



Setting Up Today's Cataract & Refractive Surgeons for Success

By Thomas Harvey, MD

Optical biometry has long been a staple in the planning and follow-up of cataract and refractive surgeries, and like all technologies in healthcare today, biometers continue to evolve. While we may once have expected the biometer to simply provide information on axial length, keratometry, and anterior chamber depth to calculate for intraocular lens (IOL) powers, today's systems go well beyond these basics. For example, the Aladdin HW 3.0 Optical Biometer and Corneal Topographer (Topcon Healthcare; Tokyo, Japan) provides nine different parameter calculations in one device, and it does so on an instrument that is easy to use and has a conveniently small footprint.

For cataract and refractive practices with increasing surgical volumes looking to maximize workflow efficiency, or to add greater functionality and additional IOL calculation formulas, a new biometer featuring advanced technology such as state-of-the-art corneal topography and dynamic pupillometry can help to bring the practice to the next level. My practice has seen firsthand the benefits such a device can yield since we added the Aladdin a year ago.

Aladdin Optical Biometer and Corneal Topographer: At A Glance

The Aladdin HW 3.0 Optical Biometer and Corneal Topographer provides low coherence interferometry biometric readings for axial length, central corneal thickness, anterior chamber depth and crystalline lens thickness. Placido-ring topography provides anterior corneal curvature, shape and wavefront (Zernike) analysis. In addition, white-to-white and dynamic pupillometry are also offered. The device performs all relevant measurements to assist in IOL calculation and surgical planning, with different IOL calculation formulas, including the Barrett Suite, the Olsen formula, as well as other formulas for post-refractive surgery and toric IOL power calculations.



Supporting the Practice with the Right Technology

While most biometers are moving to a component model in this day and age, the Aladdin continues to be an entirely mobile, multi-modal device. The device offers a touch screen experience and software integration that eliminates the need for a keyboard and mouse.

The efficiency of the Aladdin HW 3.0 for potential IOL upgrades to premium IOLs is one of its greatest advantages. Within seconds, I know exactly what is needed for the patient to achieve his or her visual goals. This is dictated into my EMR notes, including the exact model, power, and orientation of the lens. Even with post-corneal refractive surgery, the time savings are monumental.— Thomas Harvey, MD

While some will question the lack of swept-source OCT technology, I have found the device is more than capable of measuring axial length through my cataract patients. In addition, its native Placido topography capabilities provide detailed corneal information. Thanks to the onboard Barrett Suite, I can calculate toric implants faster than ever before. This device has increased the efficiency of my practice, is reproducible, simple to operate, and provides all the data I need.

Helping Cataract & Refractive Procedures to “Shine”

We use the Aladdin HW 3.0 for all anterior segment surgery applications. Our refractive surgeons love Placido topography, and this device provides top-shelf images with no extra time investment. Of course, cataract surgery is our number one procedure, and Aladdin shines with its biometry capacity. The software is a great tool to help me educate patients on astigmatism and its potential impact on uncorrected acuity.

Other benefits of the device include reducing the time to upgrade a basic IOL implant and calculate for a premium IOL option to less than one minute, and generating fewer transcription errors since all of the information is housed in the software. Our enhancement and explantation rate for premium IOL implants is less than 1% due to the accuracy of the device.

We also use the Aladdin for some refractive procedures, including laser vision correction, phakic IOLs, and refractive lens exchanges. It has excellent keratoconus detection software, which can help with potential ectasia patients. The automatic photopic and mesopic pupil information is valuable in both refractive and premium IOL surgeries.

Accelerating Toric and Multifocal IOL Calculation

I still remember the days when we would take information from the standard contact or immersion biometer using autorefractor/keratometer data and a topographic printout, to enter into online calculators to select our IOL powers. Not only was this process labor-intensive and prone to transcription errors, but it had to be done after the patient left the building, meaning if there was an error the patient had to come back to be remeasured.

With the Aladdin HW 3.0, I now have all upgraded implants calculated by the time the patient sees the scheduler. It literally takes seconds compared to more than 15 minutes per patient previously. This allows the entire team to be more efficient in sending orders and avoiding unnecessary callbacks and billing errors.

This device has been an “upgrade machine” in my practice: when the onboard topography plus Barrett Toric Calculator says 2 diopters of toricity correction is needed, I can educate the patient on the spot, so immediate value is realized and the ability to upgrade to a premium IOL increases so that the patient receives the best option for uncorrected visual correction postoperatively. The dynamic pupillometry data assists me in ruling-out patients that might not be good candidates for multifocal IOLs, helping to avoid patient dissatisfaction after the surgery.

Reaping Practice Benefits

The efficiency of the Aladdin HW 3.0 for potential upgrade patients is one of its greatest advantages. Within seconds, I know exactly what is needed for the cataract patient to achieve his or her visual goals. This is dictated into my EMR notes, including the exact model, power, and orientation of the lens. Even with post-corneal refractive surgery, the time savings are monumental.

Essential Tools for Today's Cataract & Refractive Practice

Today's fast-paced and competitive cataract and refractive surgical environment means that surgeons need the right tools to swiftly and efficiently move patients toward the best visual procedure that will ensure optimal results. These tools are no longer luxuries, but requirements for an advanced surgical practice.

At the heart of every cataract surgery procedure is the need to perform biometry of different ocular structures. To be able to obtain detailed corneal information using an advanced Placido topography system that can read 6,200 points on the cornea, as well as crystalline lens thickness, white-to-white, anterior chamber depth, and dynamic and static pupillometry in a single measurement offers valuable insights—all in one place.

Moreover, the availability of numerous IOL calculations via different formulas, including the Barrett Suite and Olsen formula, opens the door to improved refractive results in all types of eyes. Using standard toric IOL calculators adjusted by the Abulafia-Koch formula can significantly reduce errors in predicting residual astigmatism.¹ And having a toric IOL calculator built into the existing software not only saves time but can prevent errors, helping to pave the way for a successful cataract surgery.

All of these capabilities are now integrated into one device, the Aladdin HW 3.0 Optical Biometer and Corneal Topographer from Topcon Healthcare (Tokyo, Japan). The device provides cataract and refractive surgeons with advanced technology to aid them in achieving successful procedures and a more efficient practice.

1. Abulafia A, Koch DD, Wang L, et al. New regression formula for toric intraocular lens calculations. *J Cataract Refract Surg*. 2016 May;42(5):663-71.

I have found the device to be on par with popular swept-source biometers in the US in terms of reproducibility for basic IOL implantation as well as premium IOLs. There are so many good biometers today, but I cannot understand why anyone would pay twice as much for another machine that is more time-consuming, offers fewer features, and takes up the entire corner of a room.

We chose the Topcon Aladdin HW 3.0 for its total package of portability, performance, and price. It is the one irreplaceable device for our cataract and refractive surgery patients.

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