

Case Report:

DirectConnect™: From Image Acquisition to Manufacturing in One Step

Dr. Tom Arnold

Dr. Tom Arnold has just retired from a private group practice in Sugar Land, Texas. With a long-standing interest in specialty contact lenses, he is a Fellow of the Scleral Lens Education Society and an associate member of the International Society of Contact Lens Specialists. Along with Dr. Melissa Barnett, he is the co-chair of the International Congress of Scleral Contacts (ICSC). Dr. Tom Arnold is an Ambassador for Eaglet Eye.



Introduction

40-year-old white female, mild keratoconus, currently wearing soft lenses, but with dryness and decreased VA. Manifest refraction: right eye S -4.50 C -3.50x047, left eye S Plano C -1.50x107. Corrected visual acuity: RE 20/30- LE 20/30-

Background

Her father was fit with scleral lenses a few years ago, for his keratoconus, after dropping out of contact lens wear due to vision and discomfort. He has been a happy wearer ever since, so she decided to try scleral lenses.

Profilometry Measurement

Profilometry with the Eye Surface Profiler (ESP) from Eaglet Eye (Houten, The Netherlands) directly measures 3D sagittal height. Using fluorescein to make the sclera a reflecting surface, the complete cornea and sclera can be captured in a single shot image. The created bi-sphere elevation map shows a 'with-the-rule' corneal astigmatism, whilst scleral astigmatism is 'against-the-rule' (see Figure 1).

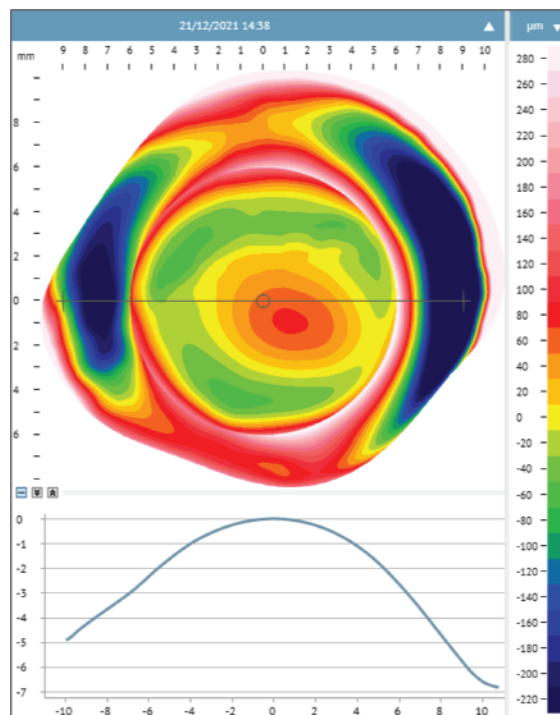


Figure 1 ESP Bisphere elevation map.

First and Final Lens Fit

The ESP DirectConnect™ was used to transfer the Profilmometry data to the Onefit MED Fitting Tool (CooperVision Specialty EyeCare). Based on these data, the online tool recommends the initial trial

Onefit MED lenses: OD 8.18 bc/4500 sag/16.0/Plano/E +75/-75; OR +1.25 20/30+2
OS 7.96 bc/4600 sag/16.0/-0.50/E +75/-75; OR Plano 20/30

The suggested diagnostic lenses were placed on the eyes. Examination with slitlamp showed an approximate clearance of 300 µm for the RE and 400 µm for the LE.

Following the over refraction, the final Onefit MED lenses were ordered:

OD 7.86 /4500 sag/16.0/ -0.37 sphere/M -75/L std/E +75/-75
OS 7.96/ 4450 sag/16.0/-0.50 sphere/M -75/L std/E std/-125

At dispense, the lenses were very comfortable BVA 20/15 for distance 20/20 for near. Slitlamp shows a good fitting lens with adequate apical clearance and no impingement. The patient was checked again after 3 weeks of wear (see Figure 2); she was very happy, average wearing time of 12 hours, BVA DV and NV 20/20.

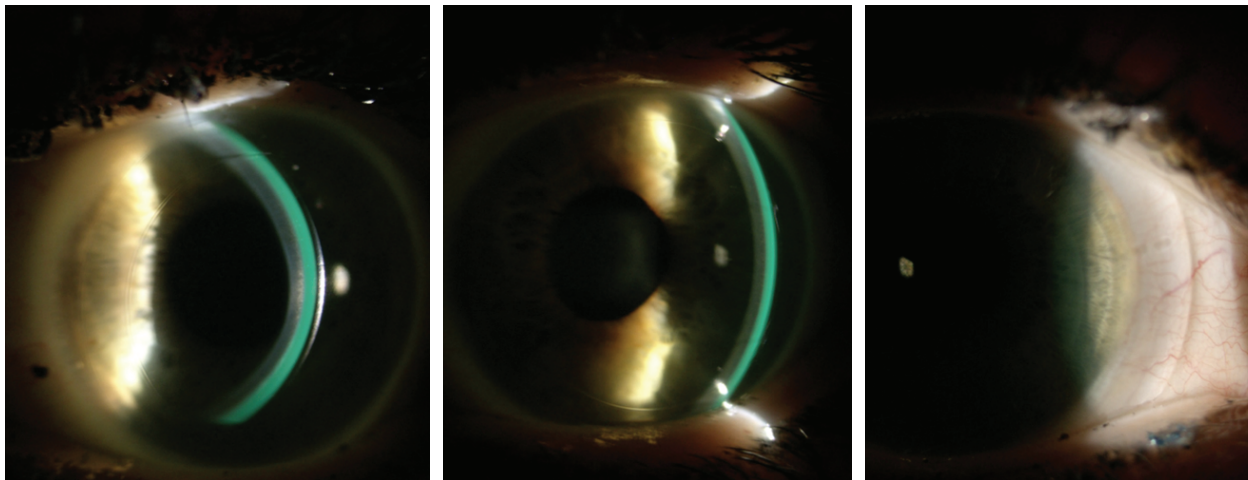


Figure 2 Onefit MED scleral lens after 3 weeks.

Conclusion

A scleral lens can be the ideal option when soft lens wear on a Keratonic eye is no longer comfortable and vision is not satisfactory. The patient has been retained as a contact lens wearer, improving her lens comfort and vision, and therefore giving her a better quality of life.

Sharing the ESP Profilmometry data with the lens lab via DirectConnect, to help design a scleral lens, increases speed and accuracy with less refits and visits to the practice. Image acquisition to lens manufacturing is achieved in one step.