

# Beyond the obvious in the fitting of specialty contact lenses

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## Background:

Quite often, we select specialty contact lenses based on corneal topography since it gives us an idea of how a contact lens (CL) should be aligned on the corneal surface. However, in this clinical case series, we invite the specialist to look past the obvious, seek the best selection of CL design beyond topography, and value the visual system as a whole. The correct lens selection should be defined by the corneal surface, previous ocular history, motivation, ease of handling, and patient comfort.

## Clinic Case 1:

**Patient Information:** Male 50 years old

**General History:** Rhinitis, allergic, rheumatoid arthritis

**Ocular History:** Bilateral keratoconus diagnosed at age 15. Crosslinking both eyes at age 23, conventional GP CL wearer 15 years ago.

**Reason for consultation:** In the last year his CLs have caused recurrent keratitis and he feels his vision has decreased dramatically in the right eye. A few months ago he had a trial of scleral lenses, but because of his history of arthritis, lens handling was too difficult (he does NOT want to use scleral lenses). The patient would like to continue to wear corneal GP lenses without causing corneal scarring.

**Clinical History:**

Uncorrected VA: RE: CD @50 cms LE: 20/400

Keratometry: RE: 5.93/5.50 x 8 LE: 7.27/6.45 x 154

Refraction:

RE: -19.00 - 4.75 x 45 VA 20/400

LE: -2.50 - 6.00 x 135 VA 20/70

**Slit Lamp:**

RE: Central leukoma, corneal scarring, major corneal de-

epithelialization at 3 & 9 o'clock, moderate papillae (Image 1)

LE: Staining inferior limbus and inferior conjunctiva, moderate

papillae

**Intraocular pressure:** RE: 14 mmHg LE: 14 mmHg

**Corneal topography (Table 1)**

Both Eyes: Large protrusion and corneal thinning in the central area, IS, SAI, SRI indices outside normal limits. The pattern coincides with Nipple keratoconus.

## Fitting process:

**INITIAL TRIAL LENS (Table 2)**

The selection of the initial lens is made based on the ROSE K fitting guide.

RE: 6.70 / -17.00 / 8.3 LRI Standard ROSE K2 NC

LE: 6.70 / -7.00 / 6.6 LRI Standard ROSE K2 NC

Eye	Initial Parameters	Fluorogram	Description	Remarks	Final Fluorogram	Final Parameter
Right	BC: 5.70 PMW: -17.00 Diam: 8.3 LRI Standard ROSE K2 NC	After 10 min	Central fit: Central accumulation, with a slight approach at the central apex. Peripheral fit: Adequate in vertical meridian, in horizontal meridian slightly steep. Diameter: Optimal Location: Interpalpebral Movement: Poor Over-refraction: -5.00 VA 20/25	When the closed edge is observed on the horizontal meridian (8 & 9 o'clock) and the open edge on the vertical meridian, a toric peripheral curve is suggested.	BC: 5.70 PMW: -21.75 Diam: 8.3 TP: 0.8 LRI Standard ROSE K2 NC	BC: 5.70 PMW: -21.75 Diam: 8.3 TP: 0.8 LRI Standard ROSE K2 NC
	BC: 6.70 PMW: -7.00 Diam: 8.6 LRI Standard ROSE K2 NC	After 10 min	Central Fitting: Close-up at corneal apex Peripheral fitting: Inadequate, closed 360° Diameter: Optimal Position: Interpalpebral Movement: Poor Over-refraction: +1.50 VA 20/20	To improve the 360° edge it is necessary to add a generalized edge lift, additionally it is necessary to lighten the BC to allow a better central toric exchange.	BC: 6.60 PMW: -8.25 Diam: 8.6 LRI +1.50 ROSE K2 NC	BC: 6.60 PMW: -8.25 Diam: 8.6 LRI +1.50 ROSE K2 NC

## CONDUCT

- Fitting ROSE K2 NC design contact lenses
- Preservative-free ocular anti-allergic drops every 12 hrs for 2 months
- Preservative-free lubricant every 8 hrs for permanent wear

## FINAL EVALUATION OF THE FITTING

These data correspond to a follow-up of 6 months of fitting. Office visits were every month to follow up the corneal lesion, ocular surface, tolerance, and handling.

VA with lenses RE: 20/25 LE: 20/20

Daily wearing time: between 12-15 hrs

Slit lamp: both eyes show lenses centered with interpalpebral position, in the central fitting the first apical touch is observed, the peripheral fitting is adequate 360° giving an excellent tear exchange. No corneal or conjunctival staining was observed when the contact lenses were removed. Comfort assessment: 10/10

## CONTACT LENS CARE

The following was recommended:

- Hand washing with soap and water when handling the lens.
- DO NOT wash contact lenses with WATER.
- Use multipurpose solution for daily cleaning.
- Use Progent as a biweekly disinfectant.

## Conclusion:

This clinical case demonstrates that while a scleral lens may initially be considered the best option for the patient's corneal staining and dry eye, lens handling was too difficult due to his arthritis (he does NOT want to use scleral lenses). We chose the scleral design and added a generalized edge lift (ROSE K2 NC) that addressed this patient's visual demands and suited his capabilities better.

## Clinic Case 2:

**Patient Information:** Female 55 years old

**General History:** Allergies

**Ocular History:** Incisional keratotomy more than 25 years ago in both eyes

**Reason for consultation:** Many years ago, she was told the best correction for her eyes were CLs, but she did not want to wear them. However, because of her dramatically decreased vision she wants to try CLs now.

**Clinical History:**

Keratometry: RE: 9.58/8.81 x 32.2 LE: 12.55/9.48 x 154

Refraction:

RE: -5.00 -4.00 x 45 VA 20/80

LE: -1.00 -7.00 x 125 VA 20/60

**Slit Lamp:** Both eyes: Radial and arcuate scars with staining over some incisions,

corneal edema, moderate conjunctival hyperemia, loss of palpebral architecture and meibomian gland dysfunction. (Image 2)

**Intraocular pressure:** RE: 22 mmHg LE: 24 mmHg

**Corneal topography (Table 3)**

RE: The axial map shows a curvature in the lower quadrant of the cornea, and an abrupt flattening in the upper quadrant of the cornea. Increased corneal thickness both central and peripheral (possibly associated with corneal edema observed in slit lamp). Asymmetric and irregular pattern in the elevation map.

LE: Flat curvatures in the center of the cornea and significant curvature in the periphery, loss of orthogonality, increased thickness in the central and peripheral part, asymmetric and irregular pattern in the elevation map.

**Co-management:**

- Corneal specialist for management of corneal edema as observed in slit lamp and Pentacam pachymetric map.
- Glaucoma specialist due to high intraocular pressure (possible glaucoma).

## Clinical Decision

After a detailed analysis of the clinical history, tests requested and recommendations of the Cornea and Glaucoma specialist (due to alteration of the endothelial cells and her diagnosis of glaucoma with high intraocular pressure), it was decided not to fit scleral lenses. Instead, it was decided to fit a corneal contact lens for irregular cornea, the ROSE K2 PG design (an oblate design to accommodate the patient's topographic characteristics).

## Fitting process:

**INITIAL TRIAL LENS (Table 4)**

The selection of the initial lens is made based on the ROSE K2 PG fitting guide

RE: 9.00 / +2.00 / 10.4 LRI Standard ROSE K2 PG

LE: 9.00 / +2.00 / 10.4 LRI Standard ROSE K2 PG

Eye	Initial Parameters	Fluorogram	Description	Remarks	Final Fluorogram	Final Parameter
Right	BC: 9.00 PMW: -12.00 Diam: 10.4 LRI Standard ROSE K2 PG	After 10 min	Central fit: Central build-up, with a slight approximation to the higher elevation area. Peripheral fit: 360° offset Diameter: Optimal Location: Interpalpebral Movement: Optimal Over-refraction: -0.80 VA 20/40	To improve the 360° periphery, it is necessary to perform a 360° edge lift. To improve the approximation in the higher elevation area, a higher BC is recommended.	BC: 9.70 PMW: -12.25 Diam: 10.4 LRI +2.00 ROSE K2 PG	BC: 9.70 PMW: -12.25 Diam: 10.4 LRI +2.00 ROSE K2 PG
	BC: 9.00 PMW: -12.00 Diam: 10.4 LRI Standard ROSE K2 PG	After 10 min	Central fit: Central build-up, with a slight approach in the higher elevation area. Peripheral fit: Slightly better Diameter: Optimal Location: Interpalpebral Movement: Optimal Over-refraction: -1.00 VA 20/25	To improve the approach in the higher elevation area, a higher BC is recommended.	BC: 9.80 PMW: -12.50 Diam: 10.4 LRI Standard ROSE K2 PG	BC: 9.80 PMW: -12.50 Diam: 10.4 LRI Standard ROSE K2 PG

## FINAL EVALUATION OF THE FITTING

These data correspond to a 6-month follow-up of fitting. Office visits were every month for followup of corneal edema, intraocular pressure, incisional scars with contact lenses. Visual lenses RE: 20/30 LE: 20/25  
Slit Lamp: First apical touch in the highest elevation area, excellent tear exchange, optimal periphery, centered lens, and optimal movement are observed in both eyes. When removing the lenses after 8 hrs of use, NO corneal staining is evident. Daily wearing time: between 9-10 hrs. Intraocular pressure RE: 19 mmHg LE: 18 mmHg. Comfort assessment: 9/10

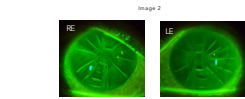


Table 3

Eye	Corneal curvatures	Axial Map	Pachymetric Map	Posterior Elevation Map
Right				
Left				

Corneal specialist recommendations

- Significant alteration of endothelial count (polymegathism and pleomorphism) consistent with the corneal edema. He controlled the corneal edema with pharmacological treatment.
- Suggested NOT to fit scleral lenses due to important alteration in the endothelial count.
- The specialist authorizes the fitting of corneal CLs.

Glaucoma Specialist recommendations

- Open Angle Glaucoma Diagnosis
- Hypotensive treatment
- Suggested not to fit scleral lenses

## CONTACT LENS CARE

The following was recommended:

- Hand washing with soap and water when handling the lens.
- DO NOT wash contact lenses with WATER.
- Use multipurpose solution for daily cleaning.
- Use Progent as a biweekly disinfectant.
- Change lens holder every month.

## Conclusion:

Sometimes the most common contact lens choice in the course of irregular cornea management is not the best option. A detailed analysis of medical history, special examinations and co-management with specialists make the difference in successful specialty lens choice, fitting and follow-up.

**Affiliations:** Both authors are Professional Services Staff for Mencon.