

Experience With the Lentis Mplus Toric IOL

This asymmetric multifocal IOL can correct astigmatism and provide good vision at all distances.

BY MAGDA RAU, MD

A common cause of patient dissatisfaction after multifocal IOL implantation in cataract surgery is residual astigmatism. Until recently, patients with more than 1.25 D of preoperative astigmatism were contraindicated for multifocal IOL implantation. Even in patients with low levels of preoperative cylinder, incision-induced astigmatism can worsen distance, near, and intermediate vision.

Limbal relaxing incisions have been employed to expand the indications for multifocal IOLs, but they lack precision. Early overcorrection is followed by regression of effect within 4 to 6 months, negatively affecting optical outcomes after multifocal IOL implantation.

Bioptic procedures, in which implantation of a multifocal IOL is combined with subsequent excimer laser treatment, carry additional postoperative risks associated with LASEK and LASIK treatments including potential loss of contrast sensitivity, as well as higher costs.

THE LENTIS MPLUS TORIC

The Lentis Mplus Toric (Oculentis GmbH) multifocal toric IOL combines the characteristics of two Oculentis IOL technologies: the presbyopia correction of the Lentis Mplus IOL and the astigmatism correction of the Lentis Tplus. The Mplus technology offers two sharp principal foci. At the same time, the posterior toric surface of the optic independently corrects astigmatism.

Previously, multifocal IOLs were based on the concept of rotational symmetry with concentric circles. The Lentis Mplus IOL takes a different approach to multifocality, in that it combines an aspheric asymmetric distance-vision zone and a 3.00-D sector-shaped near-vision zone, with a seamless transition between the two optical zones. Both principal foci of the Lentis Mplus lie on the optic axis. Thus, image displacement is not possible. Light hitting the meridional transition zone is reflected away from the optical axis to prevent interference or diffraction.

This lens is an ideal solution for patients with anisometropia and astigmatism at an age when accommodation is failing and in those who are not candidates for refractive corneal surgery.

The lens is available in C-loop and plate-haptic designs. The overall length of the Lentis Mplus Toric is 11 mm, and the optic size is 6 mm. The lens is available in sphere powers of 0.00 D to 36.00 D (in 0.01-D increments) and cylinder powers of 0.25 D to 12.00 D (in 0.01-D increments), with axis from 0° to 180° (in 1° steps).

The Lentis Mplus Toric is individually customized for each patient, enabling precise correction of corneal astigmatism and presbyopia. For customized orders, the patient's corneal topography, IOLMaster (Carl Zeiss Meditec) calculation, and anterior chamber depth measurements are necessary. Production of the lens takes 6 to 8 weeks.

CLINICAL DATA

In a prospective study from July 2009 to March 2012, my colleagues and I implanted the Lentis Mplus toric IOL in 21 eyes of 14 patients with astigmatism of 1.75 D to 4.50 D. The range of IOL powers was +8.39 to +27.63 D. The corrected astigmatism ranged from 1.75 D to 4.50 D. Mean patient age was 56 years, and follow-up was conducted at 3 months.

Patients included in the study had a strong desire to achieve spectacle independence and had no retinal or optic nerve pathology. Excluded from the study were patients whose BCVA was worse than 0.4 Snellen decimal, patients with pupils smaller than 3 mm, and

patients who had excessive expectations for postoperative vision or were exceedingly anxious or demanding.

All surgeries were performed by the same surgeon. For the operation, the 0° and 180° positions were marked with an argon laser (using the smallest spot with high laser energy) perilymbally in clear cornea. The axis of astigmatism was marked intraoperatively. Coaxial microincision phacoemulsification was performed through a 2.2-mm temporal clear corneal incision. IOLs were implanted using the Oculentis Viscoject injector with the Viscoglide cartridge. For implantation, the 2.2-mm incision usually has to be enlarged slightly; 2.4 mm is satisfactory. The lens can be implanted in one step. For a video demonstration of the implantation procedure, visit eyetube.net/?v=dajoj.



For positioning of the IOL, I use two instruments, a Sinsky hook and a cataract spatula, to rotate the lens gently into the right position without causing stress to the zonular fibers. I rotate the IOL using the Sinsky hook, and I support the lens with the spatula while stabilizing it at the right level so it does not slip out of the capsular bag. The implantation of the lower haptic can sometimes cause problems, and it is necessary to gently push it into the capsular bag.

Three months after implantation, the mean UCVA for distance was 0.78. BCVA for distance vision was 0.84, with mean correction of -0.25 cylinder. The mean UCVA for intermediate vision was 0.72, and the mean UCVA for near vision was 0.82.

At follow-up, patients received a questionnaire, which they were instructed to answer anonymously. When asked whether they had experienced glare, 18% of patients replied yes, but none reported the glare to be disturbing. Twenty percent of patients noticed halos around light sources, but only 8% found this disturbing.

We wondered why patients experienced halos, given the asymmetric design of the Lentis Mplus Toric IOL. Patients who reported experiencing halos were interviewed about what the halos looked like; all of them said that they experienced the halos in the lower portion of the visual field, between 80° and 60°.

At 3 months, 70% of patients reported being spectacle independent. Thirty percent said they occasionally needed glasses: 5% for distance and 25% for near vision. None of the patients reported needing glasses to use the computer, and 25% said they needed glasses to read small print.

When patients were asked about their satisfaction with postoperative results, 84% said they were very satisfied, 8% said they were satisfied, and 8% said they were not satisfied due to unsatisfactory near visual acuity.

TAKE-HOME MESSAGE

- A common cause of patient dissatisfaction after multifocal IOL implantation is residual astigmatism.
- The Lentis Mplus Toric is individually customized for each patient, enabling precise correction of corneal astigmatism and presbyopia.
- This lens is an ideal solution for patients with anisometropia and astigmatism at an age when the accommodation is falling and in those who are not candidates for refractive corneal surgery.

DISCUSSION AND CONCLUSION

Before my first implantation of the Lentis Mplus multifocal IOL, I was skeptical because of its unusual asymmetric design. After my experience implanting the Lentis Mplus multifocal IOL in 110 eyes, I decided to begin implanting the Lentis Mplus Toric IOL. My first cases were patients of presbyopic age who had anisometropic amblyopia, BCVA of 0.4 or better, ametropia, and a difference between the two eyes of up to 2.00 D, which made correction with glasses impossible.

The Lentis Mplus Toric is very stable. We did not observe any cases of dislocation of the lens off the axis, and repositioning was not necessary in any case. Lentis Mplus Toric IOL provides good visual acuity for distance, intermediate, and near. The intermediate vision is excellent; no patients reported needing glasses for working on the computer.

The near vision achieved with the Lentis Mplus Toric is also very good: 75% of patients were able to read small print without correction. The near add of the lens is 3.00 D. In patients with bilateral astigmatism who complain of unsatisfactory near visual acuity while reading small print, we calculate the IOL power for the nondominant eye slightly myopic, with a target of -0.50 D.

The asymmetric Lentis Mplus Toric IOL corrects vision at all distances as well as astigmatism. This lens is an ideal solution for patients with anisometropia and astigmatism at an age when accommodation is falling and in those who are not candidates for refractive corneal surgery. Even our initial three patients with anisometropic amblyopia achieved improved visual acuity, gaining an average of 1 line. ■

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