Intracorneal inlays
Who’s the best candidate for a corneal inlay?

by Vanessa Caceres EyeWorld Contributing Writer

Getting out of reading glasses is a natural motivation for many corneal inlay patients. However, the characteristics of an ideal patient go beyond that.

First, surgeons consider whether a patient’s vision and related characteristics are a good match for the inlay. “Typically, it’s someone presbyopic who is 45 to 60 years old, and they are plano to slightly myopic—up to −0.75 D,” said Vance Thompson, MD, Vance Thompson Vision, Sioux Falls, S.D. Dr. Thompson uses the KAMRA inlay (AcuFocus, Irvine, Calif.) and has been an investigator for the company. Although other inlays such as the Raindrop (ReVision Optics, Lake Forest, Calif.) and Flexivue (Presbia, Dublin) are under investigation, KAMRA is the only one currently approved for use in the U.S. by the Food and Drug Administration.

Other patient characteristics that Dr. Thompson looks for are low astigmatism (0.75 D or less), a stable refraction for about a year, and a corneal thickness that’s greater than 500 microns. An ideal inlay patient is someone who is in stage 1 of dysfunctional lens syndrome, said Daniel Durrie, MD, professor of ophthalmology, University of Kansas Medical Center, and president, Durrie Vision, Overland Park, Kan. “Their lens is clear, colorless, and they have good optics. They just can’t focus,” he said.

Dr. Durrie observed that a number of patients getting inlays have had previous LASIK. As these patients have not used glasses for years, they want to get out of reading glasses. Personality also plays a role in patient selection, as use of an inlay, like any corneal correction of presbyopia, is somewhat an exercise in compromise. With improvement in the patient’s near and intermediate vision, they may notice a slight decrease in low light distance vision.

“My KAMRA patients have been happier than my monovision patients because their distance is much better—often 20/20 or 20/25—as compared to monovision,” Dr. Thompson said. “Also, the more monovision we give, the more compromise at computer/intermediate, whereas with the KAMRA inlay, intermediate is preserved.”

Patients and surgeons need to consider that the inlay will only be used in one eye. “Not everyone likes that, especially a perfectionist,” Dr. Thompson said. When he’s concerned that a patient’s personality may affect the potential satisfaction with an inlay, he offers a monovision contact lens trial. Although the trial may blur distances more and help near vision less than the KAMRA, the trial still gives the patient an idea of how he or she deals with slight compromise. “If they like the monovision test, I think there is a very high chance of success with the KAMRA technology,” Dr. Thompson said.

Ocular surface health crucial

One factor of critical concern with the use of any inlay is ocular surface health. “Testing ocular scatter will give us good insight into the quality of the tear film and lens clarity. Excellent tear film and lens clarity are essential for the patient to have a successful outcome,” said Phil Hoopes Jr., MD, Hoopes Vision, Draper, Utah.

“It’s extremely important that you don’t operate on dry eyes with corneal inlays. We’re very aggressive about diagnostics preoperatively, and things have to clear up before surgery,” Dr. Thompson said.

He will use the HD Analyzer (Visiometrics, Terrassa, Spain) to
test tear film break-up time, and he also assesses tear film osmolarity. He relies on punctal plugs and Restasis (cyclosporine emulsion 0.5%, Allergan, Dublin) to treat the ocular surface.

“In a healthy ocular surface, frequent artificial tears must be used for several postoperative months. In the case of mild to moderate dry eye, patients should be started on Restasis and omega-3 fatty acids along with the placement of punctal plugs,” Dr. Hoopes said. He does not recommend inlays for moderate to severe dry eye.

Blepharitis must also be treated before surgery, with the usual recommendation of lid scrubs, Dr. Durrie said.

“Most of the time, you’ll figure out in a month if they are compliant and see if they are improving,” Dr. Durrie said. “This is an elective surgery, so you want to make sure they are following the rules.”

It is also important to monitor for dry eye postop and recommend the use of nighttime ointments if necessary, Dr. Thompson said.

**Inlays versus refractive lens procedures**

Not all patients in the 45- to 60-year-old range are ideal for corneal inlays. For example, if Dr. Hoopes has a patient who is 50 or older and hyperopic, he immediately consider him or her for refractive lensectomy.

He also pays close attention to ocular scatter as measured by the AcuTarget HD (AcuFocus). “An ocular scatter above 1.5 tells me the lens is on the path to future cataract, and an inlay may not be the ideal procedure at this point,” Dr. Hoopes said.

There are various diagnostic tools that help assess who is a good inlay candidate—and who isn’t, Dr. Thompson said. He uses the iTrace (Tracey Technologies, Houston) to quantify corneal and lens aberrations in addition to the HD Analyzer.

Physicians interviewed for this article also contrast stage 1 (presbyopia with a clear lens) of dysfunctional lens syndrome versus stage 2 (presbyopia with early lens changes affecting image quality) patients when considering inlays.

A stage 1 patient is potentially an inlay candidate, while a stage 2 patient is often better for a lens procedure. “That’s where quantifying lens aberrations is helpful,” Dr. Thompson said.

“If you measure corneal and lenticular aberrations with the iTrace or measure high optical scatter index with the HD Analyzer, you’ll know when it’s best to tell patients with these early lens changes to do nothing and to continue with readers or consider a refractive lens exchange.”

Surgeons also must consider if there are any refractive treatments that can be done in tandem with the inlays to assist the patient, Dr. Durrie said. “I tell patients if they are candidates for the KAMRA and may be a little too hyperopic or astigmatic, I can correct that at the same time that I’m doing the inlay,” he said.

**Editors’ note:** The physicians have financial interests with AcuFocus.

**Contact information**

**Durrie:** ddurrie@durrievision.com

**Hoopes:** pchi@hoopesvision.com

**Thompson:** vance.thompson@vancethompsonvision.com

---

**AT A GLANCE**

- Potential candidates for a corneal inlay are often motivated to get out of reading glasses. Some have had previous LASIK.
- In addition to the vision requirements for each inlay, personality is a key factor.
- Good candidates are in what is considered stage 1 of dysfunctional lens syndrome, where their lens is still clear and healthy but is presbyopic.
- Surgeons must optimize the ocular surface before surgery to make sure patients have no signs or symptoms of uncontrolled dry eye or blepharitis.