**TRIFOCAL IOL**

Novel apodised design yields improved intermediate vision

*by Roibeard O’hEineachain in Vienna*

A new diffractive IOL (Physiol FineVision) can provide patients with good intermediate vision in addition to sharp near and distance vision with nearly no change in distance vision under mesopic conditions, said Jerome Vryghem MD, Clinique Saint-Jean, Brussels, Belgium.

"The Physiol FineVision, a new diffractive trifocal intraocular lens, provides three useful focal points by combining two superimposed diffractive profiles, one with a +1.75 D addition for intermediate vision and the other one with a +3.50 D addition for near vision," Dr Vryghem told the XXIX Congress of the ESCRS.

In a prospective study involving 50 eyes of 25 patients who underwent cataract or refractive lens exchange surgery with the implantation of the Physiol FineVision IOL, 87 per cent of patients reported that they had achieved complete spectacle independence. In addition, only 10 per cent spontaneously mentioned seeing haloes around lights at night time and none of the patients reported seeing ghost images.

The patients in the study had a mean age of 70.4 years at the time of surgery and their mean preoperative best-corrected visual acuity was 0.75. All were free of any other ocular pathology and none had more than 1.75 D of astigmatism preoperatively. In all cases Dr Vryghem performed the surgery using temporal 1.9mm microincisions to avoid surgically induced astigmatism.

**Sharp acuity over range of distances** At two months’ follow-up, the patients’ monocular distance visual acuity had a mean decimal value of 0.89, and was 0.8 or better in 78 per cent of eyes, and 0.5 or better in all eyes. The mean uncorrected binocular distance visual acuity (UCVA) was 1.13, and was 0.8 or better in all patients.

In addition, the monocular uncorrected intermediate visual acuity had a mean value of Parinaud 2.46 (Parinaud 2 = Jaeger 1) at 65cm and was Parinaud 3 (J2) or better in 88 per cent of eyes, and Parinaud 4 (J3) or better in 98 per cent of eyes. Moreover, the patients’ binocular intermediate visual acuity had a mean value of Parinaud 1.7 (which is better than Jaeger 1) and was Parinaud 3 or better in all eyes.

Furthermore, monocular uncorrected near visual acuity at 30cm had a mean value of Parinaud 1.28 and was Parinaud 2 or better in 96 per cent of eyes, and Parinaud 3 or better in all eyes. Binocular uncorrected near visual acuity had a mean value of 1.06 and was Parinaud 1.4 or better in all eyes.

As regards refractive predictability, 88 per cent were within 0.5 D of emmetropia. Dr Vryghem noted that the defocus curve showed less of a dip for intermediate vision than with diffractive bifocal IOLs, with an average best distance-corrected intermediate visual acuity of Parinaud 0.86.

Furthermore, although mesopic conditions reduced the mean near and intermediate vision to Parinaud 2.29 and Parinaud 4.16, respectively, it left their mean distance visual acuity virtually unchanged. This is explained by the apodisation of the diffractive steps.

**High spectacle independence** Dr Vryghem noted that in their responses to a quality of vision questionnaire, 82 per cent of patients said they never use spectacles for near vision, and the remaining 18 per cent said they used them only for reading small letters. Moreover, 92 per cent said they never needed distance spectacles.

As regards photic phenomena, only 10 per cent spontaneously reported seeing haloes, although, when prompted by a questionnaire, 24 per cent said they saw them. In addition, four per cent reported double images but none reported ghost images, difficulties with light transition or glare. The subgroup of patients reporting haloes had a significantly lower mean age than the subgroup without haloes (66 years vs 75 years, p<0.05), Dr Vryghem noted.

When asked if they would be implanted with the same type of lens again, 76 per cent said yes and the remaining 24 per cent said they didn’t know because they had nothing with which to compare it.

"The design of the Physiol FineVision trifocal diffractive IOL adds intermediate vision with no significant decrease in near and distance vision as compared to currently available bifocal IOLs,” Dr Vryghem concluded.