



Refractive surgery

Wavefront popular among Indian surgeons, patients

Aberrometers help to produce better LASIK results and are routinely used in more eye centers, but some ophthalmologists require more training before they can utilize technology's full potential.

By Erin L. Boyle

August 2007



Cyres K. Mehta

Wavefront-guided LASIK is now a commonly used technique in India, helping to provide better night vision and best corrected visual acuity, according to several surgeons.

Use of wavefront technology has been increasing steadily in the country, and ophthalmologists who have access to it use it frequently. Many patients who are given the option choose to have surgery with the technology, they said.

"I use wavefront in nearly every case," Cyres K. Mehta, MS, FASCRS, said in an e-mail interview with *Ocular Surgery News*. "Having the technology but not using it doesn't make sense to me."

Physician experience

Dr. Mehta, who uses wavefront in his practice in Mumbai, said wavefront technology is used by many Indian surgeons, and that the number is increasing. He said the technology provides good night vision, better uncorrected visual acuity and cuts down on halos and glare. Patients often report that they can see more clearly postoperatively, he said.

Amar Agarwal, MS, FRCS, FRCOphth, based in Chennai, conducted a study on wavefront aberrations. He said before the advent of wavefront, surgeons could not measure for the best optical correction.

"Until recently, refractive disorders were treated with standard techniques, which took into consideration only the subjective refraction," Prof. Agarwal said in the study. "Wavefront techniques, on the other hand, take into account the patient's subjective refraction, ocular optical aberrations and corneal topography, with the latter not only for diagnosis, but also for therapeutic treatment, in order to design a personalized treatment based on the total structure of the eye."

Now, with the IntraLase (Advanced Medical Optics) in his center, Prof. Agarwal said he feels that the results of LASIK will be even better with fewer flap complications.



Amar Agarwal

Anand Shroff, MS, FICS, said eye centers in India are being equipped with lasers that perform customized treatments. Dr. Shroff is a corneal and refractive surgeon at Shroff Eye Hospital and LASIK Center in Mumbai.

"LASIK, if performed well, is a beautiful procedure," Dr. Shroff said in an interview with OSN. "As results get better, a higher number of people are getting motivated to undergo the procedure and are confident of a good result. India's expanding middle-income class now has the financial capacity and a changing mindset toward LASIK and cosmetic surgery. Wavefront-guided procedures are routinely performed in all the metros and some smaller towns."

Accuracy

Indian surgeons have been conducting studies to show the benefits of the technology to colleagues and peers, including how it deals with complications, preoperatively and postoperatively. Radhika Natarajan, FRCS, and colleagues conducted a study using the Allegretto wave excimer laser (Wavelight) for LASIK or PRK to study its effectiveness for the correction of pure astigmatism.

They found that the laser's outcome was safe and predictable, with a high level of accuracy in correcting astigmatism in the proper axis. They looked at 40 eyes with pure astigmatism. Patients underwent refractive surgery between March 2002 and April 2006 and were retrospectively analyzed. Of those, 27 underwent LASIK and 13 underwent PRK. The mean preoperative cylinder was -3.14 ± -1.20 D and follow-up was at 1 and 3 months.

Of the 40 eyes, 93% achieved 20/30 or better vision; 98% of eyes were within ± 0.5 D; and 26% gained one to three lines. In 10 eyes, residual cylinder was present. The mean surgical induced refractive correction was 3.3 D, with the mean angle at -11.7° in the residual cylinder group.

Aberrometers

Since 2005, many newly established LASIK centers have invested in aberrometers, but many other practices in the country are still without this technology, according to surgeons.

"Many centers in India have now changed over to lasers capable of performing customized treatments," Dr. Shroff said. "Even smaller towns have good laser technology, but some have not invested in aberrometers."

Even when present, Dr. Mehta said, some physicians are wary of the new technology and "need training before they can use its full potential."

Prof. Agarwal and colleagues introduced the concept of aberropia, a refractive error definition based upon their wavefront use. Aberropia is a condition in which reduced visual acuity cannot be explained by a patient's seemingly normal corneal topography.

Correction of aberropia with wavefront technology could be achieved by changing the aberrations to interact differently, Prof. Agarwal said.

He and colleagues conducted a retrospective study of 10 eyes of seven patients who had a BCVA of 6/12 or worse, which was improved by two Snellen lines or more after refractive correction of the wavefront aberration. That improvement could not be explained by any other cause than the removal of the aberration or obtaining aberrations that improved visual performance, they found. Using the Zyoptix system procedure with Bausch & Lomb's Technolas 217 Z laser, they found the system minimized the wavefront deformation with customized ablation.

Prof. Agarwal and colleagues concluded that some cases of poor visual quality are due to aberropia, which, when treated, can be improved. By realizing that not every wavefront aberration is negative to overall quality of vision, surgeons will have a better chance of improving visual quality for all patients, he said.



Dr. Shroff conducts wavefront imaging on a

patient while consulting imaging software about progress of procedure. Wavefront use is increasing in India as more doctors here are acquiring the technology.

Image: Shroff A

Patients

With wavefront used in so many practices, many patients are traveling to India from all over the world for safe, effective and affordable LASIK surgery, according to surgeons.

Dr. Mehta said many practices in Mumbai have hundreds of foreign nationals from the Middle East and neighboring countries visit India specifically for laser correction surgery. Prof. Agarwal said he treats many patients from South Asia.

“The same procedure in India, at a premium-positioned center, would cost one-fifth of what it is in Europe and one-third of what it is in the Middle East,” he said. “Usually these patients do return in 3 months for a postop check, so problems with dry eye, etc., are usually addressed. Also, LASIK is now consistent, with only the occasional patient requiring any active intervention after the procedure.”

Dr. Shroff echoed those sentiments and also said the doctors remain accessible so as to avoid postoperative complications.

“Thanks to the fairly low cost of LASIK in India, even at centers that offer the latest technology, there has been a large number of patients visiting India and opting to have their LASIK done before or after touring the country,” he said.

For more information:

- Amar Agarwal, MS, FRCS, FRCOphth, director of Dr. Agarwal's Group of Eye Hospitals, can be reached at 19 Cathedral Road, Chennai - 600 086, India; +91-44-2811-2811; fax: +91-44-2811-5871; Web site: www.dragarwal.com; e-mail: dragarwal@vsnl.com.
- Cyres K. Mehta, MS, FASCRS, director of the Mehta International Eye Institute & Colaba Eye Hospital, can be reached at Sea Side, 147, Shahid Bhagat Singh Road, Colaba, Mumbai – 400005, India; +91-22-2215-1303; fax: +91-22-2215-0433; e-mail: cyresmehta@yahoo.com. Dr. Mehta has no financial interest in any of the products or companies mentioned in this article.
- Anand Shroff, MS, FICS, a corneal and refractive surgeon at Shroff Eye Hospital and LASIK Center, can be reached at 222 S.V. Road, Bandra West, Mumbai - 400 050, India; +91-22-6692-1000; fax: +91-22-6694-9880; Web site: www.lasikindia.in; email: shroffaa@yahoo.com. Dr. Shroff has no financial interest in any of the products or companies mentioned in this article.

Copyright ©2007 SLACK Incorporated. All rights reserved.