

Challenges In Fitting A Corneal GP For A Patient With Blepharospasm And Keratoconus

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Introduction

Blepharospasm is a bilateral, involuntary spasm of the orbicularis oculi muscles causing functional blindness⁶. It may be caused by trauma to the face, brain, or eyes and may be worsened by stimuli such as bright lights, fatigue, or emotional tension. The average age of onset is 56 and women are affected more than men. The exact cause of blepharospasm is unknown, but thought to be associated with an abnormal basal ganglia (figure 5). This condition can pose challenges when fitting contact lenses secondary to eyelid spasms and small interpallebral apertures.

Case Description

This is a case presentation of a specialty lens evaluation in a 56-year-old African American woman with blepharospasm. The patient contracted viral meningitis as a child, which caused meningoencephalitis leading to cerebellar ataxia, hand tremors, and blepharospasm. She has a history of keratoconus and corneal GP lens use, but was unable to tolerate lenses after bilateral penetrating keratoplasty in the 1980s. Previously, the patient was fit with the Boston PROSE lens, however, the size of the lens coupled with the hand tremors made insertion difficult. This case presentation discusses the contact lens fitting sequence as well as the challenges in fitting a patient with blepharospasm.

Clinical Evaluation

	Right Eye (OD)	Left Eye (OS)
Subjective Rx	+5.75-2.50x20	+5.75-2.50x140
Visual Acuity	20/100	20/100
Slit Lamp Exam	- Small palpebral aperture - Centered corneal graft with ectasia, haze at graft-host interface	- Small palpebral aperture - Centered corneal graft with ectasia, haze at graft-host interface
Pentacam Analysis	- Diffuse corneal steepening with small island of depression s/p PKP 9.5 D corneal cylinder	- Irregular corneal steepening/depression s/p PKP 27.0 D corneal cylinder

Pentacam

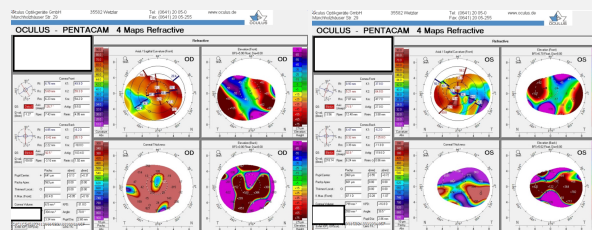


Figure 1: Pentacam shows diffuse corneal steepening with small island of focal depression OD
Figure 2: Pentacam shows irregular corneal steepening/depression OS

Contact Lens Fitting Sequence

	Right Eye (OD)
Initial scleral lens selection	Zenlens Oblate Z-17 8.0BC/ 16.0dia Patient unable to insert lens
Initial GP lens selection	Rose K2 5.8BC/-16.00/8.3dia/2 STEEP: large amounts of edge lift, excessive movement, lift off at 6 o'clock, lens popped out of eye
GP lens modification	Rose K2 5.8BC/-16.00/8.0dia/2 STEEP ACT Grade 3: steep central fit, less movement
1 week follow-up comments	BCVA 20/40 OD, patient happy she can see price tags at work. Next step: fit OS, consider rose-colored tinting of lenses to alleviate photophobia.

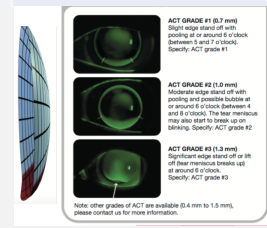


Figure 3: Images from the Rose K2 fit guide. Asymmetric Corneal Technology (ACT) allows quadrant-specific steepening of Rose K2 lenses for a better fit

Pertinent Findings

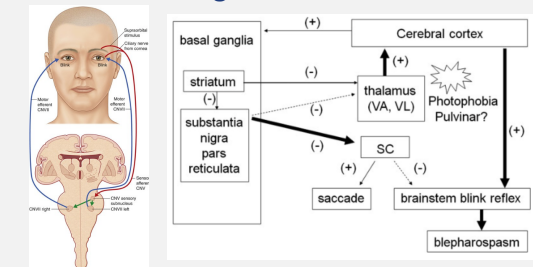


Figure 5: The pathway of the blink reflex from the eye to the pons and back

Figure 6: Damaged basal ganglia = less inhibition of the excitatory neurons of the thalamus = enhanced blink reflex through the motor pathway⁴ OR increased inhibitory signal on the inhibitory neurons of the superior colliculus=less inhibition of the brainstem= enhanced blink reflex⁴

Conclusion

Currently, there is no cure for blepharospasm, but treatments include botulinum toxin injections, oral dopamine receptor agonists, and myectomy to remove some of the eyelid muscle². Botox has become the treatment of choice due to its success rate and safety profile. In a study by Hsiung et al., 92% of patients demonstrated a sustained benefit 2 years post-treatment⁵. More recent studies have shown that rose-colored FL-41 lenses (figure 4), originally used in migraine patients, may help to reduce photophobia and subsequently blepharospasm. This tint can be added to a spectacle or GP lens, or rose-colored fluorescein may be added to the scleral lens reservoir¹. When fitting contact lenses in patients with blepharospasm, clinicians should be advised to keep low illumination in the exam room, and to use the smallest diameter lens possible without compromising stability of the lens fit. Remind the patient to keep both eyes open during insertion, and a plunger may be used to remove lenses if dexterity is compromised. Lastly, recommend Botox treatment and rose-tinted lenses.

References

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Figure 4: The FL-41 lens tint has been shown to improve photophobia and blink rate in patients with blepharospasm¹