

BACKGROUND

One challenge in fitting keratoconus and post-graft eyes is choosing whether corneal GPs or scleral lenses are appropriate. Corneal GPs may be more difficult to fit depending on corneal shape but remain a healthy option for post-graft and keratoconic eyes. With the rise in popularity of scleral lenses due to ease of fit in very irregular corneas, concerns remain of long term effects on corneal health with unnecessary hypoxic stress on the cornea and endothelium in patients with compromised corneal integrity. As hypoxic stress increases so does the chance of graft rejection.¹ High oxygen permeable lens materials used in scleral lenses can be used to manufacture corneal GPs which also provides increased tear exchange. This case will exhibit the corneal GP re-fitting for a post-graft patient to ensure corneal health.

CASE DESCRIPTION

A 54 year old male was referred for a contact lens refit and presents with a 20 year old penetrating keratoplasty OD and keratoconus OS.

- Patient's habitual corneal GPs of unknown age with entering VAs:
 - OD (figure 1): BC 6.5, DIA 10.5, Power -4.25; VA = 20/40
 - OS (figure 3): BC 7.25, DIA 9.5, Power -9.75; VA = 20/20-
 - Fitting: The lenses are immobile and center low to rest on the inferior conjunctiva OU. The OD lens has a large bubble with inferior lens edge lift off.
- Diagnostic fitting was done with RoseK lenses (Boston XO) and lenses were ordered:
 - OD: (RoseK2 IC) BC 6.2, DIA 11.0, Power -8.75, grade 2 (1.0) ACT (Aspheric Corneal Technology); VA = 20/25
 - OS (figure 4): (RoseK2) BC 7.0, DIA 8.9, Power -11.00; VA = 20/25
 - OD diameter was increased to avoid mechanical trauma to the graft from the edge of the lens while the OS diameter was decreased to help promote centration. The ACT was added OD to begin minimizing inferior lift off.
 - Fitting:
 - OD - mobile with central pooling comparable to habitual, excessive inferior lift off remains but superior peripheral edge lift is minimal.
 - OS - mobile and centers on the cornea with 3 point touch NaFL pattern, slight inferior pooling remains.

- New OD lens ordered (RoseK2 IC):
 - OD (figure 2): BC 6.3, DIA 10.8, Power -8.00, 1.5 ACT; 20/20-
 - A flatter BC was chosen to relieve some central pooling and create a more oblate shaped lens. The ACT was increased without adjusting peripheral curve to avoid a too tight superior edge while minimizing inferior lift off.
 - Fitting: Lens is mobile and sits closer to center but remains on the inferior conjunctiva. Superior peripheral edge lift remains minimal and a large bubble persists inferior with inferior lift off.
- Last OD lens ordered (RoseK2 IC):
 - OD: BC 6.3, DIA 10.8, Power -8.00, 2.0 ACT; 20/20-
 - Again, only the ACT was increased to avoid creating a too tight superior edge while trying to minimize inferior lift off.
 - Fitting: Lens remains mobile and inferior lift off persists but is improved.

CONCLUSIONS

Corneal GP fitting on keratoconic and post-graft eyes may be challenging but allows for increased tear exchange compared to scleral GPs. Increased tear exchange provides better oxygen transmission to the cornea for long term graft health. This patient has been wearing corneal GPs successfully for twenty years and the graft remains in stable and healthy condition providing the patient with good visual acuity. In this encounter the fit of the patients lenses were improved but remain imperfect. Regardless, the patient's corneas will receive adequate oxygen supply to maintain graft health due increased mobility of the new lenses. Throughout all visits, the patient had no comfort or visual complaints. Corneal GPs should be considered prior to scleral lenses until more studies are conducted to show scleral lenses are a comparable option for long-term graft health.

BIBLIOGRAPHY

¹ Ensley, R., Miller, H. "A Reliable Post-PK Option." *Review of Cornea and Contact Lenses*, 15 Feb. 2019.

Corneal GPs remain a viable option for post-graft and keratoconic correction.

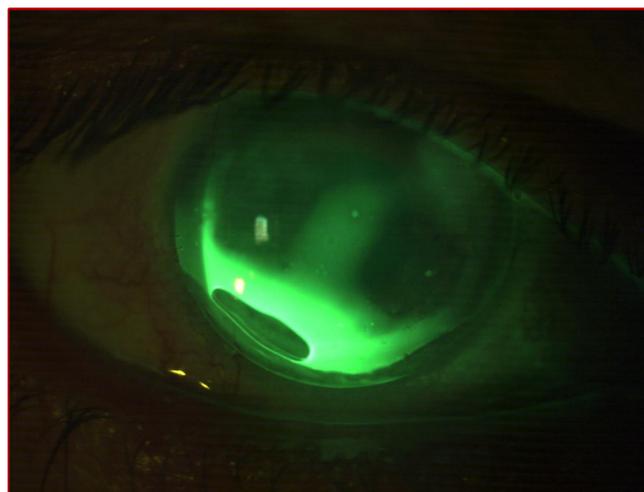


Figure 1. Habitual GP OD

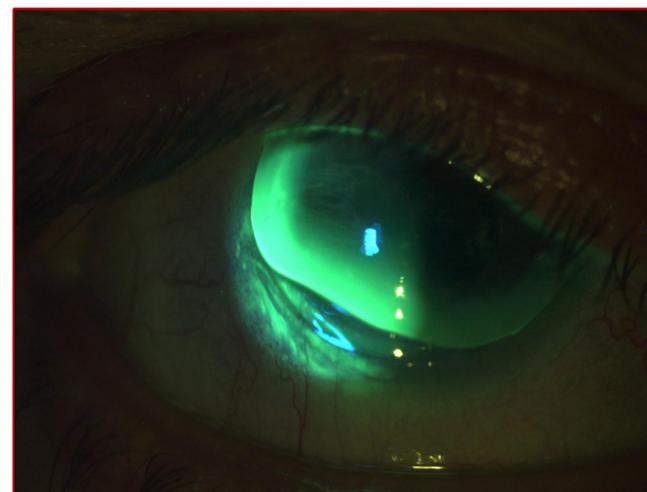


Figure 2. 2nd GP Lens Ordered OD

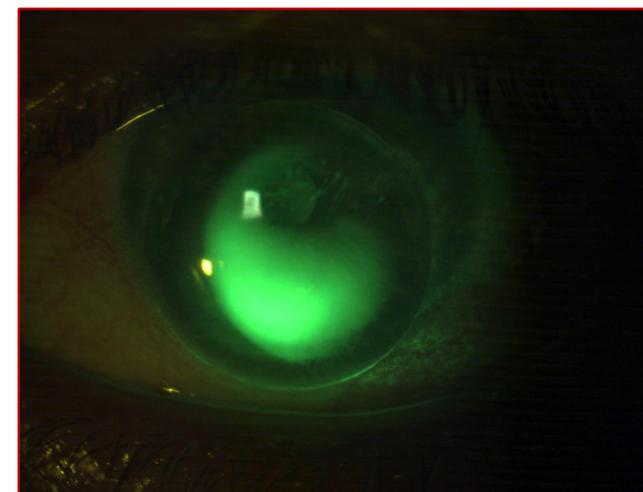


Figure 3. Habitual GP OS

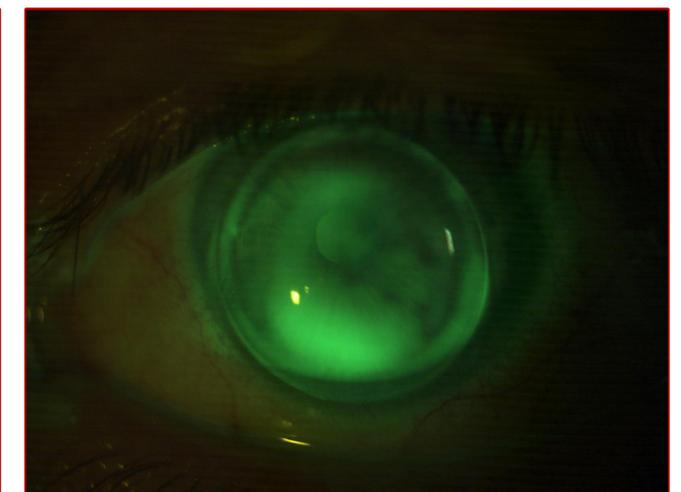


Figure 4. 1st GP Lens Ordered OS

OD GP Parameters	Type	Base Curve	Diameter	Power	Specifications
Habitual	Flosi	6.5	10.5	-4.25	unknown
2 nd Ordered	Rose K2 IC	6.3	10.8	-8.00	1.5 ACT

OS GP Parameters	Type	Base Curve	Diameter	Power	Specifications
Habitual	Flosi	7.25	9.5	-9.75	unknown
1 st Ordered	Rose K2	7.0	8.9	-11.00	None