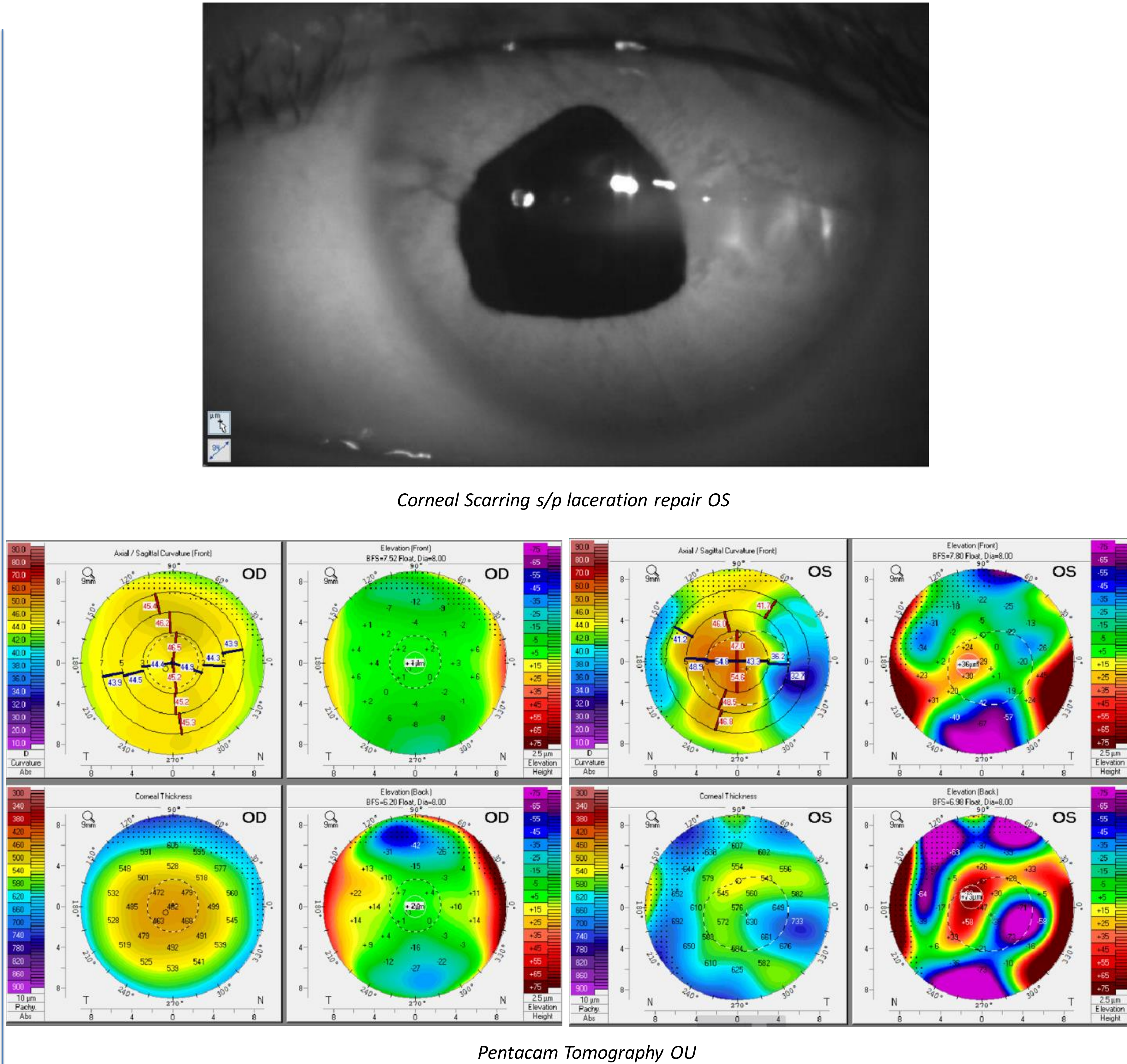


## INTRODUCTION

A 46-year-old female was referred for fitting of a rigid gas permeable contact lens (GPCL) for irregular astigmatism secondary to trauma OS. This patient had a history of shattered glass entering her left eye, leading to an open globe repair, corneal scarring secondary to corneal laceration repair, pars plana vitrectomy and lensectomy. Per the referral note from the corneal ophthalmologist, if the patient was unable to tolerate or if vision did not improve with contact lenses, a penetrating keratoplasty is to be considered. The patient was very motivated to pursue contact lens fitting to improve vision in the left eye and avoid further surgical intervention. She had no prior history of contact lens wear.

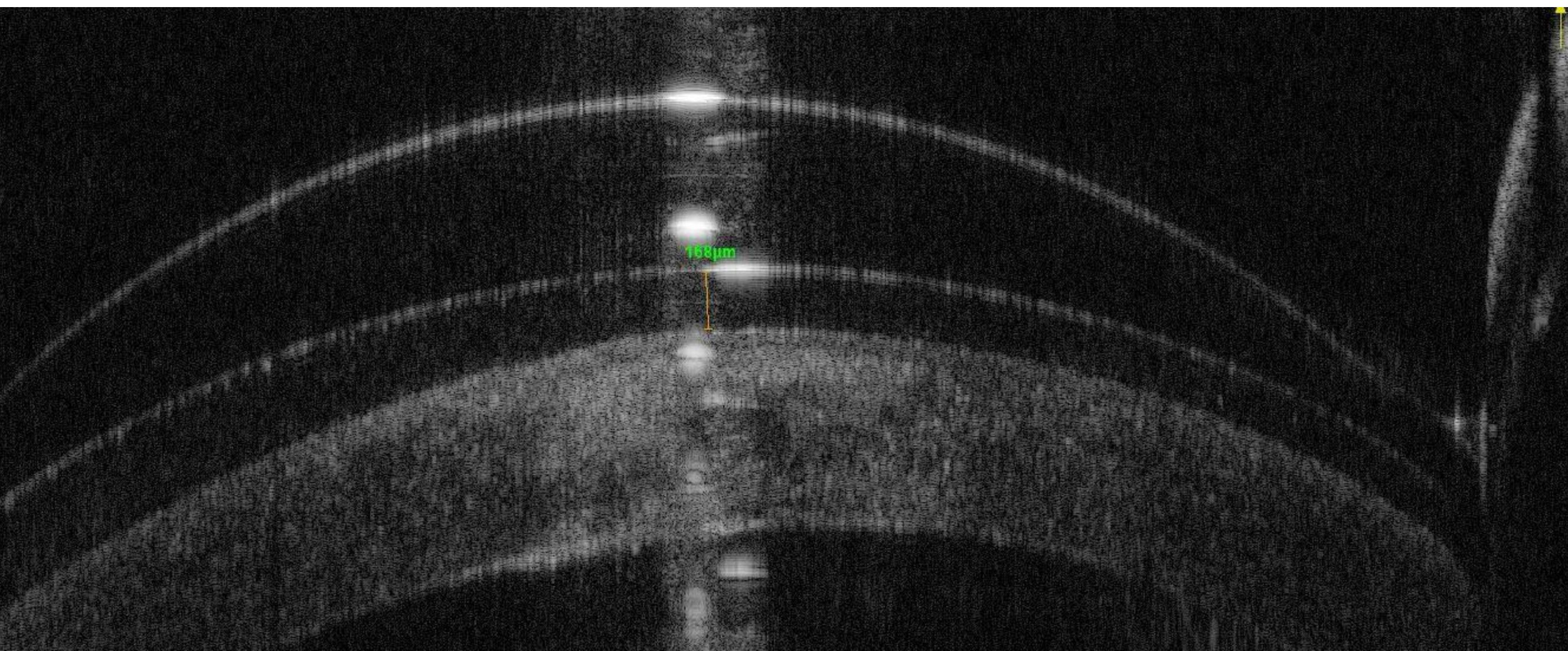
## CASE PRESENTATION

The patient's entering unaided visual acuity was 20/25 OD and 20/200 OS with no improvement with pinhole. Slit lamp evaluation revealed a horizontal linear stromal and endothelial scar running through the visual axis across the entire diameter of the left cornea. She had a surgical fixed dilated pupil and was aphakic OS. The right eye was unremarkable. Corneal topography showed irregular astigmatism coinciding with the laceration repair scar OS. A GPCL with reverse geometry design was trialed OS in office after a spherical GPCL was unstable on-eye. She was able to achieve 20/50 best corrected VA. Modifications were made to the GPCL, however the patient was not able to tolerate the lens due to its unstable fit and poor comfort. The patient was refit into a scleral lens to improve comfort and stability. Her visual acuity in the scleral lens improved to 20/30 and she was able to tolerate wear for a full day. The patient elected to wear a scleral lens on the left eye with no correction over the right eye. Polycarbonate plano glasses were recommended for protection.



## LENS OPTIONS

Based on this patient’s topography there are many different options available to correct her left eye. This patient would have a higher likelihood of success in contact lens wear as opposed to spectacle wear based on the potential and aniseikonia she may experience given the disparity in refractive error between her eyes due to her unilateral aphakia. In many cases of aphakia, a soft contact lens or a corneal GP are the preferred correction method<sup>4</sup>. Fitting this patient using a soft contact lens may improve vision but likely will not improve it to the same extent of a rigid gas permeable contact lens can. This is due to the corneal scarring which causes an irregular corneal surface that a soft contact lens would likely drape over instead of creating a spherical primary refractive surface. Given the left eyes topography this patient shows a likelihood for success in corneal GP lens wear. However, when corneal GP was trialed on the left eye the lens showed questionable stability and following the anterior elevation map the lens tended to shift inferior nasal which led to the patient being symptomatic of lens awareness. The patient was switched into a scleral lens on the left eye with no correction on the right eye. This led to resolution of her lens awareness symptoms and she elected to pursue asymmetric correction with a scleral in the left eye and no contact lens correction in the right eye.



OCT of scleral lens on eye OS

## TREATMENT AND MANAGEMENT CONSIDERATIONS

Managing this patient's left eye requires careful consideration and regular follow up to ensure best outcomes. Given the location of the patient scarring along with her abnormal pupil this patient’s visual outcome may be reduced and appropriate expectations should be set. Due to the high plus power in her scleral lens there is less oxygen that can reach the corneal surface. Thus, minimizing the post lens tear film is very important to maximize oxygen transmissibility. Ensuring that the contact lens does not touch the cornea and potentially lead to further scarring is also very important. Additionally, selecting a hyper-DK material (Dk 141 ISO/Fatt) is essential when designing lenses with increased center thickness such as in our patient's lens. It's also crucial that this patient wears some kind of polycarbonate glasses over her scleral lens to protect the right eye.

Contact Lens Parameters	
	OS
Brand	Blanchard
Design	Onefit™ 2.0
Base Curve	7.80
Rx	+13.50 Sph
Diameter	14.90 mm
Material	Boston XO2®
BCVA with GPCL	20/40

## CONCLUSIONS

Corneal scarring can complicate contact lens fitting, but it is important to keep the patient's goals and motivation in perspective. In this case the patient was hoping to avoid further surgery on her left eye, so she was very motivated to try a contact lens. Due to the imbalance between having a lens in the left eye and being uncorrected in the right eye, she was unable to tolerate the comfort in a GPCL. Additionally, the varying corneal elevations secondary to the scarring provided for a difficult GPCL fit. Switching to a scleral lens, in this case, allowed for more comfortable, clear vision for our patient. An additional consideration for this patient was ensuring the post-scleral lens tear film was minimized to ensure adequate oxygen reaches her eye. Co-management of this patient is vital to ensure continued health and good vision in her left eye.

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