

Improving Outcomes With Online Resources

Useful Web sites for optimizing patients' refractive results.

BY ASIM PIRACHA, MD

With dramatic improvements in the accuracy of preoperative measurements, the introduction of advanced intraoperative technology, and the expanded scope of postoperative management, patients now expect us not only to remove their cataracts successfully and eliminate their ametropia, but also to correct their presbyopia. Rapidly changing technology challenges our ability to achieve the best surgical outcomes. During the first quarter of 2009, the FDA approved three new premium IOLs: two diffractive multifocal IOLs and an aspheric toric lens. As technologies evolve, we often rely on our colleagues' experiences to keep us up to date. Several online resources assemble data from practicing ophthalmologists and help us enhance surgical planning, surgical outcomes, and patients' postoperative satisfaction.

OPTIMIZING BIOMETRY

The preoperative evaluation is a crucial step to performing successful cataract surgery. When evaluating patients for premium IOLs, an instrument like the IOLMaster (Carl Zeiss Meditec, Inc., Dublin, CA) is invaluable for obtaining accurate biometric and keratometric measurements. We can further improve the accuracy of our IOL calculations by combining data obtained using the IOLMaster with the Holladay 2 formula.

The User Group for Laser Interference Biometry (<http://www.augenklinik.uni-wuerzburg.de/eulib/index.htm>) is a useful online resource for those of us interested in maximizing the utility of the IOLMaster. Surgeons from around the globe have contributed to this Web site, which includes a user's guide and optimized IOL constants for the IOLMaster as well as guidelines for converting IOL constants between formulas. The global A-constant derived from pooled data is useful for clinicians who have not yet developed a personalized factor.

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CORRECTING ASTIGMATISM

With the introduction of the AcrySof Toric IOL (Alcon Laboratories, Inc., Fort Worth, TX), preoperative planning began to include calculating the axis of the IOL's placement. The axis of alignment is based on the degree of astigmatism to be corrected and the size and location of the incision through which the lens will be implanted. Alcon's AcrySof Toric calculator (<http://www.acrysoftoriccalculator.com>) can help you to determine the IOL's alignment and to anticipate how much corneal astigmatism the patient is likely to have postoperatively. To get the best results with toric IOLs, we must measure keratometry manually and know the astigmatic effect of the surgical incision.

Toric IOLs are currently available only in monofocal designs. Patients who receive multifocal IOLs therefore often require limbal relaxing incisions to correct their residual astigmatism. The LRI calculator (<http://www.lricalculator.com>) (Abbott Medical Optics Inc., Santa Ana, CA) allows you to choose a nomogram and uses vector analysis to calculate the optimal placement of limbal relaxing incisions for correcting preexisting and surgically induced cylinder.

COMPENSATING FOR LASER VISION CORRECTION

We are starting to see a new kind of patient in our practices: individuals who have undergone keratorefractive surgery and are now ready for cataract extraction or lens-based refractive procedures. These patients present a unique challenge, because their previous surgery makes

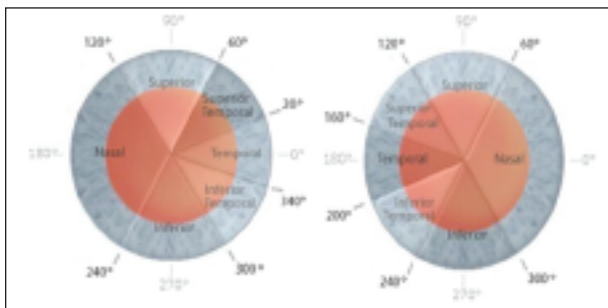


Figure 1. To use the Surgically Induced Astigmatism calculator, the surgeon enters the patient's pre- and postoperative keratometry and the site of the surgical incision.

it difficult to measure their corneal power accurately. Unfortunately, former refractive surgery patients are more likely than traditional cataract candidates to demand emmetropic outcomes.

Until advanced technology allows us to obtain accurate and reproducible biometry in eyes that have undergone keratorefractive surgery, we need to perform multiple measurements and to use more than one formula to determine the appropriate IOL power. Several online resources are available to guide you through these complex calculations, including the Web site maintained by Warren Hill, MD, (<http://www.doctor-hill.com>). Dr. Hill's tutorials review popular IOL formulas, discuss the calculation of surgically induced astigmatism (Figure 1), and describe the factors that affect the selection of IOLs after keratorefractive surgery.

Dr. Hill's Web site also includes a link to the ASCRS Post Keratorefractive Online calculator (<http://iol.ascrs.org>) (Figure 2). A limitation of the ASCRS' Web site is its inability to perform calculations with standard keratometry or topography. To use this tool, you must have additional measurements (eg, Scheimpflug imaging).

In contrast, the Post-LASIK IOL Calculator and Database (<http://iol.oculardmd.com>), a Web site created by Dennis H. Goldsberry, MD, PE, is easy to use, works with standard corneal measurements, and shows the average of 10 different formulas. Finally, you can download the Hoffer/Savini LASIK IOL Power Tool from <http://www.eyelab.com>. This spreadsheet uses data, historical and not, to calculate the IOL's power and includes all of the published methods of compensating for corneal changes associated with keratorefractive surgery. At first glance, the spreadsheet is somewhat intimidating, but I found its use became routine after the first few cases.

ADDITIONAL RESOURCES

We can maximize our patients' refractive outcomes by tracking our postoperative data and refining our cal-

Figure 2. Surgeons can determine the proper IOL power for patients who previously underwent refractive surgery by entering their current biometric measurements as well as their pre- and postoperative refractive data into the ASCRS Post Keratorefractive Online Calculator.

culations. Unfortunately, developing personalized A-constants for different premium IOLs and nomograms for excimer laser treatments is tedious and time consuming. SurgiVision Consultants, Inc. (Scottsdale, AZ), makes this process easier for those of us with any level of technological expertise by allowing us to compare our results with the global outcomes achieved with the same technology. To access SurgiVision's applications, you must enroll at <http://svc.surgivision.net/home/svchome.html>. Be advised that online services are not available for all IOLs or excimer lasers.

CONCLUSION

The online resources described in this article are valuable because they use surgeons' experiences with advanced technologies to produce guidelines for improving the outcome of cataract surgery. We can use these sources not only to learn more about IOLs and advanced strategies for correcting refractive error, but also to compare our outcomes with those of other surgeons. This perspective allows us to evaluate our surgical skills and identify areas that need improvement. ■

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