How do we help our presbyope patients?

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Presbyopia is ubiquitous. Just as everyone will age, their natural lens will become stiffer and they will lose the ability to complete near tasks. Most corneal surgical presbyopia solutions are forms of monovision, which often entails a significant compromise in distance visual acuity and contrast sensitivity. The Kamra corneal inlay from AcuFocus improves near and intermediate vision while maintaining good distance vision with minimal effect on contrast sensitivity. It is approved for use in 44 countries and will soon be submitted to the U.S. Food and Drug Administration for approval in the United States.

Study results, mechanism of action

I recently presented data on a clinical study of 44 naturally occurring presbyopic emmetropes in whom I implanted the inlay. The mean uncorrected near visual acuity improved from J8 at baseline to J2 at 24 months postoperatively. In addition, mean uncorrected intermediate visual acuity improved from 20/32 to 20/25, and mean uncorrected distance visual acuity remained at 20/20 over the same time period (Figures 1 to 3). Importantly, patients experienced minimal or no reduction in contrast sensitivity and reported performing near, intermediate and distance vision tasks, including driving at night, with ease postoperatively without glasses.

In clinical trials here in the U.S. and in practical application around the world, the Kamra inlay is proving to be a highly recommended presbyopia treatment. Based on the principle of small aperture optics, the inlay measures 3.8 mm in total diameter and has a central opening of 1.6 mm. It improves depth of focus by blocking unfocused light and only allowing focused light to reach the retina. The Kamra inlay gives excellent near and intermediate image quality with minimal blurring of distance vision, which is one of the reasons it is so well tolerated by patients. PRK and LASIK monovision both improve near vision, often at the expense of intermediate vision. It is also well known that PRK and LASIK monovision compromise distance vision and contrast sensitivity in the reading eye tremendously. For the Kamra inlay to achieve an improvement in both near and intermediate vision while maintaining quality distance vision is a remarkable aspect of this novel inlay technology.
While most ophthalmologists have excellent systems in place for helping young refractive patients and older cataract patients, presbyopes often do not fit into either of these groups and do not respond to the same educational campaigns. There are several steps I have identified for educating presbyopic patients and increasing the probability of a successful treatment.

The first step to managing presbyopic patients is to educate them about the lens and the cornea, and to make sure they know that the reason they cannot see as well as they did before is because their lens has lost elasticity and is not zooming in as it used to do. It is important that these patients understand that unless they want to replace their natural lens, which is typically not recommended as long as the lens is clear, any corneal treatment will be addressing the
there is much less compromise.

The second step is to determine the patient’s vision needs and goals. Are they a plano presbyope or are they also seeking refractive surgery for distance-intermediate vision? These are two distinct situations that should be handled differently. Do they drive often at night, and what are their hobbies? This is also a good time to go back through the patient history and find out any previous treatments they have had, any other vision issues, and what their frustrations have been. If they have had previous PRK or LASIK and are now presbyopic, it is also important to explain why they need reading glasses rather than have them believe their laser vision correction is to blame because its “effect” lessened.

The next phase of education is to help the patient understand that a corneal presbyopia treatment will only take place in one eye. The operative Kamra eye will function well, but they may still see blur up close with the distance eye that does not have the inlay. A lot of people tolerate a bit of monovision well, but some do not. Loose lens and contact lens testing at distance and near are excellent means of simulation that enable the patient to make an informed decision about whether they want to degrade distance image quality, even slightly, to help near vision.

**Determining candidacy**

A patient must have a relatively clear lens to be a good candidate for presbyopia correction in the cornea. If it is not clear, then I lean toward a lens-based procedure. Once I have verified that the lens is clear, I check to see which eye is dominant. I then try to simulate the effects of presbyopia treatment. I perform loose lens testing with a +1 D lens by having the patient look at a distance chart with both eyes open while I hold the lens first in front of the right eye and then in front of the left eye. I ask them
which side feels “more comfortable” and which side reduces their image quality the most. In general, most people like having their distance eye as the dominant eye and their reading eye as the nondominant eye. However, some patients will feel comfortable the other way around.

If I have any question about a patient being a good candidate for the inlay, I will send them home with a +1 D contact lens and have them read, use their computer, drive and do what they do in their daily living with the lens in the eye that we agree will be the best reading eye. The +1 D loose lens or contact lens test helps the patient understand the blur up close in the uncorrected eye meant for distance vision, so they can experience whether or not they can ignore the near blur from that eye. Sometimes we as physicians focus on how well patients tolerate distance blur when we correct presbyopia in the cornea. However, we also need to understand how well patients handle near blur with both eyes open, because their distance eye will not be focusing on near activities. Loose lens and contact lens testing helps us to confirm whether patients will tolerate both near and distance comfort when it comes to correcting presbyopia in one eye.

Advantages of inlay

Because the Kamra is implanted into one eye, it has some similarities with monovision (eg, the distance eye will experience near blur). However, I find Kamra vision advantageous over classic monovision for a variety of reasons in addition to that fact that it does not blur distance nearly as much as monovision and actually improves intermediate vision, especially in patients in their 50s and 60s.

In countries where the inlay is already approved for use, surgeons have been implanting it in conjunction with LASIK surgery to simultaneously address ametropia and presbyopia. While the inlay can easily be removed, initial experience with cataract surgery after Kamra implantation indicates that removal is not necessary, and in fact the inlay may enhance cataract surgical results through depth of focus. The Kamra inlay is a great option for pseudophakic patients who want to improve their near and intermediate vision but do not want the distance blur of a monovision type of procedure.

Reference:

- Thompson V. Task performance after implantation of small aperture inlay to improve near vision. Paper presented at: American Society of Cataract and Refractive Surgeons annual meeting; May 2011; San Diego.

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