

DIRECTING PATIENTS

Evaluating monovision LASIK and corneal inlays.

BY JEFFREY WHITMAN, MD



Patients have a growing number of choices when it comes to presbyopia treatment, and clear communication is key to making sure they understand the pros and cons of each option.

MONOVISION LASIK

Monovision using laser correction is one of the most established means of correcting presbyopia. It also is the easiest and cheapest surgical method that patients have available to them. To review, this treatment induces anisometropia or a difference in vision between the two eyes. The consequence can be a reduction in binocular acuity and stereopsis. The dominant eye is corrected for distance vision, and the nondominant eye is corrected for near vision.

It is important to communicate to patients that the vision in the near eye will be purposely blurry at distance. The near vision is commonly corrected in the vicinity of -1.25 to -2.00 D. It is best to trial frame the correction for a patient or to perform a contact lens trial prior to the laser vision correction. This treatment is easy to perform with existing technology and provides immediate results.

Patients should be aware of the downsides as well. The treatment is permanent, even if their near vision needs change as they age. Surgery diminishes stereopsis and binocularity, and it only provides near vision in the treated eye.

Finally, it makes later cataract surgery calculations more difficult and does not continue to work after that procedure.

CORNEAL INLAYS

Corneal inlays for the treatment of presbyopia only recently became available in the United States. The FDA approved the Kamra (AcuFocus) in 2015 and the Raindrop Near Vision Inlay (ReVision Optics) in 2016.

Kamra

The surgeon makes a deep corneal pocket with a femto-second laser. The inlay, which has a 1.6-mm central aperture and is made of polyvinylidene fluoride, increases depth of field by using the pinhole effect to improve near and intermediate vision without significantly affecting distance vision. In a pivotal trial, almost 90% of eyes treated with the Kamra saw 20/40 or better 36 months after implantation.¹

The inlay is placed within the corneal pocket and then centered over the optical axis with the help of an AcuTarget HD Analyzer (Visiometrics) mounted on the operating microscope. FDA-approved candidates are patients 45 to 60 years of age with a spherical equivalent correction of +0.50 to -0.75 D with up to 0.75 D of astigmatism who need reading glasses.¹

The Kamra inlay is only indicated for use in the nondominant eye of the patient. Vision can take 1 to 3 months to

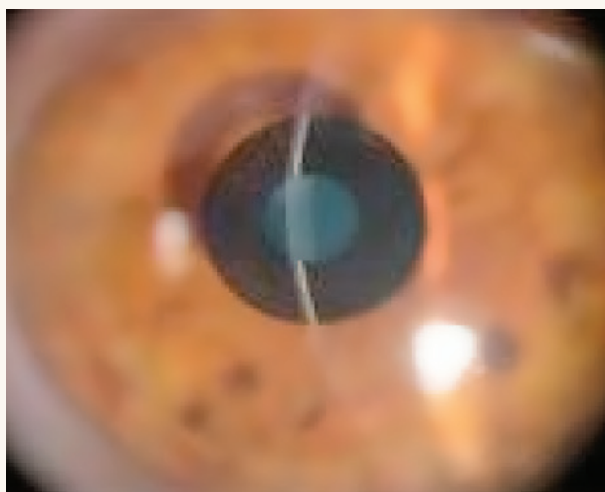


Figure 1. Kamra inlay.

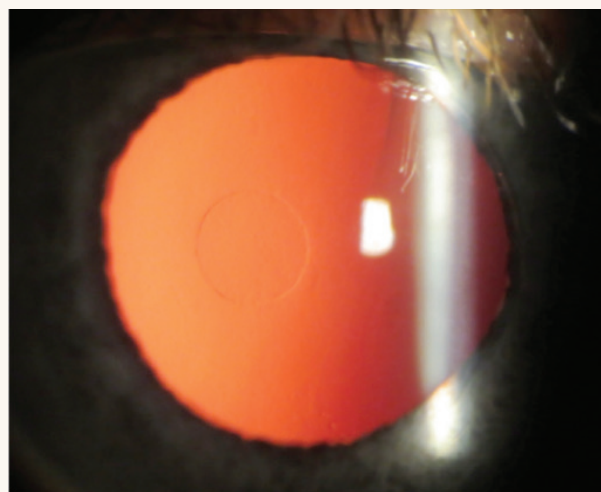


Figure 2. Raindrop inlay retro image.

EXCIMER LASER TRANSLATION

BY GEORGE O. WARING IV, MD



The FDA has issued more than 30 labeling approvals since the excimer laser's introduction onto the US market in 1998. By and large, refractive surgeons have used either wavefront-optimized (Alcon) or wavefront-guided ablation profiles, and there is no shortage of comparative literature. Widening the field, the FDA recently approved topography-guided and high-definition wavefront aberrometers. Discussing the relative advantages of available technologies with patients can be challenging.

TAILOR THE MESSAGE

Patients seeking refractive surgery are generally far more interested in their candidacy and the procedure's safety than they are in the technical aspects of various laser platforms. Millennials, I find, are primarily interested in their schedules and, therefore, prefer to know if they can have surgery and get on to their next activity. Moreover, in my experience, refractive surgery patients want a recommendation rather than a description of multiple options from which they must choose.

For these reasons, at my practice, we strive to simplify the refractive consultation. Instead of discussing the comparative aspects of the laser platforms, we recommend the procedure and technology that we deem to be the best for a given patient and then discuss their merits. The type of laser ablation chosen is based on the patient's optical profile or the correction limits of the platform. Technical discussion is reserved for specific circumstances such as highly aberrated eyes or therapeutic applications. Our approach is similar when making a selection within a class of IOLs. Our choice of IOL is often based on the cornea's aberration profile, which we typically do not discuss with the patient.

DROP THE MENU

In the past, we sought to differentiate among excimer laser platforms for patients, discussed the potential for improved

stabilize. Contrast sensitivity may be compromised in the treated eye, particularly at nighttime or in dim light.¹

Raindrop

The Raindrop Near Vision Inlay is a transparent hydrogel implant that is 2 mm in diameter and 30 μ m thick. The water content of the inlay is similar to that of the cornea itself. The device is placed under a LASIK flap that is 30% central corneal depth. The surgeon lifts the LASIK flap and places the inlay over the light-constricted pupil. No special instrumentation is needed to place or center the inlay, because exact centration is not critical to the increased depth of focus created by the steepening of the central cornea.

The Raindrop inlay provides an average gain of 5 lines in near vision and 3 lines in intermediate vision. Distance



LISTEN UP

George O. Waring IV, MD, talks with Gary Wörtz, MD, about today's management of presbyopia.
bit.ly/waring0117

outcomes, and cited FDA data on the merits of advanced technology. Our counselors would use a price-stratified menu of different laser platforms, much like discussions of premium versus insurance-based IOL technologies. Over the years, however, we have moved toward a vision-goal scenario instead of a technology menu. This approach has proven much more intuitive for our patients, as long as the terminology is meaningful to them.

USE MEANINGFUL TERMINOLOGY

We offer whatever technology we feel best suits an individual's needs. When educating patients, we use language that will be meaningful to them in terms of speed, accuracy, outcomes, comfort, experience, and safety. For example, a surgeon may explain that high repetition rates are "faster" and estimate the amount of time the laser may be used. The ophthalmologist may discuss topography- and wavefront-guided technologies in terms of "customization" or treating nuances specific to an individual's eye. Patients respond well to this approach.

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vision remains good, with an average of 1 line of BCVA lost. Immediate improvement in near vision is noted after the procedure, with stabilization of vision within 1 month. There is little effect on contrast sensitivity.²

When discussing these technologies with patients, it is important to explain what to expect immediately and how their vision will change and improve over time. If off-label treatment for ametropia is considered along with the inlay, the pros and cons need to be discussed as well. Review medication protocols with an emphasis on follow-up to watch out for any untoward reactions.

Candidates

All inlays require that the eye be free of disease and that the cornea be healthy enough for LASIK surgery. Thickness of the cornea must be suitable for the pocket or flap



AT A GLANCE

- LASIK monovision and corneal inlays are effective for treating presbyopia.
- LASIK monovision is quick and fairly inexpensive, but it decreases stereopsis and will not help patients once they develop cataracts. Inlays preserve stereopsis and should provide near vision even after cataract surgery.
- It important to explain to patients what they can expect immediately and how their vision will change over time.

required as well. Postoperatively, patients must comply with strict medical drop regimens to avoid inflammatory fibrosis, which could compromise vision and/or necessitate the removal of the device.

Advantages

The implantation of corneal inlays is a straightforward procedure using a femtosecond laser. They give a continuous range of vision (near, intermediate, and distance) in the treated eye without diminished stereopsis or diminished binocularity. They should continue to work after cataract surgery is performed, and they are removable.

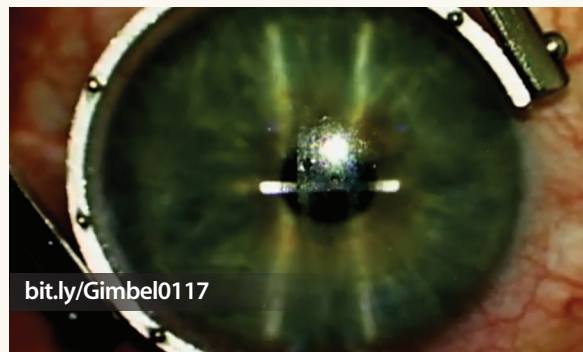
Disadvantages

A centration device and pocket software are needed for Kamra insertion, and the patient may experience decreased contrast sensitivity in the treated eye. Both inlays require approximately 3 months of steroid drops, and inflammatory fibrosis can necessitate removal of the device. Neither one is approved for concomitant LASIK to correct ametropias or astigmatism in the treated eye.



WATCH IT NOW

Howard Gimbel, MD, shares an edited-down version of the Kamra inlay (AcuFocus) procedure.



bit.ly/Gimbel0117

CONCLUSION

LASIK monovision and corneal inlays are both effective alternatives for treating presbyopia, but clear communication is key to success with either strategy. By explaining the pros and cons of the chosen modality and discussing setting realistic expectations for the immediate and long term, surgeons can maximize patients' satisfaction. ■

1. AcuFocus. Kamra inlay professional use information. http://www.accessdata.fda.gov/cdrh_docs/pdf12/P120023d.pdf. Accessed December 8, 2016.

2. Whitman J, Dougherty PJ, Parkhurst, GD, et al. Treatment of presbyopia in emmetropes using a shape-changing corneal inlay: one-year clinical outcomes. *Ophthalmology*. 2016;123:466-475.

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