

Introduction

Scleral lenses are mostly indicated for diseased eyes and most common in Keratoconus patients or other primary corneal diseases, such as corneal transplants and ocular surface disease (OSD) (Pullum et al., 2005).

They are currently available in a variety of designs and diameters. Designs vary from a spherical optical and landing zone, to a bi-toric optical zone and quadrant specific landing zone. The diameter of a scleral lens ranges from 13-24mm. At this time there is no consensus and no fixed set of rules as to what design works best for a specific eye.

A Bi-toric scleral lens is defined as a lens with 2 different curves in the posterior segment of the lens adding astigmatism to the limbal and landing zone of a lens. Being able to add toricity to the limbal and landing zone of a lens will give a better alignment and improves patient comfort in those who have a highly irregular ocular surface.

In this poster we describe the choice for a bi-toric optical zone when using a Zenlens (Bausch + Lomb, USA).

History

30-year-old female referred through an ophthalmologist for specialty contact lenses. Her unaided visual acuity for both eyes is 6/10 (logMAR 0.22). She is currently switching between RGP lenses and prescribed glasses RE S+5.50 C-3.00 x 10 / LE S+5.50 C-2.00 x 175. Best corrected visual acuity for both eyes is 9/10 (logMAR 0.046).

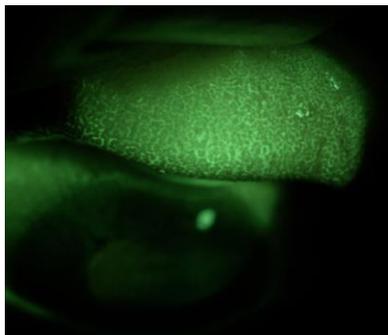


Image 1: GPC and MGD diagnosis

She is diagnosed with GPC (giant papillae conjunctivitis) and MGD (meibomian gland dysfunction). A lubricant was prescribed in combination with a gel drop and a warm compress. The patient has declined to use the drops and mask.

Upon evaluation of the eye with an ESP (Eye Surface Profiler, The Netherlands) it was decided to fit a scleral lens due to large toricity of the sclera.

Profilometry

Profilometry data was gathered using the ESP, and the ocular surface was evaluated. Due to the large amount of astigmatism in both eyes; >600 micron at a chord length of 17mm and >300 micron at a chord length of 13mm. It was decided to work with a toric haptic and toric limbal zone to ensure the best fitting lens (Image 2).



Image 2: Scleral toricity overview

The choice for a Zenlens BT was made as these lenses are more widely adjustable and suitable for high toric eyes. From experience we notice that in these exceptional cases a toric landing zone just isn't enough. Working with a BT gives us the ability to specify toricity around the limbal zone, and even the optical zone, to ensure no central touch or an excessive tear layer is present. Giving the patient an optimal fit and a pleasant experience

Final Fit

Zenlens BT 17 OD BCR 8.8 Sag 4550 / 4800; flat +7 / flat +1

Zenlens BT 17 OS BCR 8.8 Sag 4600 / 4900; flat +5 / flat +1

With the final fit we can see an even distribution of fluorescein on the cornea and limbus (Image 3a, 3b). And no impingement or blanching on the sclera (Image 3c, 3d). The patient reported good comfort and a 12 hour wear time.

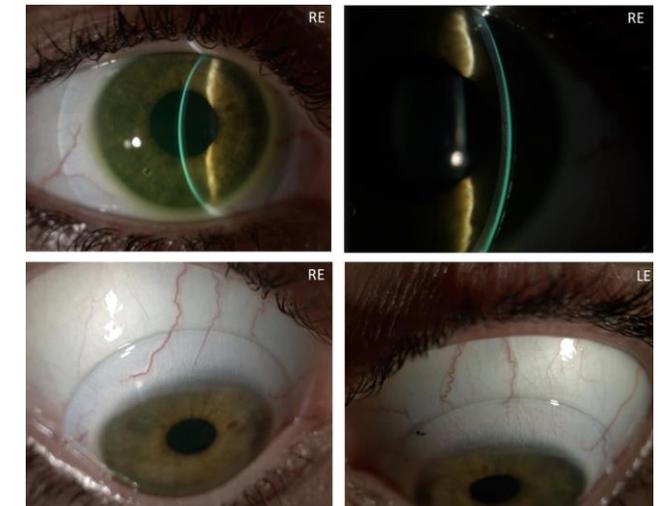


Image 3 (a, b, c, d): Scleral lens fit

Conclusion

Having accurate data on the ocular surface can help us select the right fitting lens. With more designs to choose from, we need more information on the surface to determine what lens design is the best fitting design. The ESP can provide accurate data on the sclera and cornea which can help in selecting the correct lens design.

References

Pullum, W., K., Whiting, A., M., & Buckley, J., R. (2005). Scleral contact lenses: The expanding role. *Cornea*, 24(3), 269-277. doi:10.1097/01.icc.0000148311.94180.6b

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