



GP Poppin', Sclerals Lockin'

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Introduction

Keratoconus is a progressive corneal ectasia which can lead to irregular astigmatism, blur that is not correctable with spectacle lenses, and potential monocular double vision.^{1,2} Soft, corneal gas permeable (GP), and scleral lenses may all be utilized as management options depending upon the severity of the presentation and the extent that it affects the visual axis.³

Case Description

A 65-year-old white male presented to the University Eye Center for evaluation of keratoconus and a contact lens fitting. The patient had been wearing a corneal GP lens in the right eye for the past 30 years which he reported frequently falling out throughout the day, and collected debris while performing outdoor activities. He was previously fit in a scleral lens for the left eye, but only wore it to pass his driving vision screener due to the discomfort it caused.

Ocular History

- Diagnosed with keratoconus at age 26
- Penetrating keratoplasty of the left eye at age 49

Entering Distance Visual Acuities

- OD 20/150 (with corneal GP correction)
- OS 20/60 (sans correction)

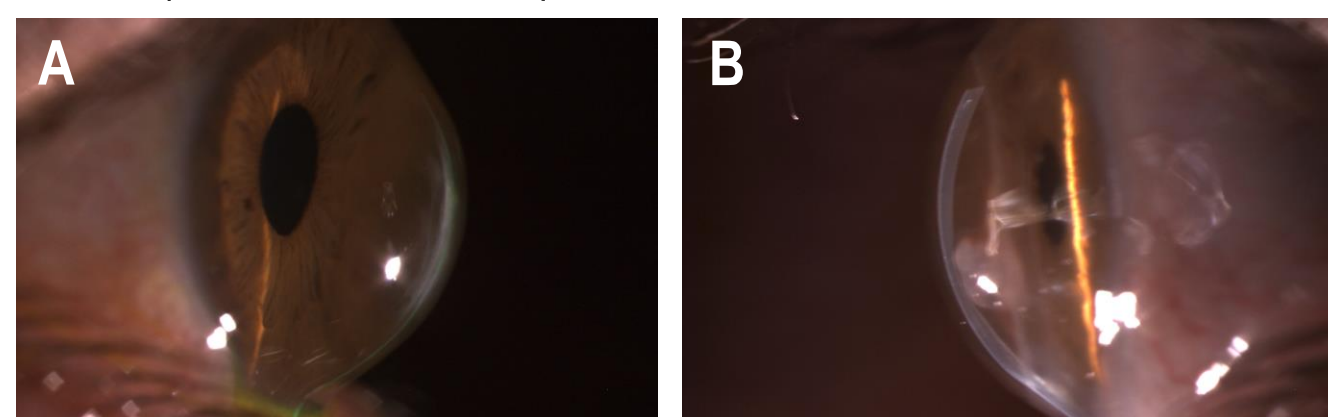


Figure 1: Anterior Segment Evaluation. OD (A) excessive inferior-central corneal steepening and thinning, central scarring 4 mm x 5 mm through the visual axis. OS (B) stable penetrating keratoplasty graft with mild neovascularization up to the graft/host junction.

Treatment and Management

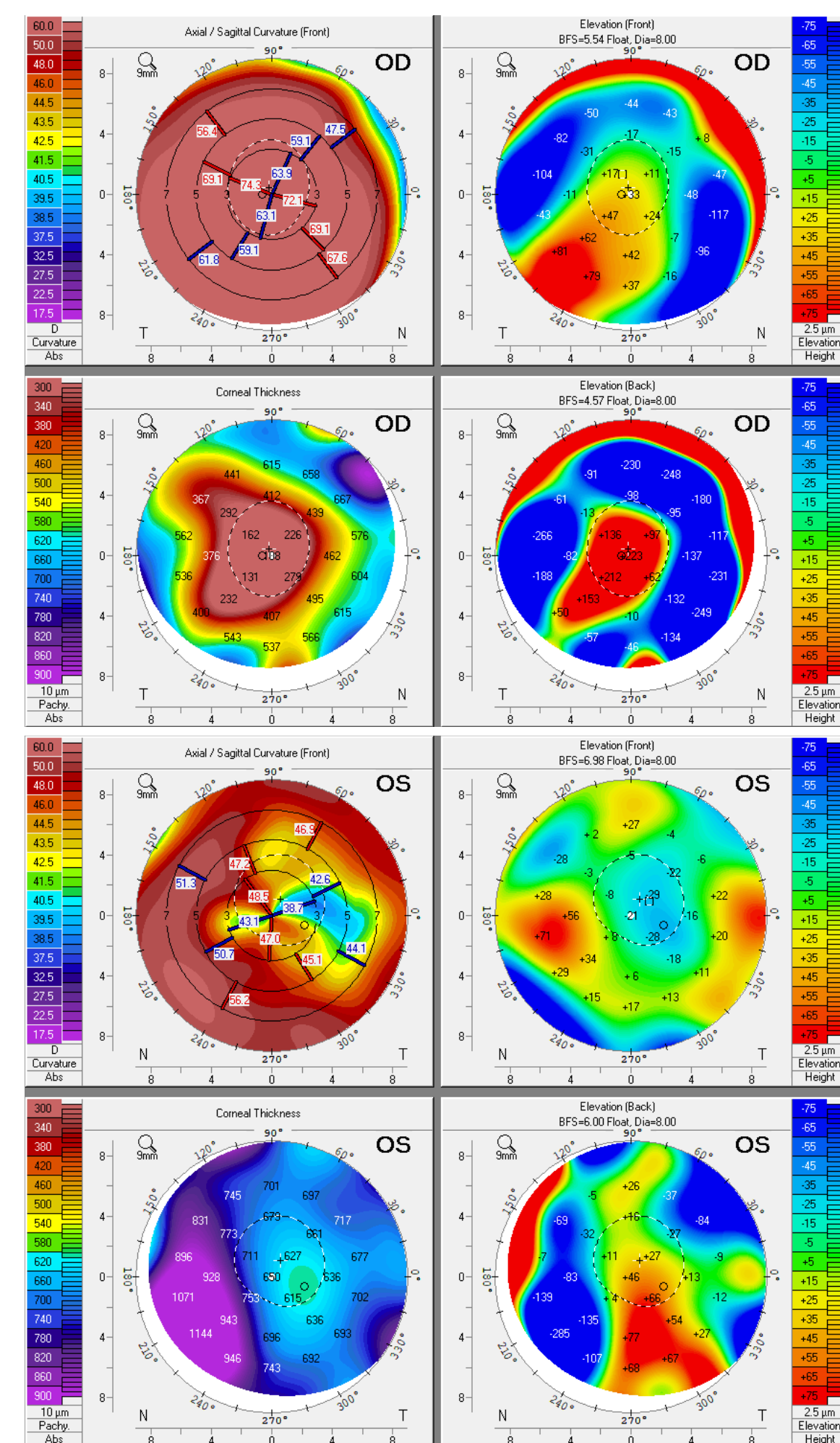


Figure 2: Oculus Pentacam 4 Map Refractive Topography. OD (top image) inferior central steepening and thinning with induced irregular astigmatism, keratometry 63.20/72.10 @ 157. OS (bottom image) penetrating keratoplasty graft with irregular astigmatism, keratometry 41.40/45.40 @113.

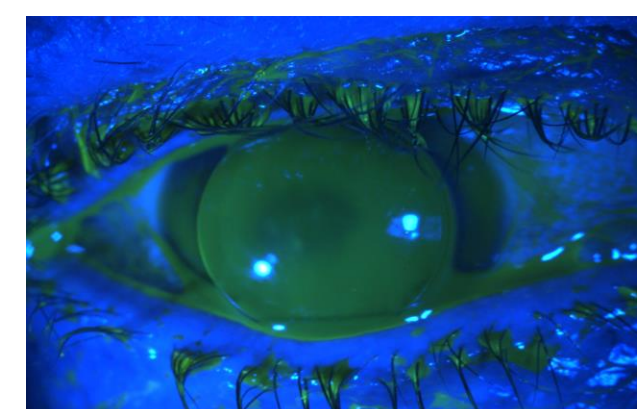


Figure 3: Patient's habitual GP lens OD. Lens assessment: lid attached, excessively flat fit with central bearing, unstable with blinking. The lens fell out multiple times during assessment with normal blinking.

The patient reported that his habitual GP lens fell out frequently throughout the day and that he had adapted by blinking less often and incompletely to help prevent it from falling out. Coming into the exam he thought he was at the point of needing a penetrating keratoplasty of the right eye as well, due to the discomfort and instability of his current lens. He did not want to have another surgery, but thought it was the only remaining option. After education of the management and treatment options available, the patient decided to proceed with a scleral lens fitting for both eyes.

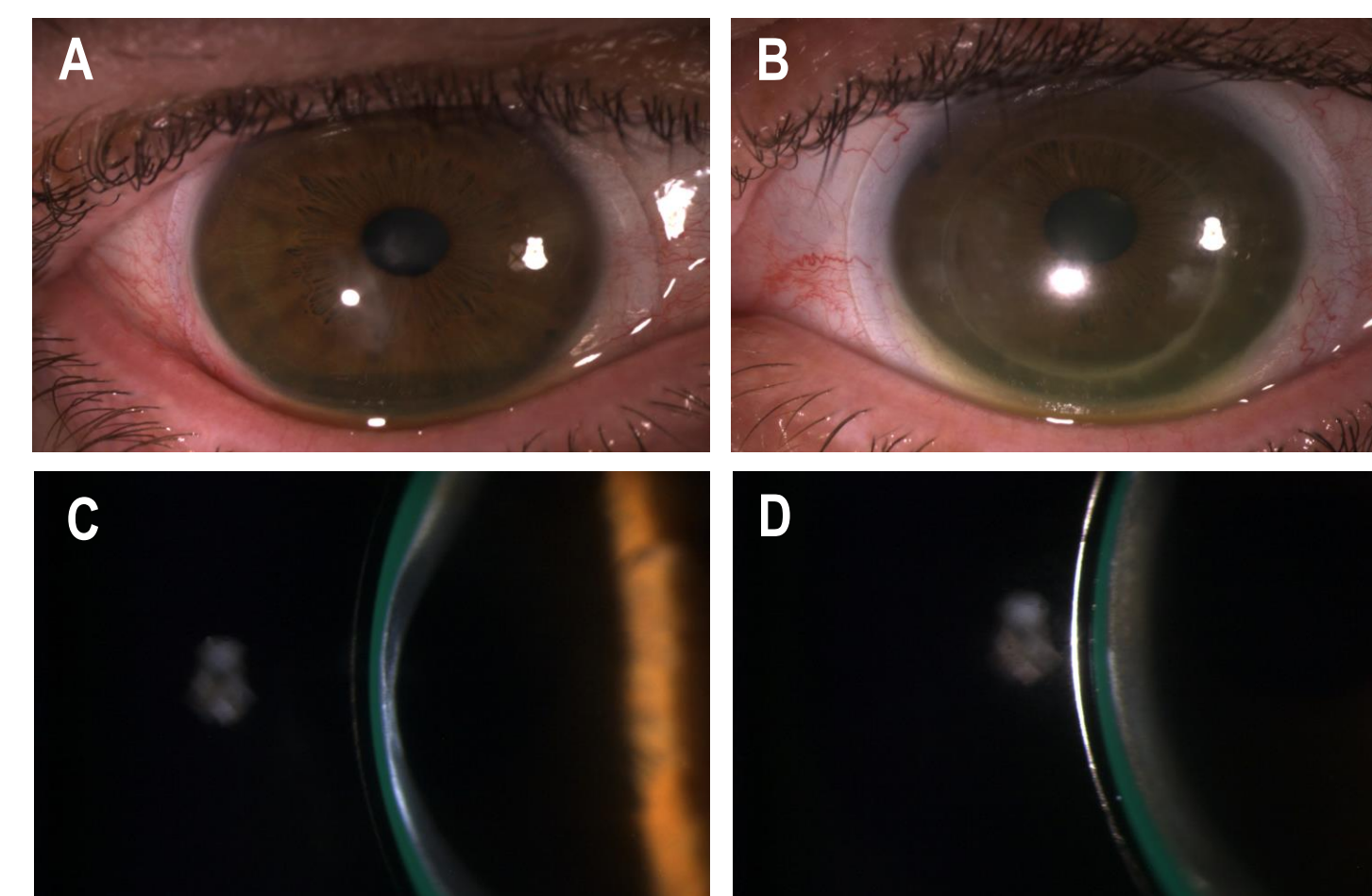


Figure 4: Diagnostic scleral lenses with toric periphery OD (A) and OS (B). Lens clearance over cone 250µm OD (C) and 300µm OS (D). Two sets of trial lenses were ordered before the final set of lenses was finalized for optimal comfort and vision.

Discussion & Conclusion

Initially this patient was apprehensive about trying scleral lenses again due to his experience in the past. Throughout the fitting process the patient became continually more enthusiastic, saying he had never been evaluated so thoroughly and appreciated the education he received about each exam element performed. Ultimately the patient was extremely satisfied with the outcome of his scleral lens fitting. He shared that he is now capable of performing all desired outdoor activities without the discomfort that he previously experienced with his corneal GP lenses and that his vision is better than it has been in years. Although his right eye still meets the surgical requirements for a penetrating keratoplasty, the patient was satisfied with the improvement in his visual acuity with the scleral lenses alone. This highlights the importance of providing patients with all management options for keratoconus when they are apprehensive about surgery, even if they have tried them in the past.

Conclusion

Scleral lenses provide an excellent option for correcting irregular astigmatism and scarring related to keratoconus and post-penetrating keratoplasty eyes, especially in cases when corneal GP lenses no longer provide optimal comfort and vision. It is important to educate patients on all keratoconus management options when they are apprehensive about surgery, even if they have tried them before. Optimally fitting scleral lenses takes practice and experience, so it can be helpful to remind patients that even if their experience has not been positive in the past, a new approach may be all that is needed for success.

References

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