High-quality functional vision achieved with Tecnis multifocal IOL

BILATERAL implantation of the Tecnis ZM900 diffractive IOL (AMO) results in excellent visual outcomes and high levels of safety and predictability so long as careful patient selection is adhered to, several recent studies indicate.

Addressing a session on multifocal IOLs during the XXIV Congress of the ESCRS, Frank J Goes MD said that his clinical experience with the Tecnis ZM900 multifocal lens has been overwhelmingly positive.

“This is an excellent safe and efficient IOL for refractive lensectomy in hyperopia and for presbyopia correction, and it is also indicated for aphakia in cataract patients. The lens provides excellent near, distance and intermediate vision but it is important to remember that careful patient selection remains vital to obtain the best outcomes with this implant,” he said.

Dr Goes presented the six-month postoperative results of 104 eyes of 52 patients who underwent refractive lens exchange at his practice in Antwerp, Belgium. The presbyopic patients had hyperopia ranging from +1.5 D to +9.0 D and a mean age of 52 years. All of the procedures were simultaneous bilateral implantations under topical anaesthesia.

Discussing the properties of the lens, Dr Goes explained that the Tecnis multifocal is based on the aspheric optic design of the Tecnis IOL which features a modified prolate anterior surface that produces negative spherical aberration, thereby compensating for the positive spherical aberration of the cornea and enhancing contrast sensitivity.

In his clinical experience, Dr Goes said that the lens delivers a high level of spectacle independence and consistently high patient satisfaction levels.

“Excellent” results for intermediate vision

“In this series, 95 per cent of patients were completely spectacle independent and only three patients needed glasses for intermediate tasks such as computer work. Uncorrected visual acuity also showed a dramatic improvement,” he said.

In terms of near visual acuity, Dr Goes noted that this is one of the strong points of the Tecnis multifocal lens, with 95 per cent of patients reading J1 or better and 100 per cent of patients reading J2 or better without glasses. For intermediate distance, Dr Goes said 60 per cent of patients could read J2 at 50 cm and 90 per cent could read J3 at the same distance.

Twenty out of the 104 eyes required a LASIK “touch-up” to correct residual refractive error after IOL implantation.

“These results are excellent because we should remember that these are active, relatively young patients who want to be able to work on computers. Only three patients in this series had problems with their intermediate vision and needed to use myopic correction to perform their computer work comfortably,” he said.

Acknowledging that visual disturbances are a well-known issue with multifocal implants, Dr Goes remarked that inevitably some compromises have to be expected with such lenses.

“There is no such thing as a free lunch but we all agree that the lunch should be as cheap as possible. With the Tecnis lens, only a minority of patients (five per cent) experienced major subjective visual complaints and only 20 per cent had minor subjective complaints. The crucial point, however, is that not one patient considered explantation as an option,” he said.

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Extra chair time essential

The need for rigorous patient selection and the importance of ‘chair time’ explaining the limitations of multifocal technology should be borne in mind by surgeons thinking of introducing the Tecnis multifocal into their practices, according to Ralf-Christian Lerche MD.

Remarking that target refraction and patient satisfaction after multifocal IOL implantation are major challenges of refractive lens surgery, Dr Lerche said that the design properties of multifocal IOLs have been known to generate problems of reduced contrast sensitivity, as well as visual symptoms such as glare and halos.

To assess the real-life performance of the Tecnis ZM900, 90 eyes of 45 patients were enrolled in a retrospective questionnaire trial carried out at the EuroEyes Centre for Refractive Surgery in Hamburg, Germany.

Patients were divided into three groups according to their postoperative refractive status: Group 1 included myopic eyes from −0.50 D to −1.50 D; Group 2 emmetropic eyes from −0.50 D to +0.50 D; and Group 3 hyperopic eyes from +0.50 D to +1.50 D.

Postoperative refraction and visual acuity (spherical equivalent, astigmatism, UCV, BCVA, reading) were correlated with overall patient satisfaction, individual interests and ergonomical visual acuity status (halos, glare, frequency of use of reading/distance spectacles).

In terms of quality of life issues, 65 per cent of the myopic group said they were satisfied with their overall visual acuity, compared to 89 per cent and 88 per cent in the emmetropic and hyperopic groups respectively. For intermediate vision, 32 per cent of the myopic group, 53 per cent of the emmetropic group and 58 per cent of the hyperopic group complained of difficulties, although only three patients requested explanation of the lens.

“In effect, the results show that the overall satisfaction as well as the visual acuity for both distance and near vision was quite good for the emmetropic and hyperopic groups, whereas myopic patients were not really happy and experienced some discomfort. By contrast, myopes were happiest with their intermediate visual acuity compared to the other groups. It was also noted that all three groups experienced some level of difficulty with night driving. The emmetropic group especially had problems with intermediate visual acuity and the highest rate of halos,” he said.

Summing up, Dr Lerche said that despite varying levels of discomfort with their implants, most of his patients would choose to have the same surgery and the same IOL again.

“In our experience, individual targeting of emmetropia, myopia and hyperopia and the right choice of lens type is still an ambitious effort in modern lens surgery and should be correlated to individual patient history. For this reason we have developed and use a special questionnaire for multifocal IOL implantation,” he said.

Positive outcomes with older cataract patients

Similarly positive outcomes using the Tecnis multifocal implant for older cataract patients were also reported in a separate presentation by Andreas Scheider MD.

In a study of 21 cataract patients with an average age of 82, Dr Scheider and colleagues found a very high satisfaction rate for near and distance vision among the 18 patients who responded to a quality of life questionnaire 2 years after the implantation. All 18 patients said they would choose to have the same lens implanted again, even though some of them experienced difficulties with glare, in these patients especially in photopic conditions.

“In my opinion the Tecnis is an easy to use, effective and safe multifocal IOL for cataract patients without the need for further additional procedures. It is also a high-quality lens for presbyopic refractive lens exchange. If you do inform these patients of some of the limitations of these types of multifocal lenses, then they are usually very happy with the end result. For the future, I think mixing-and-matching the more dominant Tecnis with the more distant dominant ReZoom will further improve distance and intermediate vision,” he added.