

Irregular Cornea Post Traumatic Globe Rupture Managed via Scleral Lens

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INTRODUCTION

Ocular trauma is responsible for over 2 million visits to emergency departments nationwide per year.¹ It is often associated with corneal laceration, which can cause corneal scarring and subsequent irregular astigmatism. This corneal astigmatism can be difficult to correct with contact lenses, due to the presence of sutures. In this case, the patient's corneoscleral laceration was due to a high velocity projectile. His central corneal scarring extended to the superior limbus, with sutures extending from the cornea to the superior sclera.

Background

A 32 year-old Caucasian male was referred to clinic for a contact lens evaluation of the left eye following a globe rupture repair and associated corneal laceration. The patient was left aphakic after the injury and had sutures spanning the cornea and superior conjunctiva. The patient noted pain during blink, due to exposed sutures. After failing soft contact lens wear, the patient was fit in a large diameter scleral lens with improved vision and comfort.

Case Presentation

Chief Complaint	Decreased visual acuity and pain OS
Medical History	None
Systemic Medications	None
Ocular History	Corneal and scleral laceration, corneal scarring, and irregular astigmatism s/p globe rupture OS
Ocular Medications	Dexamethasone/neomycin/polymyxin-B 0.1%, dorzolamide-timolol 22.3-6.8 mg/mL
Slit Lamp Examination	OD: Unremarkable OS: Reactive ptosis, post-surgical sutures on superior conjunctiva and central to mid-peripheral cornea, corneal scarring, traumatic irregular pupil, and aphakia
IOP	OD: 13mmHg OS: 10mmHg (originally 35mmHg post-sx)
Fundus	OD: 0.4 C/D, unremarkable OS: normal C/D, superior-nasal and inferior-temporal laser around atrophic areas
Acuity	OD: 20/20 sc, NIPH OS: 20/400 sc, 20/150 PH

METHODS AND RESULTS

The patient was originally fit in a 14.5mm diameter custom soft lens to improve vision along with comfort during blink. He wore this lens during the day, and a bandage soft lens at night. The soft custom lens improved the patient's vision to 20/70 OS, and relieved his symptoms of discomfort. However, this resulted in the lens tearing in his eye repeatedly, likely due to exposed sutures. One suture broke during this process and was removed, but suture removal was relatively contraindicated as they were wrapped in scar tissue. For this reason he was fit in a 19.0mm diameter scleral lens. Scleral lenses are useful to correct the irregular astigmatism (Figure 1), contributing to improved visual acuity. The scleral lens also was able to vault his central corneal scarring (Figure 2), improving glare and visual acuity. Lastly, due to the large diameter, the lens was able to vault his scleral sutures (Figures 3a & 3b), improving patient comfort. Final lens parameters and visual acuity are displayed below in Table 1.

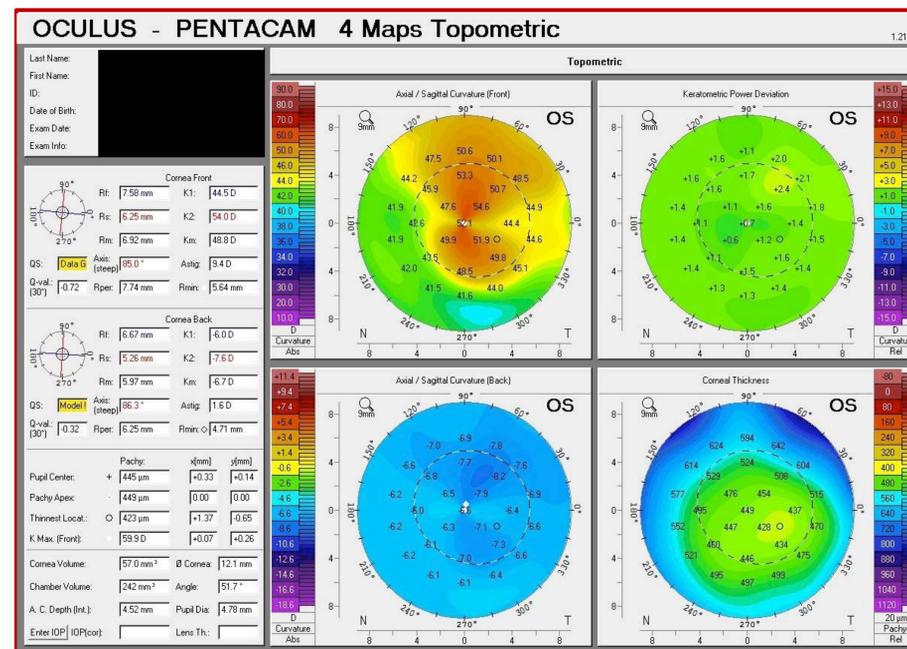


Figure 1. Scheimpflug topography highlighting the irregular astigmatism post globe rupture

Final Scleral Lens Prescription OS							Table 1
Brand	Overall Diameter	Base Curve	Power	CT	Sag	Material	BCVA
Boston Sight	19.0mm	7.90mm	+12.62 DS	0.41mm	3050um	X02 D21	20/20

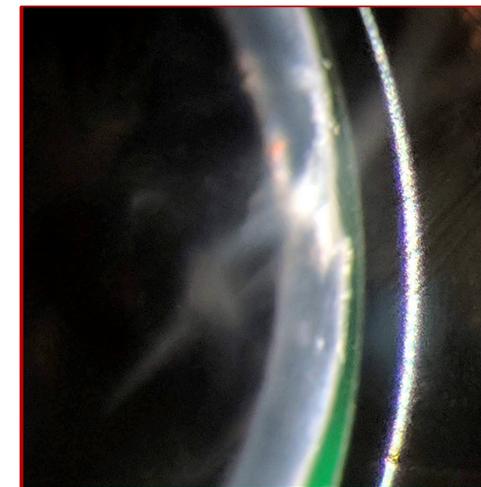


Figure 2. Slit lamp photograph of central corneal vault over corneal scarring

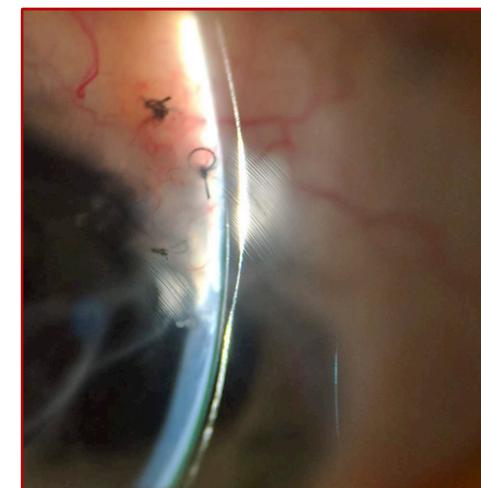


Figure 3a. Slit lamp photograph of scleral lens near limbal sutures

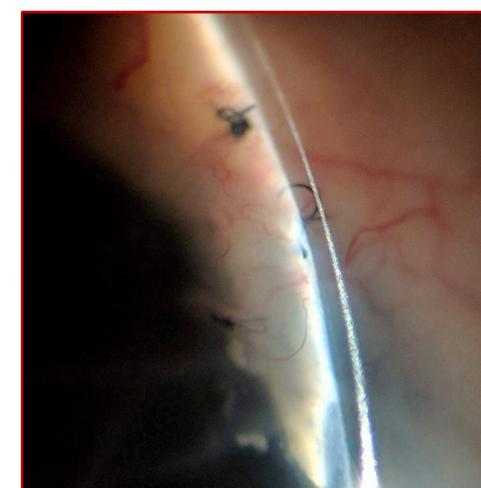


Figure 3b. Slit lamp photograph of scleral lens vaulting limbal suture

DISCUSSION

Globe rupture is a form of ocular trauma that is often preventable.¹ Men are more likely than women to have open-globe injuries (approximately 79% men), and almost 55% of these are due to projectiles.² Projectile injuries will often affect the cornea, leaving behind corneal scarring and irregular astigmatism. Specialty contact lenses are often used to treat corneal scarring by correcting irregular astigmatism,³ but the presence of sutures can make this difficult. Scleral lenses can be useful in not only in correcting corneal astigmatism, but also in vaulting corneal and limbal lesions or sutures.⁴

CONCLUSIONS

Globe rupture, especially when caused by penetrating injury, can often leave behind corneal scarring and irregular astigmatism. Scleral lens wear is a safe and effective way of offering mechanical correction while simultaneously providing optical correction induced by scarring, provided sutures can be adequately vaulted. This case demonstrates that even sutures at the limbus can be vaulted, while also providing a dramatic increase in vision when utilizing a large-diameter scleral lens.

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