



Front Surface Scleral Lens Toricity Secondary to Changing Corneal Sequelae from Herpes Simplex Virus

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INTRODUCTION

- Recurrent herpes simplex virus type 1 stromal keratitis (HSK) can induce stromal scarring, lipid keratopathy and neovascularization, causing permanent vision loss.¹ This case highlights the use of a scleral lens with front surface toric optics and quadrant-specific back surface periphery to optimize vision and fit in a patient with evolving corneal sequelae from chronic but quiescent HSK.

BACKGROUND

- Chief Complaint: KS, a 47 year old Caucasian male, was referred by his corneal specialist for a medical contact lens evaluation to rehabilitate vision in his right eye due to corneal scarring.
- Ocular History: recurrent HSK OD first diagnosed at age 10, last flare in 2015. Previous soft CL wear x 20 years. Wears single vision distance glasses for computer and driving, last updated 1 year ago.
- Medications: 500mg valacyclovir PO BID, 1% prednisolone acetate BID OD
- Personal and Family Medical History: non-contributory
- Allergies: none

CASE PRESENTATION

Pertinent Findings	Right Eye
Visual Acuity	20/50 cc, PH 20/25
Cornea	Large caliber inferotemporal stromal neo, 6 mm from limbus. Anterior stromal haze 5x6 mm in inferior half with central lipid deposits in stroma.
Bulbar Conjunctiva	Mildly elevated nasal pinguecula, (-)injection
Anterior Chamber	Deep and quiet
Intraocular Pressure	12 mmHg



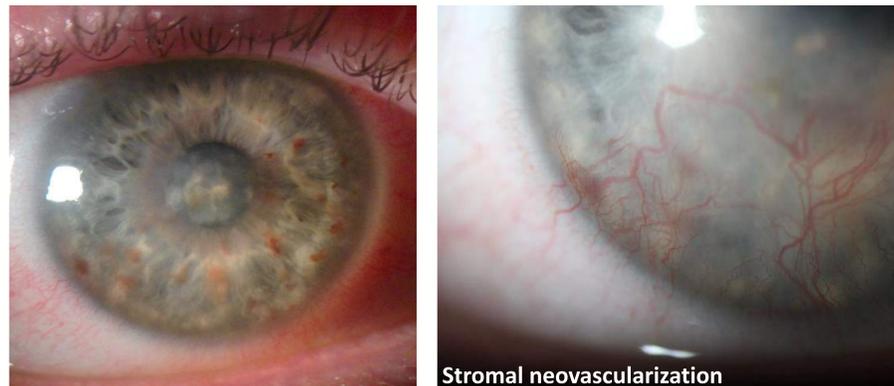
- KS was fit into a scleral lens with quadrant-specific haptic design to achieve edge alignment in all quadrants with BCVA of 20/25.
- Lens fit: 200µm of clearance over central scar, good limbal clearance and edge alignment, no compression on nasal pinguecula

RESULTS

Initial Lens Design	BC	Power	OAD	LCZ	SLZ	Material	Tint
Custom Stable Elite (Valley Contax, Springfield, OR)	8.65	+2.50	14.8	0.5 flat	Q1 (+6) Q2 (0) Q3 (+2) Q4 (0)	Optimum Extra	Blue

[5 MONTH FOLLOW-UP]

- Chief Complaint: blur in scleral lens OD x 2 months.
- Medications: unchanged
- Visual acuity: 20/40
- Over-refraction: +0.25-1.00x018, BCVA: 20/25
- Cornea: denser central scarring and lipid deposits, more engorged inferotemporal stromal neovascularization, (-) infiltrates, (-)KPs
- Lens fit: stable



[DIFFERENTIAL DIAGNOSES]

- New lenticular astigmatism → clear natural lens
- Lens flexure → none as verified by autokeratometry
- Lens warpage → none as verified by radiuscope
- ✓ Unmasking of lenticular astigmatism secondary to corneal changes

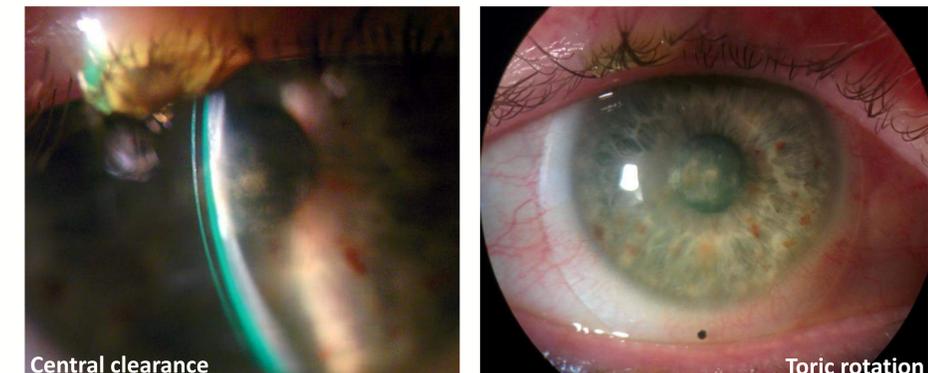
TREATMENT & MANAGEMENT

- A new lens was ordered in the same fitting parameters with added front surface toricity.
- KS was referred back to his corneal specialist. No active corneal infection was noted. A 3 month taper of 1% prednisolone acetate QID/TID/BID OD was initiated to treat the neovascularization with continued valacyclovir prophylaxis until his follow-up in 3 months.
- At 1 month CL follow-up: KS was compliant with medications. BCVA was 20/25 with no toric rotation and reduced neovascularization.
- Plan: RTC 6 months for corneal health and CL check or sooner prn.

CONCLUSIONS

- The chronicity of HSK drives progressive corneal scarring and neovascularization which can evolve during quiescence and unmask lenticular astigmatism in scleral lens wear.¹
- Quadrant-specific haptics optimize the rotational stability and edge alignment of scleral lenses with front surface toricity.²
- Monitoring for active HSK in patients on chronic antiviral therapy is critical to ensure prompt treatment and prevent further vision loss.³

Lens Design #2	BC	Power	OAD	LCZ	SLZ	Material	Tint
Custom Stable Elite (Valley Contax, Springfield, OR)	8.65	+2.50 -1.00x018	14.8	0.5 flat	Q1 (+6) Q2 (0) Q3 (+2) Q4 (0)	Optimum Extra	Blue



REFERENCES

- Lobo, A-M. (2018). Pathogenesis of herpes simplex keratitis: The host cell response and ocular surface sequelae to infection and inflammation. *The Ocular Surface*, <https://doi.org/10.1016/j.jtos.2018.10.002>.
- Rathi, F. (2018). The influence of limbal and scleral shape on scleral lens design. *Contact Lens and Anterior Eye*, 41(4), 321-328.
- Herpetic Eye Disease Study Group. (2001). Predictors of recurrent herpes simplex virus keratitis. *Cornea*, 20(2), 123-128.

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