

BACKGROUND

- When trauma, infection, disease or chemical injury opacifies the cornea, a cornea transplant can restore sight. However, if graft failure occurs and a repeat graft is not an option, the patient may once again be blind unless a different approach is utilized. The transplantation of an artificial transparent cornea, known as a keratoprosthesis, or KPro, may be indicated.
- Traditional management of the KPro patient includes a large diameter, extended-wear, bandage contact lens.
- Further lens fitting considerations include careful evaluation of lens interaction with any glaucoma drainage devices in place.
- In cases of poor soft lens retention, repeated vision-impeding lens deposit build-up or unacceptable vision, a hybrid lens may be indicated.

CASE BACKGROUND

38 year old female presents for contact lens fitting in setting of keratoprosthesis following failed penetrating keratoplasty

Medical history

- Type 1 diabetes mellitus, insulin pump, last A1c 5.6

Ocular history

- Ocular globe injury (fishhook) OS at age 11 w/ subsequent scarring
- 6 years ago: OS penetrating keratoplasty and cataract extraction
 - OD: SMILE
 - OS: successfully fit with a corneal GP (Rose K2 IC 7.85/-5.50/11.2)
- Chronic angle closure glaucoma OS + graft failure OS → **2022 KPro Type 1 with IOL removal**, pars plana vitrectomy, Ahmed valved **glaucoma drainage device** w/ overlying corneal patch
- Following KPro implantation: Kontur 16.0/8.9 soft bandage contact lens
 - Well-centered, appropriate movement, good retention
 - Lens edge in close proximity to Ahmed shunt
- Few months later (5/20/23) → endophthalmitis OS
 - Culture results: (+) staph epidermis
 - Treatment: vitrectomy + fortified antibiotics (intravitreal vancomycin and ceftaz 5/21/23)

Ocular medications - current

- Combigan OS BID
- Alphagan BID OS
- Predforte QD OS

Goals of Contact Lens Refit

- MINIMIZE LENS INTERACTION WITH GLAUCOMA SHUNT
 - Edge of Kontur len's close proximity to superiorly glaucoma drainage device is a concern to corneal specialist
- IMPROVE PATIENT VISUAL QUALITY
 - BCVA in soft lens of 20/40 OS
 - Pt complains of reduced visual quality OS and difficulty with binocular viewing
- PREVENT CORNEAL MELT
 - A bandage lens is the standard of postoperative care in KPro management to prevent corneal desiccation and melt

HYBRID LENS FIT DETAILS

Ultrahealth FC hybrid lens design

- Extended wear
- Skirt BC 8.1, power +0.50D, vault 55, diameter 14.5mm
- Fit:

- VA improves to 20/25
 - w/ marked subjective improvement in comfortable binocular viewing

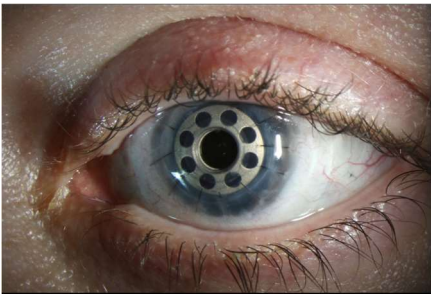
Follow up

- 1 Month later
 - Good fit, good patient comfort, free of debris, no over-refraction

Prior to KPro



After KPro implantation



OD		OS
	Lids/lashes	Mechanical ptosis
	Conjunctiva/sclera	Superior temporal tube and plate covered, bleb elevated over plate, sutures intact, nylon suture ends exposed
SMILE incision superiorly, mild patchy interface haze centrally	Cornea	KPro
	Lens	Aphakia
	Anterior vitreous	Tube visible behind K pro on transillumination, 1+ residual vit cells
0.3, normal	Disc	0.8, tilted
	Periphery	Attached, resolving temporal and nasal hemorrhages

DISCUSSION

Keratoprosthesis, Type 1

- Components: Front plate with optical stem, a back plate, titanium locking C-ring
- Material: Polymethyl methacrylate

- Potential complications:** corneal melt, infection, glaucoma, tissue necrosis, retinal detachments, epithelial downgrowth

Bandage Lens Considerations in setting of KPro

- Excessive handling of bandage contact lenses in setting of KPro should be avoided
- Medications are used over the lens
- Large, soft contact lens worn as extended wear**
 - Worn constantly for life
- If soft lens is clear, routine replacement is not necessary.** Recommend cleaning every 3-6 months in clinic
- If retention is a problem, increase diameter of soft CL or refit with hybrid**
- If deposits lead to mandated frequent soft lens replacement, **switch to hybrid**
- If conjunctival erosion, increase diameter and add Vancomycin if on Polytrim alone

CONCLUSION

Given the patient's motivation for binocular vision, active lifestyle, and history of quality vision with corneal GPs, a hybrid lens was chosen for this patient.

A hybrid lens provides good retention, less movement, and good vision with often less lens deposits over time. Thus, hybrid lenses can be an effective option as a therapeutic lens in cases where soft bandage contact lenses fail.

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