

Case Report:

ICDtoric lens fit

David P. Piñero

David Pinero is a researcher and lecturer at the Department of Optics, Pharmacology and Anatomy of the University of Alicante (Spain). In addition, he is working as a practitioner for the Department of Ophthalmology at the Vithas Medimar International Hospital (Alicante, Spain).



Introduction

The subject is a 35-year-old woman diagnosed with keratoconus since she was 18 years old. She had previously worn corneal rigid gas-permeable (RGP) contact lenses for the last 2 years. However she experienced discomfort and intolerance.

Keratoconus is a noninflammatory, elastic corneal disorder caused by progressive thinning and distortion of the central cornea. The condition is bilateral but frequently asymmetric. Scleral lenses are widely fitted for keratoconus patients. This is due to the possibility of scleral lenses to vault over the cornea. Therefore, they can be experienced as more comfortable than rigid lenses. Also scleral lenses are designed to fit with no movement during blinks, making them more stable on the eye, compared to RGP lenses.

Before fitting the scleral lenses the measured refractive error was OD S-5.25 C-3.50 x 80 / OS S-7.00 C-5.00 as 1250. Corrected distance visual acuity was 0.0 and 0.1 LogMar, RE and LE.

Fit 1

The first scleral lens fit was a scleral CL. The ICD 16.5mm, 4400 microns, S-6.00 in RE and ICD 16.5mm, 4400 microns, S-10.00 in LE. The fitting was initiated following the manufacturer's guidelines. The sagittal height was determined using a swept source OCT system. After insertion some level of inferior decentration was presented and no visible peripheral scleral whitening.

After 2 weeks of CL wear, the patient came back with complaints of poor vision. An over refraction of S-3.00 C-1.25 x 140 and S+1.00 C-1.00 x 130 was found in RE and LE and a significant level of inferior decentration was present. Suspected was that scleral astigmatism was present which induced the instability of the lens with consequent generation of an irregular tear meniscus.

Profilometry

After the first initial fit, it was decided to perform a refitting using profilometry data gathered by the Eyes Surface Profiler (ESP) (Eaglet Eye, Houten, The Netherlands). The bisphere map visible in Figure 1 clearly indicates scleral asymmetry in both eyes. A difference between the nasal and temporal sagittal heights of 470 micron and 170 micron Re and LE was found. Which indicates the need for a peritric scleral lens.

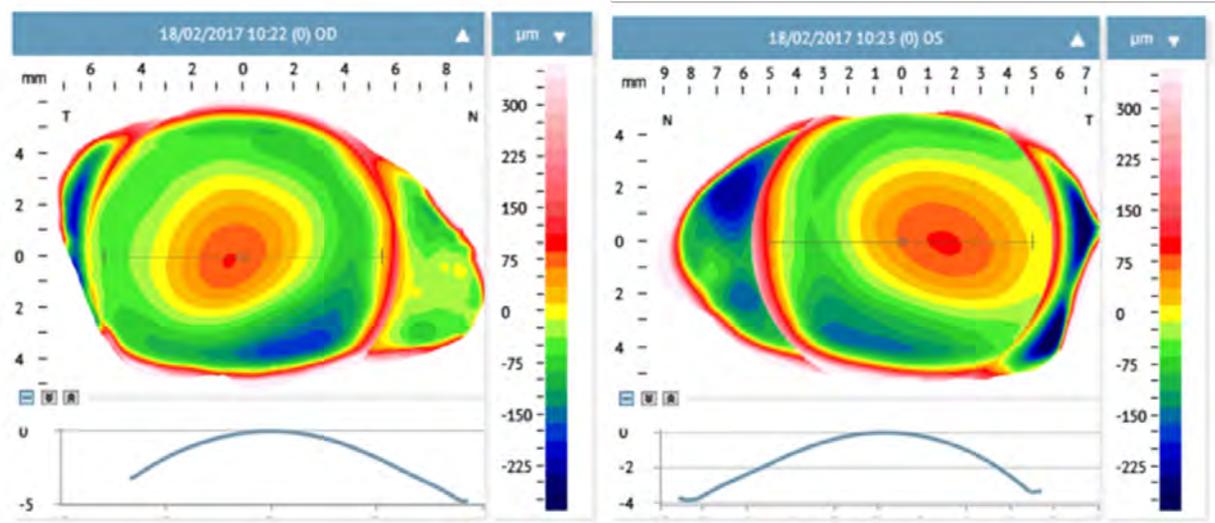


Figure 1

Fit 2

Decided was to follow manufacturer guidelines and order the toric version of the ICD scleral. Following manufacturer guidelines the new order was: ICDtoric 16.5mm, 4200 microns, S-4.75 C-1.25 x 140 RE and ICDtoric 16.5mm, 4200 microns, S-4.75 C-1.75 x 60 LE. As expected according to the ESP measurements this toricity was not enough to stabilize the lens and an additional increase of peripheral toricity was required.

Fit 3

When ordering the final lens ESP sagittal height data was taken in account. The final lenses fitted were: RE, ICDtoric 16.5mm, 4200 microns, S-4.75 C-1.25 x 140, SLZ-2/LCZ+4 steep8. LE, ICDtoric 16.5mm, 4200 microns, S-4.75 C-1.75 x 60, SLZ-2/LCZ+4 steep 8.

Conclusion

After the third fitting, CL wear was experienced as comfortable and good vision. Measured VA was RE: 0.00 LogMar and LE: 0.10 LogMAR.

One year after refitting the visual performance was intact and remained comfortable. Figure 2 is showing the final scleral lens fitted in right (up) and the left (down) eyes.

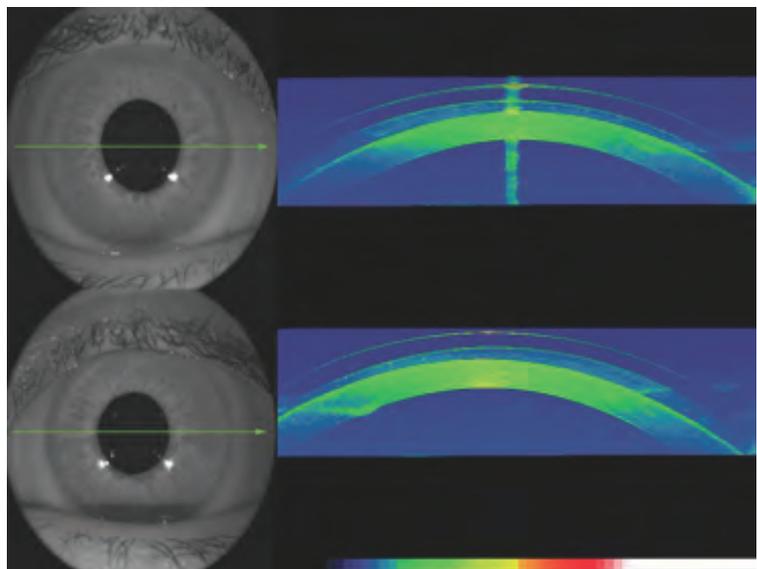


Figure 2