This study reports the results of using the IntraLase femtosecond laser to create astigmatic keratotomy (AK) incisions in grafts of 9 patients followed for 3 months. The mean optical zone was 5.9 mm and ranged from 4.8 to 6.8 mm. The depth was 80% of the thinnest corneal point at the optical zone diameter. Mean refractive cylinder decreased from 9.1 D to 3.1 D. Spherical equivalent didn't change significantly. The results appeared better in eyes where the optical zone was > 6.0 mm and AK depth was over 500 μm. More eyes with longer follow-up are needed, but this new technology appears very promising for an extremely frustrating condition for patients and surgeons.

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Phakic Intraocular Lens Implantation for the Correction of Myopia: A Report by the American Academy of Ophthalmology

Huang D, Schallhorn SC, Sugar A, et al

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Objective.—To review the published literature for evaluation of the safety and outcomes of phakic intraocular lens (pIOL) implantation for the correction of myopia and myopic astigmatism.

Methods.—Literature searches of the PubMed and Cochrane Library databases were conducted on October 7, 2007, and July 14, 2008. The PubMed search was limited to the English language; the Cochrane Library was searched without language limitations. The searches retrieved 261 references. Of these, panel members chose 85 papers that they considered to be of high or medium clinical relevance to this assessment. The panel methodologist rated the articles according to the strength of evidence.

Results.—Two pIOLs have been approved by the US Food and Drug Administration (FDA): one iris-fixated pIOL and one posterior-chamber IOL. In FDA trials of iris-fixated pIOLs, uncorrected visual acuity (UCVA) was ≥20/40 in 84% and ≥20/20 in 31% after 3 years. In FDA trials of posterior-chamber pIOLs, UCVA was ≥20/40 in 81% and ≥20/20 in 41%. Satisfaction with the quality of vision with both types of pIOLs was generally high. Toric anterior- and posterior-chamber pIOLs have shown improved clinical results in European trials compared with spherical pIOLs. Comparative studies showed pIOLs to provide better best spectacle-corrected visual acuity (BSCVA) and refractive predictability and stability compared with LASIK and photorefractive keratectomy and to have a lower risk of retinal detachment compared with refractive lens exchange. Reported complications and long-term safety concerns include endothelial cell loss, cataract formation, secondary glaucoma (pupillary block, pigment dispersion), iris atrophy (pupil ovalization), an traumatic dislocation.

Conclusions.—Phakic IOL implantation is effective in the correction of myopia and myopic astigmatism. In cases of high myopia of −8 diopters or more, pIOLs may provide a better visual outcome than keratorefractive surgeries and better safety than refractive lens exchange. The short-term

rates of complications and loss of BSCVA are acceptable. Comprehensive preoperative evaluation and long-term postoperative follow-up examinations are needed to monitor for and prevent serious complications, and to establish long-term safety.

▶ Last year I wrote a comment on the American Academy of Ophthalmology's (AAO) Ophthalmic Technology Assessment (OTA) on wavefront-guided laser in situ keratomileusis (LASIK) for myopia and astigmatism. This year the AAO published their OTA on phakic intraocular lenses (IOLs) for myopia. The AAO created the OTA Committees many years ago to provide unbiased, evidence-based evaluations of new technology for the AAO membership. Disclosure note: I was the Chair of the Refractive Surgery OTA Committee several years ago.

With incredible help and support from the AAO staff, the OTA Committee obtains all related articles on the subject, selects the appropriate ones, and has a methodologist review them. The group generates the OTA document, which is reviewed by the relevant subspecialty societies, gets revised, and then gets approved by the AAO Board.

This OTA reviewed the literature on 2 types of phakic IOLs that are FDA-approved (iris clip anterior chamber IOL and posterior chamber IOL) and also angle-supported anterior chamber IOLs. I agree with their conclusion that phakic IOLs may be appropriate in eyes that are at higher risk for problems with keratorefractive surgery (eg, > -8 D), although long-term follow-up is needed to establish long-term safety for these lenses.

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