The Benefits of Conjunctivoplasty to Improve Scleral Lens Fitting and Minimize Complications

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Background

Conjunctivochalasis is characterized as an acquired conjunctival redundancy primarily found in the inferior temporal bulbar conjunctiva. The redundancy is largely due to a loss of elasticity in the conjunctival tissue.[1] The presence of conjunctivochalasis increases the prevalence of conjunctival prolapse with scleral lens wear.[2] While cases of mild prolapse are tolerable, concern arises when the patient becomes symptomatic, the conjunctiva does not return to its natural position after lens wear, or when staining or neovascularization is present at the site.[2] In these cases, treatment for conjunctivochalasis can be pursued in tandem with contact lens wear.[3]

Case Details and Findings

Case history:

- 66-year-old Caucasian Male
- Hx Radial Keratotomy OU
- Hx of scleral lens wear with new onset discomfort OS x 6 months prior to initial examination

Pertinent Pre-treatment Examination Findings

- *ccVA:* OD 20/25+2, OS 20/25+1 OU 20/20-1
- *Anterior Segment:*
  - Conjunctival redundancy OS>OD concentrated inferior temporal OU
  - Diffuse SPK OU
  - RK 8 Cut OU
  - 2.5mm Neovascularization of inferior temporal scar OS (See Fig 2 and 3)

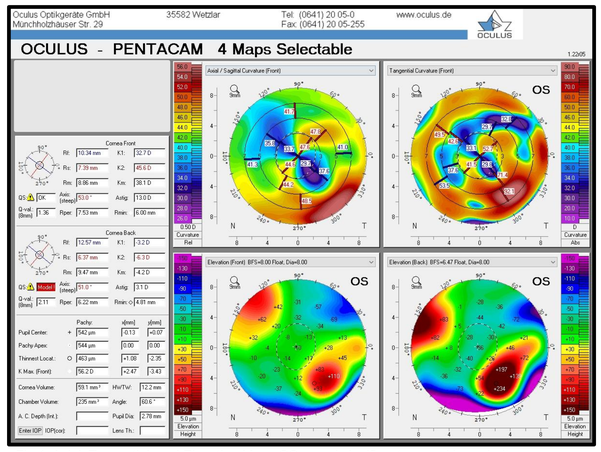

Fig 1. Axial, Tangential, and Elevation Maps OS reveal significant corneal irregularity.

OD	Scleral Lens Evaluation	OS
171 microns	Central Clearance	177 microns
Adequate Nasal, temporal, superior Excessive Inferior	Limbal Clearance	Adequate Nasal, temporal, superior Excessive Inferior
Alignment 360	Edge Relationship	Mild edge lift Nasal/Temporal
Conj Prolapse Inferior Temporal; conjunctiva returns to appropriate location after scleral lens removal, (-) Neovascularization	Additional Findings	Conj Prolapse Inferior Temporal; Conjunctiva does not return to natural position after lens removal, Neovascularization under area of concern 2.5 mm in RK Scar (See Fig 2 and 3)

Table 1. Scleral Lens Evaluation and Findings

Pre-Treatment Imaging

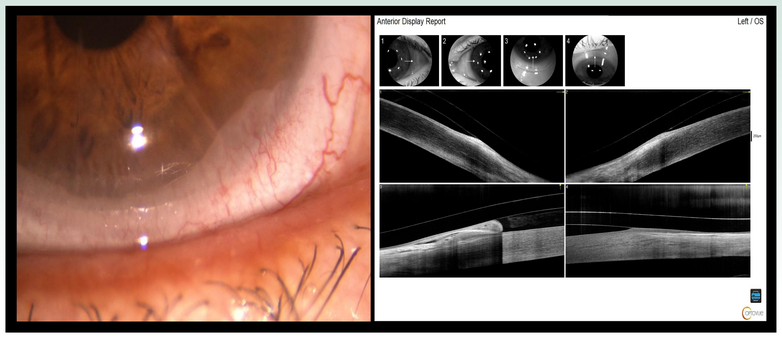

Fig 2. Pre-Treatment Conjunctival prolapse during lens wear imaged via External Imaging and Anterior Segment OCT of the left eye.

Fig 3. Retroillumination image of left corneal neovascularization highlights pre-treatment conjunctival prolapse and underlying neovascularization.

Diagnosis and Discussion

Diagnosis and Etiology:

The primary diagnosis thought to be cause of the excessive conjunctival prolapse is conjunctivochalasis. Conjunctivochalasis is a conjunctival redundancy thought to be caused by chronic inflammation and increases in prevalence with age.[1, 2] The etiology of the inflammatory process is not well understood, however has been presumed to be related to chronic ocular allergy or chronic ocular surface disease.[2]

Signs and Symptoms:

- Increased Dry Eye symptomatology[2]
- Epiphora[2]
- Folding of bulbar conjunctiva with sodium fluorescein pooling primarily inferior temporal

Potential Treatment Plans:

The following treatment plans should be implemented in the order listed:

- copious lubrication [2]
- topical steroids [2]
- thermal cautery conjunctivoplasty [4, 5]
- paste-pinch-cut conjunctivoplasty [6, 7]

Often, in the case of scleral lens wear, the effects of conjunctivochalasis are unresponsive to topical treatments and require surgical intervention. Two surgical procedures are currently available for the correction of conjunctivochalasis including paste-pinch-cut conjunctivoplasty and thermal cautery conjunctivoplasty, with the latter being the superior choice as it is less invasive than its alternative, and still very successful with one study reporting 90% improvement in subjective and objective findings.[4]

Treatment and Management

Treatment:

- Copious topical lubrication with no success
- Thermal Cautery Conjunctivoplasty with Bipolar forceps and Soniquence® i200 Radio Frequency Unit (Soniquence®, Baldwin, NY)
- Revision of Scleral Lens fit
  - addition of Bi-Elevation™ (Bausch & Lomb Incorporated, Rochester, New York) to selectively reduce limbal clearance

Result:

- regression of corneal neovascularization to 1.5mm and notable reduction of conjunctival prolapse with scleral lens wear (See Fig 4, 5)

Post-Treatment Imaging

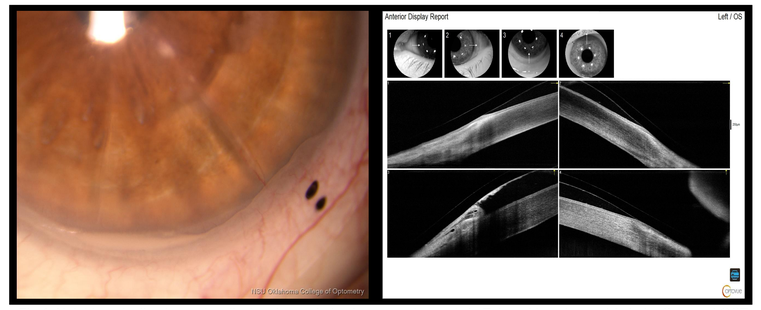

Fig 4. Notable reduction in conjunctival prolapse during lens wear imaged via External Imaging and Anterior Segment OCT of the left eye.

Fig 5. Retroillumination image of left corneal neovascularization highlights significant reduction seen 3 months after thermal cautery conjunctivoplasty.

Conclusion

In cases of problematic and persistent conjunctival prolapse secondary to scleral lens fitting, the bulbar conjunctiva should be closely examined for the presence of conjunctivochalasis. If redundancy is noted, thermal cautery conjunctivoplasty can be a helpful tool when changes to fit alone can not improve the conjunctival prolapse. Thermal cautery conjunctivoplasty is a minimally invasive and maximally effective procedure that should be considered in scleral lens patients who exhibit significant conjunctivochalasis.

References

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