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ABSTRACT BOOK

ORAL PRESENTATIONS

5-year results of a prospective randomised comparison of Schlemm's canal microstent combined with cataract surgery to cataract surgery alone

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Purpose: To compare 5-year outcomes in patients who underwent cataract surgery alone compared to those who underwent cataract surgery combined with a Schlemm's canal microstent.

Methods: 556 subjects with POAG and significant cataract with washed-out diurnal IOP 22 - 34 mmHg were randomized 2:1 to undergo cataract surgery with (HS) or without (CS) a Hydrus Microstent (Ivantis, Irvine, USA). The HS and CS groups did not differ in baseline demographics or ocular characteristics. Preoperative washout diurnal IOP was 25.5 ± 3.0 in HS vs 25.4 ± 2.9 mmHg in CS ($p = 0.9$) and visual field mean deviation was -3.61 ± 2.49 dB in HS vs -3.61 ± 2.60 dB in CS ($p = 1.0$).

Results: At 5 years, the proportion of eyes requiring glaucoma medications was significantly lower in the HS group (36% vs. 66%, $p < 0.001$). IOP related events were less common in HS. The cumulative risk of further incisional glaucoma surgery was significantly lower in HS (2.5% vs. 6.4%, logrank $p = 0.022$). Linear regression analysis showed the rate of mean central endothelial cell loss (cells/year) was equivalent in the postoperative period ($p = 0.10$). There were no significant differences in visual acuity, retinal complicaions, or other adverse findings.

Conclusion: Combined cataract surgery and Hydrus microstent results in significant reduction in medication use and risk of further incisional glaucoma surgery for 5 years postoperative.

Did CyPass actually work? What the five year, real world, efficacy data shows

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Purpose: To evaluate the longer term (5 year) efficacy of the CyPass supraciliary micro-stent for the treatment of complex glaucoma in a real world setting.

Methods: A single centre, retrospective analysis of (n = 36) consecutive cases of CyPass implantation with or without cataract surgery in patients with glaucoma of varying aetiology. Cases were primarily assessed for: complete success (IOP < 21 AND > 20% reduction WITHOUT medications), qualified success (IOP < 21 AND > 20% reduction WITH medications), or failure (IOP in excess of success criteria, further glaucoma procedures, NPL vison). Secondary analyses include: complications, visual acuity, intraocular pressure (IOP) and number of medications required.

Results: In a cohort of complex patients (Pre-op: VA: 0.43 ± 0.46logMAR, IOP 22.36 ± 5.3 mmHg, number of medications 3.11 ± 0.78, MD -13.95 ± 10.8 dB), analysis suggests that by five years only two cases (6%) retained complete success and 31% maintaining qualified success. Failure occurred in 64% of cases. On average patients began medications at 7.4 ± 11.7 months and implants failed at 23.3 ± 16.5 months.

Conclusion: Following the voluntary withdrawal of the CyPass implant by Alcon in August 2018 there has been little research into the efficacy and natural history of these implants with most publications looking into the known risks of endothelial cell dysfunction. Our study looks directly at efficacy, showing high middle-term failure rates (64%). This helps guide care in patients with historically inserted stents as well as informing us with similar suprachoroidal drainage devices re-emerging in the future.

Iridocorneal angle early modifications after Nd:YAG iridotomy in narrow angle glaucoma. Role of anterior segment OCT

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Background: To evaluate and quantificate early anatomical modifications induced after Nd:YAG laser iridotomy in patients affected by chronic angle closure glaucoma or narrow angle glaucoma

Methods: 20 eyes of 14 patients, 12 female, 2 male affected by chronic angle closure glaucoma or narrow angle glaucoma. Instilled Pilocarpine 2% eye drops each 15 minutes 1 hour before treatment, peripheral Nd:YAG laser iridotomy at 10 or 2 o'clock, power 4.5-5 mJoules. We evaluate iridocorneal angle with Anterior Segment OCT before (T0), 10 minutes (T1) and 10 days after (T2) the procedure. Comparing changes in amplitude of angle with anterior chamber depth at T0, T1 and T2.

Results: Mean iridocorneal angle amplitude before treatment (T0) 22.6°, mean at T1 38.9°, mean at T2 37.8. All eyes showed an increase of angle amplitude at T1, despite no statistically significative modifications of anterior chamber depth. The iridocorneal amplitude remain stable at T2 in 12 eyes, the remaining eyes showed a mild decrease in amplitude. All eyes maintained an increase of angle amplitude comparing measurements of T0.

Conclusions: YAG laser iridotomy is a safe and fast technique to reduce the risk of acute angle closure glaucoma and to lower intraocular pressure in narrow angle glaucoma. His anatomical results appear in very early moments after procedure despite no apparent evidence of anterior chamber deepening.

Safety and effectiveness of MicroShunt vs trabeculectomy: results from a 2-year randomized, multicenter study

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Purpose: To compare MicroShunt vs trabeculectomy in primary open-angle glaucoma at Year 2.

Methods: Patients with uncontrolled intraocular pressure (IOP ≥15 to ≤ 40 mmHg) on maximum tolerated therapy were randomized to MicroShunt (N = 395) or trabeculectomy (N = 132; NCT01881425). The primary endpoint was surgical success at Year 1 (≥20% IOP reduction without medications).

Results: At Year 2, success was lower with MicroShunt (50.6%) vs trabeculectomy (64.4%). In the MicroShunt group, mean IOP reduced from 21.1 mmHg to 13.9 mmHg (-29.8%; p < 0.01) with a mean of 0.9 medications (baseline: 3.1). In the trabeculectomy group, mean IOP reduced from 21.1 mmHg to 10.7 mmHg (-46.2%; p < 0.01) with a mean of 0.4 medications (baseline: 2.9). Glaucoma reoperation rates were 18.7% (MicroShunt) and 10.6% (trabeculectomy; p = 0.01). The hypotony rate (IOP < 6 mmHg at two consecutive visits) was higher with trabeculectomy vs MicroShunt (15.2% vs 3.8%; p < 0.01). Few serious postoperative complications were reported between Years 1 and 2 in either group.

Conclusion: In this study, success was lower with MicroShunt vs trabeculectomy at Year 2 though both groups had IOP and medication reductions, and serious complications were rare.

Three year outcomes following deep sclerectomy and xen augmentend deep sclerectomy in open-angle glaucoma

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Purpose: Analysis and comparison of the efficacy profile of two surgical techniques in terms of intraocular pressure (IOP) reduction in patients suffering from open-angle glaucoma (OAG),-: non penetrating deep sclerectomy (DS) and XEN-augmented deep-sclerectomy (XDS)

Methods: This retrospective comparative study was carried out at a tertiary centre. All OAG patients who had undergone either DS or XDS since January 2018 were retrospectively enrolled. IOP, number of anti-glaucoma medications and post-operative complications were recorded through to 36 months and compared to the pre-operative baseline. Complete surgical success was defined as achieving IOP ≤ 18 mmHg without treatment.

Results: Three-year data were available from a total of 61 eyes, 31 DS and 30 XDS. Mean patient age was 75.8 years and 41.5% were males. IOP decreased from 27.0 ± 10.7 mmHg (DS) and 29.8 ± 8.0 mmHg (XDS) preoperatively to 14.04 ± 3.1 mmHg(DS; p < 0.001) and 12.6 ± 4.0(XDS; p < 0.001) at 36 months and medication 3.42 (DS) and 3.43 (XDS) preoperatively, to 1.29 (DS; p < 0.001)and 0.6 (XDS; p < 0.001. Half DS eyes underwent YAG goniopuncture and one eye (3.2%) underwent needling revision of the bleb. In the XDS group, no further procedures were performed.

Conclusion: The present study reports a statistically significant reduction in IOP and anti-glaucoma medications following both DS and XDS through 36 months, with similaroutcomes in both groups. The rates of post-operative interventions and complications were lower in the XDS group.

1,5 year efficacy and safety results of Ab-interno bleb revision with adjunctive MMC injection

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Purpose: To re-evaluate the efficacy and safety of an MMC-augmented, ab-interno approach to failed filtering blebs.

Material and methods: 46 cases that underwent ab-interno bleb revision from 05/2018 to 06/2021 were retrospectively analyzed. Technique: 0.1ml lidocaine mixed with MMC 0.005mg is injected subconjunctivaly above the bleb and massaged, followed by copious irrigation. A/C is filled with viscoelastic and Grover-Fellman Sclerostomy spatula is used through two 20g clear cornea incisions, proceeding through the sclerostomy, resolving fibrotic areas until a filtering bleb is reformed. Intracameral cefuroxime is administered and topical corticosteroids are given postoperatively, tapered for 8 weeks, along with topical NSAIDs. At follow-ups, filtering bleb was evaluated and additional 5-FU injections were administered as needed.

Results: No significant intraoperative or postoperative complications were noticed. Mean preIOP was 21.39 ± 5.60 mmHg, with 2.87 ± 1.40 meds. Final IOP was 13.86 ± 6.84 mmHg with 1.59 ± 1.64 meds and 18 months (6-40) follow-up. Referred failed blebs had significantly higher number of preoperative meds (p = 0.031) and longer time to intervention (p = 0.043) compared to patients from our department. Higher preoperative values in IOP and number of meds were associated with higher postoperative IOP and meds values.

Conclusion: MMC-augmented Ab-interno bleb revision appears to be a safe approach to suboptimal or non-functional filtering blebs, postponing the need for new filtration surgery or tube and sparing the conjunctiva for future operations.

Five-year outcomes of Xen gel stent surgery in patients with open-angle glaucoma

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Purpose: To evaluate 5-year treatment outcomes of XEN gel stent implantation in patients with open angle glaucoma.

Methods: In this prospective, single-centre interventional study, XEN implantation either alone or combined with phacoemulsification (Phaco + XEN) was performed on consecutive eyes with uncontrolled intraocular pressure (IOP) or disease progression despite medical treatment.

Results: Out of 170 eyes initially included, 80 eyes (53.7%) of 68 patients completed the 5-year follow-up and were included in the data (XEN: n = 17; Phaco + XEN: n = 63) after 46.3% were lost to follow-up. Mean age was 78.1 ± 9.1 years, and 69.8% were female. Mean medicated IOP decreased from 19.8 ± 7.0 mmHg (19.9 ± 7.8 [XEN] vs. 20.1 ± 7.6 mmHg [Phaco + XEN]) at baseline to 12.6 ± 3.1 mmHg (12.6 ± 3.1 [XEN] vs. 12.7 ± 3.1 [Phaco + XEN]) at 5 years (± 37.0%; p < 0.001). Medications decreased from 2.0 ± 1.3 (2.0 ± 1.3 [XEN] vs. 2.0 ± 1.3 [Phaco + XEN]) to 0.8 ± 0.5 (0.8 ± 1.1 [XEN] vs. 0.8 ± 1.1 [Phaco + XEN]) (± 60%; p < 0.001). Needling revision was performed in 39 eyes (49%), and 19.4% underwent reoperations.

Conclusion: At 5 years, XEN gel stent implantation achieved clinically significant IOP and medication reduction.The procedure carries a substantial rate of needling and re-operations.

Safe PAUL tube placement in developing world and vitreoretinal settings

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Purpose: To report: a safe technique for PAUL tube shunt placement, effect in different pre-operative intraocular pressure (IOP) settings, post-operative safety and performance in combination other procedures.

Methods: Retrospective single surgeon audit of all patients undergoing PAUL tube implantation from 05/10/2020 to 16 /11/2021. Tubes were placed under a "belt-strap" scleral tunnel with a 6/0 Prolene stent. Intraocular insertion under a trabeculectomy and deep scleral flap achieved graduated tube curvature.

Results: 71 procedures: Tube alone (13) or combined with: cataract extraction alone (19), Ahmed or Baerveldt revision (3) or vitreoretinal procedures (36). Adjuvant anti-VEGF was used for VR indications. No MMC was used. Average IOP (mmHg) was: Pre-op: 26 (n = 71); Day: D1: 10(n = 69); D7-30:13 (n = 59): D31-60: 15 (n = 42): D61-90: 15 (n = 13): D91-180: 17 (n = 18): D181-340: 13 (n = 5); D341-520: 17 (n = 3). Characteristic behavior in three subgroups of preoperative IOP (low, medium, high) are described. Complications were: Flat anterior chamber: (0); Hypotony requiring intervention (0); unrelated VR complications (16).

Conclusion: Immediate IOP control, low incidence of early complications and durable effect are particularly valuable to comprehensive Ophthalmologists in the developing world who manage retinal and glaucoma conditions in a setting of poor glycaemic control, advanced disease and where transport is an obstacle. Safety and efficacy enable wider use of Glaucoma drainage devices in general and in particular in high risk, normotensive cases to prevent glaucoma undoing the good of successful VR surgery.

Slit lamp rotational extraction of incarcerated iris

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Purpose: Iris incarceration is a complication of glaucoma filtering surgery that often requires surgery. We describe a technique for reduction of incarcerated iris at the slit lamp, dubbed rotational extraction of incarcerated iris (REII). A retrospective analysis of visual function and intraocular pressure (IOP) was done in patients treated with REII after nonpenetrating deep sclerectomy.

Methods: We retrospectively evaluated a cohort of patients who received REII for iris incarceration after nonpenetrating deep sclerectomy for glaucoma. IOP (applanation) and visual acuity (VA) were measured day-of, and 1, 3, 6, and 12 months post-REII. Adverse events were recorded. Kaplan-Meier survival analysis was done with definitions of IOP control at 15, 18, and 21 mmHg.

Results: Forty-one eyes of 41 patients were treated with REII. Median time to iris incarceration from glaucoma surgery was 50 days (range 1- 1906). Mean pre-REII IOP ± SD was 33.7 ± 14.1 mmHg, which reduced to 11.5 ± 6.1 mmHg day-of. LogMAR VA was 0.72 ± 0.8 log units at baseline and was unchanged at 12 months (p = 0.53). Survival analysis demonstrated varying efficacy depending on the definition of success. 79.0 to 92.2% of eyes achieved IOP control immediately after REII, 39.5 to 71.1% at 1 month, 26.3 to 52.6% at 3 months, 21.1 to 44.3% at 6 months, and 10.5 to 38.0% at 12 months. Nearly half (47.4%) of eyes required a tube shunt by 12 months.

Conclusion: REII may be a safe, minimally invasive slit lamp procedure that can reduce incarcerated iris and delay more invasive intervention for 3-6 months in most eyes.

Digital ocular compressions reduce intraocular pressure in eyes with tube shunts

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Purpose: This study examines the effect of digital ocular compressions (DOC) in eyes with long-term Ahmed FP-7 glaucoma tube shunts.

Methods: Applanation IOP was obtained in adults with chronic glaucoma and established Ahmed tube shunts, with the nonoperated fellow eye as control. A single standardized transpalpebral DOC was applied to each eye via an interposed force-sensitive resistor, and post-compression IOP was measured 10, 20, 30 min thereafter, and again at 30min intervals until up to 240min had elapsed. IOP recording ceased once it returned to baseline. Kaplan-Meier analysis was used to analyze the magnitude and duration of IOP reduction.

Results: 22 eyes of 11 patients underwent DOC, with no significant difference in force of compression applied ($p = 0.6$). A mean initial IOP reduction of 2.55 ± sem0.58 occurred in control eyes, with a 5.36 ± 0.86 reduction in eyes with Ahmed tube shunt (paired-eye Δ; $p = 0.01$). Log rank analysis demonstrated longer survival of IOP reduction in tube shunt eye (72 min) versus control eye (34 min; Δ $p = 0.05$).

Conclusion: DOC is an effective way to maintain improved reduction of IOP in patients with Ahmed glaucoma tube shunts. DOC applied at regular intervals throughout the day can enhance maintenance of reduced IOP.

Two-year results from a European study of a supraciliary glaucoma drainage device in patients with open angle glaucoma

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Purpose: To describe the safety and efficacy of a novel, supraciliary, minimally invasive glaucoma surgery (MIGS) drainage system, MINIject® (iSTAR Medical), in open-angle glaucoma patients.

Methods: In the prospective STAR-II study, 29 patients from 8 European sites successfully received the MINIject implant during a stand-alone, ab-interno procedure. The primary endpoint is the success rate > 60%, 6 months post-operatively. Success is defined as diurnal intraocular pressure (IOP) ≤ 21mmHg and > 5 mmHg with a minimum 20% reduction from baseline, with or without glaucoma medication. Results up to 24 months are reported.

Results: Mean diurnal IOP was reduced by 9.2 mmHg (36%) from 24.6 ± 3.8 mmHg at baseline to 15.5 ± 5.7 mmHg in 27 patients reaching 24 months. Mean medication use was reduced by 52% from 2.9 ± 1.2 at baseline to 1.4 ± 1.5. At 24 months, 78% of patients reached success. The most common adverse events were IOP increase and visual acuity reduction. Mean endothelial cell loss at 24 months was 7%.

Conclusion: MIGS represent a safety advantage compared to other (ab-externo) surgical treatments. This study confirms the efficacy of a supraciliary MIGS implant, reducing IOP and glaucoma medication use.

E-POSTERS

P1
Peripheral laser iridoplasty in chronic narrow angle glaucoma: anatomical results examined by SD anterior segment OCT

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Purpose: To evaluate the anatomical and functional efficacy of peripheral laser iridoplasty in eyes with narrow iridocorneal angle.

Materials and methods: 24 eyes of 14 patients with narrow-angle not responsive to iridotomy Nd:YAG laser. All patients underwent 360° peripheral iridoplasty laser. Patients were examined at T0 before the procedure, at T1, 20 minutes after, at T2 one week after. The amplitude of the iridocorneal angle in the temporal and nasal sector were evaluated.

Results: Mean distance from the Schwalbe line in the temporal sector at T0 was 215 microns, at T1 339 microns and at T2 319 microns. In the nasal sector was at T0 189 microns, T1 338 microns and T2 319 microns. At 500 microns the distance between trabecular surface and iris anterior surface was in the temporal sector at T0 of 125 microns, at T1 of 205 microns and at T2 of 185 microns. In the nasal sector it was T0 92 microns, T1 231 microns and T2 194 microns respectively. $p < 0.0001$ both between T0 and T1, and between T0 and T2 both between the nasal sector at the level of the Schwalbe line and at a distance of 500 microns from the scleral spur.

Conclusions: Peripheral laser iridoplasty is a rapid procedure, well tolerated by the patient, able to solve angular closures not responsive to Nd:YAG laser iridotomy.

P2
Correlation between corneal elevation topography and perimetric changes in patients with primary open angle glaucoma

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Purpose: The aim of this study is to assess Scheimpflug topographic elevation maps in patients with POAG and correlate the results with their perimetric changes

Methods: This was an analytical observational cross-sectional study. Study included 78eyes of 44patients diagnosed with POAG and 52eyes of 26control subjects. Measurement of IOP, visual field examination in patients with POAG using Humphrey Field Analyzer (2003 Carl Zeiss Meditec), Germany were done. Subjects were scanned using TMS-5 topographer (Topographic Modeling System, version 5. Tomey Corp. Nagoya, Japan) to measure central corneal thickness, mean anterior keratometry, maximum anterior and posterior topographic elevation maps in the central 3, 5, and 7mm.

Results: 78patients with POAG classified according to visual field deterioration using Hodapp-Anderson-Parrish grading scale into mild glaucoma 33eyes, moderate glaucoma 19 eyes, severe glaucoma 26 eyes, and 52 eyes control were included in the study. The mean age of the patients with POAG was 57.82 ± 7.78 years. Average age of control subjects was 56.62 ± 8.48 years. Average CCT was 530.3 ± 23.58 µm, average mean anterior keratometry (MAK) was 42.97 ± 1.42D, average maximum anterior elevation (MAE) in 3,5 and 7mm zone was 5.31 ± 2.28, 12.10 ± 6.94 and 44.04 ± 21.99 µm respectively and average maximum posterior elevation (MPE) in 3,5 and 7mm zone was 8.46 ± 2.10, 19.90 ± 9.39 and 62.72 ± 28.82 µm respectively in patients with POAG, whereas average CCT was 543.0 ± 31.02 µm, average MAK was 43.11 ± 1.73D, average MAE in 3,5 and 7mm zone was 4.52 ± 1.97, 5.90 ± 2.71 and 27.19 ± 8.55 µm respectively.

Conclusion: Evaluation of corneal elevation topography by scheimpflug imaging showed forward shifting of the anterior and posterior corneal surfaces in POAG.

P3
Macular and peripapillay angio OCTin subjects affected by chronic open angle glaucoma with localized perimetric damage

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Purpose of the Study: To evaluate the diagnostic capacity of macular and peripapillary Angio OCT in glaucomatous patients with localized perimetric defect

Materials and Methods: We studied 51 eyes of 26 patients suffering from chronic glaucoma with localized campimetric damage. Patients underwent perimetry standard white on white strategy 24/2 or 30-2 and Angio OCT examination of the macular and papillary region with scanning amplitude of 4. 5 x 4. 5 mm. The vascular texture of the superficial plexus corresponding to the layer of nerve fibers both in the papillary area and in the macular area.

Results: There was a sharp reduction in vascular texture in the glaucomatous eyes with a direct proportionality with the depth and extension of the perimetric defect. The Angio OCT reliefs have been put to comparison subsequently with a case-control group consisting of 10 eyes of 5 healthy patients without perimetric defect. The group of healthy patients does not had alterations of the vascular texture neither at the macular level nor at the level of the papillary area.

Conclusions: Our work highlights how, also from an anatomical point of view, there is an alteration in the retinal areas involved in the glaucomatous pathological processes.

P4
Comparative evaluation of surgical outcomes of trabeculectomy and trabeculectomy with novel drainage device implantation in primary open-angle glaucoma patients

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Purpose: To compare the efficacy of surgical outcomes between routine trabeculectomy and trabeculectomy with novel drainage device implantation in patients with primary open-angle glaucoma (POAG).

Methods: A comparative retrospective case series study was performed in private clinic «Top Medical», Zaporizhzhia, Ukraine. POAG patients (70 eyes) underwent either trabeculectomy alone (40 eyes) or trabeculectomy with novel drainage device implantation (30 eyes) were presented in this study. The main criterion was the final level of IOP. The complete success rate was defined as intraocular pressure (IOP) that remained below 20 mmHg, with no medications required. LogMAR visual acuity, number of glaucoma medications and postoperative complications were also examined.

Results: Preoperative IOP was 37.14 ± 10.15 mmHg in the trabeculectomy group and 35.12 ± 10.14 mmHg in drainage group respectively. A mean follow-up period was 24 months. Complete success was achieved in 62.5% of trabeculectomy, and 75.4% of novel drainage device group; while failure occurred in 12.5% of trabeculectomy, and 11 % of drainage group at last follow up. There was reduction of number hypotensive medication in both groups. There was more hypotony after trabeculectomy (17.2% vs (10.5%) respectively.

Conclusion: Classic trabeculectomy and trabeculectomy with novel drainage device implantation have shown similar success rate in IOP compensation and the number of adjuvant glaucoma medication needed post-operatively in POAG eyes. The use of a novel drainage device in the surgical treatment of this cohort of patients contributes to the greater IOP normalization, opening up new possibilities in glaucoma microsurgery.

P5
Selective laser trabeculoplasty as an add-on treatment in patients suffering from different types of glaucoma and not controlled on medical therapy

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Purpose: To evaluate the role of selective laser trabeculoplasty (SLT) as an add-on treatment for the primary open-angle glaucoma (POAG) and secondary pseudoexfoliative (PXFG) and pigmentary glaucoma (PG) in patients who were not controlled on maximum medical therapy

Methods: A retrospective review of 39 glaucoma patients treated by SLT for insufficient intraocular pressure (IOP) control. Patients received SLT in a standard protocol. Data were recorded on the 0th day, the 1st day, and the 1st month after SLT. Success was defined as an IOP reduction of ≥ 20% at 1st month without the need for further medication, laser, or surgery. Results were were analyzed using Statistica software version 14.0.

Results: Before SLT, the mean of IOP in was 23.54 ± 4.83 mmHg, and the median of glaucoma medications was 4 (2-4). 1st month after SLT, a mean IOP significantly decreased to 19.64 ± 5.02 mmHg ($p < 0.001$). Out of 39 eyes, at 1st-month post-SLT, 19 (48.7%) eyes had at least a 20% reduction in IOP. The median and percentage of IOP reduction in all treated eyes were 3.5 (0-12) mmHg and 17.2 (0-40) %. The best IOP reduction effect was found in eyes with POAG (5 mmHg, 21.9%), and the slightest in PXFG (3 mmHg, 11.3%).

Conclusion: SLT as an add-on treatment significantly reduces IOP and the number of local medications in different types of glaucoma. IOP reduction by SLT is the biggest in patients with POAG and the lowest in PXFG, although they have the greatest reduction in pressure immediately after the intervention.

P6
Primary idiopathic iridoschisis. A case report

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Purpose: To show a case of a female old patient affected by primary idiopathic iridoschisis threated with laser iridoplasty before cataract surgery

Methods: We reported a case of a patient who presented under our observation with blurred vision and a progressive loss of sensitivity to contrast. Biomicroscopic objectivity featured a nuclear cataract and a jagged lower iris stroma and strains of iris floating in the anterior chamber partially occluding the iridocorneal angle. No history of previous trauma or ophthalmic surgery. The IOP was about 22 mmHg in both eyes. The OCT of the anterior segment confirmed alterations of the iris and a secondary closure of the inferior iridocorneal angle. We decided, before cataract surgery, to treat the patient with lower peripheral laser iridoplasty to reduce the risk of incarceration of iris strains in access to the cornea. We followed the laser effects with AS OCT

Results: We noticed a complete compaction of the iris stroma after the laser and a partial opening of the angle. After cataract surgery the angle became completely open and the IOP dropped to 13 mmHg without antiglaucomatous drugs

Conclusion: Primary iridoschisis is a very rare condition that can affect the eye causing a IOP raise and increase of intra and postoperative complications in case of cataract surgery. Laser iridoplasty is a safe and well tolerated procedure that can solve the situation helping to restore a normal anatomy. Anterior

Segment OCT is a valid aid both in the diagnostic and follow-up phases.

P7
Mini invasive glaucoma surgeries: what's going on and what's going wrong

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Background: Evaluate the benefits and rate of complications after implantation of two filtering devices.

Methods: 31 eyes of 26 glaucomatous patients undergoing mini invasive glaucoma surgery (MIGS) with uncontrolled progression of glaucoma. The two groups were divided as follows: 20 eyes (9 females and 8 males) with cross-linked collagen implant with ab interno approach and 11 eyes (5 males and 4 females) with synthetic implant positioned with ab externo approach. The minimum follow-up was 4 weeks and a maximum of 40 months for collagen implant. All patients had a follow up with slit lamp examination, Goldman Applanation Tonometry (GAT) and Anterior Segment OCT to detect subconjunctival changes after surgery.

Results: The collagen implant group showed a mean preoperative IOP of 28 mmHg and a post operative IOP in the first week about 14 mmHg. A qualified success (IOP less than 21 mmHg with medications) in 2 eyes. A complete success (IOP less than 21 mmHg without medications) was achieved in 17 eyes. The group of synthetic implant had a preoperative IOP about 23 mmHg and a postoperative IOP in the first week after surgery about 10 mmHg. We had a complete success in 7 eyes, 2 eyes achieved qualified success.

Conclusions: These two MIGS require shorter intraoperative times with a better tolerated procedure by patients. Early follow-up was free of serious complications and inflammation was inferior to trabeculectomy. Scar tissue rates are lower in older people but, in young patients, there are no differences to the benefit of MIGS compared to "traditional" surgeries.

P8
MicroShunt PreserFlo in open-angle glaucoma - Primary and pseudoexfoliation - early results

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The aim of the study is to analyze early surgical outcomes of the PreserFlo MicroShunt. Twenty-three patients received microshunt alone and four combined with phacoemulsification. Best-corrected visual acuity (BCVA), intraocular pressure (IOP), change in glaucoma medications were assessed. Twenty seven eyes of 27 patients were included in the study - eighteen women (66.6%) and nine men (33.3%) with primary and pseudoexfoliation open-angle glaucoma. The postoperative observation period was from one month (19 subjects) to six months (8 subjects). Before surgery BCVA was 0.67 (± 0.27) while it counted to 0.69 (± 0.25) at one month, 0.73 (± 0.24) three months and 0.83 (± 0.27) six months after surgery. There was no significant difference in VA level before and after treatment among all patients and among patients with MMC 0.5 or 0.2 mg/mL separately. Before surgery IOP was 23.14 mmHg (± 4.60), and it dropped to 14 (± 5.71) at one month, 14.79 (± 4.05) at three months and 16.86 (± 4.91) at six months postoperatively. It's level was significantly lower at each time point after treatment than before the surgery. One of the subjects after six months and two patients after three months required anti-glaucoma to achieve the target IOP. Few complications were noticed: hypotony, choroidal effusion, hyphema, keratitis, bleb fibrosis. The early results of our work showed that Preserflo MicroShunt is safe and effective for lowering IOP however, it is not free from transient complications.

P9
One year observation of IOP changes after cataract surgery with suture fixation of capsular tension ring in pseudoexfoliation glaucoma

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Purpose: To study intraocular pressure (IOP) change after phacoemulsification with capsular tension ring (CTR) suture fixation or CTR implantation in pseudoexfoliation glaucoma (PEG).

Methods: IOP change was studied after phacoemulsification with CTR suture fixation (26 eyes) and CTR implantation (34 eyes) in patients with PEG in the presence of phaco or iridodenesis. Single eyelets CTR were sutured to the sclera using 10-0 polypropylene in the first group, CTR implantation in the second group. Analysis includes IOP level, intraoperative complications; number of glaucoma drops preoperative and one-year postoperative examination.

Results: Mean age of patients was 72.4 ± 3.1 years in the first and 70.4 ± 4.6 years in the second group. Preoperative IOP level was 26.2 ± 1.2 mmHg in the first and 25.8 ± 1.4 mmHg in the second group. The level of intraoperative complications was similar in both groups. After phacoemulsification with CTR suture fixation average IOP consisted 23.8 ± 2.2 in 3 month and 19.8 ± 2.1 mmHg in one year, the number of glaucoma medication reduced from 2.6 ± 0.4 preoperative to 1.5 ± 0.6 in 19 eyes (73.1%) in one year, remained unchanged in 7 eyes (26.9%). In the group where phacoemulsification with CTR implantation was performed IOP decreased to 23.8 ± 1.6 mmHg in 3 month and 23.2 ± 2.1 mmHg in one year, the number of medications was the same in 28 eyes, reduced in 2 eyes and increased in 4 cases. Glaucoma surgery was performed in 6 eyes.

Conclusion: Scleral suture fixation of the capsular tension ring during phacoemulsification in PEG can benefit patients with week zonules by reducing IOP.

P10
Collagen implants in glaucoma surgery

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Porpuse: The porpuse was to investigate the efficacy and complications collagen implant Colost in glaucoma surgery.

Methods: We used collagen implant Colost soaked with 5FU in glaucoma surgery to prevent postoperative hypotony and bleb scarring. Colost was used for antiglaucomatous operations such as: trabeculectomy 24, non-penetrating sclerectomy 26, implantation of mini shunt 16 (Express shunt), implantation of Ahmed valve to prevent stripping of silicone tube - tube was covered by Colost, sizes 6×4 mm - 25. Observation period was from 2nd day to 24 months.

Results: Postoperative condition in glaucoma patients was same to that after surgery without Colost. There was performed impressive, wide filtration bleb. Postoperative hypotony was in more fewer cases. Postoperative IOP ranged from Po 8 to Po 14 (iCare). We have operated 91 patient, 91 eyes with different stages and forms of glaucoma.

Conclusions: Using of collagen implant Colost in glaucoma surgery increases the efficiency of the performed surgery, has a low risk of erosion and postoperative complications, had a lower rate of early hypotony. We got more wide filtration blebs and less postoperative scarring.

P11
Kahook Dual Blade goniotomy: an audit of the first 101 cases in a tertiary university hospital in England

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Purpose: To evaluate the safety and efficacy of Kahook Dual Blade (KDB) Goniotomy in combination with cataract phacoemulsification performed at The Oxford Eye Hospital between 2018 and 2020 after 12-24 months of follow-up.

Methods: We performed a retrospective single-centre analysis of 101 eyes from 92 patients with open-angle, closed-angle and mixed mechanism glaucoma that underwent phaco-KDB. Results were analysed as per the world glaucoma association guidelines on reporting of interventional glaucoma procedures in research; Success (IOP < 21 mmHg with no topical drops, or 20% reduction in NTG), qualified success (IOP < 21 mmHg with topical drops), mean reduction in IOP at last follow-up, and mean reduction in topical agents at last follow-up.

Results: At preoperative baseline, the mean IOP was 20 ± 6 (mean ± SD), and the mean number of topical medications was 2.50 ± 0.9. The mean follow-up time was 17 ± 5 months. At last follow-up, 'success' was achieved in 40% of eyes and 'qualified success' was achieved in 95%. The mean IOP at last follow-up was 15.6 ± 4.8 mmHg, with a mean reduction in IOP of -4.6 mmHg ± 7.1 mmHg ($p < 0.01$). The mean reduction in number of topical glaucoma medications was -1.35 ± 1.4 ($p < 0.01$). Within the first postoperative week, the most common complications were the occurrence of hyphaema (6%) and IOP spike (> 24 mmHg) (17%).

Conclusion: KDB Goniotomy in combination with phacoemulsification can achieve significant short-to-medium term lowering of IOP and reduction in number of topical glaucoma medications in both open and closed-angle glaucoma patients. Serious postoperative adverse events were rare.

P12
12 months outcome post viscocanalostomy with or without trabeculotomy with the OMNI surgical system in glaucoma patients

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Purpose: To report an audit on the outcomes at 12 month post surgical for sequential viscocanaloplasty and trabeculotomy with the OMNI surgical system (Sight Sciences,Inc) in pseudophakic patients with glaucoma in the Royal Surrey County Hospital, Guildford, UK.

Methods: We reviewed the clinical notes of 26 patients /32 eyes who underwent phacoemulsification and intraocular lens with subsequent viscocanaloplasty and/ or trabeculotomy. Data on intraocular pressure, number of medications and complications were recorded on day 1, month 1, 3, 6, 9 and 12.

Results: Intraocular pressure reduced from mean 24 mm/Hg at baseline to 15 mmHg at month 1 and was sustained to mean 14 mmHg at month 12. The number of medication reduced from 2.4 mean number of drops to 1 mean number of drops and this was still reduced to 2 after 12 months of follow up. Hyphaema was the most common adverse event in 22% of the cases and 9 % required further glaucoma surgery.

Conclusion: This novel device and technique showed to be effective by providing a significant and sustained reduction in the intraocular pressure after 12 month postoperative and a safety profile.

P13
Evaluation of the efficacy and safety of iStent bypass implantation combined with phacoemulsification versus canaloplasty in patients with Open-Angle Glaucoma - early outcomes

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Purpose: The aim of the study was to compare early surgical outcomes after iStent bypass implantation combined with phacoemulsification versus canaloplasty in patients with open-angle glaucoma (OAG).

Patients and Methods: A retrospective chart review were conducted including consecutive adult patients with OAG that underwent iStent bypass implantation combined with phacoemulsification or canaloplasty between January 2015 and November 2021. The study took place in Department of Ophthalmology Medical University of Bialystok, Poland. Primary outcomes included intraocular pressure (IOP) reduction and glaucoma medication reduction. Secondary outcome measures were best-corrected visual acuity (BCVA) and complications. A total of 108 eyes (108 patients) with primary and pseudoexfoliative OAG were included in the study; of these, 63 eyes were implanted with the iStent device and 45 eyes were treated with canaloplasty.

Results: The preoperative IOPs were 18.30 ± 4.39 (mean ± standard deviation) mmHg and 15.14 ± 4.73 mmHg in the iStent and canaloplasty groups, respectively (p = 0.002). At the end of follow up IOP decreased to 15.50 ± 4.31 mmHg and 15.00 ± 4.2 mmHg in the iStent and canaloplasty group respectively (p = 0.498). All patients' eyes in both groups became medication-free by 6 months follow-up. All eyes in both groups maintained or showed improved BCVA versus baseline. Safety outcomes were comparable between groups.

Conclusion: iStent bypass implantation combined with phacoemulsification offers better results in IOP reduction at 6 months than canaloplasty. Both types of treatments are effective in lowering medication with a favorable and comparable safety profile over a 6-months follow-up in OAG.

P14
Surgery for reduction IOP fluctuations in relatively yang patients

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Purpose: To identify effectiveness of Ahmad valve surgery as the first choice operation in primary open angle patients with yanger age.

Methods: Ahmad valve surgery was used as the first operation in case of medically controlled IOP but progressing fisual field loss. 20 patients age 30 to 49.

Results: After Ahmad valve implantation there were almost no change in IOP but in 78 % there were improvement in visual aqiuty from the second day of operation to 1 month.

Conclusion: IOP fluctuation is important factor even in normal IOP range. Redusing the fluctuttions patiens experience visual function improvements. In glaucoma patiens with yanger age (35 to 50) the stabilisation of IOP fluctuations needs more attenten in case of choosing operation techniques.

P15
Case report: PreserFlo Ab-Externo MicroShunt implantation in a difficult patient with advanced glaucoma

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Purpose: To present a case report of the attempt to reduce and stabilize intraocular pressure in a monocular patient with advanced, glaucomatous optic neuropathy and severe field impairment by implanting PreserFlo Ab-Externo Microshunt.

Methods: A 77-year old woman, treated because of high intraocular pressure in both eyes. The right eye is blind due to absolute glaucoma. By admission, visual acuity in the left eye was 1,0 and the intraocular pressure was 27 mm Hg on three active substances. In the past the left eye underwent multiple procedures: phacoemulsification, trabeculectomy and XEN implantation. No target pressure was achieved. After the thorough assessment and examination, patient had been qualified to the microinvasive glaucoma surgery- implantation of Preserflo Ab- Externo Microshunt in the left eye.

Results: The surgical procedure was performed without complications, obtaining the lowering and stabilization of intraocular pressure without any antiglaucoma drugs. The visual acuity in the right eye, while discharged from the hospital, was 0,9. The intraocular pressure in the left eye was stabilized and amounted to 12 mmHg. During the 1 year observation period the IOP was stable.

Conclusion: PreserFlo Microshunt seems to be a good therapeutic option, also in monocular patient because of good safety profile. The applied treatment enabled to stabilize the intraocular pressure and retain the visual acuity in the only eye.

P16
Analysing the 5 year safety and efficacy of viscocanalostomies

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Aim: To assess the effectiveness and safety of viscocanalostomies and phaco-viscocanalostomies in eyes with five-year follow-up.

Methods: Review of an electronic database of patients who have undergone viscocanalostomies and phaco-viscocanalostomies between 2012 and 2015 in the H. M. Stanley Eye Unit, Abergele. Patients were included if they had a full 5-year follow-up or required redo surgery in the 5 year period. Definition of success was IOP < 21 mmHg initially with subanalysis using IOP < 16 mmHg, IOP reduction > 20% and IOP reduction > 30%.

Results: Three hundred and seventy eyes were included in this study. Preoperative IOP was 23 mmHg ± 5.3 mmHg with an average of 3.0 ± 0.97 medications. By year 5 this was reduced to 14.3 mmHg ± 6.5 mmHg with a mean of 0.9 medications. 47.8% of eyes had an IOP of < 21 mmHg by year 5 without medication with a further 44.8% of eyes reaching this target with medication. The main complication in this group was perforation of the Trabeculo-Descemet's Window (TDW) but this wasn't associated with a poorer outcome. Excluding perforation of TDW, there were only 14 intraoperative complications.

Conclusion: This large data set of eyes undergoing viscocanalostomies demonstrates the effectiveness and safety of this technique over 5 years.

P17
Primary implantation of glaucoma drainage device in secondary glaucoma: comparison of non-valved vs. valved device

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Purpose: To investigate the comparative efficacy and safety of non-valved Aurolab Aqueous Drainage Implant (AADI) and the valved device Ahmed Glaucoma Valve (AGV) when implanted in filtration-surgery-naïve secondary glaucoma eyes

Methods: Retrospective review of consecutive patients with secondary refractive glaucoma requiring surgery to control the disease, who underwent primary glaucoma drainage device (GDD) procedure, either AADI or AGV. All eyes which received prior filtration surgery were excluded. Primary outcome measure was intraocular pressure (IOP). Secondary outcome measures were best-corrected visual acuity (BCVA), number of antiglaucoma medications (AGMs), complications, failure.

Results: A total of 126 eyes of 119 subjects who underwent primary GDD; 59 eyes underwent AADI, and 67 eyes underwent AGV. Mean age ($p = 0.689$) preoperative IOP($p = 0.139$), AGM($p = 0.542$), and BCVA($p = 0.368$) did not differ between the groups. Mean follow-up was 20.3 ± 12.9 months in the AADI group and 19.9 ± 18.2 months in the AGV group. Post-operatively at last follow-up, IOP ($p = 0.005$) and AGM ($p < 0.001$) was significantly reduced in the AADI group when compared to AGV, along with reduced rate of failure ($p = 0.047$). LogMAR BCVA improved in both groups, significantly so in the AGV group ($p = 0.023$) but not so in the AADI group. Complication rates were comparable. None of the eyes lost light perception, except 1 eye with neovascular glaucoma in the AGV group (due to endophthalmitis).

Conclusions: Both procedures were effective in reducing IOP and need for AGM but it was significantly lower in AADI including rate of failure and this affordable GDD could have a tremendous impact in low-to-middle income countries.

P18
Changes to glaucoma surgery patterns during the COVID-19 pandemic:a shift toward less invasive procedures

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Purpose: To compare the quantity, type of anti-glaucoma surgeries, and the disease stage before and during the coronavirus disease pandemic.

Methods: This was a retrospective, single-center consecutive case series audit that included medical records of patients who underwent glaucoma surgery at the University Hospital in Białystok between September 4, 2018, and March 3, 2020 (pre-pandemic group) and compared with those of glaucoma patients treated between March 4, 2020, and September 4, 2021 (pandemic group). Adult patients with primary or secondary open-angle or closed-angle glaucoma who underwent anti-glaucoma surgery were included in this study. Finally, 534 operated eyes (362 and 172 eyes operated on before and during the pandemic, respectively) were examined.

Results: The number of anti-glaucoma surgeries was halved during the pandemic compared to a similar pre-pandemic period, with a significant difference in the kind of procedure between the two groups ($p < 0.001$). The most common procedures in the pre-pandemic group were Ex-Press implantation (33.7%) and trabeculectomy (31.5%). Within the pandemic group, half of the eyes underwent trabeculectomy (50.0%), followed by Preserflo microshunt (11.6%), iStent (8.7%) and transcleral cyclophotocoagulation (TSCP), (8.7%). A significant difference in the average IOPs was revealed among patients who qualified for surgery 22.21 ± 7.83 mmHg in the pre-pandemic group and 25.16 ± 9.48 mmHg in the pandemic group; $p < 0.001$).

Conclusion: The COVID-19 pandemic is associated with a decrease in the number of extended procedures and an increase in the number of short procedures performed, such as TSCP and MIGS.

P19
Bilateral angle-closure glaucoma related to vena cava superior syndrome

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Purpose: Case report of bilateral, simultaneous, long-lasting primary angle closure glaucoma (PACG) caused by superior vena cava syndrome (SVCS). Discussion of the possible underlying mechanism. In SVCS venous return of the upper body to the heart is inhibited, the increased venous pressure in the upper body can cause massive edema of the head, upper extremities. Still, ocular manifestations of SVCS are not common.

Methods: A 57-year-old woman came for examination because of blurred vision for 4 months, diagnosed with SVCS due to mediastinal metastatic lung cancer at the same time as the onset of symptoms. Examination findings revealed bilateral PACG, with severe visual impairment on the right eye and no light perception on left eye.

Results: On the right eye the remnant visual acuity was preserved by cataract extraction, goniosynechialysis. For the left eye laser iridotomy and conservative therapy were applied to prevent pain. Anterior segment parameters were evaluated: anterior chamber depth(ACD), anterior chamber angle(ACA500), scleral spur angle(SSA), angle opening distance(AOD500), trabecular iris area(TISA500), all significantly increased. Parameters stayed stable for three months during the treatment of the underlying disease.

Conclusion: SCVS may pose the risk of PACG, recognition of early signs are key to prevent severe visual loss. To the best of our knowledge, this is the first mention of bilateral PACG in the background with SCVS.

P20
Encouraging results at one year for a modified non penetrating deep sclerectomy: our experience with 7 changes on the standard procedure

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Follow-up outcomes at 1 year of a modified non penetrating deep sclerectomy (NPDS).

Methods: 80 eyes of 69 patients affected with primary or secondary open angle glaucoma underwent NPDS were collected in our glaucoma center in a retrospective study. We have introduced 7 changes to the standard procedure of NPDS: 1) an amount of 0.04 mg of Mitomycin C was injected in the sub-conjunctival space, 2) a conjunctival flange was kept attached to the limbus while dissecting conjunctiva flap, 3) no relaxing or lateral conjunctival incisions were added, 4) no cauterization has been used, only scarification the sclera, 5) inner trabeculotomies were performed to enhance outflow of aqueous humor, 6) a "V" design suture of the scleral flap was made to maintain space between the scleral flap and the scleral bed, 7) steroids were injected in the bleb itself. The post-operative follow-up data has been collected at D1, D7, D15, M1, M3, M6, 1Y.

Results: Mean age was 61.175 ± 13.,67 years. Mean IOP has dropped from 23.41 ± 9.49 mmHg at baseline to 12.69 ± 5.07 at 12 months. Mean antiglaucoma medications was reduced from 2.49 ± 1,10 at baseline to 0.89 ± 0.98 at one year. The rate of goniopuncture was 20%. Few complications were reported.
The complete success rate was achieved in 81.25% of the patients at one year.

Conclusion: these 7 changes on a standard NPDS technique appears to be as efficient as trabeculectomy, and safe as well.

P21
Subconjunctival 5-fluorouracil 50 mg/mL vs mitomycin-C 0.04 mg/mL in bleb rescue: a retrospective comparative study

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Purpose: To evaluate the success of subconjunctival 5-fluorouracil (5-FU) versus mitomycin C (MMC) in bleb rescue after trabeculectomy surgery in glaucoma patients.

Methods: We conducted a 3-year retrospective study from January 2016 to February 2019, reviewing patient medical records of all patients submitted to subconjunctival antifibrotic injection and evaluated the success of the procedure over time. Absolute success was defined as ≥ 20% IOP reduction and IOP < 21 mmHg without medication, qualified success was defined as > 20% IOP reduction and IOP < 21 mmHg with medication and failure as ≤ 20% IOP reduction and/or IOP ≥ 21 mmHg. MMC and 5FU were compared regarding the need for further injections and surgical/laser reintervention. Eyes with < 6 months of follow-up period were excluded.

Results: 53 eyes were submitted to subconjunctival injection due to failing filtering blebs post trabeculectomy (34 5-FU injection and 19 MMC injection). Success rate was 82.4% in the 5-FU group and 89.5% in the MMC group (p = 0.013) after 3 months, 79.4% in the 5-FU group and 100% in the MMC group (p = 0.027) after 6 months and 84.8% in the 5-FU group and 100% in the MMC group after 1 year (p = 0.094).

Conclusion: Subconjunctival MMC seems to be more effective than 5FU, decreasing the re-intervention probability.

P22
Hemi-gonioscopy-assisted transluminal trabeculotomy outcomes in patients with open angle glaucoma

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Purpose: To examine the efficacy and safety of hemi-gonioscopy-assisted transluminal trabeculotomy (Hemi GATT) in patients with open angle glaucoma.

Participants and Methods: A retrospective study included 28 eyes of 28 patients who underwent hemi-GATT to treat open-angle glaucoma. Preoperative intraocular pressure (IOP), best-corrected visual acuity (BCVA) compared with final IOP, medication numbers, and BCVA levels. Success was defined as IOP reduction > 20% from baseline or IOP between 5 to 21 mm Hg, and no need for further glaucoma surgery. When success criteria were not met for any postoperative visit > 3 months after surgery, failure was determined.

Results: Mean follow-up time was 18.4 ± 6.5 months and mean age was 66.3 ± 7.2. Mean IOP was 28.3 ± 7.9 mm Hg preoperatively and 13.8 ± 5.1 mm Hg at last visit ($p < 0.001$). Mean number of medications decreased from 3.2 ± 1.3 preoperatively to 2.1 ± 0.7 at last visit ($p < 0.001$). The cumulative success probability of hemi GATT was 83%.

Conclusions: Hemi GATT have good efficacy and safety outcomes in lowering IOP and need of medication in patients with open angle glaucoma.

P23
Glaucoma filtering surgery follow up OCT assisted

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Background: To evaluate filtering bleb reflectivity after glaucoma surgery with anterior segment OCT and to find relationship between OCT patterns and surgical success.

Methods: 46 eyes of 39 patients who underwent glaucoma filtering surgery. All patients had Mitomicine C intraoperative (0.2-0.3 mg/ml for 2-3 min). Follow up minimum 1 day, maximum 48 months.

Results: Filtering blebs (IOP < 21 mmHg without ipotensive drugs) where 36, non filtering blebs 10. In the first of two groups, we found a diffuse hyporeflectivity of OCT images in 27 cases. In the non filtering bleb group we had 8 hyperreflective blebs and only 2 hyporeflective. In all subjects with a intraocular pressure under 6 mmHg in the first post operative week OCT showed a peripheral choroidal effusion undetectable in ecotomograpgy of ophthalmoscopy, with a mild ciliary body detachment.

Conclusions: Glaucoma filtering surgery, involves anterior segment structures and ocular surface in different times and in different ways, starting from the first hours after surgery until several decades. The bleb area is the real field of challenge of glaucoma surgeon where to decide the success or failure of surgery. Anterior Segment OCT gave a very important contribution in detection of acqueous humor pathway allowing the study of tissue remodeling after surgery with a new no contact tool.

P24
ExPress Shunt in angel closure glaucoma. Modified technique

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Purpose: To evaluate the effeciency of adjunctive automated peripheral iredectomy with phacoemulsification for combined management of cataract and chronic angel closure glaucoma

Methods: This prospective study included 22 eyes of 22 patients with chronic angle closure glaucoma with cataract who underwent Ex-PRESS implantation, cataract surgery and surgical peripheral iridectomy. After phacoemulsification and IOL implantation, a peripheral iridectomy was done at the site of Ex-Press shunt implantation using 23-gauge vitrectomy cutter of the phacoemulsification machine (Centurion). (cutting rate 100 cpm and vacuum of 300 mmHg was used) this aimed to create more roomy space in the anterior chamber avoiding iris touch and blogging the inner opening of the Ex-Press shunt

Results: After surgery, the mean IOP was 11.3 ± 1.2 mmHg, 14.5 ± 1.6 mmHg, 14.8 ± 2.1 mmHg, 15.3 ± 1.9 mmHg and 17.4 ± 1.8 mmHg at 7 days, 1 month, 3 months, 6 months and 12 months respectively. All postoperative IOP was significantly lower compared with preoperative IOP ($p = 0.001$). There was a significant decrease in the number of medications required after surgery. The baseline mean number of medications 3.4 ± 0.02 (range from 1 to 4), while post-operatively the mean number of medications decreased to 0.7 ± 0.01 at 12 months ($p < 0.01$).

Conclusion: Combined phacoemulsification amd automated peripheral iridectomy allow the expaqnsion of the indications of ExPress shunt to be implanted in cases of angel closure glaucoma with better safety profile than the standerd trabeculectomy in these cases.

P25
One year outcomes with the PAUL glaucoma drainage implant

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Purpose: To report efficacy and safety of the PAUL glaucoma drainage implant (PGI; Advanced Ophthalmic Innovations, Singapore, Republic of Singapore) for patients with uncontrolled glaucoma after one year of follow-up.

Methods: Consecutive PGI implantations at the University Eye Clinic Maastricht between March 2020 and May 2021 were studied prospectively. Follow-up took place at day one, week one and one, three, six and twelve months postoperatively. Primary outcomes were intraocular pressure (IOP) and the number of IOP-lowering medications. Secondary outcome measures such as visual acuity, reoperation rates and safety were also evaluated.

Results: Fifty-two eyes of 49 patients were included in the analysis. The majority had advanced (34%) or severe glaucoma (38%) based on visual field examination. Diagnoses included primary open angle glaucoma (48%), uveitic glaucoma (17%), secondary glaucoma (13%), pseudoexfoliation glaucoma (8%), and pigment dispersion glaucoma (8%). Twenty-one percent underwent previous filtration surgery and 67% of eyes were pseudophakic. At baseline, mean ± SD IOP was 23.5 ± 8.7 mmHg with 3.3 ± 1.2 IOP-lowering medications. Preliminary results showed a reduction of mean IOP to 12.4 ± 3.7 mmHg and 10.6 ± 3.0 mmHg at 6 (n = 45) and 12 (n = 24) months postoperatively, respectively. IOP-lowering medication use decreased to 1.5 ± 1.2 at 6 months and 1.5 ± 1.1 medications at 12 months after surgery.

Conclusion: PGI implantation is effective in lowering IOP and reducing the number of IOP-lowering medications after one year.

P26
Identification of risk factors affecting the rate of progression and course of primary open-angle glaucoma in patients at various stages of the disease

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Purpose: To identify risk factors and characteristics of their relationship that determine the prognosis of POAG.

Methods: The final protocol included the results of dynamic observation of 293 patients (293 eyes), with different stages of POAG. The study included indicators and characteristics of age, anamnesis, stages of the disease, intraocular pressure (IOP)-level, medicines, as well as the presence of concomitant diseases and other (social) factors (23 factors in total), which might be potential causes of POAG refractoriness. All patients were divided into 2 groups ("non-refractory" and "refractory" glaucoma), including 6 subgroups.

Results: The IOP-level at the time of POAG verification was higher in the "refractory" glaucoma group, as well as in patients with moderate, advanced and late glaucoma than in those with early stage. During the final examination the IOP-level in the "refractory" glaucoma subgroups was higher than in the patients in the "non-refractory" glaucoma group. The most common risk factors were: pseudoexfoliative syndrome (PES) -53.5%, pigment dispersion syndromes (PDS) - 16.7% and "dry eye" syndrome (DES) - 38.6 %, coronary heart diseases (CHD) - 40.3%, smoking - 16.0% and disability for general diseases - 12.6%. The frequency of the above-mentioned factors was higher in the "refractory" glaucoma group.

Conclusion: It was found that the IOP-level directly and strong correlates with the stage of the newly diagnosed disease and the IOP-level during the treatment, and also determines the refractoriness of the disease in the future. PES, PDS, DES, CHD and disability due to concomitant diseases are additional provocative agents that affect the refractoriness of POAG.

P27
Clinical outcomes of micropulse transscleral cyclophotocoagulation: 2 years of experience in a portuguese hospital

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Purpose: This study evaluates the safety and efficacy of micropulse transscleral cyclophotocoagulation (MPTSCPC) in glaucoma patients, with standard parameters, over a 24-month period.

Methods: Retrospective analysis of 61 eyes undergoing MPTSCPC from January 2018 to December 2020 was carried out. Patients received 160 seconds of laser, with settings of 2000 mW/cm^2 and a duty cycle of 31.3%.

Results: A total of 61 eyes were included, arranged in an age distribution of 73.9 ± 10.8 years. The most common diagnosis was primary open angle glaucoma, with a mean best-corrected visual acuity of 5/10 in Snellen Visual Chart. 37.7% of the eyes had undergone at least one glaucoma filtration surgery prior to MPTSCPC. Mean pre-treatment intraocular pressure (IOP) was 24.9 ± 8.6 mmHg. At every follow-up visit, there was a statistically significant reduction ($p < 0.05$) in IOP and in the number of

topical drugs required to control IOP, from 4 (baseline) to 3, with oral acetazolamide suspension in most cases. Total success rate (absolute and clinical successes combined) was 81.9% after one year of the treatment. There was no drop in the visual acuity or cases of serious complications.

Conclusion: MPTSCPC is an effective and safe procedure in reducing IOP within a broad spectrum of glaucoma patients. Further work is needed to confirm the current indications, to widen their scope and to determine the optimal treatment settings in an individual basis.

P28
To trab or to tube?

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Glaucoma surgery is indicated when medical therapy and appropriate laser treatment fail to secure adequate intraocular pressure reduction. MIGS are known for their excellent safety profile, but they haven't replaced the traditional glaucoma surgeries—trabeculectomy and tube shunt implantation
Trabeculectomy has remained the most popular option as an initial procedure for eyes with POAG, but a growing number of glaucoma surgeons prefer the use of tube shunts as an initial glaucoma procedure as well. No clear consensus among glaucoma specialists regarding the preferred surgical approach for managing glaucoma in eyes that require sustained IOP in low teens. Your choice of tube or trabeculectomy may ultimately come down to safety vs. efficacy.
There seems to be an inevitable tradeoff between safety and efficacy in glaucoma surgery. Some factors that affect the decision on which procedure to go for include surgeon skills, dedication for follow up, availability of tube shunts, type of glaucoma as well as the stage of glaucoma.

P29
A blast from the past: a surprising cause of hypotony in a patient suffering from Marfan syndrome

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Purpose: Marfan syndrome is a multi-systemic genetic connective tissue disease which may involve ocular structures. We aim to present a rare surgical complication leading to ocular hypotony in a Marfan patient.

Methods: A case report, including variable imaging modalities and surgical footage.

Results: A 42-year-old male suffering from Marfan syndrome, with a prior ocular history of bilateral aphakia due to lensectomy at childhood, a right eye (RE) idiopathic panuveitis and posterior scleritis 8 years ago and a RE retinal detachment treated by scleral buckling and posterior vitrectomy 7 years ago, was referred to our hospital due to RE pain and blurry vision. On examination, he was found with ocular hypotony of 0 mmHg, accompanied by associated maculopathy and a decrease in visual acuity from 6/8.5 at baseline to finger counting. Both anterior segment optical coherence tomography (AS-OCT) and ultrasound biomicroscopy excluded a cyclodialysis cleft. After 5 months without improvement, he developed a spontaneous inferotemporal bleb. A targeted raster AS-OCT of that area raised suspicion of a scleral tract at the trocar entry site of the vitrectomy preformed 7 years prior. During surgical exploration, the tract was confirmed, while demonstrating active leakage. The tract was sutured using 9-0 Vycril. Post-operatively, the hypotony resolved, along with improvement in the maculopathy and visual acuity.

Conclusion: Leakage from surgical wound sites must be considered as a plausible etiology of hypotony even many years after surgery. A high index of suspicion must be maintained in patients with predispositions to difficult wound healing, such as Marfan syndrome.

P30
The impact of minimally invasive glaucoma surgery on ocular surface and quality of life of patients with glaucoma

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Purpose: To explore the impact of minimally invasive glaucoma surgery (MIGS), on patient-reported outcomes and clinical parameters related to ocular surface disease in people with glaucoma.

Methods: A prospective cohort study. Fifty-seven patients were examined prior to undergoing iStent combined with phacoemulsification with or without adjunctive endocyclophotocoagulation and at 4-month follow-up. Clinical criteria to list patients for combined cataract surgery and iStent were: treated (on topical medication or previous selective laser trabeculoplasty) ocular hypertension or mild glaucoma patients, with visually significant cataracts. Endoscopic cyclophotocoagulation was added for those with moderate glaucoma or when further IOP reduction was deemed clinically necessary. All participants attended a baseline study visit 2-4 weeks prior to surgery and another one 4 months after. They completed four different Patient-Reported Outcome Measures, which were performed by the same investigator, pre and post operatively and had clinical measurements performed, including ocular surface parameters.

Results: At follow-up, on average patients returned with statistically significant improved scores on glaucoma-specific (GQL-15, $p \leq 0.001$; GSS, $p \leq 0.001$), general health (EQ5D, $p = 0.02$) and ocular surface PROMs (OSDI, $p = 0.001$). Patients were using fewer eye drops on average after MIGS compared to before surgery (1.1 ± 0.9 versus 1.8 ± 0.8; $p \leq 0.001$). Undergoing

MIGS was associated with improved tear film break-up time ($p \leq 0.001$) and reduced corneal fluorescein staining ($p \leq 0.001$).

Conclusion: The current study provides evidence to support improved patient-reported outcomes and ocular surface parameters following MIGS. Glaucoma patients undergoing MIGS also benefit from reduced medication reliance and improved IOP control.

P31
Retrobulbar tube shunt: A2B efficacy in primary congenital glaucoma

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Purpose: The purpose of this study is to examine the efficacy of the blebless A2B (anterior to back) retrobulbar tube shunt (see Graefe's 2020: https://doi.org/10.1007/s00417-020-05006-x) in lowering intraocular pressure (IOP) among eyes with primary congenital glaucoma (PCG) following failure of other medical and surgical IOP-lowering therapies.

Methods: Prospective study, single-site, nonrandomized. Patients with PCG refractory to prior surgical treatment underwent A2B-shunt implantation, a procedure requiring minimal dissection as there is no plate involved for implantation. Each patient's IOP and medication requirements were compared to preoperative baseline values for 6mo postoperatively using paired t-tests.

Results: 7 eyes of 7 patients (mean age 8.4 ± 1.2) were followed for 6mo. Mean IOP (mmHg ± SEM) improved from baseline 36.6 ± 3.3 to 19.4 ± 3.6 (-47%; Δ-17.2; $p < 0.01$) at 6mo. Mean number of glaucoma medications (±SEM) at 1, 3, & 6mo decreased from baseline 2.7±0.6 to 0.0, 0.3 & 0.4, ($p = 0.002$, 0.005, and 0.03) respectively. Complete (no meds < 21 mmHg) and qualified success (any meds < 2 1mmHg) rates at 6 months were 60.0% and 80.0% respectively.

Conclusions: The retrobulbar tube shunt was an effective rescue surgery in a high proportion of these PCG patients for whom prior standard tube shunt surgeries had failed.

P32
Comparison of UBM, OCT, and ArcScan Insight100

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Purpose: To perform comparative clinical evaluation of the efficacy of the ArcScan Insight100, an imaging system allowing simultaneous transverse longitudinal visualization of the anterior and intermediate segments of the eye, versus standard ultrasound biomicroscopy (UBM) and optical coherence tomography (OCT).
Methods: Pre- and post-operative images were taken of select patients to visualize the anterior chamber and intermediate segment using UBM, OCT, and ArcScan. Average imaging times were recorded and compared. The time required, image quality, and anatomic range of imaging techniques were compared.

Results: UBM imaging sessions averaged ~20 min, including setup and downloading images, providing detailed dynamic focal information in all 12 meridians, but were unable to provide a continuous montage of relevant structures, only a disjunct collage of still images. UBM requires contact and compression of the globe that may distort internal anatomy. OCT sessions averaged ~15 min with very high image quality of angle structures, but were of no use for imaging the intermediate segment. ArcScan sessions averaged ~12min, producing high resolution images of all relevant structures, but limited to 8 lateral and medial meridians.

Conclusions: ArcScan provided high-resolution panoramic images of the AC, CB, and anterior choroid without globe distortion. Such integrated high-resolution imagery is of significant value in surgical planning and postoperative monitoring, especially in patients with narrow angles, ocular trauma, cyclodialysis, supraciliary effusion, or anterior choroidal detachment associated with hypotony.

P33
Equivalence of Olleyes virtual reality perimetry platform to Humphrey 24-2 visual field

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Purpose: Visual field studies play a critical role in the diagnosis and monitoring of glaucoma patients. The purpose of this study is to determine parity between Humphrey Visual Field (HVF) perimetry and the Olleyes virtual reality platform (VRP).

Methods: Patients with stable, long-term HVF visual fields (horizontal dots for ≥ 5 consecutive visits on progression analysis) with normal, mild, moderate, and severe visual field loss were tested twice with VRP using proprietary software, the second of which was used for point-by-point comparison with the last available HVF.

Results: The prospective study analyzed 41 eyes of 22 people (19 binocular, 3 monocular), 9 normal, 9 mild, 10 moderate, & 13 severe. Linear correlations between HVF and VFP for glaucomatous eyes were:(y intercept (dB)/slope/R): Mild (1.4/1.1/0.64), Moderate (+1.6/0.9/0.67), Severe (+0.6/0.5/0.44).

Conclusion: Parity between the VRP and HVF was remarkably strong for mild and moderate glaucoma. Given its ease of use, space efficiency, and low cost, the VRP presents a viable alternative.

VIDEOS

V1
How hi tech can help us in early and late complications of glaucoma filtering surgery

Massimo Savastano
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This is a video made with a sequence of short clips or images captured with a slit lamp camera or hi-tech OCT examinations of different scenarios after glaucoma filtering surgery. We will appreciate slit lamp needling procedures, the aqueous humor floating in the anterior chamber to enter a tube, a direct intracameral bleeding after massage in the early post-operative follow-up, a visualization of the sweating bleb several years after surgery or "intrableb sailing" with a 3D reconstruction with an anterior segment OCT and more.....

V2
PAUL glaucoma tube erosion repair

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The PAUL glaucoma implant (PGI) is a new device used to control intraocular pressure. It was designed to reduce post-operative complications seen with current existent tubes. It is a non-valved glaucoma drainage device made of implantable medical-grade silicone with an external tube diameter of 467 mm and internal diameter of 127 mm whilst having a large surface area endplate for aqueous absorption of 342 mm2. Potential complications of glaucoma drainage devices surgery include immediate or late-onset hypotony, motility disturbances, corneal decompensation, or tube erosion. Although most frequently observed with large diameters drainage devices, tube erosion may happen with PGI. Risk factors for tube erosion may be represented by too anterior or temporal insertion, eye rubbing or pre-existing ocular surface disease such as neurotrophic cornea, meibomian gland dysfunction, frequent use of preserved eyedrops or topical steroid.
Our video displays a case of PAUL Glaucoma Implant tube erosion repaired by resitting of the tube, plugging of previous insertion site and conjunctival advancement. We present a technique that addresses all the enumerated causes which might have contributed to the exposure in the first instance in this case: insertion location, plugging the previous 3-step scleral tunnel with triangular tutoplast donor and securing a watertight closure with healthy conjunctiva.

V3
How hi tech can help us in glaucoma filtering surgery complications management

Massimo Savastano
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This is a video made with a sequence of short clips or images captured with a slit lamp camera or hi-tech OCT examinations of different scenarios after glaucoma filtering surgery. We will appreciate slit lamp needling procedures, the aqueous humor floating in the anterior chamber to enter a tube, a direct intracameral bleeding after massage in the early post-operative follow-up, a visualization of the sweating bleb several years after surgery or "intrableb sailing" with a 3D reconstruction with an anterior segment OCT and more.....

Anterior segment surgery:
over 3500 surgeries of cataract facoemulsification as first surgeon, over 250 surgeries as first surgeon of penetrating filter surgery in glaucoma. Posterior segment surgery: over 1000 surgeries as second surgeon of both ab externo and internal vitreoretinal surgery. Lacrimal pathways surgery (endoscopy, dacryocystorinostomy ab externo). Trabeculoplastic laser, iridoplastic laser, laser retina, irididotomy Nd:YAG laser, capsulotomy Nd:YAG laser. Ultrasound diagnostics, oct of the anterior and posterior segment, computerized perimetry, digital retinal fluorangiography, corneal topography.

V4
Phaco-ELT: surgical technique and results

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Excimer laser trabeculostomy (ELT) is a laser-based MIGS technique, commonly associated with cataract surgery for ocular hypertension or mild glaucoma. This video shows the standard surgical technique and the results obtained from 20 patients over a 6-month of follow-up.
The mean number of hypotensive medications changed from 1.47 before surgery to 0.36 6 months after phacoemulsification and ELT. There were no complications related to the treatment, except for one case of mild hyphema in the first post operative week, related to oral antiplatelet medication.

V5
Eyewatch implantation after radial keratotomy

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Purpose: Management of myopic glaucoma patients with radial keratotomy is challenging. Conventional filtering surgery can be thorny. Eyewatch is an adjustable glaucoma tube shunt and its implantation preserves corneal architecture with well-controlled intraocular pressure postoperatively.

Methods: This is a case of a myopic patient with radial keratotomy suffering from severe pseudoexfoliative glaucoma and not responding to medical treatment.
Under locoregional anesthesia, fornix-based conjunctival opening is performed in upper temporal quadrant. Then lateral rectus and superior rectus muscles are located before fixation of Eyeplate at twelve millimeters from corneal limbus. The next step is the creation of a scleral pocket and introduction of Eyewatch through the trabeculum, avoiding radial keratotomy

axis. After connection between Eyewatch and Eyeplate, pericard patch is sutured over the device and conjunctiva as well.

Results: One week postoperatively, visual acuity is 20/20 and intraocular pressure is 11 mmHg. Thanks to the shape of the Eyewatch, there is no corneal contact and no leak. Because mitomycin is not mandatory in this situation, there is no corneal toxicity neither. Moreover, fornix-based approach avoids astigmatism and corneal remodeling.

Conclusion: Eyewatch seems to be a promising device which provides safety and good results for glaucoma patients with radial keratotomy. Adjustment of the opening of the Eyewatch using magnet is innovative and useful to limit hypotonia postoperatively, particularly in myopic eyes.