

Case Report:

Decentered multifocal WAVE ScleraLens®

Sheila Morrison OD

Dr. Morrison received her Doctorate, Masters in Vision Science with focus on scleral lenses, and Residency in Cornea and Contact Lens from Pacific University College of Optometry. She served on faculty at the University of Houston College of Optometry where she facilitated education and research in the Contact Lens and Cornea service. Now she is back in Canada where she practices at Mission Eye Care Center for Dry Eye and Corneal Disease in Calgary. Dr. Morrison is a co-residency coordinator for the Mission Eyecare Cornea and Contact Lens Residency program affiliated with Northeastern State University - Oklahoma College of Optometry.



Introduction

48yo female. The patient was referred for scleral lens fit after being seen by numerous ODs and OMDs with limited success in managing the patients' symptoms. The patient suffers from severe dry eyes for 3 years and has signs of Sjogren's syndrome. Test were ordered to determine the etiology for her dry eye symptoms. Spectacle Rx: OD: +0.50-5.50x017 20/40 | OS: -0.50-4.25x173 20/30 | OU: +1.50 ADD OU

Background

Initially the patient was fit with diagnostic style scleral lenses. The patient was fairly satisfied with the lenses and had a good distance vision but needed reading specs for near as this particular lens design was unsuitable for multifocal. She did suffer from midday fogging and discomfort later in the day but could tolerate it, until she sustained a corneal laceration secondary to blunt force metal hitting the eye, shattering the scleral lens. After recovery it was decided for a re-fit into upgraded technology: WAVE ScleraLens®. The main goal was to address fogging, lens discomfort towards the end of the day and rebound redness, while adding front surface toric for best vision and multifocal optics to avoid wearing glasses.

Profilometry Measurement

Measurements were taken with the Eye Surface Profiler (ESP) from Eaglet Eye (The Netherlands). The ESP captures over 500.000 data points in every measurement. It is important to ensure the measurements are of good quality to make sure accurate scleral data is gathered. This is the first step for designing the perfect fitting scleral lens.

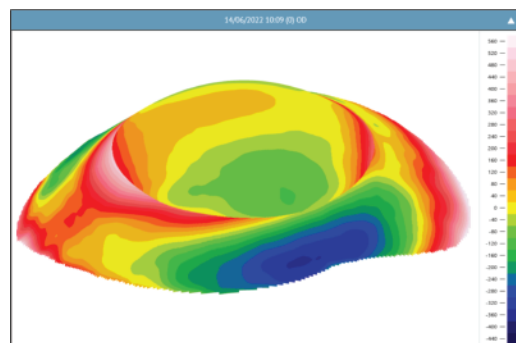


Figure 1 3D Bisphere elevation map

WAVE ScleraLens

With no need for extrapolation or stitching, the complete ESP data is automatically imported into WAVE Contact Lens System®. Simply entering the desired lens diameter and apical clearance into the WAVE lens designer software, the initial freeform scleral is designed (Figure 2). The lens design can then be fine-tuned using the WAVE modification tools.

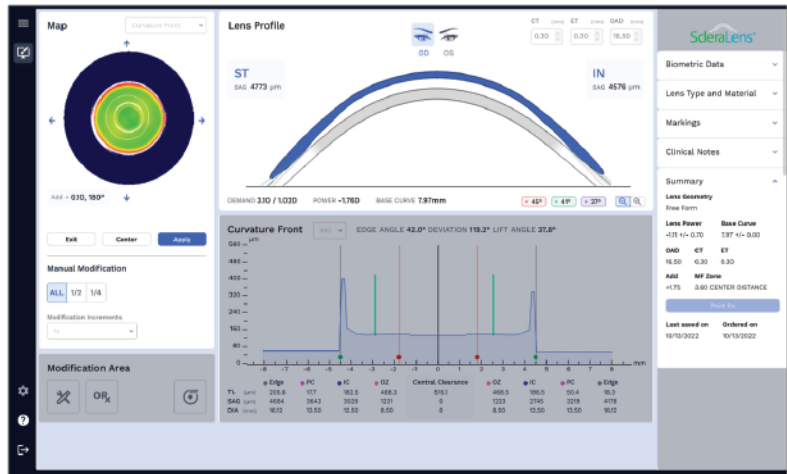
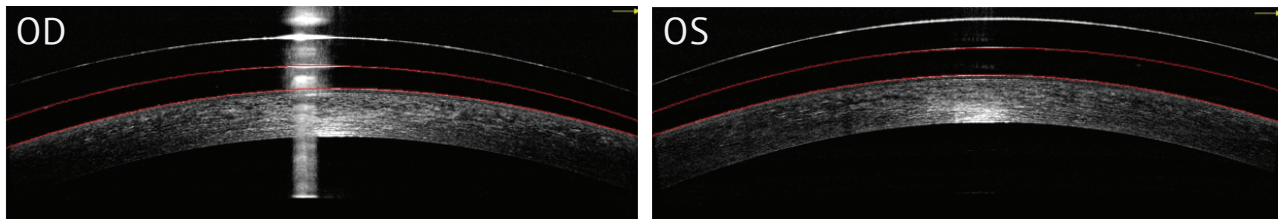
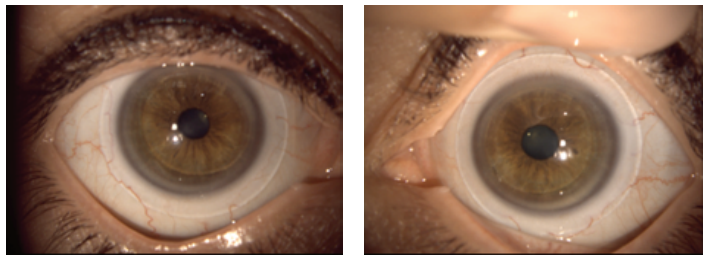


Figure 2 WAVE lens designer software

Lens Fitting

After adding 100 microns central clearance to meet my preferences, the result was a beautiful lens. The new customized lenses solved the fogging and lens discomfort, bringing great relief to this dry eye patient. Additionally, a front surface cylinder was added to cope with the high astigmatism. Thanks to the Eye Surface Profiler and WAVE technologies, a decenter multifocal zone was customized in the final lens with great results, to avoid wearing glasses.



Recommendation

It is important to have a good distance vision and a great fitting lens before the multifocal can be added. Build the shape of the lens first and make sure it is stable with a good spherical power; then add the front surface toric so she has adequate vision for the distance, in case it gets compromised a little when adding multifocal.

Conclusion

Decentered multifocal optics were successful utilizing the WAVE scleral lens data-driven from the Eye Surface Profiler. Also for vaulting over pingueculas, data-driven WAVE lenses work very well. There is no question, data helps. It doesn't mean we cannot get there with the other way of fitting, but data provides an advantage to get a good fit faster and better.