FUNCTIONAL VISION
Pan-Focal Visual Acuity - a new measurement tool
by Priscilla Lynch in Southport

Surgeons must ensure they thoroughly assess functional vision in presbyopic eyes and carefully manage patient expectations to avoid unnecessarily unhappy patients following surgery, Milind Pande FRCs, FRCOphth told the XXXV United Kingdom & Ireland Society of Cataract & Refractive Surgeons (UKISCRS) Congress. To that end, Pan-Focal Visual Acuity evaluation, a new measurement tool developed by Dr Pande and colleagues at the Vision Surgery and Research Centre, East Yorkshire, UK, has shown promising results in helping to ensure the best outcomes for presbyopic IOL patients.

Dr Pande noted that the main questions presbyopia IOL patients have are can they drive, use a computer, mobile phone, shop, read in bed, etc. In standard clinical practice when assessing functional vision in these patients measurements are taken of their photopic distance and near visual acuity, but rarely of their intermediate visual acuity.

“This really is inadequate data to answer these patients’ questions and can result in a mismatch between patient expectations and unhappiness in spite of good uncorrected visual acuity,” he said.

The current measure of functional vision is a defocus curve, which essentially measures visual acuity at different distances by putting in different amounts of defocus on the positive and negative side. However, in order to obtain adequate information on functional vision in both photopic and mesopic conditions, one would need to do both photopic and mesopic defocus curves, which is very time consuming (at least 45 minutes), impractical and subjective. Furthermore, visual acuity requirements of intermediate and near vision tasks are unknown, he added.

To address this, Dr Pande and colleagues devised a new measure called Pan-Focal Visual Acuity. “The concept behind this was that the legal driving vision standard is a long-established and well-respected standard for photopic and mesopic vision, so we could easily take it on board,” he explained. Intermediate vision activities are mainly carried out in photopic conditions, while near vision activities are carried out in both photopic and mesopic conditions, he pointed out. Thus, the new measurement tool serves as a practical clinical measure of visual acuity across standard distance and illumination levels, both corrected and uncorrected vision.

To validate the new system, Dr Pande and colleagues measured 147 eyes of 75 patients more than six weeks postoperatively with almost all variations of presbyopia IOL correction possible. The Pan-Focal Visual Acuity test was used and they were given questionnaires to assess their dependence on spectacles and what their perception of spectacle-free vision was. They were also tested in the clinic on whether they could perform tasks on the laptop, read books etc.

The global validation results showed that if binocular visual acuity is 6/9 or better in all Pan-Focal Visual Acuity measures, patients are able to carry out all tasks without spectacles and the patients themselves feel they don’t need spectacles for any activity.

**Individual task performance**

In terms of the individual task performance, the validation exercise found very good results for all activities at 6/9 or 6/12 visual acuity except for the laptop performance, which Dr Pande believed was due to variations in the working distance sometimes with the laptop.

“So 6/9 or better pan-focal visual acuity gives you complete spectacle freedom and intermediate visual acuity of 6/9 or better is required for desktop use. The laptop number was variable. Near visual acuity of 6/12 or better is adequate for reading books or newspapers with good light, but near visual acuity of 6/9 or better is needed for reading shiny magazines or telephone directories, especially in dim light,” he reported.

Results from the specific lens choices showed that the monovision and the Crystalens patients tended to perform better on intermediate vision, while multifocal lens patients tended to do better at near vision activities.

In terms of the thresholds required of 6/9 or better, he said surgeons know there is no perfect solution but by characterising each presbyopic IOL option they can then advise patients on what is possible and what is not possible preoperatively, and counsel them and modulate their expectations accordingly.

Dr Pande confirmed he uses the new measurement tool regularly in his clinic, and assesses patients first preoperatively to select the IOL for the first eye.

Then two or three weeks later, he repeats the measure and the second IOL lens for the other eye is then chosen on the basis of this.

“The Pan-Focal Visual Acuity measurement allows us to predict for patients what each lens is capable of. It is a great tool to choose what lens will work for what patient and it is also a great tool to define the boundaries of what each technology is capable of and that really is a key message as until we get to the stage where we have a perfect lens we are always going to have to choose and select,” he told EuroTimes.

Dr Pande reiterated that careful assessment and closely managed patient expectation is vital in ophthalmic clinical practice.

“The Pan-Focal Visual Acuity is really a practical, validated measure of functional vision in presbyopia patients. It allows for objective comparisons of IOLs and the different type of presbyopia eye corrections. It is also an excellent tool clinically to use day in and day out to achieve happy patients,” he concluded.