

Presbyopia, Myopia, Astigmatism Corrected With the Acri.LISA

The first toric diffractive multifocal IOL was implanted in Germany, with promising results.

BY JOSEF WOLFF, MD

For several years, surgeons have implanted multifocal IOLs to offset the accommodation loss that patients experience with aging. According to information from Acri.Tec (now Carl Zeiss Meditec AG [Jena, Germany]), the newest generation of lens technologies has provided spectacle independence to more than 80% of patients who underwent refractive or cataract surgery with IOL implantation.

Complete patient satisfaction also depends on whether emmetropia is attained postoperatively. In my practice, approximately 15% of patients who achieved spectacle independence needed an additional refractive procedure to address their remaining ametropia, which was even found after successful multifocal IOL implantation (ie, bioptics).

ONE STEP CORRECTION

Until recently, LASIK had been our procedure of choice for patients who needed a second refractive treatment. My latest discovery is that by using an Acri.Tec Acri.LISA Toric 466 TD diffractive multifocal IOL (Carl Zeiss Meditec AG) (Figure 1), additional higher-grade preoperative astigmatism can be overcome in a single procedure. I have implanted one patient with this lens, and the results are favorable.

TAKE-HOME MESSAGE

- Josef Wolff implanted the first Acri.LISA IOL.
- This lens helps to overcome higher-grade preoperative astigmatism.
- No further astigmatism is induced with this IOL.
- Recheck the axis position after stabilizing the anterior chamber.

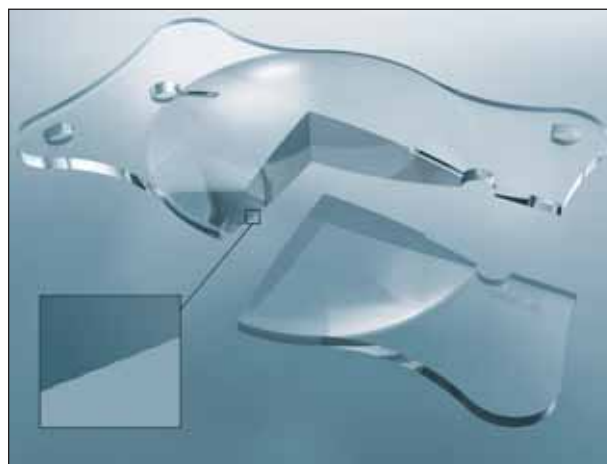


Figure 1. The Acri.LISA Toric 466 TD.

The Acri.LISA Toric 466 TD is made of hydrophilic acrylate with a hydrophobic surface. This biconvex, multifocal IOL has a diffractive, aspheric back surface. The near-vision segment of the lens is 3.75 D, and astigmatism correction is achieved through the front surface, which is toric and aspheric. This lens is ideal for presbyopia correction as well as for myopic or hyperopic patients with astigmatism of more than 2.00 D.

This IOL is astigmatically neutral when implanted through a 1.5-mm incision. Because no further astigmatism is surgically induced, I believe that this lens is advantageous for a successful toric and refractive surgery. The new diffractive design also enables optimal optical imaging quality without diffusion of light. The Acri.LISA diffractive optic covers the entire 6-mm anterior toric surface.

Additionally, the lens has excellent postoperative rotational stability. At 6 months postoperative, Reiter et al¹ showed no lens rotation greater than 4° in 98% of

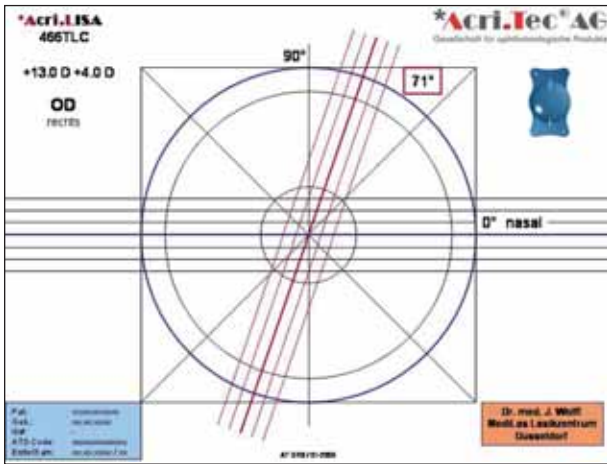


Figure 2. Intraoperative monitor foil in the patient's right eye.

cases using the Acri.Smart 46—the basic model for the Acri.LISA 466 TD IOL. Wehner² found no rotation or decentration with the Acri.Tec Acri.Smart (Carl Zeiss Meditec AG) at 12 to 19 months postoperatively.

We implanted the Acri.LISA lens in a 44-year-old woman who came to our clinic requesting LASIK. She was myopic, had high astigmatism, and showed signs of early presbyopia. Upon examination, we found keratoconus in the right eye, and we refused to perform a corneal refractive procedure. Preoperative distance vision was 20/30 in the right eye and 20/40 in the left. The Acri.LISA 466 TD was first implanted in the right eye. Two months later, we implanted the same model IOL in the left eye.

ADJUST THE PRECISE AXIS

Using a preoperative 0° marking on the slit lamp with the Gerten Pendulum Marker (HumanOptics AG, Mannheim, Germany) and selecting a distinctive episcleral vessel in the corresponding axis, we adjusted the precise axis intraoperatively (Figure 2). For this aspect of the procedure, there are two markings on the IOL in the steepest meridian. I have found that it is helpful to recheck the axis position after stabilization of the anterior chamber. If necessary, a readjustment can also be done at this point.

Four weeks postoperatively, we found a stable axis position in the right eye at 73° and in the left eye axis at 91° (Figure 3). The patient's distance vision in the right and left eyes was 0.6 UCVA, with a binocular UCVA of 20/25. Near vision at a distance of 40 cm was 0.8 UCVA in the right eye and the left eye, with a binocular UCVA of 1.00. The objective refraction was 0.25 -0.50 X 15° in the right eye, and 0.50 -0.50 X 0° in the left eye. Due to a preexisting slight amblyopia, no further improvement in distance or near vision could be achieved in our patient.

Overall, the patient had good distance and near vision



Figure 3. One month postoperative, the patient's right eye after implantation of a toric diffractive multifocal lens.

and was impressed with the results. Further examinations including contrast sensitivity and mesoptometer will be performed at 3 and 6 months postoperatively.

CONCLUSION

This patient received the first Acri.LISA Toric 466 TD IOL to be implanted in the world. Myopia, a higher-grade astigmatism, and beginning presbyopia were corrected with this toric diffractive multifocal IOL. Results thus far are promising, and there is no learning curve for surgeons who are already familiar with microincision cataract surgery.

In the future, I believe that if diffractive multifocal IOLs find broader acceptance in the refractive market after long-term multicenter results are available, this IOL will be an excellent option for patients with high astigmatism who want to achieve spectacle independence. ■

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1. Reiter J. Rotational stability of two posterior chamber intraocular lens designs: a comparative study. Poster presented at the XXIV Congress of European Society of Cataract and Refractive Surgeons Annual Meeting; London; September 12, 2006.
2. Wehner W. Microincision intraocular lens with plate haptic design. Evaluation of rotational stability and centering of a microincision intraocular lens with plate haptic design in 12-19 months of follow-up. *Ophthalmologie*. 2007;104:393-394, 396-398.