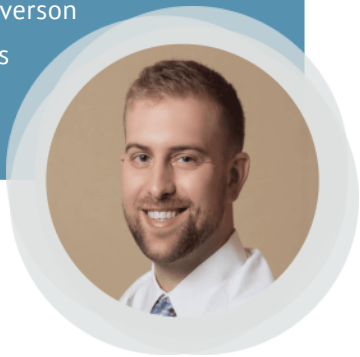
Case Report:

Freeform MAXIM3D for compromised cornea

Michael Everson OD

Dr. Everson obtained his Bachelor of Science (with honors) in 2015 from the University of Missouri before receiving his Optometry degree in 2019 from the Massachusetts College of Pharmacy and Health Sciences. Dr Everson initially focused on retinal pathology, glaucoma and post operative care at the Eye Centre of South Florida. However, after an internship with Dr. Tom Arnold focusing on specialized contact lens and primary care, Dr Everson decided to complete a residency on contact lenses, soft lenses, and sports vision at University of Alabama–Birmingham. Right now we find him practicing at Memorial Eye Center at Sugar Land, Texas.



Introduction

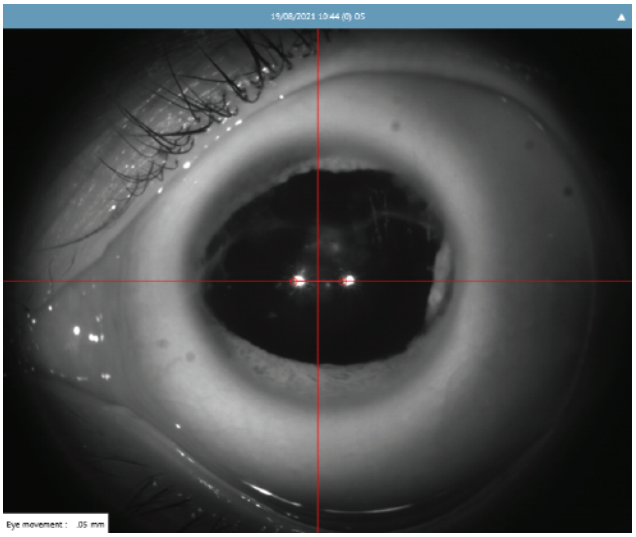
A 44-year-old Hispanic male presents for a scleral lens fitting to obtain better vision on his left eye. With a history of a penetrating globe injury OS (pliers into the eye), with the expulsion of the lens followed by a ruptured globe in October of 2015. After the globe repair on the same day, the patient was referred for a scleral/PROSE. This eye is also aphakic, with corneal ectasia and corneal scarring secondary to that trauma. The goal is to improve vision at all distances with scleral lenses.

Manifest refraction:
OD +0.25 -1.00 x009 VA 20/20
OS +12 CF @2 feet

Pachymetry:
OD 487
OS 497

Background

The amount of functional clear cornea that a practitioner has available to work with is very important. In this case, the corneal scarring can be a limiting factor in potential vision with scleral lenses. On the Source image taken with the Eye surface Profiler (ESP) (Eaglet Eye, The Netherlands) the scars from the old injury are visible.



Profilometry Measurement

The ESP is a corneo-scleral profilometer that gathers sagittal height data of the cornea and the sclera. It also creates a bi-sphere elevation map which helps assessing the scleral shape (see Figure 1).

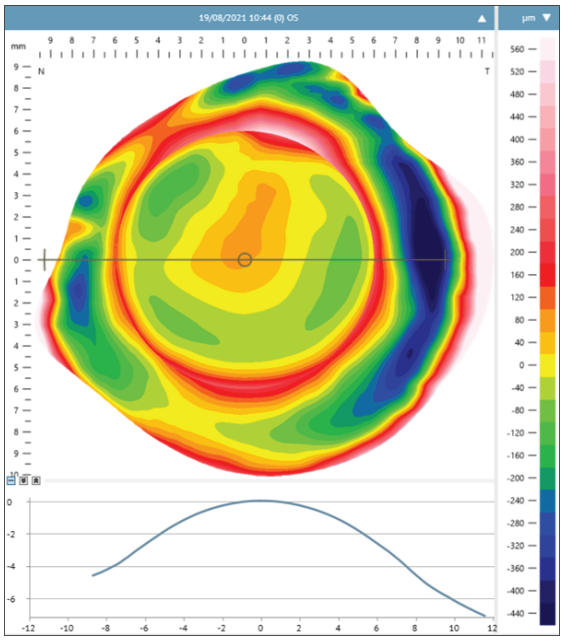


Figure 1

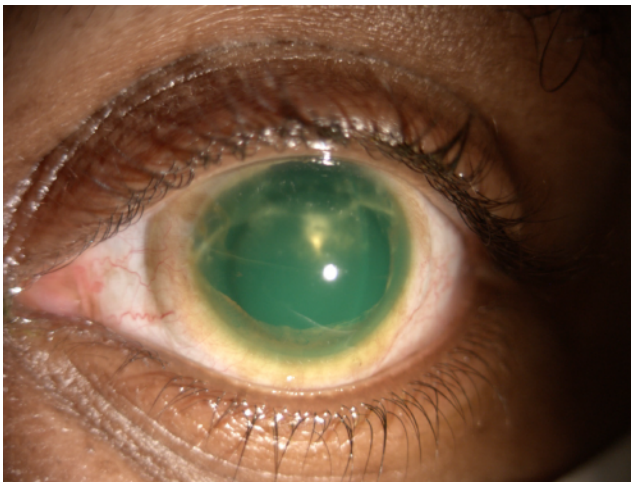
Final Lens Fit

The ESP *First Lens Fit* algorithm was used to establish the best fitting initial trial lens (OS):
BC 7.50 | SAG 5.760 | Dia/OZ 16.40/9.0

The closest diagnostic lens was placed on the eye for the over-refraction and the first lens was ordered using the DirectConnect feature of the ESP:
MAXIM3D | BC 7.50 | SAG 5.760 | Dia/OZ 16.50/9.1
Power +13.00 | Angle off-set 11° | V/A PLANO 20/200

Fitting

The ESP corneo-scleral data was very accurate for the design of a free form MAXIM3D lens and the first lens ordered was the final lens. The lens fit well, mid peripheral, limbal and haptic zones looked great, no changes were needed.



Conclusion

Empirical fitting in this case resulted in 1 lens being ordered with no need for modifications or RX adjustments. With a great ESP scan the number of visits for the patient to the practice can be reduced and deliver. More of a wow factor, patients appreciate the new technology.