



Prosthetic Contact Lens for Management of a Persistent Descemetocoele

Sydni K. Davis Farhat, OD and Robert Fintelmann, MD, FACS
Midwestern University – Arizona College of Optometry, Glendale, AZ



Introduction

A descemetocoele is a protrusion of the cornea where only Descemet's membrane remains intact. Corneal ulceration, typically resulting from infection, inflammation, or trauma, may lead to corneal thinning or an epithelial and stromal defect that may cause a descemetocoele and/or corneal perforation. Treatment options include a regimen of drops, a cyanoacrylate glue patch, amniotic membrane, bandage contact lens (BCL), or corneal transplantation.

Case Details

A 36 year-old-male with a history of acanthamoeba keratitis post-penetrating keratoplasty (PKP) in the right eye (OD) was managed for a central persistent descemetocoele within the graft. Chronic inflammation and ulceration after the PKP led to a pthysical eye with irido-corneal apposition, a mature cataract, and light perception visual acuity approximately 1.5 years after the transplant. Central corneal thinning within the graft due to a non-healing ulcer resulted in a descemetocoele.

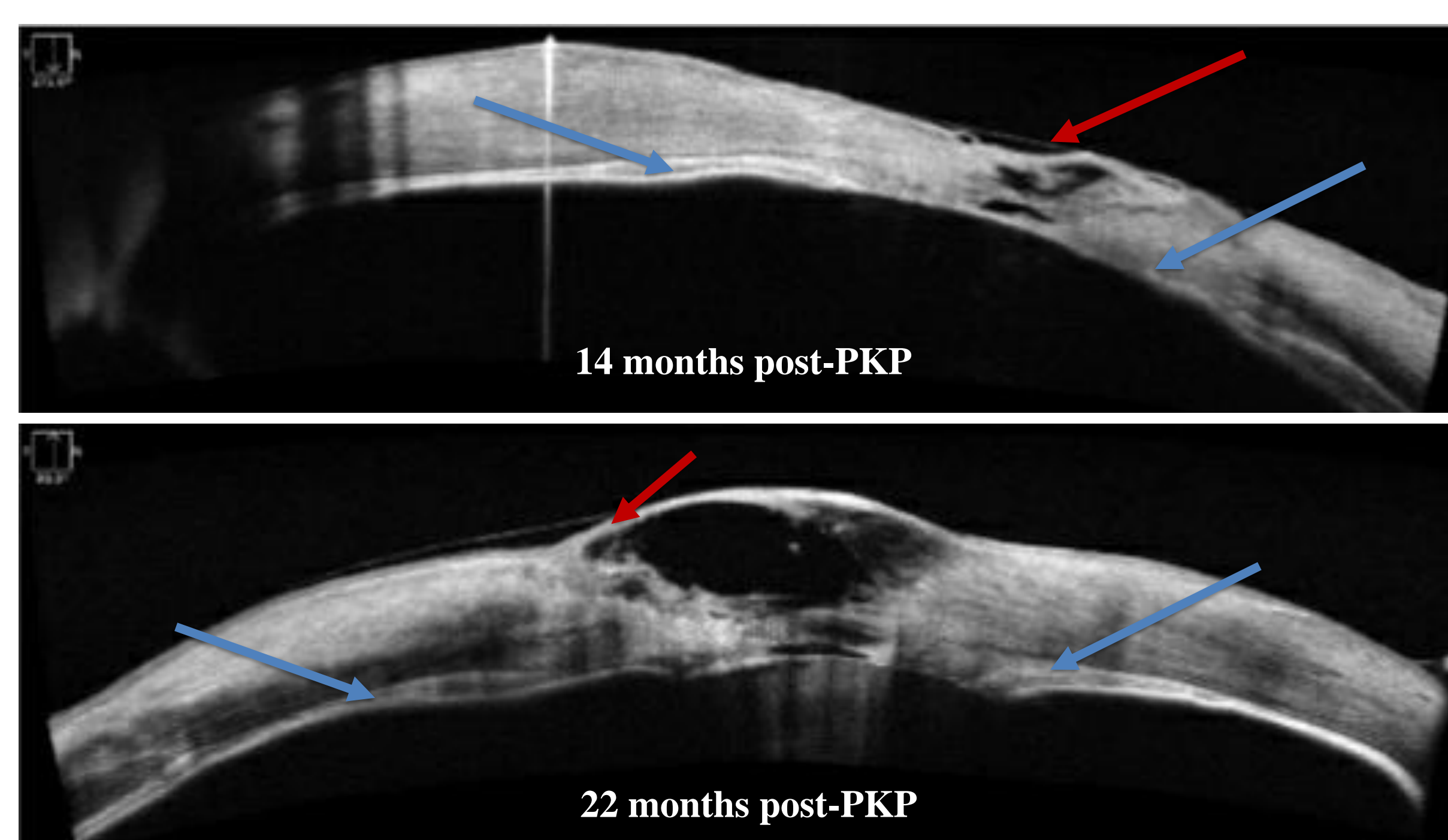


Figure 1: Vertical anterior segment ocular coherence tomography of corneal thinning with iris apposition OD. Arrows: Iris apposed to cornea (blue), cornea (red).

Management

Multiple treatments were implemented in order to manage the inflammation and corneal ulceration over the course of a year after corneal transplantation.

- Long-term use of anti-parasitic and anti-inflammatory eye drops was unsuccessful in healing the corneal defect.
- Cyanoacrylate glue and an amniotic membrane failed to seal a persistent descemetocoele with a positive Seidel sign (*see Figure 5*) within the cornea.
- A BCL worn full time was replaced every 2 weeks to cover the leak.
- An Air Optix Colors soft lens (Brown, PL, 8.6 BC, 14.2 DIA) was applied over the BCL per patient request to improve the appearance of his eye.

Since the patient was not in any pain, enucleation was not considered. Upon release from the corneal specialist, he was fit into an ABB Concise Colors prosthetic soft contact lens (SCL) (*see Figures 7&8*) approximately 17 months post-PKP OD. Lens replacement was instructed every 3 months due to full time wear with follow ups every 4-6 weeks to evaluate ocular health.

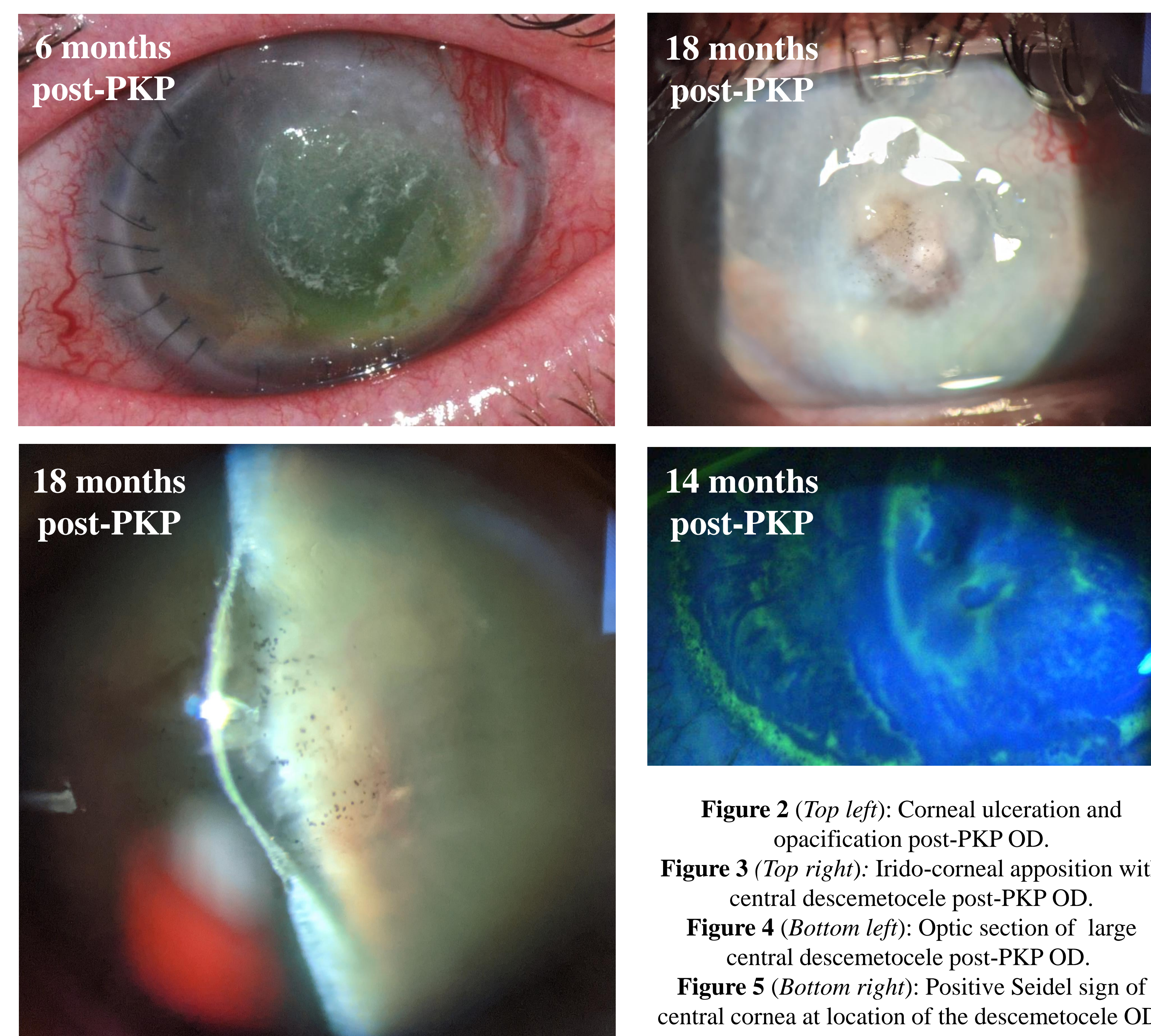


Figure 2 (Top left): Corneal ulceration and opacification post-PKP OD.

Figure 3 (Top right): Irido-corneal apposition with central descemetocoele post-PKP OD.

Figure 4 (Bottom left): Optic section of large central descemetocoele post-PKP OD.

Figure 5 (Bottom right): Positive Seidel sign of central cornea at location of the descemetocoele OD.

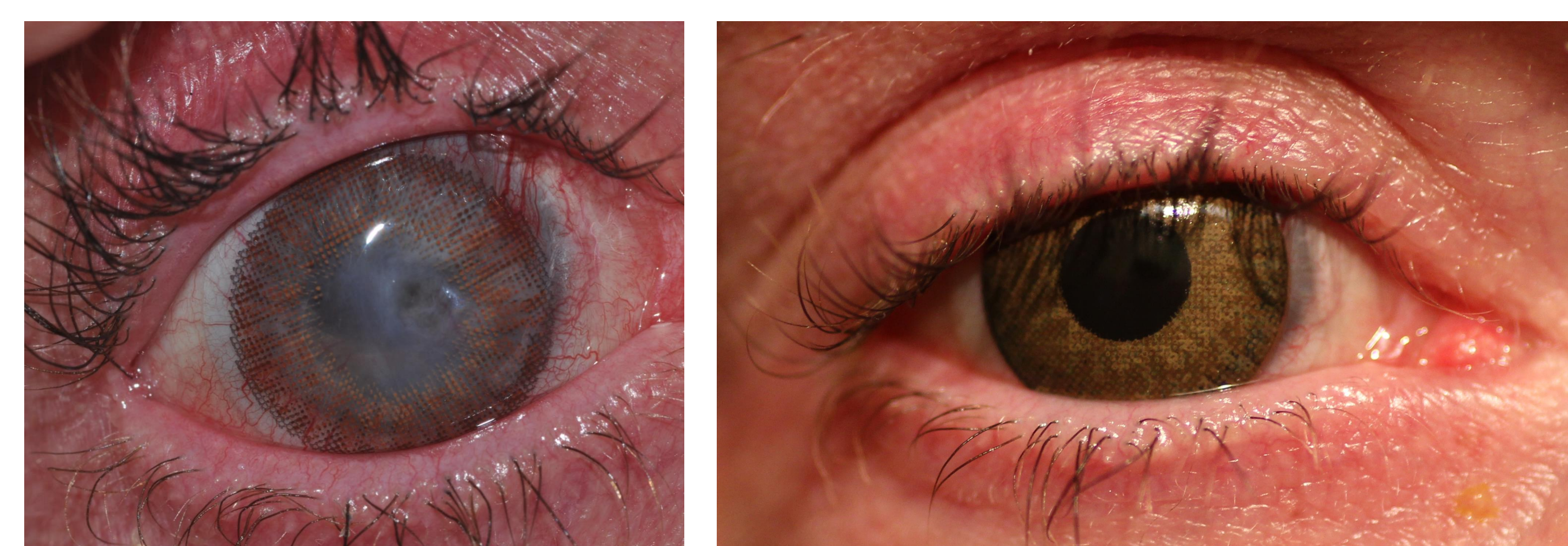


Figure 6: Initial trial of a "Brown" Air Optix Colors SCL to improve cosmesis.

Figure 7: Custom printed Concise Colors SCL OD.



Figure 8: Concise Colors prosthetic SCL OD compared to patient's natural iris color OS.

Discussion

Aside from managing the underlying cause, the primary goal when treating a descemetocoele is to prevent corneal perforation. Uveal prolapse and a positive Seidel sign can confirm the presence of a perforation. It is imperative that steps be taken to repair a leak immediately to prevent progression and reduce risk for intraocular infection. Corneal perforation can also lead to secondary glaucoma and cataract development, which can both lead to severe vision loss.

In some cases, a descemetocoele or perforation may not resolve with typical treatment options. This patient's cornea did not seal with surgical intervention, but he had already suffered profound vision loss and intraocular complications due to long-term inflammation. A repeat corneal transplant was not an option. Since his perforation was small and his condition had stabilized with a BCL, it was determined that a contact lens would be the least invasive way to seal the descemetocoele and address the patient's cosmetic concerns. It is possible that with progression of the perforation, or if the eye becomes painful, enucleation may be necessary. Finally, the risk factors for therapeutic use of a prosthetic CL should be considered, and are listed below:

- Hypoxia due to the low Dk of hydrogel lens materials used in prosthetic SCLs.
- Higher risk of infection with extended wear of soft CLs.
- Irritation of the tarsal conjunctiva due to friction with the lens printing.
- Concurrent use of medication and preserved eye drops may cause ocular irritation due to hydrogel lens materials that may absorb the drops.
- CL misalignment due to ocular deviation or an irregular ocular surface.

Clinical Pearls

- Consider that therapeutic use of prosthetic CLs may be beneficial in special circumstances.
- Carefully assess the benefits versus risks of therapeutic wear of soft prosthetic contact lenses.
- Although typically prescribed for 6-12 months of daily wear, prosthetic CLs should be replaced more often if prescribing them therapeutically.
- While a traditional scleral shell prosthetic may be considered in patients with a pthysical eye in the absence of other pathology requiring treatment, some patients may not be able to psychologically cope with this option, and may instead be successfully fit into a prosthetic CL.
- Patients should be educated that a prosthetic CL may not perfectly align on an irregular ocular surface or in a deviated eye.

Conclusion

Therapeutic use of soft prosthetic contact lenses may benefit patients with a desire to improve cosmesis, especially in a non-seeing eye. Once other treatment options have failed, such a lens may support the goal of preserving an eye without the added implications of a traditional prosthetic.

References

1. Agarwal R, Nagpal R, Todi V, Sharma N. Descemetocoele. *Surv Ophthalmol.* 2021;66(1):2-19.
2. Jhanji V, Young AL, Mehta JS, Sharma N, Agarwal T, Vajpayee RB. Management of corneal perforation. *Surv Ophthalmol.* 2011 Nov-Dec;56(6):522-38.