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Chairs: Vladimir Pfeifer and Petra Schollmayer

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DSO, comparison of two descemetorrhesis techniques

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PURPOSE To present results of Descemet Striping Only (DSO) in Eyes with Fuchs' Endothelial Corneal Dystrophy (FECD) Operated at the Eye Clinic in Ljubljana Between 2019 and 2024.

METHODS A retrospective analysis of documentation from 36 eyes of 31 patients who underwent DSO in one or both eyes. We analyzed central endothelial cell count (cECC), pachymetry (CCT), and best-corrected visual acuity (BCVA) before and after surgery. Patients were divided into two groups based on the method and extent of descemetorrhesis: one group where the diameter was adjusted to the area of guttata (Group 1, 13 eyes) and another group with a centrally round descemetorrhesis of 4-5 mm (Group 2, 23 eyes).

Patients were followed for 12 to 58 months, with an average follow-up period of 31.8 months.

RESULTS In total, endothelial cell count (cECC) was measurable after surgery in 26 eyes using specular biomicroscopy, representing 72% of operated eyes. The ability to determine ECD was set as one of the criteria for surgical success. In Group 1, cECC was measurable in 12 out of 13 eyes (92%), while in Group 2, it was measurable in 14 out of 23 eyes (60%). The average time to ECD establishment was 9.9 (± 13.4) months in Group 1 and 5.9 (± 5.0) months in Group 2. At the last follow-up: Group 1: ECD values ranged from 554 to 1534 cells/mm², with an average of 978.3 cells/mm² (± 344.4). Group 2: ECD values ranged from 354 to 2332 cells/mm², with an average of 1144.3 cells/mm² (± 637.0). The average best-corrected visual acuity (BCVA) in Group 1 was 0.62 before surgery and 0.86 after surgery, with an average improvement of 0.24 (± 0.18). In Group 2, BCVA was 0.38 before surgery and 0.62 after surgery, with an average improvement of 0.31 (± 0.29). Reduction in corneal edema was observed in 10 eyes (77%) in Group 1 and 18 eyes (78%) in Group 2. Preoperative pachymetry: Group 1: 598.9 μ m (± 61.4), postoperative 576.9 μ m (± 88.7), with an average decrease in central corneal edema of 22.0 μ m. Group 2: 631 μ m (± 72.7), postoperative 570.9 μ m (± 91.3), with an average decrease in central corneal edema of 59.2 μ m. In Group 1, one eye required planned endothelial keratoplasty (DMEK) due to low EC density and poor visual acuity, while one eye was prescribed topical therapy with netarsudil. In Group 2, five eyes underwent DMEK due to persistent edema before the establishment of measurable ECD values, with an average of 6.4 months post-primary procedure. Additionally, two eyes developed postoperative cystoid macular edema (CME), which fully resolved with topical therapy.

CONCLUSION Our retrospective study compared two methods of treating FECD with Descemetorrhesis (DSO). The method in which we removed or attempted to remove the visibly altered Descemet's membrane regardless of the removed membrane size showed better best-corrected visual acuity and a higher percentage of eyes where endothelial cell count could be measured via specular microscopy. However, it resulted in lower endothelial cell density, likely due to the larger area that needed coverage by endothelial cells in Group 1, and a smaller reduction in pachymetry, possibly because the preoperative pachymetry was lower. There is increasing proof that some patients with central Fuchs' phenotype benefit from removal of affected tissue only. The optimal patient selection for Descemet stripping only is still under research. In our case series the early stage of central Fuchs' dystrophy, pseudophakia and good patient cooperation were connected to a favourable visual outcome. DSO is a minimally invasive procedure that represents a novel treatment option for certain forms of Fuchs' endothelial corneal dystrophy. This method is independent of donor tissue availability and eliminates the risk of graft rejection and the need for prolonged corticosteroid treatment. Our study suggests that the use of Rho Kinase inhibitors is not essential for the success of DSO.

DSO, primerjava dveh tehnik descemetorekse

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NAMEN Predstaviti pooperativne izide po posegih descemetorekse (DSO) pri očeh s Fuchsovo endotelno distrofijo (FECD), operiranih na Očesni kliniki v Ljubljani med leti 2019 in 2024.

METODE Retrospektivna analiza dokumentacije 36 oči 31 pacientov z opravljenim posegom DSO na enem ali obeh očeh. Analizirali smo število centralnih endotelnih celic (cECC), pahmetrijo (CCT) in vidno ostrino (BCVA) po in pred operacijo. Paciente smo razdelili v dve skupini glede na metodo in obseg descemetorekse. Skupino kjer smo premer prilagodili področju gutt (skupina 1, 13 oči) in skupino s centralno descemetorekso velikosti 4-5 mm (skupina 2, 23 oči)

Bolnike smo spremljali 12 – 58 mesecev, povprečni čas spremljanja znaša 31,8 mesecev.

REZULTATI Zmožnost dolžitve ECD smo postavili kot eno od meril uspeha operativnega posega. V 1.skupini je izmed 13 oči pri 12 očeh bilo mogoče izmeriti cECC (92%) , v 2. skupini smo cECC izmerili pri 14 izmed 23 oči (60%). V 1. skupini, kjer je bila velikost descemetorekse osnovana na velikosti klinično izraženih gutt, je povprečni čas do vzpostavitve ECD znašal 9.9 (± 13.4) meseca, v 2. skupini 5.9 (± 5.0) meseca. Ob zadnjih kontrolah so vrednosti ECD znašale v 1. skupini od 554 do 1534 celic/mm², povprečno 978.3 celic/mm² (± 344.4), v 2. skupini od 354 do 2332 celic/mm², povprečno 1144.3 celic/mm² (± 637.0). Povprečna najboljša korigirana vidna ostrina (BSCVA) v 1. skupini je bila 0,62 pred posegom in 0,86 po posegu. Povprečno se je izboljšala za 0,24 ($\pm 0,18$), v 2. skupini 0,38 pred in 0,62 po posegu. Povprečno se je izboljšala za 0,31 ($\pm 0,29$).

Zmanjšanje edema roženice so izmerili v 1. skupini pri 10 očeh, kar znaša 77% , v 2. skupini pri 18, kar znaša 78%. Pred posegom je povprečna vrednost pahimetrije znašala v 1. skupini 598.9 μ m (± 61.4) , po posegu 576.9 μ m (± 88.7). V povprečju se je centralno izmerjen edem roženice zmanjšal za 22.0 μ m. V 2. skupini je pred posegom povprečna vrednost pahimetrije znašala 631 μ m (± 72.7) , po posegu 570.9 μ m (± 91.3). V povprečju se je centralno izmerjen edem roženice zmanjšal za 59.2 μ m. V 1. skupini je pri enem očesu predvidena endotelna keratoplastika (DMEK) zaradi niskega števila EC in slabe vidne ostrine in eno oko ima predpisano topikalno terapijo z netarsudilom. V 2. skupini je imelo 5 oči ob vztrajanju edema, pred vzpostavitvijo merljive vrednosti ECD opravljen DMEK povprečno 6.4 mesece po primarnem posegu. V 2. skupini je pri 2 očeh pooperativno prišlo do CME, ki je v celoti izzvenel ob topikalni terapiji.

ZAKLJUČEK DSO je minimalno invaziven poseg, ki predstavlja novejšo možnost zdravljenja nekaterih oblik Fuchsove endotelne distrofije roženice. Metoda je neodvisna od razpoložljivosti donorskih tkiv in izloči možnost zapletov, povezanih z zavrnitvijo presadka in dolgotrajnim kortikosteroidnega zdravljenjem. Naša študija kaže da za uspeh DSO ni nujna uporaba inhibitorjev rho kinaze.