

Filamentary Keratitis & Sjogren's Management w/ Scleral Lenses

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Introduction

Dry eye syndrome caused by systemic auto-immune disease is difficult to manage with traditional methods. The immune system of individuals with Sjogren's Syndrome will damage lacrimal glands, causing severe & chronic dry eyes. Despite a rigorous dry eye management regimen, the signs and symptoms are often stubborn and debilitating. Scleral lenses have been well documented to be a great option to manage complex dry eye cases. This poster demonstrates a case of using scleral lenses to manage autoimmune related dryness as a great option for long term and consistent patient comfort.

Case Presentation

Initial Visit: A 44-year-old Hispanic female presented with constant eye pain OU with concurrent redness and photophobia. She reported similar incidents in the past.

Ocular History:

- Severe bilateral dry eye syndrome
- Recurrent bilateral filamentary keratitis
- BCVA: OD 20/30, OS 20/25**

Medical History:

- Sjogren's Syndrome
- Rheumatoid Arthritis

Medications:

- Cyclosporine drops (not using consistently)
- Artificial tears (gels & drops)
- Etanercept injections
- Oral Guaifenesin (not using consistently)
- Topical steroid drops (pulse therapy)

Slit Lamp Exam:

- Lids/Lashes: 2+ MGD OU
- Cornea: 15+ coalesced filaments OU with corneal neovascularization (OD > OS)

Assessment:

Flare up of filamentary keratitis secondary to her systemic autoimmune disorders.

Plan:

Reinforced importance of taking cyclosporine consistently alongside oral guaifenesin with artificial tears & gels. Initiated prednisolone acetate qid. RTC 1 week for follow up visit. To be fit in scleral lenses if filaments and neovascularization are appropriately resolved to help manage dry eye symptoms.

Follow up visit 1: Patient reported full compliance with medications with improved symptoms.

Slit Lamp:

- Improvement in number of filaments OU
- Improved neovascularization OU

Plan: Begin weekly steroid taper. Continue previous dry eye regimen. RTC 1 week for follow up and scleral lens fit if neovascularization and filaments resolve.

References

- Bavinger JC, DeLoss K, Mian SI. Scleral lens use in dry eye syndrome. Curr Opin Ophthalmol. 2015 Jul;26(4):319-24.
- Contact Lens Spectrum, Volume: 31, Issue: Scleral Lenses: Understanding Applications and Maximizing Success October 2016, page(s): 8, 10, 11, 14, 15
- Bjordan O, Norheim KB, Rødahl E, Jonsson R, Omdal R. Primary Sjögren's syndrome and the eye. Surv Ophthalmol. 2020 Mar-Apr;65(2):119-132. Epub 2019 Oct 18.
- Roszkowska AM, Oliverio GW, Aragona E, Inferrera L, Severo AA, Alessandrello F, Spinella R, Postorino EI, Aragona P. Ophthalmologic Manifestations of Primary Sjögren's Syndrome. Genes (Basel). 2021 Mar 4;12(3):365

OD										
Trial Lens #	Lens Design	Diameter (mm)	Base Curve (mm)	Sagittal Depth (um)	Power (D)	Over-Refracton	Distance Visual Acuity	Subjective/Objective	Changes Made	Misc/add-ons
1	Spherical	16.5	7.34	4700	-2.00	-4.50 -0.75 x075	20/25	Mild discomfort inferiorly. Immediate re-wetting issues and deposit buildup	Decrease sag by 250um	
2	Spherical	16.5	7.76	4450	-2.00	pl	20/20	Scleral touch over inferior neovascularization 3:00 - 6:00	Steepen 3:00-6:00 midperiphery to vault over neovascularization flatten landing zone 360	Hydra-PEG, TYRO-97
3	Spherical	16.5	7.58	4450	-3.00	pl	20/20	Adequate vault over persistent neovascularization	Dispensed	Hydra-PEG, Acuity 200
OS										
Trial Lens #	Lens Design	Diameter (mm)	Base Curve (mm)	Sagittal Depth (um)	Power (D)	Over-Refracton	Distance Visual Acuity	Subjective/Objective	Changes Made	Misc/add-ons
1	Spherical	16.5	7.34	4700	-2.00	-4.25 -2.00 x175	20/25	Moderate discomfort nasally & superiorly, correlating with blanching in area. Immediate re-wetting issues and deposit buildup	Decrease sag by 250um Flatten sup/nas quadrant	
2	Front-Toric	16.5	7.67	4450	-2.00 -1.87 x175	pl	20/20	Improved comfort & mild impingment inferiorly	Flatten landing zone 360	Hydra-PEG, TYRO-97
3	Front-Toric	16.5	7.67	4450	-2.00 -1.87 x175	pl	20/20	Improved comfort, adequate vault & clearance	Dispensed	Hydra-PEG, Acuity 200

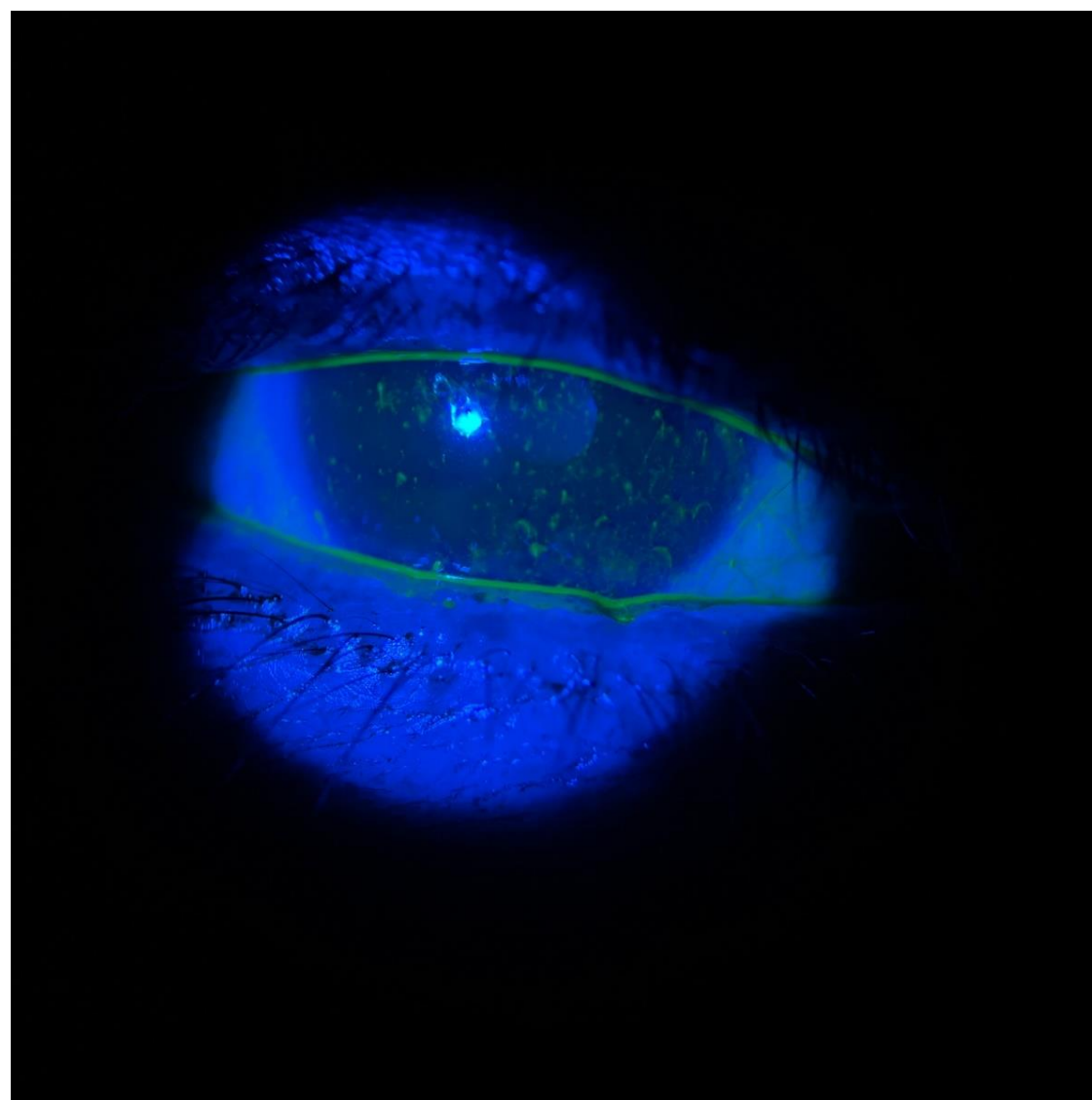


Figure 1: Extensive filamentary keratitis noted with NaFl staining (OD)

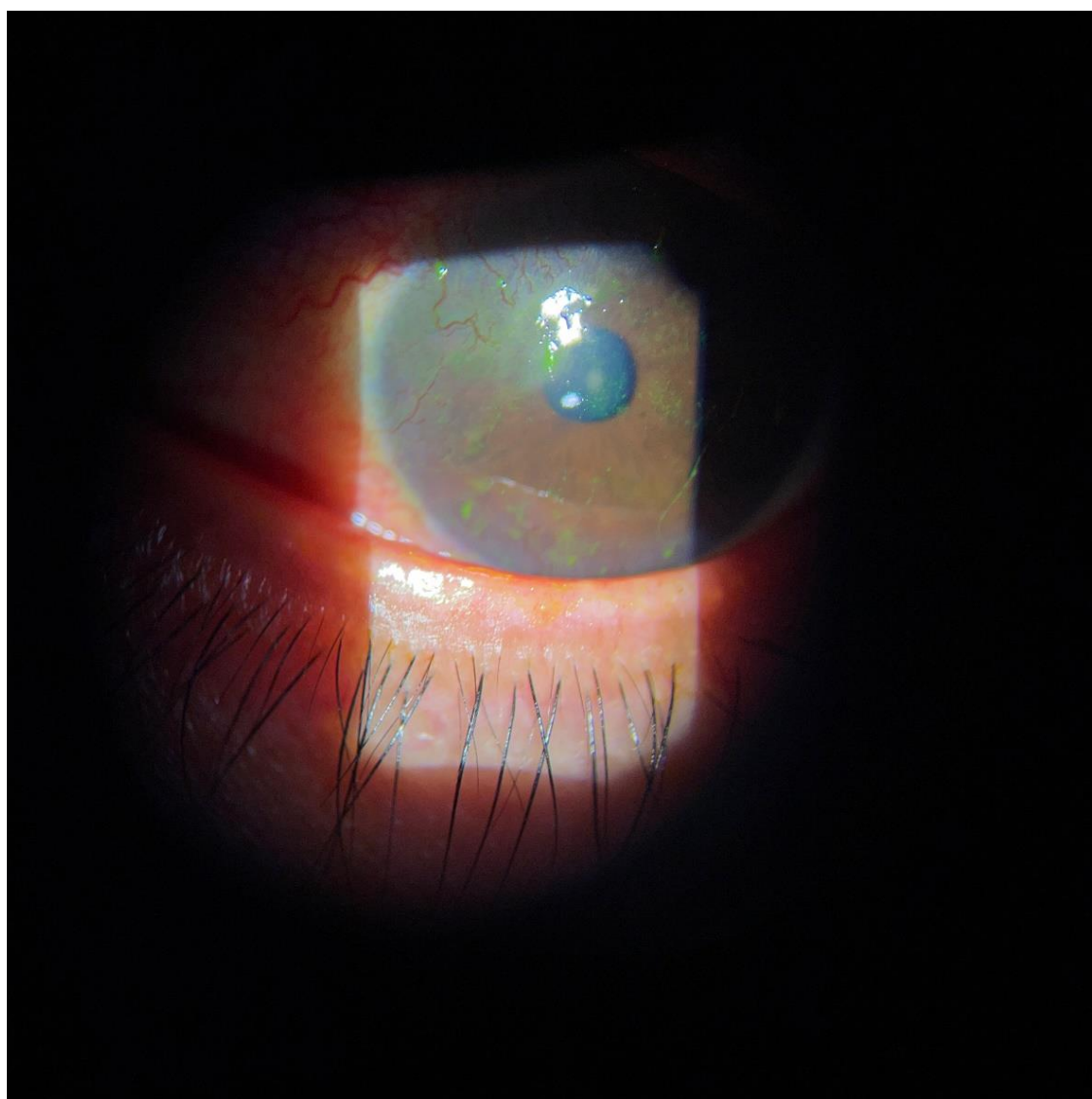


Figure 2: Superior 9:00 - 1:00 (OS) corneal neovascularization with apparent filaments

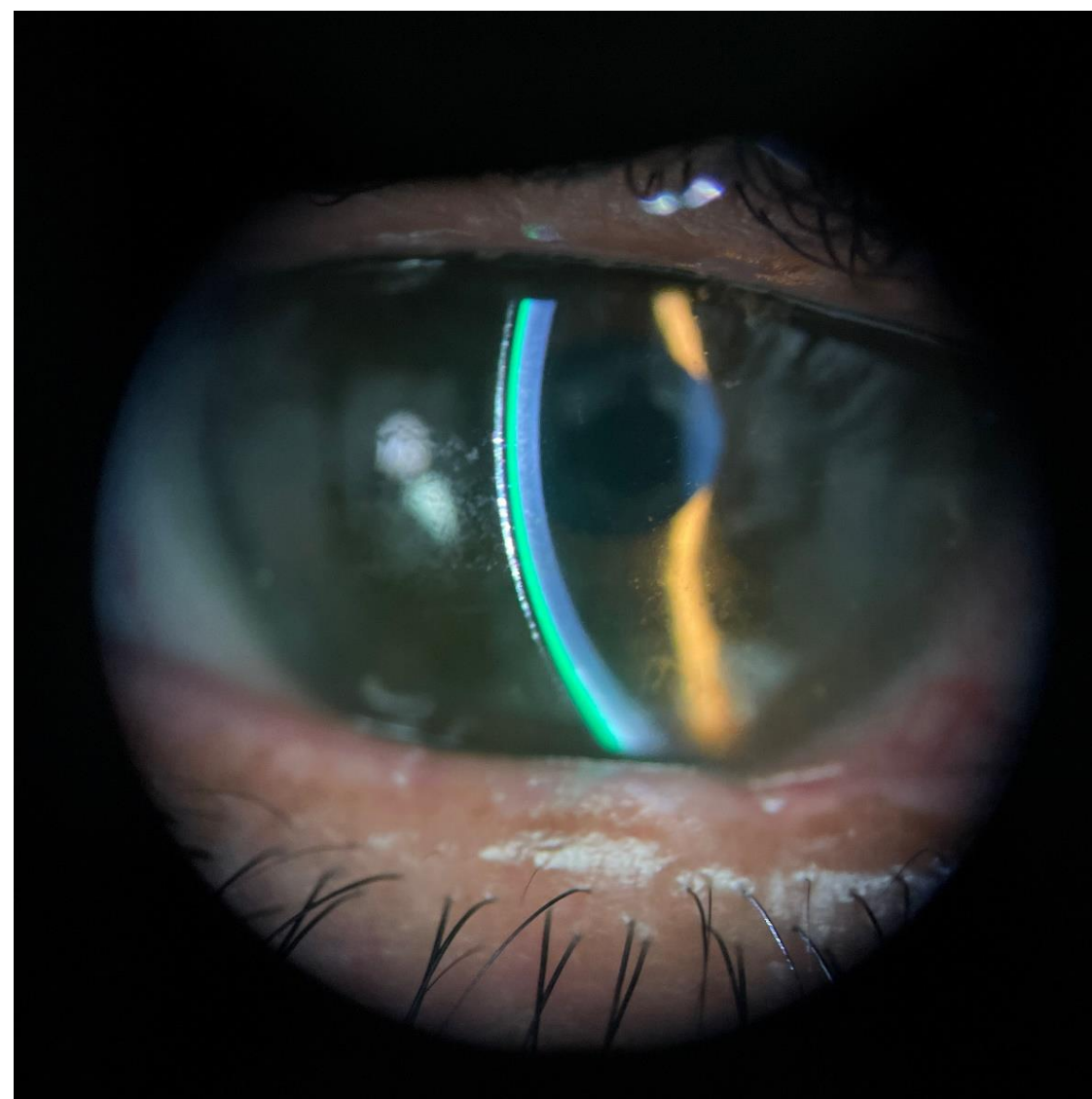


Figure 3: Trial 1 (OD): adequate central clearance with significant deposit buildup

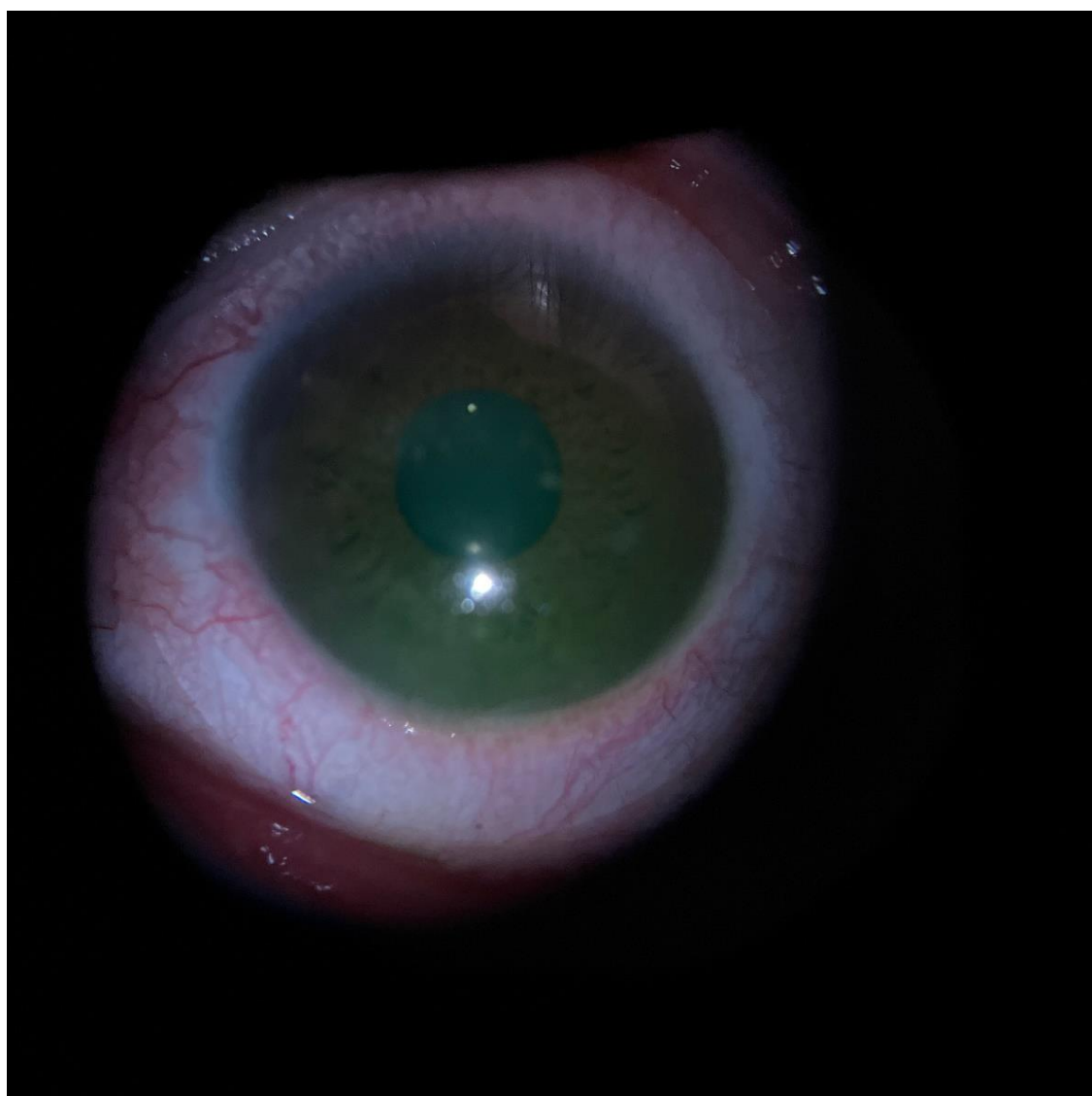


Figure 4: Final scleral lens fit (OS): improved deposit buildup, improved neovascularization

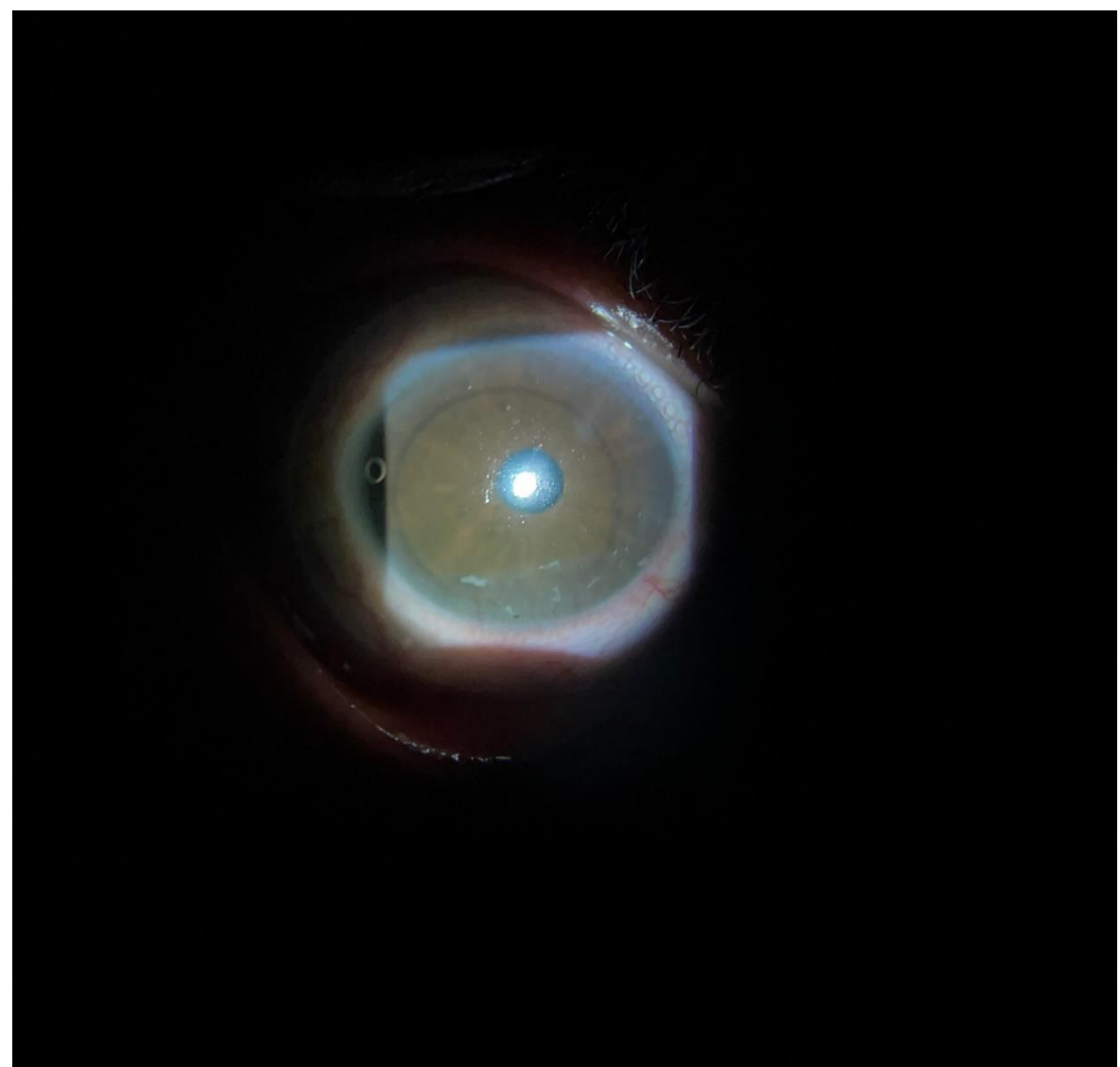


Figure 5: Final scleral lens fit (OD): Mild deposit buildup, improved neovascularization

Follow up visit 2: Patient reported full compliance with medications, with significant improvement in symptoms. Pain and redness resolved. Dryness and burning symptoms are mild-moderate & intermittent.

Slit Lamp:

- Improved filament count (<5 filaments) OU
- Improved/receded neovascularization, but still present OU

Plan: Filaments removed in-office. Continue steroid taper and current dry eye regimen. Initiate besifloxacin bid OU for 1 week.

Patient diagnostically fit with scleral lenses; reported good comfort and improved vision. RTC 2 weeks for scleral lens follow up and dispense.

Changes made to diagnostic lens fit with consultation (**see table 1**)

Scleral lens design: Soft, tangential landing zone to work around corneal neovascularization, and for better overall comfort.

Follow up visit 3: Patient finished steroid taper with full compliance of other medications. Mild dry eye complaints, intermittent frequency.

Slit Lamp:

- No more filaments remain, diffuse 2+ SPK OU
- Stable neovascularization OU

Plan: Continue dry eye regimen as instructed w/ pulse therapy steroid use prn. Lenses re-ordered with appropriate changes: see **table 1**.

Follow up visit 4: Continued improvement in symptoms with full compliance in dry eye regimen. Mild intermittent dry symptoms.

Plan: Continue dry eye regimen as instructed. Good fit, comfort, and vision with scleral lenses (trial 3 – **see table 1**) – dispensed lenses.

Follow up visit 5: Continued improvement in symptoms with full compliance in dry eye regimen. Mild intermittent dry symptoms. Scleral lens wear for up to 8hrs/day with good reported comfort and vision.

Slit Lamp:

- Similar staining pattern as f/u visit 3 & 4 (stable)
- Stable neovascularization OU

Plan: Continue dry eye regimen. Good fit, comfort, and vision with scleral lenses. Pt instructed to use preservative free isotonic buffered saline filling solution and hydrogen peroxide cleaning solution for lens care. RTC 1 month for another follow up, or prn if issues arise.

Discussion

This patient presented with severe and symptomatic dry eyes. She had previous episodes of filamentary keratitis in both eyes, likely from her underlying systemic auto-immune disorders. She has had minor success with managing her dry eyes with cyclosporine drops and oral guaifenesin, but she was taking them inconsistently due to cost.

After initiating a steroid taper and reinforcing the importance of taking her medications more consistently as instructed, her signs and symptoms did improve significantly. Despite the improvement, it would be likely for another episode to occur in the future since she has history of previous episodes. Regardless, preventing recurrence and managing her comfort level was the priority; scleral lenses as a long-term option were discussed and ultimately fitted.

With the diagnostic lenses fit in-office, her vision improved despite deposit buildup and wetting issues. She also only reported mild discomfort nasally in her right eye, correlating with the landing zone touch seen over her area of neovascularization.

After the appropriate changes were made with the help of consultation, the final lenses fit well with excellent comfort and vision. Ultimately, her consistency in compliance with her previous dry eye regime plays a large role in maintaining her dry eye. The addition of a well-fitting scleral lens will assist in that process by providing constant lubrication on the corneal surface. After one month of scleral lens wear and better compliance with her topical and oral medications, she reported significant improvement in quality of life regarding her dry eye, with no other episodes of filamentary keratitis recurrence to date.

Conclusion

Scleral lens indications are constantly expanding and continue to be a great option for managing challenging cases of dry eye. Sclerals provide continued lubrication and protection for almost every type of cornea. They are also highly customizable to ensure the best fit possible for maximum comfort.