

SUMMARY

Introduction

The endothelial dysfunction and related corneal oedema with decreased transparency is still the main indication for keratoplasty. Method of posterior lamellar keratoplasty, which is popular in ophthalmology in last few years, is suitable method because we exchange just the affected part of the cornea. Nowadays there are more surgical ways and modalities of the technique, but the best way has not been established yet.

Purpose

Purpose of our study was: to evaluate and analyze the efficacy of new technique of lamella preparation, to evaluate new method of lamella implantation and to analyse anatomical outcomes in experiment and clinical outcomes in practice.

Materials and methods

Group 1 involves 71 eyes of 55 patients, who underwent posterior lamellar keratoplasty with implantation of a hybrid lamella DMEK-S using a hydroimplantation. In group 2 were enrolled 27 eyes of 22 patients, who underwent posterior lamellar keratoplasty with implantation of a hybrid lamella DMEK-S using glide. In the postoperative period, we evaluated corrected and uncorrected visual acuity and corneal endothelial density. We analyzed and compared clinical outcomes of both groups and we focused especially on the method of implantation. Student t test and Bonferroni test were used for all statistical analysis.

Results

The rate of endothelial cell loss caused by surgery was 43.8 % in group 1. During follow-ups we observed the stabilization of postoperative findings, or at most a very low rate of corneal endothelial cell loss. The mean endothelial cell density one year postoperatively was $1005,4 \pm 80$ and $989,0 \pm 196$ two years postoperatively. The comparison of endothelial cell loss between group 1 and 2 was not realized as statistically significant. In group 1 the mean UCVA was 0.518 ± 0.04 12 months after surgery and 0.74 ± 0.10 24 months after surgery. The mean BCVA was 0.718 ± 0.04 12 months after surgery and 0.940 ± 0.1 24 months after surgery.

Conclusion

DMEK-S is a safe and effective method of treating the endothelial dysfunction of various etiologies. It combines the advantages of DSEK/DSAEK and DMEK. The central zone of bare Descemet's membrane and endothelium allows very good visual outcomes to be achieved, and the peripheral rim allows better manipulation of the lamella during its implantation. The hydroimplantation seems to be a safe, low-cost and effective method of implantation and is gentle on the endothelium.