



MID ATLANTIC CORNEA
CONSULTANTS

Optical Challenges in Vision Restoration after Acanthamoeba Corneal Ulcer

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CASE HISTORY:

Patient is a 54 year old surgeon that came to us for a soft contact lens related corneal ulcer that developed after he went swimming in the ocean in daily disposable contacts. Despite removing the lenses after swimming, his left eye was in pain the next day and he went to the emergency room. They prescribed Ciprofloxacin QID OS and the patient saw no improvement. When he saw us in clinic several days later, we completed a culture for bacteria and fungus which did not grow any organisms. We treated empirically with fortified Tobramycin, Vancomycin, and Voriconazole every hour while awake and saw patient daily. After minimal response to these agents, the drops were stopped for 24 hours and a repeat culture for Acanthamoeba was performed on non-nutrient agar with an E. Coli overlay, which came back positive. We then started him on Chlorhexadine 0.02% in addition to 1% Voriconazole and changed the fortified antibiotics to Polytrim every hour while awake and the ulcer started to respond and heal nicely. Once the epithelium was intact, we added Prednisolone acetate 1% QID OS and Vitamin C 1000mg BID PO to minimize scarring. Due to the remaining scar in the visual axis, we fit him in a scleral lens to obtain his maximum visual potential.

LENS FITTING PROCESS:

After treating his Acanthamoeba infection, he did not want to be fit in contact lenses OU. This patient got into this predicament because he did not want to lose his PALs in the ocean. His main request to me was to optimize his vision in the scleral but to be able to see through his PAL with the lens in his eye. The patient's occupation is a surgeon so his ability to perform at work with precision was of the utmost importance. His right eye has a conjunctival cyst inferior temporally that limited our ability to fit that eye with a contact lens, and the patient wanted to stay away from contact lenses altogether in the right eye.

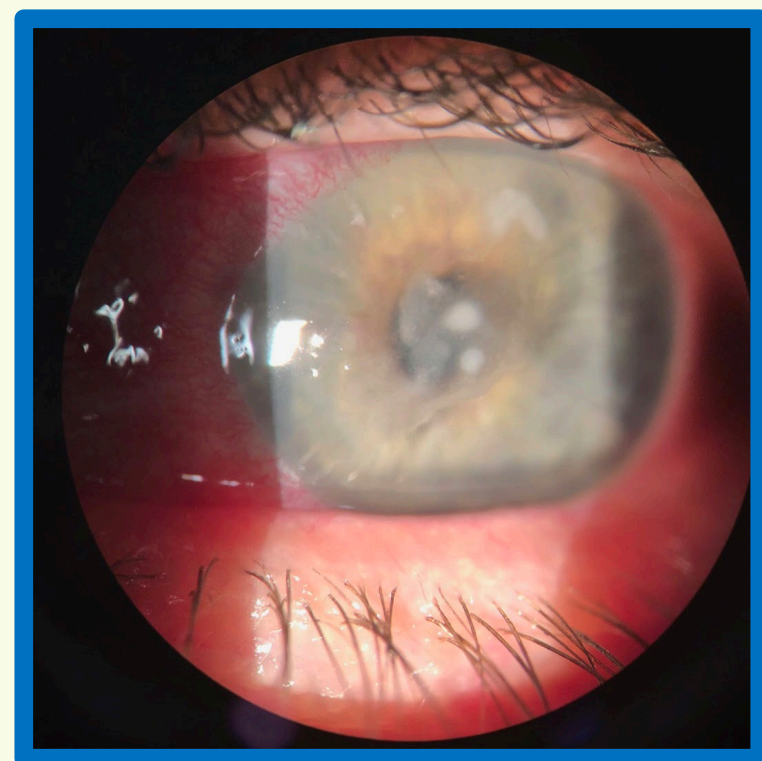


Figure 1. Patient presents with epithelial infection OS later culture positive Acanthamoeba.

STEPS TO OBTAIN SCLERAL LENS:

1. Place diagnostic lens on the eye.
Plano B.C. 8.2 Vault 3400 Toricity 36-42 Diam 16.0.
Hashmarks settled at axis 122
2. Obtain over-refraction.
ORx: +0.50DS to 20/20
3. Convert from plus cylinder to minus cylinder:
 $-5.50+1.25 \times 081 \rightarrow -4.25-1.25 \times 171$
4. Vertex glasses prescription
 $F_2 = F_1 / (1 - (t/n)F_1)$
-4.00 -1.25. x171
5. Use over-refraction and glasses prescription to determine scleral lens prescription.
Goal RX: +5.75-1.25x081
(added +0.50 due to over-refraction)
6. Ordered initial lens:
+5.75-1.25x139 BC 8.2 3500 vault
Toricity 36-42 Diam 16.0. VA: 20/30-2
Hashmarks settled at 085
7. Over-refraction: difference between glasses Rx and lens in place over-refraction
+0.25 -0.50 x 080 20/20-
8. Final lens parameters:
+5.75-1.00x127 BC 8.2 Vault 3500
Toricity 36-42 Diam 16.0 VA: 20/20-2

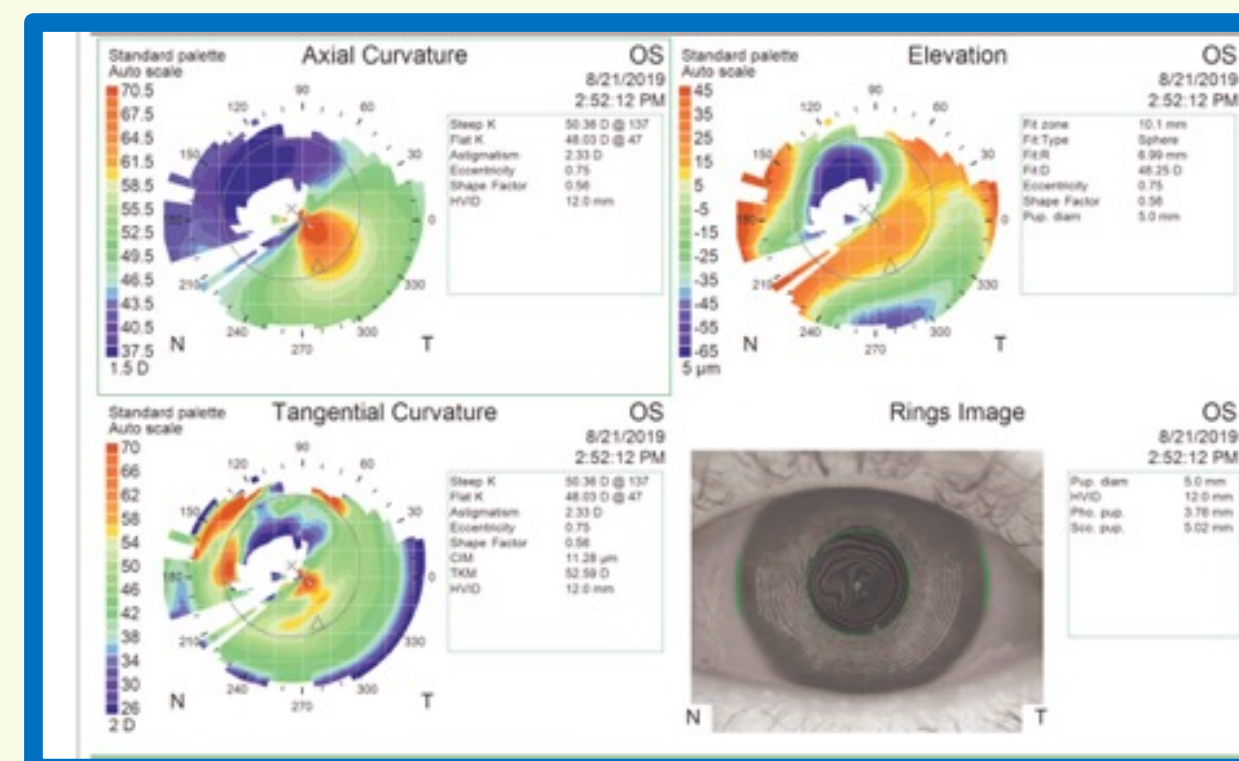


Figure 2. Corneal topography depicting irregular astigmatism secondary to residual severe corneal scar.

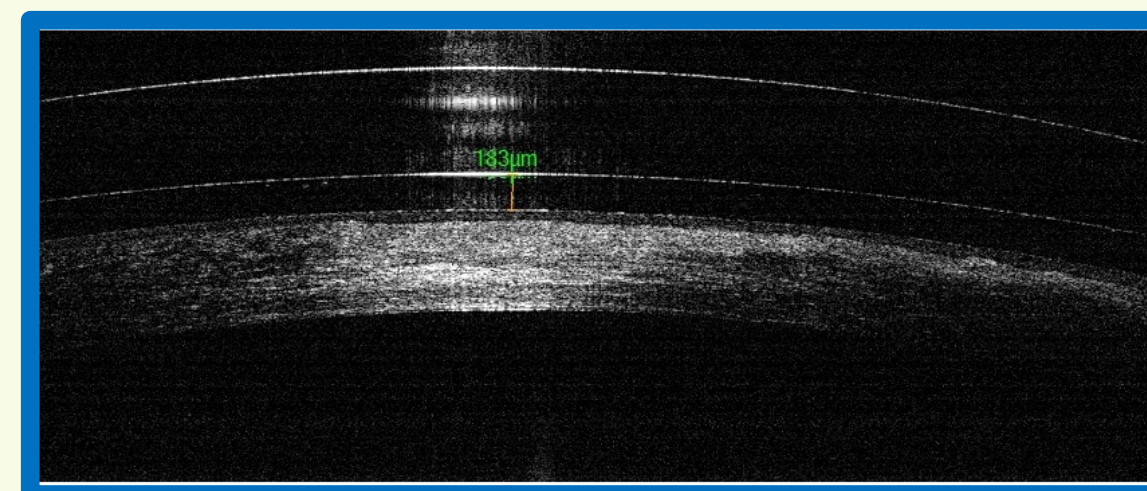


Figure 3. Anterior segment OCT depicting final central vault of scleral lens over residual Acanthamoeba scar.

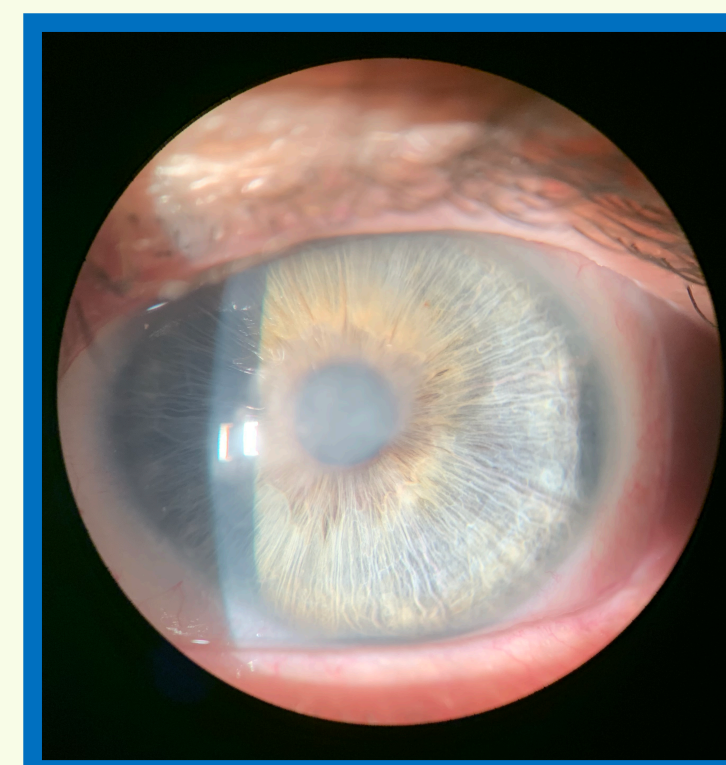


Figure 4. Final scar extends through visual axis with scleral lens to help correct vision.

LENS FITTING PROCESS CONTINUED:

Although, this was an unusual request, I agreed to try my best to fit his needs. In order for me to make it possible for him to wear his PAL over the scleral lens, I had to make the vision through the scleral the same as his uncorrected myopia. This included obtaining the prescription in his PAL, obtaining an over-refraction in the scleral lens to reach 20/20 vision, converting the findings from plus cylinder to minus cylinder, vertexing the high myopic spectacle prescription, taking into account the position of the hashmarks on the lens and adjust the cylinder axis accordingly.

CONCLUSION:

It is important to listen to the concerns and goals of the patient no matter how unique the request. With the help of consultants, I am able to get this patient the vision he desired in the modality he preferred. This case was difficult as I have never blurred a patient in a scleral to their original uncorrected state. By using optics and the use of optical coherence topography, I was able to get this patient 20/20-2, but more importantly 20/happy.

References:

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