



Gaining an Edge Over Pingueculitis in a Dry Eye Patient Treated With Scleral Lenses

Nathan Dederman OD, FAAO and Christopher Alferez OD, FAAO, FSLs
Primary Care Optometry Residency
Brooke Army Medical Center, Joint Base San Antonio, TX



Abstract

A 41-year-old female scleral lens wearer presents to clinic with for routine check up but has red and irritated eyes after wearing lenses. This case details how scleral lens edges can be modified to resolve this issue.

Background

Scleral lenses are an effective way to treat severe dry eye syndrome. Pingueculae are a relatively common incidental finding in patients in Texas and places with high amounts of UV exposure. Complications with scleral lens wear can occur with significant impingement at the pinguecula.

Case Report

41-year-old female presents to clinic for a three-month scleral lens follow-up. The patient was originally fit by a previous provider in spherical peripheral curve scleral lenses for moderate-severe dry eyes not improving with medication or artificial tears.

- **Chief Complaint:** Happy with vision but has redness when removing lenses OD>OS. Pt also states lenses feel stuck on during removal. Reports discomfort after six hours of wear.
- **VA distance with Lenses:**
 - 20/20 OD; 20/20 OS
 - OR -0.25 OD/OS but not given due to early presbyopia and good distance acuity.
- **Scleral Lens Parameters:**
 - OD: 14.8 DIA, 7.67 BC, +2.25-1.50x085, SAG 4140, standard spherical peripheral curve
 - OS: 14.8 DIA, 7.50 BC, +1.50-1.75x090, SAG 4180, standard spherical peripheral curve
- **Fit (Figure 1):**
 - Central Vault: OD: 150 microns / OS 125 microns
 - Limbal Vault: Thin nasal OD/OS, but clearing
 - Haptics: Mild/moderate impingement superior/inferior OU; moderate impingement temporally at pinguecula with injection OU, trace nasal impingement at pinguecula OD.
- **Slit Lamp (Figure 1, lens removed):**
 - Conjunctiva:
 - OD: 2+ injection over temporal pinguecula with mild paralimbal injection
 - OS: 1+ injection over pinguecula with trace paralimbal injection
 - OU lens off edge staining superior/inferior and staining at pinguecula temporally
 - Lids/Lashes/Cornea:
 - Clear OU
- **Modifications:**
 - Change to toric peripheral curves, flatten vertical haptics 3 steps from standard spherical periphery
 - Flat 1 Horizontal / Flat 4 Vertical OU
 - Increase central vault 75 microns OU and 100 microns at limbus
 - Edge modification added temporally with 2.5mm width and 200-micron height OU, located 10° below 9:00 OD and 25° below 3:00 OS.

5-week follow-up with new lenses (Figure 2)

- Impingement greatly improved OU with lens edge clearing pingueculae temporally OU and with good alignment. Documented locations with photos and confirmed no impingement on anterior segment OCT at the pingueculae. Improved patient comfort, vision stable at 20/20 OD/OS.

1-week glasses Rx exam and progress check

- The patient came into clinic to update glasses Rx and noted improved comfort and less redness for the past week of wear. Will continue follow up in 6-8 weeks for progress check with new lenses

Images

Figure 1. Initial Lens

OD

OS

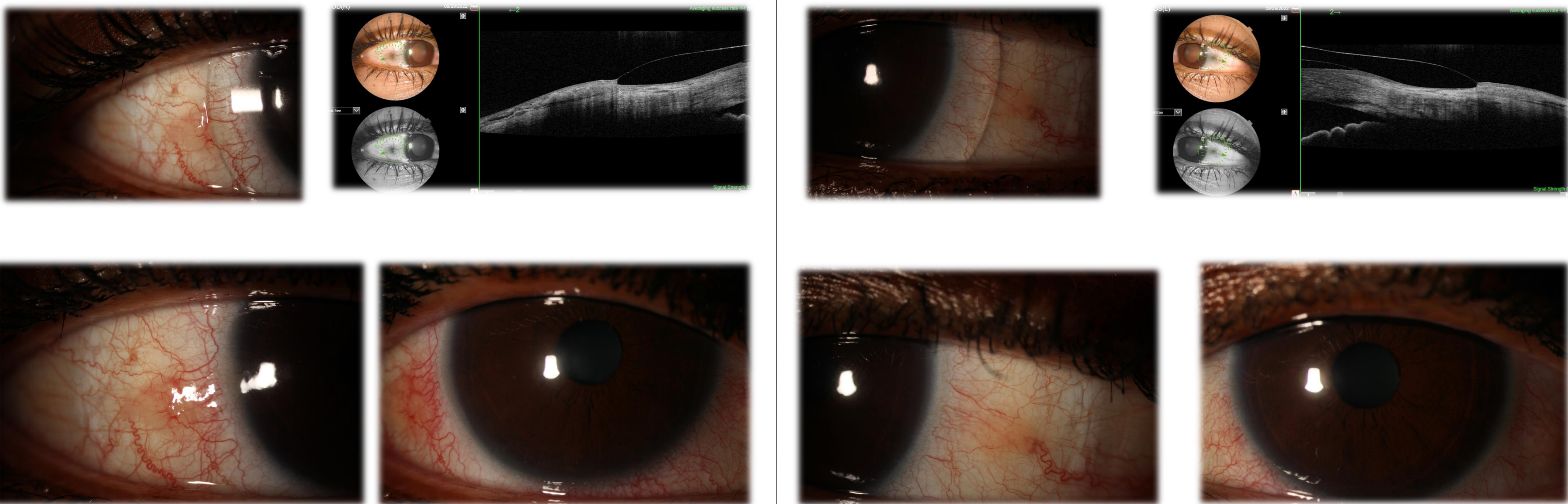
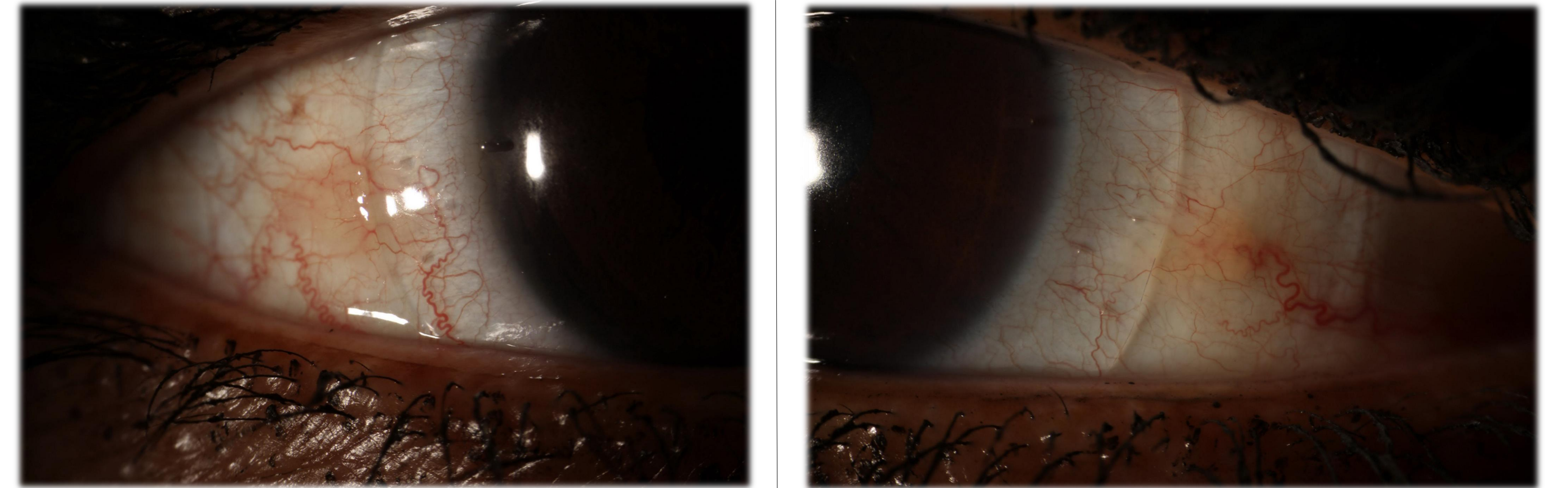


Figure 2. Final Lens

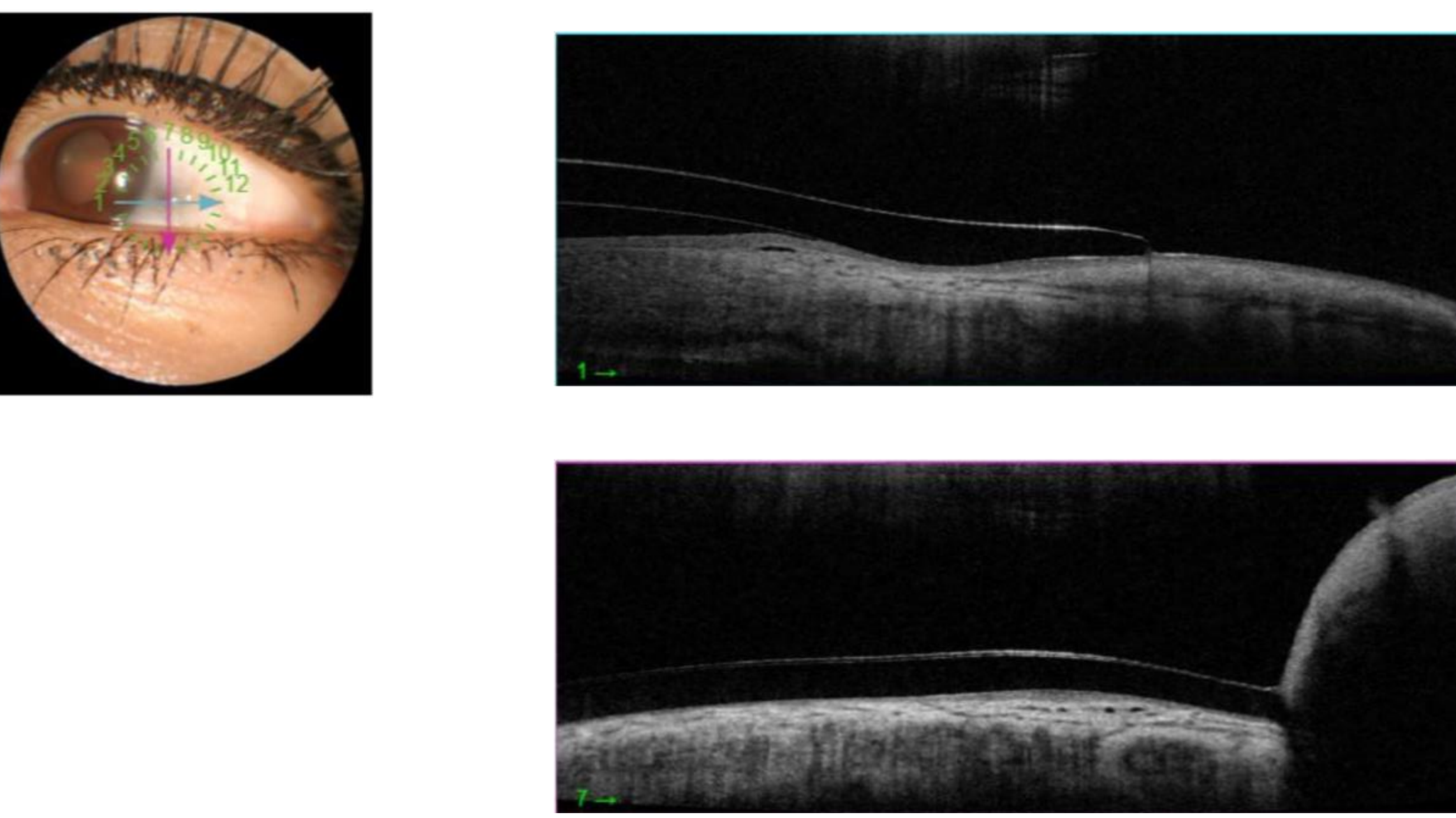
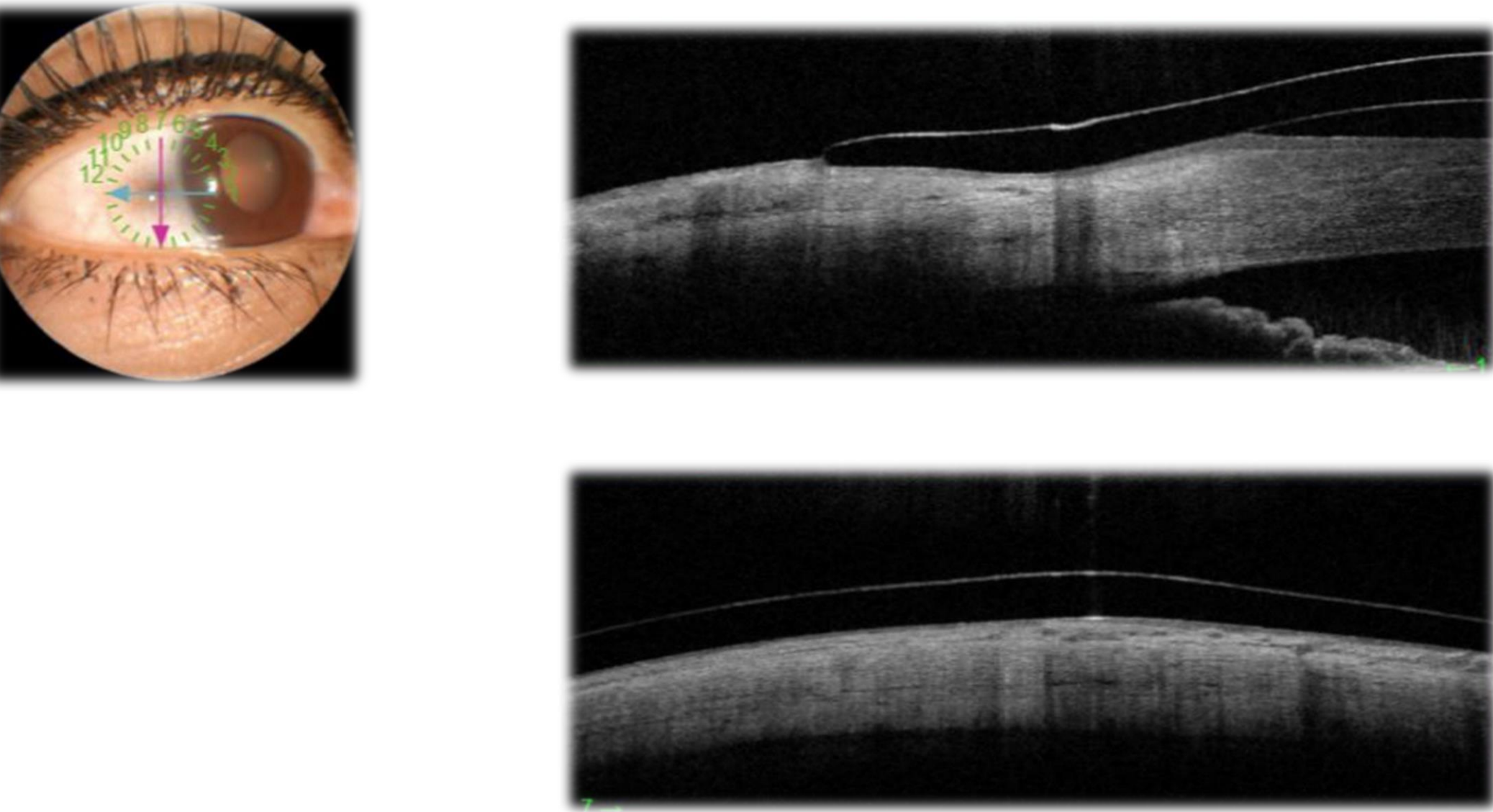
OD

OS



Slit Lamp Camera with Temporal Edge Modification

Slit Lamp Camera with Temporal Edge Modification



Anterior Segment OCT Temporal

Anterior Segment OCT Temporal

Discussion

Proper alignment with the ocular surface is essential to a good fit with a scleral lens. This is the primary interface between the lens and the eye, as the cornea is bypassed completely. The better the alignment, the better the distribution of pressure, which can lead to less conjunctival staining and inflammation.¹ In this case, the lens edge was impinging at the area of the pinguecula, greatest temporally OU. An optimal edge to bulbar conjunctiva relationship is 50/50, meaning 50% of the lens edge sinks into the conjunctiva and 50% is above the ocular surface.² Vessel blanching and lens edge stain can also indicate impingement. Short-term complications include redness, discomfort and lens instability.³ A long-term complication is conjunctival hypertrophy.³ Management options include edge modifications and changing the diameter to either avoid the pinguecula or cover it completely.¹ For this case, edge modification was selected due to already having a large lens diameter. Before considering an edge modification, a lens must be rotationally stable to ensure accurate placement.³ Improper placement can cause discomfort and poor fit.

Conclusion

Pingueculae must be monitored in scleral lens patients. The specific location in degrees and size should be noted during the exam to help with ordering. Specifically stating a clock hour location can ensure you and the consultant know exactly where the modification is. Be familiar with different brands and what modifications they can offer as well as what specific data points they need to create the modification. With lens modifications, this patient was relieved of her dry eyes without the cost of pingueculitis.

References

1. van der Worp, Eef. *A Guide to Scleral Lens Fitting*. Vol. 2, Forest Grove, Ore., College Of Optometry, Pacific University, 2015.
2. Barnett, Melissa, and Daddi Fadel. *Clinical Guide to Scleral Lens Success*. SLS & AILeS, 2018.
3. Samano Lopez, Omar. "Top 10 Secrets of the Notches." *Contact Lens Spectrum*, vol. 37, 1 Sept. 2022, pp. 32–34, 36–38.

Disclaimers

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