

INTRODUCTION

Scleral lenses can be used to mask various corneal irregularities including post-refractive surgery-induced ectasia. LASIK creates a thinner cornea after utilizing an ablation laser. Multiple LASIK treatments can result in ectasia due to a significant loss of corneal tissue along with other predisposing factors. Corneas with ectasia can be treated with corneal cross-linking or Intacs inserts to prevent further thinning or perforation. Ectasia often results in irregular astigmatism and increased higher-order aberrations. Although corneal GP lenses can be fit, friction can erode the cornea and expose Intacs. Sclerals provide a safe mode of correction over thin and irregular corneas.

HISTORY

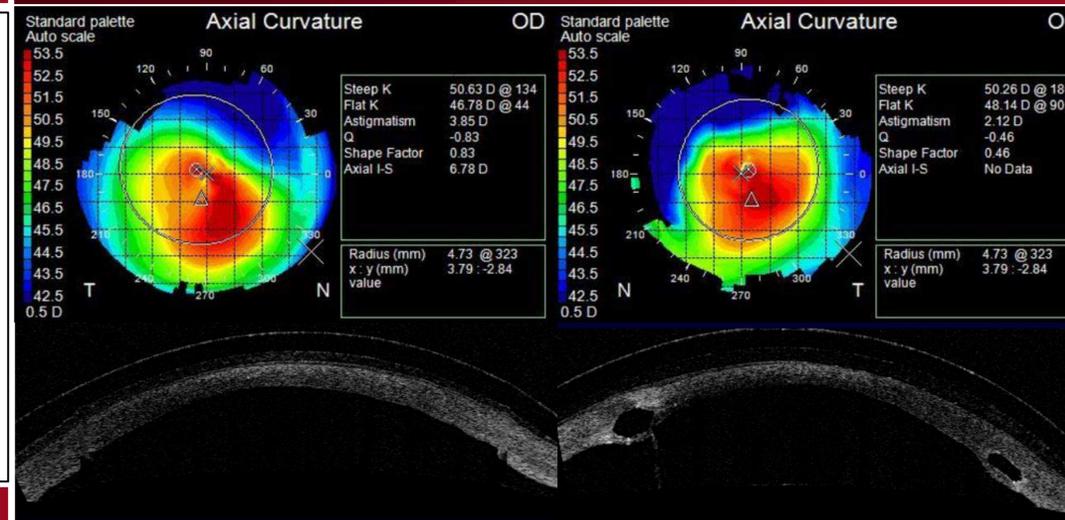
A 58 year-old Caucasian female presented for a contact lens fitting with a history of bilateral post-refractive surgery induced corneal ectasia secondary to LASIK and LASIK enhancements treated with Intacs OS and corneal collagen crosslinking with resultant irregular topography.

EXAMINATION

Medical History: Unremarkable
Ocular History: LASIK, LASIK enhancements, post-refractive ectasia, Intacs OS, corneal crosslinking OU
Contact Lens History: Had worn rigid gas permeable lenses with limited success due to poor VA and visual distortions

Findings	OD	OS
Best Corrected VA	20/25	20/25
Spectacle Rx	-8.25-6.00x090	-10.00-4.00x095
External Evaluation	Normal	Normal
Palpebral Aperture	14mm	14mm
Horizontal Visible Iris Diameter	12mm	12mm
Biomicroscopy Exam	Corneal ectasia, most prominent inferiorly	Corneal ectasia, most prominent inferiorly, (+) Intacs
Keratometry (simK)	55.69 @ 144 50.15 @ 054	55.15 @ 166 52.24 @ 076

TESTING



- Topography in both eyes shows an inferior steep zone with irregular astigmatism
- Pachymetry readings were 458 microns OD and 370 microns OS
- Intacs present OS only with no adjacent inflammation or neovascularization
- Macular OCT demonstrated normal foveal structure OU

RESULTS

The patient continues successfully wearing scleral lenses daily. She returns annually for a contact lens fit to ensure the scleral lenses are still safe, comfortable, and providing good vision. Her VA is 20/25 OD, OS and she reports fewer higher-order aberrations. Her latest visit revealed a mild change in prescription and new Europa lenses were ordered. Her topography is stable and shows no progressive corneal thinning.

FINAL CONTACT LENS PARAMETERS

Eye	Brand	Sagittal Depth	BC	Diameter	Power
OD	Visionary Europa	4387 sag	7.85 mm BC	16.0mm diam	-0.25 sph
			100 um toric PC		20/25
OS	Visionary Europa	4803 sag	7.11 mm BC	16.0mm diam	-4.75 sph
					20/25

The patient is happy with the fit and the visual acuity obtained with scleral lenses. After many procedures and dozens of contact lenses, she prefers wearing sclerals over other modes of correction and does well with the Europa design. The patient is followed regularly to ensure the fit remains acceptable and vision remains stable.

DISCUSSION AND CONCLUSION

A relatively rare post-refractive surgical complication, particularly of LASIK, is corneal ectasia. The cornea is structurally weakened as a result of the ablation laser and the creation of the flap. Additional LASIK treatments will result in thinner corneas and increased potential for corneal ectasia. Patient who are left with corneal ectasia can experience decreases in visual acuity, along with higher-order aberrations and distortions.

Patients with corneal ectasia can undergo different surgical procedures, such as corneal collagen crosslinking or Intacs implantation. Corneal crosslinking aims to stop and even regress ectasia. It may decrease keratometry values and reduce mean corneal curvature, but additional research is needed. Intacs aim to decrease corneal irregularity by decreasing keratometry values. They are implanted in the deep stroma in the mid-peripheral cornea in an effort to flatten the central anterior cornea. It is still uncertain for how long Intacs stabilize these values and if these patients are less likely to require penetrating keratoplasties.

Patients with post-refractive ectasia can benefit from a proper scleral lens fit. The regular scleral surface vaults the irregular cornea and creates a new refractive surface that increases the visual acuity potential and decreases higher-order aberrations. These patients must be closely monitored as progressive thinning can result in the need for a penetrating keratoplasty. A safe scleral fit can dramatically improve these patients' vision. Motivated patients who unsuccessfully wear spectacles or GP lenses may benefit from scleral lens wear.

REFERENCES

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