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Wavefront-guided LASIK efficacious for myopic astigmatism

Jul 15, 2003
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Ophthalmology Times Special Reports

San Francisco-Wavefront-guided LASIK with the Allegretto Wave (WaveLight Laser Technologie AG, Erlangen, Germany) excimer laser appears to be safe and effective for correcting myopic astigmatism while reducing higher-order aberrations and improving quality of vision, said A. John Kanellopoulos, MD, at the annual meeting of the American Society of Cataract and Refractive Surgery.

Dr. Kanellopoulos, associate professor of ophthalmology, New York University Medical School, presented the results from prospective follow-up of 142 eyes treated with the WaveLight system and the M2 microkeratome (Moria, Doylestown, PA) for flap creation. He reported the procedure was associated with excellent refractive accuracy, stability, and visual outcomes. Uncorrected visual acuity (UCVA) results at day 1 were nearly as good as at the month 3 follow-up when mean UCVA was 20/18, and contrast sensitivity was improved as well. Safety was also excellent with no eyes experiencing any loss of best spectacle-corrected visual acuity (BSCVA) at 3 months and the majority exhibiting gains of 1 or more lines.

"This is a relatively small group of low to moderate myopic patients, but the results are quite impressive," said Dr. Kanellopoulos, who is also on the staff of Manhattan Eye, Ear and Throat Hospital, New York, and director of the Laservision.gr Eye Institute, Athens, Greece.

"Even on the first day after surgery, these patients are seeing amazingly well, which may reflect the very smooth ablation pattern achieved with this laser as well as the smooth pass of the M2 microkeratome," he said. "In addition, the significant improvement in BCVA in this series is noteworthy, but it is similar to our experience performing standard LASIK with this laser that features a 0.9-mm flying spot and very fast-200 Hz-repetition rate."

The eyes included in the wavefront-guided study had -0.5 to -6.75 D of myopia (mean -3.8 D) preoperatively and up to -3.75 D of cylinder (mean -0.85 D). All underwent evaluation using the WaveLight Wave Analyzer, a Tscherning-type aberrometer. Those studies were performed with the pupil dilated to 7 mm, and patients needed to have four reproducible aberration measurements to qualify for wavefront-guided LASIK treatment.

"This aberrometer was found to produce very reproducible results, but it was not able to scan 100% of candidate eyes," he noted.

Patients were followed for 3 to 7 months with a mean follow-up of 4.5 months. Data from the 3-month visit showed 92% of eyes had UCVA of 20/20 or better, 57% achieved 20/15 UCVA, and 34% were able to see 20/10 uncorrected. The refractive evaluation showed 100% of eyes were within 0.5 D of intended correction.

Total higher-order aberrations improved from a mean of 0.25 µm preoperatively to 0.15 µm.

Only four eyes experienced a postoperative increase in total higher-order aberrations.