MODEST MONOVISION
Presbyopic approach with slight defocus in nondominant eye achieves high patient satisfaction
by Roibeard O’hEineachain in Vienna

Moderate monovision, with just 1.25 D of myopia for the near focusing eye, can provide a presbyopic solution that is suitable for many types of patients who would find most other strategies unacceptable, said Graham Barrett MD, Perth, Western Australia, Australia.

“We are familiar with the caution that multifocal implants may not be suited to certain individuals. But with modest monovision, architects, engineers, artists and even truck drivers are possible candidates because you can always correct their vision with spectacles if required, for example when driving at night. In addition minor amounts of defocus encountered with astigmatism and PCO and even macular function are not affected to the same degree as they are with multifocal lenses,” Dr Barrett told the XXIX Congress of the ESCR.

He noted that while modern multifocals can provide the majority of patients with complete spectacle independence, they involve a compromise in the form of reduced contrast sensitivity. Accommodative IOLs provide better optical quality but less predictable near vision, he said.

PresbyLASIK is another strategy to provide independence, but it is still not clear how corneal remodelling will affect the results over the long-term, he noted.

Similarly, the newer corneal inlays are showing promising results, but proof of their biocompatibility must await longer-term follow-up.

As a result of all these compromises and caveats, monovision with multifocal IOLs currently accounts for as much as 50 per cent of cataract procedures in some practices. Monofocal IOLs, in turn, account for 90 per cent of lenses implanted.

However, monovision also has its drawbacks, Dr Barrett said. Conventional monovision involves a myopic defocus of around 2.0 to 2.5 D. Although patients treated this way have approximately the same level of spectacle independence and binocular defocus curve as those implanted with multifocals, they lose a significant amount of stereovision.

“What we are faced with is a balance between myopic defocus and distance acuity versus the amount of near vision that can be achieved and also the impact on stereovision. That is why it is my practice to limit defocus to 1.25 D to avoid asthenopia and preserve contrast and stereovision,” Dr Barrett said.

Careful counselling essential
Dr Barrett noted that among his patients treated with modest monovision, 92 per cent achieved 20/30 and J4 or better. And despite the fact that only 27 per cent achieve total spectacle independence, patients are rarely dissatisfied with their results.

However, achieving satisfaction requires thorough preoperative counselling of patients in order to make sure they have realistic expectations. To insure that he only treats appropriate patients with monovision, he puts candidates for the procedure through a process he calls the ABCD of modest monovision.

Advising the patients of the alternatives is the first step in the counselling process. Dr Barrett tells his patients that while multifocals provide a greater chance of spectacle independence, monofocal IOLs provide a better quality of vision.

Broaching monovision is the next step, and at this point he explains that monovision provides the same quality of vision as is the case with conventional monofocal IOL implantation, but also adds improved intermediate vision, although they will require reading glasses for some activities.

Choosing the eye with the densest cataract is the next step, and Dr Barrett said he aims for emmetropia in that eye.

After successful surgery in the first eye and if 6/9 or better unaided acuity is achieved, the vision likely to be achieved in the eye with the near focus, can be demonstrated using the recently operated distance eye and a +1.25 D lens in a trial frame, which is the final step before going ahead with the procedure, Dr Barrett said.

Potential pitfalls
Dr Barrett said that during his years of practising monovision he has only encountered three cases where the patient’s dissatisfaction was great enough as to require a further surgical intervention. Each of the cases was easily remedied and left the patients very happy with their outcome.

The first case was a patient who came to him following bilateral cataract surgery performed elsewhere. The patient had an unexpected refractive outcome with a refraction of -3.5 D in the left eye. Dr Barrett performed LASIK on the eye aiming for emmetropia and leaving a refraction of -0.25 D.

The second case was a high myope who also had bilateral cataract surgery elsewhere with an intended monovision outcome. The treatment resulted in one eye being emmetropic the other eye having a refraction of -2.25 D, which the patient found unacceptable. Dr Barrett performed PRK in the myopic eye that resulted in a sphere of -1.0 D and the patient was very happy with that result, he said.

The third case was one of Dr Barrett’s own patients who ended up with a refraction of -0.5 D in one eye and -1.5 D in the other following bilateral LASIK. Retreatment of the more myopic eye resulted in a plano sphere and a satisfied patient, he said.

“I think there are some very important lessons we can learn from these patients. First, the importance in presbyopic treatments of meeting or exceeding patient expectations; secondly, the problematic nature of anisometropia of more than 2.0 D; and thirdly the primary importance of achieving excellent unaided distance acuity in achieving patient satisfaction. The reading add is the icing on the cake but you have to have the cake first and that is your distance vision,” Dr Barrett added.

Dr Barrett noted that while at present patients must choose between total spectacle independence but lower quality of vision with multifocal IOLs and less spectacle independence and excellent quality of vision with monovision, future technologies may help monovision overcome some of those restraints.

“We may need to consider another paradigm which would be to consider the combination of modest monovision with an implant with extended depth of focus. The concept here would be to simply extend the focal range for near vision but retain the other positive attributes of this technique,” he added.