Phakic IOLs: Who Is Not a Candidate?

Surgeons' success with this modality depends in large part on their awareness of its contraindications and their careful assessment of individual patients.

BY STEPHEN G. SLADE, MD

Phakic IOLs have proven to be of enormous benefit to my practice. For many patients, these lenses are the best choice for vision correction. In general, phakic IOLs have several potential advantages over laser treatment for certain patients: the cornea is not altered, the lenses can correct higher amounts of myopia, and they provide excellent visual quality. These qualities derive from phakic IOLs' nature as an additive procedure, whereas laser vision correction is subtractive. The implantation of a phakic IOL is not dose dependent, as is laser treatment; the surgery is the same for a -3.00 D as a -16.00 D myope.

Phakic IOLs can be categorized into two main designs, anterior chamber (iris or angle fixated) and posterior chamber. In the United States, one lens of each type is available, the Artisan/Verisyse (Ophtec BV, Groningen, The Netherlands/Abbott Medical Optics Inc., Santa Ana, CA) and the Visian ICL (STAAR Surgical Company, Monrovia, CA), respectively. My main experience is with the latter. I began implanting the ICL 10 years ago, served as an FDA investigator for its US trial, presented the data to the FDA for the approval of the spherical model, and have taught the courses on its use. In the FDA study, patients' satisfaction with the ICL was very high, with some 97% stating that they would want to have the procedure again at the 3-year postoperative visit (study data available from the US FDA[1]).

Although I am a fan of the phakic IOL category in general, these lenses are not an ideal option for all patients. These individuals may be divided into two groups: (1) patients for whom phakic IOLs are contraindicated and (2) patients for whom both phakic lenses and laser vision correction are suitable options.

POOR CANDIDATES

The Visian ICL is approved for the correction of myopia ranging from -3.00 to -20.00 D in patients who are 21 to 45 years of age. Preexisting lenticular opacity or early cataract are relative contraindications to the implantation of a phakic IOL. Although the rate of cataract formation requiring surgery in the ICL's FDA trial was low (0.6%), the implantation of a phakic IOL could hasten the formation of a cataract. Luckily, the presence of an ICL does not make cataract surgery more difficult, because the lens comes out easily at the time of surgery.

The ICL also may not be a good choice for an eye with a shallow anterior chamber. In my experience, one of the first things surgeons notice when beginning to implant this IOL is the greatly reduced working area compared with cataract surgery. Rather than an area from the endothelium to the posterior capsule, the surgeon must work in a space of approximately 3 mm, the typical anterior chamber depth. A shallower chamber places both the endothelium and crystalline lens at increased risk. Although the ICL is labeled down to 3.0 mm, experienced surgeons have gone to 2.7 mm.

A healthy endothelium and good cell count are necessary. In the ICL's trial, my fellow investigators and I observed a reduction in endothelial cell counts after surgery that progressed for up to 4 years before stabilizing. A loss of endothelial cells occurred in the trials of both phakic IOLs approved in the United States. Any candidate for a phakic IOL should undergo a retinal evaluation and treatment for any significant pathology before the lenses' implantation.

Several less common relative medical contraindications for the ICL include narrow angles, glaucoma, synechiae, zonular weakness, irregular astigmatism, uveitis, and pseudoexfoliation. We have not found large pupils to be a problem, but they were not expressly studied in the ICL's FDA trial.

In a few instances, a suitable candidate preoperatively becomes a poor one at the time of surgery. If the pupil does not dilate well (> 7 mm), the risk of ocular trauma with the ICL is too great, in my opinion. Any capsular entry should prompt surgeons to abort the planned ICL procedure and switch to a lens extraction. Then, if they

cannot easily place the lens, ophthalmologists should consider performing a refractive lens exchange.

IOL VERSUS LASER VISION CORRECTION

The surgeon must consider the patient's fellow eye. In cases of moderate myopia in one eye and low myopia in the other, I tend to perform bilateral laser vision correction. I believe that patients do best when they undergo similar methods of vision correction, if appropriate.

Currently, the phakic IOLs available in the United States do not correct astigmatism. When candidates for both laser vision correction and a phakic IOL have significant astigmatism, they must decide between laser treatment alone and a phakic IOL's implantation with later laser vision correction. I find that many of these individuals prefer to undergo a single procedure, if possible. Although surgeons could offer incisional keratotomy with the phakic IOL's implantation, many patients are trying to avoid older procedures such as the former.

Perhaps the main group of patients who are not candidates for phakic IOLs are those whose degree of myopia places them between a lens and laser vision correction. This gap largely depends on the individual surgeon. In general, I tend to favor phakic IOLs for eyes with more than -9.00 D of myopia and laser treatment for eyes with under -7.00 D. Of course, this rule of thumb varies, depending on corneal thickness, topography, anterior chamber anatomy, astigmatism, etc. I carefully counsel patients with between -7.00 and -9.00 D of myopia in an effort to determine their preferred form of treatment. I feel that someone who expresses a strong preference for laser vision correction is probably not a good candidate for a phakic IOL. Of course, laser treatment is typically more convenient for the patient, because bilateral surgery is more common and often less expensive.

CONCLUSION

I am pleased to offer patients the option of a phakic IOL. Refractive surgeons, however, must carefully evaluate each individual. Not everyone is a candidate for these lenses. ■

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1. US Food and Drug Administration. Visian ICL—P030016. http://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/DeviceApprovalsandClearances/RecentlyApprovedDevices/ucm078356.htm. Accessed September 22, 2009.