

Case Report:

Designing a PROSE device with the Eye Surface Profiler

Dr. Alan Kwok

Dr. Alan Kwok O.D. is a clinician at BostonSight who provides PROSE treatment to patients with complex ocular surface diseases. He was previously a faculty member of the New England College of Optometry specializing in contact lens education.

A frequent lecturer at optometry and medical meetings, he is also a fellow of the American Academy of Optometry, Scleral Lens Education Society and is a diplomate of the American Board of Optometry.



Introduction

The patient is a 62-year-old male with keratoconus OU. He is a long-time corneal GP wearer and uses INTACs combined with a corneal cross-linking treatment in OS. In addition, there is a history of recurrent corneal erosions in his left eye that were treated with a phototherapy keratectomy (PTK).

He visited BostonSight after being recently fitted with other scleral lenses that were tight fitting and had poor comfort that limited his wearing time to only a couple of hours a day. VA of the left eye wearing his current scleral lens was 20/40 (logMAR 0.30).

His right eye made use of a 23-year-old corneal graft that would not tolerate scleral lenses or PROSE devices as it became edematous after only a couple of hours wear, therefore no lenses were fitted on OD.

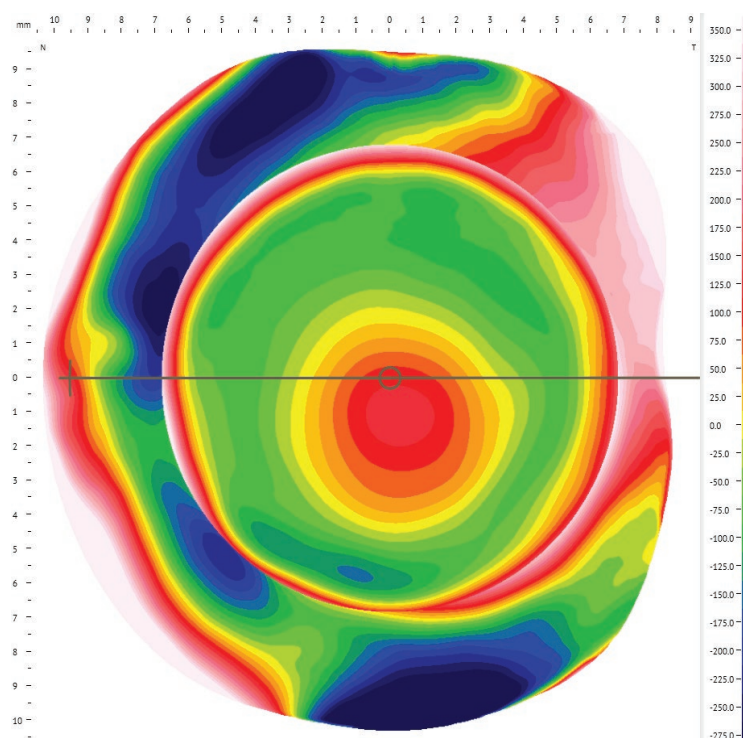


Figure 1

Profilometry measurement

A height map of the cornea and sclera was obtained using the Eye Surface Profiler (ESP), Eaglet-Eye, the Netherlands (Figure 1). The top of the cone has an elevation of 125 micron. When analyzing scleral toricity we find a difference of 400 microns between the minimum (@30°) and maximum sagittal height (@120°). Using a chord line of 19mm. With a difference of 300 microns between the nasal sagittal height and temporal sagittal height we can indicate the need for a quadrant specific design.

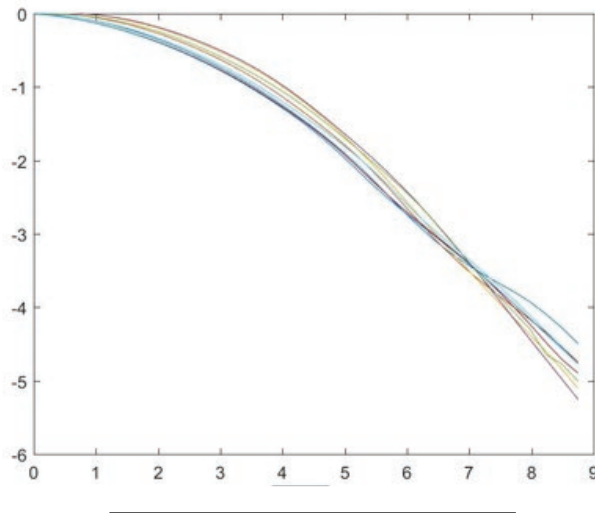


Figure 2

Using the Eaglet-Eye imaging and the BostonSight database we were able to create a way to customize the PROSE device and create the best fitting lens for the patient (Figure 2). The graphic is showing all the meridians used to create a PROSE device.

Lens Fit

The lens shows an adequate fit with good corneal clearance from limbus to limbus and no signs of conjunctival compression or impingement after several hours of wear (Figure 3).

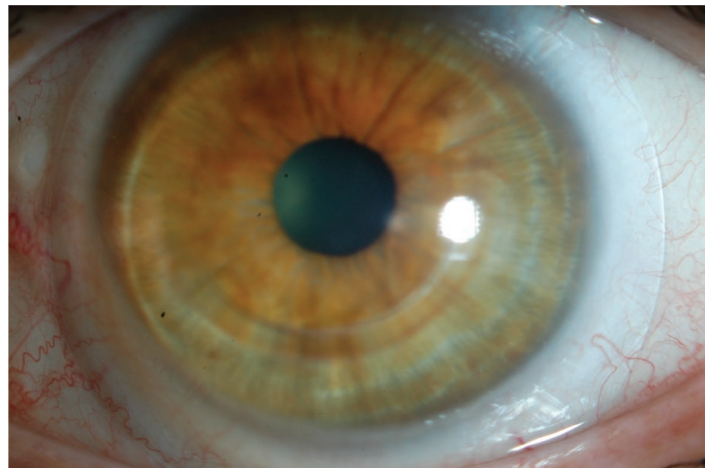


Figure 3

Conclusion

The ESP designed PROSE device improved his vision to 20/25 (logMAR 0.10). The patient reported improved vision and comfort compared to his previous scleral lenses with wearing times up to 12 hours a day.