In January 2013, a 44-year-old white male presented to my clinic for cataract surgery. As part of the FDA-monitored clinical trials for LASIK, I had performed myopic LASIK on this patient in 1995 to treat 12.00 D of myopia OS. The patient’s current topography was stable and classic for a conventional broad-beam excimer laser treatment (Figure 1). He had been seeing quite well until the past couple years, when he began to notice a gradual deterioration in image quality from nuclear sclerosis.

I had all of his preoperative data to conduct well-informed historical IOL calculations. Calculations using the Holladay II formula recommended implanting a 26.00 D IOL, and I intended to use the Crystalens Accommodating IOL [Bausch + Lomb]. Furthermore, the preoperative calculations predicted the outcome would be a spherical equivalent of -0.60 D. My staff and I scheduled him for cataract surgery on February 20, 2013.

I use intraoperative aberrometry on all postrefractive surgery cataractous eyes to supplement my traditional preoperative calculations as I make the final choice of what implant power to place in the eye. The ORA System, Intraoperative Aberrometer (WaveTec Vision) saved this case, as it has for me in other postrefractive situations. After I extracted the cataract, ORA’s aphakic reading said to implant a 22.00 D lens and that the spherical equivalent would be -0.52 D (Figure 2). I implanted a 22.5 D IOL, and the patient’s postoperative refraction was -0.80 spherical equivalent—almost exactly what ORA predicted. If I had not followed ORA and implanted a 26.00 D lens based on my preoperative calculations, the patient would have emerged much more myopic than he desired.

**TURNING POINT**

I have had a WaveTec aberrometer in my practice for approximately 4 years. During that time, the system underwent a series of software and hardware advancements. In 2012, WaveTec launched its most significant change to the system and released the ORA System. In the first 18 months of having the device, while it was still undergoing refinements to its algorithm, I did not rely on it regularly. I used it to acquire surgical data, but I did not let it inform my intraoperative decisions.

Then, two and a half years ago, I was scheduled to perform cataract surgery on a woman whose LASIK surgery I had conducted 10 years previously. I was targeting -0.50 D of postoperative spherical equivalent. ORA indicated that if I implanted the lens power suggested by my manual calculations, the patient would end up 3.00 D more myopic than I intended. However, I ignored ORA (feeling I was still in the data acquisition and algorithm refinement stage), and followed my own preoperative calculations. ORA was correct; the patient’s outcome was -3.25 D. I was honest with her about the error, and I recommended...
that she allow me to exchange the IOL because she had borderline corneal thickness for a laser treatment. She gave her consent for the IOL exchange, and I followed ORA’s advice this time. Her final outcome was -0.50 D. That case was a turning point for me; since then I have consistently used ORA in my intraoperative decision-making.

CURRENT PROTOCOL
Confirming IOL Calculations
Currently, I use the ORA device in all postrefractive eyes as well as when implanting toric and presbyopia-correcting IOLs. I compare ORA’s calculations against the historical method, the site www.astigmatismfix.com, and the ASCRS calculator. Even with the knowledge these tools provide, however, I appreciate the confidence the ORA System gives me during surgery. The device reinforces my calculations of corneal curvature (and my techs and I always account for the fact that refractive surgery alters the cornea’s anterior corneal curvature more so than the posterior curvature).

With Elective IOLs
The ORA device is especially useful for implanting toric IOLs, to ensure that I am placing the lens on the most accurate axis. When I implant multifocal or accommodating lenses, ORA again helps me choose the most accurate implant powers in order to minimize the need for postoperative refractive enhancements.

In Postrefractive Eyes
The eyes in which I find the ORA System absolutely invaluable are those for which I do not have data on a previous refractive surgery. Manual IOL calculations in those types of eyes are extremely challenging. I also use the system routinely in my premium cataract surgical patients. These individuals often have had previous refractive surgery, and they usually are highly motivated to function without glasses. Again, with these eyes, intraoperative aberrometry helps me get closer to the refractive goal. Even if these patients require an enhancement after the cataract surgery, when I have used ORA, the original outcome is not so far off the intended goal that they need to wear temporary glasses during that 3-month period before I retreat them.

Obviously, I love it when my preoperative calculations agree with ORA’s readings, but the times that they do not is when I think the ORA System is worth its weight in gold. When I see a discrepancy between the pre- and intraoperative readings, I more frequently choose IOL powers closer to ORA’s measurement. This is not to say that I think the ORA System absolves me of professional judgment—with highly aberrated eyes, in particular, like those that have undergone small-zone RK, I may not follow its recommendations exactly. In these highly aberrated, irregular corneas, the ORA device displays a caution sign that helps me weigh this type of decision.

VALIDATION
ORA’s results have been compared to the results of the most frequently used post-myopic LASIK calculation referenced in the literature.1 ORA’s outcomes compare very favorably to these published results. Therefore, I consider ORA to be clinically important in postrefractive cases.

EDUCATION
I do not market my use of the ORA System outside of the clinic, but my staff and I educate our patients about the advantages of intraoperative aberrometry during their preoperative evaluations. I find that having the technology available is a big confidence-builder for surgical candidates. I think ORA has also helped me increase referrals from other ophthalmologists and optometrists, because they have seen the merits of the technology.

CONCLUSIONS
Before the advent of intraoperative aberrometry, performing cataract surgery in postrefractive eyes was challenging. This is the first time we surgeons have an in-surgery tool to help us maximize the chances of implanting the right-powered implant. ORA is now a critical device in my practice, and I cannot imagine performing surgery without it.

Vance Thompson, MD, is the founder of Vance Thompson Vision in Sioux Falls, South Dakota. He is a researcher for and a consultant to WaveTec Vision, Abbott Medical Optics Inc., Alcon Laboratories, Inc., and Bausch + Lomb. Dr. Thompson may be reached at: (877) 522-3937; vance.thompson@vancethompsonvision.com.