

Case Report: Bulbar epithelial hypertrophy and other complications induced by scleral lens haptic misalignment

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Background

- Scleral contact lenses are a popular treatment option for patients with keratoconus, corneal transplants and other ocular conditions. Successful outcomes rely on an appropriate fitting relationship between lens and sclera.
- Scleral lens haptic misalignment can result in many complications, including discomfort, bulbar hyperemia, accumulation of debris in the post lens tear layer, and conjunctival epithelial hypertrophy.
- Epithelial inclusion cysts of the bulbar conjunctiva can be secondary to mechanical trauma but there is a paucity of literature on this complication induced by scleral lens wear.

Significance

This case report describes successful management of a patient with epithelial hypertrophy of the bulbar conjunctiva and other complications due to misalignment of the scleral lens haptic zone without pharmaceutical therapeutic intervention.

Clinical Timeline

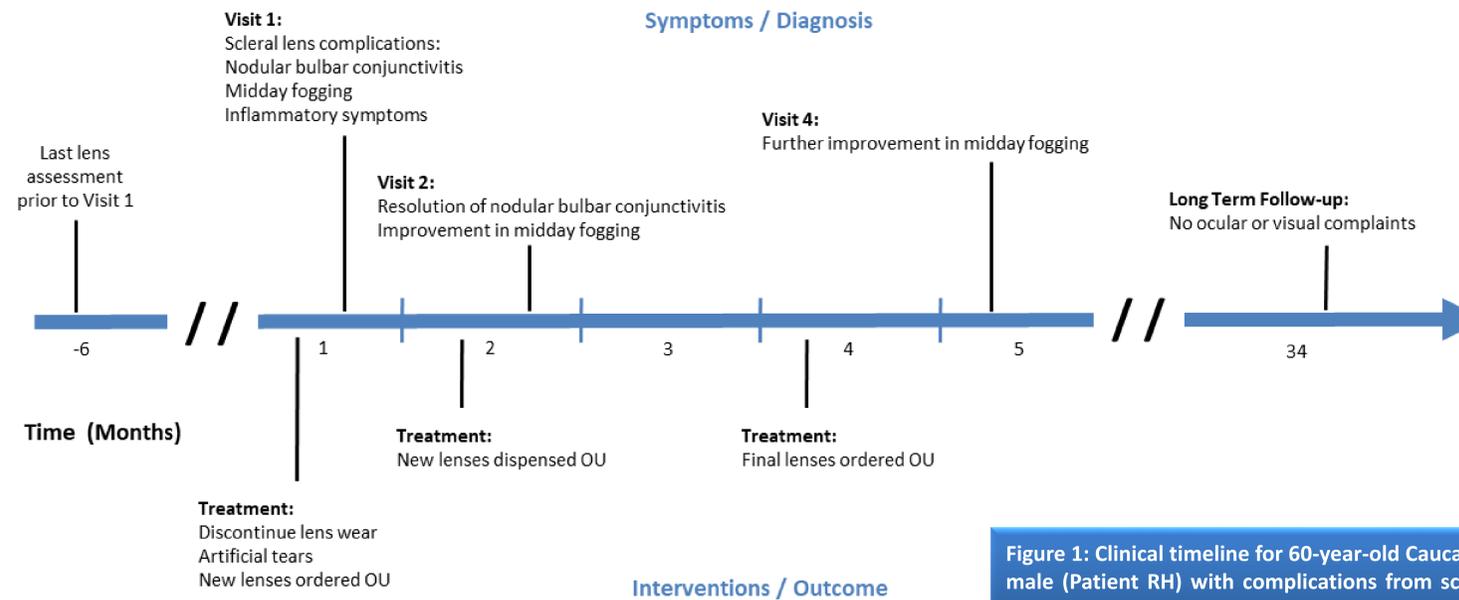


Figure 1: Clinical timeline for 60-year-old Caucasian male (Patient RH) with complications from scleral lens wear.

Case History

- A 60-year-old Caucasian male (Patient RH) presented for assessment of his scleral contact lenses that he has been wearing for the past four years.
- He reported mild discharge and light sensitivity in both eyes for the past several days but no ocular redness. RH also described longstanding symptoms of reduced vision after short wear periods that he corrects by removing, cleaning and reinserting lenses multiple times per day.

OD	Lens Parameter	OS
Jupiter	Lens Name	Jupiter
Prolate	Design	Prolate
6.75	Base Curve (mm)	6.49
16.4	Lens Diameter (mm)	16.4
8.6	Optic Zone (mm)	8.6
6.75/1.90	Peripheral Curves (mm)	6.49/1.90
8.10/0.90		8.10/0.90
13.25-12.25/0.70		12.25/0.50
14.50-13.75/0.40		14.25/0.60
Boston XO	Material	Boston XO
-2.75	Power (D)	-5.25

Table 1: Habitual lenses worn by patient for four years prior to Visit 1

Visit 1

- Lens assessment showed poorly fit haptic zones in both eyes (Table 2) including conjunctival impingement in the inferior quadrant OD.
- Ocular health assessment revealed epithelial hypertrophy of the inferior bulbar conjunctiva of his right eye (Figures 2 and 3).
- Therapeutic treatment for the epithelial inclusion cyst was declined and the patient was instructed to discontinue lens wear, instill artificial tears frequently and return for a follow up in two weeks.
- New lenses were ordered (Table 3) for both eyes to decrease central corneal clearance and improve the haptic zone alignment.

OD	Lens Assessment	OS
20/50 ⁻³ PH: 20/25 ⁻²	Distance VA	20/30 ⁻²
0.8M	Near VA	0.4M
-0.50 DS (20/50 ⁺)	Over-Refraction (VA)	Plano
47.00 / -0.50 x 119	Over-Keratometry	46.25 / -1.50 x 068
500 µm	Central Clearance	400 µm
100 µm Nas + Inf	Mid-Peripheral Clearance	200 µm Nas + Inf
Adequate	Limbal Clearance	Adequate
Compression Sup, Impingement Inf, Lift off Temp, Aligned Nas	Landing Zone	Slight compression Sup + Inf, Lift off Temp, Aligned Nas

Table 2: Assessment of Patient RH's habitual lenses

Visit 2

OD	Lens Parameter	OS
Jupiter	Lens Name	Jupiter
Oblate	Design	Oblate
7.18	Base Curve (mm)	6.75
16.4	Lens Diameter (mm)	16.4
8.6	Optic Zone (mm)	8.6
6.75/1.90	Peripheral Curves (mm)	6.49/1.90
8.10/0.90		8.60/0.90
13.50-13.00/0.70		12.75-13.50/0.50
15.00-14.50/0.40		14.25-15.00/0.60
Boston XO	Material	Boston XO
+0.25	Power (D)	-3.25

Table 3: Parameters of new lenses delivered at Visit 2

- Upon the patient's return one month later, he reported complete resolution of his acute symptoms.
- Ocular health examination revealed no sign of the conjunctival epithelial hypertrophy noted at Visit 1.
- The patient's new scleral lenses were assessed (Table 4) and the patient was instructed to return for a progress check in two weeks

OD	Lens Assessment	OS
20/50 ⁺²	Distance VA	20/30 ⁻²
Plano	Over-Refraction	Plano
350 µm	Central Clearance	275 µm
Good	Limbal Clearance	Good
Slight lift off Temp, Aligned Sup + Nas + Inf	Landing Zone	Slight lift off Temp, Aligned Sup + Nas + Inf

Table 4: Assessment of Patient RH's new lenses

Follow-Up

- At the following visit, the patient reported a significant improvement in his midday fogging symptoms and no recurrence of the acute symptoms associated with the conjunctival nodular inflammation.
- To further optimize the scleral lens fit, a final pair of lenses were ordered with flatter base curves and peripheral landing zones (Table 5).
- There were no concerns when the ocular health was assessed so the patient was instructed to return to routine contact lens assessments every four months.

OD	Lens Parameter	OS
Jupiter	Lens Name	Jupiter
Oblate	Design	Oblate
7.25	Base Curve (mm)	6.88
16.4	Lens Diameter (mm)	16.4
8.6	Optic Zone (mm)	8.6
6.75/1.90	Peripheral Curves (mm)	6.49/1.90
8.10/0.90		8.60/0.90
13.50-13.25/0.70		13.00-13.50/0.50
15.00-14.75/0.40		14.50-15.00/0.60
Boston XO	Material	Boston XO
+0.75	Power (D)	-2.25

Table 5: Final lens parameters for patient RH's lenses

- Throughout RH's follow up visits over three years, he has continued to show no recurrence of the scleral lens nodule and he reports infrequent midday fogging symptoms.
- The patient is satisfied with his visual acuity and stated at his most recent examination, "it is better than what I have seen in years"

Discussion & Conclusion

- Optimal fitting of the scleral lens haptic is important for successful scleral lens wear.
- Complications such as epithelial hypertrophy of the bulbar conjunctiva and midday fogging can be resolved by modifying the peripheral curve system and do not require pharmaceutical therapeutic intervention.
- Localized epithelial hypertrophy of the bulbar conjunctiva can result in acute inflammatory symptoms that resolve quickly when the mechanical instigator (scleral lens) is removed.
- Midday fogging symptoms can be addressed by optimizing alignment of the peripheral landing zone but may take longer to resolve.

References

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Figure 2: Slit lamp image (16X) of the patient's right eye with scleral lens removed. An epithelial nodule can be seen colocalized with a conjunctival imprint from impingement of the lens landing zone.

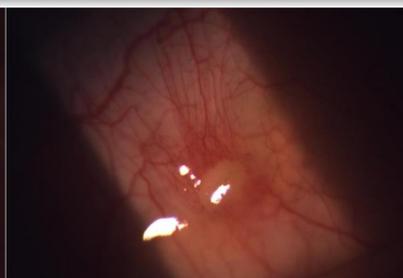


Figure 3: Magnified image (25X) of epithelial nodule shown in Figure 2. The raised opacity has a yellow tint from fluorescein staining.