



# Use of Scleral Notch to Maximize Coverage of the Ocular Surface in Exposure Keratoconjunctivitis

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## Background

Exposure keratoconjunctivitis (EK) is defined as an inflammatory ocular surface disease which affects the cornea and conjunctiva due to inadequate wetting, inadequate eyelid closure and/or reduced blink rate.<sup>1-3</sup> Signs and symptoms of EK can vary in severity, and management focuses on support of the ocular surface (table 1).<sup>1-3</sup>

### Signs and Symptoms

### Treatments

Pain	Aggressive lubrication
Foreign body sensation	Eyelid taping
Epiphora	Amniotic membranes
Photophobia	Scleral lenses
Blurry vision	Partial tarsorrhaphy
Incomplete blink	Eyelid reconstruction
Punctate epithelial erosions	Eyelid gold/platinum weight implant
Conjunctival injection	
Conjunctival chemosis	

Prosthetic replacement of the ocular surface ecosystem (PROSE) is a treatment developed by BostonSight (Needham, MA) to improve visual function, improve comfort and support the ocular surface for patients with complex corneal diseases, including EK.<sup>1</sup>

A larger diameter PROSE device (PD) or scleral lens can provide superior support of the ocular surface by providing better coverage and preventing desiccation of exposed conjunctival tissue. Anatomical obstacles may limit the diameter of a lens; however, customization of a lens haptic with use of a notch to fit around an obstacle can allow for improved coverage with a larger design. This case demonstrates the use of a haptic notch in PROSE treatment to allow for maximal coverage of the ocular surface to improve function and comfort in a patient with EK.

## Case Description

A 66 year-old Caucasian male with history of EK and mechanical lagophthalmos of the right eye secondary to several lid biopsies in setting of complex autoimmune disease and pyoderma gangrenosum presented for PROSE follow-up. His chief complaint was increased redness and decreased comfort in the right eye with his current PD (Figure 1). Clinical evaluation showed conjunctival hyperemia, inflammation and mucoid discharge in areas of exposure outside the PD. The diameter of this presenting PD was limited by the presence of a symblepharon. PROSE retreatment was initiated with goals of providing maximal coverage of the conjunctival tissue to improve function and comfort. A haptic notch was incorporated into the PD where the superior symblepharon was located to allow for a larger diameter design (Figure 2B).



Figure 1: Slit lamp photographs of the right eye with the baseline 17.5mm PD in A) primary gaze, B) inferior gaze, and C) nasal gaze. There is significant hyperemia and inflammation of the temporal exposed conjunctival tissue as well as mucoid discharge (A,C). The edge of the superior haptic of the PD is landing at the edge of the symblepharon.(B).



Figure 2: Slit lamp photographs of the right eye with the finalized 19.5mm PD with superior haptic notch, at 3-month follow-up. There is marked reduction in conjunctival hyperemia, inflammation and discharge with the increased coverage of the exposed conjunctival tissue.

\*Photos courtesy of Bita Asghari, OD, FAAO and BostonSight

## Discussion

The patient was successfully fit into a larger diameter 19.5mm PD (figure 2). The superior haptic notch fit appropriately around the symblepharon which eliminated it as an anatomical limitation in conjunctival coverage. The patient reported improved comfort, had improved function, reduced discharge, and continued to do well at his three-month follow-up.

## Conclusion

Providing maximal coverage of the ocular surface for patients with EK may improve fit, function, and comfort with scleral lens wear. Although anatomical obstacles can limit lens diameter, appropriate customization and incorporation of a haptic notch may serve as a valuable tool in improving coverage of the ocular surface.

## References

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