A refined version of Presby-LASIK is capable of delivering high-quality vision at all distances for both eyes in presbyopic patients and represents a definite improvement on traditional monovision approaches, according to a French study presented here.

“We have been successfully using this technique called advanced Isovision since October 2010 for our presbyopic patients. It has given us very satisfactory, predictable results that are a definite improvement on those obtained with other techniques such as conventional presby-LASIK or monovision,” Frederic Hehn MD told delegates attending the French Implant and Refractive surgery Association (sAFiR) annual meeting.

Dr Hehn, in private practice in Nancy, France, explained that the technique consists first of all in correcting the patient’s distance vision using a standard refractive treatment to modify the central keratometry. This is then followed by treatment for near vision on the same eye using the F-CAT profile of the Wavelight Allegretto laser (Alcon Laboratories).

“There is no induced myopia (see figure) and the patient sees perfectly at all distances with the same eye. In this way, the two eyes can be treated in the same manner independent of ocular dominance. The patient usually has excellent near vision almost immediately, and the distance vision usually takes just a couple of days to allow the patient to drive comfortably,” said Dr Hehn.

Dr Hehn added that only a small percentage of patients, in the range of less than 10 per cent, required a further refractive fine-tuning procedure for their distance vision, and none at all for their near vision.

“This technique gives excellent quality of vision which is evident from the defocus curves that we have obtained. There is no ‘gap’ in intermediate vision, as found with diffractive multifocal IOLs, and there is very little diminution in contrast sensitivity since the treatment is performed on a large, fixed optical zone of 6.5mm for both distance and near vision. The clinical results are excellent based on the fact that the technique does not penalise near or distance vision – there is no compromise like we see in traditional presby-LASIK or monovision,” he said.

Dr Hehn noted that the key to the success of the Isovision approach stems from the Wavelight system’s ability to minimise the induction of spherical aberrations during the treatment.

“Understanding how negative spherical aberrations work allows us to increase the depth of focus without the deleterious effects of positive spherical aberrations. Positive spherical aberrations are well known to give a bad quality of vision in scotopic conditions, with associated problems of glare and haloes. Controlling these factors gives us excellent and natural near vision and very good intermediate vision with an excellent defocus curve. The technique is superior to phakic multifocal IOLs especially in terms of the quality of intermediate vision,” he said.

Dr Hehn said that one of the advantages of the treatment is that Isovision, in contrast to monovision, is not limited by patient age. All presbyopic patients from 40 to 75 years of age can benefit from the treatment and it is available for myopic, emmetropic and hyperopic eyes from -8.0 D to +4.0 D, which makes it an attractive option for a large number of patients, he added.