



ICLs correct high myopia better than all-laser LASIK

The phakic lenses also provide better quality of vision, finds study of 79 eyes

Feb 1, 2008
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Ophthalmology Times



Virginia Beach, VA—Implantable contact lenses (ICLs) appear to correct myopia of greater than or equal to 6.50 D more accurately than customized all-laser LASIK, and the phakic lenses also provide a better quality of vision "both subjectively and objectively," according to G. Peyton Neatrour, MD. He is in private practice with Beach Eye Care, Virginia Beach, VA, and is an assistant professor of ophthalmology at Eastern Virginia Medical School, Norfolk.

Dr. Neatrour

Dr. Neatrour and colleagues conducted a retrospective study of 79 consecutive eyes undergoing vision correction for high myopia. Patients chose to undergo either phakic IOL (Visian Implantable Collamer Lens, STAAR Surgical) implantation or wavefront-guided, all-laser LASIK with a femtosecond laser and iris registration (CustomVue with IntraLase FS, Advanced Medical Optics [AMO]) after receiving recommendations from the ophthalmologist.

Ten patients (18 eyes) opted to have ICLs implanted. Average patient age in this group was 34 years (range, 22 to 45 years).

Forty-two patients (61 eyes) decided to undergo all-laser LASIK. Average patient age was 39 years (range, 23 to 61 years).

Postoperatively, researchers compared uncorrected visual acuity (UCVA), safety as measured by gain or loss of best spectacle-corrected visual acuity (BSCVA), accuracy, higher-order aberrations (HOAs), contrast sensitivity, complication rate, and enhancement frequency in the two patient groups. They found that the phakic lenses provided results superior to all-laser LASIK in regard to UCVA, safety, accuracy within 0.05 D, HOAs, and contrast sensitivity.

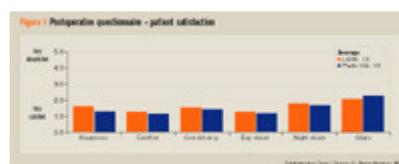


Figure 1 When patients were asked about sharpness, comfort, consistency, day vision, night vision, and glare, overall results for the phakic IOL group were slightly better than those for the all-laser LASIK group.

The mean spherical equivalent was significantly higher for the ICL group, at -10.75 D versus -6.35 D for the LASIK group. Mean astigmatism was slightly higher in the ICL group, at 1.13 D versus 0.91 D for the LASIK group.

At 3 months, UCVA was better among patients in the phakic-lens group than among patients in the LASIK group at four levels: 20/15 or better, 20/20 or better, 20/25 or better, and 20/40 or better. When measured at 6 months, however, UCVA was better in the LASIK group at all but the 20/15-or-better level.

"When we looked at safety, in terms of losing vision, we found only one [LASIK group] eye that lost one line of vision," Dr. Neatrour said. "In terms of gaining two lines or more of BSCVA, we found that the ICL surpassed [LASIK]. When we looked at accuracy—being within 0.5 D is the key goal—we saw ICLs again surpassing [LASIK] at 6 months. The goal of a postop UCVA being greater than or equal to the preop BSCVA found ICLs, again, ahead of [LASIK]."

Contrast sensitivity with and without glare improved similarly from preoperative levels in both groups, with the ICL group seeing slightly better results than the LASIK group but more improvements seen in the LASIK group.

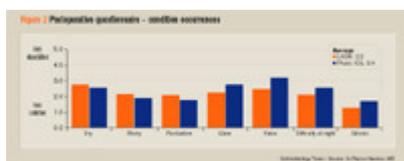


Figure 2 When patients were asked about the condition occurrences of dryness, blurriness, fluctuation in vision, glare, halos, difficulty at night, and ghosting, results for the all-laser LASIK group were slightly better than those for the phakic IOL group.

Wavefront analysis (WaveScan WaveFront, AMO) revealed an increase in root mean square (RMS), coma, and spherical aberration over time in the eyes that had undergone LASIK, whereas RMS and coma remained consistent and spherical aberrations decreased in the eyes in which ICLs had been implanted.

The groups had similar enhancement rates, with enhancements being performed in one eye (6%) in the ICL group and in five eyes (8%) in the LASIK group. The amount of preoperative astigmatism with lens implantation was a predisposing factor to requiring an enhancement, Dr. Neatrour said, adding that the need for such enhancements should be minimized with the availability of toric ICLs.

Average change in endothelial cell count in the ICL group for the five eyes for which 1-year data were available was 2% (range, -9.4% to 3.2%).

"Complication-wise, there are complications unique to [all-laser LASIK] and those unique to ICLs," he said. The most frequent complications in the LASIK group were dry eyes (nine eyes [14.8%]) and flap tears (three eyes [4.9%]); other complications included diffuse lamellar keratitis and micro-stria (two eyes [3.3%] each) and epithelial defect (one eye [1.6%]). Complications seen in ICL group included dry eyes, IOP increase, and cataract (one eye [5.6%] each).

Patient questionnaire

The investigators also measured patient satisfaction via a three-question survey. All 10 patients who had received ICLs completed the questionnaire, as did 26 of the 42 patients who had undergone LASIK. The survey revealed a preference for the ICLs on two of three questions.

"We're using a scale of one to five, with one being very satisfied and five being very dissatisfied," Dr. Neatrour said. "We asked about sharpness, comfort, consistency, day and



Figure 3 More patients in the phakic IOL group than in the all-laser LASIK group rated the postoperative vision in their treated eyes better than their preoperative vision in regard to sharpness, comfort, consistency, day

night vision, and glare, and we found the ICLs had a very vision, night vision, and glare. slightly lower or better score, 1.5, versus 1.6 with custom [all-laser LASIK]. When we looked at condition occurrences of dryness, blurriness, fluctuation in vision, glare, halos, difficulty at night, or ghosting, we found [that patients in] the custom [all-laser LASIK] group did slightly better than the [patients in the] ICL group." The average for the former group was 2.2 versus 2.4 for the latter group.

"Then we asked that question, 'How is your vision with glasses or contacts before, versus how is your vision afterward without any vision correction?' and all the way down the line on those symptoms, ICLs surpassed the custom [all-laser LASIK] despite that spherical equivalent disadvantage," he said.

Although the LASIK procedure resulted in better UCVA at 6 months and was associated with less astigmatism and more improvements in contrast sensitivity, "Overall, the ICL scored more favorably in nine of the 14 different aspects in this analysis," Dr. Neatrou said, compared with the LASIK procedure, which scored more favorably in five. He pointed out that the eyes with ICLs implanted had better UVCA at 3 months and that the lens was associated with better safety and accuracy, a postop UCVA greater than or equal to the preop BSCVA, fewer enhancements, and patient preference on two of three questions on the patient satisfaction survey.