ISCRS IN KERATOCONUS

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Purpose: To evaluate refractive effects of ISCR implantation in keratoconus patients.
Methods: The 1583 keratoconic eyes of 921 patients keratoconus (II-III st) were treated with ISCR implantation with one or two segments according the special nomograms. Pre and post operative examination included Snellen uncorrected distance visual acuity (UDVA) and CDVA, manifest refraction, slitlamp biomicroscopy, fundus evaluation, ultrasound pachymetry, and corneal topography and aberrometry Orbscan system.
Results: Pre Op: UCVA – 0.12 $\pm$ 0.07; BCVA – 0.3 $\pm$ 0.2; K-readers: 53.1 $\pm$ 3.7 (steep meridian), 46.8 $\pm$ 3.7 (flat meridian); PBFS – 54.75 $\pm$ 1.9; SE – 7.2 $\pm$ 3.5; astigmatism 6.1 $\pm$ 1.5. Post Op: UCVA – 0.7 $\pm$ 0.2; BCVA – 0.7 $\pm$ 0.2; K-readers: 45.9 $\pm$ 3.7 (steep meridian), 42.8 $\pm$ 2.7 (flat meridian); PBFS – 51.0 $\pm$ 2.1; SE – 2.0 $\pm$ 1.5; astigmatism 2.5 $\pm$ 0.7.
Conclusion: ISCS implantation improves all main parameters of corneal topography; it flattens central optical zone, which results in increase of UCVA and remained stable over the follow-up period. The reduction in segment diameter seems to be of great importance to better and effective control of astigmatism. However, if the segments are nearer from the pupil margins, visual quality can be adversely affected by scattered rays of light reaching the retina inducing blur and glares. Therefore, a compromise between ring effect and visual quality should be found. Having 4 arc-length options (90, 120, 160 and 210 degrees) makes ISCRs to be more flexible in surgical planning to achieve the better refractive outcomes.

OUTCOMES OF STANDARD CORNEAL CROSS-LINKING FOR PROGRESSIVE KERATOCONUS

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Purpose: Evaluating the clinical results of standard collagen cross-linking (CXL) in patients with progressive keratoconus.
Methods: This prospective study comprised 80 eyes of 53 patients with progressive keratoconus. All eyes were treated by standard CXL with 5 year of follow-up. All patients underwent complete ophthalmologic testing that included pre- and postoperative uncorrected visual acuity, corrected visual acuity, spherical error, spherical equivalent, corneal astigmatism, simulated maximum, minimum, and average keratometry, pachymetry, endothelial cell density and Ocular Response Analyzer (ORA)**.** To evaluate the visibility and the depth of the stromal demarcation line after CXL was using anterior segment optical coherence tomography (ASOCT). The solution used for standard CXL comprised riboflavin 0.1% and dextran 20.0%.). Iso-osmolar riboflavin solution was used for corneas with thinnest pachymetry above 400 mm (after deepithelization), hypo-osmolar solution was used for thinner corneas (less than 400 after deepithelization). Ultraviolet-A treatment was performed with UV-X System at 3 mW/cm^2 for 30 minutes.
Results: Mean age was 35.5±6.9 years (range: 15–37 years). Mean preoperative UDVA was 0,4 (SD ±0.15). UDVA improvement observed at the 3-month postoperative time and became statistically significant at the 12-month. All topographic parameters (K_{min}, K_{max}, and mean K) showed a statistically significant improvement (reduction in steepest keratometry) at 12 months post-surgery. Topographic indices (SAI and SRI) showed minimal improvement. Mean depth of the corneal stromal demarcation line after CXL was 318,5±15,2 mm. Stromal demarcation line was visible for 85% of the crosslinked corneas. Pachymetry at the thinnest point decreased significantly

(488±45 preoperatively, to 431±37 mm at 5 years). ORA measurements showed no significant differences in corneal hysteresis (CH) and corneal resistance factor (CRF) before and 1 year after treatment.

Conclusion: These results demonstrate that traditional CXL is effective and safe option in stabilizing the progression of keratoconus. There was no intra- or postoperative complications except temporary corneal epithelial defect and haze. Corneal endothelial count remained stable without significant decrease. ASOCT showed the collagen cross linking effects in the stroma. There were no cases of progression after 5 years of epi-off CXL.

CLINICAL RESULTS OF EXCIMER LASER CORRECTION FOR THE CORRECTION OF INDUCED AMETROPIA AFTER PENETRATING KERATOPLASTY

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Purpose: To demonstrate the main technological approaches and clinical results of excimer laser correction of induced astigmatism after penetrating keratoplasty.

Methods: The study includes of 6 patients (7 eyes) aged 23 - 35 years, after penetrating keratoplasty due to keratoconus, with a high degree of postoperative astigmatism and irregularity of the corneal surface. All patients underwent standard preoperative examination, including endothelial cells density and topographic analysis of anterior and posterior surface of the cornea (Tomey TMS 5, Japan). Patients were followed up for two years after keratoplasty. Was performed one-step LASIK using installation "Microscan Vizum".

Superficial corneal flap from 70 to 100 microns thickness was performed with a microkeratome ML7 (Med-Logics, USA). Terms of follow-up was between 3 to 10 years after Lasik.

Results: The results show the benefits of refractive excimer laser intervention after penetrating keratoplasty, confirms the significant topographic improvements of the anterior surface of the cornea. It was obtained high uncorrected visual acuity after refractive surgery, in comparison with the preoperative maximal corrected visual acuity. Years of dynamic analysis of corneal topography indicates a long-term stability of refraction after Lasik.

Conclusion: Analysis of clinical - functional results of the correction of refractive errors by LASIK, using the "Microscan Vizum" showed high efficacy and safety, as well as high predictability of excimer laser refractive operations. This technology demonstrates the usefulness of refractive surgery in patients after penetrating keratoplasty with severe refractive errors combined with anisometropia, which can significantly improve visual function and efficiency of spectacle correction, contributing to more successful medical-social and professional rehabilitation.

ICL vs LASIK

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Purpose: To compare the findings of moderate and high myopia correction using excimer laser vs ICL.

Methods: The 108 eyes of 57 patients were treated with ICL implantation and 2688 eyes of 1376 patients were undergone LASIK to correct low and high myopia. Sperical equivalent (SE) from 5.0 to 18.0 D, astigmatism (A) from 0.5 to 6.0 D in ICL cases and (SE) from 3.5 to 12.0 D, astigmatism (A) from 0.5 to 6.0 D in Lasik cases.

Results: In every case Post Op UCVA was 20/40 or more. In 3% the loss of 2 lines of acuity was observed in LASIK group. VA lost by the two line. UCVA was higher in ICL cases. UCVA 20/20/