

Contact Lens Management after a Full Thickness Central Corneal Laceration in a 4-year-old

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Background

- Ocular trauma is one of the leading causes of monocular blindness in children with about 20% involving an open globe¹.
- Ocular surface changes, scarring, and irregular astigmatism can result in amblyopia².
- Visual prognosis after trauma is worse in children under the age of 5³.
- After surgical repair, prompt and aggressive visual rehabilitation is necessary. This includes refractive correction with glasses or contact lenses and amblyopia treatment.
- Fitting, insertion, and removal of contact lenses in young patients can be difficult. Contact lens fitters should be able to think outside of the box and modify their exam techniques to cater to the unique needs of these patients.
- This case demonstrates the use of a SynergEyes Ultrahealth Hybrid Lens design after a full thickness corneal laceration from a cat scratch in a 4 year old boy.

Case Report

First visit 5/24/2017

A 4-year-old Hispanic male was referred for a contact lens fitting 5 weeks after a traumatic full thickness corneal laceration of the right eye from a cat scratch.

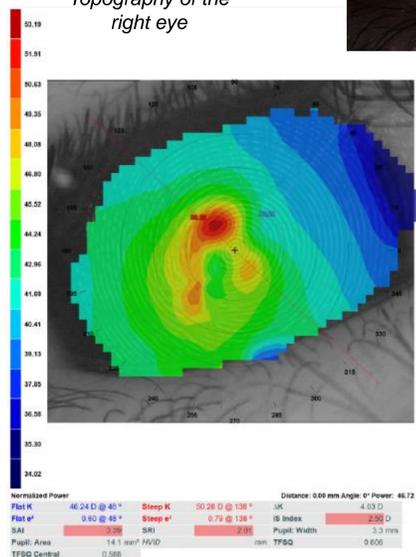
Surgical history: Open globe repair with five sutures that had been subsequently removed leaving a central scar (Image 1).

There was no lenticular or posterior segment involvement. He had no history of previous vision correction and was wearing plano spectacles for protection.

Image 1 (right):
Anterior segment photo showing 4 mm central corneal scar



Image 2 (below):
Topography of the right eye



Pertinent Exam findings:

- Uncorrected visual acuity with linear Snellen
 - OD 20/80 (slow, with arrow)
 - OS 20/25
- Slit Lamp Exam:
 - OD: 4mm central scar just outside of the visual axis (Image 1), otherwise normal
 - OS: Normal
- Topography (Image 2) revealed a steep central nipple with 4.03 diopters of irregular astigmatism located in the visual axis

Case Report, cont'd

Initial Contact Lens Assessment:

This patient required a lens that could vault the scar to cover the irregular astigmatism. Due to his age, it also needed to be comfortable, easy to use, and have high oxygen permeability. It was determined that an aspheric reverse geometry design hybrid contact lens was the best option for this patient.

At the recommendation of our consultant at SynergEyes, the first lens inserted was a SynergEyes Ultrahealth lens with a 300 vault and 8.1 medium skirt. He tolerated insertion and removal well once he was in a comfortable position. (Image 3)

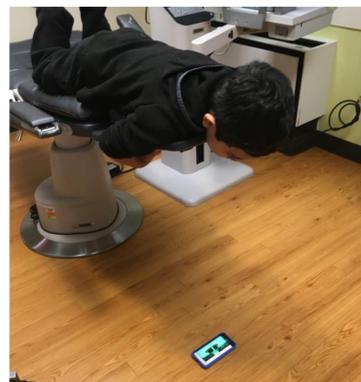


Image 3 (left): Patient positioning for insertion and removal. The exam chair was laid flat and he hung his head over the end of the chair while fixating at a YouTube video of Mickey Mouse Clubhouse.

The family utilized this same technique at home by laying him on the kitchen table or hanging over the edge of his bed

The first lens (Image 4) had central clearance, feathery touch in the ILZ, and good movement. The second lens inserted (Image 5) was 100um lower vault (200um vault with 8.1 medium skirt). This demonstrated light touch over the scar, feathery touch in the ILZ, and good movement. Therefore, the 300um lens was chosen as the final vault.



Image 4: UltraHealth lens 300um vault with medium skirt that clears the central area of scarring with good ILZ.



Image 5: UltraHealth lens 200um vault with medium skirt with light touch over the area of scarring and good ILZ

Trial lens power	Over refraction	Visual Acuity	Final lens power
-6.50 sphere	+2.00 sphere	20/30	-4.50 sphere

Dispense visit (6/20/2017)

- Excellent fit demonstrating clearance of the scar, good ILZ, comfort, and movement
- The family was able to I&R lens without issues using the positioning in Image 3.
- Best Corrected VA: OD 20/30 and OS 20/20
- Intended over-refraction: Plano, achieving +1.00 over the contact lens with no improvement in vision
- Plan: Start daily contact lens wear. Continue full time polycarbonate glasses wear for protection. Start patching of the left eye 2 hours/day and follow up in 1 month.

Case Report cont'd

1 month Follow up (7/24/2017):

- Daily wear of lens and full time glasses wear over. The patient likes the lens and feels he sees well with it. He is patching the left eye 2 hours per day
- Best corrected VA with contact lens OD only: **OD 20/20** and OS 20/20
- Contact lens assessment: Clearance over the scar, however there was some ILZ bearing and minimal movement, so the skirt was adjusted to 8.4 flat 1.
- Plan: Continue daily lens wear with polycarbonate glasses over for protection (at his managing surgeon's request). Decrease patching in the left eye to 1 hour daily to protect vision in the right eye.

3 month Follow up (10/31/2017):

- Daily wear of CL with glasses over. Patching 1 hour per day.
- Best corrected VA with contact lens OD only: **OD 20/20** and OS 20/20
- Contact lens assessment: Improved ILZ and movement with new skirt (Image 6)
 - Over-refraction: Plano
- Plan: Continue daily lens wear with polycarbonate glasses over. Discontinue patching. Return in 6 months to monitor lens fit and vision.



Image 6: 300um vault, 8.4 flat 1 skirt

Discussion

- After penetrating ocular trauma in children, prompt and aggressive visual rehabilitation is necessary to maximize vision and minimize amblyopia.
- When the injury involves the cornea and leaves scarring and irregular astigmatism, contact lenses are indicated. Options include gas-permeable, hybrid, or scleral lenses depending on the required vault and parameters.
- The aspheric reverse geometry design of the SynergEyes UltraHealth lens is a great option for pediatric irregular corneas. It is well-tolerated lens in young children.
- Although this case demonstrates a well behaved 4-year-old and a committed family, this is not always the case in the pediatric population.
 - Contact lens care and patching can be burdensome to families, and children can be very resistant to wearing contact lenses.
 - Contact lens fitters often need to be able to think outside the box with these children for things like insertion and removal techniques.
 - These patients should also be monitored very closely for contact lens related complications, lens care, and compliance to amblyopia treatment.

References

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