

Using an asymmetrical lens design for a patient with a pterygium

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Background

Semiscleral lenses are large diameter lenses which normally rest entirely on the sclera, unlike conventional contact lenses which rest on the cornea. Semiscleral contact lenses are sometimes an excellent option for irregular cornea because of their comfort. However, the presence of other factors such as pterygium and pinguecula can complicate fitting of this type of lens.

References

1. Walker, M., P. Caroline, M. Lampa, B. Kinoshita, M. Andre, and R. Kojima. 2014. A proposed mechanism for scleral lens induced conjunctival prolapse. Poster Presentation Global Specialty Lens Symposium, Las Vegas, Nevada, USA.
2. Caroline, P. 2012. Conjunctival prolapse, hooding, chalasis or... Contact Lens Spectrum 27:56.
3. Jedlicka, J. 2012. Solving Scleral Lens Complications. Contact Lens Spectrum 27:40-44.

Disclaimer

Patricia Flores-Rodríguez is partial employee of Menicon Co.; Ltd.

Conclusions

Asymmetrical parameters on large diameter contact lenses are an excellent tool for modern contact lenses. Especially in cases where pterygium / pinguecula cause an additional complication to the fitting.

Pertinent Findings

I. Ocular history:

A 27 year old male diagnosed with advanced bilateral keratoconus, had reduced visual acuity because of severe irregular corneal astigmatism. The topographical examination showed a protrusion in the inferior quadrant making it impossible to achieve the ideal fitting corneal contact lenses. He was referred by the ophthalmologist for fitting scleral contact lens to improve both comfort and visual acuity. No medications were prescribed.

II. Exams:

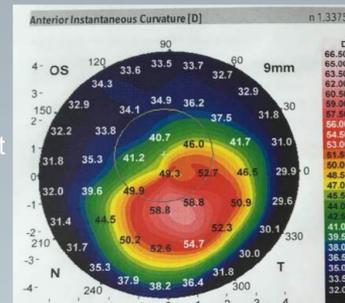
- Visual Acuity: Without contact lenses: 20/200; Subjective refraction: 20/80; Stenopeic hole (pinhole): 20/30
- Slimp Lamp: Corneal striae, corneal thinning in the lower cornea, Fleisher ring, Pterygium extending within the nasal quadrant (210° - 160°)



- Keratometry: 47.76 x 165° (7.07) 51.18 x 75° (6.59). AVE: 49.47 (6.82)

- Corneal topography: Oval keratoconus
Protrusion in the inferior quadrant

- Pachymetry: Thinnest: 357 µm
Central: 408 µm



Contact lens fitting

Fitting of the corneo-scleral Rose K2 XL lenses was performed following the manufacturer's instructions (Menicon) with the minimum clearance centrally (apical first touch); optimal limbal-scleral transition, and an edge that allows an optimal tear exchange. The lens should exceed 1.5 mm outside the limbus.

1° Order Lens:

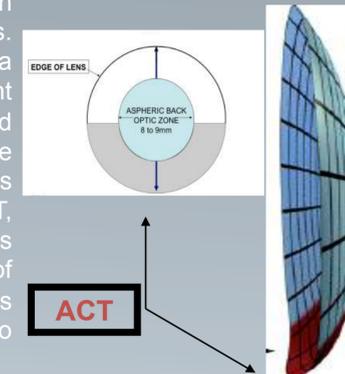
Increased Edge lift (EL) ; Peripheral toric (TP)

6.60/-7.25/14.60. EL +1.0 and TP 1.8

After 6 hours of wear, corneal staining, excessive blanching, conjunctival injection and staining in the area of pterygium was observed. These clinical signs suggest an increased sagitta (steeper base curve) and to incorporate Asymmetrical Corneal Technology (Reverse ACT) to Rose K2 XL.



Asymmetrical corneal technology (ACT) is an asymmetric option in the Rose K2 designs, which allow us to optimise the fit in irregular corneas. ACT enables the practitioner to specify a different posterior edge lift in a specific quadrant of the contact lens (normally inferior) compared to the rest of the posterior lens surface. Reverse ACT is used when the fitting indicates the lens is too tight in one quadrant. Using reverse ACT, enables the fitter to change the fitting in this specific quadrant to reduce the possibility of excessive pressure over this highest zone (This extra lift can be applied in one or two quadrants.)



Contact lens fitting

2° Order Lens:

Steeper base curve ; Increased Edge lift (EL) ; Peripheral toric (TP); Reverse ACT

6.30/-8.75/ 14.6. EL: +2.0, TP: 1.8, Reverse ACT grade 2.5 axis 185°.

After 7 hours of use, there was significantly reduced staining in the area of pterygium, with good vision and comfort.

Although it can be complex to use asymmetric parameters in designing a lens with steeper base curves, it is however possible to achieve good vision and comfort and reduce any excessive bearing over this highest zone in this case of a pterygium.

