

Scleral Contact Lens Fit Over Band Keratopathy in Pediatric Aphakic

Meagan Miles, OD

Southern California College of Optometry at Marshall B. Ketchum University



Marshall B.
KETCHUM UNIVERSITY
Southern California College of Optometry

What is Band Keratopathy

Band keratopathy is a corneal degeneration characterized by calcium deposits in Bowman's layer or in the anterior stroma. The band forms at 3 and 9 o'clock on the cornea, starting in the peripheral cornea and growing centrally. It is associated with chronic inflammation, such as uveitis, autoimmune disease, renal disease, hypercalcemia, silicone oil in aphakic eyes, endothelial compromise, certain topical medications, or can be idiopathic.

Case History

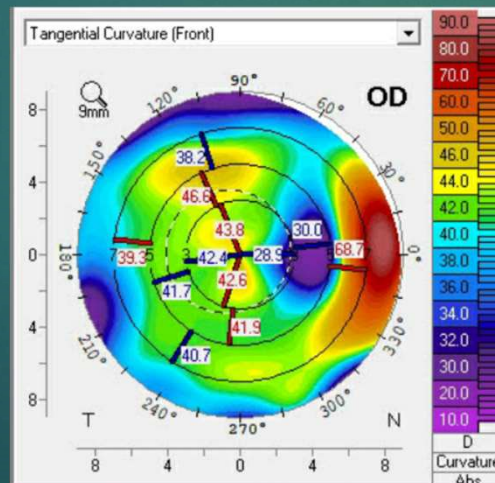
- BW is a 17-year-old Caucasian male
- He has aphakia OU, chronic nongranulomatous anterior uveitis OU, band keratopathy OU, with history of cystoid macular edema OS.
- Surgical history of pars plana vitrectomy and membrane peel OU in 2012
- Presented in May interested in contact lenses, had worn corneal GPs in the past, but was unhappy with comfort.

Entry Testing

- VA Distance: aided with glasses
 - OD: 20/20-
 - OS: 20/30+
- Habitual glasses PAL
 - OD: +14.75 +1.00 x098 +3.00 add
 - OS: +15.00 +1.00 x090 +3.00 add
- Confrontation Visual Fields: Full
- Motility: normal
- Pupils, irregular pupil, (-)APD
- Goldmann Ta: @ 10:40am
 - OD: 14, OS: 13

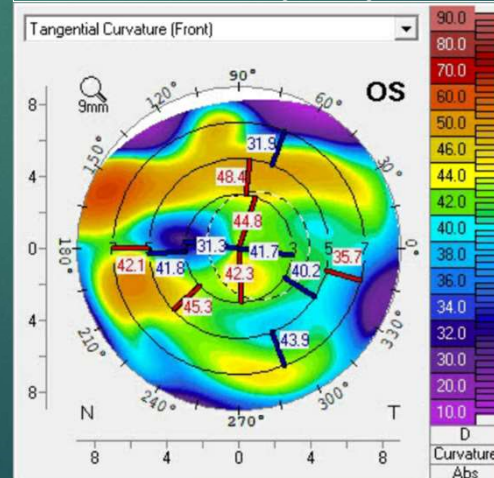
Slit Lamp Findings

- Anterior segment OU
 - Cornea
 - Old stellate KPs, Band K nasal and temporal OD
 - Large nasal, temporal, and central Band K and superior area of Band K, endothelial changes and superficial, pannus inferiorly OS
 - Iris
 - PS to capsule, irregular pupil OD
 - IK touch inferior temporal, inferior PAS, PS to capsule, irregular pupil OS
 - Aphakia OU
 - Vitreous
 - Rare pigmented cell OD
 - Rare pigmented, central vit consolidations OS
- Posterior Segment
 - C/D: 0.2 round OU
 - Macula: mild ERM OS
 - All other findings normal



Contact Lens Fitting

First lens		
	Right	Left
Brand	Zenlens with toric PCs	Zenlens with toric PCs
Base Curve	43.37 (7.78)	46.50 (7.26)
Diameter	16	16
Sphere	+17.25	+13.75
Lens	Boston XO2	Boston XO2
	Sag: 4500,	Sag: 4450,
Addl. Specs	APS: H: Std, V: Steep 4	APS: H: Std, V: Steep 4
VA	20/20	20/25-
Wearing for 15 minutes		
OD: 200 CC, slight bearing nasal over Band K, edge loose inferior, toric mark at 4/10 o'clock.		
OS: 100 CC, bearing nasal over Band K, thins superior, edges loose vertical		
Final lens		
	Right	Left
Brand	Zenlens with toric PCs	Zenlens with toric PCs
Base Curve	43.37 (7.78)	46.50 (7.26)
Diameter	16	16
Sphere	17.25	14.75
Lens	Boston XO2	Boston XO2
	Sag: 4500,	Sag: 4550,
Addl. Specs	APS: H: Std, V: Steep 6	APS: H: Std, V: Steep 6
VA	20/20	20/20-2
Wearing for 2 hours		
OD: 150 CC, bearing over nasal Band K, toric mark at 4/10 o'clock, edges well aligned.		
OS: 100 CC, bearing over nasal Band K, thin temporal, toric mark at 2/8 o'clock, edges well aligned		



Differential Diagnosis

- Interstitial keratitis
- Calcareous degeneration of the cornea
- Vitamin D deficiency
- Calciophylaxis
- Limbal stem cell deficiency
- Spheroidal degeneration
- Ciprofloxacin crystalline deposits
- Advanced basement membrane dystrophy or Salzmann nodular degeneration
- Familial Band Keratopathy

Treatment and Management

- The underlying cause should be treated first. In asymptomatic eyes, band keratopathy can be monitored. Superficial deposits can be removed from Bowman's layer by chelation with disodium EDTA or scraping. In cases where the deposits cannot be removed, a contact lens can be used to improve vision and comfort.
- Management for BW:
 - Scleral contact lens
 - Prednisolone BID OU
 - Methotrexate 12.5mg once a week
 - Folic Acid 1 mg daily and 2mg on days he takes the Methotrexate
 - Remicade 500mg every 4 weeks

Conclusion

- BW is a typical teenage boy with not so typical eyes. He doesn't like the cosmesis of his aphakia glasses, wants to wear contact lenses to play soccer, and likes to play on his phone. His band keratopathy, aphakia, and frequent flare ups of uveitis make a challenging fit. While there is slight bearing over part of his band keratopathy, this is an overall good fit, that allows BW to live like any other 17-year-old.

Reference

Weisenthal R, Daly M, et al. 2019-2020 BCSC: Basic and Clinical Science Course. Vol 9. San Francisco: American Academy of Ophthalmology; 2019. Ch 8, pg 117-120

Bagheri N, Wajda BN, eds. The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease. 7th ed. Philadelphia: Wolters Kluwer; 2017. pg.

Jhunj V, Rapuano CJ, Vajpayee RB. Corneal calcific band keratopathy. Curr Opin Ophthalmol. 2011;22(4):283-289.

https://eyewiki.org/Calcific_Band_Keratopathy