



# Improved bandage contact lens fit after Boston KPro implantation using a reverse-geometry soft lens

Lenna Walker, OD, MS <sup>1,2</sup>, Amy Watts, OD, FAAO <sup>1,2</sup>

<sup>1</sup>New England College of Optometry, <sup>2</sup>Massachusetts Eye and Ear Infirmary, Boston, MA

## Introduction

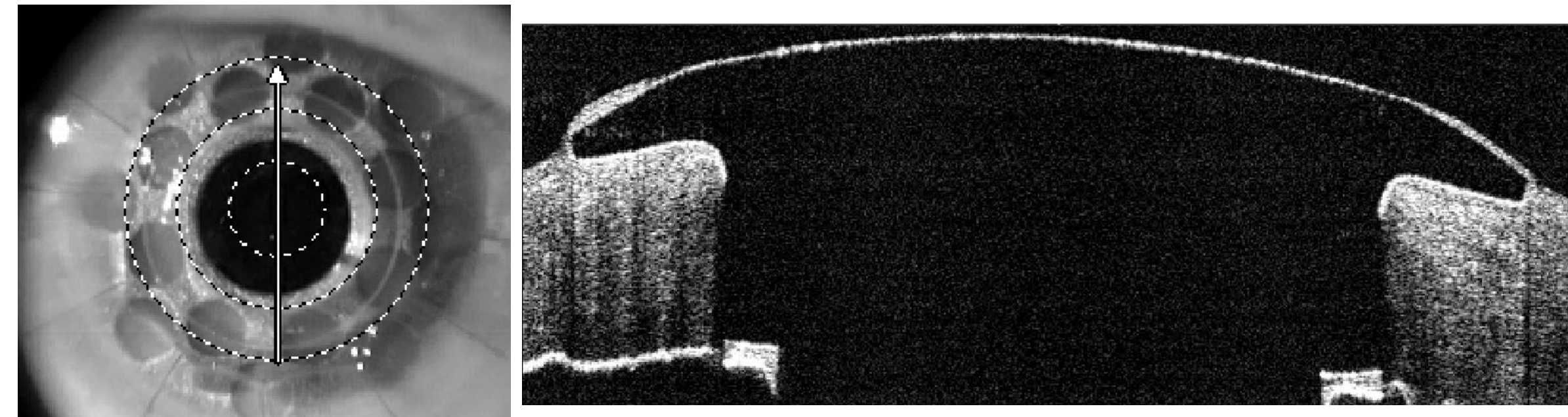
- Long-term bandage contact lens (BCL) use is the standard of care following Boston Keratoprosthesis Type 1 (KPro) implantation.
- The main goal of BCL use is to maintain hydration and protect corneal tissue from dessication, epithelial breakdown, stromal thinning, dellen formation, and melt.
- BCL use can also improve patient comfort/cosmesis and correct refractive error.
- Because there is a high degree of variability in postoperative corneal topography in these patients, obtaining an adequate BCL fit can be challenging.
- This is an example case where a flat, reverse-geometry soft lens succeeded over a standard soft lens and three different hybrids in a post-KPro CL fitting.*

## Case History

Demographics	82 yo Caucasian man
Patient Ocular History	Longstanding glaucoma OS, with VA NLP OS PKP OD x 3 (2010, 2014, 2015) for pseudophakic bullous keratopathy  Burkholderia gladioli endophthalmitis OD (2016) with central microbial keratitis and necrosis  S/P APHAKIC KPRO TYPE I with membranectomy OD (06/2017)
Ophthalmic Medications	Prednisolone BID OD Vancomycin with BAK 14mg/mL BID OD Gatifloxacin BID OD Artificial tears TID-QID OU
CHIEF COMPLAINT	Frequent BCL decentration and discomfort REFERRED FOR BCL REFITTING by cornea specialist

## OD Exam

DVA sc	20/400
Slit Lamp Evaluation	Ocular surface topography extremely flat, with a flat cornea-scleral junction and iris sitting just behind KPro back plate; Habitual BCL decentered nasally with dimpling



Anterior optical coherence tomography showing our patient's Boston Keratoprosthesis device and his flat post-operative corneal profile.

## OD Contact Lens Exam

Habitual Lens	Kontur BC: 9.0 DIA: 20mm Decentered nasal, with poor coverage; Dimpling
Failed Trials	1) SynergEyes UltraHealth FC VLT: 105 SC: 8.1(M) DIA: 14.5 -1.00 2) SynergEyes UltraHealth FC VLT: 55 SC: 8.1(M) DIA: 14.5 3) SynergEyes PS BC: 9.0 SC: 8.6 DIA: 14.5  ALL: Decentered superior or superior temporal, with excessive movement/inadequate stability and poor coverage Patient reported decreased vision and discomfort
SUCCESSFUL Trial	FlexLens PRS BC: 10.0 DIA: 16.0  Lens sat slightly inferior temporal but provided good coverage, adequate movement Patient reported good vision and comfort

## Follow-Up

At ONE MONTH FOLLOW-UP:

DVA OD cc	20/200 (Improved)
OD BCL Evaluation	BCL in good position, without wrinkling/dimpling or excessive debris  Patient reported good, stable vision and excellent comfort

SUCCESS WITH:

**FlexLens PRS (Post Refractive Surgery) BC 10.0 !**

## Conclusion

There are limited publications on the types of contact lenses appropriate for use after Boston KPro surgery. At MEEI we see a wide variety of post-op corneal topographies, and have found that a successful BCL fitting can be achieved if the practitioner has a wide variety of contact lens designs in their toolbox. In this case, we found success with a reverse-geometry soft lens originally intended for post-refractive surgery.

## TAKE HOME: Boston KPro I BCL - Fitting Considerations & Strategies

### STANDARD INITIAL LENS:

**Kontur Precision Sphere BC: 9.8 DIA: 16.0mm**

(methafilcon A, 55% water content, Dk=18.8)

Chosen for durability, biocompatibility, deposit resistance, and wide range of available parameters; Replaced annually (or as needed)

### SILICONE HYDROGEL ALTERNATIVES:

**Acuvue Oasys**

**Air Optix Night & Day Aqua**

**PureVision2**

- Pros: FDA approved for BCL use (not using off-label), less expensive
- Cons: Requires more frequent replacement (often due to deposits), limited range of available parameters

NOTE: Oxygen permeability is irrelevant for a prosthesis!

### BASIC FITTING GUIDELINES:

**A PROPER FIT =**

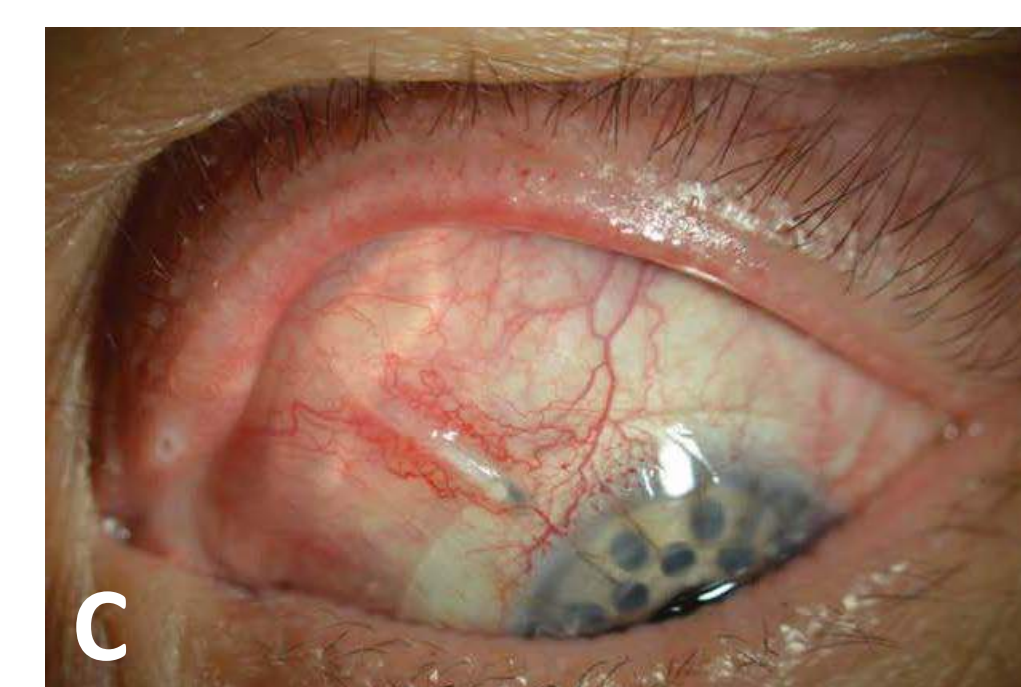
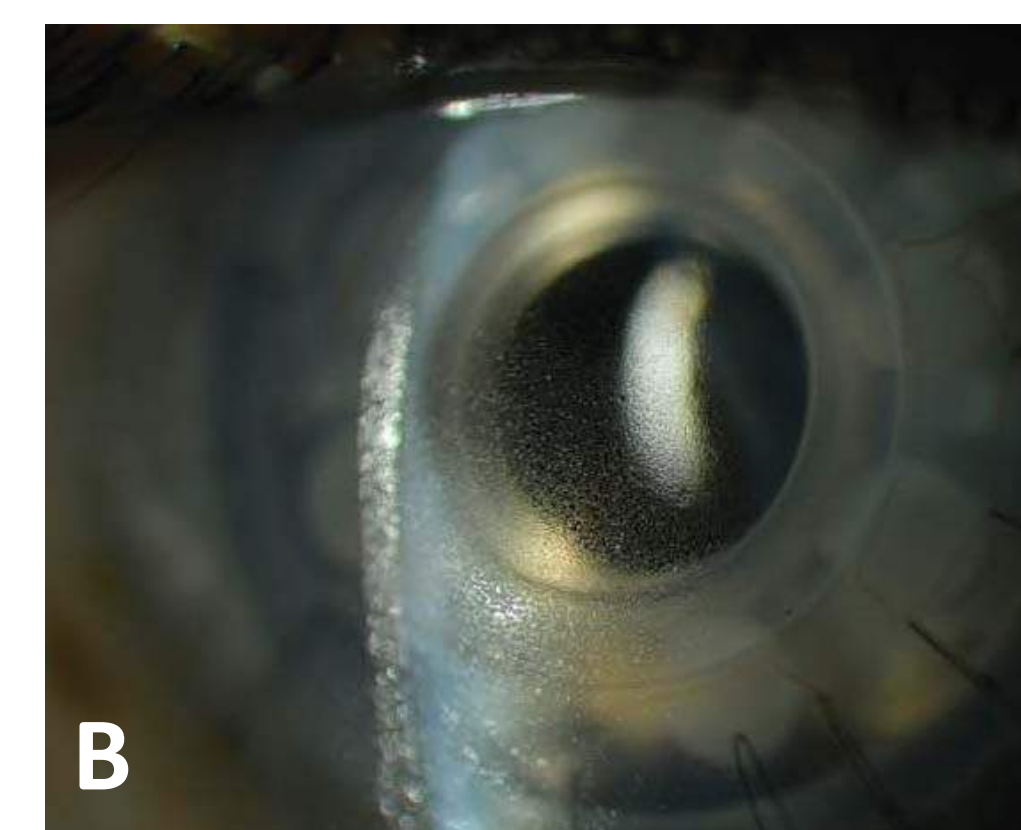
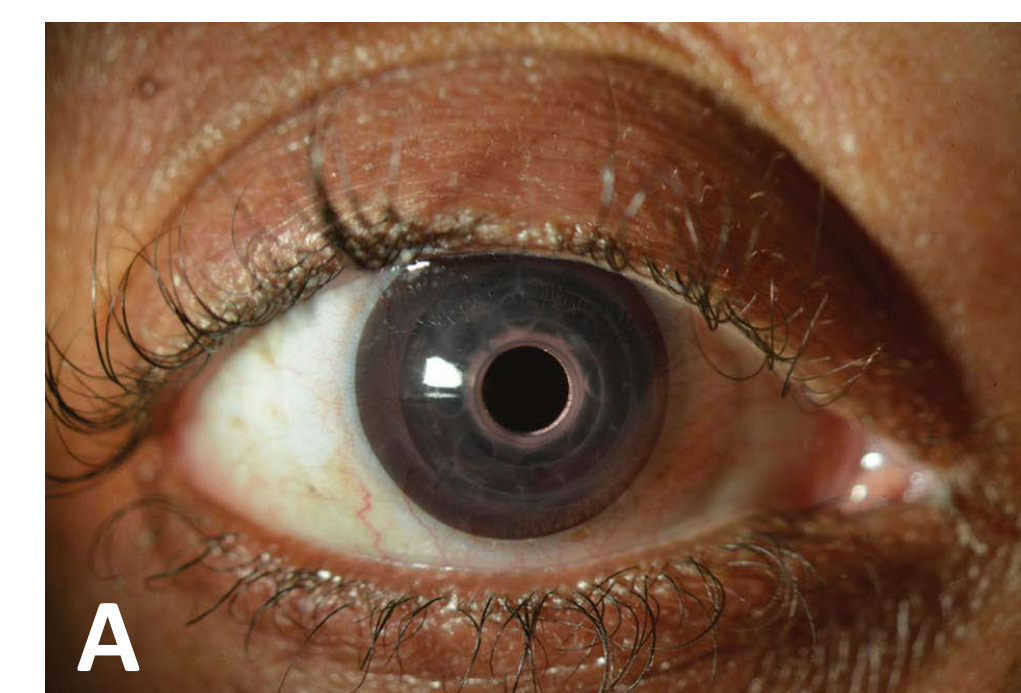
**Good centration, complete corneal coverage, adequate movement**

Edge fluting = Too Flat

Vascular compression and/or air bubbles = Too Steep

### CLINICAL PEARL:

*Standard topography on a KPro device is not useful. Use the slit lamp to determine whether the corneal profile is relatively normal, prolate, or oblate. This should inform your initial lens selection.*



(A) KPro patient wearing a tinted BCL with clear central zone. (B) Significant lens deposit accumulation on the surface of a soft BCL. (C) KPro patient with exposure of glaucoma tube shunt in the area adjacent to the BCL edge.

All images taken from Thomas et al.

PROBLEM	NEXT STEPS	OUR PATIENT!
Very flat ocular surface	Reverse-geometry lens design EXAMPLE: <b>FlexLens PRS</b> (available in BC as flat as 11.0mm)	
Lens buckles centrally	Decrease diameter and/or flatten BC	
Insertion air bubbles	Fill lens with viscous artificial tear (e.g., Refresh Celluvisc) Apply while patient leans forward	
Photophobia Poor cosmesis	Custom tinted / prosthetic lens EXAMPLES: <b>Kontur with brown tint</b> , <b>BioColors</b> , <b>Adventure in Colors</b>	
Frequent lens loss	Increase sagittal depth by increasing diameter and/or steepening BC Hybrid lens (which has suction effect) EXAMPLE: <b>SynergEyes</b> Large-diameter GP or Scleral lens In some cases: Plastics referral (e.g., for lateral tarsorrhaphy or lateral tarsal strip)	
Lens deposits	Change material (e.g., HEMA-based or 2-hydroxyethyl methacrylate-based over SiHy) Daily disposable lens or more frequent cleaning (if patient can apply/remove lens safely) Hybrid lens (deposits typically continue to form on soft skirt, but are outside LOS) Large-diameter GP or Scleral lens	
CL-induced conjunctivitis	Daily disposable lens or daily cleaning (if patient can apply/remove lens safely) GP lens	
Glaucoma drainage devices	Adjust lens diameter to reduce contact between edge of BCL and drainage device	
Refractive error	Contact lens over-refraction	

## References

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