

Four Benefits, One Lens

Co-management of Left Sided Facial Paralysis With Scleral Lenses

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Introduction

The most common childhood brain tumor are pilocytic astrocytoma's (PCA). These tumors are slow growing and often curative with resection.² Treatment with surgical excision aims for clear margins with minimal neurological injury.² Resection margins are dependent on tumor proximity to the brainstem and to cranial nerves.² Incomplete resection must be monitored regularly for tumor stability.² Ocular manifestations as a result of tumor compression and/or surgical interventions include nystagmus, cranial nerve palsies, and binocular diplopia.² This case illustrates the therapeutic benefits of scleral lenses for patients with facial palsy, diplopia, and nystagmus.

Case History

A 17-year-old female with left sided facial palsy secondary to posterior fossa PCA was referred to Medical Contact Lens service by neuro-ophthalmology for scleral lens fitting.

- **Symptomatic for fluctuating binocular diplopia and multi-directional nystagmus; symptoms dampened with a frosted left spectacle lens.**
- **Goals: protect the corneal surface, blur vision in the left eye and improve cosmesis.**

Medical History:

- Gradual onset of hearing loss, vision changes, and left sided facial droop and weakness over several years. *Refer to timeline.*

Ocular History:

- Diplopia secondary to CN 6 Palsy and Nystagmus
 - Previously resolved with Fresnel prism (6 to 30 BO).
 - Now managed with monocular occlusion due to constant fluctuations in diplopia.
- Left Lagophthalmos caused by CN 7 Palsy
 - Copious artificial tears, lubricating ointment and lid taping at bedtime.
 - Issues with ointment and lid taping led to trichiasis of the left eye.

Examination Findings

Date	Timeline of Procedures Prior to Medical Contact Lens Fitting
Nov. 2019	Diagnosed with Pilocytic Astrocytoma in posterior fossa
July 2021	Tumor debulking to resolve pressure on brainstem
Mar. 2022	LMR resection and transposition of LSR to LLR with augmentation suture
Apr. 2022	Right to left cross facial nerve graft, right sural nerve graft harvest, placement of 1.8 g platinum weight LUL, & repair of left lower lid retraction and lagophthalmos
Aug. 2023	Second stage left face reanimation, right free gracilis flap for left face reanimation

Table 1: Left Eye Anterior Segment Findings	
External	Left sided facial droop, decreased hearing left side, decreased left sided sensation, ecchymosis left lower face
Lids/Lashes	Residual lagophthalmos with 4mm lag medially, good Bells phenomenon Residual ointment on lashes, mild misdirected lash growth
Cornea	Epithelium intact, all layers clear, no defects

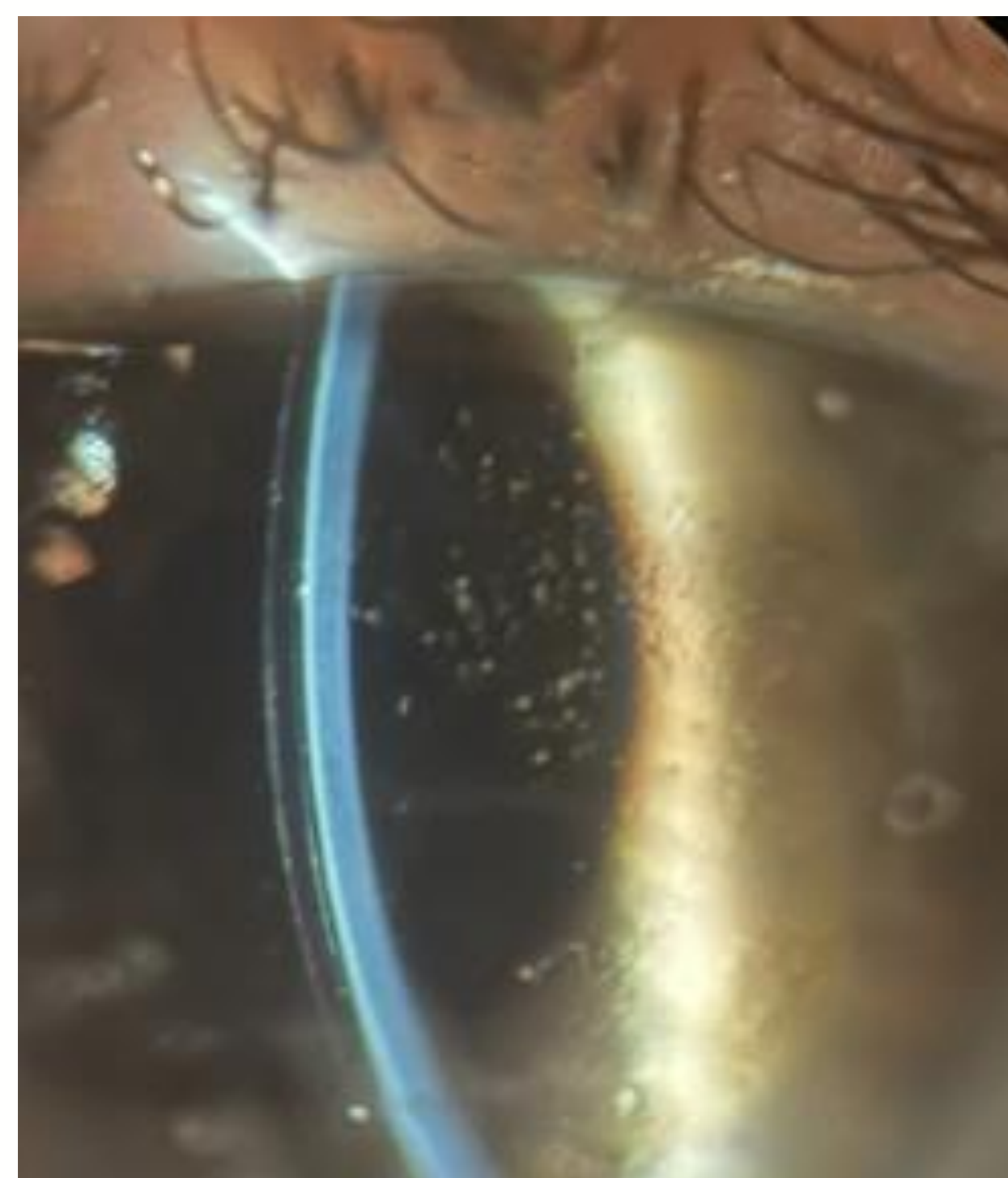


Figure 1: Optic section of diagnostic scleral lens with ointment trapped under lens.



Figure 2, and 3: *Left:* Optic section illustrating clearance of scleral lens over cornea.
Right: Final scleral lens and improved lash growth.



Case Management

Corneal Protection & Lubrication

- A CS 2020 Elite 15.8 scleral lens (Valley Contax, Eugene, OR) was fit to provide constant lubrication and protection to the cornea.
- The patient was no longer dependent on copious application of lubricating drops or ointment.

Diplopia & Nystagmus

- Vision improved dramatically with the scleral lens. However, instead a high-power scleral lens (+10 D) was used to create discreet blur, reduce double vision, and aim to dampen her nystagmus.

Improvement in Cosmesis

- Scleral lenses improved her visual function & confidence by providing more continuous fixation at the fovea versus spectacle correction. A soft toric lens was fit in the right eye to optimize her vision without spectacles.

Conclusion

PCA is recognized as the most common pediatric brain tumor and requires urgent assessment and management.² In cases such as this where PCA leads to facial paralysis, patients can undergo a procedure to reanimate the facial muscles and improve facial symmetry. Cross-face nerve grafting connects the paralyzed side to the contralateral functioning facial nerve to reanimate the face.³ Additionally, a nerve graft transfer may be used to further improve eyelid closure or ability to smile. An interprofessional team is required for the care of these patients and should include optometrists to ensure visual rehabilitation. Scleral lenses can provide constant protection and lubrication to the cornea. High plus powered scleral lenses can be used to reduce visual disturbance caused by fluctuating diplopia and nystagmus. Contact lenses also provide more continuous fixation at the fovea than spectacles. In patients with nystagmus, visual acuity can be affected by fluctuations in mental state and visual task.¹ Improving the confidence of patients with nystagmus may improve their visual function and quality of life.¹

References

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