QUALITY OF VISION

Ideal visual performance tests should fulfil a number of basic criteria

by Dermot McGrath in Geneva

Precise, reproducible and accurate methodologies to obtain objective evaluation of quality of vision after presbyopic IOL implantation are essential in order to create surgical techniques which will eliminate post-refractive visual disturbances, according to Joaquim Neto Murta MD, PhD.

“The ideal refractive and lens surgery would allow patients to detect and recognise large and small objects, of high and low contrast, at all distances and under all lighting conditions. The quality of vision should be evaluated by contrast sensitivity, colour vision, glare and night vision testing,” he said.

Speaking at the joint meeting of the European Society of Ophthalmology (SOE) and the American Academy of Ophthalmology (AAO), Dr Murta, director of the Department of Ophthalmology, University Hospital Coimbra, Portugal, said that there are 45 different glare and contrast sensitivity testing methods currently available.

“The problem is that the majority of the available techniques lack standardisation and scientific validity. They are hard to interpret for both physician and patient, they often lack correlation with symptoms, they tend to be time-consuming, costly and often superfluous,” he said.

With this in mind, Dr Murta said that the ideal visual performance tests should fulfil a number of basic criteria. It should be easy to use for clinicians and technical support staff, as well as being easy for the patient to understand. It should ideally be quick to perform, test variable contrast and spatial frequency, allow for small increments in task difficulty, and perform multiple trials in each test level.

It should also be computer generated and scored and permit random generation of test targets, he said. Finally, it should permit the pupil to physiologically dilate and to include infrared pupil size monitoring.

For contrast sensitivity testing, Dr Murta stressed the importance in terms of quality of vision to analyse separately the patient’s magnocellular and parvocellular systems.

“The magnocellular system is very important in night vision and above all in terms of peripheral vision, while the parvocellular system plays a more important role in photopic vision, colour, texture, shape discrimination and central vision,” he said.

To demonstrate the utility of a computerised psychophysical assessment method under photopic and mesopic conditions (Metrovision), Dr Murta presented the three-month results of a prospective study comparing the AcrySof ReSTOR +3 Add lens (Alcon Inc), the Lentis Mplus IOL (Oculentis) implanted bilaterally in two groups of 30 patients and a monofocal aspheric IOL (Alcon) as a control.

He noted that while the ReSTOR lens has an extensive publication history in the scientific literature, the glare and contrast sensitivity tests to which the lens had been subjected have not always met the rigorous standards needed to fully assess the performance of a multifocal lens.

As one of the newer multifocal IOLs on the market, the Lentis Mplus IOL features an innovative approach in multifocal lens technology, without Fresnel rings, by combining an aspheric, asymmetric distance-vision zone with a 3.00 D sector-shaped, near-vision zone.

Looking at the overall visual acuity outcomes, Dr Murta said that no significant difference was found in the mean distance, intermediate and near uncorrected visual acuity between the ReSTOR and the Mplus IOLs. However, the Lentis Mplus recorded worse outcomes for contrast sensitivity with medium and high spatial frequencies under both photopic and mesopic conditions.

The stability of the Lentis Mplus was also a concern as a rotation of a multifocal IOL with such design can negatively impact the postoperative quality of vision, added Dr Murta (see figure).

Rotaition of a Lentis MPlus IOL (> 30º) three months post-op

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