

MANAGING AN EXTREME CONE USING CORNEO-SCLERAL LENSES WITH SPECIAL DESIGN FEATURES



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ΕΠΙΣΤΗΜΟΙ ΑΝΤΙΠΡΟΣΩΠΟΙ Menicon

Clinical Case Presentation

Patient: A 67-year old male with an extreme nipple keratoconus in both eyes (Fig.1).

History: Keratoconus was diagnosed at the age of 14 yrs. The patient had been wearing a 25mm PMMA scleral (haptic) lens for more than four decades, but lately he had been experiencing blurry vision and reduced acuity after a few hours of wear: a common complication known as “mid-day fogging”, caused by debris accumulation between the scleral lens and the cornea [1].

Findings: Corneal thinning but still healthy ocular surface.

Figure 1: Observing the keratoconic left eye from the side.



Corneal topography revealed (Fig.2):

RE → K1: 3.94@100 K2: 3.80@10 → Km: 3.87mm (87.3D)

LE → K1: 4.22@80 K2: 3.99@170 → Km: 4.11mm (82.2D)

Corneal thickness (thinnest locations): RE: 173µm and LE: 277µm

Corneal Topography – Management – Diagnostic Fitting

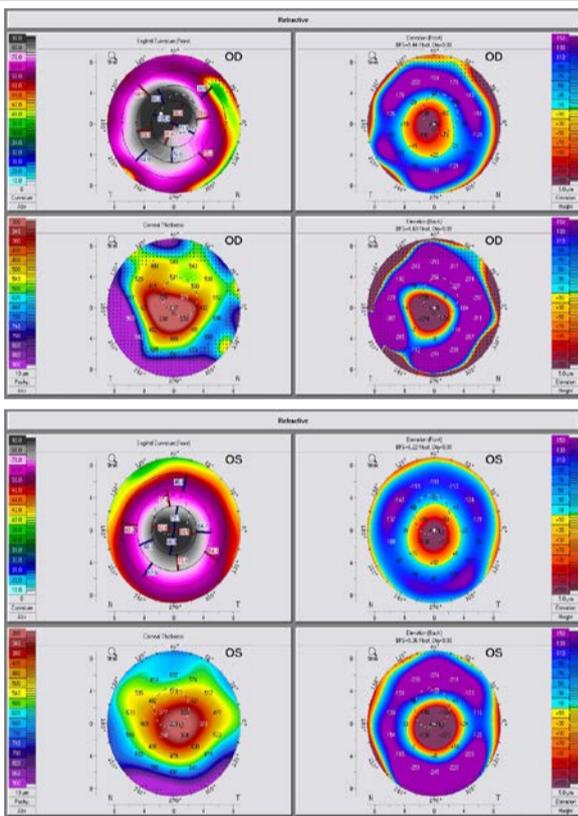


Figure 2: Corneal topography maps (Wavelight Allegro) for the Right (upper) and Left (lower) eyes, showing an extreme nipple cone.

Plan: To replace his PMMA lens with a lens with a high DK material. Due to the extreme cone, a **corneo-scleral Rose K2 XL** lens was fitted in both eyes.

Complains: Although fitting improved wear time, the patient reported **reduced vision quality** depending on lens rotation, **handling** problems and some **mucus buildup**. Also, there was a **breakage** in the 1st lens prescribed for the LE.

Management: To secure cornea oxygen requirements and to improve fitting the following issues were considered: [3]

- a **hyper-permeable material:** Menicon Z (Dk:163)
- a **max (260µm) central thickness** to reduce lens flexure.
- a **Quadrant Specific Edge Lift Design:** an asymmetric edge option, to achieve different edge lifts to each quadrant.
- preservative free **artificial tears** on insertion than saline.
- an extra cleaning step (Progent) to remove protein deposits [2]

Summary: a customized corneo-scleral lens with special design features was needful for this special case.

Figure 4: Lens “deposits” (LE)



Figure 3a (RE): A very light feather touch at the highest point of the cornea is notable. Figure 3b (LE): Steep central fit, insufficient edge lift (especially between 225-315 deg)



Table 1: Diagnostic fitting – CLs Parameters

CLs Parameters		Comments
RE		
1st	Rose K2 XL BC: 6.00 / 14.60 / -15.75 / EL: -0.50	VA 0.8 12h-per-day wear time
LE		
1st	Rose K2 XL 5.90 / 14.60 / -15.00 / EL: -0.50	Fig. 3b Increase DIA / Flatten BC
2nd	Rose K2 XL 6.10 / 15.00 / -13.50 / EL: +1.0	Fig. 4 Asymmetric EL
3rd	Rose K2 XL (Z material) QUAD.SE.L. 6.10 / 15.00 / -13.50 EL: +1.50 @ 270 deg / EL: +1.0 other quadrants 0.26 mm Special (max) Central Thickness	VA 0.4 Comfort improved

Conclusions

- ✓ Refitting a scleral lens user to a smaller diameter lens is a challenging issue due to issues in comfort / handling.
- ✓ A corneo-scleral lens, like RoseK2 XL, in a high Dk material, could offer similar comfort to a scleral lens, delivering significantly more oxygen to the cornea.
- ✓ Customized specialty options (i.e. toric / quadrant specific lens designs, flexible edge lift, special central thickness) secure a proper alignment with the irregular cornea, increasing comfort and wearing time.
- ✓ Patients symptoms and complaints should be carefully recorded and managed to limit the complications associated with contact lens wear.

References

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*Disclosure: Contact-lenses.gr is the official distributor of Menicon products in Greece.