameters from images obtained by different tomographs.

Results: Correlation was found only for two pairs of comparisons based on three parameters. The evaluation results from DRI OCT Triton and Spectralis machines correlated in terms of mean flow deficit size ($r=0.802$, $p=0.017$) and flow deficit density ($r=0.83$, $p=0.021$). A moderate correlation was identified for the flow deficit number parameter from Avanti and DRI OCT Triton.

Conlculsion: The absence of correlation between numerical measurements conducted on images of the same eye obtained from different OCT machines indicates a significant discrepancy in OCTA algorithm results among different manufacturers. Possible reasons include diversity in scanning area and resolution, presence of projection artifacts, as well as image distortion due to the artifacts and speckle noise resolving algorithms, and of course, various technical specifications of the devices (SD vs SS, wavelength, scanning speed, axial and transverse resolutions). The results of this study emphasize the importance of understanding the limitations of the OCTA choriocapillaris visualization. Despite advancements in quality and scanning speed, its results, while correlating, may not accurately represent the true anatomical depiction of vascular structures. Therefore, any quantitative assessments performed using modern commercial OCT machines should be critically interpreted.

BILATERAL POSTERIOR SCLERITIS AS A PRESENTING FEATURE OF BEHCET DISEASE

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Purpose: To present a rare case of bilateral scleritis associated with Behcet disease.

Design: Case report.

Observation: We present a case of a 32 years old White male patient who presented with a 1-week history of severe, bilateral retro-orbital eye pain, redness, photophobia and profound vision loss.

Results: His ophthalmological examination reviled significant dyschromatopsia. Slit-lamp examination showed OU marked conjunctival injection, fine keratic precipitates, diffusely overlying corneal endothelium, trace hypopion, +2 cells and +3 flare, posterior synechiae, which extended 270

degrees in OD and 180 degrees in OS. Dilated fundus examination revealed +2 vitreous cells and +2 vitreous haze, Frisen grade 4 optic nerve head edema, with no detectable spontaneous venous pulsation (SVP) OU Blunt foveal reflex with petaloid appearance, as well radial lines (Paton lines) emanating from optic disk (more strikingly in OS), radial choroidal folds, mostly located in posterior pole OU were observed. OCT B-scan macula of the right eye showed hyper-reflective dots in the vitreous (consistent with inflammatory cells,), absent foveal contour, wrinkling of RNFL, sub-retinal fluid (SRF) accumulation, retinal pigment epithelium (RPE) and choroidal irregularity ("lumpy-bumpy" RPE), and diffusely thickened choroid with erased choroidal vasculature. OCT B-scan macula of the left eye revealed similar findings, except bacillary layer detachment (BALAD) was seen in OS. Fundus fluorescein angiography (FFA) showed marked disc leakage and mild late phase pinpoint hyperflurescence, consistent with focal capillary leakage. B-scan ultrasonography showed sclero-choroidal thickening OU, without fluid accumulation between optic nerve and sclera ("T-sign"). Magnetic resonance Imaging (MRI) of the brain and orbits with and without contrast demonstrated bilaterally thickened posterior scleral walls in non-contrast T2 and enhancement after gadolinium administration in T1 Spectral Presaturation with Inversion Recovery sequences (SPIR). Upon further questioning and extensive review of systems, the patient recalled the history of recurrent, painful oral ulcers. Oral examination revealed solitary, small-sized, sub-lingual aphthous ulcer with white-yellow necrotic base and well-defined borders, characteristic for Behcet disease.

Conclusion: Extensive laboratory work-up was carried out, and eventually we diagnosed the patient with bilateral posterior scleritis associated with Behcet disease. The patient started aggressive systemic immunosuppression, including Tumor necrosis-alpha inhibitor (TNF-α)-(Adalimumab) and Disease-modifying antirheumatic drug - Azathioprine (Imuran). After 3 months of intensive systemic immunosuppression, the patient's redness, pain and photophobia completely resolved and his BCVA dramatically improved.

Conflict of Interest Disclosures: None.

POSSIBLE CONNECTION OF PERFORATING SCLERAL VESSELS AND ARTERY-VEIN COMPLEX TO CHOROIDAL NEOVASCULARISATIONS IN EYES WITH PATHOLOGIC MYOPIA

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Purpose: To determine the connection between myopic choroidal neovascularisation (mCNV) activity, perforating scleral vessels (PSV) and artery-vein complex (AVC) examined by optical coherence tomography (OCT).

Methods: Retrospective analysis of patients with mCNV before and after intravitreal aflibercept injection using multimodal imaging. The presence of PSVs, AVC and mCNV activity was assessed using swept-source optical coherence tomography images. Patients received 1 intravitreal aflibercept injection at baseline. Additional injections were performed in case of mCNV persistence or recurrence at monthly visits. Patients were under follow-up for a minimum duration of 12 months. Main outcomes were the relationships between number of injections and the prevalence of retinal-choroidal structural lesions.

Results: 13 eyes of 12 patients (2 male, 10 female, mean age 62.4 ± 10.1 years) with CNV secondary to pathologic myopia were included in the study. PSV were found in 9 out of 13 eyes (69.2%), AVC – in 4 out of 13 eyes (30,1%) at the site of CNV. They were under or in contact with the mCNV in all cases. The mean number of intravitreal injections received by patients with mCNV was 2.06 ± 1.17 along 19 ± 4.1 months of follow-up. Eyes with AVC needed less intravitreal injections along the follow-up period, when compared with eyes without AVC.

Conclusions:

1. Swept-source OCT is a high-quality method to detect PSV and AVC in the eyes with pathologic myopia.

2. Intravitreal aflibercept was effective for treatment of mCNV with clinically important visual and anatomic benefits achieved with a limited number of injections.

3. PSV may also play a pivotal role in the formation of myopic CNV.

4. AVC complex has an influence over myopic choroidal neovascularization activity resulting in less aggressive neovascular lesions than those with perforating scleral vessels only.

CONE -ROD DYSTROPHY WITH COMPLICATED MYOPIA (CLINICAL OBSERVATION)

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Purpose: To mark the importance of early diagnosis of cone-rod dystrophy (CRD) and to recall informative examination methods and to show the results of medication antioxidant retinoprotection.

Methods: The clinical observation of patient E., 41 years old, who came to the Municipal Clinical Hospital No. 15 named O.M. Filatov in 2022 with complaints of blurred vision at dusk, periodically photophobia and eye floaters in both eyes. In the anamnesis these complaints have been noted for more than 17 years, myopia since 7 years, in 2007 sessions of retinal laser photocoagulation for dangerous areas of peripherial retinal dystrophies in both eyes, later - laser vision correction by LASIK method, in 2023 repeated retinal laser photocoagulation in both eyes.

No previous medical treatment for complicated myopia has been performed. Did not use glasses with UV protection. Profession is associated with visual and stressful workload (computer visual syndrome), from anamnesis morbi is known the disease of VVD, chronic gastritis, data on family history of ophthalmopathology are unknown to the patient.

When the patient was referred to Municipal Clinical Hospital No. 15 named O.M. Filatov, he was examined: Visual acuity test, Autorefractometry, Pneumotonometry, Bio-ophthalmoscopy (Gonioscopy), Computerized perimetry, B-scanning, Optical coherence tomography (OCT), Fundus pho-

tography, Schirmer's test, Norn's test, Sirius+ corneal topography. The patient was referred for an additional examination for ERG.

On the basis of the patient's complaints and the results of examinations, the following diagnosis was made - atypical form of CRD.

Since 2022, the patient was repeatedly prescribed courses of systemic retinoprotection (micronutrients with antioxidant properties), as well as eyelid hygiene, instillations of tear substitutes, metabolic and antioxidant drugs.

Results: Bio-ophthalmoscopy revealed chronic blepharoconjunctivitis, corneal hypoxia, anterior chamber angle opening – degree IV, pigmentation 2-3. Lens opacity in the cortex and at the periphery. Destruction of vitreous body. On the fundus: pale background, full bloody optic disk, clear contours, myopic cone, retinal angiopathy. On the periphery: peripherial retinal dystrophies, retinoschisis, zones of "lattice" retinodystrophy with ruptures (dangerous zones of peripherial retinal dystrophies) delimited by sectorally pigmented retinal laser photocoagulation.

Schirmer's test result was 5 mm, normal indicator - 15 mm. Norn's test revealed: on right eye tear film rupture for 5 seconds, on left eye tear film rupture for 7 seconds.

According to the data of computerized perimetry revealed a decrease in the level of photosensitivity at the central and peripheral threshold test.

Optical coherence tomography both eyes - The foveolar fossa is smoothed. Right eye - Retinal thickness in the foveola - 127 μm, outside the foveola - 277 μm. Left eye - Retinal thickness in the foveola - 116 μm, outside the foveola - 268 μm. OD – ONH is full-blooded, RNFL thickness - 69 μm, excavation 0.22 OS - ONH is full-blooded, RNFL thickness - 68 μm, excavation 0, 07.

Mixed Electroretinography was subnormal, which is associated with decreased function of the rod system and peripheral retina. High-frequency rhythmic ERG at 30 Hz was subnormal, (which means decreased function of the cone system of the retina).

The patient was diagnosed with: Atypical form of Cone-Rod dystrophy, complicated moderate myopia (after LASIK condition), Laser-operated

peripheral vitreoretinal dystrophy, angiopathy, cortical cataract, chronic blepharoconjunctivitis, dry eye syndrome, pigment dispersion syndrome.

Conclusion: During the 2-year follow-up, the patient was examined using standard and special methods, medication, and recommended to wear glasses with UV protection. All examination results remained stable, the patient did not report any new complaints.

Analysis of complaints (history taking) and comprehensive ophthalmologic examination using not only standard but also special techniques allows early diagnosis of atypical form CRD.

To monitor this disease it is advisable to use computerized perimetry (central and peripherial threshold test) and to perform ERG, as well as OCT.

The described clinical case showed that local and general antioxidant treatment in a case of patient with CRD shows a stabilization of visual functions, supporting anterior and posterior segment of the eye without negative dynamics.

It is necessary to pay attention to the significance of the next stage - medical and genetic study, which will allow to form a more targeted complex of measures to stabilize the process.

Financial Disclosure: Please indicate Yes / No with details where applicable.

THE SIGNS OF CHOROIDAL MELANOMAS ON FLUORESCEIN ANGIOGRAPHY

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Purpose: to study the differential diagnostic criteria of uveal melanoma using fluorescein angiography.

Material and methods: 18 patients who applied to the National Centre of Ophthalmology named after acad. Zarifa Aliyeva in the last 10 years were diagnosed with uveal melanoma using the fluorescein angiography method. 8 of them were women and 10 were men. The age range of the patients was between 38-65.

Results: In 12 patients the own vessels of the tumor were visualized at the initial stage. According to some experts this is a pathognomonic symptom. Vascularization is not clearly observed in intensively pigmented tumors. Hyperfluorescence was observed in 94% of patients due to the formation of epitheliopathy. In some incipient melanomas a ring of hypofluorescence was observed around the tumor. Existing hemorrhages, "orange pigment" islands may also cause secondary and choroidal hypofluorescence. The presence of hyperfluorescence and hypofluorescence areas at the same time creates a "spotty" image of fundus. These areas begin in the early phase, become stronger and eventually take on a diffuse image. Another symptom characteristic of melanoma - diffuse hyperfluorescence was observed for a long time in all our patients. This situation is related to the long-term stay of fluorescein in the developed special vascular system of the tumor. We were not found the non-fluorescent tumors in our practice. The approach to the significance of fluorescein angiography in the diagnosis of early melanomas is ambiguous. At the initial stage the presence of subretinal fluid , pigment existence seems as hypofluorescence and this makes diagnosis difficult. For this reason the diagnosis of uveal melanomas should be performed comprehensively.

Conclusion: Fluorescein angiography is a modern, non-invasive examination method of melanomas. However, the examination should be performed comprehensivly because of the necessity of differentiation of melanomas with a large spectrum of nosological units.

CHOROIDAL OSTEOMA COMPLICATED BY CHOROIDAL NEOVASCULARIZATION. 7-YEAR FOLLOW-UP (CLINICAL CASE)

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Purpose: To determine the algorithm for the necessary diagnostic examinations to prove the diagnose of choroidal osteoma and analyze the results of anti-VEGF therapy for choroidal osteoma with neovascularization in a long follow-up period.

Methods: The patient, a 25-year-old woman, turned to an ophthalmologist for the first time with complaints of decreased visual acuity and the appearance of metamorphopsia in her right eye. History: 2 weeks ago she suffered from acute respiratory viral infection. The ophthalmologist diagnosed: "Coloboma of the choroid. Optic disc neuritis of the right eye." The patient was recommended the drug therapy for optic disc neuritis (without positive effect). Then the patient turned to another ophthalmologist, where was made another diagnosis - "Central serous chorioretinopathy of the right eye" and prescribed the conservative treatment of CSC , which did not produce any results. Then the patient turned to the SM-clinic to clarify the diagnosis and treatment tactics.

The ophthalmological examination included visometry with determination of best-corrected visual acuity (BCVA); indirect ophthalmoscopy using a non-contact lens MaxField 78D (Ocular Inc., USA); Optical coherence tomography (OCT) was performed on a Cirrus HD-OCT 5000 device (Carl Zeiss Meditec, Germany) and OCT-Angio was performed on a Solix device (Optovue, USA), fluorescein angiography and fundus photorecording were performed on a Visucam 500 fundus camera (Zeiss , Germany).

A diagnosis was made: "choroidal osteoma, complicated by choroidal neovascularization of the right eye." The patient was prescribed treatment: 3 intravitreal injections of aflibercept, 3 using standard technology with an interval of 1 month at a dose of 2 mg (0.05 ml) in a sterile operating room.

The patient's follow-up period was 7 years.

Results: BCVA of the patient`s right eye increased to 20/20 after the whole course of antiangiogenic therapy (3 month later) and metamorphopsia was

not a concern. A deep yellow lesion with irregular borders remains around the optic disc. A neuroepithelium edema and hemorrhages are not detected in the area of the papillomacular bundle. The intensity of the hyperpigmentation zone has increased. There are no changes in the macular zone. The OCT of the right eye showed no neuroepithelial detachment 3 months later. Hyperreflective and hyporeflective zones are preserved in the structure of the tumor itself. According to OCT-Angio, neovascularization is not detected. According to autofluorescence examination of the right eye – the tumor zone corresponds to a hypoautofluorescent focus. A zone of hyperautofluorescence is determined at the edges of the focus. In the zone of choroidal neovascularization, the zone of hyperautofluorescence is smaller in area compared to the previous study.

According to fluorescein angiography of the right eye, the area of the weak hyperfluorescence on the projection of choroidal neovascularization became smaller compared to the previous study. Increased dye leakage was not detected in the later stages of the examination.

The early spotty hyperfluorescence remained in the tumor area, and there was diffuse staining in the later phases.

During a 7-year follow-up, the best-corrected visual acuity was 20/20, and there no recurrences of neovascularization were observed. In 2022, when examining the fundus of the right eye with cycloplegia, several vitreoretinal tractions were visualized, which were delimited by laser coagulation of the retina.

Conclusion: Choroidal osteoma is more common in young, healthy women. The tumor occurs at the age of 20-30 years and manifests itself as a gradual decrease in vision if the macular area is involved. In 75% of cases, the tumor is unilateral. The etiology of the disease still remains unknown. Differential diagnosis is carried out with non-pigmented choroidal melanoma, cancer metastasis to the choroid, choroidal hemangioma, as well as with idiopathic sclerochoroidal calcification. A decrease in visual function is due to reasons such as atrophy of the retinal pigment epithelium closedt to the osteoma, serous retinal detachment above the osteoma, or choroidal neovascularization. The presented clinical case demonstrates a rare

form of unilateral choroidal osteoma, complicated by choroidal neovascularization; an examination algorithm, including data from OCT, autofluorescence, fluorescein angiography, OCT angio, helps in making the correct diagnosis and choice of treatment tactics. The presented clinical case confirms the effectiveness of antiangiogenic therapy with aflibercept for secondary choroidal neovascularization in choroidal osteoma.

SESSION IV: SURGICAL RETINA

APPLICATION OF THE TWO-STEP RETINECTOMY FOR THE TREATMENT OF ADVANCED SECONDARY PROLIFERATIVE VITREORETINOPATHY.

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Purpose: To report the anatomical and functional outcomes of the two- step retinectomy for the management of recurrent retinal detachment after the first retinectomy surgery and advanced secondary postoperative proliferative vitreoretinopathy.

Material and methods: Retrospective, noncomparative, interventional case series with review charts of 16 eyes of 16 patients with recurrent retinal detachment and inferior 180 degree proliferative vitreoretinopathy in which retinectomy with adjacent endolaser close to it on bare choroid performed at first step of the surgery with silicone oil tamponade. The second step of the surgery in cases of secondary recurrent retinal detachment, performed 3-4 months after surgery with additional retinectomy and endolaser in new bare choroid in areas beyond-the-edge proliferation close to retinectomy site with formation new retinectomy site. In all cases during first retinectomy surgery ILM peeling is performed. The follow-up period was up 12 months after the last surgery.

Results: The final anatomical success was achieved in 15 eyes (93.8% of cases) after the second retinectomy surgery. The BCVA was 2.4 ± 0.66 LogMAR before the first retinectomy and 0.67± 2.67 LogMAR after the second retinectomy at the last visit, respectively (P<0.001). Silicone oil removed at the last follow up in 14 cases (87.5%). Hypotony was noted in 2 cases (12.5 %). Mean follow up was 16.8± 6.66 months after the last surgery.

Conclusion: Two- step retinectomy with adjacent endolaser to bare choroid are effective in managing of recurrent retinal detachment after the first retinectomy and advanced secondary postoperative proliferative vitreoretinopathy with the increase of the final retinal reattachment rate.

Financial disclosure: There are no financial conflicts of interest to disclose.

EVOLVING FLUIDICS FOR ENHANCED SAFETY AND EFFICIENCY IN ANTERIOR AND POSTERIOR SEGMENT SURGERY

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Purpose: This review explores advancements in fluidics technology and their impact on the safety and efficiency of anterior segment (phacoemulsification) and posterior segment (vitrectomy) procedures.

Maintaining Chamber Stability: A Balancing Act

Intraocular chamber stability is paramount for a successful surgery. The anterior chamber, with its smaller volume, thin walls, and mobile structures (iris, lens capsule), is particularly susceptible to pressure fluctuations. Fluidics plays a critical role in balancing irrigation and aspiration rates to maintain chamber stability. Large incisions in anterior segment surgery further complicate this balance.

Evolution of Fluidic Systems: Beyond Venturi Pumps

Traditionally, Venturi pumps were used for aspiration due to their faster rise times compared to older, pulsatile peristaltic pumps. However, advance-

ments in pump design have led to the development of machines capable of generating high flow rates (core vitrectomy) and low flow rates (vitreous shaving) with improved control. One such innovative system, the EVA-Nexus DORC with VacuFlow Valve Timing Intelligence (VTI), utilizes computer-controlled pistons and closure valves to offer surgeons independent control over flow and vacuum settings. This novel pump system provides precise control during vitreous shaving in flow mode, particularly when working near a detached retina. Additionally, it eliminates the need for gravity-fed or pressurized irrigation bottles, offering rapid-response irrigation crucial for phacoemulsification safety and efficiency.

Vitreous Cutters: Partners in Stability

The evolution of vitreous cutters significantly enhances stability during close-to-retina shaving. “Port-based flow limiting,” characterized by limitations on flow rate associated with cutter gauge size, port size, cut rate, and duty cycle, becomes an advantage of smaller gauge systems. Reduced flow rates and high cut rates, particularly in double-cutters (TDC), minimize the distance vitreous fibers travel between cuts, minimizing traction on the vitreous and retina.

This refined abstract provides a concise overview of advancements in fluidics and their impact on ophthalmic surgery, highlighting specific technologies and their benefits for surgeons.

SESSION V: LIFE LONG LEARNING

EXECUTIVE FOR IOFF-SUBSPECIALTY FELLOWSHIPS

Author: Cordula Gabel-Obermaier

> The International Ophthalmological Fellowship Foundation (IOFF e. V.), is a German-based charity, that is committed to enhance ophthalmic education and thus to improve access to the highest quality eyecare in low-resource and underserved countries.

Annually, about 100 three-months fellowships, 4 six-months fellowships in Retinoblastoma and 2-3 one-year fellowhips are awarded to highly motivated young Ophthalmologists.

Having completed their IOFF Subspecialty Fellowship, candidates return to their home country to resume their position and to apply the newly acquired knowledge. They take part in programs to restore vision and prevent blindness.

In the presentation, information on the program will be provided, as well as instructions and advice on how to complete a good application file.

OUTCOMES FROM A MULTICENTER, RANDOMIZED CONTROLLED TRIAL OF DIRECT SELECTIVE LASER TRABECULOPLASTY (DSLT) IN OPEN-ANGLE GLAUCOMA AND OCULAR HYPERTENSION (THE GLAURIOUS STUDY)

Authors: Prof. Merab Dvali, M.D.; Dr. Monika Zalinian, M.D.; Dr. Yoram Solberg, M.D. PhD
Affiliation: This multicenter study involved 14 centers in Israel, Italy, Georgia, and the UK. The presenter represents Clinic Akhali Mzera in Tbilisi, Georgia, one of the trial sites. *The trial was sponsored by BELKIN Vision Ltd, Yavne, Israel, with additional funding from a Horizon 2020 European Commission research grant.*

Purpose: This study aimed to evaluate the safety and efficacy of direct selective laser trabeculoplasty (DSLT), an automated, non-contact, image-guided procedure, compared to conventional selective laser trabeculoplasty (SLT) for reducing intraocular pressure (IOP) in patients with open-angle glaucoma (OAG) and ocular hypertension (OHT).

Methods: This prospective, randomized, controlled, evaluator-masked trial included 201 participants aged 40 years with OAG or OHT, on 0-3 hypotensive medications, and an untreated/washout IOP between 22-35 mmHg. Following washout, participants were randomized 1:1 to receive DSLT (n=99) or SLT (n=93). IOP was measured at baseline, post-treatment, and at follow-up visits through 12 months. The primary outcome was the mean change in washout IOP from baseline to 6 months. Secondary outcomes included IOP changes at 12 months and safety profiles, assessed by the incidence of ocular adverse events (AEs).

Results: At 6 months, the DSLT group showed a mean (±SE) washout IOP reduction of 5.5 (±0.5) mmHg (–20.6%), compared to 6.2 (±0.5) mmHg (–23.6%) in the SLT group. The least-squared mean difference of 0.7 mmHg was within the non-inferiority margin of –1.95 mmHg, suggesting clinical equivalence. However, the 95% confidence interval (–2.2 to 0.8 mmHg) crossed the non-inferiority margin, narrowly missing statistical non-inferiority (p=0.09). At 12 months, mean (±SE) non-washout IOP reduction was

3.2 (±0.4) mmHg (–12.2%) for DSLT and 3.2 (±0.4) mmHg (–9.4%) for SLT, with a between-group difference of 0.01 mmHg (95% CI: –1.1, 1.1; P<0.001), indicating non-inferiority at 12 months. Both groups had similar safety profiles, though DSLT had a higher incidence of mild, clinically non-significant punctate subconjunctival hemorrhage.

Conclusion: DSLT demonstrated a clinically meaningful reduction in IOP at 6 months, sustained at 12 months, and was non-inferior to SLT in long-term IOP reduction and safety. While statistical non-inferiority at 6 months was narrowly missed, the results suggest that DSLT is a promising first-line treatment for glaucoma, offering an effective and automated alternative to conventional SLT. Further research with larger sample sizes may confirm these findings and support the widespread adoption of DSLT in clinical practice.

Financial Disclosure: No.

SELECTIVE LASER TRABECULOPLASTY - THE FIRST CHOISE TREATMENT FOR OPEN–ANGLE GLAUCOMA

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Purpose: Elevated intraocular pressure (IOP) is considered the main risk for the onset and progression of primary open-angle glaucoma (POAG and the only modifiable risk factor for control of the onset and progression of optic nerve atrophy. Besides the medical and surgical therapy for glaucoma, laser treatment has received considerable attention in recent times. Commonly practiced are argon laser trabeculoplasty (ALT) and selective laser trabeculoplasty (SLT), but laser trabeculoplasty gained popularity with the introduction of SLT, which appears less destructive than ALT and repeatable unlike ALT. The aim of the study was to evaluate the pattern of IOP reduction following SLT in the patients who were treated with laser as primary therapy and the patients with prescription one or more medicaments.

Material and Methods: Patients (age 45 years and older) with early to moderate POAG Phakic and pseudophakic were included in the study. IOP between 19 and 32 mmHg measured on at least two visits. Baseline IOP was taken using the Goldmann applanation tonometer. The average of 3 measurements was taken before the SLT decision on different follow-up visits. After Pilocarpine 1% instillation and topical anesthesia the laser procedure involved the Ellex Solo SLT Laser and a Latina SLT Gonio Lens. Treatment was realized in two stages at 1-month intervals. During one procedure I placed 150-190 contiguous spots along 180° of the TM. Immediately, after the completion of the procedure brimonidine 0.2% drop was applied. All patients were prescribed topical diclofenac sodium 0.1% for 5 days 3 times a day after laser treatment.

Results: A total of 726 eyes of 463 patients with early and moderate POAG were involved in the study. The mean age of the study participants was 54.3 ± 5.2 years (range, 45 to 78 years) and 295 (63.7%) were males. Diabetes mellitus in 8% and systemic hypertension in 30% were noted. 596 eyes (82%) were on medications, and 130 (18%) eyes were treated with laser as primary therapy. The number of drugs reduced from an average of 1.3 to an average of 1.0 was statistically significant with the inter-eye correlation. Those patients who were treated with laser as primary therapy with a baseline IOP of $25.4 \text{ mmHg} \pm 2.9 \text{ mmHg}$ had IOP reduction of 7.5 ± 3.1 mmHg at the last visit, and those who were on antiglaucoma medication with baseline IOP 23.9 ± 2.2 mmHg had IOP reduction of 6.8 ± 2.8 mmHg.

Conclusion: SLT is a safe and innovative technology that uses lasers to target only certain cells of the trabecular meshwork of the eye, leaving the tissue surrounding these cells untouched.

In our study, the patients were treated with laser as primary therapy or adjunct laser with medication. The overall IOP reduction was 27.7%, and the success rate was 75% at 1 year and 53% at 2 years.

We concluded that SLT appears to be repeatable in eyes with POAG that have previously been successfully treated.

We have found that it is more effective to begin treatment at closer to about 0.8 mJ (if the TM has 1 to 2-plus pigment) and titrate by 0.1 mJ increments. The energy level is titrated to the targeted response looking for bubbles forming in the anterior chamber. Once bubbles are visualized, titration is not decreased.

SLT is more effective in a virgin eye that has not received any medications yet. If the patient drop maximal medications, SLT usually has a less effect. Drops suppressed aqueous production and enhanced outflow so much, that the additive effect of SLT is reduced. We should be offering it to our patients first-line.

No Financial Disclosure

PEARLS OF AHMAD VALVE IMPLANTATION

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Background/Aims: Implantation of Ahmed glaucoma valve is an effective surgical technique to reduce intraocular pressure in patients affected with glaucoma. While in the past, the use of this device was reserved to glaucoma refractory to multiple filtration surgical procedures, up-to-date mounting experience has encouraged its use also as a primary surgery for selected cases. Implantation of Ahmed glaucoma valve can be challenging for the surgeon, especially in patients who already underwent previous multiple surgeries. Several tips have to be acquired by the surgeon, and a long learning curve is always needed. Although the valve mechanism embedded in the Ahmed glaucoma valve decreases the risk of postoperative hypotony-related complications, it does not avoid the need of a careful follow-up.

Methods: Body implant is positioned 8–10 mm from the limbus, outside limbal healing space. The plate is then sutured to the sclera with a 9.0 or 10.0 nylon suture. The drainage tube is trimmed to permit a 2–3 mm insertion in the AC and is bevel cut to an angle of 30°, to facilitate AC entering. An AC paracentesis is performed, and viscoelastic substance is injected to increase spaces. The AC is then entered 1–3 mm posteriorly to the corneo-

scleral limbus with a 22G needle. The needle tract is anterior and parallel to the plane of the iris. The tube, which is trimmed so that the bevel faces to the corneal endothelial surface, is inserted into the AC through the needle tract. Care must be taken at this point to ensure that the drainage tube does not contact iris or corneal endothelium after insertion.

Results: A report from the American Academy of Ophthalmology has reported the major short-term (up to 5 years after surgery) to medium-term (5–10 years after surgery) complications of aqueous shunt devices. They include immediate and late hypotony after surgery, excessive capsule fibrosis and clinical failure, erosion of the tube or plate edge, and very rarely infection.

Conclusion: AGV implantation is an effective and relatively safe surgical procedure, which allows to manage particular phenotypes of glaucoma (ie, secondary glaucoma) and glaucoma refractory to previous filtration surgeries (ie, second choice surgery). Many surgical tips are to be acquired by the surgeon, and a long learning curve is always needed. In comparison with other non-valve glaucoma drainage devices, AGV has the great advantage of an easier postoperative management. Nevertheless, early postoperative hypotony is still a dangerous complication that can affect this type of surgery.

No Financial Disclosure

BILATERAL SIMULTANEOUS PRIMARY ACUTE ANGLE CLOSURE GLAUCOMA

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Introduction: Unilateral primary acute angle closure glaucoma is not an often condition in ophthalmological practice, but still well-known and with sufficient information in literature, whereas bilateral cases are rare with scarce information. Considering the bilateral nature of the process, correct diagnosis, detection of provoking factors, and correct and prompt treatment are twice important. We would like to present a case of bilateral simultaneous primary acute angle closure glaucoma with it's likely underlying cause.

Case presentation: In august 2023 we consulted a patient in inpatient service. The patient was admitted to the emergency department with severe eye pain and headache, vomiting and high blood pressure. According to the patient, the mentioned symptoms have been developing for three days. Patient didn't mention any ophthalmological condition in the anamnesis. She was undergoing a treatment to the stomatologist, where she was injected with several topical adrenaline injections. Patient was treated with systemic antihypertensive and diuretic drugs before our consultation. Ophthalmological examination revealed: blurry and hydratad cornea, pupil dilated and fixed bilaterally. visual acuity: finger counting on both eyes, due to hazy optical areas, gonisocopy wasn't performed. Primary acute angle closure was diagnosed and appropriate treatment was carried out. Fotil Forte (pilocarpine+timolol) twice daily, dexamethason 4 times a day topically, 5% sodium chloride ointment 4 times a day. After several days corneas cleared out, gosnioscopy was performed, almost 360 degrees angle closure was revealed. Bilateral laser iridotomy was performed on 11, 1, 5, 7 clock hours, visual acuity improved, additional diagnostic methods were used: OCT of RNFL, perimetry. Within 1 month phacoemulsification of cataract with IOL implanting was performed on both eyes. Topical antihypertensive medication was stopped , and patient was scheduled for further planned follow up.

Discussion: Cases of acute attack o bilateral glaucoma are rare in ophthalmological practice and in most cases it has a specific provoking factor. The clinical case presented above, in our opinion, was caused by multiple topical injections of adrenaline. Despite the delayed referral of the patient and also the previous treatment, which led to the partial removal of clinical signs, should not confuse the clinician. Considering the correct anamnesis and clinical signs, it is possible to make a correct diagnosis and obtain a clinically good outcome.

APPLICATION OF MAGNETIC RESONANCE MORPHOMETRY AND POSITRON EMISSION TOMOGRAPHY IN DIAGNOSTICS OF GLAUCOMATOUS NEUROPATHY

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Introduction. In the human brain, not only the number of neurons decreases in glaucoma, there is a restructuring of glio-neuronal relationships, in which the number of neurons decreases, and the number of glial cells, which take part in various compensatory processes, on the contrary, increases.
Issues related to changes in the linear and volume characteristics of the parts of the human visual pathway are discussed in many works, however, among these publications, the authors rarely single out individual cytoarchitectonic fields. There are almost no works revealing the metabolism of glucose in the brain

Purpose: To study the possibilities of magnetic resonance (MR) morphometry and positron emission tomography (PET) with fluorodeoxyglucose in the diagnosis of cerebral neuropathy in patients with primary open-angle glaucoma (POAG).

Materials and methods. The complex ophthalmological, MR and positron emission examination of 32 patients with different stages of POAG (14 female and 18 male, aged 53 to 76) was conducted. The average age of the patients was 66.1±5.63 years. Initially, intraocular pressure was both low and high in the anamnesis. The control group included 11 people, comparable in age, without history of glaucoma and neurological pathology.

Positron emission tomography with 2-[18F]-fluoro-2-deoxy-D-glucose (18F-FDG) was performed in 16 patients with early/moderate and 16 patients with moderate/advanced stages of the disease. MRI of brain was performed on machine with magnetic field strength of 3.0 T. Standard surface head coil was used. Standard examination was performed with T1- and T2-weighted images, FLAIR and 3D T1 pulse sequence. T1-weighted images with slice thickness of 1 mm were used for morphometric assessment of the volume of cortex and other brain structures. PET of the brain was performed on an installation combined with computed tomography with the possibility of semi-quantitative analysis of the obtained results using Cortex ID software package. Statistical processing of the obtained data was carried

out using the standard Statistica software package. Reliability was assessed using the non-parametric Mann–Whitney test with a significance level of $p<0.05$.

Results. We determined the volumes of various structures of the brain depending on the form and stage of glaucoma. It was determined that the earliest changes occur, first of all, in the lateral geniculate nucleus in high-pressure glaucoma.

A significant decrease in the volume of subcortical nuclei was diagnosed in POAG. In the brain of patients in the subgroup with normal-pressure glaucoma, the volumes of brain ventricles were increased. The width of thalamus was increased in male.

In addition to those described earlier, a significant correlation was established between degenerative changes in the cerebral cortex during morphometry and areas of abnormal metabolism during PET in the gyrus temporalis medius, to large extent corresponds to Brodmann area 21. Its functions are related to such different processes as distance perception, recognition of familiar faces, audiovisual emotional recognition and access to meaning of a word during reading.

The obtained results indicate the high informativeness of PET with 18F-FDG in determining the localization and character of the expression of metabolic disorders in the brain substance.

It should be noted that single false-negative and false-positive cases in the subgroup of patients with the early and moderate stages of POAG were due to the minimal severity of the decrease in volume indicators of the cortex of various brain structures.

Conclusion. The methods of magnetic resonance morphometry and positron emission tomography, based on the calculation of quantitative and semi-quantitative indicators of the volume of the cortex and metabolism of the gray matter of the brain, allow with high accuracy to detect degenerative changes in the early stages of their development, and also carry out differential diagnostics between various POAG forms.

On the basis of the analysis of the results of a comprehensive radiographic examination of patients with primary open-angle glaucoma, we developed an algorithm for the diagnosis of glaucomatous neuropathy.

Conflict of interest: none.

SESSION II:
PEDIATRIC OPHTHALMOLOGY, STRABISMUS & OCULOPLASTY

CONGENITAL ANTERIOR STAPHYLOMA – RARE FORM OF PEDIATRIC GLAUCOMA

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The purpose is to describe and analyze the results of treatment of patients with anterior segment staphyloma. Congenital anterior staphyloma is a rare developmental anomaly of the eyeball, characterized by an enlarged, opaque, ectatic cornea protruding through the interpalpebral fissure in combination with severe dysgenesis of the anterior segment. Secondary glaucoma almost always develops with this malformation. Typical histopathological findings are absence of Bowman's membrane, Descemet's membrane and endothelium, limbal insufficiency, iris is usually atrophic and adherent to the posterior surface of the cornea, anterior chamber agenesis, trabecular meshwork and Schlemm's canal are not differentiated; microphakia, ciliary body hypoplasia.

Material and methods. The results of treatment of 18 patients (19 eyes) were retrospectively analyzed. At the same time, 12 children were operated on in the first month of life due to the threat of perforation of the ectatic cornea. In 3 children, in 4 eyes, staphyloma was combined with complete cryptophthalmos. In two children, anterior segment staphyloma was associated with microphthalmos of the fellow eye and multiple malformations -

ventricular septal defect, agenesis of the corpus callosum. All patients were diagnosed with secondary glaucoma. When diagnosing glaucoma, we were guided by the international classification and criteria for the diagnosis of childhood glaucoma CGRN. The management for each individual patient were selected individually, taking into account age, severity of staphylomatous changes, and concomitant pathology.

Results. All patients, depending on the method of treatment, were divided into 4 groups.

The first group consisted of 10 children (10 eyes). All patients in this group underwent penetrating tectonic keratoplasty with simultaneous lensvitrectomy. In 5 eyes, hypotensive intervention was further required - implantation of the Ahmed valve; in the remaining cases, glaucoma was contolled with medication.

The second group included 4 children (5 eyes): 2 boys and 2 girls, for whom enucleation was indicated due to staphylomatous changes in the anterior segment. During histological examination, the enucleated globe measured 35 mm, the anterior chamber angle was occluded by iris adhesions, the lens was atrophic and had transformed to a knob-like structure adhering to the posterior cornea.

The third group included 2 patients (2 eyes): 1 boy and 1 girl, in whom anterior segment staphyloma was combined with intercalary scleral staphyloma. These patients underwent sclerokeratoplasty at the age of 1 month, and then trabeculectomy.

And the fourth group consisted of 2 patients whose ectatic cornea had no signs of thinning. In this situation, vitrectomy and extraction of a rudimentary, reduced-sized lens (microspherophakia) were performed without keratoplasty. The second stage was the implantation of glaucoma drainage device.

Conclusion. Early keratoplasty with lensvitrectomy is the only way to preserve the eyeball in congenital anterior staphyloma. In this case, damage to the limbal stem cells, a small age of the child, and a large graft size are unfavorable factors for transparent engraftment of the graft. The choice of hypotensive surgery also remains a significant problem. Trabeculectomy, in most cases, is not considered due to the absence of the trabecular mesh-

work and Schlemm's canal. Cyclodestructive interventions are difficult due to the altered anatomy of the anterior segment and thinning of the sclera. The procedure of choice remains the implantation of drainage devices.

In general, due to the rare occurrence of congenital anterior staphyloma, it is advisable to choose management for each individual patient individually, taking into account age, severity of staphyloma and the associated pathology.

Conflicts of Interest: none declared.

Funding: the authors received no specific funding for this work.

CHILDHOOD GLAUCOMA PROFILE – RESULTS OF 20 YEARS RETROSPECTIVE STUDY

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The purpose: to analyze the profile of childhood glaucoma in accordance with the new classification and evaluate the convenience of its use in clinical and research work. In 2013, at the 9th Congress of the World Glaucoma Association, a new classification of childhood glaucoma was adopted. According to this classification, childhood glaucoma classified into primary glaucoma, including primary congenital glaucoma and juvenile open-angle glaucoma; and secondary glaucoma, including glaucoma associated with nonacquired ocular anomalies; glaucoma associated with nonacquired systemic disease; glaucoma associated with acquired diseases, glaucoma following cataract surgery. Many of the listed forms of childhood glaucoma are extremely rare and are classified as orphan diseases.

Materials and methods. We retrospectively reviewed the data of 775 patients (1169 eyes) aged from 0 to 18 years with childhood glaucoma who visited the clinics between 2003 and 2023. The mean follow-up period was 10.89 ± 8.2 years. Based on medical documentation, a patient register was formed containing epidemiological, demographic, clinical data, as well as long-term results of treatment of children with various forms of glau-

coma. For each examined eye, a form consisting of 22 questions is filled out - last name, first name, gender, region of residence, age at the time of detection of glaucoma, form of glaucoma in accordance with the international classification CGRN, diagnosis according to medical records, which was either confirmed or reclassified using CGRN criteria, diagnostic signs at the time of manifestation of glaucoma, complaints, treatment performed, number and type of operation performed, associated ophthalmological and systemic pathology, examinations with protocols of operations, photographs, visual functions at the end of the observation period.

Results. Majority of patients (53.4%) had bilateral ocular involvement. Most often, bilateral lesions were observed in primary congenital glaucoma (77.9%), juvenile glaucoma (97.0%), and secondary glaucoma associated with nonacquired ocular anomalies (54.1%). Males were more affected (425 patients; 54.8%). Наиболее распространенной формой оказалась глаукома на фоне приобретённых заболеваний (40,6%).

The most prevalent type of glaucoma in our cohort was glaucoma associated with acquired diseases. In this subgroup, the most common cause of glaucoma was retinopathy of prematurity (358 eyes). Primary congenital glaucoma was noted in 20.8% of cases, while in the other publications from China, Brazil, India, and Egypt, the this subtype of glaucoma represented 50%. Such differences are associated with the ethnicity of patients and the prevalence of genetic mutations.

In the vast majority of cases (from 51,8% to 84,9%), the treatment of glaucoma was surgical. The maximum number of repeated hypotensive operations - 2.1 glaucoma surgery per 1 eye was required for patients with primary congenital glaucoma. The results of surgical treatment of secondary childhood glaucoma turned out to be more optimistic - one operation was enough to glaucoma control in 64.6% of operated eyes with glaucoma associated with non-acquired ocular anomalies, in 70.7% of cases in glaucoma associated with non-acquired systemic condition, 66.8% in secondary glaucoma associated with acquired conditions, and in 68.4% of cases in glaucoma following cataract surgery. During the follow-up period, 1504 surgical procedure were performed. The most common intervention in all subgroups were incisional surgery. Cyclodestructive procedures were

significantly ($p<0.05$) more often performed in the group with secondary glaucoma associated with acquired conditions.

Conclusion. Currently, there is an algorithm for the treatment of only primary congenital glaucoma, which includes angular surgery as initial surgical procedure, and if it is failed, trabeculectomy. At the same time, the needs of clinical practice also require the creation of appropriate algorithms for the treatment of other forms of childhood glaucoma/ The use of a unified classification system is expected to greatly enhance the understanding of this disease, while improving childhood glaucoma management approaches and standards of clinical care in rare types of this desease

Conflicts of Interest: none declared.

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CHALLENGES IN DIAGNOSING AND TREATING MONOCULAR CATARACT OR GLAUCOMA CASES IN CHILDREN: A CASE REPORT

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Introduction: Monocular cataract or glaucoma in children pose diagnostic and treatment challenges, often masking underlying rare but critical conditions. We present a case highlighting the importance of thorough evaluation in such cases.

Case Description: An 8-year-old girl with a history of mild right eye deviation and blurred vision underwent unsuccessful cataract extraction. Further evaluation revealed a pigmented ciliary body mass with a neoplastic vascularized membrane and posterior synechiae. Ultrasonography and imaging confirmed a ciliary body mass with optic disc involvement. Enucleation was done. Genetic testing revealed a DICER1 mutation.

Diagnostic Assessment: Basic ophthalmological assessment , imaging modalities including ultrasonography, ultrasound biomicroscopy, fluorescein angiography, and magnetic resonance imaging T1,T2 fat suppression were utilized to characterize the ocular findings.

Treatment and Outcome: The patient underwent enucleation and systemic evaluation following the identification of a DICER1 mutation. The case underscores the necessity for comprehensive diagnostic investigations and vigilance in unilateral pediatric cataract or glaucoma cases to prevent the oversight of life-threatening conditions.

Conclusion: The presented case emphasizes the significance of diligent diagnostic assessments, particularly in unilateral pediatric cataract or glaucoma cases, to uncover potentially life-threatening underlying conditions. Timely intervention, possibly under general anesthesia, is essential for accurate diagnosis and appropriate management.

Keywords: Monocular Cataract, Glaucoma, Pediatric Ophthalmology, Diagnostic Challenges, DICER1 Mutation, Ocular Imaging, Systemic Evaluation.

Financial disclosures: IOFF subspecialty 3month fellowship program grant

CORRECTION OF BLEPHAROSPASM WITH BOTULINUM TOXIN

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Purpose: To assess the efficacy and side effects of treatment of blepharospasm (BS) with botulinum neurotoxin type A (BoNT-A).

Methods: Blepharospasm is a focal dystonia that also affects the perioocular muscles such as the procerus and corrugator, and mainly the musculus orbicularis oculi (MOO). The prevalence of the condition varies between countries but is around 20– 133/1,000,000. The disease, which is slightly more prevalent in women than in men, is most commonly present in the 6th decade of life. It often results in increased blinking, involuntary closing

of the eyes, and difficulty opening the eyes. It affects both eyes symmetrically, but in very rare cases, it can be asymmetrical. Difficulty in eye opening may sometimes be accompanied by apraxia of eyelid opening. BoNT-A injection was applied to the MOO by using preseptal or pretarsal application methods as previously stated in the literature. Before being injected, the BoNT-A was diluted with 0.2 ml of 0.9% saline in the pretarsal applications and 0.2 or 0.4 ml in the preseptal applications. In case of clinical necessity, injections were also applied to the procerus, corrugator, and nasalis muscles. In patients with other focal dystonias, injections were also made to the affected areas.

Results: All the patients reported improvement after treatments. All of them reported relief of periocular and perioral spasms. The mean duration of improvement was 4-6 months. No side-effects or systemic reactions were observed.

Conclusion: BoNT-A is effective in the management of Benign essential blepharospasm, Hemifacial spasm and Meige Syndrome. This along with a good safety profile justifies its role as a first line treatment therapy in blepharospasm. However, it is a temporary treatment option where the effect lasts for a short period of time and repeated injections are required.

No Financial Interest to Disclose

SWEPT SOURCE OPTICAL COHERENCE TOMOGRAPHY IN PEDIATRIC INTRAOCULAR TUMORS (CASE REPORT)

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Purpose: To evaluate of the value of Swept source OCT in the differential diagnosis of intraocular tumors particularly posterior scleral cysts.

Methods: The presented material describes a clinical case of a posterior scleral cyst, which was initially diagnosed as a benign tumor of the retina (retinoma). Some of the similar cases were reported previously in the literature. The comprehensive eye examination included visual acuity test, refraction test, pneumotonometry, biomicroscopy, ophthalmoscopy, ultrasonography using the Quantel Medical ABSolu ultrasound scanner, OCT using Topcon DRI OCT Triton plus SS-OCT.

Results: A 13-years-old boy came to our clinic for an annual scheduled examination. Previously he was diagnosed with compound hyperopic astigmatism in both eyes and retinoma of the left eye. His BCVA was 1.0 in both eyes. IOP was 18 mm Hg in both eyes. Fundoscopy of the left eye revealed an oval-shaped well-defined hypopigmented prominent lesion measured 3.07 mm vertically and 2.23 mm horizontally along the superotemporal arcade at a distance of 5.7 mm upwards from the optic disc. The adjacent retina was not changed.

Ultrasound examination (ABSolu ultrasonic scanner, 20 MHz ring sensor) displayed a dome-shaped prominence cyst-like formation with clear highly echogenic walls and hypoechogenic contents above the optic disc, at a distance of 4.5 mm from it. The lesion was 1.57 mm in height and 3.33 mm in vertical diameter.

According to SS-OCT of the pathological zone, a rounded cystic formation with well-defined wall, located subchoroidally, in the sclera, containing an irregularly distributed amorphous material of medium optical density with optically empty areas, was revealed. Compression and severe thinning of the choroid over the cyst was determined. The retina over the formation was not changed. Some thickening of the RPE-BM zone was found. The size of the cyst in the cut zone was 1.262 mm in height and 2.847 mm in transverse diameter. According all the examination data the patient was diagnosed with posterior scleral cyst of the left eye.

Conclusion: 1. Posterior scleral cyst must be taken into account in the differential diagnosis of intraocular tumors in the children's age group.

2. SS-OCT with a wavelength of 1050 nm, penetrating into deeper tissues and allowing high-resolution visualization of the choroid, sclera, chorioscle-

ral junction zone, gives us the opportunity to determine the exact anatomical localization of the intraocular tumor and evaluate its structure, which, in combination with other examination methods allows for reliable differential diagnosis of intraocular tumors.

ACUTE ACQUIRED COMITANT ESOTROPIA

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Purpose: Acute acquired comitant esotropia (AACE) is an infrequent presentation of esotropia. The prevalence of this type of strabismus is 0.3%. It is characterized by a sudden-onset eye misalignment and diplopia. The purpose of this article is to review three cases of Children who were diagnosed with AACE.

Methods: We present 3 cases (children 6-10 years) of AACE. All of them suddenly developed diplopia and esotropia, with large-angle. After complete ophthalmological and neurological examinations strabismus surgery was conducted.

Results: Bilateral medial rectus recession in two cases and unilateral recession of the medial rectus and resection of the lateral rectus in one case were performed. After strabismus surgery fully recovered binocular vision and was no longer noticeable diplopia.

Conclusion: Strabismus surgery of AACE has good motor and sensory results and can successfully restore good binocular function. Neurological examinations and neuroimaging should be performed to exclude any potential intracranial disease. The excessive use of smartphones may be associated with developing and increasing AACE.

Financial Disclosure: No

THE CURIOUS CASE OF BROWN SYNDROME

Affilation: Lana Datuashvili – MD, Clinic LJ, Georgia, Kutaisi.

Purpose - Raising awareness of the diagnosis, treatment and management of Brown Syndrome.

Clinical Case: A 7-year-old boy had the trauma, accidentally hit a pencil in the upper nasal area of the orbit of the right eye, after which, from the third day, the parents noticed the specific head position and double vision.

Visual acuity in both eyes was 1.0; The fundus of the eye was normal, was orthophoria in the primary gase, eye movement was full, slight hypotropia was noticed in the right eye in dextroversion and hypertropia was noticed when the head was turned to the right side.

Diagnostic methods: Eye movement test, MRI of the Orbit.

Treatment: If Brown is acquired – anti-inflammatory medications - non-steroid anti-inflammatory drugs; local steroid injections in the area of the trochlea and oral corticosteroids can be used; sometimes in acquired cases, there may be spontaneous resolution.

Management of congenital cases is surgery - to decrease the binocular diplopia and correct a specific head posture.

Surgical management of this condition stems from trying to eliminate the restriction induced by the tight superior oblique tendon. Initial approaches to release the restriction of the superior oblique included an excision of the superior oblique tendon sheath or a tenotomy.

Wright et al described a more predictable way to release the restriction through the use of a tendon expander in the form of a silicon band. This was a way to lengthen the tendon adequately but not too much so as to induce a superior oblique paresis. Knapp later described a simpler technique where a non-absorbable polyester suture was used as a bridge suture to lengthening the tendon and hold two ends of the cut tendon together after a tenotomy. Also called the chicken suture, this permitted intraoperative adjustment of the amount of lengthening through a slip knot and was technically easier to perform.

Conclusion: Our patient - with acquired Brown Syndrome - after medical treatment (listed above) felt better and didn't need any surgical treatment. The main thing in Brown's Syndrome is correct diagnosis and timely treatment.

No financial Disclosure

STATISTICAL STUDY OF OPHTHALMOLOGICAL DISEASES PREVALENCE IN GEORGIA BASED ON THE DATA OF CHARITY DIAGNOSTIC ACTIONS CONDUCTED IN 16 REGIONS

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Purpose: Community eye health charity programs are a common format for organizing screening events, focusing on early detection and prevention of eye diseases. Through collaboration between the Lions Eye Diabetic Clinic-Georgia and the State Service of Veterans Affairs of Georgia, 19 charity events were conducted across 16 regions of Georgia in 2022-2023. These events provided comprehensive eye care services to war veterans and their families. Services included visual acuity testing, auto Ref/Keratometry, slit lamp examination, IOP measurement and ophthalmoscopy. Patients diagnosed with eye conditions received prescriptions and were referred to appropriate clinics as per their regions.

Methods: After each campaign, patient data was entered into Microsoft Excel to create a comprehensive database. This database included information on patients' gender, age, location, diagnosis and prescriptions. The diagnoses, recorded based on the 10th revision of the International Classification of Diseases (ICD-10), were statistically analyzed using the SPSS program. In total, 637 patients were examined, and their diseases were categorized accordingly.

Results: Disorders related to dry eye, accommodation, and refraction were the most prevalent. Male predominance was observed in diseases such as blepharitis, anisometropia, conjunctivitis, and pterygium, while female pre-

dominance was noted in conditions like dry eye syndrome, age-related cataract, diabetic and hypertensive retinopathy. Other eye disorders were also detected, such as glaucoma, strabismus, keratoconus, vitreous floaters, lid margin and lacrimal system diseases.

Conclusion: The findings from this study, coupled with the crucial impact observed in numerous patients, underscore the significance of charitable initiatives like vision screening in Georgia. These actions have proven highly effective and pertinent, often serving as a pivotal step in guiding future interventions and safeguarding visual health. It's noteworthy that a significant portion of examined patients underwent vision screening for the first time, while others had undergone previous surgeries. However, due to various reasons preventing follow-up, they relied on the campaign to assess their current ocular health status.

Financial Disclosure: No

OCULAR TORTICOLLIS

Natalia Maghlakelidze MD, PhD. Associate Professor. "Georgian American University", "Aversi Clinic."
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Abstract: Introduction: torticollis is an abnormal head position: head turn, head tilt chin-up or chin-down, or any combination of these. Torticollis is not diagnosis, it is a sign of an underlying disease. Torticollis can arise from non-ocular and ocular conditions. Ocular torticollis, as opposed to non-ocular torticollis results from strabismus or other eye conditions in order to maintain binocular vision and/or to optimize visual acuity. The more common diseases causing head tilt in children are congenital nystagmus, superior oblique palsy, isolated inferior oblique palsy, dissociated vertical deviation, Brown syndrome. Face turn can cause horizontal rectus muscle palsy, Duane syndrome, congenital fibrosis of extraocular muscles, nystagmus, refractive errors, visual field defects. Chin-up or chin-down abnormal head postures are most commonly caused by "A" and "V" pattern strabismus, palpebral ptosis or refractive errors.

Patients with paralytic strabismus adopt an abnormal head posture to maintain binocular vision and avoid diplopia. Patients with paresis of a horizontally-acting extra-ocular muscle may achieve this with face turn alone, but a combination of face turn and chin elevation or depression may be necessary to correct for an abnormal vertically-acting muscle, and head tilt may also be found.

Treatment is usually surgical, with extent and location dependent upon on the underlying cause.

Conclusion: Early diagnosis and correction of ocular conditions resulting torticollis is important because prolonged AHP (primarily head tilt in children can cause facial asymmetry or secondary musculoskeletal changes.

Keywords: torticollis, superior oblique palsy, strabismus, abnormal head position, head tilt.

SESSION III: SURGICAL RETINA

SCLERAL BUCKLING VS COMBINED PARS PLANA VITRECTOMY-SCLERAL BUCKLE FOR PRIMARY REPAIR OF PEDIATRICS CHRONIC RETINAL DETACHMENT

Tural Galbinur. Azerbaijan Medical University, dept.of ophthalmology

Purpose: To evaluate the outcome of scleral buckling (SB) and combined pars plana vitrectomy with scleral buckle (PPV-SB) in the primary pediatrics rhegmatogenous retinal detachment repair.

Methods: A retrospective study was conducted in patients under 18 years of age, who presented with rhegmatogenous retinal detachment at Ophthalmo Retina Center at National Prime Hospital, Baku, Azerbaijan between January 2020 and March 2024. Primary measurable outcomes were single surgery success rate (SSSR) and rate of postoperative complications.

Results: A total of 22 eyes of 22 patients were included in the study; 10 eyes in SB group and 12 eyes in PPV-SB group. Mean follow-up period after surgery was 36.2 months ±18 months. SSSR was 78.5% (n=8) and 85% (n=11) for SB and PPV-SB, respectively. No statistically significant difference was found between the two methods of RRD repair in single surgery success rate with an OR of 1.3 (P=0.50). Complication rates were comparable in both groups in the last follow-up.

Conclusion: In this series, SB and PPV-SB have comparable results in regard to anatomical success and rate of postoperative complications. More complicated cases were selected to undergo PPV-SB upon surgeons' preference.

Keywords: scleral buckle; pars plana vitrectomy; pediatrics; retinal detachment.

A NOVEL SCLERAL FIXATION TECHNIQUE FOR DEXAMETHASONE INTRAVITREAL IMPLANT (OZURDEX®) IN VITRECTOMIZED EYES AFTER EPIRETINAL MEMBRANE REMOVAL

Ana Vachiberidze MD, Tekla Mamageishvili MD, Luka Sabanadze MD, Orkhan Huseynov MD, Nikoloz Labauri MD.FVRS

Purpose: The aim of this study was to evaluate the clinical efficacy and feasibility of an Ozurdex® (Allergan, Inc., Irvine, CA) transscleral suturing technique for the treatment of macular edema (ME) following pars plana vitrectomy (PPV) for epiretinal membrane (ERM) removal.

Methods: This prospective, interventional case study includes 23 eyes of 23 patients who were diagnosed with idiopathic ERM associated with ME. PPV for the ERM removal with or without internal limiting membrane (ILM) peeling was performed followed by the implantation of Ozurdex®, sutured to the sclera using a silicone tube as a fixation element. Spectral domain optical coherence tomography (SD-OCT) was used for the assessment of the ERM and central retinal thickness (CRT) preoperatively, at 1 week and months 1, 3, 6 and 12 postoperatively. Best-corrected visual acuity (BCVA) was assessed at each visit.

Results: All patients completed 18-month follow-up period. No unexpected intraoperative or postoperative surgical complications were observed in any case. Ozurdex® implants have completely disappeared into the silicone tube after 8 months. The logarithm of the minimum angle of resolution (logMAR) visual acuity improved from the preoperative value of 0.72±0.30 logMAR to 0.28±0.15 logMAR. The ME completely disappeared in 7 eyes and gradually decreased in 16 eyes. The central foveal thickness (CFT) decreased in all patients from 545.27±112.0 to 321.0±112.0 μm. Ocular hypertension was observed in 4 eyes and 1 patient required tube shunt surgery.

Conclusion: This novel technique for Ozurdex® trans-scleral suturing may be safe and clinically effective in avoiding serious complications related to free floating implants.

Keywords: Vitrectomy; Ozurdex; Epiretinal membrane; Macular edema.

REVOLUTIONIZING MACULAR INDENTATION: A NOVEL APPROACH USING EXPANDED POLYTETRAFLUOROETHYLENE IMPLANT FOR MYOPIC TRACTIONAL MACULOPATHY.

Author: Guillermo Salcedo

> Purpose: To describe a novel technique featuring a pioneering implant—expanded polytetrafluoroethylene (ePTFE)—for macular indentation in Myopic Traction Maculopathy (MTM).

Affiliation: Asociación Para Evitar la Ceguera en Mexico (Association to Prevent Blindness in Mexico [APEC]).

Methods: Retrospective, descriptive study. We share the evolutionary journey of this surgical method, providing insights into our own experiences. The presentation includes crucial recommendations on implant size, seamless implantation procedures, and the safety and efficacy of its impact on MTM complications.

Results: The evolution of the technique is described, featuring decision-making process on the improvement of the ePTFE implant. Twelve patients with MTM that underwent vitrectomy and macular buckle with the ePTFE are analyzed and described, based on their preoperative and postoperative features.

Conclusions: ePTFE implants for macular buckles to treat features of MTM seem to be safe and effective in the short-term. This implants could provide a faster, cheaper and probably safer way to indent the macular in patients with MTM.

Financial Disclosure: IOSA Health Speaker / Consultant

THE SIGNS OF CHOROIDAL MELANOMAS ON FLUORESCEIN ANGIOGRAPHY

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Purpose – to study the differential diagnostic criteria of uveal melanoma using fluorescein angiography.

Material and methods: 18 patients who applied to the National Centre of Ophthalmology named after acad. Zarifa Aliyeva in the last 10 years were diagnosed with uveal melanoma using the fluorescein angiography method. 8 of them were women and 10 were men. The age range of the patients was between 38-65.

Results: In 12 patients the own vessels of the tumor were visualized at the initial stage. According to some experts this is a pathognomonic symptom. Vascularization is not clearly observed in intensively pigmented tumors. Hyperfluorescence was observed in 94% of patients due to the formation of epitheliopathy. In some incipient melanomas a ring of hypofluorescence was observed around the tumor. Existing hemorrhages, "orange pigment" islands may also cause secondary and choroidal hypofluorescence. The presence of hyperfluorescence and hypofluorescence areas

at the same time creates a “spotty” image of fundus. These areas begin in the early phase, become stronger and eventually take on a diffuse image. Another symptom characteristic of melanoma - diffuse hyperfluorescence was observed for a long time in all our patients. This situation is related to the long-term stay of fluorescein in the developed special vascular system of the tumor. We were not found the non-fluorescent tumors in our practice. The approach to the significance of fluorescein angiography in the diagnosis of early melanomas is ambiguous. At the initial stage the presence of subretinal fluid , pigment existence seems as hypofluorescence and this makes diagnosis difficult. For this reason the diagnosis of uveal melanomas should be performed comprehensively.

Conclusion: Fluorescein angiography is a modern, non-invasive examination method of melanomas. However, the examination should be performed comprehensivly because of the necessity of differentiation of melanomas with a large spectrum of nosological units,.

INTRAOCULAR LENS (IOL) DISLOCATION TREATMENT & MANAGEMENT-

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Objective: Postoperative trauma, weakness of the zonules, in some cases develops IOL dislocation, which leads to complications such as: impaired vision, diplopia, retinal detachment, hemophthalmos, macular cystoid edema, uveitis, secondary glaucoma.
Our goal is to select the appropriate surgical approach for IOL fixation to prevent or treat these complications.

Method: Pharmacological miosis is recommended before surgical treatment, then appropriate surgical tactics should be selected. Fixed arc (CTR) is usually used in conjunction with artificial crystal, but in recent cases only the arc is not a protective mechanism. We would like to offer you a technique in which a complex, IOL with a CTR, is fixed on a colored membrane

Results: Using a similar complex allows us to avoid artificial IOL dislocation.

Conclusion: Complicated cataracts (with or without lens dislocation) are common in the Georgian population, so the correct selection of surgical method of IOL implantation preoperatively may prevent its dislocation.

INTRA OCULAR LENS OPACIFICATION – MANAGEMENT

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Objective: The effect of the type of intraocular lens material on its effectiveness. It is important to integrate the artificial intraocular lens with the intraocular tissues and maintain its rigidity for a long time.
In the recent years, the most common complication of cataract extraction is posterior capsule rupture. All this is influenced by its material and design. Hydrophobic and hydrophilic crystals are used widely today.

Method: Surgery is the only way to get rid of a cataract. Despite the existing studies, the effectiveness of medicinal products is not confirmed.Surgery is recommended when cataracts prevent you from going about your daili activities such as reading or driving. It's also perfomed when cataract interfere with the treatment of other problems. During the surgical intervention, the existing cloudy Lens is replaced. The quality and composition of the lens determine the results of implantation, phacoemulsification both in the early and later postoperative period. We would like to offer you a technique that has become necessary during the total disruption of the hydrophilic intraocular lens.

Conclusion: after cataract extraction, a contact with the type of intraocular lens material was statistically established, not only the disruption of the posterior capsule, but also its total disruption. This pathology was revealed during the use of hydrophilic acrylic IOL .

Results: the use of similar lens allows us to avoid both total disruption of the artificial lens and fibrosis of the posterior capsule.

PHOTOPHOBIA- SYMPTOM OR RESULT COMPLICATION ?!

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Photophobia – the symptom that often becomes the reason, for the patient's consultation to an ophthalmologist. Basically, it is the only subjective complaint from patients who have undergone other surgical operations on the eye, For example: phacoemulsification and artificial lens implantation.

Despite the fact that there are many different nosological diseases which symptom is photophobia, the main object of patient treatment is always an ophthalmologist or an Ophthalmic surgeon.

The purpose of the topic: to determine the factors that become the cause of photophobia, to explain the mechanisms by which its development takes place. **To show** us the expected results of its independent symptom as well as complications of other and other surgical interventions. **To determine** the coefficient of improvement of the quality of life in case of its solution. **To introduce** the correct tactics of patient management and to minimize the probability of photophobia as a symptom.

TRANSSCLERAL CYCLOPHOTOCOAGULATION AND REFRACTORY GLAUCOMA (TSCPC) - ITS IMPORTANCE IN THE MANAGEMENT OF REFRACTORY(NEOVASCULAR) GLAUCOMA AND IN GENERAL OPHTHALMOLOGY.

Giorgi Petriashvili, MD phd (European University), Bachana Omiadze (Aversi Clinic)

Objective: To inform the public about the advantages and disadvantages of (TSCPC) in the management of glaucoma patients, to review its availability and outcomes. I would like to drow your attention on the type of Refractory Glaucoma , when The IOP is High and wision is Low.

Purpose: Condition and Mechanism of Refractory Glaucoma - Refractory Glaucoma is the last stage of glaucoma when the optic nerve is white,aggressive pain,tearing, the intraocular pressure 40-70 Mmgh, patients have neovascularization, patients have inflammatory processes.

Methods: Transscleral Cyclophotocoagulation – It's purpose, availability and advantages, pros and cons of this treatment method.

Conclusion: The role of laser surgery in Ophthalmology medicine occupies a large place. In Refractory Glaucoma , patients have severe pain that prompts eye enucleation, CPC laser allows us to save patients from eye removal and sympathetic ophthalmia.

THE EFFICACY AND SAFETY OF IPL IN THE TREATMENT OF DRY EYE CAUSED BY MEIBOMIAN GLAND DYSFUNCTION (MGD)

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Background: This research explored the efficacy and safety of IPL in the treatment of dry eye caused by Meibomian gland dysfunction (MGD).

Methods: A total of 30 patients with dry eye caused by MGD were enrolled in this study. The patients were divided into either the experimental group or the control group by random number table. The experimental group (15) was treated with intense pulsed light (IPL), and the control group (n=15) was treated with palpebral gland massage combined with a hot compress. The efficacy, the incidence of adverse events, and patients' levels of satisfaction with treatment were compared between the 2 groups. The quality score of the palpebral gland, the height of the lacrimal river, and the change of tear secretion function were analyzed using a generalized linear equation at different time points.

Results: The total effective rates of experimental group and control group were 90.2% and 80.0%, respectively, and the therapeutic effects of experi-

mental group were better than those of the control group (P<0.05). In the generalized estimation equation, with the passing of time, the eyelid gland quality score for moderate and severe abnormality, the lacrimal river height measurements 0.35 mm, and the tear secretion measurements 5 mm all decreased (P<0.05). In addition, the moderate and severe abnormal eyelid gland quality score, the lacrimal river height measurements 0.35 mm and the tear secretion measurements 5 mm of patients in the experimental group were lower than those in the control group (P<0.05). There was no significant difference in the incidence of adverse events between two groups during treatment (P>0.05). In the satisfaction survey, patients who received IPL treatment had higher levels of satisfaction at 7 days and 30 days than those control group (P<0.05).

Conclusions: IPL is more effective in the treatment of eyelid gland dysfunction dry eye than a traditional eyelid gland massage combined with a hot compress. IPL effectively improves eye function and alleviates clinical symptoms and has good safety; thus, it can be considered for clinical application and promotion.

ELECTROPHYSIOLOGICAL ASSESSMENT OF RETINAL GANGLION CELLS FUNCTION IN EARLY STAGE OF GLAUCOMA

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Abstract: Today early detection of primary open angle glaucoma (POAG) remains one of the unsolved problems in ophthalmology. The data of automatic perimetry and electrophysiology and their correlations play the dominant role in a study of visual system functions in suspected glaucoma. Important risk factors for glaucoma includes elevated intraocular pressure (IOP), and the patient's age. To identify subtle changes in the visual system, distinguishing functional decline under "latent" glaucoma, a detailed study of the function parameters in different age groups is necessary. Different methods of perimetry and neuroimaging allow indirectly assessing the loss of bodies and axons of retinal ganglion cells (RGCs) by the change, respectively, the visual sensitivity and thickness of the retinal nerve fiber layer (RNFL). Perimetry and morphometric studies make it possible to indirectly evaluate the loss of ganglion cells and axons according to a change, correspondingly,

early light sensitivity loss and decrease of thickness of retinal ganglion cells (RGC). However, the inter-instrumental analysis - the direct comparison of the data between the results of different tests (especially of the data of subjective and objective research) are not acceptable for the quantification of neurodegenerative processes including POAG. Therefore, we assume that for the objectification of such a comparison the calculation of relative parameters - the indices of quantitative changes in the unction of the retina can be perspective. Changes in the functional activity of the retina in glaucoma in our work prove greater age-related loss of the retinal ganglion cells (RGC)of parvocellular system and their axons (or earlier onset of loss) in comparison with the magnocellular system. Well-known pattern ERG ratio ("Freiburg paradigm") calculated for the early detection of latent glaucoma should be indexed in accordance with the age of the patient, as senescence in the absence of glaucoma in the second adulthood may complicate diagnosis. It is very important to consider when examining patients with suspected POAG. In this paper, we have proposed the calculation of indices of relative loss of light sensitivity of the retina, and RNFL and have shown the usefulness of these indices to quantify the death of RGC bodies and axons in early glaucoma. New relative parameters can be used for diagnosis and monitoring of glaucoma process.

Keywords: primary open angle glaucoma, age changes, perimetry, electrophysiological studies, morphometric study

CUSTOMIZED OPTIONS FOR KERATOCONUS TREATMENT & CORRECTION (CORNEAL APPROACH)

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Purpose: The retrospective analyses of the patients with keratoconus treated with customized methods aiming to therapeutic and refractive effects: halting progression of keratoconus diseases and to achieve refractive effect (corneal approach); to access the efficacy and safety of those interferences.

Methods: The visual rehabilitation for keratoconic corneas requires addressing three concerns: halting the ectatic process, improving corneal shape, and minimizing the residual refractive error. From the year 2006 in our clinic, we have been performing CXL using Epithelium-off technique for deeper penetration of the riboflavin into the stroma; using hypotonic riboflavin in relatively thin corneas (less than 400 microns). In kertoconic pa-

tients we have been using Corneal Segments as well, two purposes: to halt the progression of the disease and to achieve refractive effect by flattening the central cornea and regularizing its asymmetry. Lasik also is considered in some cases to correct mild-moderate refractive error, followed by CXL. Any of these surgical options can be performed alone or combined with the other techniques depending on what the case requires. Individual approach – is of the most importance. After Therapeutic effect scleral lenses are an excellent option for patients living with keratoconus

Results: A total of more than 1400 eyes were assessed for retrospective analyses. Among them 52 eyes with combined treatment with Lasik Correction followed by CXL in planned manner. More than 1000 patients with ISCRS implantation; and up to 350 eyes with combined treatment with ISCRS implantation plus CXL in planned manner as well. The standard full ophthalmological examination with thorough topography data of the eyes were analyzed.

Conclusion: Corneal collagen crosslinking has proven to be an effective treatment used to strengthen the cornea for the most of the patients, and prevent further progression of Keratoconus. This minimally invasive procedure has been used globally with remarkable results over the past decade. It works to strengthen the collagen bonds with eyedrop medication and ultraviolet (UV) light from a special machine to produce a firmer cornea that doesn't bulge outward. It can also help prevent the need for future corneal transplant surgery. Its combination with ISCRS or Lasik can importantly improve the visual acuity and quality of life of the patients.

Financial Disclose: None of the authors has anything to declare.

TITLE: SURGICAL MANAGEMENT FOR VMT WITH FTMH FORMATION

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Purpose: To demonstrate surgical technique for management of vitreomacular traction syndrome with full thickness macular hole formation.

Method: 23 Gauge lens sparing three port pars plana core vitrectomy was done. Posterior vitreous was identified and stained using diluted triamcinolone acetonide suspension. Low vacuum high cut rate vitrectomy was done in shave duty cycle mode, to trim stained posterior hyaloid membrane in circumferential manner around the fovea region. PVD was induced and vitreous base shave was done with indentation to identify possible peripheral pathology. Finally posterior hyaloid remnant was trimmed to the smallest portion without separation of the flap over the fovea. ILM peeling was not done. Air intravitreal tamponade was used. The patient was advised to maintain facedown position for 24 hours period of time.

Results: OCT was done 24 hours after surgery and demonstrated air bubble and retina interface with closed macular hole without traction. One week post operatively after reabsorption of the bubble, OCT showed type 1 macular hole closure (closed without foveal neurosensory retinal defect). BCVA improved from 0.1 decimal to 0.6 decimal after surgery.

Conclusion: Vitreomacular tractions syndrome remains one of the commonest reasons for central vision distortion. Vitrectomy with posterior hyaloid separation with or without ILM peel has been shown to be a safe procedure for its management. Triamcinolone acetonide is a good visualization tool in a vitreoretinal surgeons' hands both for inducing PVD and trimming posterior hyaloid to the edge of the fovea in a circumferential manner. One year follow up of the patient showed stability and integrity of the macular interface without clinically significant ERM formation.

Financial interest: I have no financial interest to disclose

OCULAR SURFACE OPTIMIZATION PRIOR TO INTRAOCULAR SURGERIES

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Purpose: Ocular Surface Disease (OSD) adversely affects preoperative planning for cataract and refractive surgery. The compromised ocular surface status can interfere with preoperative keratometry and biometry for intraocular lens (IOL) power calculation, corneal topography and aberrometry data for refractive surgery planning. We present our protocol for the diagnosis and combined treatment of OSD prior to surgery. As OSD pathogenesis is complex with its core mechanism tear hyperosmolarity, its treatment requires complex approach.

Methods: Before the treatment the ocular surface is analyzed using the IDRA® Ocular Surface Analyzer (SBM SISTEMI, Inc., Torino, Italy). The IDRA device not only carries out detailed structural research of the tear composition and provides the visualization of the meibomian glands, but also suggests the algorithm for the treatment. Before implementing Intense Pulsed Light (IPL) treatment modality into our practice, we have been using traditional treatment options along with manual expression of meibomian glands. In cases of anterior blepharitis before we proceed to the IPL therapy, we usually perform AB Max (Anterior MicroBlepharoExfoliation) in-office procedure for the removal of the debris. In our algorithm of OSD treatment the second step is IPL procedure followed by the Low-Level Light Therapy (LLLT). The efficacy of the treatment algorithm was assessed by the Ocular Surface Disease Index (OSDI) questionnaire, data of the IDRA Ocular Surface Analyzer and findings on slit-lamp examinations.

Results: Although, satisfactory results were achieved with the traditional treatment, they were short-term and with the implementation of novel treatment protocol patients experienced long-lasting improvement. The efficacy of the treatment algorithm is depended on the number and frequency of the procedures. Not only the symptoms, but parameters of the ocular surface were improved following the combined treatment procedures that enabled us to obtain accurate preoperative data for the precise post-surgical results.

Conclusion: Maintaining a healthy ocular surface is essential for achieving the best visual outcome in cataract and refractive patients. Ocular surface preparation is beneficial not only in patients with established ocular surface disease, but also in those with minimal signs or symptoms of the disease. IPL therapy as a stand-alone procedure or in combination with other treatment modalities is a Gold Standard and is considered to be safe for the treatment of the MGD improving the tear film stability and hence, can optimize surgical outcomes.

No Financial Interest to Disclose

THE IMPORTANCE OF MULTIFOCAL ELECTRORETINOGRAPHY IN THE DIAGNOSIS AND TREATMENT OF DIABETIC MACULAR EDEMA

Multifokal elktroretinography is an electrophysiological method that can ensure examanation of separate areas of the makula at the same time. This non-invasive method, proposed for the first time by Erich Satter (1992), is used wiyh nuclear efficiency in the diagnosis of various deseases of the makula. Mf-ERG not only records the electrophysiologycal activity of the retina, but also allows to objectively fix the results obtained by stimulating its various parts.

Key words: diabetic retinopathy, macular edema, vitreomacular traction, multifocal electroretinography.

Purpose – to study the effectiveness of the multifocal electroretinography method in carrying out diagnostic and therapeutic measures in patients with various forms of diabetic macular edema.

Material and methods: The study included 40 patients who were divided into two groups:– patients with cystoid macular edema (20 patients); group II – patients with traction macular edema (20 patients). Of these 15 patients were women (37,5%), 25 were men (62,5%). The age of the patients ranged from 47 to 70 years (mean age was 56.6±12.4).

All examined patients were diagnosed with various forms of diabetic macular edema. All patients from group I received anti-VEGF intravitreal injections; patients diagnosed with proliferative diabetic retinopathy complicated by vitreomacular syndrome (group II) underwent pars plana vitrectomy. Before and after treatment, all patients underwent multifocal electroretinography (Mf-ERG).

Results: The results obtained showed that even in the early stages of focal edema, changes not detected by ophthalmoscopy were reflected in Mf-ERG. Due to solid exudates, the positive peak P1 is lengthened. P1 amplitude in both groups reduce significantly. In patients with patients with cystoid macular edema the P1 amplitude of the Mf-ERG was 39,39±13,65 nV/deg (normal from 66.6-130.4 nV/deg) and the pronounced changes correspond to the Mf-ERG indicators. In group with tractional macular edema P1 amplitude amounted to 35,78±11,05 nV/deg. After treatment in both groups P1 amplitude increase almost twice and became in group I 102,53±18,32 nV/deg, in group II 54,62±22,22 nV/deg.

Conclusion: A combined electrophysiological and morphological study in patients with diabetic retinopathy is of particular importance in studying the distribution of pathological processes in the retina, its topography, depth, the nature of damage to the macular area, as well as its pathogenesis.

OPTIMIZING ORAL FLUORESCEIN ANGIOGRAPHY: A COMPARATIVE STUDY EVALUATING CONCENTRATIONS AND EFFICACY IN RETINAL IMAGING

Guillermo Salcedo MD.O

To assess the feasibility, optimal concentration, and comparative efficacy of oral fluorescein angiography (O-FA) as an alternative to intravenous fluorescein angiography (IV-FA) for retinal imaging, with a focus on determining the optimal concentration of orally administered fluorescein and evaluating the fluorescence dynamics, image quality, and safety in both healthy volunteers and diabetic retinopathy patients.
The routine use of oral administration of fluorescein for retinal fluorescein angiography is limited. O-FA may serve as an alternative to traditional IV-FA, particularly for patients facing challenges with IV access (e.g., children)

and for continuous examinations needed to assess disease activity, such as inflammatory vasculitis.
For O-FA to gain wider acceptance, questions about optimal concentrations, fluorescence dynamics over time, and image quality need addressing.

This study is divided into two parts:
Part 1: To compare two concentrations (10% and 25%) of orally administered fluorescein. Specific objectives include the analysis and comparison of initial fluorescence time, peak phase of maximal fluorescence (MaxF), overall fluorescence, and fluorescence over time.
Part 2: To compare fluorescence and image quality between O-FA and IV-FA in diabetic retinopathy patients. Specific objectives include analyzing and comparing fluorescence, image quality, and adverse events.

Methods:
Part 1: A cross-sectional, comparative study with 19 systemically and ophthalmologically healthy volunteers randomized into 10% and 25% groups. Images were taken at intervals, and mean grey values measured fluorescence.

Part 2: A cross-sectional, comparative study with diabetic retinopathy patients randomized into O-FA (4 ml of 25% fluorescein) or IV-FA (3 ml of 10% fluorescein). Mean grey values measured fluorescence, and image quality was assessed by blinded graders.

Results:
Part 1: Nineteen eyes of 19 volunteers were analyzed, with 10 in the 10% group and 9 in the 25% group. The mean fluorescence for the 10% group was 32.55 pixels (95% CI 28.24-36.86; SD 24.75), and for the 25% group, it was 38.62 pixels (95% CI 33.14-44.11; SD 29.68). The Mann-Whitney U test revealed a statistically significant difference ($U = 2957.00$, $P = 0.043$).

Further analysis of initial fluorescence times showed no significant difference between the 10% group (11.5 seconds, 95% CI 2.98-20.01, SD 11.90) and the 25% group (8.22 seconds, 95% CI 3.81-12.63, SD 5.7) (Mann-Whitney $U = 40.00$, $P = 0.681$). Maximal fluorescence (MaxF) was also comparable between the two groups, with Group 1 at 62.79

pixels (95% CI 53.70-71.89, SD 12.70) and Group 2 at 72.68 pixels (95% CI 58.11-87.25, SD 18.95) (Mann-Whitney U = 27.00, P = 0.142). Importantly, no adverse events were reported in either group.

Part 2: Thirty-one patients underwent O-FA, while 33 patients underwent IV-FA. Mean fluorescence for O-FA was 76.38 pixels (95% CI: 68.4-84.36; SD: 21.76) and for IV-FA was 78.79 pixels (95% CI: 70.69-86.88; SD: 22.83). The independent samples t-test showed no statistically significant difference between the two groups (T = -0.4431, df = 62, P = 0.668).

Image quality grading, conducted by two independent and blinded graders, resulted in an average score of 8.54 (95% CI: 8.12-8.97) for O-FA and 8.89 (95% CI: 8.80-8.97) for IV-FA. The Mann-Whitney U test indicated no significant difference in image quality between the two methods (U = 454, P = 0.285).

Adverse reactions were minimal, with two cases of mild gastrointestinal upset reported in the O-FA group, while no adverse events were reported in the IV-FA group.

Conclusions: These detailed findings contribute to the understanding of the optimal concentration of oral fluorescein and support the viability of O-FA as a comparable imaging method to IV-FA in diabetic retinopathy patients. We have demonstrated that the optimal concentration for O-FA is 25%. There were no significant differences in fluorescence or image quality when comparing O-FA to IV-FA. O-FA holds promise as an alternative imaging method for patients.

ROLE OF INFLAMMATION CYTOKINES IN THE PROGRESSION OF DIABETIC RETINOPATHY

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The WHO predicts up to 366 million incidences of diabetes mellitus (DM) in the world by 2030. Modern literature sanctifies the results of numerous studies of the role of various biologically active substances in the pathogenesis of diabetic retinopathy (DR). Considering the pathogenetic aspects of this issue, it was of interest to us to study the role of inflammatory cytokines in the progression of DR.

Purpose – comparative assessment of the role of inflammatory cytokines TNF-α, IL-1α, IL-8 in the development of proliferative diabetic retinopathy.

Material and methods: A retrospective study was conducted in two groups of patients with DR at the National Centre of Ophthalmology named after acad. Zarifa Aliyeva. Group I - 40 patients with nonproliferative diabetic retinopathy (NPDR); group II - 42 patients with the development of proliferative diabetic retinopathy (PDR) during the year. The groups did not differ statistically in terms of age ($p=0.581$), gender ($p=0.507$), average duration of diabetes ($p=0.098$) and its type ($p=0.264$). In addition to the basic visual functions, the central macular thickness (CMT) and total macular volume (TMV) were evaluated by optical coherence tomography (OCT). The laboratory study included the determination of inflammatory cytokines TNF-α, IL-1α, IL-8 in blood serum (BS) and tear fluid (TF) using enzyme-linked immunosorbent assay (ELISA). A comparative assessment between the indicators of the two groups was carried out according to the Mann-Whitney U-test (Pu), indicators after a year with baseline indicators in the corresponding group - according to the Wilcoxon W-test (Pw). Statistical significance of differences was assessed at $p<0.05$.

Results: Based on the results, we conclude that in group II, the average level of all the studied factors in the BS increased significantly (TNF-α – 8,4±0,4 pg/ml, Pw=0,001; IL-1α – 12,9±0,5 pg/ml, Pw=0,001; IL-8 – 40,5±2,1 pg/ml, Pw<0,001) over the year , which was not observed in group I (TNF-α – 5,3±0,4 pg/ml, Pw=0,667; IL-1α – 7,3±0,5 pg/ml, Pw =0,393; IL-8 – 23,0±2,2 pg/ml, Pw=609). In the TF in group I, a signif-

icant decrease was noted (TNF-α – 25,5±1,0 pg/ml, Pw=0,001; IL-1α – 23,0±1,2 pg/ml, Pw =0,001; IL-8 – 14,9±1,6 pg/ml, Pw<0,001) over the year , in group II, on the contrary, a significant increase in the average level (TNF-α – 33,1±1,3 pg/ml, Pw=0,005; IL-1α – 28,0±1,4 pg/ml, Pw<0,001; IL-8 – 26,3±2,5 pg/ml, Pw<0,001) of inflammatory cytokines. The development of PDR in group II occurred against the background of a significant difference in the level of all studied factors from similar indicators in group I, both at the systemic (TNF-α, IL-1α, IL-8 - Pu<0,001) and local (TNF-α – Pu<0,001; IL-1α – Pu<0,009; IL-8 – Pu=0,001) levels.

Conclusion: Our results allow us to conclude about the prognostic significance of the interrelated increase inflammatory cytokines (TNF-α, IL-1α, IL-8) at the systemic level in the development of PDR. Further, with the development of PDR, the interdependent growth of all study factors both at the systemic and local levels determines the key role of inflammation in triggering a cascade of processes leading to pathological proliferation. Along with anti-angiogenic therapy, which is currently widely used in the treatment of DR, it is advisable to consider the need for preventive anti-inflammatory therapy to prevent the aggravation of diabetic damage to the organ of vision.

SIMPLIFIED INTRASCLERAL IOL FIXATION WITH 27G TROCARS AND SUTURELESS TECHNIQUE

Prof. Dr. Mitrofanis Pavlidis. Augencentrum Köln

This study introduces a modified technique for intracameral fixation of dislocated intraocular lenses (IOLs) using a 27-gauge (G) trans-trocar approach. This approach aims to simplify the procedure and shorten the learning curve.

Methods: A large cohort (542 eyes, 540 patients) with IOL dislocation underwent IOL exchange with the novel technique between June 2017 and December 2022. The technique utilizes two 2-3 mm from limbus-parallel scleral tunnels created with a 27G trocar positioned 180° apart and 3 mm from the corneal limbus. A three-piece IOL (Kowa Avansee Preset) was employed. Following 27G trocar removal, a 27G forceps (Ultrapeel DORC) externalized the PVDF haptic. The haptic tip was then fused with electrocautery to form an intracamerally fixated "nail head." Full 27g vitrectomy completes the surgical approach.

Results, outcomes: All patients were evaluated post-operatively at one month. Mean uncorrected and best-corrected visual acuity (BCVA) improved significantly ($p<0.01$ and $p=0.05$, respectively). Endothelial cell density exhibited a slight decrease (2303 vs 2014 cells/mm2, $p=0.09$). Mean IOL tilt and decentration were minimal (2.42° and 0.35 mm, respectively). No correlation was found between IOL positioning and BCVA. While some complications occurred (vitreous hemorrhage: $n=8$, hyphema: $n=1$, IOP elevation: $n=15$, iris capture: $n=4$, hypotony: $n=2$), no IOL redislocation was observed.

Conclusion: This intrascleral 27G trans-trocar IOL fixation technique demonstrates promising results with good visual outcomes, minimal complications, and a potentially rapid learning curve due to its streamlined approach.

A CASE REPORT: CATARACTA NIGRA

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Purpose: There is no reliable evidence about the etiological factors involved in the development of black cataract, one of the rarest diseases worldwide, but several risk factors have been identified: old age, smoking, sunlight exposure, malnutrition and etc. Most of these risk factors are environmental stressors that lead to the formation of toxins or the impairment of antioxidants.

Methods: A 61 years old woman referred to the Lions Eye Diabet Clinic-Georgia due to distorted vision after a course of cancer chemotherapy. She had been complaining of progressive vision loss for the past 15 years. She also complained of a ventral hernia, essential hypertension and she underwent oophorectomy in the past. Diagnostic evaluation revealed a lens opacity (OD: Cataracta Nigra, OS: Age-related cataract) and high myopia in both eyes.

Results: The patient underwent extracapsular cataract extraction with posterior chamber intraocular lens implantation on the right eye. There were no post-operative complications. The optimal timing of surgery on second eye was planned.

Conclusion: This is the first documented case of the rare pathology in Georgia. A case report shows that extracapsular cataract extraction with posterior chamber intraocular lens implantation is safe in patients with black cataract and comorbidities. With the help of modern technologies and advanced techniques postoperative complications are rare. Further research is needed to determine the long-term side effects of cancer chemotherapy and their relationship to the eye, in particular their role in the development of the rare eye disease - black cataract.

Financial Disclosure: No

A CASE OF CERULEAN CATARACT

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Purpose: Cerulean Cataracts are a form of congenital cataracts that are characterized by diffuse blue dotted opacifications across the nucleus and cortex of the lens. The Cerulean cataracts are inherited as an autosomal dominant trait.

Results: 54 years old woman was referred to Lions Eye Diabet Clinic – Georgia due to blurry vision. Her binocular UCDVA was 20/25. Diagnostic evaluation revealed binocular Cerulean Cataract.

Conclusion: This is the first documented case of the rare pathology in Georgia. Patients with cerulean cataracts usually have preserved visual acuity and rarely need cataract extraction before adult age. Progression of cerulean cataracts is slow and may not become significant until the third or fourth decade of life. Since this is a rare case, about which we have limited information it needs further assistance.

Financial Disclosure: No

STATISTICAL STUDY OF OPHTHALMOLOGICAL DISEASES PREVALENCE IN GEORGIA BASED ON THE DATA OF CHARITY DIAGNOSTIC ACTIONS CONDUCTED IN 16 REGIONS

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Purpose: Community eye health charity programs are a common format for organizing screening events, focusing on early detection and prevention of eye diseases. Through collaboration between the Lions Eye Diabetic Clinic-Georgia and the State Service of Veterans Affairs of Georgia, 19 charity events were conducted across 16 regions of Georgia in 2022-2023. These events provided comprehensive eye care services to war veterans and their families. Services included visual acuity testing, auto Ref/Keratometry, slit lamp examination, IOP measurement and ophthalmoscopy. Patients diagnosed

with eye conditions received prescriptions and were referred to appropriate clinics as per their regions.

Methods: After each campaign, patient data was entered into Microsoft Excel to create a comprehensive database. This database included information on patients' gender, age, location, diagnosis and prescriptions. The diagnoses, recorded based on the 10th revision of the International Classification of Diseases (ICD-10), were statistically analyzed using the SPSS program. In total, 637 patients were examined, and their diseases were categorized accordingly.

Results: Disorders related to dry eye, accommodation, and refraction were the most prevalent. Male predominance was observed in diseases such as blepharitis, anisometropia, conjunctivitis, and pterygium, while female predominance was noted in conditions like dry eye syndrome, age-related cataract, diabetic and hypertensive retinopathy. Other eye disorders were also detected, such as glaucoma, strabismus, keratoconus, vitreous floaters, lid margin and lacrimal system diseases.

Conclusion: The findings from this study, coupled with the crucial impact observed in numerous patients, underscore the significance of charitable initiatives like vision screening in Georgia. These actions have proven highly effective and pertinent, often serving as a pivotal step in guiding future interventions and safeguarding visual health. It's noteworthy that a significant portion of examined patients underwent vision screening for the first time, while others had undergone previous surgeries. However, due to various reasons preventing follow-up, they relied on the campaign to assess their current ocular health status.

Financial Disclosure: No

EFFICACY AND STABILITY OF A NOVEL DUAL-OPTIC INTRAOCULAR LENS IN CATARACT SURGERY: TWO-YEAR CLINICAL FEASIBILITY STUDY OUTCOMES

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Purpose: The aim of the study was to assess the long-term visual performance and stability of the OmniVu modular shape-changing intraocular lens (IOL, Atia Vision) after cataract surgery.

Affiliation: The prospective, nonrandomized, interventional feasibility study was conducted at two international sites in Georgia and India.

Methods: A total of 29 eyes of 19 subjects were enrolled in the study. 9 subjects underwent monocular implantation, and 10 subjects were implanted bilaterally with the OmniVu IOL. Clinical endpoints included monocular and binocular best distance corrected visual acuity (CDVA) at distance (4 M), intermediate (DCIVA, 80 and 66 cm), and near (DCNVA 40 cm), monocular and binocular defocus testing with ETDRS charts, and mean refractive spherical equivalent (MRSE). Outcomes were evaluated 1, 3, 6, 12 and 24 months post-operatively. Acuity results are presented in logMAR ± standard deviation (Snellen equivalent).

Results: At 24 months, results for 14 eyes from 8 subjects treated monocularly and 4 subjects treated binocularly are available. Mean monocular CDVA, DCIVA, and DCNVA were -0.10 ±0.04 (20/16), -0.06 ±0.10 (20/16), and 0.09 ±0.11(20/25), respectively. For subjects with binocular OmniVu IOL implantation, mean CDVA was -0.16 ±0.04 (20/12), mean DCIVA was -0.06 ±0.10 (20/16), and mean DCNVA was 0.08 ±0.13 (20/25) at 24 months. Defocus testing showed that visual acuity was better than 20/32 over a total range of 3.50 D for monocular and 4.50 D for binocular defocus curves, respectively. The mean MRSE remained between ±0.50 D from 1 to 24 months postoperatively. Overall safety outcomes

agreed with traditional cataract surgery. One posterior YAG capsulotomy was performed without incident.

Conclusion: Long-term clinical feasibility outcomes with the OmniVu modular shape-changing IOL show patients achieve and maintain good visual performance from far through near with predictable and stable refraction. Follow-up is ongoing, and additional study is warranted to further evaluate lens performance.

Financial Disclosure: No

POSSIBLE CONNECTION OF PERFORATING SCLERAL VESSELS AND ARTERY-VEIN COMPLEX TO CHOROIDAL NEOVASCULARISATIONS IN EYES WITH PATHOLOGIC MYOPIA

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Purpose: To determine the connection between myopic choroidal neovascularisation (mCNV) activity, perforating scleral vessels (PSV) and artery-vein complex (AVC) examined by optical coherence tomography (OCT).

Methods: Retrospective analysis of patients with mCNV before and after intravitreal aflibercept injection using multimodal imaging. The presence of PSVs, AVC and mCNV activity was assessed using swept-source optical coherence tomography images. Patients received 1 intravitreal aflibercept injection at baseline. Additional injections were performed in case of mCNV persistence or recurrence at monthly visits. Patients were under follow-up for a minimum duration of 12 months. Main outcomes were the relationships between number of injections and the prevalence of retinal-choroidal structural lesions.

Results: 13 eyes of 12 patients (2 male, 10 female, mean age 62.4 ± 10.1 years) with CNV secondary to pathologic myopia were included in the study. PSV were found in 9 out of 13 eyes (69.2%), AVC – in 4 out of

13 eyes (30,1%) at the site of CNV. They were under or in contact with the mCNV in all cases. The mean number of intravitreal injections received by patients with mCNV was 2.06 ± 1.17 along 19 ± 4.1 months of follow-up. Eyes with AVC needed less intravitreal injections along the follow-up period, when compared with eyes without AVC.

Conclusions:

1. Swept-source OCT is a high-quality method to detect PSV and AVC in the eyes with pathologic myopia. **2.** Intravitreal aflibercept was effective for treatment of mCNV with clinically important visual and anatomic benefits achieved with a limited number of injections. **3**. PSV may also play a pivotal role in the formation of myopic CNV. **4.** AVC complex has an influence over myopic choroidal neovascularization activity resulting in less aggressive neovascular lesions than those with perforating scleral vessels only.

THE ROLE OF EMOXYPINE İN PREVENTİON OF RETİNOPATHY İN PRETERM İNFANTS

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Purpose – to investigate the role of emoxypine in prevention of retinopathy of prematurity in preterm infants. Retinopathy of prematurity (ROP) is a rapidly progressive disease that can result in blindness. The most important factor in preventing the complications of ROP is a proper screening program, dequate oxygen therapy, use of prenatal steroids and vitamin E reduce the incidence of ROP. In addition, the use of ethamsylate (dicinone) in neonatology also gives positive results. These agents are directly or indirectly aimed at preventing retinal hyperoxia. In addition, instillation of antioxidant drugs (histoxiron, emoxypine) helps prevent ROP.

Methods: 160 preterm infants born with 25-30 weeks of gestational age were included in study and were classified in two groups: 80 infants, whom were prescribed 1% emoxypine once in 10 minute during 1 hour in a day and 6 weeks continuously were included in 1st group; 80 infants without emoxypine thepy were classified in 2nd group. All children underwent in-

tensive therapy including respiratory treatment. First oftalmologic examination was performed in 31-34th weeks.

Results: The result of the study was assessed on the basis of ophthalmological examinations: by the time of the first manifestation of signs of the disease, by frequency of distribution in groups, distribution by retinal zones, stages of development, frequency of occurrence of the posterior aggressive form and regression.Retinopathy was found in 29 (36%) infants of 1st group (speading pathology in 1st zone in 4 (13,8%), 2nd zone in 9 (31%), 3rd zone in 16 (55,2%)) and in 38 (47%) babies of 2nd group (speading pathology in 1st zone in 7 (18,4%), 2nd zone in 19 (50%), 3rd zone in 12 (31,6%)). The comparison of results between two groups showed less frequency and late occurence of retinopathy in infatnts who treated with emoxypine. The infants treated with emoxypine were also characterized with periferal manifestation of process, more cases of regression, and less demand in 2nd treatment.

Conclusion: Thus, the use of emoxypine played positive role in prevention of retinopathy prematurity in early periods of postnatal growth.

Financial disclosure: No

MAGNETIC RESONANCE MORPHOMETRY OF VOLUME OF STRUCTURES OF GRAY AND WHITE MATTER OF THE BRAIN IN GLAUCOMATOUS NEUROPATHY

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> **Relevance.** Magnetic resonance morphometry (Voxel-based morphometry) is technique that allows one to obtain data on the intravital volume of various structures of the gray and white matter of the brain based on computer processing of magnetic resonance images (MRI). It can be characterized as the sequential processing of T1-weighted images of the brain in special software, which allows further analysis of the individual structure of the brain substance and the identification of group differences in various neuropathy. There is no information about the relationship between altered gray and white matter in glaucoma.

Purpose: To assess the volumetric parameters of gray and white matter of the brain using magnetic resonance morphometry in patients with primary open-angle glaucoma (POAG) and low-tension (normal-tension) glaucoma (NTG).

Materials and methods. All patients underwent thorough ophthalmological and neurological examination at the Bekhtereva human brain institute of the Russian academy of sciences.

A total of 60 patients were examined, of which 48 were in the main group and 12 in the control group. 24 patients aged 66.6±7.92 years had a clinical diagnosis of POAG, 24 patients aged 65.8±4.68 years had a clinical diagnosis of NTG. The groups were comparable in severity of glaucoma according to perimetric indices. The control group was matched on demographic characteristics.

The initial data in the morphometric study were T1-weighted MRI with a slice thickness of 1 mm of the brain. During post-processing, the gray and white matter of the brain as a whole, the gray matter of the frontal, temporal, parietal, occipital lobes, thalamus and hippocampus were assessed. The presence of interhemispheric asymmetry with a predominance of linear dimensions in the left hemisphere of right-handers was revealed. A correlation analysis was carried out comparing the results of static perimetry and the identified volumes of brain matter. Among the large number of identified patterns, only those with strong (>70%) or moderate correlations (40-70%) were taken into account.

Results. In control group, the total volume of gray matter was 1231.3±94.66 cm3, the total volume of white matter was 1011.7±93.78 cm3, the left and right thalamic volumes were 6841.2±730.62 mm3 and 6760.3±822.4 mm3. In patients with POAG compared with those examined from the control group, there was no statistically significant difference in sizes of the frontal, temporal, and parietal lobes. Atrophic changes in the brain substance were pathognomonic for NTG. When assessing volumes in patients with NTG, significant differences were shown in the sizes of the temporal and occipital lobes. The parietal and temporal lobes of the brain may secondary atrophy due to lacunar damage to the subcortical white matter. In these patients, the thalamus both in the right and left hemispheres were slightly smaller than in the control group ($p<0.05$).

In general, patients with NTG due to a more pronounced degenerative process were characterized by much smaller volumes of the studied areas than

with POAG. This was manifested primarily in decrease in the total volume of gray matter ($p<0.05$). The strongest correlations were shown for the size of total volume of white matter, the temporal and occipital lobes, the hippocampus, and perimetric indices of retinal light sensitivity.

Conclusion. The most pronounced and, in our opinion, the most pathognomonic differences between NTG and POAG was a decrease in the total volume of white matter, temporal and occipital lobes.

MRI morphometry is a highly informative method for diagnosing the degree of neurodegeneration in both primary open-angle glaucoma and low-tension glaucoma and allows one to identify specific atrophic patterns already in the early stages of the disease, which, of course, opens up broad prospects for early diagnosis and selection of adequate methods of specific therapy.

Conflict of interest: none.

EFFECTIVE USE OF OPTICAL STEREO SIMULATORS "ZENITSA" FOR THE PREVENTION OF MYOPIA IN SCHOOLS

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Purpose. Assess the effectiveness of new health treatments activities for myopia.

Methods there were 19 children (38 eyes. 8boys and 11 girls) with low myopia between the ages of 15 and 16 years. For treatment we used a set consisting of 3 optical stereo simulators "Zenitsa" with different "base" positions of the prisms. We carried out the treatment in the school treatment center during a break between classes for 7-8 minutes.

Results After 10 sessions, monocular visual acuity increased average by 0.22, and binocular visual acuity average by 0.28 .Fusion reserves have improved + average by 6.250, and - average by 0.760. Relative accommodation reserves increased average by 3.89 diopters.

Conclusion The effectiveness of stereo simulators "Zenitsa" is increased due to the positive effects of competition and separation of visual fields, and also due to the stereokinetic accommodative reflex. activities in school settings allows to bring effective treatment for all risk groups for the occurrence of and progression of myopia.

Financial Disclosure No

EPIDEMIOLOGY OF CATARACT IN GEORGIA

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Aim: To estimate the incidence and prevalence of Cataract in Georgia and by Georgian regions in 2007-2022.

Method: Using data analysis the information accepted from National Centre for Disease Control and Public Health (NCDC) from 2007 to 2022, incidence and prevalence of Cataract in the population of Georgia and by Georgian regions was analyzed.

Results: There were only few eye disease separated from 2007 to 2019 year according to National Centre for Disease Control and Public Health (NCDC) including: Glaucoma, Cataract and Accommodation and refraction disorders.

Crude rate per 100 000 persons of all types of Cataract in 2007-2012 in Georgia was 315.1, in 2013-2019 crude rate per 100 000 persons was 1041.0 and 2020- 2022 crude rate per 100 000 persons 212.0. From 2020 was analyzed base of National Centre for Disease Control and Public Health (NCDC) by age and gender. Crude rate per 100 000 persons for female population was 255.8 and for male population - 153.3.

Age specific incidence at the age of 50-59 there are 132.5 cases in female population, and 107.9 cases in male population. In the age group 60-69, there were 702.7 cases in female and 418.6 in male population. The amount of Cataract cases 70-79 age group, in female population 1234.9 and in male population 718.6.

Prevalence of Cataract for Georgian regions 2007- 2012 the highest was in Mstheta-Mtianeti - 542.0 per 100 000 people and the lowest in Kvemo kartli. In 2013-2019 crude rates of Cataract per 100 000 people are dramatically increased and highest was in Imereti 1 498.1 and the lowest in Racha Lechkhumi and kvemo Svaneti. In 2020-2022 the rate of Cataract decreased, as well as the rates of other nosology because of the Covid-19 pandemic. The high rate of Cataract cases compared to other regions it was high in Imereti, and Tbilisi 319.9, per 100 000 people but the lowest was in Mstheta-Mtianeti 38.2.

Conclusion: The incidence of Cataract in Georgia is higher in Female then in Male and it is rising with the age. In the age of 60-69 number of Cataract cases are 5 times more compared to the previous age group (50-59) in both gender. The amount of Cataract cases continues to increase with the age and in the next age group 70-79, Cataract cases per 100,000 population in female, as well as in male population it was same 1.7 times more Cataract cases. According to our analysis, trends of increasing and decreasing total number of Cataract are repeated by other eye diseases. The increase of eye diseases cases is explained by the implementation of universal health care and increased access to health services and reduction of the incidence of Cataracts and accordingly, other eye diseases in 2020, is explained by the limitation of the mobility of population during the Covid-19 pandemic.

THE IMPORTANCE OF MULTIFOCAL ELECTRORETINOGRAPHY IN THE DIAGNOSIS AND TREATMENT OF DIABETIC MACULAR EDEMA

Key words: diabetic retinopathy, macular edema, vitreomacular traction, multifocal electroretinography.

Multifokal elktroretinography is an electrophysiological method that can ensure examanation of separate areas of the makula at the same time. This non-invasive method, proposed for the first time by Erich Satter (1992), is used wiyh nuclear efficiency in the diagnosis of various deseases of the makula. Mf-

ERG not only records the electrophysiologycal activity of the retina, but also allows to objectively fix the results obtained by stimulating its various parts.

Purpose – to study the effectiveness of the multifocal electroretinography method in carrying out diagnostic and therapeutic measures in patients with various forms of diabetic macular edema.

Material and methods: The study included 40 patients who were divided into two groups:– patients with cystoid macular edema (20 patients); group II – patients with traction macular edema (20 patients). Of these 15 patients were women (37,5%), 25 were men (62,5%). The age of the patients ranged from 47 to 70 years (mean age was 56.6±12.4).

All examined patients were diagnosed with various forms of diabetic macular edema. All patients from group I received anti-VEGF intravitreal injections; patients diagnosed with proliferative diabetic retinopathy complicated by vitreomacular syndrome (group II) underwent pars plana vitrectomy. Before and after treatment, all patients underwent multifocal electroretinography (Mf-ERG).

Results: The results obtained showed that even in the early stages of focal edema, changes not detected by ophthalmoscopy were reflected in Mf-ERG. Due to solid exudates, the positive peak P1 is lengthened. P1 amplitude in both groups reduce significantly. In patients with patients with cystoid macular edema the P1 amplitude of the Mf-ERG was 39,39±13,65 nV/deg (normal from 66.6-130.4 nV/deg) and the pronounced changes correspond to the Mf-ERG indicators. In group with tractional macular edema P1 amplitude amounted to 35,78±11,05 nV/deg. After treatment in both groups P1 amplitude increase almost twice and became in group I 102,53±18,32 nV/deg, in group II 54,62±22,22 nV/deg.

Conclusion: A combined electrophysiological and morphological study in patients with diabetic retinopathy is of particular importance in studying the distribution of pathological processes in the retina, its topography, depth, the nature of damage to the macular area, as well as its pathogenesis.