

INTRODUCTION

The incidence of open globe injuries in adults is rare, with a prevalence of 3.40/100,000¹. Many complications can result including aphakia, anisometropia, or irregular astigmatism. Contact lenses are an ideal tool to address these complications by optimizing vision. A 2021 study showed that 83% of patients with history of open globe injuries had better vision with contact lenses than manifest refraction².

CASE REPORT

A 25-year-old male presented for a contact lens fitting 6 months after an open globe injury to his right eye. The patient had no other pertinent ocular or medical history.

EXAM FINDINGS

	OD	OS
Uncorrected Visual Acuity	20/125 (PH 20/40)	20/20
Manifest Refraction	+3.75 -10.00 x 135 VA: 20/25	Plano sph VA: 20/20
K Readings	36.70/49.50 @ 55°	41.70/42.30 @ 81.3°

Table 1 Patient’s entering uncorrected DVA, manifest refraction, and keratometry readings

EXAM FINDINGS – CONTINUED

	OD	OS
External	Normal	Normal
Lid/lashes	Clear	Clear
Conjunctiva/Sclera	Mild hooding at 2 o'clock in area of wound	White and quiet
Cornea	4 nylon sutures superior nasal limbus	Clear
Anterior Chamber	Deep and quiet	Deep and quiet
Iris	Flat and intact	Flat and intact
Lens	Trace focal PSC	Clear
Vitreous	Clumps of old vitreous heme	Clear

Table 2 Ocular health findings

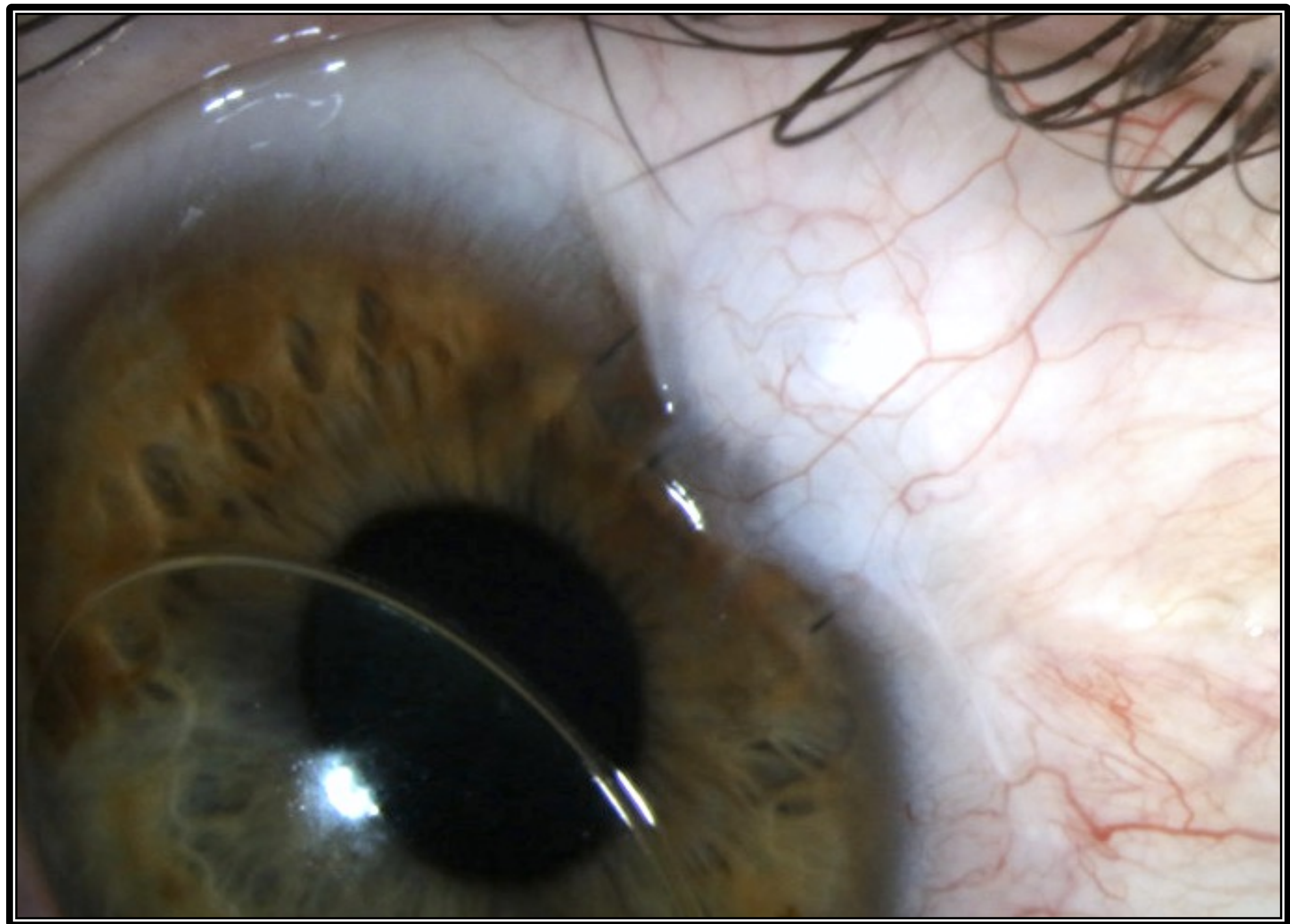


Figure 2 Superior nasal limbal wound closed with sutures

Manifest refraction was able to improve vision in the right eye to 20/25. However, when the patient was shown the manifest refraction in a trial frame, he was unable to tolerate the anisometropia.

The sutures in the right eye’s superior nasal limbal wound site induced a large amount of corneal astigmatism, contributing to the reduced uncorrected visual acuity. Corneal topography showed 12.8 D of oblique corneal astigmatism in the right eye with an elevation difference exceeding 350 microns in the peripheral cornea. The central 8mm of the cornea, however, had relatively regular astigmatism and less elevation difference. The left eye’s corneal topography showed no irregularities and had only 0.6 D of corneal astigmatism.

CONTACT LENS FITTING

A corneal RGP was chosen over a scleral due to cost considerations. A small diameter trial bitoric lens that had similar base curves to the mean K reading and happened to have 2.84 D of toricity was selected. The trial lens had an initial acceptable fit and vision improvement to 20/40. Parameter adjustments were made over the course of 5 months to improve centration, vision, and comfort at subsequent visits. Ultimately, a bitoric corneal RGP fit was finalized, yielding an acceptable fit and 20/20 acuity. The corneal RGP was slightly de-centered inferiorly however the patient was happy with the vision and comfort. Additionally, the cornea showed good lens tolerance after lens removal at follow up visits.

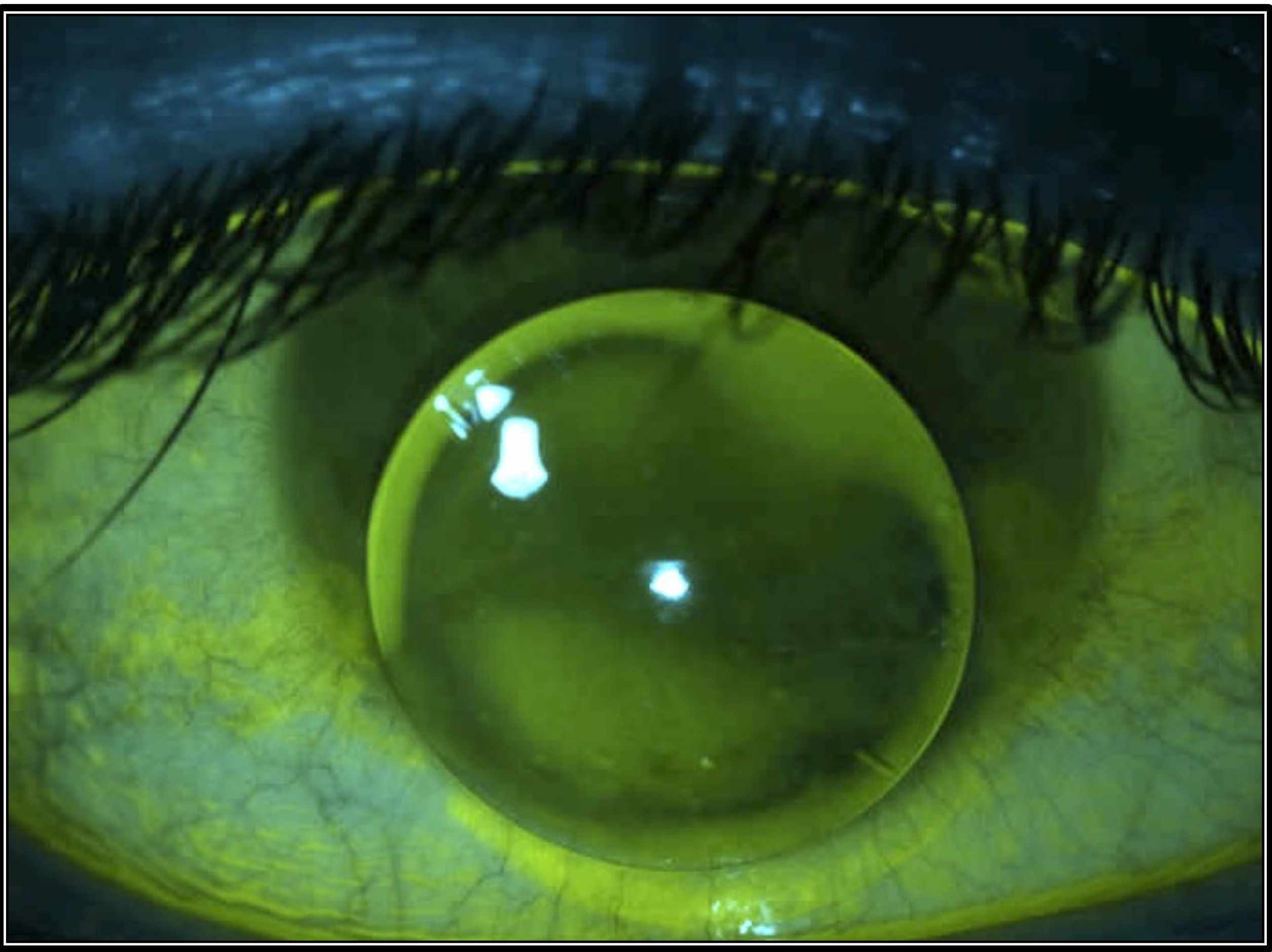


Figure 3 Final corneal RGP fluorescein pattern

	OD
Power	+2.00/-2.75
Base Curve	8.33/7.80
Diameter	8.5mm
Edges	Steep 1 edges at hash marks Steep 2 opposite hash marks

Table 3 Parameters of final corneal RGP

CONCLUSIONS

When deciding on a contact lens modality, multiple factors must be considered: amount of astigmatism, elevation difference, and cost. In this case, choosing a small diameter bitoric corneal RGP avoided the steep elevation differences of the peripheral cornea. It also provided superior visual acuity and comfort compared to the manifest refraction.

REFERENCES

1. Batur M; Seven E; Esmer O; Akaltun MN; Yasar T; Cinal A; Epidemiology of Adult Open Globe Injury. The Journal of craniofacial surgery. Published October 2016. <https://pubmed.ncbi.nlm.nih.gov/27526252/>.
2. Scanzera AC, Dunbar G, Shah V, Cortina MS, Leiderman YI, Shorter E. Visual rehabilitation with contact lenses following open globe trauma. Eye & contact lens. Published May 1, 2021. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8272942/>.

ACKNOWLEDGEMENTS

Special thanks to Gary Lamoureux for helping with imaging

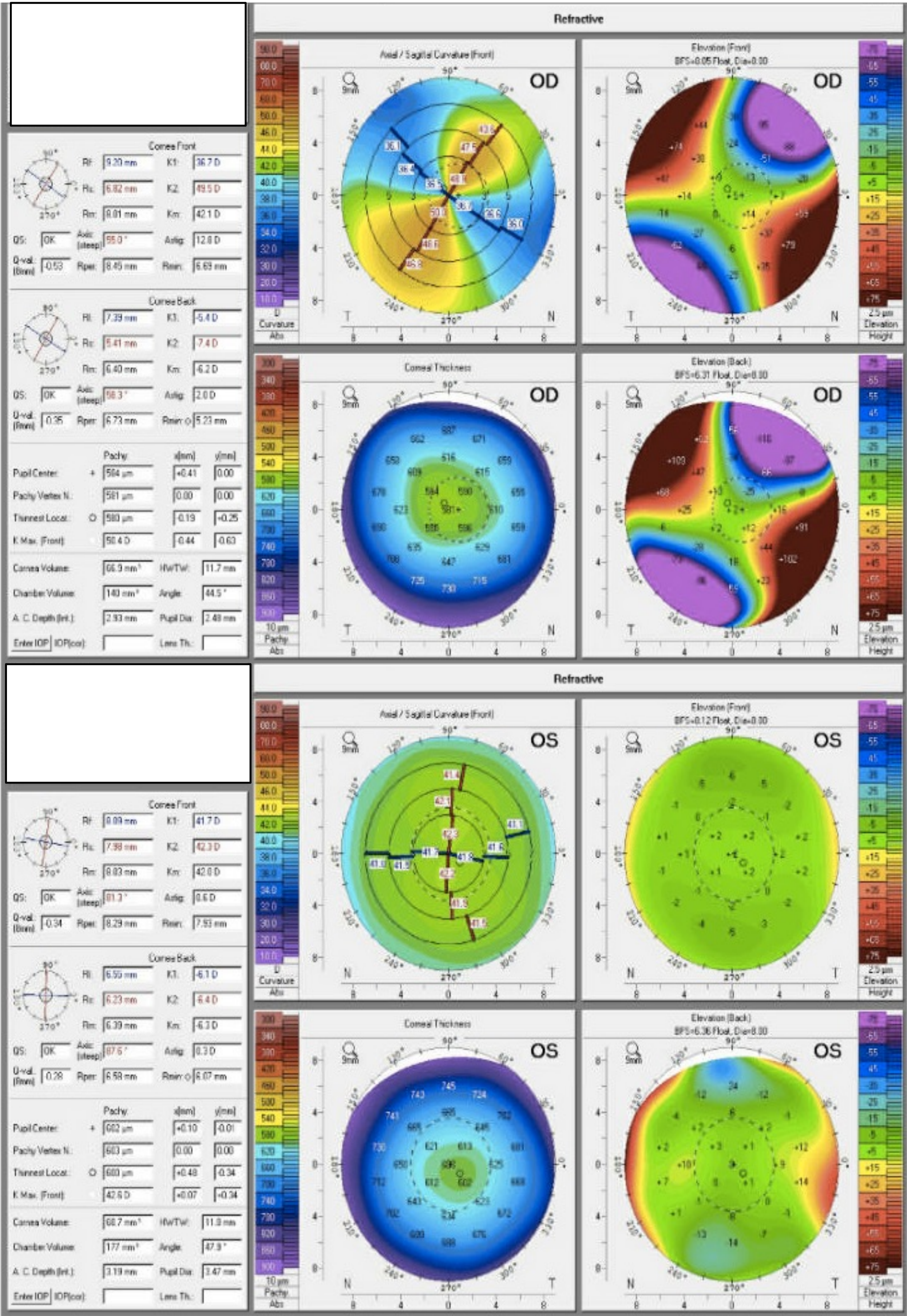


Figure 1 Corneal pentacam 4 maps refractive view