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A cost-effective approach

Laser excellent choice for myopic, astigmatism treatment

Two refractive surgeons cover highlights of system, which provides good visual outcomes

By Lynda Charters

Reviewed by Paul Dougherty, MD, and Nancy A. Tanchel, MD

The Nidek EC-5000 excimer laser system with the OPD Scan most importantly provides excellent visual outcomes for patients with myopia or myopic astigmatism. An added bonus is that it provides surgeons an excellent return on their investment compared with other commercially available laser systems that are equipped with wavefront-guided technology, according to refractive surgeons who use the system.



Dr. Tanchel



Dr. Dougherty

For Nancy A. Tanchel, MD, medical director, Liberty Laser Eye Center, Vienna, VA, the clinical results that she obtained with the EC-5000 system were the main reasons for purchasing it. She said that when she compared her 1-day postoperative results using the EC-5000 with those from the CustomVue laser vision correction system with WaveScan (VISX) for wavefront-guided treatment in the FDA

trial, the EC-5000 results were superior.

“Our results using a standard treatment were even better than the results with wavefront-guided LASIK using the VISX and the LADARVision Custom Cornea (Alcon) lasers in equally matched groups of patients with the same range of correction,” she said. “I found that the Nidek EC-5000 does not provide any surprises, the results are consistently good, and the laser is a workhorse.”

Treating high to extreme myopia

To illustrate the type of results she obtained, Dr. Tanchel reported the outcomes from 28 eyes with high to extreme myopia (spherical equivalent range, -8 to -19.25 D); the cylinder ranged from 0 to -3.2 D. All flaps created were 8.5 to 9 mm and 80 to 90 μ m. At 1 month postoperatively in 19 eyes that had reached that end point, 63% of eyes had uncorrected visual acuity (UCVA) of 20/20 or better, 74% 20/25, 84% 20/30, 95% 20/40, and 100% 20/50.

At 1 month postoperatively,

all patients reported night vision equal to or better than the preoperative night vision and all were comfortable driving at night. Importantly, the vision was stable; 11% of eyes lost 1 line of vision, and no eyes lost 2 lines.

“Patients with high to very high myopia can be safely treated with the Nidek EC-5000 laser,” Dr. Tanchel said. “Excellent visual results can be achieved, however, enhancements are more likely in this highly myopic group, and individual surgeon nomogram

optimization is very important.”

Reproducible results

Paul Dougherty, MD, clinical instructor of ophthalmology, University of California-Los Angeles, uses five lasers in his practice, two EC-5000 systems, two LADARVision systems with CustomCornea (Alcon), and a VISX STAR S4 with CustomVue laser vision correction system.

“I use the EC-5000 because it gives me excellent reproducible clinical results when compared



The Nidek EC-5000 excimer laser system can be used to treat myopia and myopic astigmatism safely. (Photo courtesy of Nidek Inc.)

Take-Home Message

The EC-5000 excimer laser system (Nidek) provides excellent visual results for patients with high myopia. In addition, it is more cost-efficient to run because there are no royalty fees and a less costly per month service charge. Also, the system seems to be less time-intensive compared with a wavefront-guided approach.

head to head with the VISX CustomVue and LADARVision,” Dr. Dougherty said. “I prefer using the EC-5000 when treating patients with more than -7 D of myopia. I am getting the best clinical outcome possible for those cases with the EC-5000; below -7 D, all the lasers work quite well. From day 1 postoperatively, my patients with higher myopia have better UCVA than the other lasers provide.

“The main downside to the laser is the range of approval, because it is not yet approved to treat patients with hyperopia. Also, because of the coupling ratio of the laser, the patients have to have at least half the amount of myopia as they do astigmatism,” he said. “For example, in a patient with plano -2.00 × 180°, treatment on the Nidek will create a diopter of hyperopia and is therefore not yet approved for use. Despite this, 85% to 90% of the patients with myopia and myopic astigmatism can be treated with the EC-5000.”

Gaining lines of vision

Three important studies, according to Dr. Dougherty, documented the EC-5000 results. David Zadok, MD, and colleagues reported in *Ophthalmology* (1999;106:2391-2394) that 30% of patients undergoing an enhancement procedure gained 1 or more lines of vision with the EC-5000. Mihai Pop, MD, and Yves Payette, MD, found that 97% of patients had 20/40 or better vision and 85% were 20/20 or better (*Ophthalmology* (2000;107:251-257). Anun Vongthongsri, MD, and associates reported in the *Journal of Refractive Surgery* (2001;17:S242-S245) that 16% of 2,000 had improved best-corrected visual acuity (BCVA) and no eyes lost best-corrected vision.

The icing on the cake for surgeons when purchasing costly equipment such as an excimer laser is a good return on the investment. While Dr. Tanchel pointed out that this factor is secondary to good patient outcomes, however, the Nidek equipment carries the added advantage that the Nidek does not require payment of royalty fees.

“These fees add up, and it adds costs for your patients. Now with wavefront-guided treatments the royalty fees are as high as \$250 per eye or more,” Dr. Tanchel said. “Nidek is presently working on a wavefront-guided system, but using the OPD Scan, which is Nidek’s wavefront sensor, and using the EC-5000,

the data from the OPD Scan can be used to personalize the treatment using the EC-5000 and a surgeon can perform a version of wavefront-optimized LASIK.

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Nancy A. Tanchel, MD

“It is counterintuitive to me, with the excellent results that this laser system provides, that surgeons would want to pay royalty fees for another laser,” she added.

Using the Nidek system is also less time-intensive compared with using a wavefront-guided approach. The OPD Scan, according to Dr. Tanchel, is very quick and easy to use and provides topography, wavefront data, and autorefraction in one sitting, making

it unnecessary to move the patient from room to room and machine to machine.

Dr. Dougherty echoed these sentiments.

“The EC-5000 is the most cost-efficient of the five lasers that I own because of the lack of royalty fees,” he said. “The company does not require that you pay a per click fee either for primary cases or for enhancement procedures, which can be up to \$300 an eye with the other lasers.

“Of all the lasers I have, the EC-5000 is the fastest to calibrate,” he continued. “In addition, I have the fewest number of gas refills with this laser. And it has the least expensive service contract.”

The Nidek EC-5000 laser system is also very efficient to operate in terms of staffing costs and patient circuit time in the practice, he noted. **OT**

FYI

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Dr. Dougherty is a paid consultant for Nidek Inc.

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Dr. Tanchel has no proprietary interest in the Nidek EC-5000.

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