

A New Contact Lens Option for Post-LASIK Patients

Edward Boshnick, OD

The SynergEyes® PS contact lens offers a new option for improving vision in post-LASIK patients.

The majority of patients who undergo LASIK come away with excellent results, but a modest percentage of patients need additional correction. For most of them, a simple enhancement surgery will suffice; but for some patients the postoperative situation is more complex.

For patients whose visual needs can't be met by additional surgery, contact lenses are often the best, and sometimes the only, alternative. Now, a new hybrid contact lens designed to meet the needs of many post-LASIK patients offers an additional option for improving visual outcomes in these often challenging situations.

Offering Contact Lenses

There are a number of reasons why patients may need contact lenses following LASIK, among which are post-LASIK ectasia, decentered ablation, or an epithelial healing defect, all of which can leave the patient with an

With a hybrid lens, patients get optical benefits similar to those of a GP or scleral lens but with greater comfort, thanks to the soft hydrogel skirt

irregular cornea. In addition, post-LASIK patients often have significant higher order aberrations, which create reduced indoor vision, reduced night vision, and dysphotopsias. These patients may also have complications related to dry eye disease, which can occur following LASIK regardless of the visual outcome.

Most people decide to have LASIK in order to see clearly *without* glasses or contact lenses, so these patients are understandably

dismayed to learn that they will continue to need additional vision correction after surgery. Since mine is a referral practice that sees patients after they learn of their condition, I can't comment on how to break this unhappy news to patients. Instead, I will focus on what doctors

can say and do once the decision has been made to fit a patient with contact lenses.

In my discussions with patients, I aim both to inform them about their vision-correction options and reassure them that I will do everything I can to help them achieve the best possible vision. Fortunately, we can now offer most patients several good options, and better technology continues to emerge. So, while I tell patients that I am fitting them with the best option currently available, I also remind them that better options may become available in the future.

Contact Lens Options

Patients with significant corneal irregularity following LASIK can't wear standard soft contact lenses (either hydrogel or silicon hydrogel) because these lenses cannot mask the underlying irregularity. Instead, these patients need a rigid lens that can provide the regular refractive surface their eyes are lacking. However, while standard gas permeable (GP) lenses could provide the necessary optical correction, the irregularity of their corneas often makes it impossible to get an adequate fit with standard GP lenses.

CONTACT LENS OPTIONS FOR POST-LASIK PATIENTS

<input checked="" type="checkbox"/>	Scleral Lens
	— Vaults the cornea
	— Provides stable fit for irregular corneas
	— Good for patients with dry eye disease
<input checked="" type="checkbox"/>	SynergEyes® PS Lens
	— Rigid lens bonded to a soft hydrogel skirt
	— More comfortable than scleral lens
	— Available in a wide range of powers
	— Provides good oxygen permeability

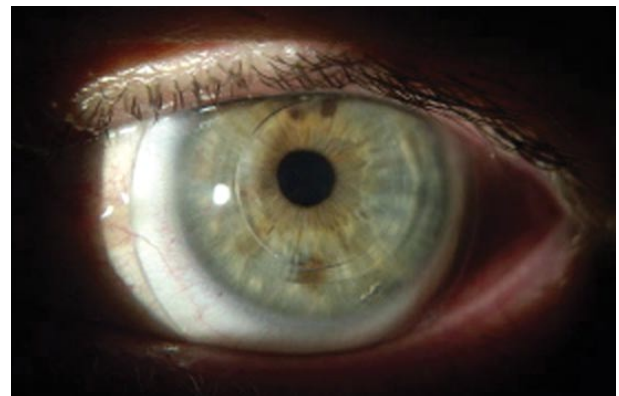


FIGURE 1 A scleral lens (shown) can improve vision in a variety of post-LASIK conditions — either on its own or in conjunction with other treatments. In this case, a scleral lens was fit for a post-LASIK patient who also had Intacs® corneal implants.

In this situation, achieving both the target visual correction and lens stability requires the use of a highly specialized contact lens. Suitable options include either

a scleral lens, which vaults the cornea, or a hybrid lens, which consists of a rigid lens bonded to a soft hydrogel “skirt.”

Although not every post-surgical patient is a suitable candidate for the SynergEyes PS lens, my success rate with this lens is about 80%

With a scleral lens, patients get the optical benefits of a standard GP lens, but with added stability because the lens rests on the sclera (which still has its normal curvature) rather than on a cornea that has been rendered abnormal by the surgery (Figure 1). In addition to improving patients’ vision, a scleral lens can also improve dry eye signs and symptoms in some patients because the

device traps a layer of tears between the lens and the cornea, helping to keep the corneal tissue moist.

With a hybrid lens, patients get optical benefits similar to those of a GP or scleral lens but with greater comfort, thanks to the hydrogel skirt. When the patient blinks, the eyelid contacts the soft hydrogel skirt rather than the edge of a rigid lens, preventing some of the discomfort which is a frequent complaint among patients with rigid lenses.

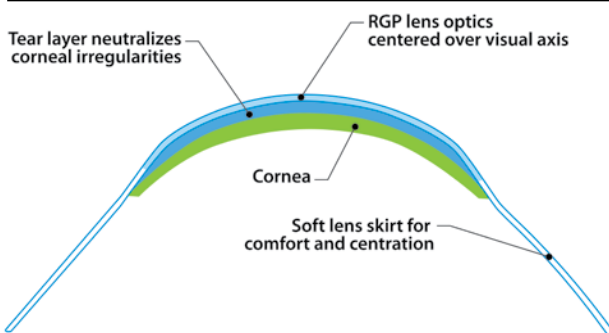


FIGURE 2 The SynergEyes® PS lens has a “reverse geometry” design in which the center portion is flatter than the periphery to fit the flattened central cornea that occurs following LASIK for myopia.

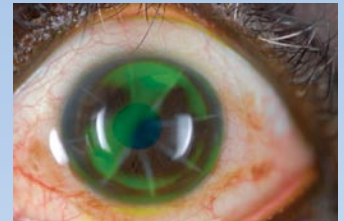
The SynergEyes® PS Lens

While hybrid contact lenses are not new, the SynergEyes® PS lens is the first hybrid lens specifically designed for patients with oblate corneas from refractive surgery. The SynergEyes PS lens uses a “reverse geometry” fit to ensure that the curvature of the lens matches the curvature of a cornea flattened by myopic ablation (Figure 2). Specifically, the center of the lens is relatively flat while the periphery is more steeply curved, which helps the lens maintain a stable fit on the eye.

OTHER USES OF THE SYNERGEYES® PS LENS

In addition to using the SynergEyes® PS lens for vision correction in post-LASIK patients, I have also found this lens useful for improving vision in patients who previously had radial keratotomy (RK). Because my practice is located in southern Florida, I see

a number of patients who had RK performed in South America during the late 1990s, some of whom have also had subsequent LASIK. Because RK patients frequently have very irregular corneas, the SynergEyes PS lens is often the lens of choice for these individuals. In general, the SynergEyes



Fluorescein staining shows how the SynergEyes® PS lens fits over an irregular cornea in a post-RK patient.

PS lens works for these patients for many of the same reasons it works well in post-LASIK patients. Because the rigid center portion of the lens corrects the corneal irregularity, this lens can improve vision even in patients with corneal topography that has been significantly altered due to RK (See figure).

The SynergEyes PS lens also provides a high level of oxygen permeability. While the peripheral skirt is made of a 27% water poly-HEMA material with modest gas permeability, the rigid center is highly gas permeable, so that the lens allows good exchange of oxygen and carbon dioxide. As a result, ocular surface tissues remain healthy with this lens, and patients’ eyes remain white and normal looking.

Finally, by using a rigid material for the center of the lens, the SynergEyes PS lens is able to provide the same optical correction enjoyed by conventional GP lens wearers. And with a wide range of available parameters — 8 base curves from 7.6 to 9.0 in 0.20-mm steps, 2 spherical curves 8.3 mm and 8.6 mm, 3 lifts to allow fine tuning of the lens design to optimize the fit, and sphere power ranging from +2.00 to -6.00 in 0.25-D steps — the lens offers appropriate correction for almost any oblate or post-surgical patient.

The SynergEyes PS lens uses a “reverse geometry” fit to ensure that the curvature of the lens matches the curvature of a cornea flattened by myopic ablation

Fitting the SynergEyes PS Lens

To get the full benefits of the lens design, the lens must fit properly. To achieve a good fit, I recommend performing multiple corneal topographies to get a clear idea of the shape of the cornea prior to dispensing the lens, and I also evaluate the cornea to assess the status of the tear film and the integrity of the LASIK flap. I then use diagnostic lenses and fluorescein to visualize the fit of the lens, aiming to achieve as little touch as possible with the rigid portion of the lens, both centrally and peripherally (Figure 3). After I've fit the lens, typically in the morning, I may ask

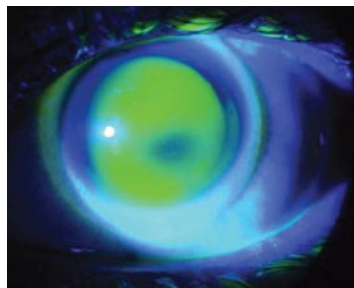


FIGURE 3 When fit properly, the SynergEyes® PS lens has minimal contact with the cornea. This lens has been fit on a post-LASIK cornea. Note the minimal central touch.

patients to wait at the office for

several hours so that I can reevaluate the fit later in the day and check to make sure there are no negative tissue effects from the lens.

Having fit about 100 patients with the SynergEyes PS lens, my experience so far has been very positive. Although not every patient is a suitable candidate for the SynergEyes PS lens, my success rate with this lens is about 80%, making it a good option for many patients and a valuable addition to my armamentarium.

Conclusion

While patients who need contact lenses following LASIK tend to be unhappy that they don't have 20/20 or better uncorrected vision, appropriate contact lenses can significantly improve their overall situation. A properly fit scleral or hybrid lens can correct the patient's corneal irregularity and significantly reduce higher order aberrations, resulting in better visual acuity and fewer dysphotopsias. In addition, with the SynergEyes PS lens, this vision correction is possible in a lens that is more comfortable and more oxygen-permeable than many previously available options.

THE BOTTOM LINE

In patients with corneal irregularities resulting from post-LASIK ectasia, decentered ablations, or healing defects following LASIK, a rigid lens material is necessary to provide proper vision correction. Fitting these patients with a scleral lens or a hybrid lens can provide the necessary correction, and these lenses are stable enough to fit properly over an irregular cornea. A hybrid lens also has the benefit of being more comfortable, as the patient's eyelid contacts the soft hydrogel skirt rather than a rigid lens edge.

Edward Boshnick, OD, is in private practice in Miami, FL, where he specializes in contact lenses. He can be contacted at ed@boshnick.com. *Refractive Eyecare* senior editor Kay Downer assisted with the preparation of this manuscript.