

Wavefront-guided femto-LASIK efficacy for myopic adult patients with refractive amblyopia.

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Purpose: to find out whether wavefront-guided femto-LASIK can improve the postoperative uncorrected visual acuity (UCVA) in comparison with preoperative best spectacle corrected visual acuity (BSCVA) in the group of adult refractive amblyopes.

Setting: Republican Ophthalmological Center, Minsk, Belarus.

Methods: seventeen eyes of 10 consecutive patients (7 isometric and 3 anisometric refractive amblyopes without strabismus) underwent wavefront-guided LASIK procedure on WaveScan WaveFront™ System / STAR S4 IR™ excimer laser platform (AMO, Santa Clara, CA, USA). Flap creation was performed on IntraLase™ FS60 femtosecond laser. The efficacy was defined as the positive difference between 3 month post-op UCVA and preoperative BSCVA (both measured in decimal system), 3 month post-op BSCVA was also measured. Mean spherical equivalent refraction (MRSE) in the group was -5.17 ± 2.42 . Target refraction in all cases was emmetropic. Mean pre-op BSCVA was 0.55 ± 0.25 .

Results: in 9 cases we observed the improvement in post-op UCVA in comparison with preoperative BSCVA, in 5 cases there were no significant difference between two values and in 2 cases we've registered the deterioration of post-op UCVA in comparison with preoperative BSCVA (caused by the undercorrection, post-op BSCVA in both cases resembled pre-op BSCVA). Three month postoperative MRSE was -0.1 ± 0.6 and mean UCVA 0.62 ± 0.22 , mean BSCVA was 0.67 ± 0.27 .

Conclusions: wavefront guided femto-LASIK is a predictable and effective way of correcting myopia in adult amblyopic patients and is able to improve postoperative UCVA and BSCVA in comparison with preoperative BSCVA.

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ICRS surgery the analysis with a new custom made 3D OCT

PURPOSE: To characterize 3-dimensionally the geometrical properties of keratoconic corneas, before and after intracorneal ring segments (ICRS) implantation, using custom-developed Optical Coherence Tomography (OCT).

METHODS. Ten keratoconic corneas were measured pre-operatively and post-operatively at 7, 30 and 90 days. ICRS (Ferrara-type) were implanted in femtosecond-laser and manually created tunnels, following standard surgical protocols. Anterior and posterior corneal topographic and pachymetric maps were obtained pre- and post-operatively from 3-D images of the anterior segment of the eye acquired with a custom spectral domain OCT, provided with custom algorithms for image analysis, fan and optical distortion correction and quantification. The 3-D positioning (depth and rotation) of the ICRS was also estimated longitudinally, relative to the pupil center and iris plane.

RESULTS. Pre-operatively, the average corneal radii of curvature were 7.02 ± 0.54 mm (anterior surface) and 5.40 ± 0.77 mm (posterior surface), and the minimum corneal thickness was 384 ± 60 μ m. At 90 days, the average corneal radii of curvature were 7.26 ± 0.53 mm (anterior surface) and 5.44 ± 0.71 mm (posterior surface), and the minimum corneal thickness was 396 ± 46 μ m. ICRS implantation produced a significant decrease of corneal power (by 1.71 ± 1.83 D at 90 days). Corneal irregularities (defined by high order Zernike terms of the corneal elevation maps) and the corneal thickness distribution decreased in some patients and increased in others. The measured ICRS depth (measured in 3-D) matched well the planned ICRS depth (within 23.93 ± 23.49 μ m). On average, ICRS showed an overall tilt of -6.8 ± 2.6 deg (temporal) and -2.1 ± 0.8 deg (superior) at 7 days and a systematic but small (<1 deg) rotation between 7 and 90 days.

CONCLUSIONS. Anterior segment sOCT, provided with fan and optical distortion correction and analysis tools, is an excellent instrument for evaluating and monitoring

the changes produced by ICRS in keratoconic corneas, and for analyzing the 3-D ICRS position during the follow-up. ICRS produced flattening on the anterior corneal surface, although the benefit for corneal surface regularization varied across patients.

The syndrome of dry eye at the contact correction.

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The soft contact lenses are used widely in medical and cosmetic aims. The age of users of the contact lenses attribute to the active capable of working. A contact lens, placed on a cornea, is able to violate the structure of tear film, that can result in development of symptom of dry eye. Quite often the state is aggravated by the influence of external factors: wind, conditioners, tobacco smoke, protracted work with a computer, system diseases and others.

Purpose of work. Study of display of syndrome of dry eye of the patients with the contact correction of sight.

Methods. Under a supervision there were 36 patients. Among them there were 14 women, 12 men at age from 18 to 35 years. Duration of using contact lenses hesitated from 3 to 7 years. 6 patients were used by hydrogel lens, 8-lenses of the nightly carrying, 22 patients are silicon hydrogel lenses. We developed the questionnaires which included next questions: 1. passport information; 2. complaints (burning, dryness, itch, feeling of foreign body, turning of eye red); 3. work is connected a) with a computer b) a presence of conditioner in a building c) wind 4. concomitant diseases. 5. reception of medicines.

There were conducted the following inspection: visometry, refractometry, biomicroscopy, test of Shirmer and test of Norna.

Results. The displays of syndrome of dry eye were exposed by 11 patients (30,5%) . It is set that all these patients carry the contact lenses more than 4 years, and use a computer more than 2 hours a day; two of them have chronic tonsillitis the 6 patients

took hormonal contraceptives, the 8 patients carried hydrogel contact lenses, the 3 patients - silicon hydrogel lenses.

At a biomicroscopy the 3 patients were found out the folds of bulbar conjunctiva in a lower-outward quadrant. The changes from the side of cornea are not exposed, the test of Shirmera and Norna were within the limits of norm. All patients complained of the periodic turning of eyes, feeling of dryness red, to the fatigue of eyes. The complaints increased being in the closed apartment, protracting the work with a computer and at the use of lamplight.

For the removal of symptoms of dryness of eyes it was offered to the patients to use installation of Vidisik (15 minutes before putting on the lenses) or the drops of Optive. All patients marked disappearance of symptoms of dry eye during the leadthrough of treatment. However more comfortable for a patient it was to use the drops of Optive. It also allowed a patient to use preparation in any conditions.

Conclusions 1. The users of the contact lenses the signs of syndrome of dryness of eyes are in 30,5% cases.

2. The patients, using hydrogel contact lenses have the symptomatic syndrome of dry eye more frequent.

3. Displays of syndrome of dry eye were not marked by the persons, using the lenses of the nightly carrying.

4. For treatment of syndrome of dry eye at a contact correction it is recommended to use Vidisik (15 minutes before putting on the lenses) or the drops of Optive.

**TRABECULOTOMY AB INTERNO COMBINED WITH
PHACOEMULSIFICATION IN COMPARISON WITH SIMPLE
PHACOEMULSIFICATION: PROVEN HYPOTENSIVE RESULT**

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Purpose: To evaluate simultaneous trabeculotomy ab interno combined with microcoaxial (2.2mm) phacoemulsification and IOL implantation safety and efficacy. To estimate hypotensive results of this combined surgery in comparison with conventional microcoaxial (2.2mm) phacoemulsification with IOL implantation in comparable groups of patients with cataracts and subcompensated glaucoma.

Methods: *Main group:* 27 eyes (27 patients) mean age 68 ± 6 years. Cortical and nuclear cataracts (grade I) - 40%, mature - 20%, intumescent cataracts - 20%. In all cases cataracts were complicated with subcompensated glaucoma with one or more hypotensive medications. In 80% of the cases iridocorneal angle was open and wide, in 20% - narrow. Mean IOP before surgery was 27 ± 4 mm Hg. Mean glaucoma drops number was $2,1 \pm 0,6$. In all cases of the main group trabeculotomy ab interno was performed after phacoemulsification was completed and IOL was implanted. Trabeculotomy was made with trabeculotomy using surgical gonioscopy lens Ocular Magna 120° in medial upper quadrant.

Control group: 30 eyes (30 patients) mean age 68 ± 6 years old. Cortical and nuclear cataracts (grade I) - 50%, mature - 10%, intumescent cataract - 10%. In all cases cataracts were complicated with subcompensated glaucoma with one or more hypotensive medications. In 80% of the cases iridocorneal angle was open and wide, in 20% - narrow. Mean IOP before surgery was 26 ± 4 mm Hg. Mean glaucoma drops number was $1,9 \pm 0,6$. In all cases in the control group routine microcoaxial (2.2mm) phacoemulsification with IOL implantation was performed.

Results: Schlemm's canal bleeding during the trabeculotomy were observed in seven cases of the main group. In one case of the main group the capsular tension ring was implanted due to zonular weakness. On the first day after surgery hyphema was observed in two cases and hemorrhagic aqueous humor opalescence was in 14 cases of the main group. Minimal (less than 1 mm) choroid detachment was observed in 20% of cases. Mean IOP after surgery was $18,2 \pm 2$ mmHg in the main group and

24±2 mmHg in the control one. Mean glaucoma drops number was 0,3±0,3 in the main group and 2,0±0,7 in the control one. BCVA was approximately the same in both groups: 0,8±0,2 and 0,7±0,3 respectively. In the month follow-up period mean IOP in the main group was 20,0±5 mmHg. and mean glaucoma drops number 0,4±0,3. In two cases of the control group glaucoma decompensation required to perform nonpenetrative hypotensive surgery. With such additional surgery mean IOP in the control group was 22,3±2. and mean hypotensive drops number 1,7±0,8. Hypotensive results (mean IOP and mean hypotensive drops number) were reliably better than in control group. Groups were comparable and all the results were statistically proven.

Conclusions: Trabeculotomy ab interno combined with phacoemulsification and IOL implantation is technically easy and safe surgery in patients with cataract and subcompensated glaucoma. Hypotensive effect is statistically proven and significantly better than in the control group.

ONE AND TWO-YEAR FOLLOW-UP OF A NOVEL MINIMALLY INVASIVE DRAINAGE IMPLANT: THE INNFOCUS MICROSHUNT™

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Objective: To report the experience of the minimally invasive drainage implant (MIDI Arrow) developed at the Bascom Palmer Eye Institute in Miami, Florida, USA. The single site, prospective, non-randomized study of 21 eyes in 21 patients was performed at Centro Laser, in Santo Domingo, Dominican Republic. The purpose of this study is to evaluate the IOP lowering effects of the InnFocus Microshunt used either alone or in combination with phacoemulsification for a period of two years.

Method: 21 eyes included; 8 eyes underwent combined glaucoma and phacoemulsification surgery and 13 eyes had glaucoma procedures alone. All eyes

received an intraoperative wide application under the subconjunctival flap of 0.4 mg/mL of Mitomycin C for three minutes. The flexible tube made of the biocompatible material SIBS was implanted through a 3 mm long needle track made with a 27 g needle.

Results: The average medicated baseline IOP was 23.9 ± 5.4 mmHg (n=21). The average IOP dropped 56% to 10.6 ± 2.8 mmHg (n=21) and 52% to 11.4 ± 3.0 mmHg (n=17) at 1 and 2 years, respectively. The success rate, measured by dropping IOP by $\geq 20\%$ without surgical intervention, was 100% (21/21) and 94% (16/17) at 1 and 2-years, respectively. There were two cases of transient hypotony and two choroidal effusions which cleared spontaneously. There were no long-term sight-threatening adverse events.

Conclusion: The InnFocus MicroShunt effectively lowered IOP by 56% and 52% with 90% and 88% of patients achieving IOP of ≤ 14 mmHg at one and two years, respectively. Results are similar when implanted alone or in combination with phacoemulsification without serious long-term adverse events. The simplicity of use and ease of follow-up will provide a simple and effective replacement for trabeculectomy and may become the treatment of choice for patients who have failed at least one glaucoma medication.

Title: Femtosecond Assisted Cataract Surgery in Mature Cataracts and Difficult Cases.

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Purpose: To Prove the Efficacy of the Femtosecond Laser for the Surgery of Difficult Cataract Cases

Methods: Demonstration of state of the art in femtosecond technology through videos of surgery on black and white hypermature cataracts, cataracts with small pupils,

combined cataract and glaucoma, cataracts in the presence of phakic lenses, and cataracts with special intraocular lenses.

Results: Femtosecond Laser (Catalys Precision Laser System, Sunnyvale, CA) has made the average cataract operation easier, the difficult cases become a routine procedure, and the impossible cases become possible.

Conclusions: Cataract procedure of difficult and challenging cases has been simplified by the assistance of the femtosecond laser technology.

The Dropped Nucleus

Dr. Peter Barry

The dropped nucleus opens the door to corneal failure, uveitis, vitritis, glaucoma, cystoid macular oedema, retinal detachment and endophthalmitis. However, with honest recognition and appropriate surgical repair, the original objectives of posterior chamber intra-ocular lens implantation can usually be achieved.

The surgical options for the trainee, the experienced cataract surgeon and the vitreo-retinal surgeon will be presented in diagrammatic and video format.

Endophthalmitis Following Cataract Surgery/Prevention and Treatment

Dr. Peter Barry

The adoption of intra-cameral antibiotic injection prophylaxis for endophthalmitis is becoming more widespread around the world since the publication of the ESCRS Study in 2006. However, there are still major problems resulting from "kitchen pharmacy" with errors in dilution, contamination, TASS and anxieties about anaphylaxis / penicillin allergy. Examples of these adverse events will be shown and the allergy issue discussed in detail.

A summary of the ESCRS study findings will be presented as well as the results of introducing intra-cameral antibiotics in various parts of the world. Managing a case and performing an adequate vitreous biopsy with intra-vitreous antibiotic injection will be demonstrated by video.

TORIC INTRAOCULAR LENS IMPLANTATION IN CATARACT AND REFRACTIVE LENS EXCHANGE SURGERY

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Purpose: To evaluate the visual and refractive outcomes after the Acrysof toric intraocular lens (IOL) implantation in patients who had cataract and refractive lens exchange (RLE) surgery.

Methods: This retrospective study included 35 eyes of 21 patients with preexisting corneal astigmatism from 1.00 to 4.00 diopters (D) who had toric Acrysof SN60T/ IQ SN6AT (T3,T4,T5,T6,T7,T8) IOL implantation. The uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA) and residual refractive cylinder were evaluated at 3 months postoperatively.

Results: 17 eyes of 12 patients had cataract surgery. 18 eyes of 9 patients had RLE. 3 months postoperatively, the mean UDVA was 0.74 ± 0.14 (SD) and the mean CDVA, 0.86 ± 0.11 (SD). The UDVA of 20/40 or better in 94 % of eyes and 20/30 or better in 77 % of eyes. The residual cylinder was less than 0.75 D in 82 % of eyes and less than 1.00 D in 91 % of eyes.

Conclusion: Implantation of the Acrysof toric IOL was effective, safe and predictable to correct preexisting corneal astigmatism in cataract and RLE patients.

Key words: Toric IOL implantation, astigmatism, cataract, RLE.

Modern method of retinoblastoma salvage eye treatment in Ukraine

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Salvage eye treatment of children with retinoblastoma (RB) nowadays are based on development of new chemotherapy methods: systemic intravenous and local – paraocular (subconjunctival, sub-Tennon), intravitreal injection and intraarterial selective a.ophthalmica perfusion. Efficacy of systemic intravenous polychemotherapy is proven by many researchers [Seregard S. 2007; Shields C.L. et al. 2005; Saakjan S.V. et al. 2008; Bobrova N.F. et al. 2008; Gombos D.S. 2002] but has a number of common adverse toxic reactions: alopecia, gastrointestinal disorders, myelosuppression, secondary infections, neurotoxicity, nephropathy (Abramson et al, 2005; Gombos et al, 2007; Lambert et al, 2008). Intraarterial a.ophthalmic perfusion is a rather complex procedure and needs various different medical/non medical specialists and expensive equipment. Paraocular chemotherapy can cause acute swelling and morbidity, fibrosis of the periocular tissues leading to restricted eye movement, necrosis of the periocular fat and enophthalmos (sunken eye). Intravitreal Melphalan injections was used by A. Kaneko as alternative to enucleation method of recurrent retinoblastoma treatment with vitreal seeding (A. Kaneko et al. 1994; 1995).

Purpose: to study the efficacy of retinoblastoma salvage eye treatment algorithm based on primary combined local and systemic polychemotherapy.

Material and method. New method of RB salvage eye treatment was developed in State Institution “Filatovs institute of eye diseases and tissue therapy of NAMS of Ukraine” and consists of 3 consecutive steps. 1st – primary combined polychemotherapy – local intravitreal Melphalan injection and following systemic chemoreduction (VEC-protocol); 2nd – local tumor destruction; 3rd - EBRT at lineal accelerator on indications.

Efficiency of this treatment algorithm was estimated at 24 children (34 eyes) aged 2 mo/o – 6 y/o ($17,3 \pm 16,2$ mo) with monolateral – 10 children (10 eyes), bilateral RB – in 14 cases (24 eyes). Tumor was at stages T1 – 5 eyes, T2 – 7, T3a – 5, T3b – 17. Multifocal growth was in 23 eyes, RB capsule break – in 12, vitreal and retinal seeds – in 13, anterior chamber seeds – in 1, retinal detachment – 8 cases, jukstapapillar localization – 11.

Combined polychemotherapy started from primary intravitreal injection of 0.01mg Alkeran (Melphalan) that was made through a pars plana under the surgical microscope control with contact fundus-lens near to a tumor. From 1 to 6 injections were administrated in one eye under indications with an interval of 3-4 weeks. The simultaneous systemic chemoreduction was introduced according to Shields et al 1996 (VEC-protocol).

Additional local tumor destruction therapy was made: lasercoagulation (16 eyes), transpupillar thermotherapy (9), cryotherapy (4), brachytherapy (3). EBRT at lineal accelerator has been performed to 7 children.

Follow up period was 5 – 40 ($17,1 \pm 9,1$) mo.

Results No complications of intravitreal injection and in the postoperative period were identified. Regressive changes were obtained in 93,7% patients after 1st combined polychemotherapy course that allowed to continue on salvage eye therapy and decrease number of systemic chemoreductions up to $4,3 \pm 0,3$. 94 intravitreal Melphalan injections were performed in total. In one case with familiar bilateral RB VEC-protocol was totally excluded. New tumor focuses during treatment have appeared in 13 eyes, 7 eyes had progressive growth. 9 eye in stages T3a (2) and T3b (7) were enucleated due to retinal detachment (4), new focuses development (2), papilla opticus involvement (2), no treatment response (1). Pathohistological investigations have shown total necrosis, fibrosis, calcification and degenerative changes of tumor tissue in all cases except: retinocytoma (1 case with no treatment

response), alive tumor cells in 2 cases one of them with anterior chamber seeds had choroidal invasion.

Summary 25 eyes (73,5%) were preserved with total tumor regress on 20 of them (58,8%): T1 – 4/5, T2 – 7/7, T3a – 3/5, T3b – 5/17. Regressive changes consisted of: big tumor size decreasing with fragmentation and calcification; small tumor disappearing or chorioretinal scar formation, vitreal and retinal seeds resolving. Treatment is proceeding in five eyes T3b stage with remaining tumors/incomplete regress and in 1 eye with jukstapapillar RB.

Conclusion. Primary combined polychemotherapy started from intravitreal Melfalan injection is an effective and safe method of treatment which doesn't need complex and expensive equipment and could be used as first "stroke" acting directly on tumor cells from the vitreous. This type of therapy was especially effective as a primary influence in cases of RB endophytic and multifocal growth, breaking of the tumor capsule, vitreal and retinal seeding. Combination of local influence with systemic chemoreduction generates the "double stress" RB therapy.

Developed retinoblastoma salvage eye treatment algorithm allowed to avoid enucleation in 73,5% cases (even with T3a-b stages, vitreal and retinal seeding) and decrease chemoreduction courses number up to $4,3 \pm 0,3$ with their negative systemic influence on child.

VA results in infants with primary IOL implantation after congenital cataracts phacoaspiration

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Background: Primary in-the-bag IOL implantation in children, especially in infants is greatly perspective direction of congenital cataracts surgery because of its

physiologic in-the-bag IOL staying, uvea contact protection, thereby inflammation reducing degree that promotes faster VA restoration in the postop period.

Aim: to analyse VA results in infants with primary IOL implantation after congenital cataracts phacoaspiration.

Material and methods: 100 children (159 eyes) aged 1-24 months (ave $9,9 \pm 5,3$ SD mo/o) with various types of congenital cataracts (atypical forms - 48,4%, total - 29,6%, zonular - 22,0%) were operated. All children divided into 6 groups by age criteria (1-3 mo/o, 4-6, 7-9, 10-12, 13-18, 19-24) for more detailed research. Detailed observation was performed before operation and in 12 and 24 months post op under general anesthesia: US-biometry, anterior and posterior US scanning, keratometry, tonometry, biomicroscopy, ophthalmoscopy. IOL optic power calculation was performed by SRKII formula. Average calculated optical IOL power was - 29,5 D (17,0 D min and 42,7 D max), average implanted optical IOL power was reduced to obtain slight hyperopia - 26,0 D (16,0 D min and 30,0 D max). Operation technique: phacoaspiration through tunnel limbal incision, ACCC, primary IOL Acrysof in-the-bag implantation, PCCC and “dry” anterior vitrectomy on indications. VA measurement by Teller acuity cards.

Results. All eyes before operation were almost blind with VA as light perception (direct and indirect pupil light reaction). Only in some cases of zonular cataracts VA was determined as poor “follow reaction”.

Infants pseudophakic eyes VA dramatically increased immediately after operation and was continued to raise in 12 and 24 months post op period in all groups but was differ in groups after surgery with monocular and binocular cataracts.

Thus in monocular pseudophakia average VA in 12 months post op increased to $0,07 \pm 0,03$ SD with min data 0,02 and max 0,2. In 24 months post average VA in monocular pseudophakic eyes was $0,1 \pm 0,04$ SD with min data 0,04 and max 0,25. VA (0,2-0,25) was obtain in 2 infants aged 6 and 10 mo/o with posterior lenticonuses which had red reflex on a circle of it before operation.

In binocular pseudophakia VA raised more considerably and in 12 months post op was $0,13 \pm 0,05SD$ with min data 0,04 and max 0,4. In 24 months post VA continued to raise till $0,22 \pm 0,06SD$ with min data 0,06 and max 0,6. Maximum VA data (0,6) was received in one infant aged 5 mo/o with total binocular cataracts.

The highest optical results received in infants operated at the first year of life especially at 1-3 mo/o and 4-6 mo/o groups and reached maximum (to 0,3-0,6) at binocular cases mostly in total and zonular types.

Conclusion. Phacoaspiration with primary IOL implantation during first six month of life is revealed as mostly favourable to obtaine high visual functions.

Received VA data of early operated pseudophakic infants eyes testify to high efficacy of implantation surgery.

Lower results are revealed in monocular cataracts make necessary the further perfection of monocular pseudophakic eyes pleoptic treatment at the time of postoperative rehabilitation.

Early elimination of ambyogenic factor and creation of normal optical conditions for visual analyzer development are the basic preconditions for high visual function achievement and it further development.

Transpalpebral surgical approach to orbital optic nerve gliomas removal

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Optic nerve gliomas occupy the second place among orbital tumor in pediatric population and the fifth among the primary tumors of the orbit in a whole. In 70 % of cases the disease declares itself at the first decade of life and characterized by different rate of growth and a degree of visual functions loss.

The most widespread tactics of optic nerve gliomas treatment now consists in dynamic observation in the stationary period of the disease which characterised by absence of active tumor growth signs according clinical examination and MRI or CT data, stable visual acuity and view fields. Surgical activity is indicated at the tumor progression causing significant decrease of visual functions, expressed proptosis and threatening by germination to the cranial cavity.

Surgical removal of orbital optic nerve gliomas till now remains the main radical method of treatment in cases of evident progression and the only way of prevention of tumor germination to the cranial cavity. Different approaches to the orbital part of optic nerve – various methods of external orbitotomy - transpalpebral (Pakhomova, 1964), osteoplastic orbitotomy by Krönlein and its modification (Bilgq, 1989; Bakunowicz-Lazarczyk, 1996), subfrontal (Marchal, 2006), through external cantus (Rose, 2007), transconjunctival (Petrenko, 2008) as well as transcranial techniques (Rueda-Franco, 1998) are used. However any of methods is not devoid of some lacks that encourages the new surgical approaches elaboration.

Purpose: To analyse the results of elaborated surgical approach to orbital optic nerve gliomas removal application.

Method: The new method of transpalpebral translevator orbitotomy for orbital optic nerve gliomas removal has been elaborated at the department of pediatric ophthalmopathology of SI «The Filatov Institute of Eye Diseases and Tissue Therapy NAMS of Ukraine». The main stages of the technique:

- skin-muscle incision along the palpebral fold;
- Muller muscle separation up to conjunctival fornix;
- soft tissues block consisting of Muller muscle, aponeurotic part of the levator muscle and orbital septum sutures by provisional stitches and displaces up by handles;
- opening of the Tenon's capsule, suturing and cutting of superior rectus and superior oblique muscles;

- removal of the orbital part of the optic nerve together with a tumor after preliminary opening of the Schwann's sheath and inspection of tumor content;
- reinsertion of superior rectus and superior oblique muscles; restoration of soft tissues block to the initial anatomic position and fixation by absorbable sutures to the tarsus;
- suturing of skin-muscle incision.

Results: 11 children aged 2-12 years with progressive orbital optic nerve gliomas have been operated on using the elaborated technique. Any complications during surgical intervention have not been marked. Moderate upper eyelid and orbital tissues edema, gradually diminishing within 2-3 weeks after surgery, was marked. Postoperative blepharoptosis was remaining for 1-1,5 months after surgery, gradually decreasing according to edema reduction. The keratitis provoked by viral infection has developed in one patient a month after operation. Remote term observation (6 months - 5 years) has shown no recurrences of the tumor. Good cosmetic effect of operation with gentle scarring, sufficient symmetry of eye fissures and preservation of good levator muscle and superior rectus muscle function were achieved.

Conclusions: The new method of transpalpebral translevator orbitotomy provides good survey of the orbital cavity, enough wide surgical space for allocation of a big size tumor and manipulations on orbital structures up to the apex under the visual control, convenient approach to the internal surgical space of the orbit. Despite of performing levator aponeurosis cutting off from the tarsus, it is not injured owing to up displacement together with Muller muscle and orbital septum in united block and protection by hooks in the further course of operation. In the subsequent at the final stage of intervention correct anatomic positions of anterior part of the orbit structures are restored, in particular, aponeurotic part of the levator muscle comes back into initial position that provides preservation of its normal function and prevent the development of such often complication of orbital surgery as blepharoptosis. Results

of usage of elaborated approach to orbital optic nerve gliomas removal allow to recommend it for application in surgical practice.

enVista – non glistening Diamond

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TOPICALITY:

If in the past cataract surgery was usually delayed until the cataract had matured and the patient had become totally blind, it has been incorporated into refractive practice during the last years. So finding the most perfect IOLs is of current importance.

Setting the enVista apart from currently available IOLs is the unique combination of aspheric, aberration-free Advanced Optics technology, designed to deliver enhanced contrast sensitivity and better quality of vision, with a clinically proven glistening-free material. In addition, the enVista lens design is intended to minimise posterior capsular opacification (PCO), these features, combined into one platform with the enVista lens, provide surgeons with the opportunity to optimise short-term and long-term outcomes for their patients.

PURPOSE: To evaluate glistening free properties, controlled unfolding, decentration rate, visual acuity and biocompatibility after performing phacoemulsification with enVista IOL (Bausch +Lomb) implantation.

MATERIAL & METHODS: The prospective case series comprised 37 eyes of (20 patients) that underwent phaco surgery with implantation of enVista Bausch+Lomb IOL through 2.2 mm incision using single use inserter. All surgery was performed by one surgeon (Prof Merab L Dvali). The safety, efficacy, predictability, stability, and adverse events of the surgery were assessed. Before implantation, patients had a complete ophthalmic examination including refractometry, keratometry, pachymetry,

slit lamp biomicroscopy, applanation tonometry, and binocular indirect ophthalmoscopy. The target refraction was emmetropia in all cases.

Main aspects that should be underlined are the flexibility of enVista IOL that makes real sense with the insertion through 2.2 mm incision, controlled unfolding of enVista and its great positioning in capsular bag, as well as easy removal of viscoelastic at the end of the procedure.

RESULTS: We got desired emmetropia in all eyes that underwent implantation of enVista IOL. No signs of inflammation have been seen on the second day and a week after the surgery caused by enVistas high biocompatibility property.

Follow-up ranged from 3 to 6 months. No glistening was found in any case with enVista. As for decentration and tilting of IOL, there was no significant tilted or decentred IOL seen in any of the eyes. In regard to visual acuity, it was 20/30 or higher in all cases.

CONCLUSIONS: Implantation of enVista Bausch+lomb IOL is safe and well controlled and provides predictable, stable refractive results. With its great biocompatibility it reduces post surgical inflammation rate. Absence of glistening is great benefit for patients, because of reduction of light scattering and maintaining high visual acuity and quality. EnVista maintains good position in capsule and is not impacted with decentration due to its unique power from the center -to - edge. Post surgical visual acuity is good and contrast sensitivity is significantly better than with some other hydrophobic IOLs.

The enVista hydrophobic acrylic intraocular lens is a significant addition to the surgeon's current choices. The enVista lens features a highly durable, clinically proven glistening-free material. The unique material combined with the aspheric, aberration-free Advanced Optics technology, provides surgeons with a new lens platform for optimal patient outcomes.

My 30 years PHAKICs

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When we decide to put an additional lens in the eye, two questions arise – where it should be placed and where it can be fixed. There are not many options as there are two spaces in the eye where additional IOL can be located - anterior and posterior chambers; and three points of possible fixation - anterior chamber angle, iris and sulcus ciliaris.

It goes without saying that the most inviting in its volume is anterior chamber and the easiest for fixation – anterior chamber angle. That is why the pioneers of early fifties chose this way to follow, but IOLs were then too rough and low quality. There were not viscoelastic materials, and operations were much traumatic to corneal endothelium and anterior chamber angle structures. The most postoperative complications lead to phakic lens removal and in some cases even to enucleation what considerably cooled down surgeons to correct ametropia with phakic IOLs.

Only after 30 years, with appearing on the market viscoelastic material Healon, some surgeons dared to return to “taboo subject”. I created the two types of phakic IOLs with different types of fixation: the first one to the iris periphery, the second one – in four points of anterior chamber angle. Fyodorov used the method of pupil fixation type “cufflink”. Baikoff transformed Kelman’s aphakic “Multiflex” lens into phakic lens.

Using Healon enabled to perform as difficult manipulation as suturing IOL fixation in three points of the iris periphery with polypropilene threads.

The high myopia was corrected in all the 64 eyes but the necessity to perform two additional corneal incisions caused additional, iatrogenic astigmatism that’s why the full correction was not always achieved.

The quite similar method of phakic lens fixation was used by Dr. Worst and Dr. Fechner. It has been still used for nowadays named Artisan, Verysize.

To make the implantation technique easier, as well as reduce the incision, I created

the first phakic IOL with 4 points of support in the scleral spur of anterior chamber. Flexible support elements allow using standard size of IOL in any diameter of anterior chamber. The first international presentation on the matter I made in October 1985 in Cannes and the first publication - in 1986 in leading Soviet ophthalmologic journal.

During several years since 1983 I made more than 100 implantations with very good visual results. However, as shortly as early 90-ies, I noticed the permanent endothelial cell loss in the eyes with angular fixated phakic IOLs.

In Europe, the early 90-ies were marked by the variety of different models of angular fixated anterior chamber phakic IOLs. Each of them gives hope for preventing corneal dystrophy but all of them came to the dead end. Endothelial cells gradually destroyed.

To replace anterior chamber phakic IOLs, posterior chamber phakic IOLs humbly began to appear, based on the "venturou" concept of Svyatoslav Fyodorov – to put an additional lens in the narrow posterior chamber. PRL floating there and ICL supported at sulcus.

I used only some PRL and stopped. The 21st century I started with ICL and have very good results. In some cases of astigmatism I used so called Bioptics.

After Toric ICLs' appearance at the market, I use it less often and also had wonderful results.

In patients with ICL, excellent visual results were slightly overshadowed with obligatory presence of iris coloboma, because the most patients were very young and consequently, very attentive to their appearance. This year we have a possibility to use the new type of ICL with hole in the centre. That's excluded the need of performing iridectomy. I like to finish this surgery with a little bubble of air.

In the first series of using these lenses, we have faced long-term complaints of patients with glare and halos due to High order aberrations. Our medical staff was in panic, I referred to experts worldwide for an advice. Can the hole be the cause? I received different kind of answers. The entire city knew about my "unsuccessful" surgery. Only after 4 months of neuroadaptation, when her brain used to the new

optics and she came to the clinic with the decision to operate the fellow eye, we all breathed a sigh of relief.

In some cases I used phakic ICL in keratoconic myopic eye after ISCR implantation, and even after RK. Capsular cataract may be the only complication of ICL. It can be caused by the contact of ICL with natural lens, or the cause can't be detected.

During the last years we have a new tendency to return towards the anterior chamber fixation it's like enter the same river for the third time.

SCREENING AND TREATMENT OF THE RETINOPATHY OF PREMATURITY IN CENTRAL REGION OF HUNGARY

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Introduction: Retinopathy of prematurity is a vasoproliferative retinal disease, which affects low-birth weight infants. ROP is a leading cause of childhood blindness around the world.

Expert screening by ophthalmologists to detect treatment-requiring disease according to the definitions is crucial. In Hungary, ROP screening in the NICUs is provided by paediatric ophthalmologists. Despite the screening according to guidelines many infants were transferred to our center for the consultation, the decision of the treatment before the new program. The transport of the premature baby can be a mechanical stress and can have an adverse effect on the infant.

A new program is presented which started in 2008 by Semmelweis University and Peter Cerny Foundation.

The aim of the presentation is to analyse the data of children who were screened and treated in this program.

Material and Methods:

The ambulance transports the qualified ophthalmologist and instruments to the primary hospitals if the local ophthalmologist would ask the consultation and photocoagulation. If laser treatment because of ROP is necessary and general anaesthesia is available, we performe it in the primary hospital.

Wide-angle digital fundus camera (RetCam Shuttle) were installed in this program in 2009. All premature babies at risk are screened with this camera in two NICUs of Semmelweis University and if the local ophthalmologist in regional hospital would ask the consultation we transport this instrument there. Image data are forwarded to the Reading Centre in Department Ophthalmology and evaluated by an expert ophthalmomogist.

Result: By using the retino-telemetry system, a total of 925 screening examinations were performed by the ophthalmologist and licenced transport nurses between 31 January 2010 and 30 March 2011. In this periode 384 premature babies with a birth weight of less than 1500 grams or gestational age of 32 weeks or less were screend with this system.

In the first 4 years periode (01.08.2008-31.07.2012) 144 eyes of 72 premature babies were treated with Stage 3 ROP in the primary hospital. 40 eyes of 20 babies (28%) were treated with zone I or posterior zone II ROP and 104 eyes of 52 babies (72%) with zone II ROP.

In this first 4-years periode we reduced the transport of premature babies for laser treatment and consultation in this program. Complications wasn't be observed.

Conclusion: The results show that this program can be an effective and good alternative method for management of consultation and treatment of ROP.

27 G One Pars Plana Port Vitrectomy with a Reflow Strategy for Macular Diseases and beyond

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2- Department of Ophthalmology, Policlinico di Modena, Modena, Italy.

Purpose : to report our results for macular hole using anterior chamber infusion during the reverse zonular flow “Reverse flow”(personal technique) one port pars plana 27G vitrectomy technique

Setting/Venue: Department of Ophthalmology, Hospital S. Maria delle Croci, Ravenna, Italy

Methods: A retrospective analysis of 10 eyes which underwent re-flow one port 27g vitrectomy with the infusion in the anterior chamber for macular hole. This technique was used to decrease the turbulence of fluids in the vitreous cavity and for the possibility of decreasing the number of scleral ports to one port in cases of simple vitrectomy. For these eyes we reviewed the functional outcome, anatomical outcome and the possible long term complications

Results :All patients had the retina applied. One case with macular hole presented incomplete closure and rising edges of hole after 1 week and was treated with gas injection (SF6 50%, 2,5cc)

Conclusions: One Pars Plana Port- 27G with “Reflow” is a effective and safety technique for macular hole, even in very thin approach

Artificial iris in posttraumatic aphakia or large iris coloboma

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Purpose: Nearby cosmetic IOL and pupillary reconstruction, the artificial iris is a better solution. We show our strategy to suture a foldable IOL on the back surface of the artificial iris to achieve a cosmetic and refractive result on posttraumatic aniridia

Setting/Venue: Department of Ophthalmology, Hospital S. Maria delle Croci, Ravenna, Italy

Methods: we reviewed 6 eyes with combined anterior and posterior segment injuries. Open-sky surgery technique and mini-invasive 25/23G system was used to repair ocular injuries, necessitating the use of TKP for exploration and reconstruction. But, at the end, the iris was too much destroyed for reconstruction. So, after 3 months, we performed artificial iris implantation with intraocular foldable lens suturing at the artificial iris

Results : In these cases with posttraumatic aniridia, the artificial iris with intraocular lens was stable

Conclusions: In the case of posttraumatic aniridia, the artificial iris with suturing IOL on the back surface of the artificial iris is the gold standard for obtaining a good result anatomical, functional and aesthetic .

SCH IN BLUNT TRAUMA IN PK: EARLY MIVS APPROACH WITH "POLE TO POLE " STRATEGY

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Purpose: to show the effectiveness and safety of mini-invasive (MIVS) 23g system in the treatment of post-traumatic suprachoroidal hemorrhagic detachment (SCH) in patient operated for PK

Setting/Venue: Department of Ophthalmology, Hospital S. Maria delle Croci, Ravenna, Italy

Methods: case report of 61 y/o male patient who undergo to accidental blunt trauma with corneal wound reopening, lens expulsion, iris rupture, vitreous prolapse, retinal detachment and SCH. Surgery with not valved 23g trocars was performed after 8 days. The surgical steps were: 23g transconjunctival drainage of SCH, vitrectomy to

repair the tractional retinal detachment, iris surgery with pupil plasty, IOL implant with posterior enclavation, new PK and final tamponade.

Effectiveness / Safety: 23g trocars via pars plana, with the help of anterior chamber 23g infusion, allow safe and well controlled drainage of SCH. After this crucial step, the vitrectomy can continue with standard surgical passages (membranes peeling, IOL implantation, PK, final tamponade). The anterior chamber infusion guarantees the optimal IOP during all the surgical steps, even during open-sky manouvres.

Pre-Operative Intravitreal Bevacizumab In the Setting of Proliferative Diabetic Retinopathy

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Purpose: To evaluate the efficacy of pre-operative intravitreal bevacizumab injection on the rates of postoperative vitre hemorrhage in patients undergoing vitrectomy for complications of proliferative diabetic retinopathy.

Methods: Forty eyes of 37 patients who received pre-operative intravitreal bevacizumab 1.25 mg were compared to a similar group of 44 eyes of 44 patients that had undergone vitrectomy surgery prior to the availability and widespread use of pre-operative intravitreal bevacizumab. The primary outcome measure was the incidence of early postvitrectomy hemorrhage . Secondary outcome measures included delayed postoperative vitreous hemorrhage, changes in best-corrected visual acuity (BCVA). For statistical analysis, the paired t-test and Fisher exact tests were used.

Results: Four of 40 eyes (10%) pretreated with intravitreal bevacizumab vs. 12 of 44 eyes (27%) not pretreated with intravitreal bevacizumab had a clinically significant postoperative vitreous hemorrhage. The mean best-corrected visual acuity (BCVA) in

bevacizumab group improved from a mean of hand motions to a mean of 0.1 at 1 month ($P < .001$) and mean BCVA in non-injected group improved from hand motion to 0.006 ($P < .001$).

Conclusion: Intravitreal injection of bevacizumab 1 week before pars plana vitrectomy seems to reduce the incidence of early postvitrectomy hemorrhage in patients undergoing vitrectomy for complications of proliferative diabetic retinopathy.

Treatment of pediatric rhegmatogenous retinal detachment by pneumatic retinopexy technique

Tural Galbinur

Purpose: The purpose of this study was to evaluate the effectiveness of pneumatic retinopexy as an alternative technique for repairing rhegmatogenous retinal detachments in pediatric eyes.

DESIGN: Retrospective, interventional case series.

METHODS: A review on 5 pediatric patients (5 eyes) who had undergone pneumatic retinopexy as the initial procedure for primary retinal detachments with multiple break(s) on retina. After gas injection, all patients were instructed to maintain a face down positioning, later head tilting against the break side.

RESULTS: Five male patients (mean age 12.4 years, ranging from 11 to 14) were included in this study. All eyes (100%) had myopia of -3 diopters or higher. Macular detachment was found in four eyes. Pneumatic retinopexy alone resulted in reattachment in all eyes (100%).

CONCLUSION: Pediatric rhegmatogenous retinal detachment can be treated by pneumatic retinopexy with proper head position and laser photocoagulation.

12 MONTH RESULTS OF FEMTOSECOND –ONLY LASER VISION CORRECTION TECHNIQUE SMILE.

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Purpose. To report the results of first 78 fully seeing eyes treated for myopia with a new method of refractive correction, Small Incision femtosecond Lenticule Extraction SMILE. SMILE is one of the kinds of complete femtosecond vision correction procedure ReLEx (Carl Zeiss' brand name) performed entirely with the VisuMax® Femtosecond laser. In a recent study SMILE is investigated in terms of stability, safety, efficacy, predictability, HO spherical aberration changes and subbasal neurofiber changes.

Methods. This prospective clinical trial comprised 78 eyes from 39 patients. The mean age was 29 years. The pseudoflap and a lenticule of intrastromal corneal tissue were cut simultaneously using a femtosecond laser VisuMax. The lenticules were removed from the corneal tissue through the small incision. Preoperatively the mean spherical equivalent (SE) was $-4.51 \text{ D} \pm 1.36 \text{ SD}$ (from -9.00 to -2.00). The mean cylinder was -0.42 ± 0.55 (from -3.0 till 0). The follow-up time was 12 months. Also we recently examined the changes in trigeminal nerve density by studying the nerve structure under a confocal specular microscope NidekConfoscan 4 preop and postop.

Results. 12 months postoperatively, the mean SE was $-0.1 \text{ D} \pm 0.26 \text{ SD}$. The cylinder was $-0.05 \text{ D} \pm 0.23 \text{ SD}$ (from $+1.0$ till -1.0 D). 23.38% or (18 eyes) gained 1 line, 67.53% (52 eyes) no changed, 7.79% (6 eyes) lost 1 line and 1 eye lost 2 lines. UDVA 20/32 and better had 100% (77 eyes), UDVA 20/20 and better had 81.82% (63 eyes). The mean spherical aberration postoperatively was $Z_4;0 -0.07 \pm 0.21$. The trigeminal nerve density decreased to 50% and 60% at 1 to 6 months postop.

Conclusion. The SMILE procedure for correcting the myopia shows good results in terms of efficacy, stability and safety, with few adverse events and less induction of HO aberrations. A one-laser system would decrease the cost of the procedure. SMILE potentially safer for biomechanical structure of cornea and has the potential to preserve trigeminal nerve density better than Lasik. Current results also indicate

that there is less induction of spherical aberration. The femtosecond laser cutting action is more independent on corneal hydration and another fluency rates.

Surgical tips for application of Trabectome in glaucoma management

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Trabectome is a surgical device that can be used for Ab interno trabeculectomy, a minimally invasive glaucoma surgery for the surgical management of adult, juvenile and infantile glaucoma. Unlike trabeculectomy, the surgery does not create an external filtering bleb. Instead, the Trabectome handpiece opens access to Schlemm's canal by ablating the trabecular meshwork of the eye, therefore reducing intraocular pressure which is major risk factor for glaucomatous vision loss. The irrigation/aspiration device provides irrigation during surgery and collection of residual fluid and ablated tissue in a collection bag. This procedure is performed through a small incision and can be done on an outpatient basis.

Combined cataract and glaucoma surgery with premium IOL implantation.

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Surgical strategy in the treatment of patients with cataract and glaucoma combination always required special approach resulting in disputes between the eye surgeons.

My practical experience showed that single-step operations make up 10 to 15 % of all cataract surgeries accounting for about 400 to 600 operations a year. From this point of view, it must be routine, however, sure, each such patient should be treated individually. Modern microinvasive non-penetrating glaucoma surgery in many cases helps patients with cataract and glaucoma in one single step, that is, by all means,

faster, cheaper and more convenient for the patient as well as for the doctor. Phacoemulsification with IOL implantation and non-penetrating deep sclerectomy (NPDS) with aut drainage allows to achieve similar results in glaucoma compensation, compared to sinus trabeculectomy but with lesser intra- and post-operative complications or changes in eye refraction and optics, that is very important during implantation of modern premium class IOLs.

The presence of glaucoma even with initial visual function changes is a relative contraindication to multifocal IOL implantation, therefore, surgeon is obliged to discuss all the possible consequences of such decision with a patient. In this case decrease in contrast sensitivity, peculiarities of central visual field losses, pupil functions, and possibility for glaucoma progression in future should also be considered. The patient should be informed about other options to decrease spectacle dependence, such as monovision or implantation of accommodating IOLs. Having thoroughly learnt patient's real expectations, his/her job, life style and impossibility to perform the latter with alternative options, only in this case multifocal IOL implantation can be considered in glaucoma patients. I say to such patients, "You should try hard to convince me to do that!" This phrase enables me to cut off most of unrealistic patient's expectations efficiently. Taking all above into account, the decision concerning multifocal IOL implantation is made by surgeon and patient together. The number of implanted multifocal IOLs in our clinic has already exceeded 1500, not more than 40 of which have been implanted to glaucoma patients (i.e. less than 3 %), while the percentage of glaucoma patients operated on for cataract is much higher - 30 to 40 %. IOLs were implanted at different glaucoma stages (excluding end stage) in patients with preserved central visual field. In case of noncompensated glaucoma surgery was performed simultaneously with NPDS with aut drainage with own lens capsule. In the last half a year I have been performing additional draining of subchoroidal space with this capsule.

Surgical technique: Surgery is performed under topical eye drop anesthesia. Ask the patient to look down. First, separate conjunctiva from the limbus in the area of antiglaucoma intervention. Following diathermocoagulation, dissect 1/3 thickness superficial round-shaped scleral flap. The base of the first scleral flap is dissected 1.5 – 2.0 mm into the limbus and clear cornea. (Figure 1).

At the top of this triangle cut an open end window over the ciliary body. Then ask the patient to look straight and proceed to phacoemulcification. Following 1.8 mm temporal clear corneal incision and two paracenteses, fill the anterior chamber with viscoelastic. Perform capsulorhexis and stain the anterior lens capsule with a drop of methylene blue (Figure 3).

Following hydrodissection and dileniation, extract the nucleus and the cortex using the proposed “Dig&Split” technique. The remaining lens masses are removed using bimanual irrigation/aspiration system with obligatory posterior capsular polishing. IOL implantation is preceded by viscoelastic injection into the anterior chamber. In case of posterior capsule opacity, even insignificant, or possibility for secondary opacity development during the post-operative period, perform primary posterior capsulorhexis under IOL optical part (“layered pie” technique). Then ask the patient to look down again and remove the deep scleral flap with outer wall of Schlemm's canal and part of corneal tissue in order to expose Descemet's membrane to 1.0 - 1.5 mm. (Figure 4).

Preserved anterior lens capsule is sutured with 10-0 sutures to the sclera behind the scleral spur. To avoid sutures completely, during the last surgeries I moved the stained capsule through the scleral window into subchoroidal space with spatula (Figure 5).

Thus fixed own capsule layer acts as a collagen drainage not only preventing from the formed intraocular fluid outflow tract closure, but also joining intrascleral outflow tract with subchoroidal space thus stimulating uveal outflow. If surgery has been

performed without microperforations, there is no need to suture the superficial scleral flap and the procedure is completed with one conjunctival buried suture.

Combination of phacoemulsification using 1.8 mm incision and sutureless glaucoma surgery allows to use premium class IOLs – toric, multifocal, multifocal toric, accommodating – because we do not induce any changes in the eye optics.

In general, the results in this patient group are positive and patients assess their vision as good or excellent, though there are some unsatisfied patients: one with advanced glaucoma with concentric visual field defect and rigid pupil of 3 mm, two patients with developed glaucoma and high-grade myopia and one patient with developed glaucoma and isolated scotomas in the central visual field. I explain the high percentage of satisfied patients with thorough and stringent selection.

The approach to glaucoma surgery in pseudophakic eye does not differ from that in phakic eye in case of primary open-angle glaucoma, though, de jure it is secondary. Exclusions are complications of cataract surgery itself or during the post-operative period. As usual it is open-angle glaucoma with wide angle, that is why NPDS is my first choice. Even if there is no filtration right on the operating table, laser descemetogoniopuncture performed in several days as usual results in good outcomes. Such approach does not lead to refraction changes almost without inducing astigmatism, that is especially important in case of IOL implanted in the eye, premium IOL in particular. In this case the patient does not need to change his/her usual visual activity without impairment of visual life quality. Sure, if we face glaucoma in pseudophakic eye several times operated on before, the approach should be individual including intraocular fluid retention level determination as well as the reasons for recurrences and choice of, using refraction surgeons terms, "customized" surgery: NPDS with drainage, use of cytostatics, fistulizing operations, implanting shunts (Ex-Press) and drainage devices (Molteno, Ahmed), endo- and transscleral cyclodestructive surgery, etc.

Complex surgical treatment of IOL dislocated in the capsular bag

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Purpose. To present variants and results of treatment of various dislocations of IOL with the capsular bag.

Methods. The technique of IOL reposition with iris fixation is based on support of the IOL from the posterior chamber with a 30G needle or a 25G vitreotome needle inserted via pars planum. After reposition, the IOL is slightly pressed from the posterior chamber and transcorneal suture is passed beneath the haptics with iris fixation. Scleral fixation was used for IOLs with closed loops or in presence of capsular tension ring in the bag.

Results. A retrospective analysis of the results of suggested method in 46 eyes of 40 patients (29 males, 11 females) was performed. Age of the patients was from 50 to 83 years (69 ± 7). Etiology: 37 eyes – PES, 3 – trauma, 3 – suture lysis, 3 – etiology is not clear. Visual acuity – from 0.04 to 0.9 (mean 0.35 ± 0.28). Time of dislocations development from 4 months to 14 years ($7 \pm 0,2$).

Change of visual acuity after operation – mean 0.74 ± 0.14 .

Summary: The introduced technology provides high visual acuity, proves to be safe and time saving.

Deep Lateral Orbital Wall Decompression in Graves Orbitopathy

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2. National Eye Institute named after acad. Z. Aliyeva.

3. OFKO Eye Clinic, Private Practice

Purpose: To compare effectiveness and safety of the deep lateral wall decompression in patients with Graves orbitopathy.

Methods. Thirty-three orbits of 22 patients were decompressed by removing volume from the lateral orbital wall and intraconal fat amputation.

Results. Six male, 16 female patients with a mean age $46,00 \pm 11,66$ and 46.06 ± 9.87 respectively were undergone surgery. Mean follow-up were $5,3 \pm 3,75$ months. Exophthalmometry readings were $24,00 \pm 3,27$ before, and $- 20,24 \pm 3,07$ after the surgery.

In primary gaze position diplopia was absent in 15 patients before and after the surgery. In two patients diplopia was gone and 3 patients had improved and one patient has not perceived any change.

Conclusions. Deep lateral wall decompression diminishes orbital venous stasis, decreases intraorbital pain and exophthalmometry readings and decreases diplopia in the vast majority of patients. and if adequately performed is a safe and reliable technic.

Femtosecond Laser-Assisted Cataract surgery: Learning curve and results:

Kaskaloglu Mahmut

Venue: Kaskaloglu Eye Hospital, Izmir, Turkey

Purpose: To evaluate the use of a femtosecond laser incisions in the lens and lens capsule prior to standard and refractive cataract surgery.

Methods: We report our experience with the first 50 eyes operated with Femtosecond Laser assisted cataract surgery and IOL implantation. Surgeries were performed through 2.2 mm incisions. Incisions, capsulorhexis and nucleus softening were performed with a LenSx femtosecond lens surgical system. Following laser treatment, patients underwent standard surgical procedures, during which the efficacy of the laser cuts was assessed.

Results and conclusions: Our results demonstrate that femtosecond assisted microincisional cataract surgery is a controllable technique, with high precision in the

incision size and structure. Capsulorhexis size and position are highly precise in all the patients. The learning curve is very short.

CICATRICAL ENTROPION REPAIR AND RECONSTRUCTION OF CONJUCTIVAL FORNICES AFTER SJS, LYELL SYNDROME, CHEMICAL BURN, IRRADIATION OR MECHANICAL TRAUMA

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Partial or total shrinkage of conjunctival fornices, severe scarring, cicatrical entropion, trichiasis, lagophthalmos, corneal disorder due to dysplasia of conjunctiva – are common consequences of toxic epidermal necrolysis, chemical burns, radiotherapy or mechanical trauma with involvement of conjunctiva and tarsal plate.

The goal of reconstruction is deepening of the fornices and reforming of eyelids in order to provide its` perfect shape, eliminate entropion and prevent further complications.

Material, methods. 10-year period of observation took in 420 clinical cases with following disorders: 132 – ocular burns, 87 – postradiation therapy, 10 – congenital abnormalities, 28 – SJS, Lyell syndrome and pemfigoid, 56 - mechanical tauma, 69 – contraction of the anophthalmic socket.

In all cases free grafting of the oral mucosa was performed. Surgical methods were as follows: plane full-thickness transplantation to the posterior layer of eyelids, substitution of the dysplastic epithelium at the posterior surface with split-thickness grafts and transplantation of step-like mucous grafts to reform posterior layer and intermarginal space. In 95% of patients labial mucosa was used, in 5% - hard palate mucosa. The latter was transplanted for plane posterior layer plasty only.

The combined step-like mucous transplant was applied to reform not only the posterior layer but intermarginal space and the posterior rib of the eyelid margin.

Results. As a rule mucous grafts take well. In the present group two operations came to failure, that was observed in the group of postradiation atrophy. But more frequent problem was secondary cicatricial contraction of the grafts. It was seen in 120 patients with following degree of contraction: 86 – light contraction with no impairment of general result, 23 – moderate contraction which required additional surgery and 11 – severe contraction resulted in total failure which demanded re-reconstruction.

Discussion. Good variety of surgical techniques can be used to achieve the goal.

Local plasty methods are effective when tissue deficit is not evident. The commonest task for local plasty is marginal rotation for cicatricial entropion.

If conjunctival deficit is apparent a surgeon has to look for some material to compensate the lack of mucous lining. The whole variety of materials can be divided in two groups: 1) “live” transplants and 2) “substitute” transplants. Certain “pros” and “cons” are typical for both groups.

Transplantation of mucous membrane autografts is able to solve most problems of conjunctival dysplasia, entropion and symblepharon caused by tissue deficit. To make a choice between labial mucosa and palate mucosa one should take into account the rigidity of the latter material. It serves well as a framework for posterior layers of eyelids, better for the lower eyelid, but it cannot be used for total reforming of the fornices.

The flange effect of the posterior rib of the eyelid margin must be accounted as a main point of guard from recurring cicatricial entropion. And the step-like mucous graft contribute well to this.

Amniotic membrane is a widespread transplant, but it is useful to serve as a temporary patch within the area of the anterior part of the globe and is useless to correct cicatricial entropion or posterior rim of the eyelid and fornices as a whole. That is why it was not mentioned in this group of severe deformities.

Conclusion. Oral mucosa shows itself as the best material for regaining of the fornices and repairing of eyelids in cases of cicatricial entropion since 1890s (after Millingen and Sapezhko).

Palate mucosa is recommended for posterior layer of the lower eyelid, labial mucosa for all purposes, step-like graft is better for posterior layer and intermarginal space simultaneously.

Middle layer formation for skin and mucous grafting in eyelids' reconstruction with significant deficit of soft tissue.

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Free skin grafts plastic surgery is a widespread and effective method of reconstruction of eyelids scar deformation and periocular area defects. Relative quickness, one-stage of surgery and absence of additional scars make this method available and widely applicable. Through eyelid defects, deep indrawn scars connected with the bone prevent getting good reconstruction outcomes using only free skin grafts surgery because of high secondary grafts contraction leading to abnormal eyelid relief. It's necessary to manage conditions for free skin and mucous grafts plastic surgery to increase treatment effectiveness.

Purpose: to expand statements for free skin grafts plastic surgery in postraumatic eyelid defects with soft tissue deficiency and colobomas.

Material and methods: 18 patients with postraumatic eyelid defects in age from 5 to 64 years old. Types of trauma: explosive and gunshot trauma, animal attack, grinding wheel trauma, auto trauma. 13 patients had an eyelid scar eversion and lagophthalmus, with soft tissue thinning in defect area. Eyelid reposition was limited because of deep scar spreading and it's adhesion to orbit margins. 4 patients had traumatic eyelid colobomas more than 2/3 of horizontal size. Lower eyelid was absent

in 1 patient. All patients undergo free layerwise skin grafts transplantation from opposite eyelid or from the back of an ear. Requirement of successfully surgery was middle eyelid layer forming which provides sufficient tissue volume and reliable place for transplantation.

We used a number of special features to form a middle soft tissue layer: cut out small flaps from subcutaneous tissues of surrounding area and rotate them to a defect place (n=10), in case of deficiency of surrounding tissues we cut out a rotation flaps from forehead (n=4), we used a sliding soft tissue flaps in case of colobomas(n=4). Back wound surface of middle layer was formed from mobilized conjunctival remains or from mucous membrane of the lip. Skin defects was filled with free skin grafts.

After surgery antiscarring therapy was performed.

Results: Engraftment has been determined in all cases. Functional and cosmetical results were verified not earlier than after 6 month. Scarring lagophthalmus was eliminated in 11 cases in 2 cases additional skin transplantation was needed. There were no any cases of eyelid eversion.

Correct shape of eye gap and lashes were restored in 4 patients with traumatic colobomas. A patient without lower eyelid resumed the new one.

Discussion: Whilereconstructing eyelid defects it's necessary to consider diminutiveness of created parts of eyelids, it's natural mobility, ability to congregate in fold and skin softness.

Therefore free skin grafts plastic surgery is the choice method in reconstruction of eyelid defects because the periorbital skin does not conform with those requirements. In cases of postraumatic eyelid defects it's usually appeared like deep indrawn scars spreading to the bone margins of orbit or/and along the whole eyelid with middle soft tissue layer loss. Therefore forming of this layer is a very important for good engraftment of layerwise skin graft.

Conclusion: Free skin grafts plastic surgery with middle soft tissue layer forming in patients with posttraumatic eyelid defects with soft tissue deficiency and colobomas provides to get full engraftment and resistant functional and cosmetical outcomes.

A survey of 241 consecutive cases of 23 gauge vitrectomy for complications of diabetic retinopathy

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Purpose. To analyze anatomical and functional results of 23 gauge pars plana vitrectomy for complications of proliferative diabetic retinopathy.

Venue. Results of vitrectomy in 241 eyes of 206 patients, who underwent surgery for complications of proliferative diabetic retinopathy in department of diabetic eye disease in Z. Aliyeva National Ophthalmology Centre in 2009-2012, were analyzed. All patients were operated by a single surgeon (author).

Methods. All patients underwent vitrectomy using Accurus surgical system (Alcon, USA) with standard 23 gauge technique. Standard 23 gauge pars plana vitrectomy techniques were used under BIOM 4 visualisation system (Oculus, Germany). In most cases, diabetic epiretinal membranes were removed using segmentation technique with vitrectomy probe alone. Triamcinolone acetonide was used intraoperatively to identify posterior vitreous face and epiretinal membranes. BSS, air, gas (20% SF₆) or low-viscosity (1000 Cst) silicone oil was used in the end of surgery depending on case.

23 eyes (9,5%) were pseudophakic prior to surgery. Combined cataract and vitrectomy surgery was performed in 123 eyes (51,0%) using same surgical system (Accurus, Alcon), with IOL implantation at the end of phacoemulsification and then switching to vitrectomy.

From total of 206 patients, 116 (56,3%) were females, 90 (43.7%) - males. Mean age of patients at the time of surgery was 56,7±8,83 years. 35 patients had bilateral

surgery. Mean known duration of diabetes at the time of surgery was $12,77\pm 6,61$ years. 19 eyes were lost from follow-up early after surgery, for remaining cases, follow-up ranged from 6 months up to 4 years.

Visual acuity results were initially measured in decimal system, then converted to LogMAR for statistical calculations. Statistical analysis was done in SPSS data editor.

Results. Indications for vitrectomy included: vitreous hemorrhage – 63 eyes (26,1%), vitreous hemorrhage in combination with tractional retinal detachment – 62 eyes (25,7%), tractional retinal detachment – 71 eye (29,5%), tractional-rhegmatogenous retinal detachment – 5 eyes (2,1%), severe fibrovascular proliferation – 16 eyes (6,6%), vitreomacular traction - 10 eyes (4,1%), asteroid hyalosis – 7 eyes (2,9%), premacular hemorrhage – 7 eyes (2,9%).

Visual acuity improved in 203 eyes (91,5%) out of 222 under observation. Mean LogMAR acuity has changed from $1,99\pm 0,78$ to $1,07\pm 0,69$ after surgery. Highest results were obtained in asteroid hyalosis group (LogMAR $0,63\pm 0,35$ postoperatively). Eyes with vitreomacular traction and vitreous hemorrhage also showed good postoperative visual acuity results ($0,77\pm 0,38$ and $0,81\pm 0,53$, correspondingly). Tractional-rhegmatogenous detachment group showed surprisingly better results ($1,00\pm 0,21$) than tractional retinal detachment group ($1,37\pm 0,69$). The worst results were in eyes with severe fibrovascular proliferation ($2,21\pm 0,89$).

Most common complications postoperatively were: recurrent vitreous hemorrhage in 22 eyes (9,1%), rhegmatogenous retinal detachment (12 eyes, 5,0%), secondary glaucoma (27 eyes, 11,2%).

Conclusion. 23 gauge pars plana vitrectomy allows to achieve high functional results in various complications of diabetic retinopathy, except advanced cases with severe fibrovascular proliferation. Frequency of main complications after 23 gauge pars plana vitrectomy for proliferative diabetic retinopathy are comparable with those of previously published data of conventional 20 gauge vitrectomy. Our results confirms

again efficacy and safety of 23 gauge vitrectomy for different complications of diabetic retinopathy.

Retinal pigment epithelium after energetic surgery of cataract .

Sergey Kopayev, Veronika Alborova, Valentina Kopayeva, Sergey Borsenok, Vera Delektorskaya¹

Purpose:To study the condition of retinal pigment epithelium after cataract extraction by various methods using energy of ultrasound and laser .

Setting:The S. Fyodorov Eye Microsurgery State Institution, Moscow, Russia; Academician V.I. Shumakov Federal Research Center of Transplantology and Artificial Organs, Moscow, Russia¹

Methods: After experimental cataract surgery electron transmission microscopy of pigment epithelium in macular area of retina was carried out.Laser cataract extraction was performed in 3 left cadaver human eyes (male, 68-72 years) using the Russian device “Rakot” (Nd-YAG 1.44 μm). Ultrasound phacoemulsification (Millennium) was performed in 3 right eyes of the same individuals.

Results: After laser operation the ultra-structure of nucleus, nuclear membrane and chromatin corresponds completely to the norm. After ultrasound phacoemulsification the electron optical density of cell cytoplasm is porous. Many vacuoles were available in cells cytoplasm compared with ultra-structure of retinal pigment epithelium after laser operation.

Conclusions: Laser energy for the posterior segment of the eye is a safer one of two energy types which are used in cataract surgery, because energy doesn't reach vitreous body and the retina.

Laser energy in cataract surgery

Valentina Kopayeva, Aleksey Sagorulko¹, Mayya Nemsizveridse¹

Sergey Kopayev, Evgeniya Leksutkina², Vladimir Starostin³

Purpose: Evaluation of Laser Cataract Extraction (LCE) in 4 clinics using a Russian technique developed under the guidance of academician S.N. Fyodorov in 1994-1997.

Setting: Fyodorov Eye Microsurgery State Institution, Moscow with Branches in Sankt-Petersburg¹, Krasnodar² and Ulyanovsk ZKB³, Russia.

Methods: Russian device RACOT was used. Solid state Nd-YAG-laser generates radiation with wave length of 1.44 mcm in pulse periodical regime with pulse duration 250 microseconds and pulse energy up to 400 mJ. Radiation power is up to 4 w, frequency of the pulses is up to 30 Hz. Energy is rendered directly to the lens through the quartz fiber 450 mikrons in diameter ; forevacuum pump. Surgical technique: bimanual through two punctures in the cornea. From total quantity LCE (10532 operations) last year 1300 operations . was carried out in patients aged 60-94 years with immature cataracts (27%), with medium cataracts - (48%), with hard and very hard cataracts - (25%).

Results: Nuclei of any hardness were crushed spontaneously under the radiation effect without manual fragmentation, without ultrasound energy. Working laser duration: several sec. - 5 min., depending on the nucleus hardness. Cataracts with lens subluxation, 10°- 90° ciliary zonule abruptions were successfully extracted in 2 %. Intraoperatively 10 posterior capsule ruptures (0.8%) were noted during the removal of fibrotic opacities from its surface in immature cataracts. Areactive course was observed in 1283 cases (98.7%) postoperatively. Reactive transitory hypertension: 12 eyes (0.9%). Corneal edema - 5 (0.4%). Visual acuity achieved a maximum level after 5-7 days. Endothelial cell loss: immature cataracts - 0.5-2%, hard and brunescant cataracts - 4-6%.

Conclusions: The Russian LCE technique using Nd-YAG laser 1.44 mcm allows to crush nuclei of any hardness. The quantity of complications and the endothelial cell loss are minimum. Lasertip is not overheated, no pressure on lens and zonules (patients can be operated at any age), energy doesn't reach vitreous body and the retina, manual efforts are not demanded for fragmentation of the lens nucleus . Surgical technology is simpler and easier for the surgeons in comparison to ultrasonic cataract phakoemulsification. LCE - technology of the XXI century.

Early term results of femtosecond laser assisted small incision lenticule extraction

Author: Yasar Kucuksumer

Purpose: To evaluate the early term results of femtosecond laser assisted small incision lenticule extraction

Setting: Beyoğlu Eye Training and Research Hospital Refractive Surgery Department

Design: Retrospective comparative case series.

Methods: Twenty eyes from 10 patients with myopia or myopic astigmatism in both eyes were used. Medical records of patients who had SMILE(Group 1) in one eye and femto-LASIK(Group 2) in the fellow eye were reviewed. Main outcome measures were corrected, uncorrected visual acuities and manifest refraction, at postoperative 6 months.

Results: The preoperative SE was similar in both groups ($p=0.982$). In both groups, SEs were -4.17 ± 1.82 at group 1, and -3.01 ± 1.40 at group 2. UCVA values were 1.17 ± 0.22 at group 1 and, 1.10 ± 0.26 at group 2. At postoperative 1 month evaluation, SE were reduced to -0.16 ± 0.37 at group 1 and 0.06 ± 0.02 at group 2 ($p<0.05$)($p<0.05$). UCVA VALUES were increased 0.04 ± 0.07 at group 1, 0.01 ± 0.05 at group 2. ($p<0.05$)($p<0.05$). There was no any complication in any cases.

Conclusion: SMILE is a safe, predictable, and efficient procedure when compared to Femtosecond assisted LASIK. There were no differences between SMILE and femto-LASIK treatment in postoperative visual acuities at postoperative 1 month.

Quantification of endothelial cell coverage of dispersive and cohesive Ophthalmic Viscosurgical Devices (OVD's) after cataract surgery.

Florian TA Kretz, Il-Joo Limberger, Gerd U Auffarth

Purpose: Laboratory evaluation of corneal endothelial adherence of two Ophthalmic Viscosurgical Devices (OVD's) with a different hyaluronic acid structure in a porcine eye model.

Setting: IVCRC, Department of Ophthalmology, University of Heidelberg

Design: A prospective, experimental, unmasked study on previously enucleated porcine eyes.

Methods: In a wetlab setting the corneal endothelial adherence of a dispersive and a cohesive OVD as well as their combination in the soft-shell technique were evaluated. All OVD's were dyed with fluorescein for superior visualisation. Each group consisted of 10 porcine eyes, which had been enucleated at the veterinary department the same day. Cataract surgery was performed with equal phaco settings. Afterwards the cornea was trephined and a picture taken of the endothelial side under blue light. The persisted corneal coating was evaluated with a planimetric image analyzer software.

Results: The lowest endothelial coating was found for the cohesive group with 72%, while the dispersive group showed a significant higher adherence ($p = 0.0009$) to the endothelium of 86%. The highest endothelial coating could be found in the soft-shell group (90%) without a significant difference to the dispersive group ($p = 0.0962$).

Conclusion:

Dispersive OVD's with a low molecular weight, have a higher adherence to the endothelial surface compared to cohesive OVD's with higher molecular weight, as the intermolecular bindings are stronger and most of the OVD is aspirated or washed out during surgery. By combining both, the cohesive OVD supports the endothelial coating of the dispersive OVD by still offering the benefits of pseudoplasticity and extension possibility.

Compound scores in the evaluation of uveitis activity - The standardized uveitis score Heidelberg

Authors: Kretz FTA, Becker Matthias D., Max Regina, Plaza Damian

Purpose: Often single parameters as best corrected visual acuity (BCVA) or cell grades are used to judge treatment effect. This approach is handicapped by not accounting for many other activity parameters in the different uveitis subsets. Therefore we created and evaluated two non-parametric uveitis score-systems for uveitis activity.

Venue: Interdisciplinary Uveitis Centre, Department of Ophthalmology, University Hospital Heidelberg

Methods: The score-systems consisted of BCVA, anterior chamber cell count, central retinal thickness-measurement, IOP, flare, vitreous haze, while SUSH III also contained the actual steroid dose and flaremeter measurements. 4 different patient selections were analyzed over a period of one year.

Results: Over 1 year the TEAM group showed a significant reduction of 9.69 ($p=0.000$) for SUSH I and 11.6 ($p=0.000$) for SUSH III. The ADUR group showed a significant reduction of 13.47 ($p=0.002$) for SUSH I and of 17.42 ($p=0.000$) for SUSH III. In the Myfortic® group a statistic significant reduction was only found for SUSH III with 3.36 ($p=0.037$), while in the CellCept® group the reduction was only significant at the six month follow up visit with 3.42 ($p=0.013$) for SUSH III. Both

research groups showed an increase in BCVA that stabilized from the 6 month visit on, while the other two groups had a stable BCVA during the whole follow up period. A negative correlation could be found between the BCVA and the SUSH score-systems.

Conclusion: Score-systems are a novelty in the activity grading of uveitis. They have the potential to improve evaluation of activity of uveitis and thus creating more uniformity in outcome measures. In study cohorts where the reduction of uveitis activity is the main goal, both score systems have a good predictability of uveitis activity and are superior to BCVA alone, while in groups formed by daily clinic patients with stable BCVA SUSH III gives a better predictability as the steroid dose is taken in account.

Evaluation of the first diffractive, trifocal MIOL: The finevision concept

Kretz FTA, Fitting A, Limberge I, Auffarth GU

Purpose: Clinical evaluation of a trifocal, diffractive intraocular lens (MIOL).

Venue: International Vision Correction and Research Centre (IVCRC), Department of Ophthalmology, University Hospital Heidelberg

Methods: The Micro-F MIOL (PhysIOL, Belgium) was implanted after cataract removal. Six patients (11 eyes) are so far enrolled in the study. They received a trifocal MIOL with +3.5 D addition for near and +1.75 addition for intermediate. Follow-up examinations were performed up to 6 months after surgery including: Refraction, ETDRS visual acuity monocular and binocular (near at 40 cm, 80cm and distance) as well as defocus curve.

Results: Median monocular UDVA was 0.2 [logMAR] during follow up period of 6 weeks and 0.1 binocular compared to CDVA of 0.1 monocular and 0.1 binocular. Median UNVA was 0.3 six weeks after surgery compared to a DCNVA of 0.2 monocular and 0.15 binocular. All patients were satisfied with their refractive

outcome. Follow up is continued over a period of 3 month and further patients will be enrolled.

Conclusions: The Micro-F trifocal, diffractive MIOL provides good functional results after surgery with a high percentage of spectacle independence and patient satisfaction. Especially the functional results for intermediate distance give patients advantages in daily life. Still, further studies with higher numbers of patients are needed.

Biplanar sutureless closure of the leaking wounds for microincision vitreous surgery (MIVS): A new technique

Nikoloz Labauri MD, Narmina Iskenderova MD, Tekla Mamageishvili MD, Nino Tavberidze MD

PURPOSE: To evaluate the efficiency of a new technique for the sutureless, hermetic closure of the leaking scleral wounds used in MIVS.

SETTING: “Akhli Mzera” Eye Clinic. Pvt.Ltd. Tbilisi, Georgia;

METHODS: Prospective, consecutive interventional case series. 1240 Scleral incisions of 870 eyes, which underwent different gauge (20, 23,25), sutureless MIVS were investigated. Once the trocar is removed and the wound is recognized as leaking one, the same trocar blade is used to create an adjacent transscleral entry using the same direction of cut to access the internal flap of the original incision and support this latest from inside, in the same time the smooth surface instrument is used to massage the scleral wound from outside to achieve a hermetic closure.

RESULTS: Among 870 eyes silicone oil was used in 654 (75%), Gas in 128 (15%) and Air in 88(10%) eyes as a tamponading agent. All 1240 leaking incisions were successfully closed on the first attempt, regardless the size of the gauge.

CONCLUSIONS: Biplanar closure technique has been proposed to be effective, quick and still sutureless technique to hermetically close the leaking wound during microincision vitreous surgery.

Long term outcome of Internal limiting membrane peeling for rhegmatogenous retinal detachment with or without existence of proliferative vitreoretinopathy: A comparative study

Nikoloz Labauri MD, Narmina Iskenderova MD , Tekla Mamageishvili MD, Nino Tavberidze MD

PURPOSE: The purpose of this study was to evaluate, compare and establish the efficiency of internal limiting membrane (ILM) peeling as an additional tool of primary pars plana vitrectomy (PPV) for the management of rhegmatogenous retinal detachment with different complexities.

SETTING: “Akhali Mzera” Eye Clinic. Pvt. Ltd. Tbilisi, Georgia.

METHODS: In this prospective study were recruited 155 eyes of 143 patients and divided in two main groups and four subgroups. Group I includes 66 (42.58%) eyes, which were undergone PPV for retinal detachment complicated with proliferative vitreoretinopathy (PVR). This group is divided in two sub-groups: I-A includes 32 (48.5%) eyes, where ILM peeling was performed and I-B 34 (51.5%) eyes, where ILM was left intact. Group II includes 89 (57.42%) eyes where PPV was used for simple retinal detachment repair, not complicated with PVR. This group was similarly divided in two sub-groups, which are II-A includes 47 (52.8%) eyes, where ILM peeling was used and II-B includes 42(47.2%) eyes, where ILM was left intact. For ILM staining Membrane Blue Dual (D.O.R.C.) was used and ILM was peeled under perfluorocarbon liquid. Conventional silicone oil was applied as a tamponading agent in all patients. Apart of routine ophthalmological examinations all patients underwent fundus photography and optical coherence tomography preoperatively and all the time

during postoperative follow up period. Patients were evaluated for macular pucker, cystoid edema formation and complications, which possibly could related to ILM peeling procedure. Recruitment period was 20 months and mean follow up period was 21.1 ± 8.9 months.

RESULTS: Retinal reattachment was achieved by one surgery in 147 (94%) eyes and 8 (5.2%) eyes required two or more surgical interventions. Visual acuity (VA) improved in 144 (92.9%) eyes in both groups. At the end of follow up the mean postoperative VA in subgroup I-A was 0.2 (varied from 0.05 to 0.7) to compare to subgroup I-B, where mean VA was 0.1 (varied from 0.03 to 0.4). Unlike group I, the group II showed almost no difference between peeling and nonpeeling subgroups. In both subgroups final postoperative mean VA was 0.4 (varied from 0.05 to 0.9). Intraoperative and postoperative complications were as follow: Macular pucker in one (3.1%) eye in subgroup I-A, 7 (20.5%) eyes in subgroup I-B and 6 (14.2 %) eyes in subgroup II-B; Macular edema in 2 (6.2%) eyes in subgroup I-A, 9 (26.4%) eyes in subgroup I-B, one (2.1%) eye and 3 (7.1%) eyes in subgroup II-B; Macular hole in one (3.1%) eye in subgroup I-A and one (2.1%) eye in subgroup II-A (both of them were spontaneously closed by the next day); Iatrogenic paramacular damage of neurosensory retina during peeling procedure observed in 2 (6.2%) eyes only in subgroup I-A.

CONCLUSIONS: According to this study we can conclude that ILM peeling in conjunction with vitrectomy is an effective technique with a high anatomical and functional success rate in the retinal detachment cases complicated with PVR. It prevents the macular pucker and reduces the rates cystoid macular edema formation. In contrary, ILM peeling didn't show significantly better functional outcome in simple retinal detachment cases, despite the higher rate of macular pucker or edema formation in "non peeling" subgroup during postoperative period.

RESULTS OF SURGICAL TREATMENT OF PATIENTS WITH RESISTANT FORMS OF GLAUCOMA

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Annotation. In this article the authors present the results of surgical treatment of patients with surgery resistant forms of glaucoma. 61 patients have undergone surgery by the developed method for the operation. In the period of monitoring from 6 months to 1 year all the operated patients have been a positive result.

Introduction. Glaucoma is a serious and common pathology of the visual organ, taking the third leading causes of blindness in the world and the primary disability in the eye diseases. The issue is considered to be relevant and socially significant.

The reason for the lack of antiglaucoma operations effectiveness under surgery resistant refractory forms of glaucoma is an excessive scarring in the area of maneuver, which according to different authors ranges from 16 to 48% of cases [Bessmertny A.M, 2006].

The purpose of this research is to increase the effectiveness of surgical treatment of patients with surgery resistant forms of glaucoma.

Material and methods. The object of the research was 61 patients (61 eyes). Middle age of the patients was 66.5 years old. The youngest patient was 19, and the very old was 86 years old. The patients were divided by sex: male – 34 (55.7%), female – 27 (44.3%).

By the stages of glaucoma: patients with the first stage in the sample were not available, with the second stage of glaucoma was 8 (13.1%) patients, with the third stage – 26 (42.6%), and the fourth one – 27 (44.3%).

By the level of IOP the patients of this group were as follows: 5 (8.2%) patients had the level of IOP ranged from 23 to 26 mm Hg, 31 (50.8%) patients had the level of IOP ranged from 26 to 32 mm Hg and 25 (41%) patients had more than 33 mm. Hg.

Indicators of visual acuity before surgery: 8 (13.1%) patients were completely blind; 10 (16.4%) patients had residual visual functions (up to an uncertain light perception); 19 (31.1%) patients had visual acuity ranged from 0.01 to 0.09 and 24 (39.4%) patients – from 0.1 to 0.8.

By the risk of scarring the studied patients were divided into three groups:

group I, with a low risk of scarring – 5 patients (III-IV stages of glaucoma, pseudoexfoliation syndrome, patients younger than 50 years old);

group II, with a moderate risk of scarring – 38 patients (earlier surgically operated, pseudophakia (aphakia), a history of the patient with uveitis without neovascularization);

group III with a high risk of scarring – 18 patients (neovascular glaucoma in the course of diabetes mellitus, after central retinal vein thrombosis, previous uveitis with neovascularization).

All the patients underwent a standard complete eye examination, including OCT posterior eye by the unit Stratus OCT 3000 (Carl Zeiss Meditec). The state of structures of the anterior chamber and filtering bleb was examined by the unit OCT Visante.

The operation was performed according to our methodology. The method for the surgical treatment of patients with resistant forms of glaucoma surgery received (PATENT No13653, July 21, 2010, Belarus).

The results of the research. In the postoperative period all the patients had improvement: visual acuity improved at 10 patients (6 men and 4 women), accounting for 16.4%, remained stable at 49 patients (28 men and 21 women), representing 80.3%. Decrease in visual acuity was observed in 2 cases (men), which is 3.3%. Visual field increased at 6 patients (3 women and 3 men), which is 9.8%, and the changes in the w Visual field ere not observed in 55 cases, which is 90.2%.

All patients have had normalization of ophthalmotonus. Thus, the averages of IOP were 35.7 mm Hg before the operation, median 31, min. and max. figures of IOP – 23

and 70 mm Hg.). After the operation the IOP averages were 10.9, median 11, min. and max. figures of IOP – 6 and 17 mm Hg.).

As complications in the postoperative period there was hyphema in 11 cases (18%), including 4 patients needed to wash the anterior chamber, and in one of them washing the anterior chamber was twice. In all other eyes hyphema reabsorbed on its own within 1-3 days.

Thus, the proposed operation is an effective treatment for patients with surgery resistant forms of glaucoma. The correct choice of an operation method allows to eliminate pain syndrome and keep the eye as an organ under the most severe neovascular forms of glaucoma.

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Analysis of postoperative refraction aim at patients with high degree axial hypermetropy operated on cataract

Russia, Krasnodar, Moscow

Purpose. Analysis of postoperative refraction aim at patients with high degree axial hypermetropy operated on cataract phacoemulsification+IOL **20**

Materials And Methods. The study had 2 stages: retrospective analysis and (62 patients) and prospective analysis (40 patients). In retrospective group 4 subgroups were separated with formation criterion eye length according to echobiometry data: 8 eyes – till 20 mm; 17 eyes – 20.01-20.50 mm; 20 eyes – 20.51-21.00 mm; 17 eyes – 21.01-21.62 mm. Keratometrical data: min 40.75 D and max 48.25 D. All patients got cataract phacoemulsification, flexible IOL implanted with optic power from 26D to 38D. IOL calculation according to the formula SRK/T with imputed refraction after operation from sph.-0.03 D to sph.-0.75 D.

In prospective group biometry data within 18.25-21.72 mm. Keratometry: min – 40.25D; max – 47.50D. All patients got obligatory ultrasound β -scanning. Cataract phacoemulsification was carried out, flexible IOL were implanted with optic power more than 26 D. IOL optic power calculation on formula SRK/T and Hoffer Q with calculation on emmetropy ($\pm 0,5D$). At IOL implantation calculation data of formula SRK/T were used (design of research).

Results. Results of retrospective method determined deviations from predictable refraction. At eye length till 20.00 mm – postoperative refraction from sph. +3.5D to sph. +8.5D, medium deviation rate (MDR) of refraction sph. +4.25D ($m \pm 0,73$). At eye length 20.01-20.50 mm – or sph. –1.5D to sph. +2.25D (1 case sph. –1.5D, 16 cases from sph. +0.5D to sph. +2.25D), refraction MDR sph. +1.75D ($m \pm 0,32$). At eye length 20.51-21.00 mm – from sph. –1.5D to sph. +1.75D (in 3 cases from sph. –1.5D to sph. –0.5D, in 17 cases from sph. +0.5D to sph. +1.75D), refraction MDR sph. +1.25D ($m \pm 0,25$). At eye length 21.01-21.62mm – postoperative refraction from sph. –1.0D to sph. +1.25D (in 6 cases from sph. –0.5D to sph. –1.0D, in 11 cases from sph. +0,25D to sph. +1.25D), refraction MDR sph. +1.0D ($m \pm 0,24$).

Episodes of myopic refraction evaluated as faults of biometry and keratometry.

At retrospective analysis in 9 cases, postoperative refraction was myopic at diaposone from sph. –1.0D to sph. –3.25D. It was defined posterior vitreous body detachment (PVBD) with several degrees of vitreous body dislocation. In other 29 cases after operation was get emmetropia ($\pm 0.5D$), in 2 cases (EL less than 20 mm) – poor hypermetropy. At β -scanning at patients with PVBD was determined.

Conclusions. 1. In a result of retrospective analysis of patients with high degree axial hypermetropy operated on cataract phacoemulsification with implantation of flexible IOL was discovered presence of real refraction deviations from planned and its' dependence from eye length.

2. In a result of prospective analysis with high degree axial hypermetropy operated on cataract phacoemulsification with implantation of flexible IOL was discovered

dependence of postoperative «myopisation» and degree of its's size and PVBD spread, vitreous body consistency, IOL physician-structural characteristics.

3. Correlation establishment between these factors and postoperative myopia, IOL position (using UBM) require far examination.

Treatment of corneal injuries utilizing superficial therapeutic covering material.

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Purpose. To analyze clinical effectiveness of the different types of medical plastics (MP)with amniotic membrane(AM)to coversurface ofthe cornea for the treatment of complications of cornealtraumas in the senilepatients.

Material and methods.The study includes the results of treatment of 35 eyes of 35 patients aged 52-79 with SMPC with different fixation of AM within 5 days – 3,5 weeks after injury. In the I group there were 12 with the «overlay» technique of fixation of amnion, in the II group - 12 MP with the tactics of combined use of AM with the techniques of «filling», «inlay», supplemented according to the clinical picture - full coverage of the cornea «overlay» AM (7 cases), sclera or dura mater (5 cases). The III group included 11 cases of the tactics of double-layer covering of the cornea with the use of AM and alloplants. The indication for surgery was a process in the corn SMPC ea with a tendency to progression in size, depth, risk of perforation, including a protracted course.

Results. Clinical analysis of results of treatment with three types ofMP with AM demonstrated that a differentiated approach is needed and justified. The positive effect of individually selected treatment was observed in all cases.

Conclusion. Medical Plastics with AM transplantation is effective and affordable treatment for corneal injuries requiring urgent care. Properties of MP with AM that

lead to a positive therapeutic outcome are analgesic, anti-inflammatory effect, activation of processes of reparative regeneration of the cornea, suppression of the infection, inhibition of the inflammatory processes with the prevention of gross scarring, suppression of corneal neovascularization. Translucent corneal opacity was achieved in 86%.

ULTRASONIC BIOMICROSCOPY IN THE DIAGNOSIS OF CHANGES IN MECHANICAL INJURY OF THE EYE IN PATIENTS OF SENILE AGE GROUP

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Purpose. To evaluate early and adequate diagnosis of changes induced by closed eye trauma utilizing ultrasonic biomicroscopy (UBM) to study most frequent and characteristic structural, topographical-anatomical abnormalities in patients of senile age group.

Material and methods. Sixty six eyes (36 patients) 58-82 years old with a closed, mostly microtrauma, have been examined. The injury in all cases of observations was a home accident. The examination was conducted on the 2nd – 11th days after the injury. In 22 (61%) patients, the trauma was preceded by cataract surgery with IOL implantation, including 12 patients in both eyes. Cataract surgery was done 5 months to 3 years before the injury. UBM was performed with UBM OTI-SCAN Ophthalmic Technologies Inc. (Toronto, Canada) by the standard technique (Pavlin C.I.).

Closed eye injury in the senile group of patients

Results. UBM detects changes that often remain undetectable for standard research and registers even a greater diversity of structural defects than in younger population. Cumulative character of topographic-anatomical abnormalities after injury includes: trauma induced changes, the ones present before the injury (such as: age-related, due

to previous surgical treatment, manifestations of pathological aging and their complications.

UBM identifies the state of injured eye structures, often including those after both surgical and mechanical eye injury. Causative factors of most important complications for the prognosis of the outcome are: inflammatory and hemorrhagic, causing decompensation of IOP.

Conclusion. In the injured eye of the senile group of patient UBM most often detects various structural changes of iridociliary zone, lens, Zinn ligament fibers (ZLF). Lens opacity of various degrees observed almost in all cases, increase in its thickness with different acoustic density of capsule can be explained, probably, by reduced resistance of the capsule to microtraumas.

UBM detects different displacements of lens, IOL, ZLF abnormalities (almost always the posterior portion of fibers), including the background as a pseudoexfoliative syndrome. The analysis of structural changes arising from trauma of previously operated eye with various variants of IOL fixation shows that IOL displacements can play a role as an additional injury factor, playing a role in the higher rate of complications. UBM allows monitoring the pathological process in the dynamic, and helps to develop the optimal treatment strategy.

FIRST EXPERIENCE AND SHORT-TERM RESULTS OF FEMTOSECOND LASER DESCOMET'S STRIPPING ENDOTHELIAL KERATOPLASTY WITH THE GRAFT PREPARATION FROM ENDOTHELIAL SIDE.

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Descemet stripping automated endothelial keratoplasty (DS(A)EK) is currently the surgical standard of care for the treatment of endothelial failure. Added stromal

thickness and irregular thickness of graft resulting from DSAEK surgery may have the cause for the relatively small percentage of patients achieving 20/20. Development of femtosecond laser technology, permitting to prepare the grafts with regular profile and the desired thickness. However, the laser's photodisruption process may be damaging to the endothelium when femtosecond laser to cut ultrathin tissue too close to the delicate cells. There is some evidence that this may be the case when cutting within around 100 μ m of the endothelium (Invert FS-DSEK). The purpose is to present the first experience and short-term results of femtosecond laser Descemet stripping endothelial keratoplasty with the graft preparation from endothelial side.

Materials and methods. Of the 6 patients, 2 were women and 4 men. The mean age was 60 years (from 34 to 81). In 3 cases, there was the endothelial failure after penetrating keratoplasty in 2 cases was pseudophakic bullous keratopathy, in 1 case - Fuchs' dystrophy. Two patients had artificial lens-iris diaphragm and were operated glaucoma with Ahmed implant. There were also paralytic mydriasis, pupil fixated intraocular lens, postrupture scar of the sclera. Preoperative best corrected visual acuity (BCVA) was 0.04 (0.01 -0.05). Follow-up was 6 months. Invert FS-DSEK performed with a femtosecond laser LDV Z6. Intraoperative depth of femtodisruption (from endothelial side) was 150 microns. The average diameter of the graft was 9 mm (8.0 - 9.5). Graft insertion into the anterior chamber performed with forceps. Six months postop we have studied BCVA, performed biomicroscopy, optical coherence tomography (OCT) and Scheimpflug analyzer of the cornea, and endothelial microscopy with manual count of endothelial cell density (ECD). Because of the hard preop neuroretinal pathology in most cases DSEK was performed mainly for therapeutic reason. Follow-up was 6 months. Effectiveness was appreciated by the presence of intra- and postoperative complications, corneal transparency, uniformity of grafts, thickness of grafts and endothelial cell density. Results. All corneas achieved transparency. There was a graft detachment (performed to rebubbling) in 1 case. There was a partial detachment in 1 case, which didn't require the rebubbling.

Average minimal grafts thickness was 76.6 microns, average maximal - 93.3 microns. Average graft central thickness according to OCT was 90,7 microns. The difference in the thickness of the graft within the same among all grafts was 4-31 microns. Six months after surgery average BCVA was 0.2 (0.05 - 0.4). The mean ECD was 1720 ± 162 cell/mm² (500-2345 cell/mm²). The difference between the central and peripheral thickness of the graft was less than 20 microns. Conclusion. To our knowledge, this is the first demonstration of clinical ability and efficiency of femtosecond laser Descemet stripping endothelial keratoplasty with the graft preparation from endothelial side. The method to permit to create ultra-thin and uniform flap, with a functioning endothelium, with no rejection episode of donor tissue. This study has several important limitations: a small number of patients; the inability to evaluate the functional efficacy of surgery; the absence of data about preoperative endothelial cell density and postoperative endothelial cell density loss; the presence in the study group the patients as a own cornea and with graft.

Developing a national ROP programme in Bulgaria

S. Nikolova, V. Chernodrinska

ROP is mostly an avoidable cause of blindness. To reduce the risk of visual impairment, national and local ROP programs are required. Such local programs have been run in some of the neonatal and ophthalmology units in Bulgaria through the years. They helped to reduce blindness from ROP significantly.

Two National ROP workshops for ophthalmologists, neonatologists and neonatal nurses were held in Bulgaria with the support of IAPB and the International Centre for Eye Health: in Varna in 2009 and in Sofia in May 2013. The purpose was to reach an agreement on national guidelines for screening and treatment of ROP and propose a national programme on ROP. Standards for improvement of neonatal care were

agreed as good neonatal care helps to reduce severe ROP. ROP working group was established.

The implementation of a National ROP programme may help improve neonatal care, screening and treatment of ROP, standard data recording form helps introduce evidence based criteria and regular updating of national guidelines and thus reduce the unfavorable outcome from ROP.

Comparative results in a combined procedure of intrastromal corneal rings implantation and crosslinking in patients with keratoconus.

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Summary:

Purpose: To compare the effectiveness of combined procedures intrastromal corneal ring implantation followed by crosslinking, with crosslinking followed by intrastromal corneal ring implantation, results based on refractometry, keratometry and function after one year from the procedures.

Material and methods: The study comprised 2 groups of patients with different stages of keratoconus, which met the eligibility criteria for intrastromal corneal ring implantation and corneal collagen crosslinking. Group 1 included patients(41 eyes) who underwent intrastromal corneal ring implantation followed by crosslinking and group 2(30 eyes)

included patients who underwent crosslinking first followed by intrastromal corneal ring implantation.

Results: it was observed a decrease in K values about 1.5 D and refraction also in group 1, compared to a decrease in K values about 1 D and refraction, in group 2. Recovery of visual acuity was higher in group 1 than in group 2.

Conclusions: The sequence of intrastromal corneal ring implantation followed by crosslinking proved to be more effective in reducing K values , spherical equivalent

and cylinder compared with crosslinking followed by intrastromal corneal ring implantation.

Keywords: keratoconus, crosslinking, intrastromal corneal ring

The assessment of levofloxacin and moxifloxacin eye drops concentrations in anterior chamber aqueous humor by HPLC-MS method.

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Purpose: To determine the concentration of Signicef®, Oftaquix® and Vigamox® eye drops in anterior chamber aqueous humor.

Methods: 90 patients were included in the study. In group I (30 patients), Vigamox/moxifloxacin was used, in group II (30 patients) and group III (30 patients), 0.5% Levofloxacin was used (Oftaquix and Signicef, respectively). Antibacterial eye drops were instilled for an hour before surgery every 15 min (i.e., 4 times) in all subjects. Antibacterial medications concentrations in anterior chamber aqueous humor were measured by HPLC-MS/MS method

Results: Mean concentrations of Oftaquix and Vigamox eye drops in anterior chamber aqueous humor were 0.9 µg/mL and 1.0 µg/ml, respectively, while Signicef mean concentration was 1.5 µg/ml.

Conclusion: Mean concentrations of all tested drugs that belong to a group of fluoroquinolones were several times higher as compared with mean MIC90 for strains isolated from patients. This provides safe post-op period and infectious complications prevention.

Early clinical outcomes of Visian ICL implantation with central flow technology (STAAR V4C), for correction of high myopia and myopic astigmatism

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Purpose To evaluate the early clinical outcomes of an Visian ICL (STAAR V4C) implantation for the correction of high myopia and myopic astigmatism

METHODS This study includes 16 eyes of 10 patients aged from 22 to 37 years who underwent with Holo toric ICL(STAAR V4c) implantation. Preoperative ametropia ranged between $-13.0 \text{ D} \pm 4.0 \text{ D}$ with astigmatism $-3.0 \text{ D} \pm 1.75 \text{ D}$.

Before surgery and at 1 week and 1, 3 and 4 months after surgery, we assessed the efficacy, safety, predictability, stability and adverse events of the surgery, based on the data of Uncorrected Visual Acuity (UCVA), refractive outcome, anterior chamber depth, anterior chamber OCT, intraocular pressure, and biomikroskophy.

RESULTS At 4 month postoperatively all patients had 0.8 ± 0.2 Uncorrected Visual Acuity (UCVA) equal to the preoperative Best Corrected Visual Acuity (BSCVA) ± 0.1 .

Change in manifest refraction from week 1 to month 6 was $0.05 \pm 0.3 \text{ D}$. No significant rise in intraocular pressure (including pupillary block) or a secondary cataract occurred in any case during the period of observation.

CONCLUSIONS Our short term results suggest that implantation of a newly developed ICL with a central flow technology (STAAR V4C) is a safe, offered good results for the stability of intraocular pressure and the central hole in an ICL have not great impact on optical performance of the lens.

One year results of Femtosecond Lasik in Georgia

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Purpose: To report our experience of refractive surgery outcomes with visumax femtosecond laser system and Mel 80 excimer laser from Carl Zeiss Meditec, Inc.

Methods: Preoperative and postoperative evaluations included corneal topography, visometry, refractometry, pachymetry, aberrometry (pentacam - oculus; Atlas - Carl Zeiss), ophthalmometry (Topcon). Corneal flap ranged from 90 to 110 microns; optical zone from 6.5 ± 0.3 mm; flap side cut 900; with ASA (aberration smart ablation) tissue saving program. Ablation depth ranged from 40 to 120 microns. Clinical evaluation and topographies were obtained preoperatively and postoperatively at one, three, nine months and twelve months.

Results: We have operated and observed 95 (145 eyes) patients that underwent FS LASIK; age ranged from 18 to 45 years. Preoperative ametropia ranged between -10.0 D to + 3.0 D with astigmatism up to 3.0 D. Exclusion criteria included the presence of suspect keratoconus and residual stromal thickness of less than 300 microns, corneal thickness less than 490 microns. Follow up ranged from 1 to 12 months. There were no intraoperative and postoperative complications. At one month postoperatively all patients had uncorrected visual acuity (UCVA) equal to the preoperative best corrected visual acuity (BSCVA) ± 0.1 .

Conclusion: Femto-LASIK leads to extremely accurate and safe results.

The preparation of the corneal flap by laser is significantly safer and more precise than with a mechanical cutting blade.

The thickness and diameter of the corneal flap are individually determined. Above all the thickness of the flap can be extremely accurately controlled. So people who tend to have a thin cornea can be treated safely with the femtosecond laser.

The recovery period after the procedure is equally as painless, except for a temporary foreign body sensation and an increase in tears.

The sight's recovery period is very short as the corneal flap protects the surgical wound like a plaster produced naturally by the body and therefore vision can rapidly normalise itself.

Patient can already pursue his usual activities a few days after the procedure.

Sight is stable after approx. 4–8 weeks.

One year clinical experience of Boston KPro implantation in Georgia

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Purpose:To report the one year clinical experience of 5 complicated cases of corneal pathology, which successfully managed by Boston KPro, firstly done in Georgia.

Methods:The study evaluate one year experience of severe corneal pathologies, treated with implantation of a corneal graft with a KPro. Data collected included patients visual acuity, intraocular pressure, slit lamp and B scan examination. Surgical interventions and the postoperative course were recorded.

Results:Follow up ranged between 3 and 12 months. All patients had improvement in postoperative visual acuity. There was no such post operative complications as KPro extrusion, severe inflammation and retinal detachment. In one case IOP was elevated, which was successfully treated with 0,5 % Timolol drops.

Conclusions:The Boston KPro is indicated when standart corneal transplant would be unlikely to succeed. Successful outcome requires patient compliance and need close post- surgical follow up. Postoperative management of glaucoma is critical for preserving the visual gains achieved with the Boston KPro.

Accrued experience with the Boston KPro has demonstrated its versatility but also the difficulties that remain in postoperative management.

Preference of anterior vitrectomy in pediatric cataract surgery

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Purpose of review: Cataract surgery is the most commonly performed intraocular surgery in the pediatric population worldwide. Although the basic surgical techniques have not significantly changed over the last several years. This review will primarily focus on some technical aspects of surgery - anterior vitrectomy, Acrysof IOL implantation and postsurgical outcomes.

Recent findings: Manual anterior and posterior capsulorhexis, anterior vitrectomy, still remains a gold standard for the successful outcome of pediatric cataract surgery. Primary management of the posterior capsule and anterior vitrectomy in 100% is mandatory and not depending on the age of the child at surgery. Primary implantation of the intraocular lens after cataract removal is gaining popularity even in infants and young children. Clinical results of 100% anterior vitrectomy and Acrysof® IOL in pediatric eyes are encouraging. Despite satisfactory technical outcomes, the functional outcomes remain unpredictable.

Summary: With refinements in surgical techniques pediatric cataract surgery, with anterior vitrectomy and intraocular lens implantation, is likely to become an established mode of treatment of children even in any age group.

Visumax femtosecond laser assisted KERARING implantation in patients with keratoconus

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Purpose: To report the outcomes after the implantation of intrastromal corneal ring segments (KERARING) aided by the Visumax femtosecond laser for the correction of keratoconus.

Methods: Intrastromal corneal ring segments KERARING, were implanted for keratoconus correction after corneal tunnel creation with the aid of femtosecond laser. 20 eyes of 13 consecutive keratoconic patients with mean age 26 ± 8.2 years, 40 % were keratoconus grade II, 60% grade III.

Results: Uncorrected visual acuity (UCVA), best spectacle-corrected visual acuity (BSCVA), refractive outcome, corneal topographic findings were determined before and after surgery at 1 day, 1 week, 1 month, 3 months, 6 months and one year.

Visual acuity improved from 0.6 (± 0.3) to 0.17 with reduction of the spherical equivalent from -4.67D to -2.0 D.

Mean astigmatism reduction was 3.27 D.

K maximum decreased from 49.85D preoperatively to 46.00 D and K minimum decreased from 45.33D to 44.75 D. There were no intraoperative or postoperative complications. Follow up period one year.

Conclusions: In this study corneal Intrastromal ring implantation with the use of the Visumax femtosecond laser was a safe, minimally invasive procedure, with low risk of complications and significant improvement on visual acuity and topographic data in this setting of patients with keratoconus.

Secondary IOL implantation in rehabilitation of children with Aphakia

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Setting: Ophthalmology Department, KharkovMedicalAcademy of Postgraduate Education, Ukraine

Purpose: To present and analyze results of secondary intraocular lens (IOL) implantation in children after congenital and traumatic cataract extractions.

Methods: 14 eyes of 11 children had secondary posterior chamber IOL implantations: 8 eyes after congenital cataract extraction, 6 eyes after traumatic cataract extraction (8 eyes – monocular, 6 eyes – binocular). An implantation procedure depended on condition of the posterior capsule, posterior and anterior sinechies, pupil, vitreous. Different types of IOLs were used. The loops of IOL were positioned intracapsullary (7 eyes), in sulcus ciliaris (7 eyes).

Results: Three years data on 14 eyes showed significant visual improvement in 13 cases. In long term follow-up the visual acuity in children with binocular cataract had an average increase from 0,3(6/20) to 0,7 (6/8). The binocular vision was restored in 75% of cases. Color vision became better in all cases. There was no significant visual improvement in one eye with high amblyopia.

Conclusions: In spite of technical complexity the secondary IOL implantation in children allows to achieve a high functional results: visual acuity increase, color vision improvement, binocular vision restoration.

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Decorin und PVR

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Proliferative vitreoretinopathy (PVR) is characterized by the formation of fibrotic membranes within the vitreous and at the retina that can lead to tractional retinal detachment and blindness. PVR remains a difficult management problem despite advances in vitreoretinal surgery. Surgery for PVR now has a high anatomical success rate although visual results are disappointing. The use of adjunctive treatments to

prevent cellular proliferation holds promise for the prevention of PVR or recurrences after surgery. The use of chemotherapeutics are limited by their toxic effect to the retina. As in other ocular processes such as neovascularization an interruption of the pathological cascade might be interesting. Herein we present the use of Decorin. Decorin is a small proteoglycan that binds to the potent wound-healing factor transforming growth factor β (TGF- β) and inhibits its biological activity in a number of cell types. The results within an aggressive in vivo model gives promise to follow this approach for clinical application.

Sabina Sapeta, Ewa Mrukwa-Kominek

Topic:

In vivo corneal confocal microscopy in glaucoma patients after antiglaucoma treatment.

In vivo confocal microscopy can be a useful diagnostic tool which allows non-invasive deep insight into the corneal structure.

Purpose: The aim of the study was to evaluate the corneal changes with the use of confocal microscope caused by trabeculectomy, laser iridotomy or selective laser trabeculoplasty in glaucoma patients.

Setting: University Hospital N°5 Ceglana, Department of Ophthalmology

Material and methods: The study group of 22 patients with glaucoma (30 eyes) was diagnosed with the use of confocal microscope CS4 (Nidek Technologies, Italy) before and after antiglaucoma treatment. Measures include number of corneal endothelial cells, as well as polimegatism and pleomorphism of these cells.

Results: Mean corneal endothelial cell density before and after antiglaucoma treatment was 2920 cells/mm², and 2727 cells/mm² respectively. The mean percentage of polimegatism was 49,97% before and 53.28% after treatment and mean percentage of pleomorphism was 40.50% before and 32.98% after the treatment.

Conclusions: As a chronic disease glaucoma causes damages not only in the optic nerve but also in corneal tissue.

The combined method of macular edema treatment in the occlusion of central retinal vein branch

with the arteriolar constriction using

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Purpose. To assess the efficacy of combined therapy of macular edema in the occlusion of central retinal vein branch in the presence of mechanical compression at the site of arterial-venous crossing by artery.

Material and methods. The indication for the arteriolar constriction was the macular edema in the occlusion of central retinal vein (CRV) due to the presence of mechanical compression of occluded vein by artery at the site of arterial-venous crossing. In addition to the standard ophthalmological examination the optical coherence tomography (OCT) of the retinal central segments and the fluorescein angiography (FAG) were performed.

4 patients (4 eyes) were treated. Follow-up was 1 - 12 months. The arteriolar constriction was made as 1st stage in all patients. The technique is to apply the coagulations along the arteries at the site of venous occlusion. The coagulations were applied with sufficient intensity to constrict the arteries, accompanying the occluded vein. The resulting arterial constriction decreases the blood inflow.

The result is a reduction in retinal edema and, consequently, an increase in visual acuity. The effect is of short duration, but allows performing a barrage of macular area or barrier coagulation. The second step was a barrage of macula.

Report of case. The patient 65 years came to our clinic with complaints of decreased vision in the left eye, a spot in the eye for a few days. The corrected visual acuity

was 0.2. The thrombosis of CRV inferior temporal branch was diagnosed on the basis of ophthalmoscopic data. The OCT data – the cystoid macular edema, the FAG data – the appearance of thrombosis of CRV inferior temporal branch, macular edema, areas of hypoperfusion and capillary non-perfusion along the inferior temporal arcade, shunts. The Lucentis injection with next laser coagulation was proposed, but the patient refused.

The arteriolar constriction was made. 2 days later against a background of the retinal thickness reducing the barrier laser coagulation along the CVR inferior temporal branch and the coagulation of capillary non perfusion areas were performed. At the next examination the patient noted the improvement of visual acuity to 0.45, OCT revealed a decrease of the retinal thickness. At the examination after 1 month the visual acuity of left eye is stable, the central retinal thickness was without negative dynamics. The patient was satisfied with her vision; a spot in the left eye didn't worry.

Results. As a result of the treatment a good anatomical effect – reducing of the retinal thickness and, as a result, improving of the visual function – was achieved in all patients (4 eyes). In case of need the arteriolar constriction can be repeated after 1-2 months.

Conclusion: The combined treatment of macular edema with the arteriolar constriction using in the presence of mechanical compression of occluded vein by artery at the site of arterial-venous crossing is an alternative to costly, invasive method, combined with the use of anti-angiogenic drugs, not yielding while the duration of effect and effectiveness.

The Use of Amniotic Membrane in the Rehabilitation of Patients with Disease of the Anterior Segment of the Eye

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The amniotic membrane was first used in surgery in 1910 in skin transplantation. Thereafter it has been used for cutaneous and mucous lesions for regeneration of tissues. In recent years its effectiveness has been demonstrated in the treatment of diseases of the ocular surface. In 1940, De Roth used a fresh fetal membrane as a graft for conjunctival surface reconstruction with limited success. Sorsby et al reported the successful use of amniotic membrane as a patch graft in the treatment of acute ocular burns in 1946 and 1947 [4.5].

The amniotic membrane in ophthalmology has been practised in the Republic of Belarus since 2005, when the important research work called “The Use of Amniotic Membrane for the Reconstruction of the Cornea and Conjunctiva Surface” (Sitnik.H.V.) was provided at the ophthalmology department of BelMAPO.

The purpose is to analyze of the effectiveness of a comprehensive treatment of the anterior segment of the eye diseases using the amniotic membrane at the patients with corneal ulcer and the disease of the graft.

Materials and methods. To examine patients with the anterior segment of the eye diseases there are used methods of diagnosis: visometry, biomicroscopy, echobiometry, optical coherence tomography (Visante), pachymetry, tonometry.

The efficiency of the comprehensive treatment of the eye anterior segment using the amniotic membrane at the patients with a long-term corneal ulcer and the disease of the graft.

Results.The efficiency of the use of the amniotic membrane which facilitates epithelialization, reduces inflammation, reduces scarring, reduces the adhesion of tissues, reduces vascularisation.

The recovery of the graft cleanness has already been appeared at the 3rd week at patient D, at the 4th week at patient G after the transplantation of the amniotic

membrane. Patient B had a poor result, so the covering by Puchkovskaya was executed.

Conclusions. The amniotic membrane has been successfully used in a comprehensive treatment of the eye anterior surface when rehabilitating of the patients with corneal ulcer and the disease of the graft.

The development of IOLs and the Prevention of Posterior Capsule Opacification (PCO)

Prof David Spalton London

The incidence of PCO has declined with the introduction of square edged IOLs but 10 – 20 % of patients still require a laser capsulotomy. Apart from the small risk of medical complications (macular oedema, retinal detachment, damage or dislocation of the IOL) it is a major a socio economic problem. Laser capsulotomy is a very substantial cost to health care budgets. There are major logistical problems in identifying elderly patients who need laser treatment, particularly now as most patients are discharged very soon after surgery, and many elderly patients attribute failing vision after surgery to ‘old age’ and fail to realise they have a treatable condition. PCO is a particular problem in paediatric eyes, eyes with co existing conditions and with multifocal lenses.

The aetiology of PCO is multifactorial being influenced by IOL material, design, surgical technique and inherent patient factors (eg age, coexisting ocular disease). The quality of the posterior square edge is extremely important and this should go through the optic haptic junction to prevent the ‘Achilles heel’ effect . PCO appears to be more common with hydrophilic IOL materials, possibly because these IOLs are manufactured with a poorer quality square edge design. To prevent PCO the rhexis

should lie completely on the IOL surface and polishing of the anterior capsule makes PCO worse.

In view of these problems there is a substantial amount of research in to better ways of preventing PCO. For various reasons physical removal, drug treatment or surgical techniques have all failed. More recently there is considerable interest in 'open bag' IOL designs where the anterior and posterior capsules are separated by the IOL and cannot fuse. Circulation of aqueous in and out of the bag possibly removes growth factors modulating lens epithelial cell proliferation and there is now good experimental and early clinical work to substantiate this. New IOL designs based on this concept offer dramatically reduced PCO and the possibility of a flexible capsular bag for an accommodative IOL.

Some Particularities of Surgical Treatment of Esotropia

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Purpose: In bimedial rectus recessions to analyse the decision to measure from the limbus rather than from the muscle insertion and to taking into consideration the length of eye's geometrical axis.

Methods: We retrospectively examined the records of 92 patients who underwent bimedial recession after the age of 3 years and were available for 5-year follow up. Visual acuity was ranged from 0.4 with correction for the single eye and not more than 0.1-0.2 without or with endurable correction for the worse eye. The angle of deviation accessed by Hirshberg's method was 15° and more.

We did bimedial recession more or less assuming the muscle insertion is 5.5 mm from the limbus when actually ignoring this and we were in fact measuring from the limbus. This means that a minimum recession was 8.5 mm and 11.5 mm is a

maximum from the limbus. But sometimes we exceed this measuring according to the length of eye's geometrical axis. For deviation of 15 ° we made 8.5 mm recession if the length of eye's axis was 22-23 mm or more. But for the same size of deviation and 20-21 mm eyeball recession was 8 mm. According to our scheme for angle of esodeviation from 20 ° to 40 ° for every 5 ° recession increase by 0.5 mm. For eyeball of length 20-21 mm it was from 8.5 to 11 mm and for bigger eye – 9-11.5 mm. In cases of 50 ° of esodeviations we performed theoretical maximum recession – 11.5m. But for eyes of 22 mm and more we exceed this maximum up to 12 mm.

The patients who had no good alignment after the first operation were reoperated by lateral resection.

Findings: The first surgical treatment resulted in orthotropia in 74% of patients. Secondary surgery was required in 26% of patients (14% of them had good alignment that remained stable for a period and then decompensated and last 12% had unstable alignment throughout the study period.

Conclusion: To make a symmetrical medial recession for esodeviation it's very important to measure from the limbus and to take into account the length of eye's geometrical axis.

Singh techniques for strabismus surgery:

DaljitSingh M.S.,D.Sc.

The surgery is done with Fugo plasma blade.It cuts/ ablates without bleeding and without charring. The muscle gets exposed in a few seconds. The muscle is stretched between two muscle hooks. For recession, a block of muscle is removed while the marginal fibres of the muscle are undisturbed. Block removal works like recession.Tenon capsule and conjunctiva are sutured.No suture is applied to the sclera. In a similar way, recession of superior rectus becomes possible. The new resection surgery is also done in the same way.Before removing the block of the muscle, a muscle suture is passed at the point where "resection is intended. After

removing the muscle block, the muscle suture is passed through the stump of the muscle and the tenon capsule. The suture is then tied.No suture to the sclera. A point of safety in both the techniques.The anterior segment circulation is not affected. There is no danger of mis-alignment, hence no danger of diplopia. Very suitable for treating/operating cases of intractable phorias.The total surgery time is about 6 minutes. Because Fugo blade cuts with plasma, there is no collateral tissue damage,hence no postoperative reaction. There is no postoperative pain or swelling. The child goes to school after 2 days.

Singh technique of conjunctival route strengthening/plication of the levator muscle.

DaljitSingh M.S.,D.Sc.

The upper lid is double everted and stabilised with stout nylon sutures.The conjunctiva is ballooned, the fornix is opened with three vertical incisions with Fugo blade without bleeding.Muller muscle is pulled to reach the pearly while levator muscle. Sutures are passed to hold levator at three points. Now the anterior surface of the tarsal plate is exposed with Fugo blade, by ablating the overlying muscle tissue. The muscle holding sutures are passed and tied through half thickness of tarsal plate, three mm from the upper edge.The lid is returned to its original position.Good results can be obtained by this conjunctival approach. A lid fold gets made quite naturally.No tissue is removed in this operation, therefore in case of any surgical mistake (over or under correction) can be corrected by re-operation.There is no danger of lagophthalmos and corneal exposure. This is the only conjunctival route technique for ptosis surgery which is also easy to learn. The surgical time is less than 20 minutes and the surgery is practically bloodless.

Fugo blade in glaucoma surgery:

DaljitSingh M.S.,D.Sc.

Fugo plasma blade produces laser like cutting plasma on the tip of a blunt wire. This plasma can ablate surfaces or ablate tracks through the tissues, including the vascular ciliary body, without bleeding and without burning or charring. With these properties, it becomes easy to do the following kind of glaucoma surgeries:*Non-perforating filtration surgery*-The sclera is ablated over the anterior part of the ciliary body. When sufficient is reached, the ablation is directed anteriorly. It immediately opens the posterior end of Schlemm canal. The non-perforating filtration is over within a couple of minutes. No learning is required. *Transciliary filtration*: It can be done as transconjunctival-transscleral-transciliary filtration track, or it can be done after making a conjunctiva and going through the sclera and the ciliary body one by one. The postoperative anterior chamber problems are totally eradicated and the chamber remains well formed from the moment of the surgery. *Microtrack filtration*: In this technique a thin transconjunctival translimbal track is made in the anterior chamber. The surgery takes less than 3 minutes to do. Strategies have to be found to prevent shallowing of the anterior chamber and blockage of the filtering track by an iris wick. Blocked track can be opened with a shot of YAG laser.

Phakic intraocular lenses, my perspective:

DaljitSingh M.S.,D.Sc.

I started phakic intraocular lens as an iris claw lens for hyperopia in 1987. Soon after I used phakic iris claw lenses for myopia. I have done 140 myopia and 60 hyperopia lenses. They have been followed for over 20 years, though they fail to come regularly as advised. We had an extensive experience with aphakic iris claw lens before starting with phakic lenses. These lenses are extremely well tolerated, but if a lens gets dislocated due to trauma or if the patient is in the habit of rubbing, endothelial cell layer can get damaged. Every phakic intraocular lens is connected to some uveal tissue, therefore subclinical inflammation can not be ruled out. As time

passes, there is greater need for check up, but the patients and many doctors do not take enough care. We have no guarantee for no complication over the next 50 years. All lenses shall need explantation when the patient develops cataract. The posterior chamber lenses shall bear the main burden of difficult explantation, but the iris claw lenses are easy to explant. Passage of time increases the responsibility of the doctor and the patient towards the health of the operated eye. Considering this difficulty, I compared 10 patients with phakic lens in one eye and PRK in the other eye. The results were the same. I started PRK in 1991. I started PRK for high and very high myopia in 1992. Till 2010 we had done 1010 high myopia cases with an average error of -14 D (max -26 and minimum -10.5). The visual results were extremely gratifying, with only 2.5 % haze and regression, which could be easily re-treated. There was not a single case of keratoconus. Phakic lenses both myopia and hyperopia were discontinued in 2003. Refractive corneal laser treated cases are not a liability for any one. The patients and the ophthalmologist can rest assured that no difficult intraocular surgery is in store for them. If the pros and cons of PRK and phakic lenses are considered, then phakic lenses have no place in modern refractive surgery, barring a few rare situations. It should be remembered that the posterior chamber volume is only 65 uL and the anterior chamber volume is only 250 uL. In 50 years time the crystalline lens volume grows from 140 uL to 250 uL, thus completely upsetting the anatomy of the chambers. These facts are not realised by the surgeons who go after the results of recent surgeries of 1 to 5 or 10 years. Phakic lens implant surgeries have enough of their early post-surgical problems including some very serious ones. **The whole gamut of phakic intraocular lenses needs to be seriously reconsidered.**

Surgical correction of presbyopia: optimal choice.

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Purpose: Recent demographic data in the world shows increasing of population in senior age. The problem with correction of presbyopia becomes more important issue. Presbyopia is one of the widespread reasons of physiological decrease in the eye function and as a consequence limiting the quality of life in social aspect. Presbyopia decreases dynamic refraction, leading to physiological weakness of the eyes accommodation.

The aim of presentation is describing of our experience about surgical methods of presbyopia correction(3 cases) and looking for more optimal clinical solution.

Setting and Methods: There are exists different methods of presbyopia correction, that may be divided on non-surgical and surgical. Non-surgical treatment include: glasses for short distance, bifocal glasses, multifocal glasses, contact lens:-monofocal to achieve monovision and multifocal.

Surgical correction of presbyopia consist of laser correction, corneal and scleral implants ("inlay", "intraIOL", "karma") and implantation of intraocular lens: - accommodating IOL, multi/bifocal IOL with or without a toric correction.

Laser surgery ("Monovision", "Advanced Monovision", Alcon Allegretto Wave Eye Q) is a presbyopic laser correction based on the specific changes asphericity of cornea through induction of specific aberration of the eye. In the standard method "Monovision" the dominant eye corrected to emmetropia and non-dominant to myopia. With use of the standart techniques "Advanced Monovision", non-dominant eye is corrected to myopia, but corneal asphericity changes to prolate and increase the depth of the focus.

In the selection of patients for laser correction we used the following criteria:

1. Presbyopia.
2. No interest for glasses and / or contact lens.
3. No interest or phobia for implantation refractive IOL.
4. Visual acuity 20/20.
5. Regular cornea.

6. Good photopic and mesopic vision.
7. "Eye Health" (no cataracts, glaucoma, retinal degenerations etc.)
8. Readiness to compromise from the patient.

Modern surgical correction of presbyopia presented implantation of intraocular lenses:

1. Accommodating IOL ("Crytalens", "Optoflex").
2. Multi/ bifocal IOL ("Acrysof Restor3D", "Acrilisa", "Techis", "Lentis Mplus" and other)

In the authors surgical practice most often are used accommodating IOL Optoflex FIL 618 and AcrysofRestor +3, O, and new on the market AcrysofRestor +2,5

Report of cases:

Case 1: The patient is a male 53 years old. Refraction before surgery: OD=+ 1.25sph +0,5cyl ax175 OS=+ 1.75 sph+0,5cyl ax10. Dominant eye is right. Topography and pachymetry of cornea are normal. Planning refraction after procedure "Advanced Monovision": OD Plan OS-1,75sfr.

Used laser "Allegretto Wave Eye-Q" with technique "Custom-Q ablation", which is standard Wavefront Optimized ablation with predominantly programming changes of asphericity cornea on the left eye with normogramme. Proceeded LASIK with microkeratome GEBAUER-flap 130mkr.

Postoperative results: Autorefractometry: OD= +0.25sph -0.25cyl ax15 OS=-1,75sph -0.25cyl ax1 . UCVA OD = 1,5 UCVA = 0,8 BCVA OS = 1,5 with-0,75 sph. Near vision: OD=J5, OS=J1.

Case 2: The patient is female 31 years old with diagnosis: Cataract presenilis oculi sinistra. VOD-PPLC (about one year).

Operation: Phacoemulsification with implantation IOL OptoflexFIL 618. Postoperative results: Autorefractometry: OS=0.0sph-0, 50cyl ax 10 Vision acuity OS = 0,9 without correction For near vision: OS-J3 to 60 cm of observation in 1 month.

Case3: The patient is a male 48years old. Autorefractometry: OD=+ 4.0sph, OS=+6.0.

The patient using glasses for long and short distances with full correction, unable to adapted multifocal glasses, unwilling to use contact lens. Not suitable for laser eye correction. The patient has very active style of life. Dominant eye is the right.

Operation: Bilateral clear lens extraction with IOL implantation RESTOR 26.0D +2,5 – on the right eye and 28,0 D +3,0 on left eye.

Postoperative results: Autorefractometry: OD = 0 sph - 0 25 cyl ax 0. OS = +0, 25 sph - 0,5 cyl ax 167.

VSVA OD = 1,25. BCVA OS = 1,0. For near vision OD=J1+ at 45-55sm OS=J1+ at 35-40sm. With both eyes=J1at 30-60sm.

Conclusions: Besides of the standart methods correction of presbyopy like points glasses, contact lens, laser treatment (method” Monovision” and “Advanced Monovision”), which is not always satisfies patients expectations , interest is rising to implantation IOL during the last years.

Innovative manufacturing technologies IOLs offer accommodating lens (“Crystalens”,”Optoflex”) and multi/bifocal lens (“Acrisof Restor”+3,0D and +2,5D,”Acrilisa”,”Tecnis” and other). . We have not achieved good results using accommodating lens OptoflexFIL 618 , probably we need more prolonged period of postoperative observation.

Possible application multi/bifocal IOL,especially the appearance of “Restor+2,5D”,corrects range of refractive surgery,making results more expected.”Restor+2,5” is a new product of“AcrysofRestor” and not a substitute for “Restor”+3,0D and not need to change criteria for choice of patients. Meanwhile this gives better comfort of vision on the middle distances, especially in using PC.

The authors support the choice of IOL Restor +3,0and IOL Restor +2,5 in the surgical method correction of presbyopy,but more research is needed in this group of patients.

Analysis of UV corneal collagen crosslinking results in patients with progressive keratoconus by Oculus Pentacam.

A.Ulyanov, S.Rebrikov, V.Deryabin, M.Ivanova

Purpose: to analyze the results of UV corneal collagen crosslinking in the treatment of progressive keratoconus by Oculus Pentacam.

Patients and methods: We have performed a retrospective study of 72 patients (87 eyes) aged from 16 to 31 years. There were 54 males and 18 females. All the patients had progressive keratoconus grades II-III confirmed by dynamic follow-up. Follow-up period was from 5 to 26 months.(3-12)

UV crosslinking was performed by standard deepithelisation technique in all cases.

Results: mean UCVA did not change by 1 month after operation, but increased by 0,15 in 3 months, by 0,16 in 6 months and by 2 lines in a year. These changes were statistically significant ($p=0,000129$).

Mean BCVA also did not change in 1 month after operation, but increased by 0,2 in 3 months and remained stable up to the end of follow-up period. These changes were also statistically significant ($p=0,003792$).

Mean corneal curvature radius value before the operation was $6,75 \pm 0,98$ mm. In 3 months after the operation it has increased by 0,17 mm and did not change further.

According to pachymetry data in 1 month after the operation there was a decrease of corneal thickness in the thin place by $30 \pm 0,12$ microns. The changes were also statistically significant

Elevation of the posterior corneal surface changed within 5 microns limit in 3 and 6 months after the operation and was stable by 12 months.

Changes of anterior corneal surface elevation fluctuated within 2 microns limit during the follow-up period.

Conclusion: Change of anterior and posterior corneal surfaces elevation values after UV corneal collagen crosslinking were extremely variable with a tendency to an insignificant increase of maximal values.

Changes of analyzed parameters were observed up to 3 months after the operation and afterwards all the parameters were stable.

Change of keratographic parameters in post-op period was accompanied by an increase of BCVA and UCVA.

First results of Microkeratome-assisted anterior lamellar keratoplasty in the management of Hyperopic shift following radial keratotomy

Alexey Ulyanov Oleg Shilovskikh

Setting/Venue: S.Fedorov IRTC "Eye Microsurgery" Ekaterinburg Center

Purpose: No effective treatment for hyperopia following radial keratotomy has been described previously. A new surgical technique of microkeratome-assisted anterior lamellar keratoplasty for correction of hyperopia following radial keratotomy was investigated.

Methods: Four radial keratotomy patients who were unhappy with uncorrected vision and who were unsatisfied spectacle correction underwent keratoplasty in 5 eyes.

The period from radial keratotomy to surgery was 17 - 26 years. Following up period 4– 14 month.

Pre surgery mean value: UCVA $0,08 \pm 0,05$; BCVA= $0,38 \pm 0,2$; Spherical equivalent (SE)= +3.34D (+1.38 to +5.75D) Corneal astigmatism in central optic zone 4.5 mm - 6,52 D (1,25 - 11,7D). Minimal keratometry value = 32,53 D (28,15 - 36,2D)

Results: Mean post op value: UCVA $0,16 \pm 0,11$; BCVA= $0,62 \pm 0,08$; SE= - 3.9D (- 1.6 to -6.0D) Corneal astigmatism in in central optic zone 4.5 mm – 2.56 D (1,25 - 11,7D). Minimal keratometry value 42, 5 D (40, 25 – 44,75D). More compact distributions of equivalent Keratometric readings values was marked post operation in central cornea (Pentacam).

Conclusions: Microkeratome-assisted anterior lamellar keratoplasty in the cases of Hyperopic shift following radial keratotomy allows improving visual acuity, restores

refraction of a cornea to pre radial keratotomy values, creates conditions for predicted and uncomplicated correction of the created myopia

Amniotic membrane in trabeculectomy

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PURPOSE: to compare efficacy of amnion-shielded trabeculectomy and standard trabeculectomy in patients with risk of glaucoma surgery failure in more than 1 year follow-up.

METHODS: We observed 129 patients with refractory glaucoma since May 2006 to April 2010: 61 patients were operated using standard trabeculectomy (Group 1) and 68 patients were operated using amnion-shielded trabeculectomy (Group 2). Each group was subdivided into two subgroups: with low and moderate risk of trabeculectomy failure, and with high risk of trabeculectomy failure. Exclusion criteria were inner fistula obstruction and unknown fistula condition. Inner fistula was visualized by optical coherence tomography. Efficacy of surgery was evaluated by survival analysis. Definition criteria of failure were: IOP more than 26 mm Hg by Maklakov with highest dose of medications, repeated glaucoma surgery, cyclophotocoagulation.

RESULTS: We found no evident differences in hypotensive effect, amount of medication and visual function between two groups ($p>0,05$). In patients with low and moderate risk of trabeculectomy failure at the end of follow-up cumulative survival in Group 2 (28 patients) was 83,3%, and in Group 1 (42 patients) was 75,5% ($p>0,05$). In patients with high risk of trabeculectomy failure at the end of follow-up cumulative survival in Group 2 (40 patients) was 69,4% and in Group 1 (19 patients) – 54,5% ($p<0,05$). We found no statistically evident differences of postoperative complications rate among comparing groups.

CONCLUSIONS: Amniotic membrane using as an adjuvant during trabeculectomy in patients with risk of surgery failure may prolong a time of controlled glaucoma surgery hypotensive effect. Amnion-shielded trabeculectomy may be used in patients with different risk of surgery failure.

Herpetic Eye Disease

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Purpose: Human herpes viral infection is a major cause of morbidity worldwide and a frequent cause of ocular pathology – conjunctivitis, keratitis, scleritis, uveitis, optic neuritis. It is a recurrent disease and the complications may lead to blindness.

Methods: Diverse clinical picture with various manifestations, risk factors and diagnostic problems are discussed in a retrospective review of 120 consecutive patients with herpetic eye infection referred to our hospital for a year. Pathogenesis and classification of ocular herpetic disease are analyzed. 50 patients (42%) had stromal keratitis. Symptoms and signs of recurrence were documented in 34 patients (28%). Herpes simplex infection was observed in 85 patients (71%) and varicella zoster virus in 35 patients (29%). Therapeutic approach depended on clinical form and stage.

Results: Controversies in optimal management and current treatment strategy are demonstrated. Treatment of complications, including severe cases with corneal perforation are presented.

Conclusions: Systemic antiviral treatment demonstrate beneficial effect in our series of patients. Importance of differentiating HSV and VZV is emphasized. But still to date scientifically proven answers on herpetic eye disease are very limited.

Addressing Diagnostic and Therapeutic Challenges in Patients with Narrow, Occludable and Closed Angle Glaucoma

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Purpose: The majority of patients with closed angle glaucoma suffer visual impairment as a result of late diagnosis and/or inappropriate treatment. Our goal is to discuss the pathogenic mechanism of the disease development, to analyze the diagnostic problems; diagnostic "traps" that lead to delayed management and the need of individual treatment in patients with closed angle glaucoma

Venue: The study was conducted at University Eye Hospital "Akad. Pashev" for a period of 12 months (January 2012 – December 2012) and included all consecutive patients with closed angle glaucoma, chronic closed angle glaucoma and occludable angle in exfoliative glaucoma which were presented, examined and treated at the hospital.

Methods: A prospective study of 157 consecutive patients (196 eyes), 66 male and 91 female, underwent a full ophthalmological examination and specialized diagnostic procedures. Mean age of the patients was 66 (29-88). Treatment was conducted with medications, laser application and various surgical procedures with a follow up period of 3 to 15 months.

Results: In 54 patients (30%) the diagnosis was made during acute angle closure attack with its typical symptoms and signs. In 38 patients diagnosis of closed angle glaucoma was established at regular exam for refractive correction. 68 patients (43%) had been diagnosed with closed angle glaucoma for years elsewhere but they have not been treated properly.

The main reason for management problems were lack of awareness for the varied clinical presentations of the disease - 28 patients were misdiagnosed as follows: iridocyclitis (13 patients), conjunctivitis (5 patients) and cataract (10 patients). Significant glaucomatous damage at presentation consisted of serious visual field loss, advanced optic disk cupping, iris atrophic changes and decreased visual acuity. The

treatment procedures were as follows: lasers (laser peripheral iridotomy and argon laser trabeculoplasty) – 51 eyes (26%), lasers with additional antiglaucomatous medications – 102 eyes (52%), trabeculectomy – 43 eyes (22%). Phacoemulsification was performed as primary or secondary treatment procedure in 20%.

Different pathogenic mechanisms of angle closure were found in our pool of patients. We demonstrate that the significance of chronic closed angle glaucoma is underestimated as well as the importance of the occludable angle in exfoliative glaucoma. Potential irido – trabecular contact as a result of changes in anterior chamber width and lens vault during follow up of patients diagnosed with primary open angle glaucoma was also overlooked.

Conclusions: The main cause for diagnostic mistakes in closed angle glaucoma is due to lack of adherence to the protocol of comprehensive eye exam and differential glaucoma search. Urgent and appropriate diagnosis and management in patients with angle closure glaucoma is of crucial importance because of the rapid development of the glaucomatous damages. In a global aspect there is a dramatic increase of the number of patients with closed angle glaucoma with poor prognosis and expected larger incidence of blindness as compared to open-angle glaucoma. Performing gonioscopy during follow up of every glaucoma patient is of importance.

Title: A new iris implant for Aniridia

Author: Prof Yehia Mostafa, Cairo university

Purpose: to describe the technique and result of a new iris Implant (bright ocular) in case of traumatic aphakia and aniridia.

Venue: EyeCare center June 2012

Methods: this is a case report. A child 12 years old suffering from corneal scar, aphakia and aniridia . Under GA scleral flaps and 3.2mm clear corneal incision where

made. First a 3 piece foldable Iol was scleral fixated followed by implantation of the iris implant to lie over with no sutures. Then wounds were closed .

Results: postoperative lay the patient was seen 1 day, 1 week and 1 month postoperatively. Position of the implant was stable all through, cosmetic appearance were very acceptable by child and parents, IOP was normal except for a spike of increase after 1 week that was controlled by medications.

Conclusion: bright ocular iris implant is a promising addition . The need for algorithm of sizing and long term effect on IOP as well as stability should be evaluated in larger studies.

Reconstruction of conjunctival surface after scleral buckling surgery

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Purpose: To find the optimal surgical approach for management of conjunctival defects associated with scleral buckling surgery.

Methods: Prospective study of 56 eyes of 56 patients suffering from conjunctival defects and exposed scleral buckles after successful surgery of retinal detachment. Erosion and extrusion of silicon implant elements were revealed within 2-48 month after successful scleral buckling procedure. Complete ophthalmic examination including ultrasonography, optical coherence tomography were performed in all cases. 29 patients (group 1) underwent surgical treatment with the using of multilayered amniotic membrane graft. 27 patients (group 2) were treated with the using of local tissues. The size of conjunctival defects varied from 4 to 15 mm in both group. Our tactic was to leave the scleral buckling construction without changes. The absolute indication for silicon implants removal was microbial contamination.

Results: Conjunctival regeneration and regression of inflammation were revealed in $3,1 \pm 0,96$ days in group 1, in $7,6 \pm 6,6$ days in group 2. The wound dehiscence was

observed in 16 patients of group 2 on 3-7 days postoperatively and repeated operations were performed. We had to remove the silicone implants in 8% of group 1 because of microbial contamination, and in 23,8% of group 1 because of large size of conjunctival defect and deficit of tissues to cover exposed silicone elements. The absence of inflammation was registered in $19,6 \pm 16,2$ days (group 1) and after $25,4 \pm 12,9$ days postoperatively in group 2. The superficial layer of amniotic membrane graft was intact from 7 to 12 days. Total removal of the scleral buckling construction was performed in 18 patients. We observed the following complications: recurrent retinal detachment in 27,8%, phthisis bulbi – in 16,7% among them. Symblepharon formation was observed in 19% in group 2 and in 8% in group 1. Conclusion: The surgical treatment of conjunctival defects with the using of amniotic membrane graft allows to preserve the anatomical and functional results of retinal detachment surgery.

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Experimental study of correlation of terahertz emission with eye surface – fibrous eyeball cover, cornea and sclera

Russia. Krasnodar. St.-Petersburg

Purpose. Study of terahertz emission correlation with eye surface – fibrous eyeball cover, cornea, sclera in experiment.

Materials and methods. This work made on base of 14 samples of cadaveric pig eyes. The research carried out on 10 cadaveric eyes, which were in conserved growth medium Borzenok-Moroz, that provided their anatomic-physiologic condition close to natural and 4 native sample (without conservation). Keeping time of conserved samples is 7 days from the moment of material getting till experiment.

1 group contained 3 enucleate eyes conserved in liquid growth medium Borzenok-Moroz. In 2 group were 11 corneal-scleral samples getting by the way of surgical

dissection. After evisceration of cadaveric eyes was carried out dissection of corneal-scleral disk from the side of anterior epithelium using mechanic trepan based on fabric preserving microsurgical method which allows maximal save nativity, architectonics and density of endothelial cells of donor cornea at the stage of hypothermic conservation in cultural medium. For spectrum measurement transmission of frequency in diapason 0,05 THz – 2 THz eye component THz spectrograph TS-5. The research of eye component sample reflection spectrum carried out with help of scatterometrical THz spectrograph.

Results. Fir transmission and reflection spectrum of cornea was made averaging on 8 samples on 3 dimension of everything. For transmission spectrum pig eye sclera was carried out averaging on 5 dimensions. Unlike cornea and other eye components sclera omit THz emission but on the level of percentage- depending on thickness. It is noted that pig eye cornea in normal condition contains about 1000 mkm in thick that approximately in 2 times more than person has.

Also carried out measurement of transmission and reflection spectrum of cornea in center and in peripheries of cadaveric pig eye sclera. It was made 5 measurements for every sample.

As a result it was established that out of pig eye components terahertz emission with power about 30-40 mkW omit only sclera on the level of percentage - depending on thickness. Thickness of research samples contained about 1000 mkm. Other components of anterior eye segment: cornea (center, peripheries, limb) don't omit terahertz emission of such power. It is supposed that increase of terahertz emission power more than 60 mkW allows get transmission spectrum for cornea. **165**

Conclusion. The measurement of transmission and reflection spectrum of terahertz emission on cadaveric eye and its' components allows fix optimum emission power, educe parameters of required power for emission passing through cornea with aim of determination of using terahertz emission possibility in study of etiopathogenesis and

diagnostics of ophthalmopathy of anterior eye segment- cornea, sclera and ciliary body.

Abstract. In experiment on cadaver animals' eyes the authors carried out the study of terahertz beam interaction with eye surface – fibrous tunic of eyeball, cornea and sclera of pig. It was researched the penetrating possibility of picoseconds length impulses (ps): transmission spectrum and gleam with anterior eye surface components in terahertz diapason of electromagnetic oscillations spectrum 0,05-2,0 THz. Power parameters of THz beam for sclera transmission 30-40 mW was determined. THz beam of high power is necessary for cornea, center and peripheral and libal

The Use of Phacoemulsification and Limbal Relaxing Incision in Case of High Surgically Induced Astigmatism

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(Case Report)

Purpose

Regardless of the developments in the technologies of ophthalmic surgery, post surgery induced astigmatism is still a major problem in ophthalmology. Current methods of astigmatism treatment do not always allow to treat the high induced astigmatism, which is why in some cases, in order to get good results, it is necessary to combine various methods. However, in cases with patients suffering from cataract and astigmatism, it is preferable to use the method of phacoemulsification with toric intraocular lens implantation. Although trabeculectomy is the golden standard in glaucoma surgery, in some cases refractional rehabilitation of the patients is not always predictable. This is due to the fact that sometimes an uncontrollable suture

tension and its further shred can take place during suture adaptation of the scleral trim, which can further lead to a change of shape of the cornea in the form of inverse or direct astigmatism.

Setting

A patient with surgically induced high astigmatism was operated at “Shengacit ”MC using microcoaxial phacoemulsification (MICS) with posterior chamber IOL implantation and libmal relaxing incision (LRI)

Methods

Patient with low and blurred vision of the left eye, lack of binocular vision, diplopia, which forces the patient to close the left eye. The left eye vision is 0.09 with correction sph (-)2.75, cyl(-) 8.0 ax 160 = 0.3, IOP 10 mm. Hg. The patient has previously undergone a trabeculectomy with basal iridectomy because of primary open-angle glaucoma I-b. A biomicroscopy exam of the eye shows a cystic conjunctival filtration pad with insufficient scleral flap, transparent cornea, anterior chamber of medium depth, iris subathrophic, posterior synechiae and lens– opacity in all layers (++ by Burato). The results of Auto Ref-Keratometer - 176°-39.80D, 86°-47.20D, astigmatism- 7.40D . AnOS surgery has been applied in order to improve the eyesight function and correct the induced high astigmatism: phacoemulsification with toric intraocular lens implantation and limbal relaxing incisions (LRI). Intraocular toric lens was calculated using AcrysofToricIOL on-line calculator, and the LRI was calculated using on-line AMO LRI calculator (Abbott Medical Optics LRI calculator) by means of NAPA alignment chart (refers to the Nichaminage and pachymetry adjusted nomogram). A 24D AcrysofIQToricSN6AT9 lens has been implanted with cylindrical power of 6.0D, two 60° cornea incisions have been made at relevant meridians.

Results

Early postoperative period was smooth, no complications registered. On the second day, after medical pupil dilatation, the location of the IOL evaluated. The IOL

location was correct, condition of incisions – satisfactory, edges – clear. Left eye vision is 1.0, IOP 10mm Hg. Binocular vision recovered, no asthenopic complaints registered. Further patient exam is scheduled on the second day, in one week, one month and three months periods after the surgery.

Conclusion

Based on obtained data it has been revealed that phacoemulsification with toric intraocular lens implantation and application of relaxing incisions (LRI) for a patient with a cataract and high induced astigmatism are the most preferred methods, which can improve both visual functions of the patient and topography of the cornea.

We have no financial interest in this subject
