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Book of
Abstracts

BELLUCCI, ROBERTO

THE NEW B&L ADVANCED OPTICS IOL FOR ABERRATION CORRECTION IN THE HUMAN EYE

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PURPOSE: The new B&L Sofport Advanced Optics IOLs are designed with two aspheric surfaces to eliminate any spherical aberration induced by the IOL. This paper reports about expected optical results in implanted eyes.

SETTING: Ophthalmic Unit, Hospital of Verona, Italy

METHODS: In the pseudophakic eye, there are two entities of spherical aberration that must be corrected to achieve optimal optical quality.

The first entity is the spherical aberration due to the anterior corneal surface, that varies with eyes from zero to approx +0.05 μ . The second entity is the spherical aberration produced by the intraocular lens itself, that depends on the optical power, on the refractive index of the material, and on the surfaces design. The new Advanced Optics IOL corrects for this second entity of spherical aberration.

RESULTS: The Bausch & Lomb Advanced Optics concept is to design an intraocular lens free from any induced spherical aberration. The resulting aberration is therefore that of the anterior corneal surface, that can be calculated pre-operatively from corneal topography. This lens is expected to increase the optical quality of implanted eyes, less depending on centration in comparison with other aberration-correcting IOLs.

CONCLUSION: The new Advanced Optic design effectively prevents IOL-induced spherical aberration in implanted eyes, leaving unchanged the spherical aberration of the corneal surface. The advantages for the optical quality are expected to be present even in the case of decentration.

BEZDETOKO, PAUL

PHENOMENON OF PSEUDOACCOMMODATION IN PATIENTS WITH AN ARTIFICIAL OPTICAL LENS IN COMBINATION WITH TANGENTIAL SCLERA CORRUGATION

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PURPOSE: Our method is the intensifying of effect of pseudo-accommodation in cases with implantation posterior-chamber IOLs in a postoperative period. It is achieved by increasing amplitude of forward movement of an intraocular optical lens. That's why we combine two procedures: Implantation crystal lens and expansion of the scleral skeleton.

SETTING: Department of Ophthalmology, Kharkov Medical State University, Kharkov, Ukraine.

METHODS: Our method consists of two phases. The first one is an extraction of cataract: After creating a 3.2mm temporal corneal tunnel incision and a 4.5 to 5.0mm capsulorhexis, we removed the lens with phacoemulsification. The lens is made of silicone with a 5.0mm optic. The second one is a realization of tangential sclera corrugation. We make four tangential sections on 4mm from limbus with depth of 2/3 of the sclera and with length of 3mm. Edges of sections are corrugate by a width of 2mm. On the edges of the section are apply by the seam.

RESULTS: In a postoperative study of 20 eyes of 13 patients who underwent our procedure, 15 eyes had uncorrected distance visual acuity of 20/25 or better and 16 had uncorrected near vision acuity of J3 or better after mean follow up of 6 month. Five eyes achieved J1 vision with no correction, 12 achieved J1 with correction and 3 eyes achieved J2 with correction. The mean correction was 0.9D and the near point of accommodation was mean 35cm within a range of between 18cm and 50cm. Then we are observing frontal moving of the IOL 150 - 450 microns.

CONCLUSION: Described method is acceptable, first of all to patients who are required for change of a lens and this is a great part of patients of any ophthalmologic hospital, i.e. patients with a cataract of one or both eyes which in majority of cases combine with presbyopia.

BHARTI, SUDHANK

RESULTS OF ASTIGMATISM CORRECTION WITH TORSION COMPENSATION DURING LASIK

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PURPOSE: To evaluate the efficacy and accuracy of Torsion Error detection and its compensation for correction of high myopic astigmatism

SETTING: Bharti Eye Foundation, New Delhi, India.

METHODS: This study comprises of the first 100 eyes of myopic astigmatism treated with Nidek EC5000CX2 incorporating a new software. All ablations were done with 100% sphere, 116% cylinder and 33% sphere-to-cylinder shift. These eyes were followed for 6 weeks and assessed on post LASIK UCVA, correction of astigmatism (aimed v/s achieved), ablation depth and subjective visual satisfaction of the patient.

RESULTS: 76% of the eyes treated with TED achieved visual acuity equal to or better than pre LASIK BCVA on the 7th day post LASIK. On 20th day none of the eyes had a residual astigmatism of 1 D and 72% eyes were within 0.5D cylinder. 92% eyes had residual astigmatism within 30 degrees. 56% eyes had overcorrected astigmatism on 7th day. 12% remain overcorrected on 20th day. On 40th day, 88% eyes were either fully corrected or had mild myopic astigmatism.

CONCLUSION: Correction of astigmatism above -1.5 D is more accurate and results more satisfying when TED is used. The results are very superior in very high pure astigmatism above -4.0 D. The residual astigmatism, if any, is in the prop axis thereby increasing patient satisfaction.

CALOSI, ANTONIO

CORNEAL REMODELLING WITH OVERNIGHT ORTHOKERATOLOGY

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PURPOSE: A prospective, consecutive study was performed to evaluate the corneal response to overnight orthokeratology by means of a customized hexa-curve reverse geometry lens in hyper-Dk gas-permeable material.

SETTING: Florence, Italy.

METHODS: We treated 50 eyes of 25 myopic patients aged from 11 to 44 years. The baseline refractive error was from -1.00 to -6.00 D spherical equivalent, WTR astigmatism up to 1.50 D and ATR or oblique astigmatism up to 0.75 D. For all the subjects an overnight wear was scheduled. Subjective rating, UCVA, BCVA, manifest refraction, ultrasound pachimetry, corneal topography, corneal wave-front analysis, and biomicroscopic data were collected at baseline, in the morning immediately following lens removal and 12 hours after lens removal after 1 night, 1 week, 2 weeks, 1 month, 3 months and 6 months of lens wear.

RESULTS: The cornea responded rapidly with significant ($p < 0.05$) central corneal flattening and improvement in visual acuity after the first night of lens wear; the corneal shape changed from prolate to oblate after one night of wear. By the end of one week, all corneal and visual changes had reached a maximal level and remained fairly stable during the day. These changes were sustained at the following visits. During the first week, there was a significant increase of corneal spherical aberration ($p < 0.05$). Biomicroscopy showed no significant ocular adverse events. No significant change was observed in the central thickness of the cornea ($p > 0.28$).

CONCLUSION: The lack of change in central pachimetry suggests that we can flat the cornea without a direct compression of the center. Our biomechanical hypothesis is that the central flattening might be secondary to a mid peripheral steepening, induced by a displacement of the epithelium that results from the compression in the alignment zone of this lens.

FINANCIAL DISCLOSURE: Yes (patent holder)

SETTING: Institute of Ophthalmology, Catholic University, Rome, Italy
METHODS: 22 eyes of 12 patients underwent LASEK and 24 eyes of 13 patients underwent LASIK. Topography data (CSO EyeMap) were used to calculate total corneal aberrations, coma-like and spherical-like aberrations with 3mm and 7mm pupil, before and one year after surgery (a paired Student t test measured LASEK and LASIK RMS values, whereas an independent student t test compared LASEK vs LASIK RMS values). We correlated by a linear regression analysis the achieved correction (post- minus pre-operative cycloplegic refraction) and the corneal aberrations, as well as the corneal residual thickness (pre- minus postoperative central pachymetry) and the spherical-like aberrations.

RESULTS: Total corneal aberrations similarly increased with 7mm pupil, whereas with 3mm pupil increased after LASIK only. Coma-like and spherical-like aberrations similarly changed with 3mm and 7mm pupil ($p > 0.05$, independent t test). The amount of achieved correction resulted positively correlated ($p < 0.05$) with spherical-like aberrations both in LASEK and LASIK with 7mm pupil, but only in LASIK with 3mm pupil. With 3mm pupil the amount of corneal residual thickness was negatively correlated ($p < 0.05$) with spherical-like aberrations after LASIK, but not after LASEK.

CONCLUSION: These findings could suggest that, one year after surgery, LASIK induces corneal aberrations more than LASEK with 3mm pupil, and that, after LASIK, the corneal residual thickness could influence the increase of higher order aberrations on the anterior corneal surface.

CALOSSI, ANTONIO

CORNEAL REMODELLING IN KERATOCONUS WITH A REVERSE GEOMETRY CONTACT LENS

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PURPOSE: To assess if in some carefully selected cases, when the keratoconus has not progressed very much and contact lenses can not be worn for an adequate period of time, corneal moulding procedure can grant satisfactory results.

METHODS: We present a case report of corneal moulding with a reverse geometry RGP contact lens in a keratoconus patient, partially intolerant of rigid contact lenses during his daily activities. Before corneal moulding was performed, BSCVA was 20/25 with -3.75 $-4.50 \times 50^\circ$.

RESULTS: After morning only two hour RGP CL wear, BSCVA turned out to be 20/20 with -4.75 sph spectacle correction and remained good until afternoon. The comparison between the topography and the aberration map of the corneal surface before and after the procedure highlights a significant decrease in the corneal aberrations.

CHITKARA, DEEPAK K.

PATIENT SATISFACTION FOLLOWING INSERTION OF THE KELLAN TETRAFLIX KH3500 IOL DESIGNED FOR SOCIAL READING IN PSEUDOPHAKIC EYES

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PURPOSE: To evaluate subjective satisfaction with near vision following insertion of Kellan Tetraflex KH3500 IOL designed to provide social reading capability.

SETTING: Private Hospital, Manchester UK.

METHODS: All patients undergoing refractive lens exchange who have completed 6 month follow up were sent an anonymised postal questionnaire to evaluate their satisfaction with reading ability.

RESULTS: Currently 24 patients have replied to the questionnaire. Sixty Seven percent require reading glasses only occasionally for fine prints and only 21% require reading glasses at all times. Most (75%) are very satisfied or moderately satisfied with near vision without spectacles.

CONCLUSION: The Kellan Tetraflex KH3500 IOL is capable of providing social reading without the need for reading glasses in the vast majority of pseudophakic patients.

FINANCIAL DISCLOSURE: Yes.

COSKUNSEVEN, EFEKAN

EVALUATION OF LASIK FLAPS CREATED WITH INTRALASE FS LASER VERSUS SCHWIND MICROKERATOME: 400 AND 400 EYES

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PURPOSE: To evaluate the flap dimensions, cut quality, flap thickness predictability, visual and refractive results between Intralase FS Laser and Schwind Microkeratome.

SETTING: Dunya Eye Hospital, Istanbul, Turkey.

METHODS: In 400 eyes of 200 patients Schwind Microkeratome (130 μ m head), in 400 eyes of 200 other patients Intralase femtosecond laser was used to create flap for LASIK surgery. Femtosecond patients were divided into 4 groups according to the flap thickness (i.e: F1: 90 μ m, F2: 100 μ m, F3: 110 μ m, F4: 120 μ m). Preoperative corneal pachymetry and intraoperative stromal bed pachymetry were measured using Sonogage 50 Hz ultrasonic pachymetry. Dimensions of the flaps were measured by Gauder ruler. Wavelight Allegretto Wave laser was used in both groups of eyes for ablation.

RESULTS: The mean postoperative spherical equivalent was 0.50 ± 0.17 D and 0.77 ± 0.12 D for the myopic and hyperopic group In the Schwind group, 0.50 ± 0.13 and 0.68 ± 0.12 for the myopic and hyperopic groups respectively in the Intralase group. The mean flap thickness was $124.4 \pm 12.4 \mu$ m in Schwind group, 111 ± 31 in F1, 112 ± 32.2 in F2, 118 ± 33.2 in F3 and 121 ± 32.7 in F4 group. Flap diameter was 9.46 ± 0.33 and 9.1 ± 0.12 , hinge chord was 4.65 ± 0.47 and 3.80 ± 0.10 , postoperative UCVA was at first day 0.80 and 0.90, at third day was 0.86 and 0.94 for the Schwind and Intralase groups respectively.

CONCLUSION: No flap complication was observed in both groups. F4 was the most predictable, Schwind was the most reproducible. Flap diameter and hinge chord was more accurate in the Intralase group. Visual recovery appears to be quicker in the Intralase group.

COSKUNSEVEN, EFEKAN

INTACS IN KERATOCONUS: 1 YEAR RESULTS

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PURPOSE: To determine the efficacy safety and predictability of intracorneal ring segments (INTACS) implantation in keratoconus.

SETTING: Dunya Eye Hospital, Istanbul, Turkey.

METHOD: A retrospective review of 135 eyes who had INTACS surgery for keratoconus with at least 1 year follow-up was made. All patients were contact lens intolerant with clear visual axis. 135 eyes of 75 patients (36 male, 39 female) were enrolled in the study. Age ranged between 19 and 45 (mean: 29.7 ± 7.79). Two symmetrical segments were implanted at 70% depth of cornea with the same standard technique. Thicknesses of segments were chosen according to spherical equivalent.

RESULTS: Segments were removed in 2 patients due to trauma and infection respectively. Mean UCVA improved from 0.22 ± 0.12 preoperatively to 0.32 ± 0.17 , postoperatively and this difference was statistically significant. 23 (17%) eyes lost 1 - 3 lines of UCVA, 30 (22%) eyes showed no change, 82 (61%) eyes gained 1 - 6 lines. The mean BSCVA increased from 0.42 ± 0.17 to 0.57 ± 0.19 . However this difference was not statistically significant. 24 (18%) eyes lost 1 - 4 lines, 22 (16%) eyes showed no change and 89 (66%) eyes gained 1 - 6 lines of BSCVA.

CONCLUSION: INTACS may improve UCVA and BCVA and corneal topography in keratoconus patients. INTACS could be an alternative treatment before penetrating keratoplasty in keratoconus patients with contact lens intolerance. However, more cases and longer follow-up is required to establish the efficacy of the treatment.