

## Introduction

- A 41-year-old Hispanic male presents for a scleral lens refit due to lens impingement surrounding tube shunts OU.
- Lens design, troubleshooting, and fitting considerations are discussed

## Case History

### Chief Complaint

- 41 year old male presents with pain and redness OU with new scleral lenses duplicated from previous order.

### Ocular History

- Pellucid Marginal Degeneration diagnosed in 2012 with successful scleral lens wear since 2012
- Severe Primary Open Angle Glaucoma treated with topical ocular hypotensives, tube shunts OU placed in 2015, and Selective Laser Trabeculoplasty OD in 2019
- Notched scleral lenses introduced in 2015

### Medications

- Ocular: Cosopt BID OU, Latanoprost QHS OU, Brimonidine BID OU

## Case Presentation

### Manifest Refraction

OD: -4.75-8.00x088 20/125  
OS: -7.25-4.75x090 20/70

### Slit Lamp Findings

- OU:
- Superior temporal elevated tube shunt well covered with conjunctival tissue and scarring
  - Inferior corneal thinning 2 mm from limbus with scarring

### Tomography

- OU:
- Inferior corneal steepening with classic “crab claw” or “kissing doves” pattern.
  - Significant steepening within 2mm of inferior limbus OD>OS.

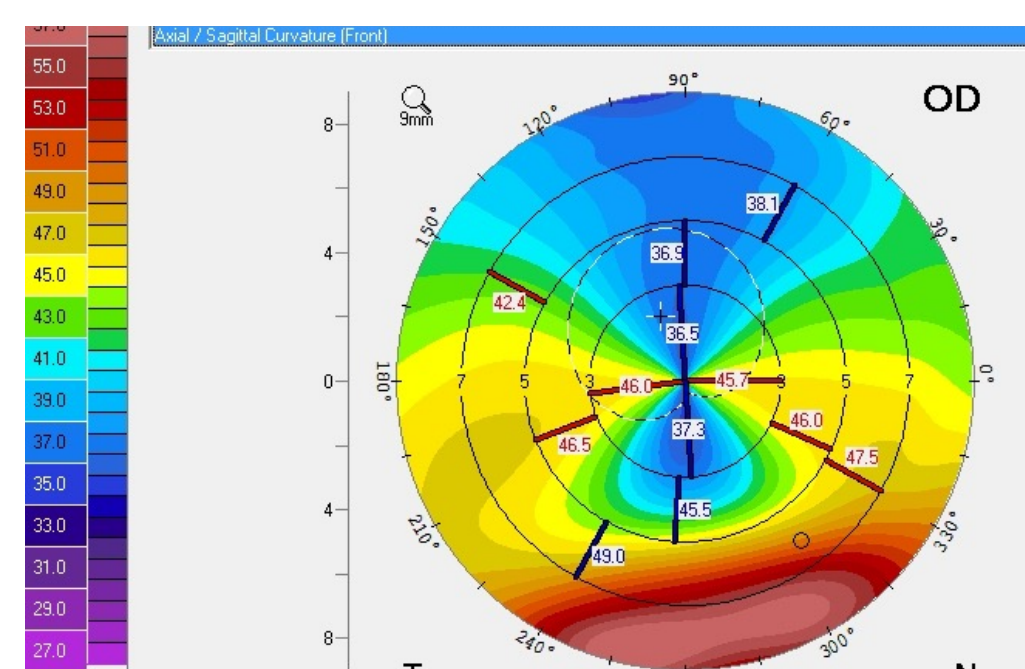


Figure 1: Axial Corneal Curvature OD

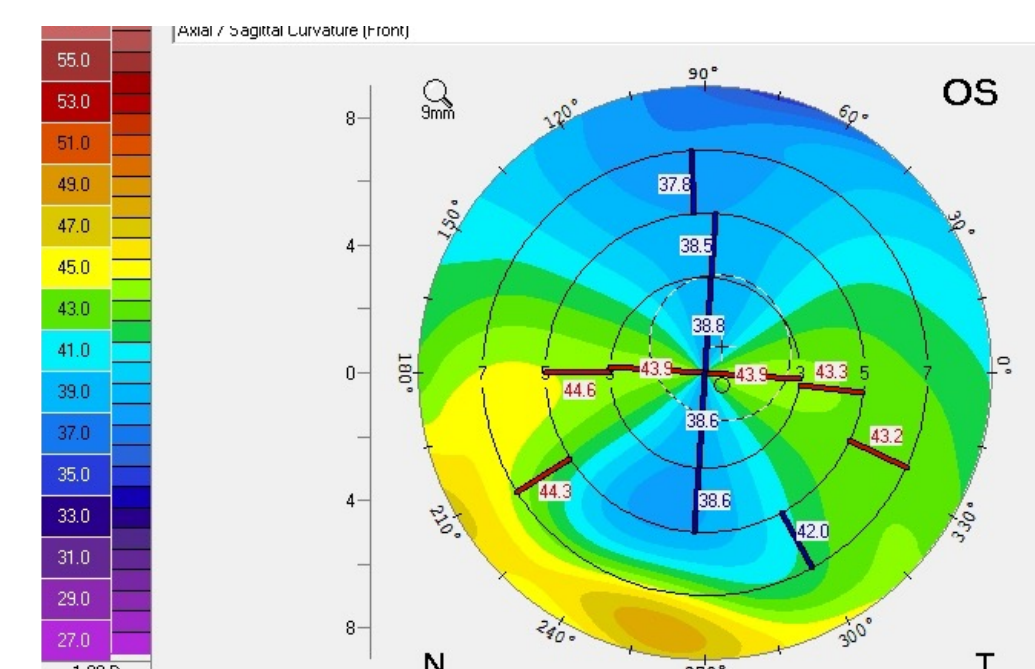


Figure 2: Axial Corneal Curvature OS

## Case Presentation

### Visits 1+2: Re-ordered last finalized parameters from 2019 (Different lens design OD vs OS, initially fit with corneoscleral topography data)

OD: -12.50, BC 7.38, Dia 16.2, Sag 5325, Sph Haptic, 0.5mmDx8.0mmW notch  
•VA 20/100  
•Mid-peripheral touch inferior, mild impingement at notch edges causing discomfort with notch aligned with shunt  
OS: -13.75, BC 7.18, Dia 16.5, Sag 5248, Sph Haptic, 2.5mmDx10.0mmW notch  
•VA 20/60  
•Mild impingement at notch edges causing pain and redness

### Visits 3+4: Widened notches 1mm and maximally rounded edges OU, increased mid-peripheral clearance OD

OD: -5.75, BC 8.65, Dia 16.2, Sag 5325, Sph Haptic, 0.5mmDx9.0mmW notch  
•VA 20/100  
•Improved inferior clearance, improved comfort, no notch-shunt interaction  
OS: -13.75, BC 7.18, Dia 16.5, Sag 5248, Sph Haptic, 2.5mmDx11.0mmW notch  
•VA 20/60  
•Adequate fit, improved comfort, and no notch-shunt interaction

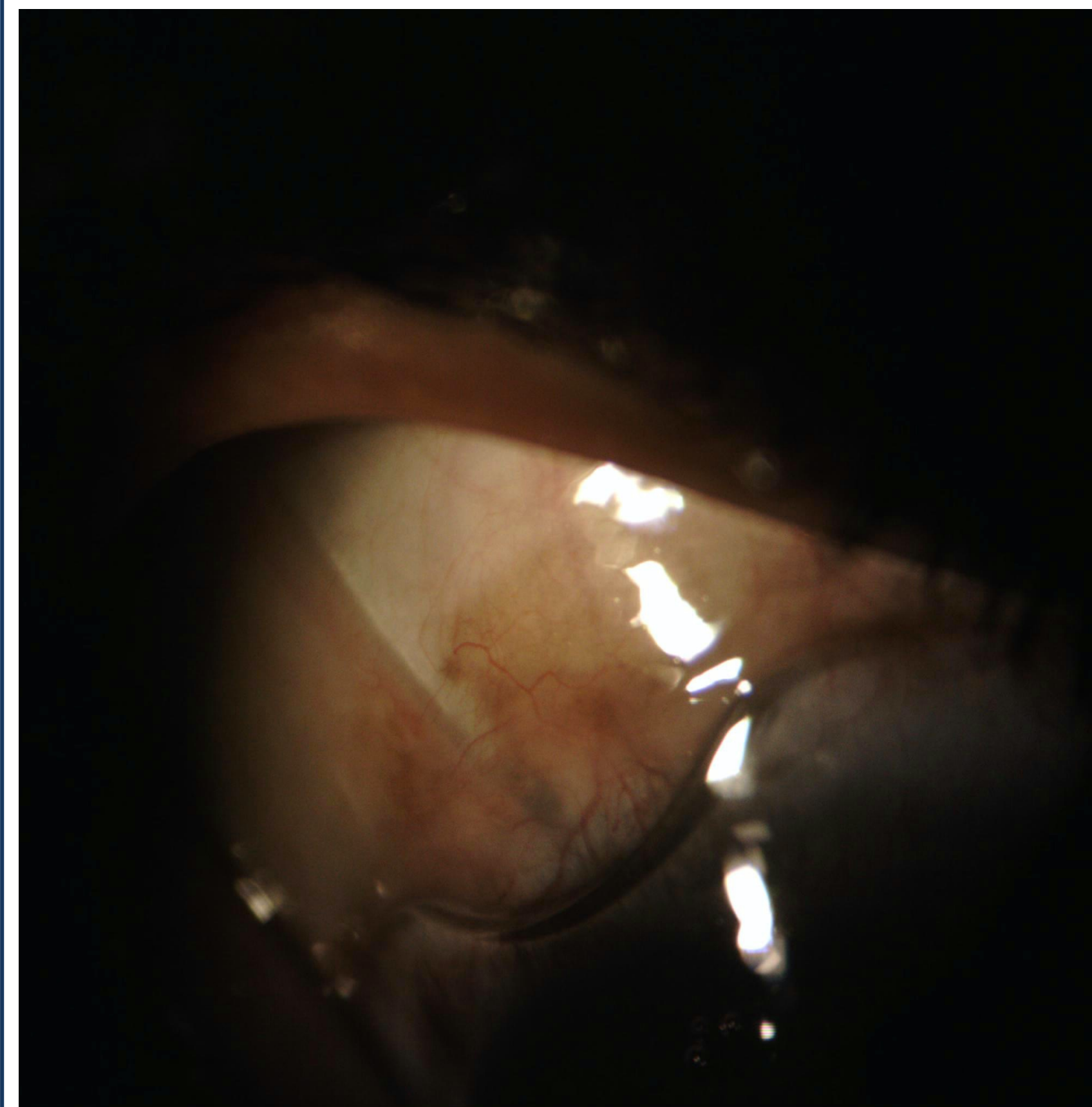


Figure 3: Tube Shunt + Finalized Lens Notch OD

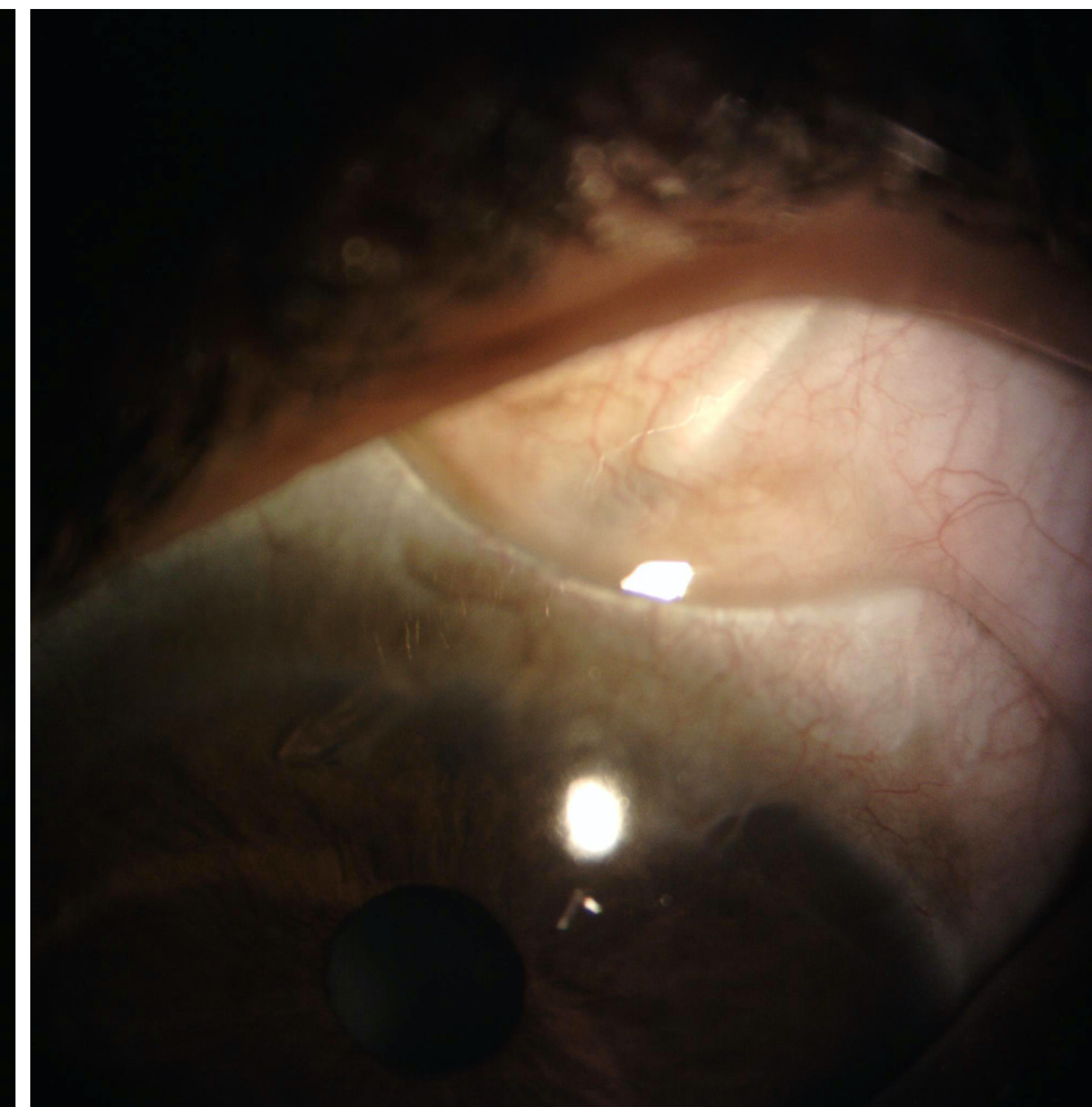


Figure 4: Tube Shunt + Finalized Lens Notch OS

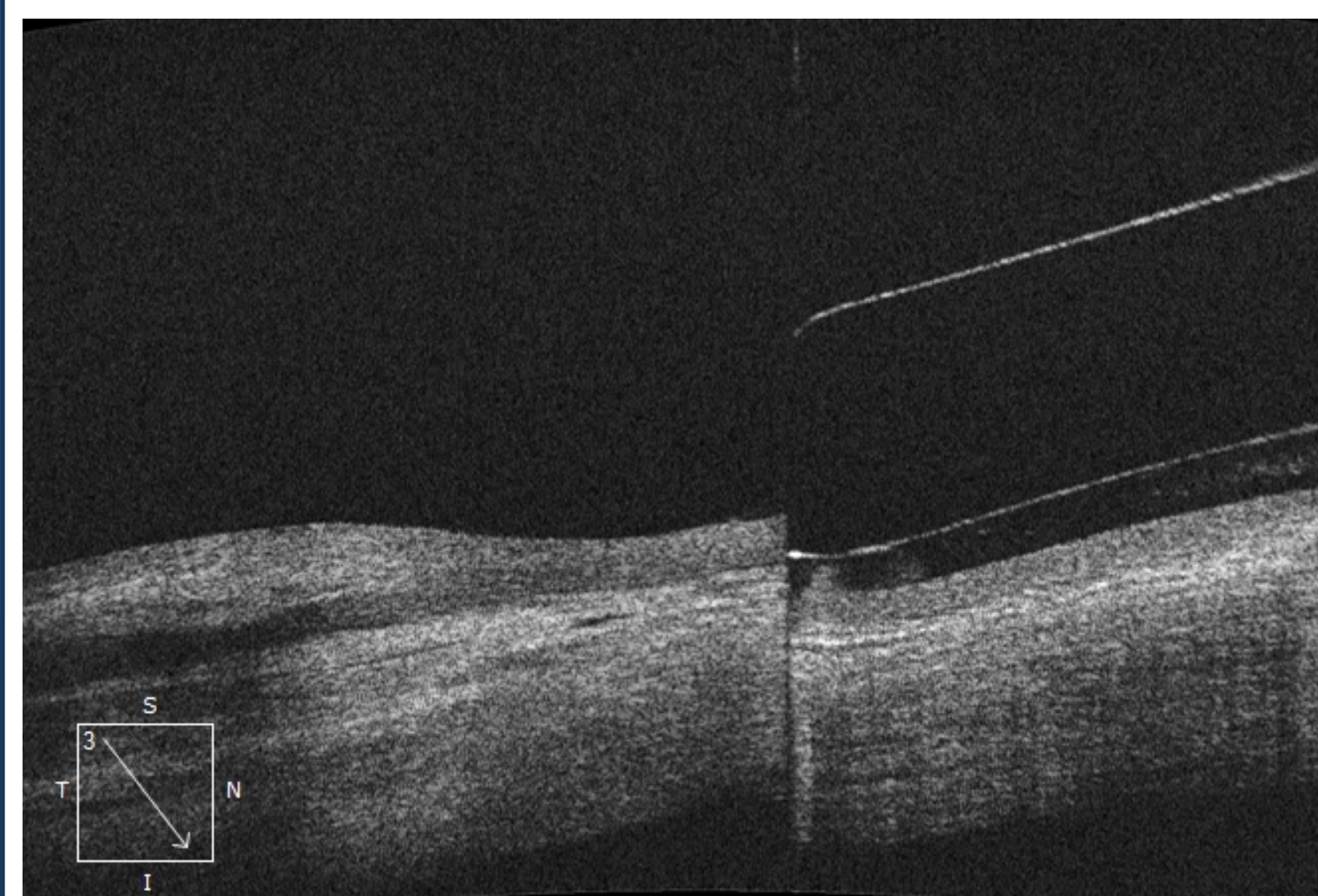


Figure 5: Anterior Segment OCT Over Lens Notch OD

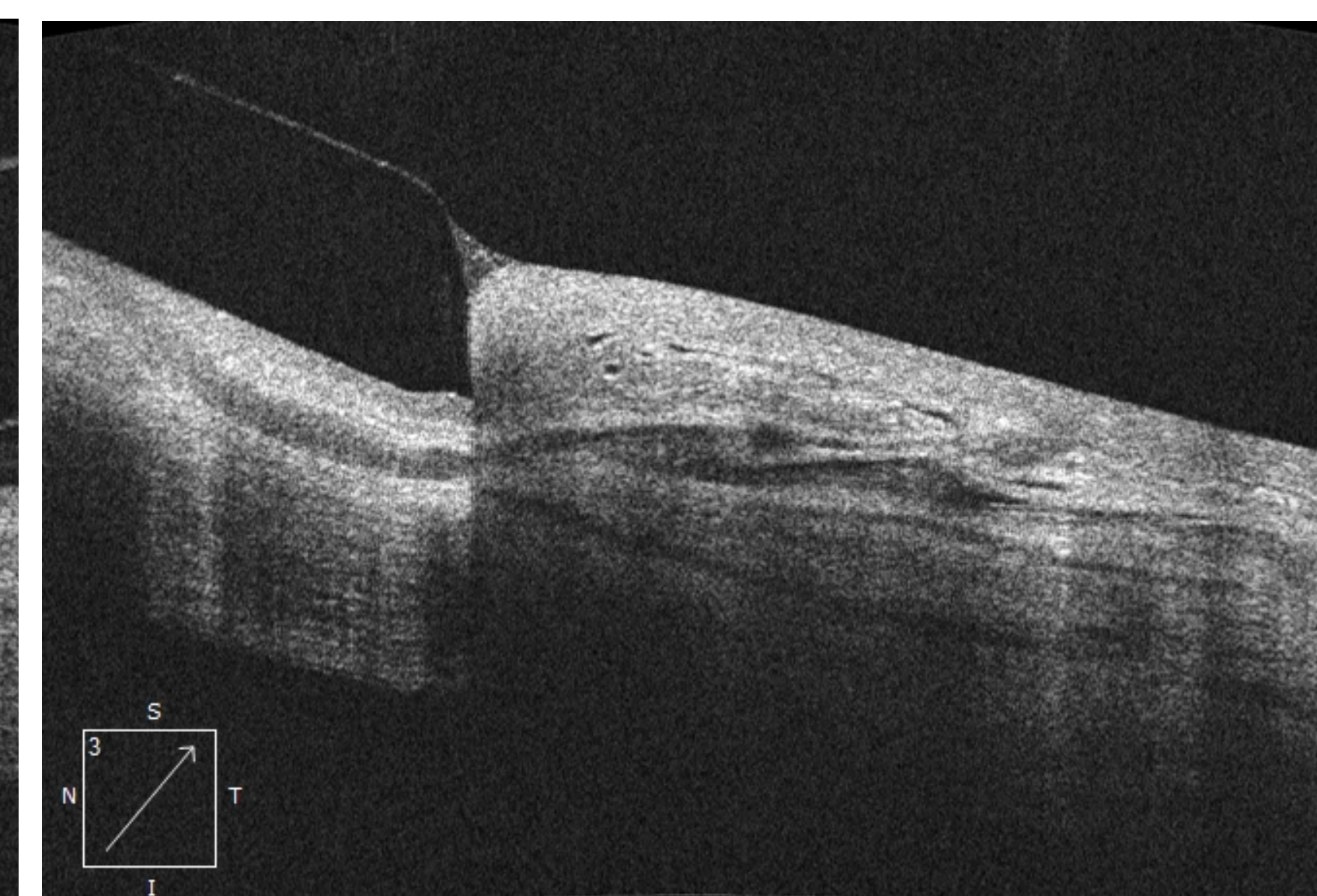


Figure 6: Anterior Segment OCT Over Lens Notch OS

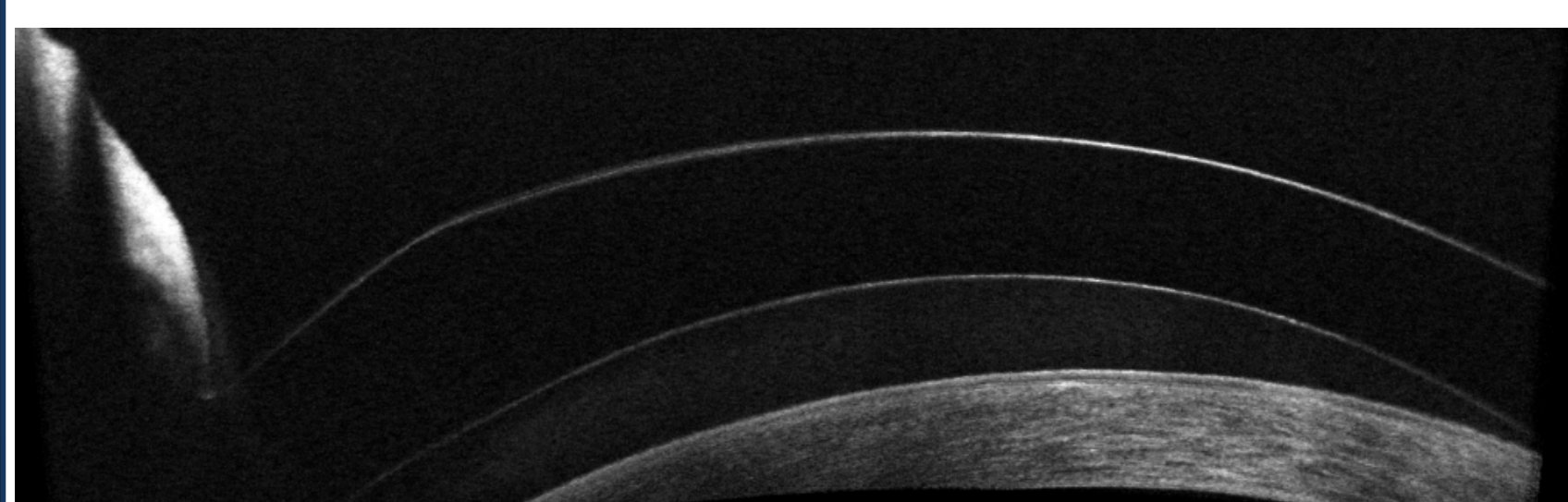


Figure 7: Anterior Segment OCT with Scleral Lens OD

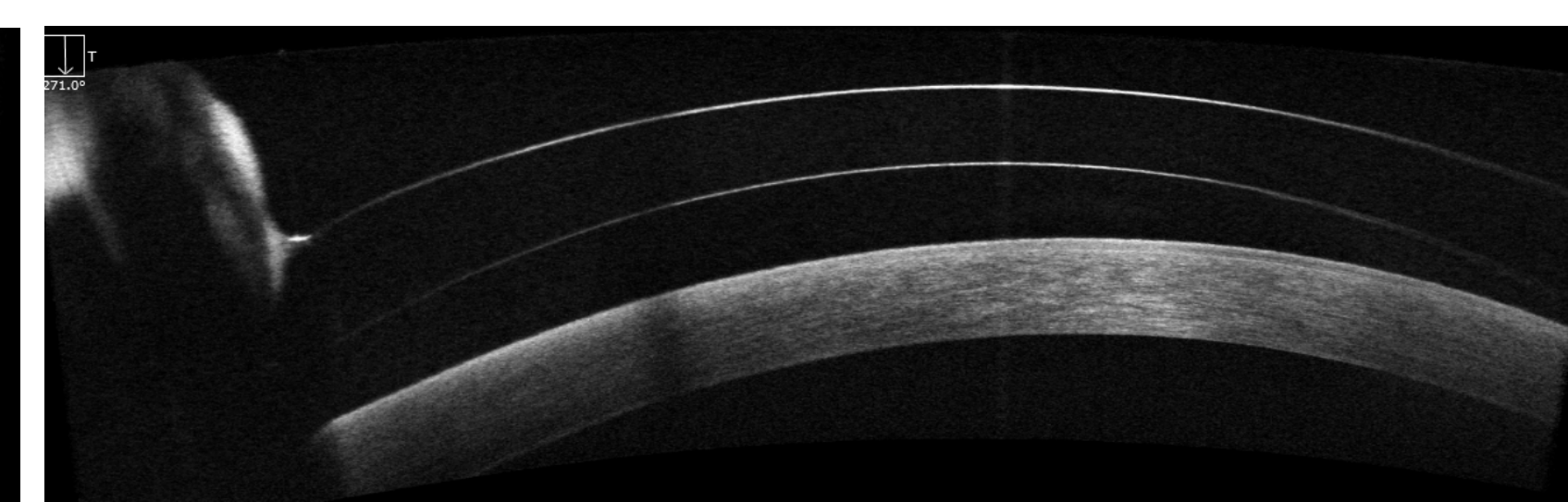


Figure 8: Anterior Segment OCT with Scleral Lens OS

## Discussion

- Glaucoma drainage devices can interfere with scleral lens landing, alignment, and centration.<sup>1</sup>
- Persistent contact between lens haptics and the conjunctiva covering tube shunts can lead to discomfort, reduced tube function, or erosion of the conjunctival tissue, often requiring surgical repair.<sup>1,2</sup>
- Notching, toric haptics, truncation, channeled haptics, scleral topography guided and impression-based lens designs are all options to accommodate glaucoma drainage implants.<sup>2</sup>
- Lens notches can be variable, even when duplicated, and parameters may be recorded differently by different manufacturers.
- When fitting notched lenses, corneoscleral topography can help to determine lens parameters more efficiently than diagnostic lens fitting due to lens interaction and decentration with the elevated areas.<sup>3</sup>

## Conclusion

- Scleral obstacles including glaucoma drainage devices are not contraindications to scleral lens wear, and these obstacles can be circumvented or accommodated as necessary.
- Even with long-term wear of notched scleral lenses, refitting may be necessary due to notch manufacturing variability.

## References

1. Tasha Tanhehco & Deborah S. Jacobs (2010) Technological Advances Shaping Scleral Lenses: The Boston Ocular Surface Prosthesis in Patients with Glaucoma Tubes and Trabeculectomies, Seminars in Ophthalmology, 25:5-6, 233-238, DOI:10.3109/08820538.2010.518873
2. Walker, Maria K., et al. “Anatomical and Physiological Considerations in Scleral Lens Wear: Conjunctiva and Sclera.” Contact Lens and Anterior Eye, no. 6, Elsevier BV, Dec. 2020, pp. 517–28. Crossref, doi:10.1016/j.clae.2020.06.005.
3. Sanders DR, DeNaeyer G (2018) Virtual Scleral Lens Fitting over Large Filtering Bleb Using Corneal-Scleral Topography. Int Page 5 of 5 J Open Access Ophthal 3(1):1-5. DOI: <http://dx.doi.org/10.15226/2474-9249/3/1/00130>
4. Nguyen, Anh Tuan H., et al. “Glaucoma Surgical Considerations for PROSE Lens Use in Patients with Ocular Surface Disease.” Contact Lens and Anterior Eye, no. 4, Elsevier BV, Aug. 2016, pp. 257–61. Crossref, doi:10.1016/j.clae.2016.02.002.