Triple procedure advocated for endothelial keratoplasty and cataract removal

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W HEN cataract surgery is indicated for patients who are to undergo endothelial keratoplasty, a triple procedure combining Descemet's Stripping Automated Endothelial Keratoplasty (DSAEK) with phacoemulsification and IOL implantation is preferred over a staged approach, according to Mark A Terry, MD.

At the annual meeting of the Association for Research in Vision and Ophthalmology, Dr Terry presented an analysis of outcomes from data being collected prospectively in an ongoing IRB-approved study at Devers Eye Institute, Portland, Oregon. The results supported a triple procedure by showing it did not increase the risk for graft dislocation or endothelial cell loss at six months compared to DSAEK surgery alone.

“Some surgeons advocate performing phacoemulsification first and DSAEK weeks later based on concerns that if simultaneous surgery is performed, residual viscoelastic will promote graft dislocation and that the newly placed IOL will be unstable, touch the graft, and cause endothelial damage. However, our data provide an evidence-based rationale for the triple procedure, which also has advantages for the patient in reducing cost, time and risk,” said Dr Terry, who is director of cornea services, Devers Eye Institute.

The comparative study included the first consecutive 223 cases of DSAEK, of which 116 (52 per cent) had a triple procedure and 107 (48 per cent) had DSAEK alone. Dr Terry performed more than three-fourths of the procedures, with the other cases performed by novice surgeons at Devers Eye Institute, using the exact same DSAEK technique. Fuchs’ dystrophy was the underlying diagnosis in 80 per cent of eyes.

In the overall series, the donor dislocation rate was only 1.3 per cent (three cases). Two dislocations occurred in eyes undergoing DSAEK alone (1.9 per cent) and one was in an eye undergoing a triple procedure (0.8 per cent). Time to dislocation was one to two days in the DSAEK only eyes and the event occurred on the third postoperative day in the triple procedure case.

“On the first day after surgery in the patient who had phacoemulsification, the graft was firmly attached, there was no interface fluid, and vision was clearing,” Dr Terry reported.

Endothelial cell loss data at six months were analysed for 37 eyes each in the DSAEK only and triple procedure groups. Mean cell loss rates were 34 per cent in the eyes that did not have phaco and 36 per cent in the eyes that did. There was no significant difference between those rates or in mean endothelial density between groups.

Dr Terry reported there were no cases of primary graft failure in the entire series of 223 eyes.

“Based on these data, because we did not have a single case of graft failure in over 200 cases, no conclusions can be drawn on primary graft failure risk after a DSAEK triple procedure. However, it seems reasonable to assume combining DSAEK with phacoemulsification does not cause or increase iatrogenic primary graft failure,” he said.

Dr Terry attributes the excellent outcomes with the triple procedure to his conservative surgical technique. None of the studies used Healon yellow to enable identification of residual material in the anterior chamber and confirmed that it does not coat the anterior chamber surface and can be easily and completely removed from the anterior chamber with a simple irrigation and aspiration technique using standard cataract surgery I/A cannulas.

“We have now used Healon in more than 520 eyes undergoing endothelial keratoplasty with different techniques and have not seen any pockets left in the interface or a single case of graft dislocation due to the viscoelastic. However, it is important to be meticulous in ensuring the viscoelastic is completely removed from the eye prior to inserting the donor tissue lenticule,” Dr Terry said.

He noted that some surgeons who recommend against performing a triple procedure because of concerns that the viscoelastic will adhere to the interface and promote dislocation may have used dispersive viscoelastics which are different than Healon, and that some others have cited “unpublished data” when reporting that use of viscoelastics interferes with donor attachment.

“Attachment depends on good endothelial function early on, so that damage to the endothelium can lead to dislocation,” he said.

He also performs scraping of the peripheral recipient bed to roughen the surface and exposes stromal fibrils as a means of enhancing donor adherence.

To prevent damage to the donor endothelium from the IOL, Dr Terry emphasised the importance of a small diameter capsulorhexis, 4.5mm or less, which will secure the IOL in the capsular bag, and use of acetylcholine chloride (Miochol-E) after the viscoelastic is removed which will secure the IOL in the capsular bag, and use of acetylcholine chloride (Miochol-E) after the viscoelastic is removed and prior to insertion of the graft in order to pharmacologically constrict the pupil.

“Endothelial touch to the iris is much gentler than touch to the IOL. These two strategies provide a dual barrier to prevent the IOL from moving forward while the graft is inserted,” Dr Terry said.

More detailed information about Dr Terry’s techniques for endothelial keratoplasty and combined surgeries can be found at the website www.diek-dsek.com.

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