Scleral Lens Fit for Keratoconus with Pterygium: 
To Notch or Not!

Sara Berke-Silva, OD, Andrea M. Janoff, OD, FAAO

Abstract: Keratoconus is a corneal ectasia with concomitant irregular astigmatism for which scleral contact lenses have become a popular form of correction. However, adequate comfort and fit can be impeded by an existing elevation in the peripheral cornea and/or the conjunctiva caused by pterygium or pinguecula. In these cases, certain manufacturers will notch the edge of a scleral lens to bypass the elevation, thereby circumventing the need for surgical excision.

Case Report: A 39 y.o keratoconic male presented for a scleral lens re-fitting in the left eye due to marked hyperemia of the nasal conjunctiva from scleral lens compression over an elevated pterygium, exacerbated by a 20hrs wear schedule. Resolution of conjunctival redness was achieved with temporary discontinuance of lens wear and Tobradex use. Pterygium surgery was deferred due to patient inability to go without a lens during the post-op period.

A Europa (Visionary Optics, LLC) scleral lens fitting was performed using the 18mm diagnostic set. The best fit lens provided limbus to limbus clearance, however, dramatic conjunctival compression and impingement were observed over the nasal pterygium with minimal compression seen elsewhere. Using the slit lamp reticle, the horizontal width of the pterygium was measured from the inner-most boundary to the lens edge and the vertical height of the pterygium was measured at the inner-most boundary, the lens edge, and midway between the two.

After consultation, a Europa semi-scleral lens was ordered:

<table>
<thead>
<tr>
<th>Power</th>
<th>Sag</th>
<th>Base Curve</th>
<th>Diameter</th>
<th>Optic Zone</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>-13.00DS</td>
<td>5.70</td>
<td>6.14</td>
<td>17.0</td>
<td>8.8</td>
<td>0.45</td>
</tr>
</tbody>
</table>

At the dispensing visit, the patient reported good vision and comfort. Visual acuity with a -0.25DS over-refraction was 20/25+. One week post-dispensing, the notch was viewed as properly aligned over the pterygium and the hyperemia was improved. The patient did report that his comfort and vision with this lens was better than any other he’d worn, but intermittent dryness and irritation necessitated frequent use of artificial tears. The patient was scheduled for punctal occlusion and informed that reducing wear time from 20hrs to 12hrs per day would be most helpful.

Discussion: Many patients with keratoconus cannot be without contact lenses for extended periods of time due to the consequent poor vision and its negative impact on quality of life. Relying on chronic steroid use to decrease conjunctival hyperemia is not a viable option due to the risk of complications, including glaucoma, cataracts, rebound inflammation, and the threat of opportunistic infections.1 Pterygium surgery requires weeks of no lens wear and has inherent risks of its own, possibly more so in patients with corneal ectasia. Potential adverse outcomes include recurrence, corneal dellen, scarring, perforation, non-healing epithelial defect with secondary scleral melt, and strabismus.2,3

Conclusions: This patient was able to wear a contact lens more comfortably and with less conjunctival hyperemia because of a scleral lens with a fabricated notched edge. Additional improvement is expected with punctal occlusion and compliance with a 12hrs wearing schedule. For a keratoconic patient with superficial conjunctival and/or peripheral corneal elevations, a notched scleral lens should be considered to avoid or delay precarious surgical interventions.

References