

Tangent designed scleral lens landing zone for a compression free fit

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Introduction

The natural slope between the cornea and conjunctival/scleral surface is tangential (van der Worp). Many of the current scleral designs utilize a multi-peripheral curve system from the base curve extending to the landing zone (LZ). Although this allows flexibility for lens adjustments, it can often lead to compression of the conjunctival/scleral surface (**Figure 1**). Presented is a case that describes a patient with decreased visual acuity secondary to scarring post microbial keratitis that was successfully fit with a scleral lens with a tangent peripheral curve design.

Case Summary

A 66-year-old female patient reported for scleral lens fitting secondary to decreased vision from scarring post microbial keratitis infection 6 months previous. She had a history of LASIK surgery X 20 years and recent cataract surgery just prior to her corneal infection. Slit lamp exam revealed extensive corneal scarring (**Figure 2**) and MR OD -1.00 DS 20/400. Corneo-scleral topography was taken for measurement and scleral lens design. The patient's mapping showed a highly irregular corneal surface and a spherical conjunctival/scleral shape (**Figure 3**). A scleral lens was designed with a tangent peripheral landing zone. A 16.5mm scleral lens with a sagittal depth of 4495 microns and power -1.57 20/40 had adequate central corneal clearance and a landing zone without compression or edge lift (**Figures 4 and 5**).

Discussion

Compression of the landing zone is a common complication of scleral lens fitting. Patients with scleral lens compression will complain of lens discomfort during wear and difficulty with lens removal. Landing zone compression is easily recognized by the practitioner with slit-lamp exam of the fit showing areas of bulbar conjunctival blanching. Additionally, AS-OCT imaging will show excessive compression of the conjunctival surface. Scleral lens designs that incorporate a tangential peripheral curve system that matches the typical topographical profile of the cornea/scleral interface will have a softer landing without compression. For this patient, a scleral lens with a tangential landing zone design provided a lens that was comfortable to wear without complications.

Figures

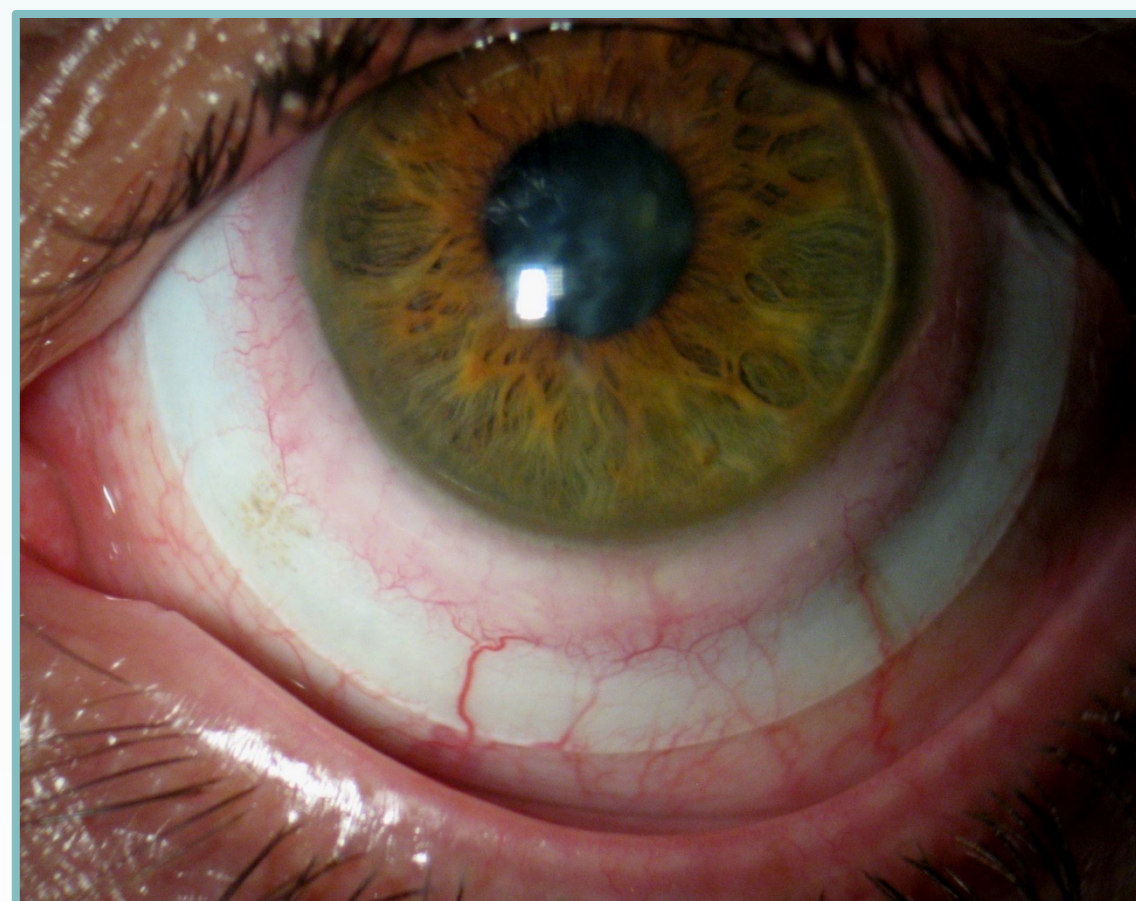


Figure 1.
Scleral lens with excessive compression of the bulbar conjunctiva.

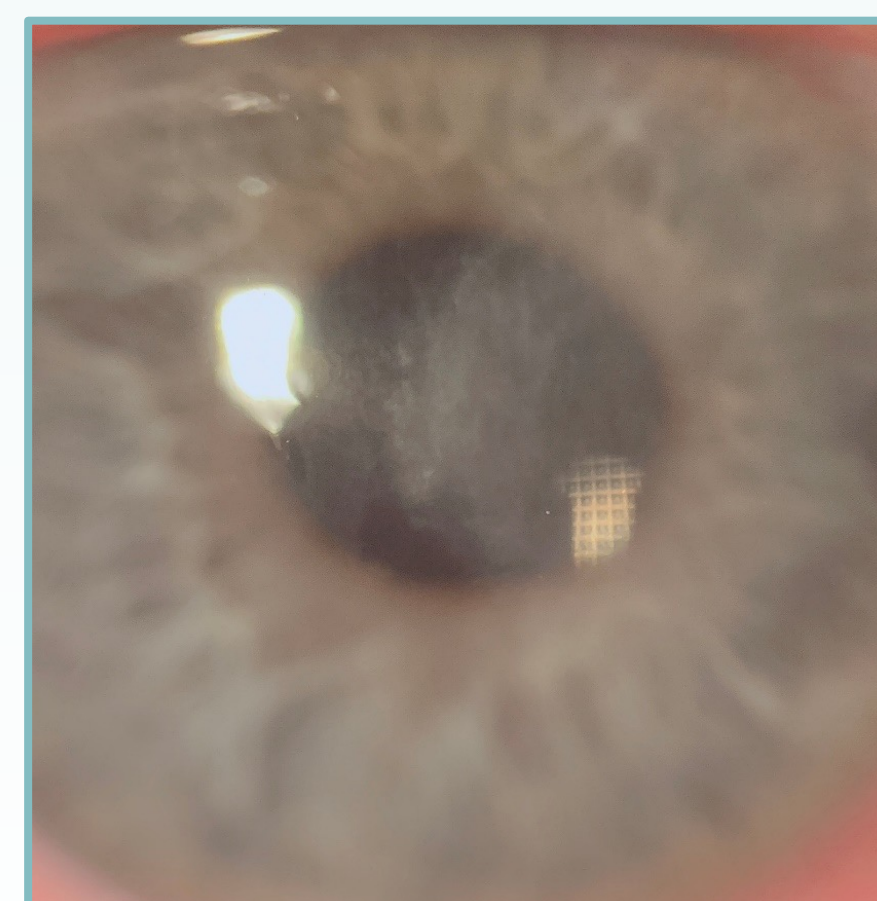


Figure 2.
Corneal scarring post microbial keratitis

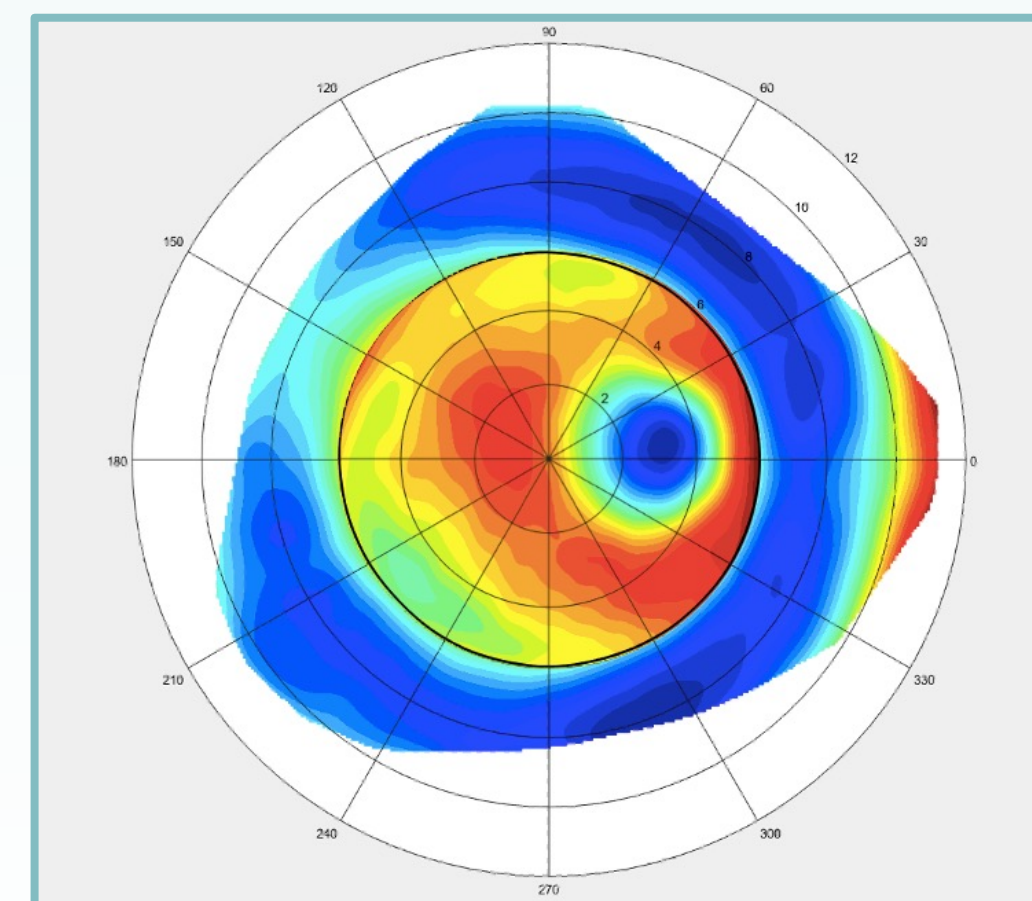


Figure 3.
Corneo-scleral topography

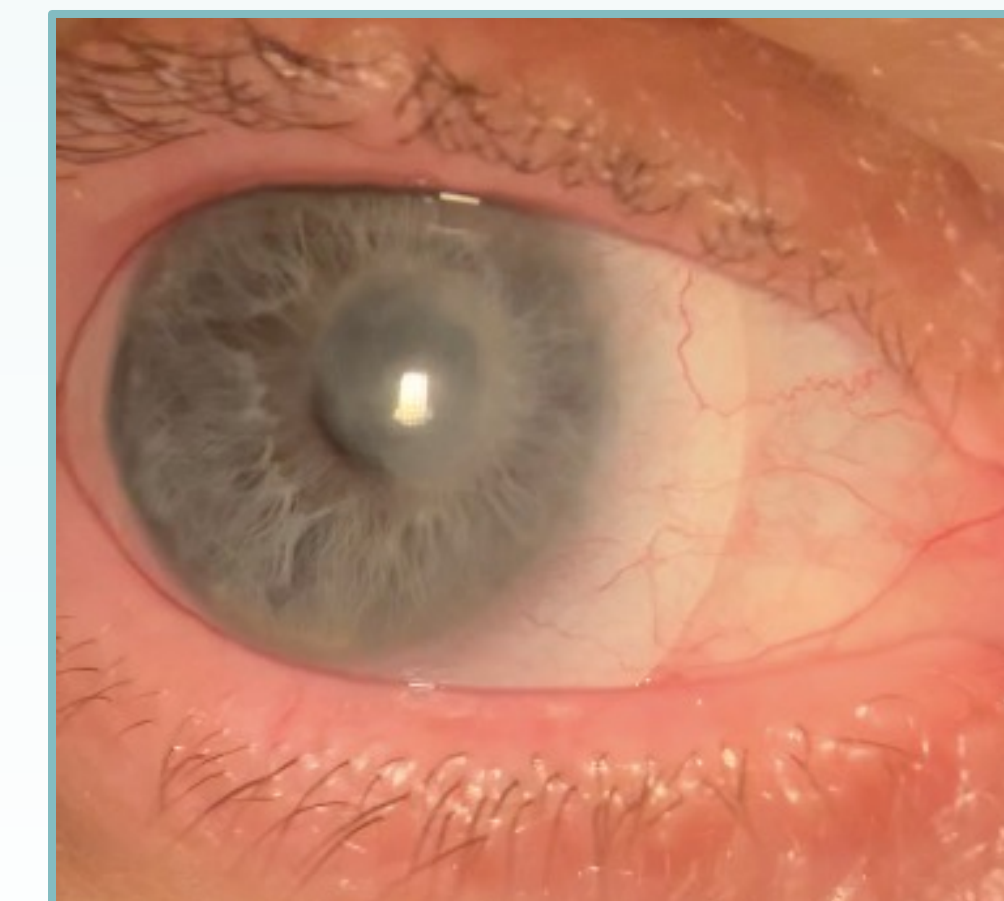


Figure 4.
Landing zone with soft landing

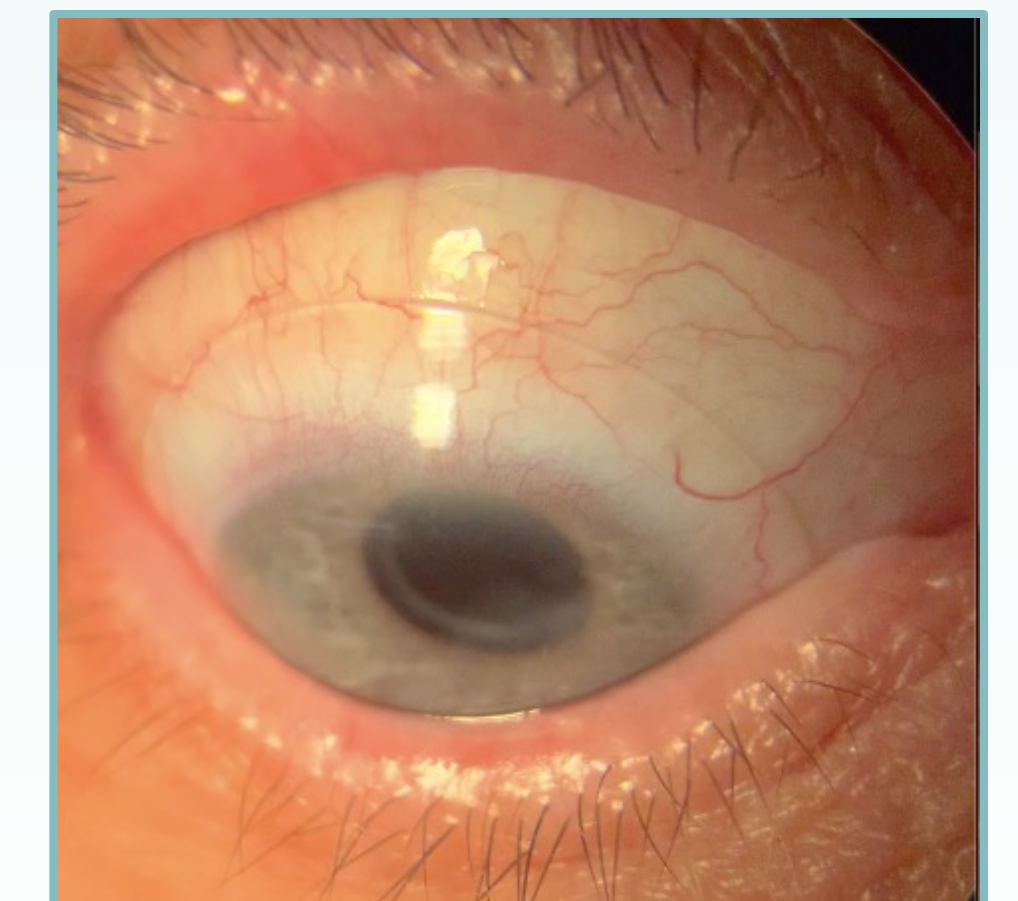


Figure 5.
Scleral landing zone without compression or edge lift

References

van der Worp E, Graf T, Caroline P. Exploring Beyond the Corneal Borders. Contact Lens Spectrum. 2010 Jun;26-32

Disclosures

Dr. DeNaeyer is a consultant for Visionary Optics and is a shareholder of Precision Ocular Metrology