

Sweet Dreams Dry Eyes, a Case of Overnight Scleral Lens Wear

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Introduction

Graft versus host disease (GVHD) has ocular implications that affect the cornea, conjunctiva, meibomian glands, lacrimal glands, and eyelids. Typically, these patients are managed with a combination of ocular therapeutics and specialty contact lens wear. We present a case of corneal rehabilitation of a patient with GVHD using scleral lens wear.

Case History

PV is a 33-year-old male with a history of radiation therapy for leukemia. He had an extensive history of mixed aqueous deficient and evaporative dry eye and exposure keratopathy due to nocturnal lagophthalmos. PV previously underwent extensive dry eye treatments but found no relief. Co-management with the cornea specialist led to a diagnosis of GVHD.

Clinical Findings

	OD	OS
Lids and lashes	1+ papillae, 2+ bleph, 1+ MGD	1+ papillae, 2+ bleph, 1+ MGD
Conjunctiva/Sclera	White and quiet	White and quiet
Cornea	3+ diffuse PEE with fibrous nodules and anterior scarring inferiorly. Coalesced PEE in linear band centrally and superiorly	3+ diffuse PEE inferior and superior cornea, 2+ PEE central cornea.



Figure 1 PV's meibography showing meibomian gland drop out. Figures 1A and 1B show significant truncation of the right eye, 1C and 1D show slightly more drop out and truncation of the left eye.

Management

PV was initially fitted for daily wear scleral lenses and had good relief during the daytime, however he experienced repeated overnight corneal erosions post-lens removal. As a result, therapeutic overnight scleral lens wear was initiated in June 2023. He was instructed to cycle between two different pairs of scleral lenses and replace the reservoir every 12 hours.

PV had best corrected VAs of 20/20 OU with the scleral lenses. He tried different intervals of overnight lens wear and was followed closely during the overnight treatment. He wore the lenses overnight almost daily for a month with weekly follow ups and demonstrated improvement of epithelial integrity. PV noted that his dry eyes had significantly improved since starting the scleral lens wear both during day and nighttime. Overnight wear was tapered to three nights a week, but was not as successful as nightly wear.

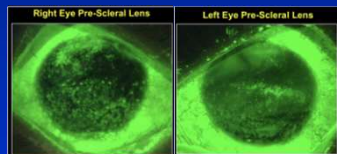


Figure 2 (Left)
PV's baseline corneal staining before and after daytime scleral lens wear

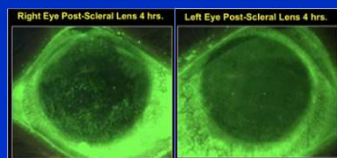
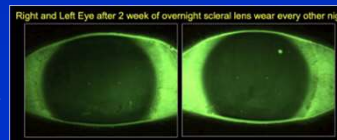
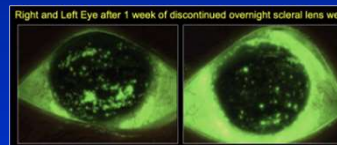
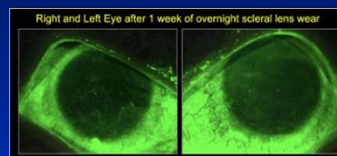


Figure 2 (Right)
PV's corneal staining after initiating overnight scleral lens wear at various intervals



Discussion

Despite the overall improved appearance of PV's corneas, he was referred to a cornea specialist to determine if other treatments could alleviate his symptoms without relying solely on long-term overnight scleral lens wear. The cornea specialist suspected PV had chronic ocular GVHD and recommended continuing with daytime scleral lens wear. No other treatments were initiated as they expect the ocular surface to proceed to stabilize. PV will return in three months for ocular surface check.

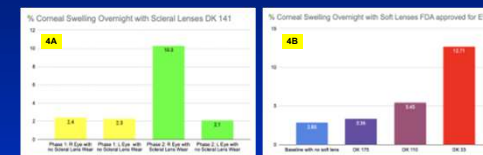


Figure 3 Corneal swelling percentages with overnight scleral lens wear with 450 micron center thickness (4A: Nefedov et. al) and overnight soft lens wear with FDA-approved extended wear (EW) materials (4B: Mueller et. al). Results show overnight corneal swelling with scleral lens wear is comparable to that of overnight wear of FDA-Approved EW soft contact lenses.

Conclusion

Scleral lenses can be used to correct difficult refractive errors and rehabilitate the epithelium when traditional dry eye therapies are ineffective. While overnight lens wear is controversial, it can provide relief and a solution to concerns that were unmet with conventional treatments.

References

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- Nefedov, Paul, "Do Scleral Lenses Provide Adequate Oxygen Permeability for Overnight Lens Wear?" (2016). College of Optometry. 20 <https://commons.pacificu.edu/opt/20>