

PRESBYOPIA

Corneal and lenticular approaches available for spectacle independence after cataract surgery. *Roibeard O'hEineachain reports*

The two main rivals for preventing postoperative presbyopia in patients who undergo cataract surgery are monovision and multifocal lenses, said Roberto Bellucci MD, University of Verona, Verona, Italy, at the 18th ESCRS Winter Meeting in Ljubljana.

Both approaches involve some compromise. With multifocal IOLs there tends to be a reduction in contrast sensitivity, compared with monofocal IOLs. With monovision treatment, there is a reduction in the distance vision acuity in the eye that has been made myopic.

Research suggests that patients with multifocal IOLs achieve higher rates of spectacle independence and higher levels of satisfaction than those with monovision. He cited a recent published randomised study from Moorfields Eye Hospital in London, UK (*Wilkins et al, Ophthalmology, 2013 ;120(12):2449-2455*).

It compared the visual outcomes and satisfaction levels in 94 patients implanted with multifocal IOLs Tecnis[®] ZM900 (AMO) to the results achieved in 93 patients implanted with monofocal IOLs (Akreos[®] AO, Bausch + Lomb) targeted for emmetropia in one eye and -1.25 D of myopia in the other eye.

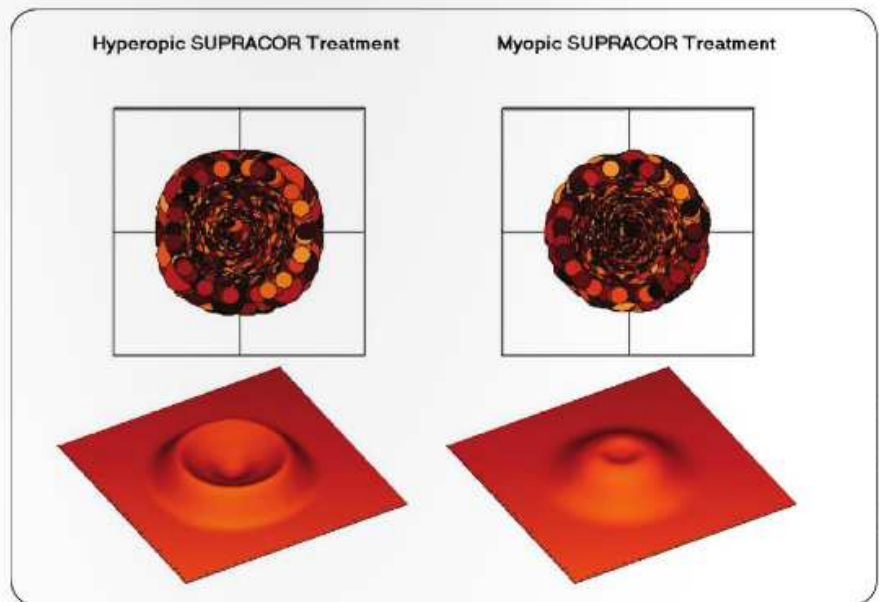
At four months' follow-up, 71.3 per cent in the multifocal group reported never wearing glasses compared to only 25.8 per cent in the monovision group ($P < 0.001$). In addition, although distance visual acuity in the two groups was similar, the multifocal group had significantly better near visual acuity.

"This does not come as a surprise. The reason to consider monovision is not because multifocal IOLs don't work, they do. But with monovision we get slightly better results for contrast sensitivity than we do with multifocals," Dr Bellucci said.

He added that 35 per cent of those in the multifocal group said they had glare that was very annoying, compared to only 15 per cent of those in the monofocal group.

However, in terms of general satisfaction the multifocal group again prevailed, 58 per cent of patients said that they were very satisfied, compared with only 44 per cent in the monofocal group.

For patients who have already undergone implantation of monofocal IOLs, add-on multifocal IOLs can be an effective option, he said. Studies conducted to date with the lenses indicate that they provide basically the same multifocal visual acuity and optical quality as conventional multifocal IOLs.



Ablation pattern of the hyperopic and myopic Supracor algorithm

Courtesy of Roberto Bellucci MD

LASER ENHANCEMENT

There are also many corneal refractive procedures available to pseudophakes who seek spectacle independence. They include various presbyopic LASIK procedures and a range of corneal inlays.

The most popular of the multifocal presbyopic LASIK approaches is the PresbyMax[®] (Schwind), which has central zone for near. It is available for both hyperopic and myopic eyes.

Another, newer LASIK ablation profile is the Supracor[®] (Bausch + Lomb), which also has a central zone for near. It is currently available for hyperopic and myopic eyes.

Dr Bellucci reported that he has used the Supracor presbyopic treatment in 12 eyes of nine patients who were hyperopic after they underwent cataract surgery. Six months after they underwent the LASIK procedure, uncorrected distance visual acuity was 0.10 logMAR and uncorrected near visual acuity at 40cm was 0.14 logMAR.

"I had pretty good results and obtained good uncorrected distance and near vision in all these eyes and obtained the extended depth of focus for which PresbyLASIK treatment was intended," Dr Bellucci said.

CORNEAL INLAYS

Finally, there are the corneal inlays which combine multifocality and monovision. They exist in three types, all designed for unilateral implantation. They are the refractive annular microlens Flexivue

MicroLens[™], the small aperture Kamra Vision[™] (AcuFocus) inlay and the space-occupying Raindrop[®] (ReVision Optics) inlay.

In a study in which five pseudophakic patients underwent implantation of the Raindrop inlay, the mean near, intermediate and distance visual acuities in the treated eyes were 20/20, 20/25 and 20/20, respectively, he noted (*Tran et al, 2013 ESCRS Congress*). A larger study with the inlay is due for publication soon, he added.

In another study, involving pseudophakic patients implanted with the Kamra inlay, mean uncorrected near visual acuity improved five lines from J10 to J4. Mean uncorrected distance visual acuity, corrected distance visual acuity and corrected near visual acuity remained stable and were 20/20, 20/16 and J1, respectively (*Huseynova et al J Refract Surg, 2014 ; 30: 110-115*).

Dr Bellucci concluded his presentation by cautioning surgeons to be attentive to the different age profile of pseudophakic patients, particularly when carrying out corneal procedures.

"Regardless of the treatment you apply to the cornea, you have to keep in mind that pseudophakic patients are generally older than phakic presbyopic patients. They will therefore be more prone to eye surface problems such as blepharitis, dry eye syndrome and epithelial dystrophy," he said.

Roberto Bellucci: robell@tin.it