FUCHS’ DYSTROPHY

Debate explores optimal approach for treating cataract in patients with Fuchs’ dystrophy

by Dermot McGrath in Abu Dhabi

It is better to perform a combined cataract and Descemet’s stripping endothelial keratoplasty (DSEK) in patients with Fuchs’ dystrophy or should surgeons opt instead for a staged approach of two separate procedures?

At a special debate session held during the World Ophthalmology Congress, Pravin K Vaddavalli MD argued the case for the former approach while Rudy Nuijts MD, PhD, outlined the benefits of a staged approach.

Dr Vaddavalli, associate ophthalmologist at the LV Prasad Eye Institute, Hyderabad, India, said that while specific cases may warrant a staged procedure depending on the severity of the cataract and progression of the dystrophy, there were valid arguments in favour of combining the procedures for many patients. “The main reason why I think we should do it together is because it is one surgery, and the results of combined DSEK with cataract surgery have excellent visual outcomes and very good refractive stability that are comparable to those patients who have DSEK alone,” he said.

He noted that cataract surgery in patients with Fuchs’ corneal dystrophy presents a particular challenge because of the endothelial cell loss associated with phacoemulsification. Looking at the scientific literature, Dr Vaddavalli said that intraocular surgery in a normal cornea results in an average loss of between 11 per cent to 15 per cent of the endothelial cells.

“This is no different in cataract surgery in Fuchs’ dystrophy patients, with a loss of about 11 per cent to 12 per cent of endothelial cells, although the absolute number of cells lost is probably less because you are starting off with less cells in the first place. So if you do cataract surgery in a patient with Fuchs’ dystrophy it will probably tip the balance from a patient with no corneal oedema to one with oedema,” he said.

In terms of visual function, Dr Vaddavalli cited a 2011 study by van de Meulen et al that found that quality of vision is severely impaired in patients with Fuchs’ dystrophy and improves significantly after DSEK.

“The amount of light scatter in these patients was significantly greater than age matched controls who may or may not have a cataract. As this light scatter can be removed by performing a DSEK surgery, it seems that the corneal endothelial changes or changes in the stroma might themselves cause a reduced visual function in patients with Fuchs’ dystrophy,” he said.

Appropriate selection

Presenting the case for a staged procedure, Dr Nuijts said that found that quality of vision is severely impaired in patients with Fuchs’ dystrophy and improves significantly after DSEK.

His criteria for the selection can be based on corneal thickness, but also signs such as early morning decompensation, endothelial cell density, firmness of the cataract and quality of vision,” he said.

Once the patient has been identified as being a good candidate for a staged procedure, the main preoccupation of the surgeon is to prevent postoperative corneal decompensation from the cataract procedure, said Dr Nuijts. “The risk factors for endothelial cell loss are the firmness of the nucleus, shorter eyes, longer phacoemulsification time and complications. What is very important in this category of patients is that the surgeon prevents contact of the fragments with the endothelium, and discusses the risk of decompensation with the patient,” he said.

Dr Nuijts said that the soft shell technique pioneered by Steve Arshinoff MD, combining a dispersive and a cohesive viscoelastic, has been shown to be particularly helpful in protecting the compromised corneal endothelium in Fuchs’ dystrophy patients.

In terms of phacoemulsification, Dr Nuijts said a literature survey did not indicate any clear advantage for particular nucleotomy techniques, but noted that torsional ultrasound technology may well offer advantages over traditional longitudinal ultrasound for these patients.

This was confirmed by a randomised study carried out by Dr Nuijts and co-workers looking at the corneal thickness changes in Fuchs’ endothelial dystrophy patients who underwent either torsional or conventional phacoemulsification.

“We found that torsional phacoemulsification resulted in less US time and less cumulative dissipated energy (CDE), especially in the higher grades of cataract (see figure above). We also saw less swelling of the cornea at day one with torsional compared to longitudinal ultrasound,” he said.

Dr Nuijts said it was also important to bear in mind the disadvantages of doing a combined procedure in such patients.

“As well as the intraoperative disadvantages of a smaller capsulorhexis, and issues with lens iris diaphragm visibility and mobility, there are also the postoperative problems of unpredictability of the refractive effect, since not all eyes with DSEK improve and there is a continuing loss of endothelial cells after keratoplasty. There is an incidence of corneal graft rejection of up to 9 per cent and we also have IOP pressure spikes that may be caused by the use of corticosteroids in up to 30 per cent of cases,” he said.

Dr Nuijts said that phacoemulsification might be considered as the preferred option for a standalone procedure if the corneal thickness is 620 microns or less.