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SCIENTIFIC PRESENTATIONS AND POSTERS

ESCRS *Virtual congress*

József Győry
MD

Evaluation of refractive and visual outcomes, as well as astigmatism-correcting efficiency and rotational stability of a double-loop haptic toric intraocular lens: a one year follow-up

FREE PAPER DETAILS

· First Author: J. Győry, HUNGARY
· Co-Authors: –

ABSTRACT DETAILS

Purpose:
To evaluate the clinical outcome at 5 years after implantation of a multifocal intraocular lens Liberty 677MY considering visual outcomes and patients' satisfaction.

Setting:
Department of Ophthalmology, Csolnoky Ferenc University Hospital, Veszprém, Hungary

Methods:
Patients were implanted bilaterally with diffractive trifocal IOL-Liberty 677MY (Medicontur). Out of 50 patients 41 patients completed a 5-years postoperative visit where clinical and patient reported parameters were recorded. Because of various pathological conditions four patients were excluded from the data analysis. Standard visual acuity measurements were performed and monocular and binocular defocus curves were taken, contrast sensitivity (CS) was assessed by CSV-1000 in mesopic, photopic an backlight condition. The quality of vision was assessed using the VFQ-25 questionnaire.

Results:
Visual acuities for distance, intermediate and near vision, and defocus curves clearly demonstrated the stability of the trifocal performance which was comparable to the values recorded 2 years postoperatively. For 94 % of the eyes the postoperative refractions were close to plano, between -0.5 and +0.5 D. Except three patients with occasional spectacle dependence for distance or intermediate, the others achieved spectacle independence at all distances. Mean CS values for all spatial frequencies and light conditions were similar to the values recorded at one and two years postoperatively, and were in the upper third range of the age-matched normal values.

Conclusions:
Our data, based on prospective, long term (five years) follow-up clinical study, provides evidence regarding the refractive stability and trifocal performance of Liberty 677MY. The lens confers good contrast sensitivity and maintains CS in the range considered physiologic for elderly people. Spectacle independency was achieved at most of the patients, dysphotopic phenomena were rarely reported and easy to tolerate.

Financial Disclosure:
... receives consulting fees, retainer, or contract payments from a competing company, ... travel has been funded, fully or partially, by a competing company, ... research is funded, fully or partially, by a competing company

Prof.
Zoltán Zsolt Nagy
MD, DSc

Comparison of refractive stability and long-term visual outcome with two different presbyopia-correcting IOLs: the imapct of lens design

FREE PAPER DETAILS

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· Co-Authors: H. Kiss, É. Juhász G. Sándor K. Kránitz Á. Dunai

ABSTRACT DETAILS

Purpose:
To test the visual performance of two multifocal IOLs with different materials and designs, and to assess the long-term stability of refractive and visual outcomes.

Setting:
Department of Ophthalmology, Faculty of Medicine, Semmelweis University, Budapest, Hungary.

Methods:
In this prospective, comparative study including 100 eyes of 50 cataract patients, bilateral implantation of either the hydrophilic trifocal Liberty® 677MY capsular bag IOL by Medicontur Ltd with double C-loop haptics or the hydrophobic AcrySof® IQ ReSTOR® SN6AD1 lens (Alcon Inc.) with modified L- haptics was performed during routine cataract surgery. Refractive outcomes, visual acuities for far, intermediate and near distances, and defocus curves were assessed throughout a two-year follow-up period. The results of the two lenses were not only compared to each other, but possible changes in the visual performance of the same lens over time were also evaluated.

Results:
Superior visual and refractive outcomes could be observed in the Liberty® group compared to the AcrySof group during the two-year follow-up. Results confirmed long-term stability in the case of the Liberty lens, while a refractive shift towards negative values could be observed with the AcrySof IOL. Defocus curve evaluations support these findings: while the curves of the Liberty lens are stable over time ($p=0.5119$), the defocus curves of the AcrySof eyes show a significant decrease between the 6th and 12th postoperative months ($p<0.0001$).

Conclusions:
Our work has highlighted that it is not enough to compare the visual and refractive outcomes of different multifocal IOLs at a particular follow-up visit, as although the outcomes with different lenses might seem comparable, results are not guaranteed to be stable in the long term. The design of presbyopia-correcting lenses seems to have major impact on the long-term stability of surgical results. The findings of our present investigation suggest that the Medicontur Liberty lens is a reliable choice also in the long-term.

Financial Disclosure:
None

Joaquín Fernández Pérez
MD, PhD

Combining questionnaires and simulators for assessing Dysphotopsia: pilot design of a new app

FREE PAPER DETAILS

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· Co-Authors: M. Rodríguez-Vallejo, N. Burguera, N. Garzón, E. Ordiñaga-Monreal C. Albarrán, I. Basterra

ABSTRACT DETAILS

Purpose:
To review the scientific literature from 1985 up to 2020 about Dysphotopsia for designing a new iPad application considering the domains usually included in the questionnaires used by Multifocal Intraocular Lens (MIOLs) studies and to combine a new set of questions with a simulator of some photic phenomena (PP) around an oncoming car headlight. Five domains were included: halo, glare, starburst, other short time PP and negative dysphotopsia.

Setting:
Qvision, Ophthalmology Department Vithas Virgen del Mar Hospital

Methods:
Three stages were included: (1) yes/not experiencing the PP using a static image for improving comprehension (2) grading with a simulator the size, intensity and width for halo and the first two for glare and starburst (3) judging how bothersome was the PP, evaluated with a five-level Likert scale. A simulated combined image for subjects who experienced more than one PP was also used and subjects were asked about how similar was to their real experience and how bothersome was the combination. 26 subjects implanted with MIOLs and 26 controls were evaluated.

Results:
Only halo obtained significant differences between control (46.2%) and MIOL (88.5%) for yes/not experiencing the PP (p=0.001). No differences were obtained for bothersome between subjects who experimented any PP between groups. For the simulator parameters, only Intensity for Halo and Glare was significantly different between control (0.59 and 0.52) and MIOL (0.73 and 0.74). The simulator combined image was graded as moderately or very similar to the real experience for 62% of controls and 59% of MIOLs. Intensity for each one of the PP was the parameter with the highest statistical power, the remaining parameters of the simulator had very low power.

Conclusions:
Controls also reported experimenting Halo, Glare and Starburst and the only difference with MIOLs was the rates of experiencing the Halo that doubled the control cases. For subjects who experimented any PP in the control group, this was as bothersome and equally graded by the simulator than in MIOLs with exception of intensity which was higher in the MIOLs group. This corresponds to a pilot study conducted during the design of the App, an improvement of design is required according to the current evidence before to start the validation process with higher sample sizes.

Financial Disclosure:
None

Guadalupe Cervantes-Coste
MD

Refractive and visual outcomes after the implantation of a presbyopia correcting trifocal intraocular lens with optics based on elevated phase shift technology

FREE PAPER DETAILS

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ABSTRACT DETAILS

Purpose:
Refractive and visual outcomes after the implantation of a presbyopia-correcting trifocal intraocular lens with optics based on elevated phase shift technology

Setting:
Association to Avoid Blindness in Mexico (Asociación Para Evitar la Ceguera en México - APEC) Hospital, Mexico

Methods:
During our prospective non-comparative study we aimed to gain initial experiences with the Liberty presbyopia-correcting IOL. Pre- and postoperative refractive and visual outcome data from 31 eyes (18 patients) were included in the analyses. Only subjects with a preoperative cylindric refraction of not more than 1.00 D were evaluated. Uncorrected and best-corrected distance (UDVA, CDVA), uncorrected intermediate (67 cm, UIVA) and uncorrected near (40 cm, UNVA) visual acuities were measured preoperatively, then one and three months postoperatively. Subjective refractions were documented in each case. Dysphotopic events and spectacle usage habits were registered postoperatively.

Results:
A significant improvement of visual acuities could be observed for all distances (<0.0001). UDVA improved from the preoperative 0.58 ± 0.43 D (mean ± SD; logMAR) to 0.16 ± 0.14 D; UIVA improved from 0.68 ± 0.13 D to 0.05 ± 0.09 D, while UNVA increased from 0.72 ± 0.13 D to 0.06 ± 0.09 D three months after surgery. The spherical equivalent refraction (SEQ) of 93% of eyes were within 1.00 D from the target refraction, emmetropia. All patients achieved spectacle independence for all distances. Dysphotopsia (glare at night) was reported by only one patient.

Conclusions:
Based on our first experiences we conclude that the Liberty 677MY presbyopia-correcting IOL is a good choice to restore vision in all distances. Refractive and visual outcomes are outstanding, and dysphotopic phenomena seem to be rare and not bothersome. All our patients are highly satisfied and spectacle independent. Nevertheless, a longer follow-up, an extended number of patients, and the application of the toric model for our astigmatic patients would be of our major future interest.

Financial Disclosure:
... research is funded, fully or partially, by a company producing, developing or supplying the product or procedure presented

Prof. Sathish Srinivasan
FRCSEd, FRCOphth, FACS

Visual and refractive outcomes following implantation of an add on secondary IOL to correct residual refractive errors following lens bases surgery

FREE PAPER DETAILS

· First Author: S. Srinivasan, UK
· Co-Authors: –

ABSTRACT DETAILS

Purpose:
To report the visual and refractive outcomes following monocular implantation of an add – on secondary IOL to correct residual refractive errors following lens bases surgery.

Setting:
University Hospital Ayr, Ayr, Scotland, UK.

Methods:
Prospective interventional case series. 5 eyes of 5 subjects with residual refractive error following previous lens based surgery were included. 3 to 6 months following the primary surgery subjects underwent a secondary procedure during which a custom designed add on IOL was implanted in the ciliary sulcus. The mean residual refractive error varied from minus 1.5D to plus 1.5D A commercially available on line calculator was used from the IOL manufacturer to calculate the IOL power of the add – on IOL for emmetropia. Distance visual acuity was recorded on day 1, week 1 & 4, month 3 & 6.

Results:
There were no intra- or post-operative complications. The average uncorrected distance visual acuity improved from 0.4 LogMAR pre-operatively to 0.0LogMAR post-operatively. Spectacle independence for distance vision was achieved in all patients. There was no change in intraocular pressure pre and post operatively.

Conclusions:
Unilateral implantation of an add - on secondary IOL seem to be a safe and effective option in achieving spectacle independence and to correct unexpected residual refractive errors following lens based surgery. However a larger cohort and a longer follow up is required to assess the long term efficacy of this procedure.

Financial Disclosure:
... receives consulting fees, retainer, or contract payments from a competing company

Kjell Gunnar Gundersen
MD, PhD

Reducing residual astigmatism after primary cataract surgery using the AddOn® Toric sulcus IOL

FREE PAPER DETAILS

- First Author: K. Gundersen, NORWAY
- Co-Authors: –

ABSTRACT DETAILS

Purpose:
To correct residual refractive astigmatism in patients who have had prior cataract surgery.

Setting:
Single surgeon eye clinic, Haugesund, Norway

Methods:
ic sulcus IOL to correct residual astigmatism after previous cataract or refractive lens exchange (RLE) surgery and IOL implantation in the capsular bag. A retrospective chart review was conducted to identify relevant patients who had uncomplicated secondary surgery. Refractive and visual acuity data after primary cataract surgery were collected, along with the details of the secondary sulcus IOL surgery. Subjects were assessed during a single visit after their secondary surgery. Clinical evaluation included measurement of UCVA, BCVA, clinical refraction and axis alignment. Inter-lenticular opacification or pigment dispersion were also evaluated.

Results:
18 eyes were evaluated. Primary IOL`s included trifocal, EDOF and monofocal IOLs. Mean residual astigmatism was reduced from -1.67 D to -0.31 D ($p < 0.001$). 16 of 18 eyes (89%) had residual refractive astigmatism ≤ 0.50D, and no eye had more than 0.75D after secondary IOL implantation. Mean UCVA was 0.01 logMAR, with no eye having UCVA worse than 0.1 logMAR. Mean lens axis orientation was 4.9 degrees from intended. Sixteen of eighteen eyes (89%) had a lens orientation ≤ 10 degrees from intended. Max. deviation identified was 13 degrees. No eyes showed any inter-lenticular opacification or pigment dispersion

Conclusions:
The AddOn® Toric sulcus IOL significantly reduced postoperative refractive astigmatism in patients with astigmatism after their primary cataract or RLE surgery, providing very good and stable uncorrected distance vision.

Financial Disclosure:
None

Ladislav Nováček
MD

Evaluation of refractive and visual outcomes, as well as astigmatism-correcting efficiency and rotational stability of a double-loop haptic toric intraocular lens: a one year follow-up

E-POSTER DETAILS

· First Author: L. Novacek, CZECH REPUBLIC
· Co-Authors: –

ABSTRACT DETAILS

Purpose:
To evaluate the refractive and functional outcome of the trifocal 1stQ AddOn supplementary intraocular lens (IOL) designed for implantation into the ciliary sulcus.

Setting:
Department of Ophthalmology, Institute of Aviation Medicine Prague, Prague, Czech Republic

Methods:
The intraocular lenses were implanted either mono- or binocularly into 35 eyes of 22 cataract patients with mild corneal astigmia (preoperative cylindric refraction range on the spectacle plane was -0.5 dioptres [D] to -3.75 D), following a routine cataract surgery. Uncorrected and corrected distance visual acuities, corrected near visual acuity, as well as off-axis rotation were assessed throughout a 1-year follow-up period. Apart from the comparison of pre- and postoperative spherical and cylindrical refractions and visual acuities, a vector analysis based on the Alpin's method was performed to assess the efficiency of astigmatism-correction, and the predictability of the results.

Results:
IOL-implantation has brought 88% of eyes into the ±0.50 D, and 100% into the ±1.00 D range compared to the target refraction, emmetropia, and the results remained stable during the first postoperative year. Astigmatism-correction has brought similar results: 94% of eyes had a cylindric error of not more, than ±0.50 D, and 100% were within ±1.00 D, and it did not change significantly during the follow-up period. Refractive and visual outcomes were close to the preoperative estimations. No eyes have shown a rotation of more than 5°. The absolute rotation after 12 months was 1.42 ± 1.89° (Median=0.00°).

Conclusions:
Our results suggest that the Bi-Flex 677TAY monofocal IOL by Medicontur represents an efficient and safe solution for cataract patients with preoperative astigmatism. Clinical outcomes are predictable, and the double-loop haptic design which is responsible for the high degree of rotational stability helps to preserve refractive and visual outcomes even in the long-term.

Financial Disclosure:
None

Joaquín Fernández Pérez
MD, PhD

New system to measure chromatic contrast sensitivity defocus curves with multifocal intraocular lenses

E-POSTER DETAILS

· First Author: J. Fernandez, SPAIN
· Co-Authors: M. Rodríguez-Vallejo, J. Martínez, N. Burguera, D. Piñero

ABSTRACT DETAILS

Purpose:
To evaluate the defocus shift, the effective addition, and the area under the contrast sensitivity defocus curve (CSDC) measured for red (R), green (G) and blue (B) isolated channels of an iPad (4th generation) for bandwidths centered on 610 nm, 543 nm and 462 nm and uniform luminance of 34 cd/m2 for all channels.

Setting:
Qvision, Ophthalmology Department Vithas Virgen del Mar Hospital, Almería, Spain

Methods:
17 subjects implanted with the Liberty IOL (Medicontur) were monocularly measured at the 3-month follow-up visit with the best spectacle refraction obtained with white light at infinity. The Multifocal Lens Analyzer (Beta version, defocuscurve.com) was used to measure Chromatic Contrast Sensitivity Defocus Curves at 2 m with a +0.50 D lens and manifest refraction. A previous calibration of the iPad was conducted with the SpydeXElite colorimeter (Datacolor). The test consisted of Sloan letters of 0.3 logMAR changing its contrast in 0.1 logCS steps for isolated RGB channels. Refractive Analysis Toolbox for Matlab (v1.0.3, test-eye.com) was used for processing defocus curves.

Results:
The median location of the far distance focus was at +0.25 D for R, at 0 D for G and at -0.25 D for B ($p<0.05$ for R vs B). The addition obtained from the curve decreased with the wavelength from a median of 3 D for R and 2.5 D for G and B ($p<0.05$ for R vs B). For all channels and additions, the interquartile range was 0.50 D. The area under the defocus curve was lower for B (0.82) than for R (1.58) and for G (1.54)($p<0.05$). No differences were obtained between R and G ($p>0.05$).

Conclusions:
This beta version of Multifocal Lens Analyzer resulted in promising results for detecting the defocus shift, computing effective addition and measuring contrast sensitivity for several bandwidths centered on a particular wavelength. The system could be used in clinical practice to provide new clinical evidence of multifocal intraocular lenses that correct chromatic aberration and enhance contrast sensitivity.

Financial Disclosure:
gains financially from product or procedure presented

Valerij Serdiuk
MD

Comparison of visual function, quality and patient satisfaction after the implantation of three different multifocal intraocular lenses

E-POSTER DETAILS

· First Author: V. Serdiuk, UKRAINE
· Co-Authors: S. Ustymenko, S. Fokina, I. Ivantsov

ABSTRACT DETAILS

Purpose:
To test the refractive and visual outcomes and the quality of vision (frequency and severity of dysphotopic phenomena, spectacle use and overall satisfaction) after the bilateral implantation of three different multifocal intraocular lenses (MIOLs) in patients with age-related cataract.

Setting:
Dnipropetrovsk Regional Clinical Ophthalmological Hospital, Ukraine.

Methods:
In this prospective, comparative study including 90 eyes of 45 cataract patients, bilateral implantation of either the hydrophilic trifocal Liberty® 677MY capsular bag IOL by Medicontur Ltd, the hydrophilic AT LISA® tri 839M lens (Carl Zeiss Meditec AG), or the hydrophobic AcrySof® IQ PanOptix® IOL (Alcon Inc.) was performed during routine cataract surgery. Refractive outcomes, visual acuities (VA) for far (5.0 m), intermediate (0.8, 0.6 m) and near (0.4 and 0.3 m) distances, and visual acuity curves were assessed three months postoperatively. Visual quality, dysphotopic events and spectacle use were evaluated using McAlinden's questionnaire during the 3-month postoperative visit.

Results:
VA curves were similar for the three MIOLs, however the Liberty lens seems to be superior for far and near, while AT LISA tri provides somewhat better VA in the intermediate range (60 cm). Refractive correction was the most effective with the Liberty IOL (p=0.0131). Dysphotopic phenomena (glare, halo) were usually perceived at night or in low light conditions. Their frequency was lower with AT LISA tri and Liberty lenses, however the severity of dysphotopic events were the lowest with the Liberty IOL. Two-third of AT LISA tri and Liberty patients, while only 57% of PanOptix patients achieved spectacle independence.

Conclusions:
Our investigation revealed that all three examined MIOLs are safe and efficient in presbyopia-correction of cataract patients, however different models have different capacities in restoring far, intermediate or near vision. The correction of refractive errors was the most effective with the Liberty IOL, and dysphotopic symptoms were significantly less disturbing for patients implanted with the Liberty lens. We conclude that the vision preferences of each patient should be always taken into consideration when choosing a MIOL, and the possible occurrence of dysphotopic events should be also clearly communicated in each case.

Financial Disclosure:
None

Brian Harrisberg
MD, MBBCh, FRACS, FRANZCO

Clinical outcomes in patients following implantation of the Scharioth Macula Lens

E-POSTER DETAILS

· First Author: B. Harrisberg, AUSTRALIA
· Co-Authors: Bernadett Faragó, MSc, PhD, HUNGARY

ABSTRACT DETAILS

Purpose:
Retrospective evaluation of the clinical outcomes in three eyes of three pseudophakic patients with dry Age-related Macular Degeneration (AMD), wet AMD stabilized with anti-VEGF treatment, and Vitelliform Macular Dystrophy following the unilateral implantation of the novel A45SML plano powered supplementary intraocular lens with central +10.0 D addition (Scharioth Macula Lens; SML) manufactured by Medicontur.

Setting:
Central Sydney Eye Surgeons, Newtown, Sydney, Australia.

Methods:
All patients were evaluated prior to receiving the SML implant to ensure suitability for the procedure. Prediction of improvement in near visual acuity was simulated preoperatively by performing a near visual acuity test at a distance of 15cms from the patient's eye with a +6.0 D addition in a trial frame over the distance correction of the patient. The SML was implanted into the ciliary sulcus of the better seeing eye in each case. Subjective refractions, uncorrected visual acuities at distance, best-corrected distance and near visual acuities, macula OCT and anterior segment OCT were tested preoperatively and postoperatively.

Results:
A significant improvement was noted with near visual acuity in the treated eye of each patient when tested at a reading distance of 15 to 18 cms (Patient 1 improved from 0.14 decimal acuity to 0.5; Patient 2 improved from 0.4 decimal acuity to 0.5. Patient 3 improved from 0.25 decimal acuity to 0.67). Most improvement was observed after postoperative visual training. The actual near visual acuities achieved were similar or even better compared to those estimated preoperatively. Distance visual acuity did not change in all cases. No complications related to the implantation or the lens itself were observed.

Conclusions:
The SML appears to be a safe option that can provide useful near vision in pseudophakic patients with maculopathies such as AMD and Vitelliform Macular Dystrophy.

Financial Disclosure:
None

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