

INTRODUCTION

- Contact lenses can provide visual rehabilitation in patients with a history of ocular trauma, including open globe injuries and repair¹.
- In addition to improving vision, hard contact lens over-refraction (OR) is a valuable tool to evaluate visual potential in patients with irregular corneal astigmatism due to trauma².
- This case report discusses the role of specialty contact lens fitting and over-refraction in a patient who sustained an open globe injury due to a corneal laceration. In addition to providing improved vision to the patient, a corneal GP over-refraction helped aid in the treatment staging of a patient with complex ocular history.

CASE REPORT

- 27yo white male presents for CL fitting OD
- Chief complaint: blurred vision OD
- Ocular history:
 - Zone I open globe injury due to tile chip
 - S/p open globe repair
 - S/p complex cataract extraction and IOL placement
- Ocular medications: none

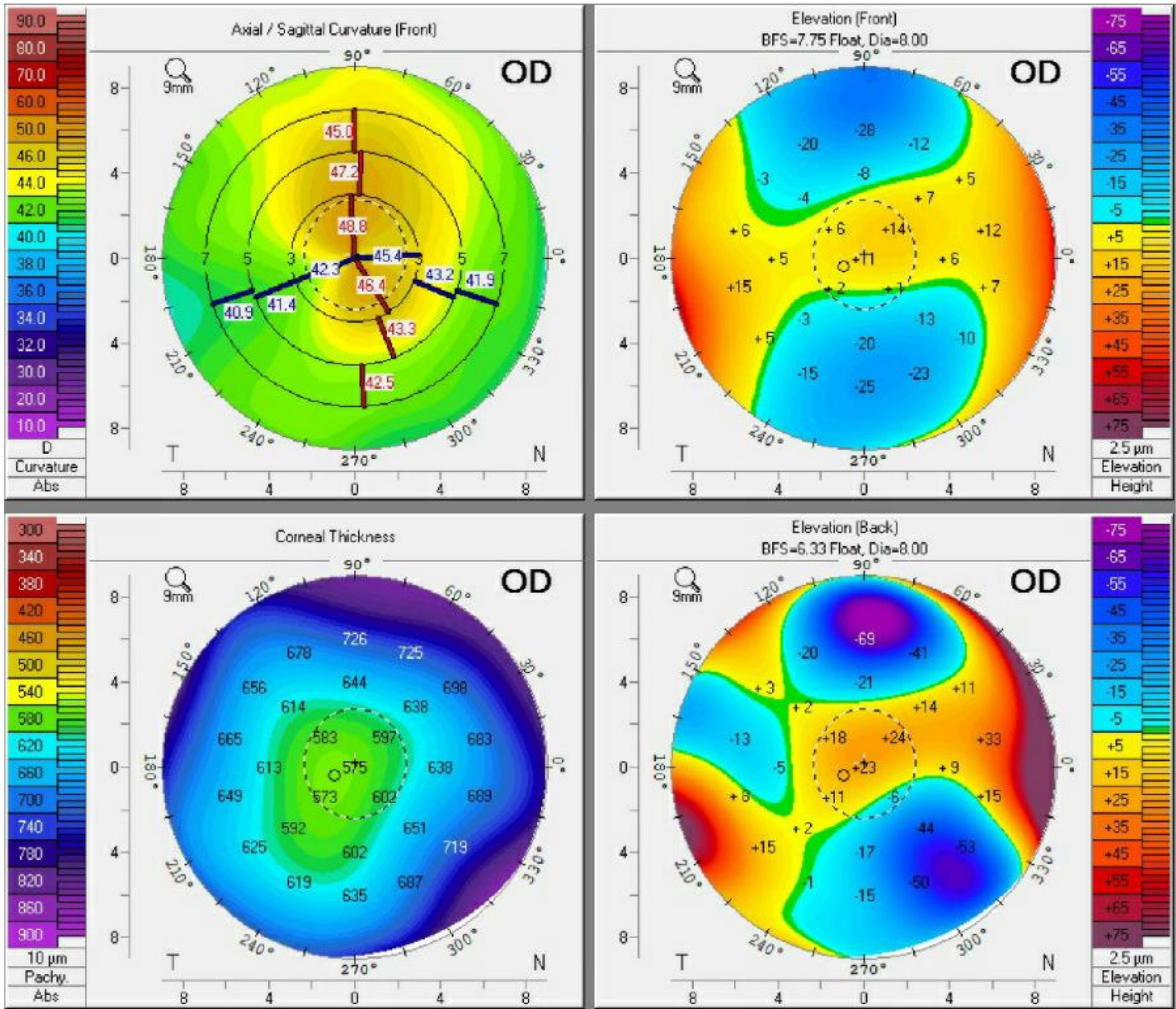
EXAM FINDINGS

	OD	OS
VAsc (PH) BCVA with MRx	20/150 (20/60) 20/50	20/20
Lids/Lashes	Normal	Normal
Conjunctiva/ Sclera	Normal	Normal
Cornea	5mm vertical laceration from inferior limbus to central cornea s/p repair, 2 sutures remaining. Wound with mature white scar along wound margins. Tiny pigment in wound. Seidel negative.	Normal
Anterior Chamber	Normal	Normal
Iris	Normal	Normal
Lens	Posterior Chamber Intra Ocular Lens (PCIOL) with 1+ Posterior Capsular Opacification (PCO) centrally, 2+ inferiorly	Normal
DFE	Unremarkable	Unremarkable

CL FITTING OD

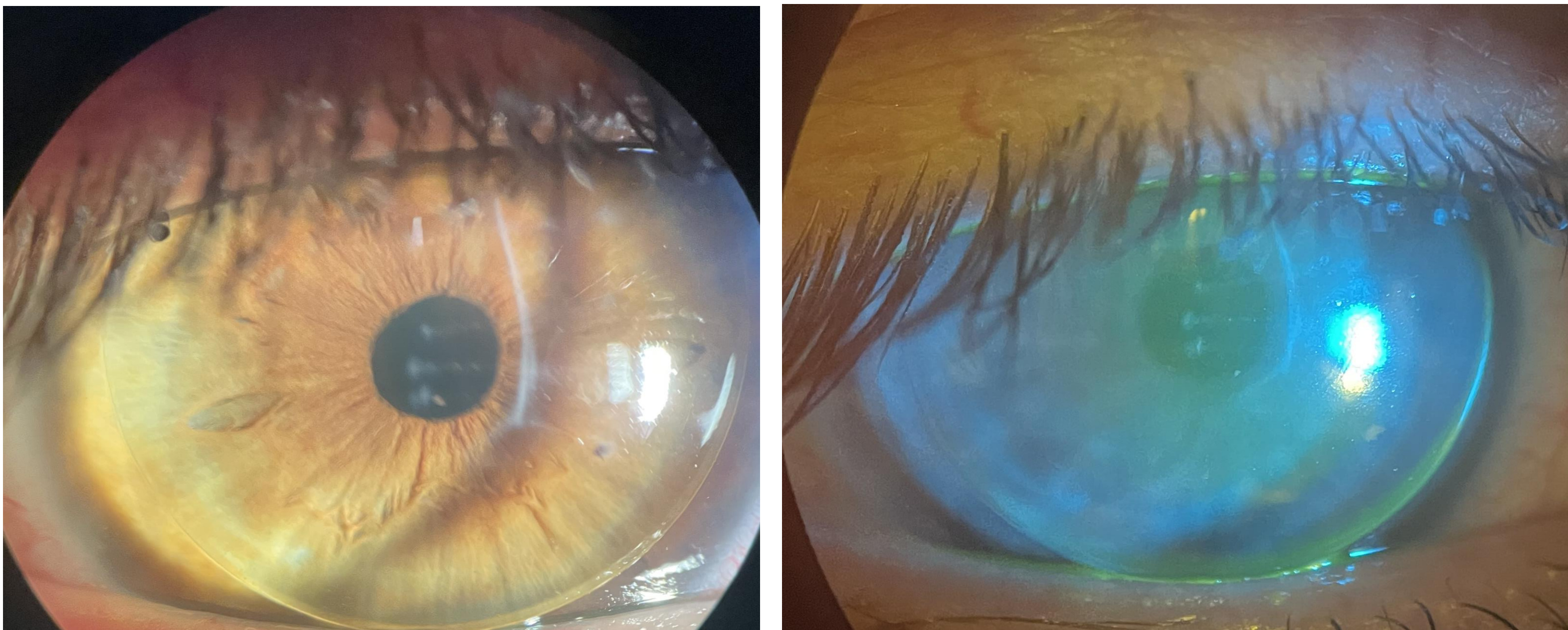
Lens	BCVA with OR	Lens fit
Standard spherical design GP 7.40/10.0/-3.00	20/40-1 OR: -4.50 -1.50 x180	Well centered, LA fit, alignment pattern, thin edges, good movement with blinks.
Plan: YAG capsulotomy		
Standard spherical design GP 7.40/10.0/-3.00	20/20-3 OR:-4.50 -0.50 x004	Well centered, LA fit, alignment pattern, thin edges, good movement with blinks.
Plan: Discussion with consultation re: bitoric vs back surface toric vs continue with spherical GP fit – will continue with spherical given good alignment fit. Flatten edge lift and incorporate OR.		
Standard spherical design GP 7.40/-7.50/10.0/ EL 115	20/25-2 OR: none	Centered horizontally, LA fit, good movement on blink, steep fit with central pooling, thin tear film mid-peripherally.
Plan: Steep fit, however minimal corneal staining and lens moves well with blink. Excellent vision. No changes to lens for now. Return in 1-2 months for corneal tolerance check.		

IMAGING



Pentacam

OD: 3.5D irregular astigmatism, superior steepening
OS (not shown): regular cornea



Slit lamp photos

Left: white light photo, 5mm vertical corneal laceration s/p repair with scarring, corneal GP
Right: cobalt light with NaFl, corneal GP with LA fit, alignment pattern, thin edges

DISCUSSION

- This patient was initially fit in a spherical GP, with BCVA 20/40 with sphero-cylindrical OR. However, we expected greater improvement in his BCVA with the OR than what was obtained. This suggested that his vision was limited by ocular pathology in addition to corneal irregularity. Mild PCO was noted at his initial contact lens fitting. His DFE was otherwise unremarkable, so the PCO was identified as a potential cause of vision limitation.
- A YAG capsulotomy was recommended before continuing the CL fit.
- At his follow-up s/p YAG capsulotomy, his BCVA with the same lens improved to 20/20-3 with OR. Given the excellent vision and relatively good lens fit, minor tweaks were made to flatten the edge lift and incorporate the spherical OR.
- This case demonstrates the diagnostic value of a hard CL OR. When the patient's vision didn't improve as expected at the initial fitting, other ocular pathology could be identified as a potential cause of reduced vision.
- Rigid contact lens wear can eliminate or postpone the need for a penetrating keratoplasty, as in this case, where vision is improved with contact lens wear alone³.
- Further, this was an example of a lens not fitting as expected. We expected to need a bitoric or keratoconic GP given his superior ectasia. However, the large-diameter spherical GP provided a good fit and excellent vision.
- At follow-up appointments, the need for presbyopic correction OD can be addressed via a multifocal CL, monovision, or bifocal/PAL glasses OD (single vision OS) on top of contact lenses.

CONCLUSIONS

- Optometry plays a unique role amongst the larger treatment team for patients with a history of open globe trauma.
- While specialty contact lenses can help optimize vision, there is also an important role for CL OR as a diagnostic tool to determine the cause of visual limitation.
- In this case, the patient's BCVA with the CL OR was initially worse than expected, which helped guide treatment decisions.
- After this patient's YAG capsulotomy and subsequent CL fitting, he achieved near-perfect vision and was excited to begin contact lens wear.

REFERENCES

1. Scanzera AC, Dunbar G, Shah V, Cortina MS, Leiderman YI, Shorter E. Visual Rehabilitation With Contact Lenses Following Open Globe Trauma. *Eye Contact Lens*. 2021;47(5):288-291. doi:10.1097/ICL.0000000000000756
2. Zheng B, Shen L, Walker MK, et al. Clinical evaluation of rigid gas permeable contact lenses and visual outcome after repaired corneal laceration. *Eye Contact Lens*. 2015;41(1):34-39. doi:10.1097/ICL.0000000000000061
3. Smiddy WE, Hamburg TR, Kracher GP, Gottsch JD, Stark WJ. Contact lenses for visual rehabilitation after corneal laceration repair. *Ophthalmology*. 1989;96(3):293-298. doi:10.1016/s0161-6420(89)32893-4