

# Bioptics in Cataract Surgery Patients

Excimer laser ablation can be used to achieve excellent postoperative UCVA.

BY JOHN A. VUKICH, MD

Increasingly, patients' goal for ocular surgery is excellent UCVA. Because New Technology IOLs require an out-of-pocket cost, patients expect to get what they pay for. In order for refractive cataract surgeons to deliver a consistent postoperative refractive endpoint, we must be able to refine and adjust the outcome for those patients who are not satisfied with their vision. It is no longer acceptable to leave a residual refractive error following cataract surgery.

## ADDRESSING ASTIGMATISM

Nearly 40% of patients presenting for cataract surgery have at least 1.00 D of preexisting astigmatism, and approximately 20% have 1.50 D or more (Figure 1).<sup>1</sup> This component of the refractive error, which cannot be corrected by the newest generation of presbyopia-correcting IOLs, must be addressed in order for patients to achieve their best UCVA.

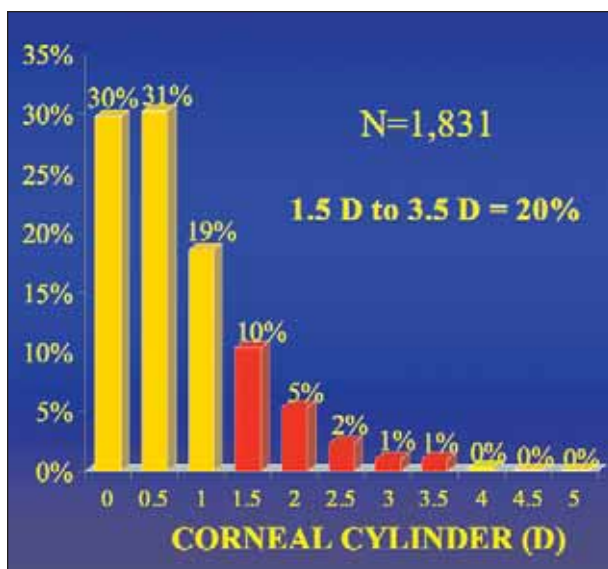


Figure 1. Grabow and Martin<sup>1</sup> examined the prevalence of preexisting corneal cylinder in a series of over 1,800 cataract patients. They discovered that one in five patients had 1.50 D or more of cylinder.

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Astigmatic correction is even more important when the patient is receiving multifocal IOLs. These lenses introduce higher-order aberrations into the visual system that are additive to the second-order aberrations. Patients typically will not tolerate astigmatic error on top of the induced multifocal aberrations. In my experience, as little as 0.50 D of cylinder will result in a less-than-optimal visual outcome.

Traditional postcataract spectacles do not allow patients to achieve their goal of spectacle independence and are therefore not appropriate for anyone who is interested in customized cataract surgery. Relaxing incisions, either limbal or corneal, may be performed preoperatively or at the time of cataract surgery. These techniques, however, which weaken the cornea with 90% thickness incisions, have not evolved much during the past 30 years. The predictability of relaxing incisions is also too variable to yield the kind of results that are consistent with modern vision correction technology (I am unaware of any directly comparative studies). Currently, I typically only perform relaxing incisions on cataract patients with very high cylinder to reduce their astigmatism before they undergo a wavefront-guided enhancement.

## MY METHOD

I prefer to use an excimer laser for postoperative enhancements after cataract or lensectomy surgery. The modality can achieve accurate results to reach an emmetropic endpoint. All the lasers in the marketplace have good attempted versus achieved ratios. For example, the

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iris registration of the Visx Customvue (Advanced Medical Optics, Inc., Santa Ana, CA) allows precise astigmatic correction. With a laser enhancement, I can also adjust the spherical correction. Therefore, if a patient who is scheduled for an astigmatic enhancement ends up slightly myopic, I can easily achieve an emmetropic endpoint with a single enhancement procedure. Many patients' residual refractive errors are small in magnitude. In my experience, PRK has been well tolerated by patients following cataract surgery. I prefer surface ablation over LASIK because of the latter's higher incidence of epithelial defects during flap creation in more mature patients and concern about incisional strength after clear corneal surgery. Although I frequently perform laser enhancements after implanting presbyopia-correcting IOLs, I find that the approach is equally effective for patients who desire monovision with standard IOLs. I can give a patient a little stronger add for near vision with the laser during the astigmatic enhancement. Similarly, I can fine-tune a patient's distance vision so that it is as close to plano as possible.

#### IN SUMMARY

Many contemporary cataract patients no longer assume that refractive error is a lifelong condition, and they are aware that new technologies can improve their quality of life. The general awareness of the ability to correct preexisting refractive error at the time of cataract surgery is growing both by word of mouth as well as our own efforts to educate patients. In my colleagues and my practice, bioptics has been a successful way to deliver a predictable and consistent refractive endpoint for cataract patients seeking freedom from glasses. ■

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1. Grabow HB, Martin RG. STAAR AA-4203 one-piece plate-haptic silicone IOL. In: Martin RG, Gills JP, Sanders DR, eds. *Foldable Intraocular Lens*. Thorofare, NJ: Slack, Inc.; 1993: 237-250.