PHAKIC IOL

Screening is important when reaching decisions on phakic IOL candidates

by Priscilla Lynch in Southport

Phakic IOL candidates require a comprehensive workup to rule out any potential anatomic or physiological problems, Jan Venter MD, London, told delegates attending the XXXV UKISCRS Congress.

When patients attend for screening, his clinic first looks at corneal topography (Pentacam, Oculus) and measures anterior chamber depth, which is critical in these patients, and screens for corneal diseases and keratoconus. “About five to 10 per cent of these patients need a laser enhancement so we need to know the cornea topography is normal to allow us to do this and also we identify the steepest meridian of the cornea where we place our incision for a non-toric or even a toric lens,” he said.

The biometry of the patient is checked for future reference and it confirms the anterior chamber depth. The white-to-white measurement is also taken as that is necessary for the use of an Acrysof Cachet lens as well as for the Visian ICL lens calculation of size. Autorefraction is also used, as a reference for manifest refraction, while tonometry is used to exclude any ocular hypertension or glaucoma, which he said are considered as contraindications for a phakic IOL.

Especially important is the specular microscopy findings in these patients, he said. “As we know we have about 4,000 cells/mm² in the first decade of life but we lose about 0.6 per cent every year and at 40 years of age we have about 2,600 cells/mm²,” Dr Venter said.

The patients’ cell density is thus carefully examined by the clinic. With polymegathism, the difference in sizes across cells in the area is measured with a lower CV more desirable, while looking at pleomorphism (percentage of cells with six sides/edges) a higher percentage is desirable for a phakic IOL.

“We exclude patients with endothelial cell problems, guttata, Fuchs, etc. Currently we would want a cell count of more than 3,000 cells/mm² if patients are younger than 30 years of age and for patients over 30 we would want 2,000 cells/mm² or more for Artisan/Artiflex. For an Acrysof Cachet and Visian ICL, we use the FDA guidelines. Part of the informed consent forms that they sign states that they attend for a yearly endothelial cell count,” he said.

Emphasising the importance of cell loss, he outlined the findings of a number of studies. Looking at a European multicentre study (Budo, 2000) on iris fixated lenses, there was about a nine per cent loss over a period of three years, while looking at the results of a study (Henry F Edelhauser) on posterior chamber IOLs there was a cell loss of 12.5 per cent over a period of five years. “If you ask why, as the lens is behind the pupil, it is generally because of chronic inflammation. The lens rests on the iris, the lens fixates on the ciliary body and that causes chronic inflammation which contributes to cell loss even with a posterior chamber lens,” he explained.

Returning to his clinic’s screening procedures, Dr Venter said they also use optical coherence tomography (OCT) to look at the anterior chamber depth from the endothelium (requiring a minimum of 2.8mm), the iris configuration, the true angle to angle distance, and the crystalline lens rise (maximum 0.6mm), which is the measurement of the distance between the anterior surface of the crystalline lens and the horizontal line between the two angle recesses.

Lens rise limit

Elaborating the rationale behind the lens rise limit, he said the lens rise increases by 20 microns each year and it is possible to calculate the number of years a lens can stay safely in the eye before reaching maximum lens rise (Baikoff G. et al. Pigment dispersion and Artisan phakic intraocular lenses: Crystalline lens rise as a safety criterion. J Cataract Refract Surg 2005; 31:674-680).

“They, if it exceeds 0.6mm (600 microns), the patient is not suitable for a phakic IOL, particularly an Artiflex lens, as 60 per cent of these people will develop posterior synechiae and you will end up having to remove the lens, so we critically look at that,” he noted.

Meanwhile, Dr Venter said new software for OCT allows the clinic to simulate the position of the lens prior to the surgery, which helps determine its safety in the distance of the phakic IOL from the epithelium, and the vaulting through the distance of the phakic IOL from the crystalline lens. A safe distance is 1.5mm at the edge of the phakic IOL and 2.0mm at the centre of the lens, he told delegates, adding that surgeons must remember the crystalline lens grows by 20 microns per year so the distance between it and the phakic IOL will reduce over time.

Dr Venter’s clinic also measures the scotopic pupil size, by Colvard or Wavefront aberrometer, in these patients. Glare and haloes are seen in patients with big pupils so the maximum pupil size is 6.5mm for an Artisan 5.0mm lens, and 7.0mm is the maximum pupil size for an Artisan 6.0mm lens, while there is no restriction for the Visian ICL lens.

A retinal OCT is also performed on these patients to document any retinal pathology, myopic degeneration, etc, and exclude any active pathology. And of course manifest refraction is very important to confirm refraction stability, he stressed. Finally, Dr Venter himself then sees the patients for a dilated fundus examination and slit lamp examination before the final decision on the patient’s suitability for the procedure is made.

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