

Case Report:

Unlocking NewVision for Dry Eye Patient

Patrick Simard OD

Dr Patrick Simard graduated from École d'Optométrie de l'Université de Montréal, where he also obtained his Master's Degree in vision's science on keratoconus research. He is a Fellow of the AAO, the IACLE, and the BCLA. He also holds a Master's Degree in Business Administration from HEC Montreal. Currently, he is in private practice at Clinique d'Optométrie Bélanger and serves as a clinical instructor and lecturer at Université de Montréal. His area of research is on myopia control, orthokeratology, aberrometry, and scleral lenses. He co-holds a patent for a contact lens design that controls the development of myopia and axial length.



Introduction

44-year-old massage therapist, low myope and with dry eyes. Wanting to be spectacle free, especially during work, he learned about orthokeratology through a friend and decided to explore this option. Previous attempts with various lenses had failed due to persistent dryness and discomfort.

Background

The patient's spectacle prescription was OD-1.75 and OS -2.25, and his corrected visual acuity was 20/20 in both eyes. Initial orthoK lenses were ordered by extrapolating data, based on the measurements of a traditional topographer.

At the first follow-up, despite providing 20/20 visual acuity, the patient reported discomfort on the right eye. The patient neither wore the lenses regularly nor had them with him, so we decided to wait.

One month later, he still reported discomfort at night and difficulty removing the lenses, although the vision remained

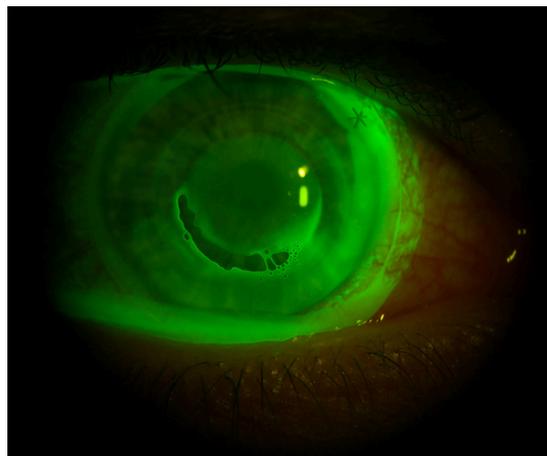


Figure 1 Initial lens fit

good. It was determined that the lenses were too small (13.5mm diameter) and the edges too tight, causing discomfort. The trans-limbal curve needed widening and flattening, and the lens diameter required an increase.

Profilometry measurement

The Eye Surface Profiler (ESP), a corneo-scleral profilometer, was used to capture high quality, single-shot images with no extrapolation. The more reliable translimbal data revealed a relatively spherical corneal surface (Figure 2).

The ESP elevation data can be used for empirical fitting as an alternative to diagnostic fitting. Its software enables seamless data sharing with AccuLens (USA), the lab behind a new corneo-scleral orthok lens, the NewVision.

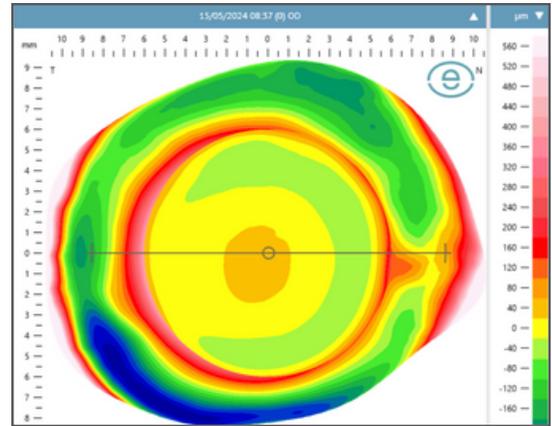


Figure 2 ESP Bi-sphere elevation map (OD).

Final Lens Fit

The lens diameter was increased to 14mm and, based on the corneal peripheral data, the corneal-scleral curves were widened and flattened. This solved both the comfort and lens removal issues, while the VA remained 20/20 with the new lenses. Follow-up topography maps showed good centration (Figures 3 and 4).

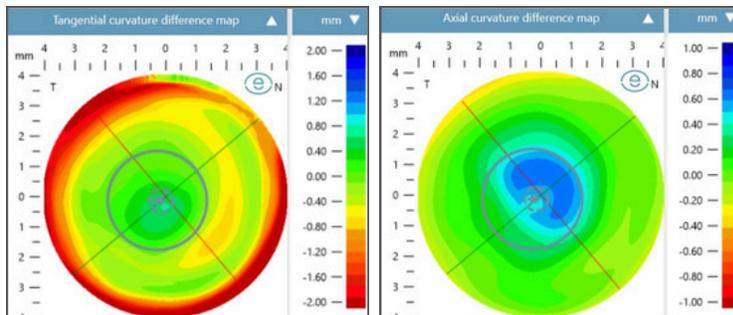


Figure 3 ESP Tangential and axial curvature maps indicating good lens centration.

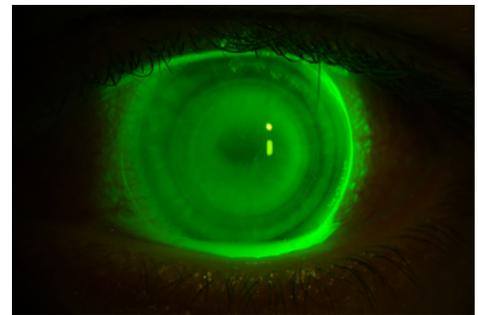


Figure 4 Fluorescein pattern highlighting an optimal fitting.

Conclusion

Using true elevation data from the ESP, covering the complete cornea beyond the limbus, instead of relying on extrapolated information from traditional topographers, is crucial in achieving an optimal alignment, especially with larger-diameter OrthoK lenses extending beyond the limbus.

When designing an OrthoK lens beyond the limbus it is essential to create enough lift over the limbus, and to measure the scleral shape, making sure that limbal stem cells will not be compromised.