



Utilization of Custom Impression-Based Device for Optimal Alignment over Glaucoma Drainage Device in the Management of Neurotrophic Keratitis

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INTRODUCTION

- Neurotrophic keratitis (NK) is a degenerative corneal disease that results from impaired trigeminal innervation resulting in decreased corneal sensation.
- Patient RL has a history of persistent corneal epithelial defect in the setting of NK secondary to herpes zoster keratouveitis, as well as uveitic glaucoma requiring placement of a glaucoma drainage device (GDD).
- A method for achieving optimal scleral lens fit over irregular conjunctival patch graft tissue due to GDD will be presented.

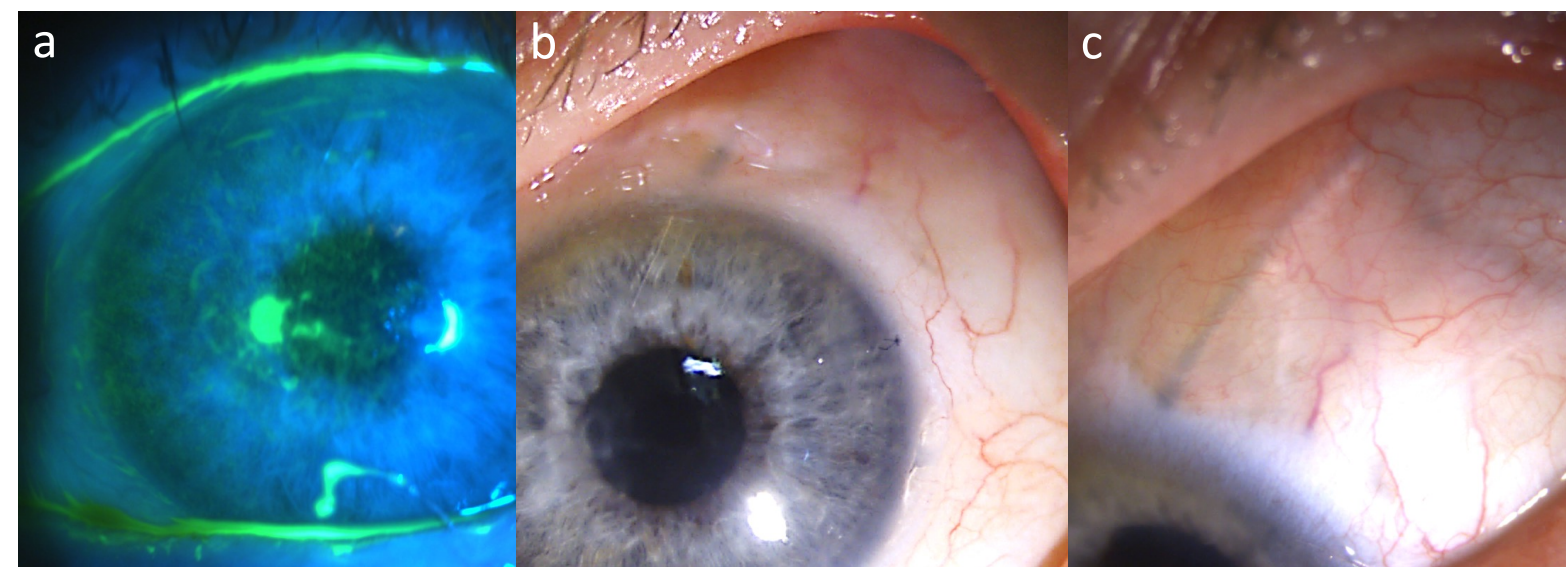
CASE PRESENTATION

Demographics	71 year old Caucasian male
Chief Complaint	Referred for scleral lens evaluation
Ocular History	<ul style="list-style-type: none"> Herpes zoster keratouveitis OS in 2016 Neurotrophic keratitis OS with recurrent non healing corneal epithelial defects Uveitic glaucoma OS s/p Ahmed tube shunt (11/13/18) S/p CEIOL OU
Medications OS	<ul style="list-style-type: none"> S/p partial lateral tarsorrhaphy S/p 8 week Oxervate therapy 20% autologous serum tears 4-6 times daily Erythromycin UNG nightly Brimonidine TID Preservative free Cosopt BID Valtrex 1 gram daily Preservative free artificial tears PRN
Past Medical History	Unremarkable

CLINICAL FINDINGS

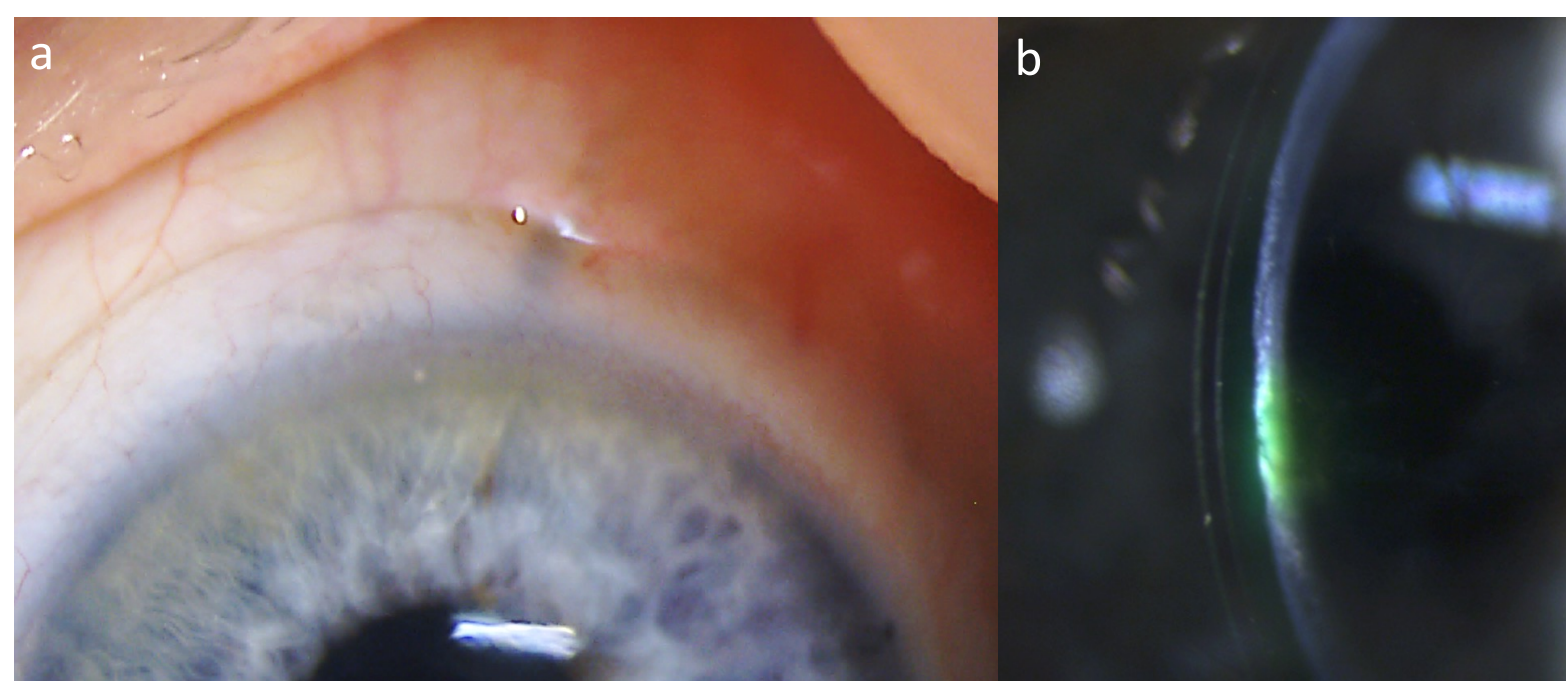
	OD	OS
Visual Acuity (MRx)	20/20	20/80
IOP	15	12
Pachymetry	568	425
Lids/Lashes	Clear	20% lateral tarsorrhaphy
Conjunctiva/Sclera	White & Quiet	Ahmed tube to AC – no exposure
Cornea	Clear	Central <1mm round epi defect nasal to visual axis – no infiltrate; irregular epithelium

Figure 1. Photos of OS showing (a) epithelial defect, (b) elevated patch graft over the (c) superior Ahmed tube



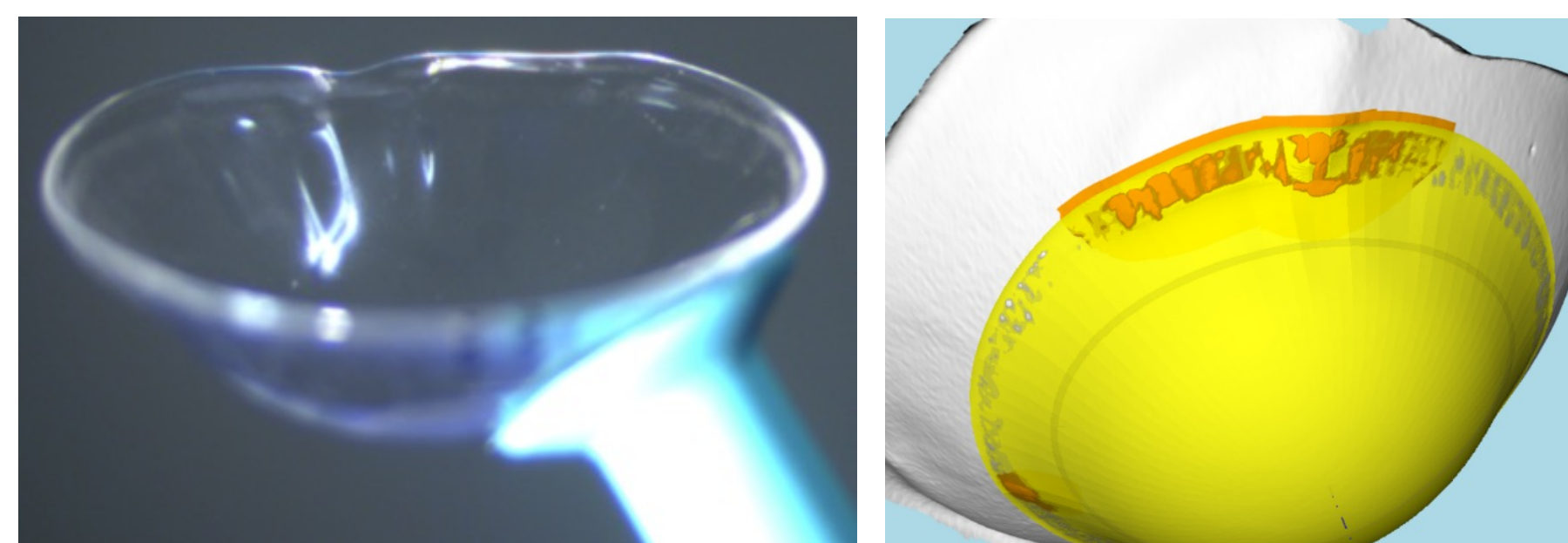
INITIAL SCLERAL LENS EVALUATION

Figure 2. When a diagnostic scleral lens was placed on OS, there was (a) impingement of the lens against the patch graft and (b) fluorescein uptake in the epithelial defect could be appreciated.



In order to achieve a more optimal fit over the GDD, an impression was taken and a custom scleral device was ordered.

EYEPRINT PRO (EPP) LENS



With the impression-based scleral lens:

- Optimal fit over the cornea and GDD achieved in 2 lens orders
- Visual acuity improved to 20/25

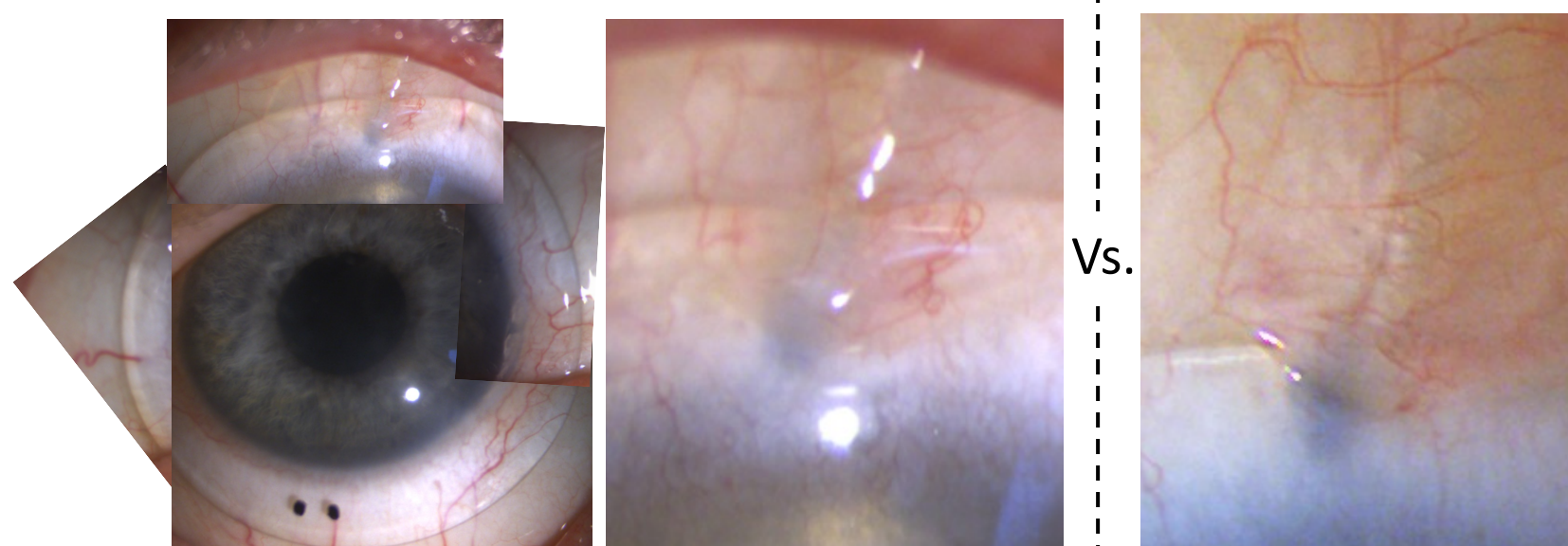


Figure 3. EPP lens with aligned scleral landing zones 360°

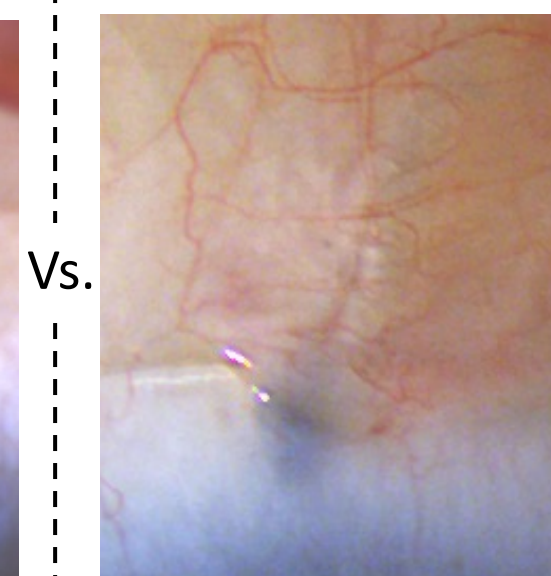


Figure 4. Poor alignment with a diagnostic lens

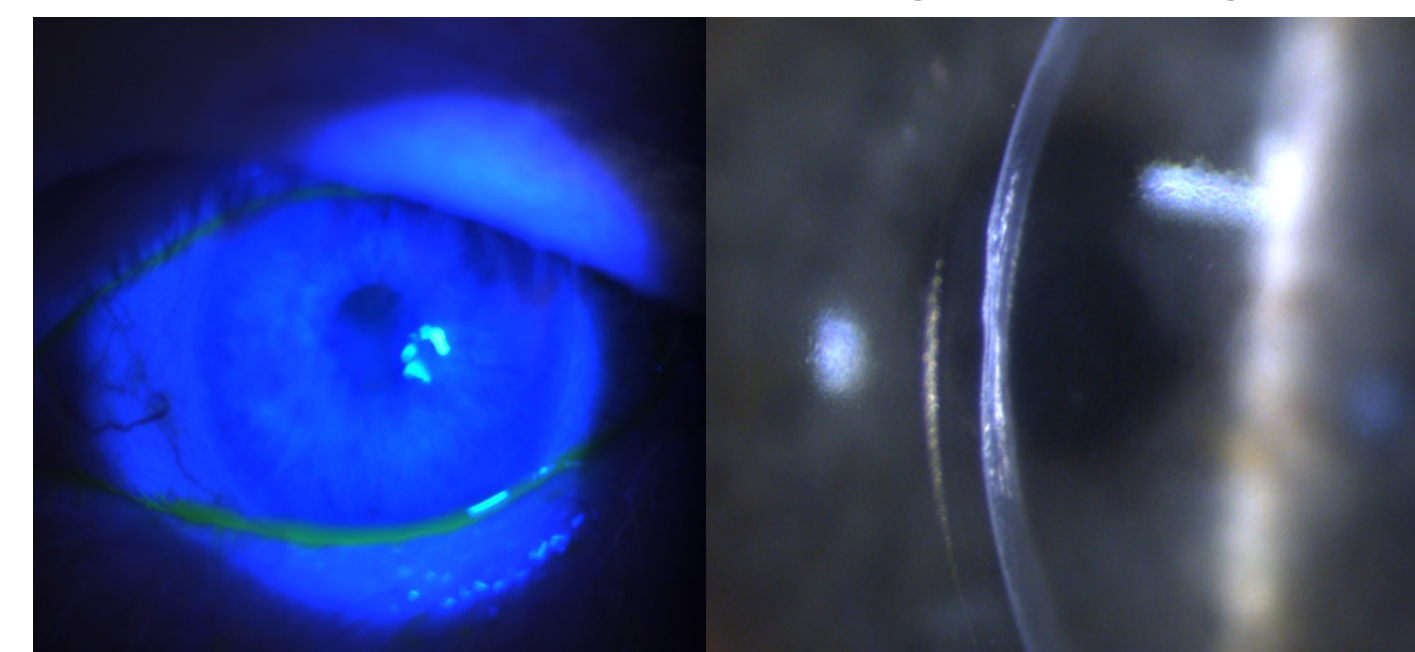
TREATMENT/MANAGEMENT OF NK

- The goals of managing neurotrophic corneas are to promote corneal re-epithelialization and prevent further epithelial breakdown.
- Treatment options include: aggressive lubrication with preservative free artificial tears and ointment, moisture chamber goggles, autologous serum tears, recombinant human nerve growth factor, soft bandage contact lenses, tarsorrhaphy, corneal neurotization.
- Properly fitting scleral lenses are an excellent, nonsurgical therapy because they provide continuous corneal lubrication through the post lens fluid reservoir while optimizing vision.
- It is important to discontinue toxic topical medications, ie. preserved glaucoma medications or steroids.

MANAGEMENT OF PATIENT RL

- Corneal epithelial defect at initial visit:** Discussed management options with cornea specialist, added moxifloxacin QID and soft BCL.
- Scleral lens fitting:** Achieved corneal and limbal clearance, with aligned scleral landing zones. Lens ordered in a high Dk/t Optimum Extreme material with HydraPEG coating.
- Close monitoring:** Frequent follow up and appropriate fitting approach are required to achieve optimal physiological outcomes.

Figure 4. 2 month follow up visit without epithelial defect, however with corneal scarring and thinning.



CONCLUSION

- Carefully monitor patients who have undergone prior GDD surgery for conjunctival erosion and take caution to avoid harsh scleral landing zone over the area.
- An impression-based scleral design can be utilized to create a custom imprint of the corneoscleral curvature when a conventional scleral lens may be inadequate.

REFERENCES

- Witsberger E, Schornack M. Scleral Lens Use in Neurotrophic Keratopathy: A Review of Current Concepts and Practice. *Eye Contact Lens*. 2021;47(3):144-148. doi:10.1097/ICL.0000000000000748
- Silverman JIM, Huffman JM, Zimmerman MB, Ling JJ, Greiner MA. Indications for Wear, Visual Outcomes, and Complications of Custom Imprint 3D Scanned Scleral Contact Lens Use. *Cornea*. 2021 May 1;40(5):596-602. doi: 10.1097/ICO.0000000000002588. PMID: 33252387.