Hybrid Technology for Post-Surgical Eyes

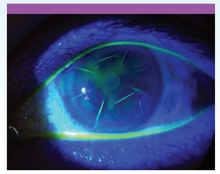
by Edward Boshnick, O.D., F.A.A.O.

PURPOSE

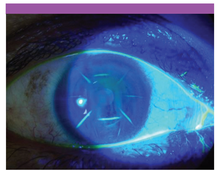
To demonstrate how a new hybrid contact lens (*SynergEyes® PS*) combines a rigid lens center with a soft outer skirt and provides an alternative to further surgical "enhancements" for patients who achieved unsatisfactory results from refractive surgery or corneal transplants. The FDA reports approximately 5 percent of the millions of people who undergo LASIK or other refractive surgery have unexpected negative results from their procedure, including double vision, glare, flare, dry eyes and reduced night vision.

Many of these visual symptoms are due to post-surgical corneal irregularities, and require RGP contact lenses to correct those refractive errors. But obtaining a well-centered, comfortable fit with RGPs on these surgically altered, significantly irregular corneas is nearly impossible due to lens instability.

Many of these challenging cases can achieve positive outcomes without further surgery by utilizing the *SynergEyes® PS* lens, which has been designed specifically for post surgical eyes and was new to the market in 2008.



Patient E.R., post-RK left eye

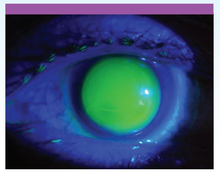


Patient E.R., post-RK right eye

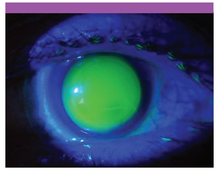
METHODS

A 24-lens diagnostic set was used to fit patients who presented with a variety of irregular corneas, mostly resulting from surgical attempts to correct pre-existing refractive ametropias, and who had failed with previous contact lens fitting attempts subsequent to the surgeries.

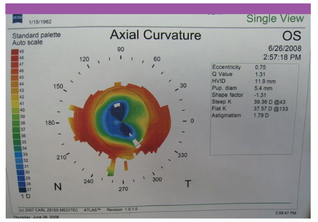
The *SynergEyes® PS* lens has an oblate posterior surface and a 6.5mm spherical posterior optic zone available in eight standard base curves. In addition, each base curve is available with a choice of three steeper secondary curves to create a "reverse geometry" profile that extends across the RGP/ soft skirt junction, allowing the lens design to be fine tuned to optimize the fit for an extensive range of corneal topographies. After determining the optimum base curve and secondary curve (Lift Curve), a further choice between two spherical skirt curve options was selected to maximize stability, centration, and comfort.



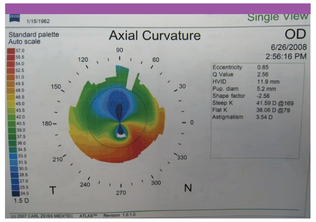
Patient E.R. left eye with ***SynergEyes® PS***



Patient E.R. right eye with ***SynergEyes PS***



Patient E.R., post-RK topography, left eye



Patient E.R., post-RK topography, right eye

RESULTS

A total of 126 eyes with irregular corneas, mostly resulting from refractive surgery attempts, were fitted with the *SynergEyes® PS* lens design. 82 percent of the fits were successful. All of these patients had either failed with previous contact lens fittings or were unsatisfied with the comfort or vision of their current lenses.

CONCLUSION

There is a large and growing population of post-surgical patients seeking a non-surgical solution to a host of visual disturbances that sometimes result from surgery. When these patients are fit with the *SynergEyes® PS* lens, they often experience longer wearing times, better visual acuity and greater comfort when compared to lenses they had previously tried. Because the *PS* lens is very stable on highly irregular, traumatized corneas and has high oxygen permeability within the RGP center, the lens is tolerated well and provides good physiological response. The wide array of lens parameters allows practitioners the ability to adjust the sagittal depth of the lens with an assortment of base curve and reverse curve combinations. The *SynergEyes® PS* lens has proven to be very effective in treating a variety of post-surgical and irregular corneas.