Case Report:

Dreaming in 20/20: OrthoK fitting with Dreamlens

Ricardo Duarte

Ricardo Duarte graduated from University Rafael Landívar (Guatemala) in 2005 with a degree in Optometry. His extensive clinical background includes roles at Hospital Rodolfo Robles and the National Unit of Ophthalmology. Currently he runs his private practice, Óptica Ricardo Duarte, in Guatemala City and is Professional Affairs Manager at Eaglet Eye (The Netherlands). He is LATAM Myopia Management Ambassador, CLSA and IACLE member, and holds NCLE-C certification.

Introduction

A 17-year-old female patient presented with complaints of blurry vision and uncorrected visual acuity of 20/50 in both eyes. She came to the practice for orthokeratology lenses to correct her vision without relying on spectacles.

Baseline manifest refraction was −0.75−0.75x179 OD and −1.00−0.75x175 OS, with a best-corrected visual acuity (BCVA) of 20/20 in both eyes.

Baseline profilometry

Baseline corneo-scleral profilometry maps were captured using the Eye Surface Profiler (ESP) (Eaglet Eye, NL) to facilitate a precise orthok design. The ESP elevation data provide detailed information about the corneal shape and the peripheral profile (Figure 1). These data can be used to design OrthoK lenses that precisely land on the patient's eye, to support good centration and effective corneal reshaping.

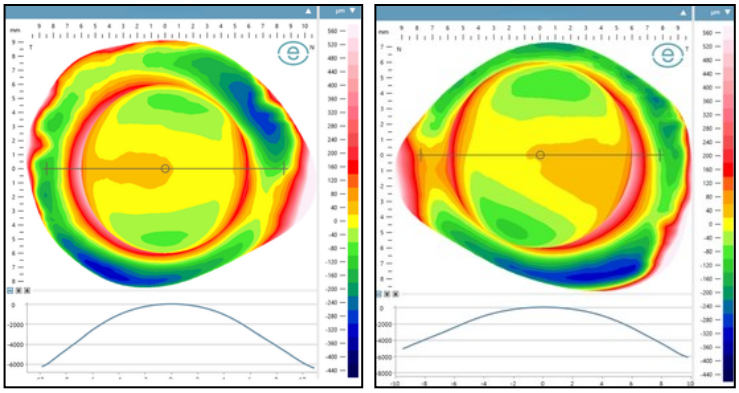

Figure 1 Baseline ESP scans.

First Lens Fit

The ESP integrated *First Lens Fit* algorithm was used to calculate DreamLens (TruForm, USA) OrthoK lenses for both eyes (Figure 2). Traditionally, this lens design relied on SimK values, limiting the ability to customize the fitting curves. The ESP algorithm modernizes this approach by using full corneal sagittal height data to calculate all parameters across the different lens zones, enabling a more individualized fit.

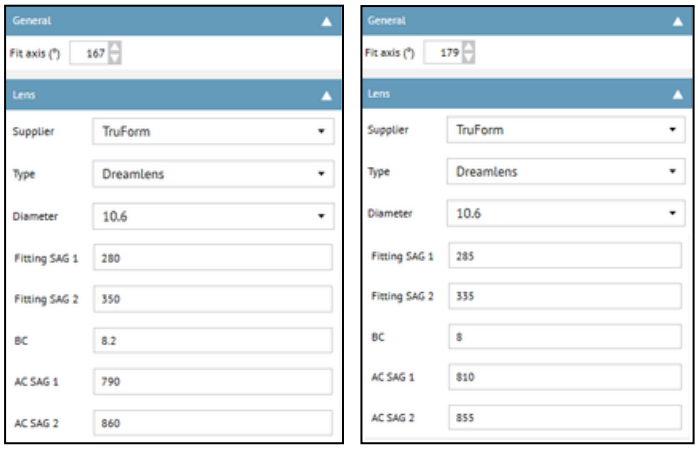

Figure 2 Lens design calculation with the ESP algorithm.

Two-week follow-up

At the two-week follow-up visit, the patient's BCVA without lenses improved to 20/20 OU. Slit-lamp examination confirmed excellent central corneal health with no signs of SPK (Superficial Punctate Keratitis) in either eye, though a localized allergic reaction was observed in the inferior region of the left eye. The fluorescein imaging indicated effective and well-centered corneal reshaping (Figure 3).

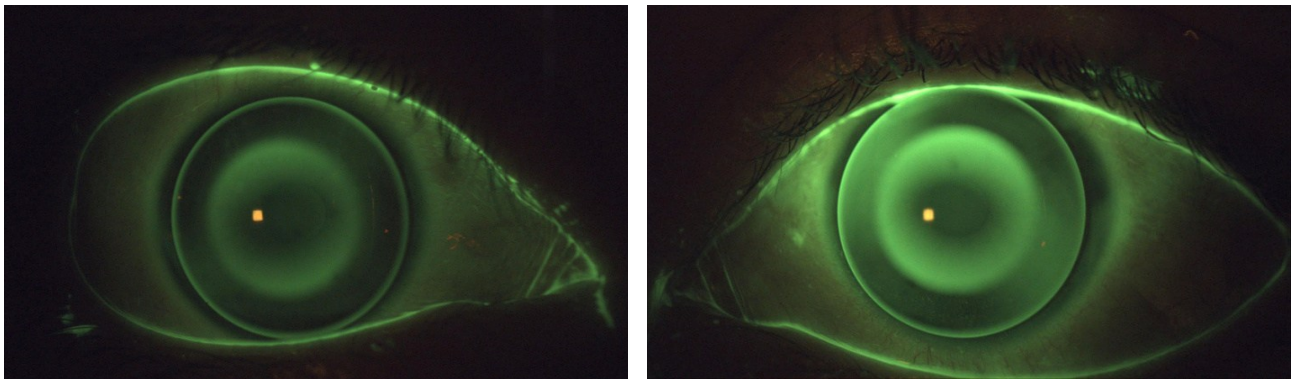

Figure 3 Anterior segment fluorescein imaging of the lens fitting relationship.

Conclusion

The Eye Surface Profiler combines accurate ocular surface data with the smart *First Lens Fit* algorithms to design customized DreamLens OrthoK lenses. This data-driven approach yielded excellent visual performance while maintaining corneal health. This case highlights the value of profilometry-guided lens design in modern orthokeratology fitting.