

Scleral Lens Fit for Dry Eye with Ahmed Valve

Utilizing Edge Design for Scleral Obstacles

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Introduction

Scleral lenses may be used for a variety of ocular conditions, most commonly those resulting in an irregular corneal surface. However, another less common reason for a scleral lens includes dry eye. While aqueous deficient dry eye is most successful when treated with scleral lens, those with evaporative dry eye can also exhibit some success with this treatment.

These large diameter custom lenses, however, while suitable for improving comfort from dryness by bathing much of the ocular surface at all times can also create new problems if the patient has raised lesions on the conjunctiva or sclera. Custom edge designs can help to avoid these problem areas in patients who depend on these large diameter lenses.

Case History and Exam

A **60-year-old** Hispanic male presents for initial scleral contact lens fit.

Chief Complaint: The patient reports that he cannot tolerate toric soft contact lens in the right eye due to dryness and the left eye's vision fluctuates in his RGP. He currently needs to use NPATs every 15 minutes.

POHx: Evaporative dry eye unresponsive to conventional treatments (warm compresses, lid scrubs, etc). Pterygium removal OD 1996, OS 2012. Retinal detachment OS s/p scleral buckle, followed by OMD 2x/year. Glaucoma OS s/p Ahmed Valve with filtering bleb. H/o eroded valve OS. Dry ARMD OU Dx 2009.

PMHx: High cholesterol, hypothyroidism

Medications: Levoxyl

Pupils: Gr 2 APD OS

Monocular Subjective: OD +2.50-1.00x097 (20/20-2)

OS -2.25-4.25x026 (20/25+2)

Anterior Segment

OD 2+ MGD, Patent LPI @ 9:00, Clear cornea

OS 2+ MGD, Ahmed Valve with filtering bleb @ 1:00 emerging ~3mm from limbus, PCIOL lodged within pupil between anterior and posterior chambers, LPI @ 12:00.



Figures 1 & 2: Anterior segment photo of left eye demonstrating tube emerging from scleral ~3mm posterior to limbus with associated filtering bleb and Ahmed Valve.

Clinical Findings

Initial Diagnostic Trial Lenses:

16.0 Europa® Prolate Design

OD: -0.50 / BC 7.85 / Dia 16.0

OS: 0.00 / BC 8.04 / Dia 16.0

Initial Lens Fit:

OD: CC 1.25:1 (600um) / LC 360 / blanching superior and inferior / edge lift nasal and temporal / inferior decentered

OS: 1.50:1 (705um) / LC 360 but thin nasal that clears on left gaze / blanching superior and inferior / edge lift nasal and temporal / inferior decentered

Management

Final Lenses:

16.0 Europa® Prolate Design (Visionary Optics, Front Royal, VA, USA)

OD: +4.25 / BC 8.44 / Dia 16.0 / 200 TPC

OS: +3.00 / BC 9.06 / Dia 16.0 / 200 TPC

Final Lens Fit:

OD: CC 0.75:1 (255um) / LC 360 / good scleral alignment, no blanching / well centered / PC markers at 2:30 and 8:30

OS: 0.50:1 (175um) / LC 360 / good scleral alignment, no blanching / well centered / PC markers at 10 and 4 / notch properly positioned

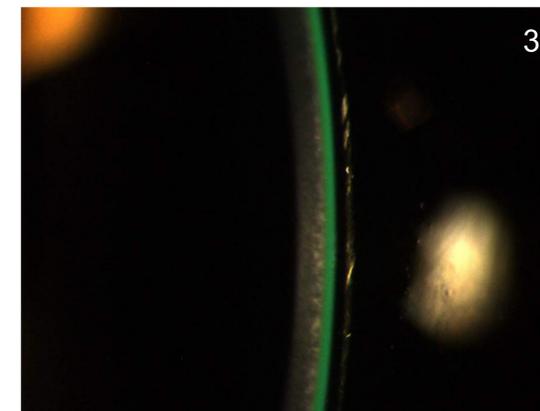


Figure 3: Optic section showing adequate vault over the central cornea

Figure 4: Notch in lens edge properly positioned to reduce contact with tube and surrounding conjunctiva and episclera

Discussion

The patient's dry eye symptoms were successfully managed with the scleral lens and although the lens edge itself did not frankly contact the tube, extra care was taken to notch the lens. This was in effort to allow plenty of space and prevent possible cumulative friction of the tissue surrounding the tube, causing valve erosion. The patient's IOPs were carefully monitored throughout the lens fit and were maintained within target range. Open communication was also upheld with the patient's glaucoma specialist, successfully triaging care in a patient with multiple ocular conditions. The highly customizable scleral lens makes fitting patients with a variety of ocular surface conditions and surgical histories possible. Patients can achieve a level of vision and comfort that they may have deemed impossible with their previous lenses.

Other options of avoiding scleral or conjunctival obstacles include decreasing the diameter of the lens (which could have been a successful alternative to a notch in this case) or increasing the diameter of the lens to vault over conjunctival lesions such as a pinguecula. Other scleral lens designs such as Zenlens™ (Alden Optical, Lancaster, NY, USA) offer their MicroVault edge design.

Clinical Pearls

- Scleral lenses have many uses for various ocular surface conditions outside of corneal irregularities.
- Utilizing an anterior segment camera can be instrumental in placing an edge notch in the proper position.
- One can avoid scleral and conjunctival obstacles through various methods including increasing or decreasing the lens diameter and incorporating an edge notch or MicroVault.

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