

# Presbyoptics Helps to Grow a Practice

For the comprehensive anterior segment surgeon, the ability to perform conductive keratoplasty after IOL implantation or LASIK surgery fills a critical gap.

BY Y. RALPH CHU, MD

**M**y colleagues and I recently coined the term *presbyoptics* to describe the concept of performing Nearvision CK (Refractec, Inc., Irvine, CA) on eyes that had previously undergone IOL implantation or corneal refractive surgery or as a planned second step following lens implantation surgery.

Presbyoptics is the natural evolution of bioptics, which was originally described by Güell<sup>1</sup> and Zaldivar et al.<sup>2,3</sup> The term referred to laser corneal surgery after phakic IOL implantation, but it later came to be more broadly used. In this article, I describe presbyoptics as the application of a presbyopia-correcting surgery to the eye after previous ocular surgery such as IOL implantation or corneal refractive surgery like LASIK or PRK. I also discuss how I apply this treatment in my clinical practice.

## DIFFERENT TYPES OF PRESBYOPIC PATIENTS

In my practice, my colleagues and I perform Nearvision CK and LASIK in addition to implanting a variety of presbyopia-correcting lenses. What procedure a patient elects to undergo depends on many factors, including lifestyle visual demands as well as the patient's age and his past ocular history.

There are essentially three types of presbyoptics candidates. The first group comprises all of the plano presbyopes, including patients with naturally occurring presbyopia, pseudophakes implanted with standard IOLs, and patients who had LASIK and are now becoming presbyopic. For patients who have had previous LASIK, my colleagues and I are performing the Nearvision CK procedure years after the original surgery.

The second group suited for presbyoptics is made up primarily of patients planning to undergo cataract surgery who do not want, or are not qualified for, a multifocal or accommodating IOL but are still interested in achieving functional

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near vision. In these patients, my colleagues and I might implant a standard or aspheric monofocal IOL and plan to perform Nearvision CK in 3 to 6 months, once the incision has healed and the refraction has stabilized.

For the third group, Nearvision CK presbyoptics is an opportunity to fix an unexpected outcome, especially after premium procedures. New technology IOLs have further raised patients' expectations of having useful near and distance vision following cataract surgery. If functional vision is not achieved, surgeons must be able to offer procedures like Nearvision CK to satisfy unhappy patients.

## NEARVISION CK

### A Simple and Safe Procedure

In many cases, Nearvision CK is one of several options for correcting presbyopia. The keys to the procedure's appeal compared with other corneal or lenticular procedures are its superb safety profile and relative simplicity. No incision, tissue removal, or operation on the visual axis is necessary. In more than 150,000 eyes treated worldwide, there have been no significant visual complications following Nearvision CK (data on file with Refractec, Inc.).

### Patient Selection

When selecting pseudophakic patients for presbyoptics, it is important to ensure that they will be able to

function well and achieve satisfactory near and distance vision. Because we perform Nearvision CK on just one eye, my colleagues and I have candidates complete a trial with monovision contact lenses to be sure they will tolerate the potential imbalance between their eyes. Happily, a significant percentage of patients achieves a blended vision effect, although we cannot predict which ones will.

I recommend the Nearvision CK with Lighttouch (Refractec, Inc.) technique for more consistent results with fewer treatment spots when compared with the original, standard pressure technique. We typically need to perform only one ring of eight spots at the 7.5- or 8.0-mm optical zone. Because we can treat at a wider optical zone with Nearvision CK with Lighttouch versus the original, standard pressure technique, there are fewer complications, less induced astigmatism, and seemingly less regression of effect with time, although more data are needed to confirm this anecdotal impression.

### Advantages

Having a procedure as safe as Nearvision CK to offer patients is a huge practice booster, given that other options for correcting presbyopia years after previous IOL surgery are limited. For example, implanting a piggyback IOL is quite invasive. Corneal surgery to give the patient LASIK monovision might be feasible but is not ideal, because older patients are more prone to dry eye in addition to having a higher incidence of epithelial defects and ocular surface disorders.

### IOL PRESBYOPTICS

My colleagues and I are in the midst of a prospective study of Nearvision CK following IOL implantation. We plan to enroll at least 25 eyes. Thus far, we have followed 12 patients for 3 months.

To date, subjects' mean age is 65 years. All of them underwent cataract extraction and the implantation of a multifocal or aspheric IOL. Most (10/12) of the patients received Tecnis Z9000 aspheric monofocal lenses (Advanced Medical Optics, Inc., Santa Ana, CA). One patient had an Array multifocal lens (Advanced Medical Optics, Inc.), and one received an Acrysof SN60WF IQ monofocal aspheric IOL (Alcon Laboratories, Inc., Fort Worth, TX).

We performed Nearvision CK with the Lighttouch pressure technique on each patient's nondominant eye to improve his near vision. All subjects received one ring of Nearvision CK treatment at the 7.00-, 7.50-, or 8.00-mm optical zone with a monovision target (Table 1).<sup>4</sup>

At 3 months postoperatively, all of the patients see J1 or better at near, both in their treated eye and binocularly. Their mean spherical equivalent changed from 0.02D preop-

**TABLE 1. NEARVISION CK WITH THE LIGHTTOUCH PRESSURE TECHNIQUE\***

| CK Treatment Pattern  | Nomogram      |
|-----------------------|---------------|
| Eight spots at 8mm    | 0.75 to 1.00D |
| Eight spots at 7mm    | 1.25 to 1.75D |
| 16 spots at 7 and 8mm | 2.00 to 2.25D |

*\*With the Lighttouch pressure technique, the conventional CK nomogram will yield a dramatic overtreatment, so a more conservative approach is required.*

**TABLE 2. THREE-MONTH RESULTS OF NEARVISION CK FOLLOWING IOL IMPLANTATION**

|                                | 3 Months Postoperatively     |
|--------------------------------|------------------------------|
| Mean spherical equivalent      | -1.14 + 0.76                 |
| Mean distance UCVA (binocular) | LogMAR 0.09<br>Snellen 20/24 |
| Near UCVA (treated eye)        | J1+ to J3                    |
| Near UCVA (binocular)          | J1+ to J3                    |

eratively to -1.15D postoperatively, but the subjects experienced little loss of binocular distance vision (Table 2).

No patient lost more than one line of distance BCVA. Patient satisfaction surveys reveal that they are satisfied (3/12) or very satisfied (9/12) with their uncorrected functional vision after presbyoptics.

### LASIK PRESBYOPTICS

LASIK patients who underwent surgery in their 20s or 30s will seek new options as they turn 45 and suddenly need glasses again. They are relatively young and, in most cases, are not ready for the expense or risks of IOL surgery.

Although a surgeon could relift the LASIK flap and perform a laser enhancement, there are a number of reasons to choose Nearvision CK over LASIK for presbyopic correction. First, lifting the flap increases the risk of epithelial ingrowth. Second, LASIK patients seeking to reduce their dependence on reading glasses do not want to jeopardize their good distance vision by undergoing another invasive surgery that requires more tissue removal. Third, they are drawn to a safe, simple procedure. Finally, the potential to achieve a blended vision effect means that Nearvision CK patients are likely to achieve functional near vision while experiencing less

loss of distance visual acuity. This does not happen in every patient, but in our experience about 30% of patients achieve a blended vision effect.

Surgeons treating post-LASIK patients should be aware that Nearvision CK seems to have a greater effect on these versus virgin eyes. My colleagues and I take a conservative approach. We start with eight spots at a wide optical zone, such as 8mm, and see how the patient responds. I use the Lighttouch technique in post-LASIK patients, because I believe it results in less regression of effect.

Of course, surgeons must ensure that the flap and cornea are healthy and the surgical history is uncomplicated. Epithelial ingrowth, diffuse lamellar keratoplasty, corneal abrasions, or abnormalities would be potential contraindications for any refractive surgical treatment after LASIK, because they increase the risk of complications.

Because it is progressive, presbyopia challenges surgeons but also provides them with an opportunity to discover new solutions to patients' changing vision. Presbyoptics is an excellent first step for correcting presbyopia in post-LASIK eyes as well as eyes that have previously received an IOL implant. ■

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