THE OHIO STATE UNIVERSITY
COLLEGE OF OPTOMETRY

Corneal Transplant Avoided with a Corneal GP Fit for Keratoconic Eye

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BACKGROUND

Complication rates for penetrating keratoplasty have significantly improved in recent years and secondary enhancements may allow for an uncorrected visual acuity for 20/40 or better[1]. However, this procedure still carries a risk of endophthalmitis and requires long-term treatment with steroid drops to prevent graft rejection.

Although RGP fitting may be challenging, lenses may improve a patient's quality of life drastically without the need for invasive procedures and the risk of endophthalmitis. Keratoplasty may be required in patients who have failed with contact lenses. Contact lens failure is most often due to unacceptably poor vision, but may also be caused by intractable contact lens intolerance, frequent lens displacement, and significant corneal thinning[2]. If vision and comfort are acceptable with a contact lens, complications inherent to corneal transplantation can be avoided.

CASE DESCRIPTION

Initial exam

A 26 year old female was referred to The Ohio State Optometry Clinic for a contact lens fitting for keratoconus. The patient had been seen by an ophthalmologist the previous year and was told that contact lenses were not an option for her due to her steep corneas and that she required a corneal transplant. The patient could not afford surgery at the time so she had been correcting her vision with glasses since then.

- Vision w/ habitual glasses
  - OD 20/200, PH 20/30
  - OS 20/25
- Slit lamp exam
  - Mild corneal thinning OD
  - No striae or scarring
- Diagnostic fitting was performed and Rose K2 lenses were ordered

Dispense

- Vision: 20/20 OD/OS
- OR: Plano OD/OS
- Fitting
  - Fluorescein pattern: three point touch OU
  - Centration: centered OD/OS
  - Movement: good movement OD/OS
  - Edge lift:
    - OD: good edge lift superior and inferior, minimal edge lift temporal and nasal
    - OS: good edge lift 360

Patient very happy with vision!

2 week follow up

- Patient reports good comfort and vision
- Vision 20/20 OD/OS
- OR: Plano OD/OS
- Fitting:
  - OD: Minimal edge lift, 3&9 staining
  - OS: Excessive edge lift, 3&9 staining
- New lenses ordered
  - One step flat edge OD
  - One step steep edge OS

Second dispense

- Good edge lift OU
- Lenses finalized

CONCLUSIONS

Many, but not all, patients with keratoconus eventually require a transplant due to contact lens failure. However, primary treatment for vision correction should still be an initial contact lens fitting. Most keratoconus patients are likely to experience acceptable vision and comfort in contact lenses without the need for keratoplasty. This approach minimizes the risk of endophthalmitis to the patient as well as the need for chronic steroid treatment.

3 and 9 o'clock staining is a common side effect of poor edge design or inadequate movement on a corneal GP lens[3]. Too much or too little edge lift causes desiccation of the adjacent cornea and often discomfort for the patient. This can be solved by increasing or decreasing the edge lift appropriately or by initiating dry eye treatment if edge lift already appears appropriate.

BIBLIOGRAPHY

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2. Lass JH, Lembach RG, Park SB, Hom DL, Fritz ME, Svilar GM, Nuamah IF, Reinhart WJ, Stocker EG, Keates RH, et al. Clinical management of keratoconus. A multicenter analysis. Ophthalmology. 1990 Apr;97(4):433-45.
3. Bell, Gary. (1997). A New Theory on 3 and 9 O'clock Staining. Contact Lens Spectrum. Dec 1997.

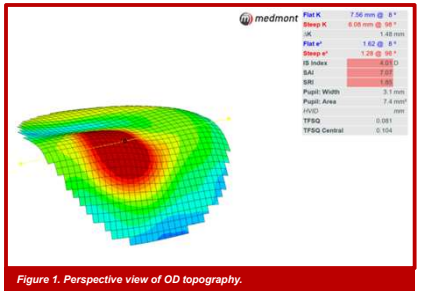

Figure 1. Perspective view of OD topography.

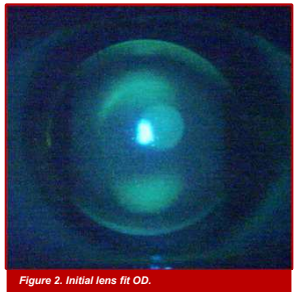
Figure 2. Initial lens fit OD.


Figure 3. 3 & 9 staining OD.

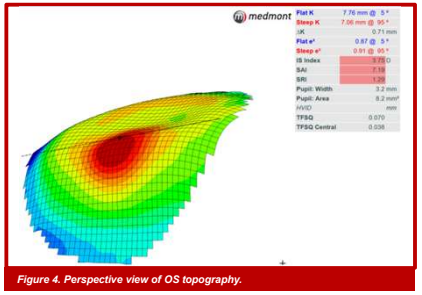

Figure 4. Perspective view of OS topography.


Figure 5. Initial lens fit OS.


Figure 6. 3 & 9 staining OS

OD GP Parameters	Type	Base Curve	Diameter	Power	Edge	Specifications
First order	Rose K2	7.10	9.0	-5.00	Standard	Grade 1 ACT
Second order	Rose K2	7.10	9.0	-5.00	Standard flat	Grade 1 ACT

OS GP Parameters	Type	Base Curve	Diameter	Power	Edge	Specifications
First order	Rose K2	7.60	9.2	-3.00	Standard	None
Second order	Rose K2	7.60	9.2	-3.00	Standard steep	None