

Intrastromal Donor Limbal Segments Implantation as a Surgical Treatment of Progressive Keratoconus: Clinical and Functional Results

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Abstract : Purpose: To evaluate the effectiveness of intrastromal donor limbal segments implantation for treatment of progressive keratoconus considering on main characteristics of corneal endothelial cells. Setting: Outpatient ophthalmic clinic. Methods: Twenty patients (20 eyes) with progressive keratoconus II-III of Amsler classification were recruited. The worst eye was treated with the transplantation of donor limbal segments in the recipient corneal stroma, while the fellow eye was left untreated as a control of functional and morphological changes. Furthermore, twenty patients (20 eyes) without progressive keratoconus was used as a control of corneal endothelial cells changes. All patients underwent a complete ocular examination including uncorrected and corrected distance visual acuity (UDVA, CDVA), slit lamp examination fundus examination, corneal topography and pachymetry, auto-keratometry, Anterior Segment Optical Coherence Tomography and Corneal Endothelial Specular Microscopy. Results: After two years, statistically significant improvement in the UDVA and CDVA (on the average on two lines for UDVA and three-four lines for CDVA) were noted. Besides corneal astigmatism decreased from 5.82 ± 2.64 to 1.92 ± 1.4 D. Moreover there were no statistically significant differences in the changes of mean spherical equivalent, keratometry and pachymetry indicators. It should be noted that after two years there were no significant differences in the changes of the number and form of corneal endothelial cells. It can be regarded as a process stabilization. In untreated control eyes, there was a general trend towards worsening of UDVA, CDVA and corneal thickness, while corneal astigmatism was increased. Conclusion: Intrastromal donor segments implantation is a safe technique for keratoconus treatment. Intrastromal donor segments implantation is an efficient procedure to stabilize and improve progressive keratoconus.

Keywords : corneal endothelial cells, intrastromal donor limbal segments, progressive keratoconus, surgical treatment of keratoconus

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