THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Use of Commercially Available Scleral Lens for Persistent Epithelial Defect

Stephanie Pisano, OD
Havener Eye Institute, The Ohio State Universiiy, Department of Ophthalmology and Visual Science

Introduction

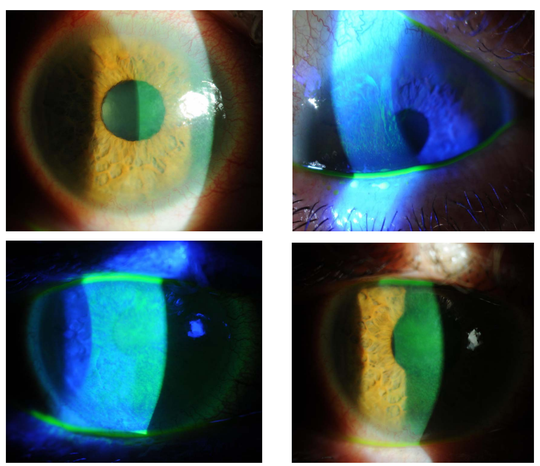
Persistent corneal epithelial defects can be a sign of limbal stem cell deficiency (LSCD). LSCD can be acquired secondary to prolonged use of soft contact lenses. Other symptoms of LSCD can include blurred vision, pain, light sensitivity and ocular dryness. In this case, the patient had failed multiple other treatments for her symptoms and was in the process of a scleral lens fit when she developed a persistent epithelial defect in the left eye. The scleral lens was used not only to improve the patient's symptoms from LSCD, but to also promote resolution of a non-healing epithelial defect.

Case Presentation

A 49 yo WF referred for specialty lens fitting from an internal corneal specialist with 2 year history of severe ocular surface disease with keratoconjunctivitis and severely reduced vision.

- CC: severe blurred vision with eye pain, light sensitivity and ocular dryness
- POH: High myopia with extensive history of non-compliant soft contact lens wear
- PMH: rosacea, ear reconstruction surgery
- History of punctal plugs, long term use of Restasis®, bandage soft contact lenses, preservative free artificial tears, topical steroids, and minocycline with minimal improvement in ocular symptoms
- BCVA with manifest refraction:
  OD: -10.00 -0.75 x 010 **20/300**
  OS: -5.75 -1.50 x 160 **20/100**
- Relevant Slit Lamp Findings OU: Blepharitis, 1+ injection, 2+ PEE with late stain whorl pattern present superiorly on cornea, peripheral neovascularization

Figure 1. Corneal surface at initial visit



In Office Scleral Lens Trial

Due to the extent of the ocular surface disease, the patient was fit into scleral lenses to improve the ocular surface and therefore improve the patient's decreased vision and symptom of light sensitivity. The parameters of the initial trial lenses are below:

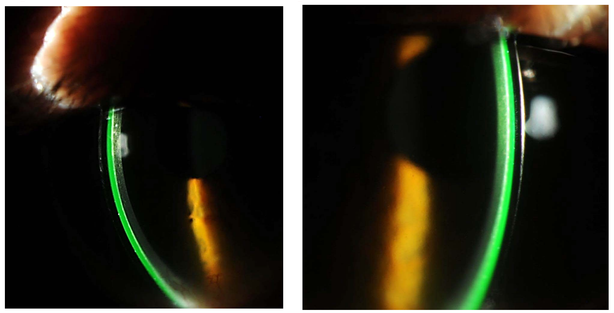
OD: Europa (Visionary Optics): 46 D / 16.0 mm : good corneal vault over entire cornea, fine vessel blanching in all 4 quadrants, good patient comfort

- With over-refraction: -8.00 DS **20/30+**

OS: Europa (Visionary Optics): 47 D / 16.0 mm : good corneal vault over entire cornea, fine vessel blanching in all 4 quadrants, good patient comfort

- With over-refraction -8.50 DS **20/20**

Figure 2. Initial trial lenses fit after settling 30 minutes



Emergency Visit

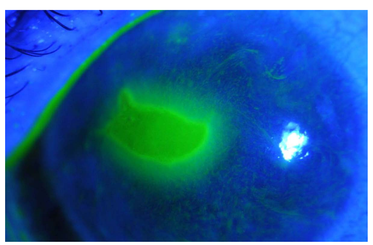
Prior to the patient's scleral lenses arriving in office for dispense, the patient presented with eye pain, decreased vision in the left eye for 1 day.

Entering VA (with current glasses): OD: 20/60, NIPH, OS: CF @5', NIPH

Relevant Slit Lamp Findings OS: 3.5 mm Horizontal x 1.5 mm Vertical corneal defect, 3+ injection, no infiltrate or hypopyon present

Plan: The patient was started on ciprofloxacin 1 gtt every hour while awake, and scheduled to return 3 days later

Figure 3. Corneal defect OS, initial presentation



Follow Up Care

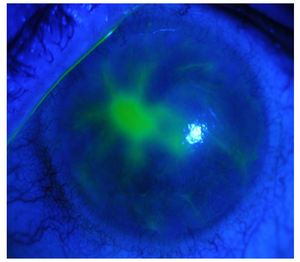
Days with Defect	Visual Acuity	Size of Defect	Management
Day 1	CF @5'	3.50 mm x 1.50 mm	Ciprofloxacin Q1hr
Day 3	CF @5'	3.50 mm x 1.50 mm	Place BCL Ciprofloxacin Q1hr
Day 6	20/400	3.00 mm x 1.00 mm	Continue BCL, Ciprofloxacin QID
Day 14	20/400	3.00 mm x 1.00 mm	Continue BCL, Ciprofloxacin QID
Day 21	20/400	2.50 mm x 1.00 mm	**Initiate scleral lens wear**

Initial Scleral Lens Dispense

Due to minimal improvement of corneal epithelial defect with traditional treatments, and non-infectious etiology, the patient returned for the initial scleral lens dispense (21 days after initial defect presentation).

- Entering VA (habitual glasses): **OD:** 20/50, **OS:** 20/400
- **Slit Lamp findings OD:** stable from initial visit, **OS:** defect present at 2.5 mm x 1.00 mm

Figure 4. Corneal defect OS, at dispense visit



The patient was able to successfully learn to insert and remove the lenses. The changes in the dispensed lenses from the original trials included changing material to Boston XO2 OU and flattening the peripheral curves in both eyes to help with mild blanching noted during the initial fit.

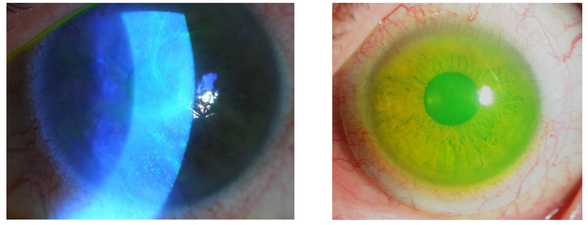
VA with scleral lenses dispensed: **OD: 20/25 OS: 20/50, PH 20/25**

Plan: Dispensed lenses OU to patient and Instructed to add 1 drop of ciprofloxacin 15 minutes prior to lens insertion and QID throughout the wear time. Patient to remove lens prior to sleeping and apply erythromycin ointment. Patient to follow up 5 days (not ideal, patient unable to return any sooner due to personal/family issues).

Follow Up Care After Initiating Scleral Lens Wear

Days of Scleral lens wear	Visual Acuity	Size of Defect	Management
Day 4	20/100	1.25mm x 1.00 mm	Continue Scleral Lens wear, Ciprofloxacin QID
Day 8	20/60	**Resolved, no defect**	Continue scleral lens wear, discontinue ciprofloxacin
Day 15	20/60	Stable surface	Continue scleral lens wear
Day 30	20/25	Stable surface	Continue scleral lens wear

Figure 5. Ocular Surface OS with healed defect and final scleral lens OS



Discussion

Acquired limbal stem cell deficiency (LSCD) is a condition that can cause varying degrees of od ocular signs and symptoms. LSCD acquired from long term CL wear is estimated to be 15% of all LSCD cases and is present in 2.4-5% of CL wearers. Patients with CL induced LSCD are more likely to be female, over age 40, and have more than a 10 year history of soft lens wear. In this case, traditional treatments for treating the epithelial defect had failed. This patient was successfully able to wear scleral lenses to help resolve a non-healing epithelial defect in the left eye. She continued to wear the lenses after the defect healed due to her underlying ocular surface disease and limbal stem cell deficiency in both eyes.

Conclusion

- Scleral lenses are one option to help reduce the symptoms of LSCD, improve vision, and maintain the ocular surface.
- In certain cases, patients with non-healing epithelial defects may benefit from scleral lenses in their unique ability to protect the ocular surface

Acknowledgements

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Sources

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