



Scleral Lens Abates Neurotrophic Keratitis in Severe Dry Eye Patient



MAJ Marcelo Moya OD and MAJ Christopher Alferez OD, FAAO
Primary Care Optometry Residency
Brooke Army Medical Center, Joint Base San Antonio, TX

Abstract

Neurotrophic keratitis (NK) is a debilitating disease that can lead to further complications which may be difficult to manage. This case discusses the early signs of NK and the application of scleral lenses as an effective treatment modality.

Background

Corneal sensory nerves originate from the ophthalmic branch of the fifth cranial nerve and play a vital role in corneal health. From chemical signaling of metabolic pathways to nutrient support, the loss of corneal sensory nerves leads to stromal melting and possible corneal perforation.¹ Corneal sensory nerve deterioration is the etiology of NK. Deterioration can occur from damage to the trigeminal nerve or directly to corneal nerves. Since corneal sensation is decreased, most patients are asymptomatic.

Case Report

80-year-old female with a history of scleral lens wear for dry eyes presents with early signs of NK after not wearing her lenses consistently. Corneal health markedly improves after lenses are worn regularly.

Medical history: Type 2 diabetes

Medications: Lifitegrast ophthalmic solution 5% BID, serum tears BID, refresh plus 0.5% QID, lacrilube ophthalmic ointment QHS, glimepiride 2 mg tab once daily

Chief complaint: Patient notes good comfort and vision with lenses.

Visual Acuity: OD 20/40, OS 20/50-2

Lenses: OU: Scleral Lens Prolate/17.0 Diameter/7.8 BC/5050 SAG/Steep 2 edge/-1.00DS

Central vault: OD 240µm, OS 240µm

Limbal vault: touch nasal at limbus OU

Haptics: compression inferior nasal OU

Over-refraction: OD +0.25 DS 20/40 PHNI, OS plano-1.75X049 20/20-2

Lens off stain: Inferior nasal OU

Slit Lamp Findings:

OD 1+ conjunctival injection, 1 mm vertical X 4 mm horizontal band of neo/pannus inferior cornea, 4+ corneal punctate epithelial erosions (PEE) along edge of pannus, 1+ haze central cornea, cotton wisp test: no sensitivity

OS 1+ conjunctival injection, 4+ PEE inferior cornea, cotton wisp test: no sensitivity

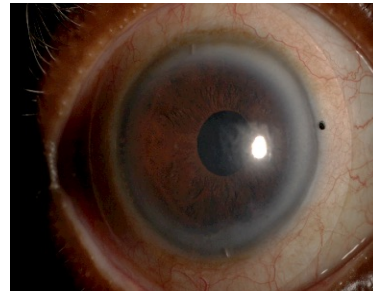


Photo of right lens

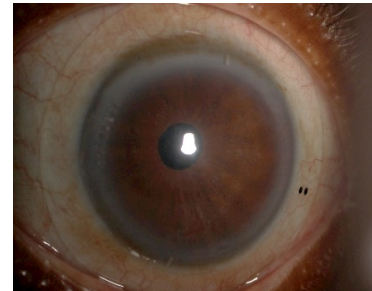
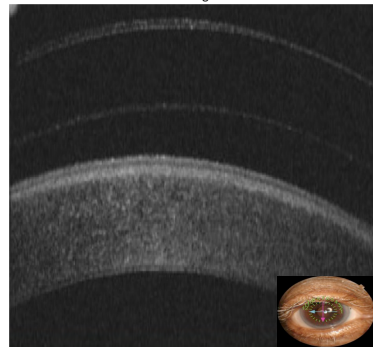
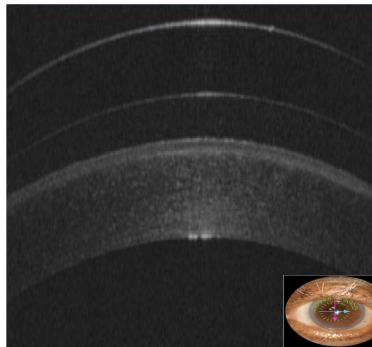


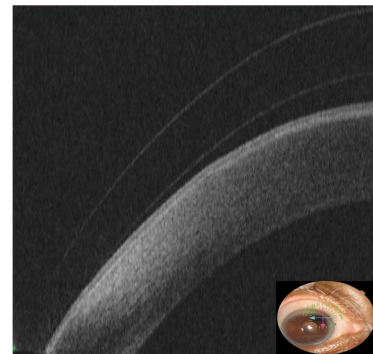
Photo of left lens



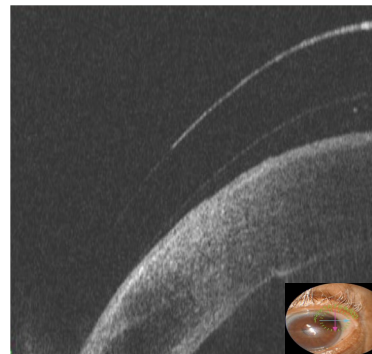
Central clearance of right lens



Central clearance of left lens.



Landing zone over limbus



Landing zone over superior cornea

Treatment/Management

The patient was refit to improve alignment and was advised to wear scleral lenses more often. She was instructed to instill two drops of serum tears along with sterile saline in the lens. The patient was followed up after five weeks and at the exam she reported wearing lenses during all waking hours. PEE decreased in both eyes to 2+ inferiorly and pannus decreased from 2.5mm to 1.7mm.

Discussion

NK is an orphan disease with a prevalence of 5 in 10,000 and incidence of less than 1.6 in 10,000.² NK severity is diagnosed in three stages. Stage I is corneal edema with punctate keratopathy. Stage II is characterized as having a persistent corneal epithelial defect. Stage III classifies a stromal melt and ulceration. Corneal sensitivity testing of an asymptomatic cornea with significant PEE may help detect early stages. Current treatment ranges from artificial tears to penetrating keratoplasty.³ Preservative free artificial tears may be used for Stage I. Surgical tarsorrhaphy and scleral contact lenses are indicated at stage II. Stage III may require a penetrating keratoplasty. Most treatments address passively the etiology of NK. Novel Nerve Growth Factor (NGF) medications have been developed to improve nerve growth directly and have proven a viable treatment method.⁴

Conclusion

In the case presented, scleral lenses used in combination of autologous serum had a favorable outcome in treating early NK.

References

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3. Sacchetti, M., & Lambiase, A. (2014). Diagnosis and management of neurotrophic keratitis. *Clinical Ophthalmology* (Auckland, N.Z.), 8(default), 571-579. [10.2147/OPHT.545921](https://doi.org/10.2147/OPHT.545921)
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Disclaimers

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