

Toric Lens or Astigmatic Keratotomy?

The options for correcting presbyopia are not as developed as those for treating astigmatic errors, yet presbyopia is the bigger annoyance to patients.

BY STEPHEN G. SLADE, MD

For patients, cataract surgery is a unique, once-in-a-lifetime opportunity to reduce their need for glasses along with removing the cataract. We ophthalmologists can address astigmatic refractive errors as well as presbyopia with the surgery and lens selected, and it is well accepted that more than 72% of people in the United States have 0.50 D or more of astigmatism.¹ Residual astigmatism degrades vision after cataract surgery, and it is a greater problem with multifocal than monofocal lens implants, as it degrades vision with a multifocal more.²

Although our options for correcting presbyopia are not as developed as those for treating astigmatic errors, for most of our patients, presbyopia is the bigger annoyance preoperatively. Despite the availability of many corneal surgical options for correcting refractive errors, including LASIK and PRK, none is approved for the correction of presbyopia. With that in mind, should we correct a patient's presbyopia and astigmatism or just his or her astigmatism? Of course, we would rather correct both if we can.

In my practice, I offer three options to cataract patients, all based on what they want and expect in terms of their need for glasses after surgery. Basic cataract surgery may include monovision, but it does not include astigmatic or presbyopic correction. The second option, for best uncorrected distance visual acuity, includes astigmatic correction with either a laser-created arcuate incision or a toric IOL. In the third option, which most of my patients choose, I attempt to eliminate their need for glasses through astigmatic correction and the implantation of a presbyopia-correcting IOL.

METHODS OF ASTIGMATIC CORRECTION

The currently available ways to correct astigmatism at the time of cataract surgery are limbal relaxing incisions (LRIs),

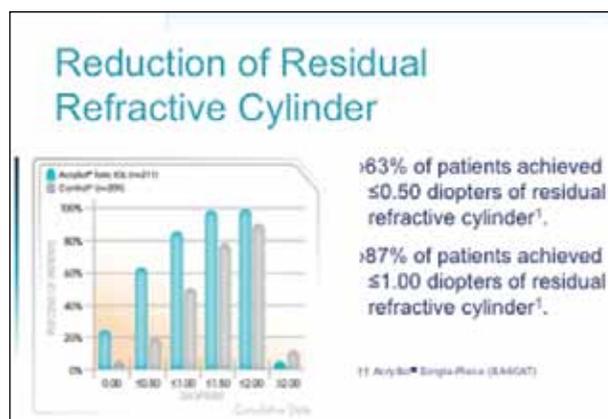


Figure 1. Results with the AcrySof Toric IOL.

laser arcuate incisions, and toric IOLs. Toric monofocal IOLs are available in the United States and provide excellent results, as seen in Figure 1 with the AcrySof Toric IOL (Alcon Laboratories, Inc.)

Poll et al conducted a retrospective study (n = 192) comparing the efficacy of astigmatic correction achieved using toric monofocal IOLs versus peripheral corneal relaxing incisions.³ The investigators found that the average residual astigmatism was 0.42 D with toric IOLs and 0.46 D with corneal incisions. In other words, toric IOLs achieved slightly better results than manual incisions. Higher degrees of astigmatism favor the use of toric IOLs, and US surgeons now have a full range of astigmatism-correcting monofocal IOLs with the availability of the aforementioned AcrySof lens (Figure 2), the Tecnis Toric (Abbott Medical Optics Inc.), the STAAR Toric (STAAR Surgical), and the Trulign (Bausch + Lomb)—the first IOL available in the United States to address astigmatism and presbyopia (Figure 3).

Laser arcuate incisions are a very effective method of

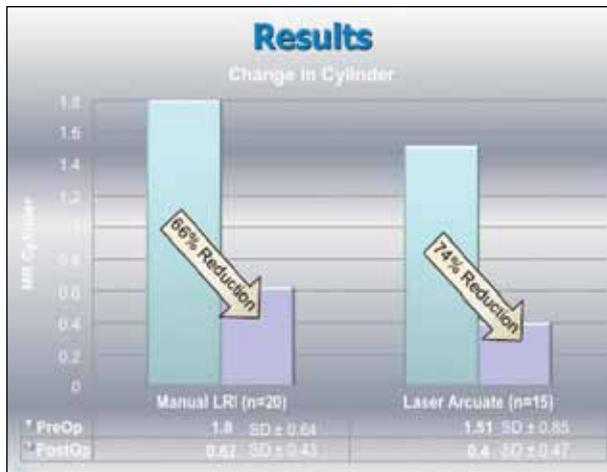


Figure 2. The author has been able to achieve 0.41 D residual astigmatism using femtosecond laser-created arcuate incisions.

correcting astigmatism. I use laser incisions instead of LRIs, because the former are more accurate in my hands. In my early experience with laser incisions, I have achieved outcomes that compare favorably to published results with toric IOLs (Figure 2). I have been able to achieve 0.41 D residual astigmatism using femtosecond laser-created arcuate incisions.⁴

ADVANTAGES OF LASER INCISIONS

The key term in laser cataract surgery is *image guidance*. With this technology, I can precisely place an arcuate incision at a controlled depth. Although laser-created incisions rarely need adjustment, they can be reopened if necessary, whereas intraocular surgery is required to rotate a toric IOL.

Another benefit of laser incisions is that they allow us to treat low degrees of astigmatism. In contrast, with IOLs, the lowest amount of astigmatism that can be corrected is generally 1.00 D.

If a patient's astigmatism is located in the cornea, there may be optical advantages to correcting it there. With a toric IOL, as the capsular bag contracts, the lens can move forward or backward and can rotate out of the proper axis. Incisions do not rotate out of the axis where they are created. IOLs can be reversed, but it is also possible to reverse the effect of an incision with a suture.

Although femtosecond laser arcuate incisions are not as accurate as excimer laser ablation, in my hands, they offer patients the convenience one of a single trip to the OR. As mentioned previously, almost three-quarters of people have at least 0.75 D of astigmatism which we would correct during excimer laser refractive surgery, so why not during femtosecond laser cataract surgery? With the femtosecond laser, it is possible to treat 0.50 D or 0.25 D, just as we would with the excimer laser. In time, I expect image-guided arcu-

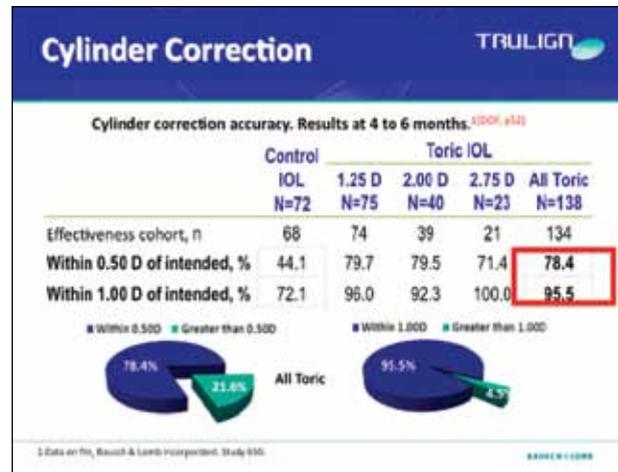


Figure 3. The Trulign, the toric Crystalens, was approved in the spring of 2013.

ate incisions to become more accurate, and nomograms will continue to be refined. Intraoperative aberrometry with devices like the ORA (WaveTec Vision) or the Holos Surgical Wavefront Aberrometer (Clarity Medical Systems, Inc.) should improve results.

Incisions, however, will always be subject to more wound healing and regression than LASIK, PRK, or toric IOL procedures.

CONCLUSION

Although arcuate incisions are a useful option today, the discussion will change if more toric IOLs become available in the United States. If there is an opportunity during cataract surgery to reduce the patient's need for glasses, then we should address his or her presbyopia.

For now, why choose astigmatic over presbyopic correction, especially when the astigmatism can be corrected on the cornea? When toric multifocal lenses and more toric accommodating IOLs are available in the United States, as they are in Europe, I believe they will become our first choice. ■

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