



# Vision Rehabilitation with Scleral Lenses For Advanced Corneal Neovascularization

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## INTRODUCTION

This case highlights the use of scleral lenses to rehabilitate vision and delay the need for corneal transplantation in a young patient.

## BACKGROUND

- Corneal neovascularization (CNV) is the invasion of new blood vessels caused by the imbalance between angiogenic and antiangiogenic factors that are required for corneal transparency.
- It is essential for the cornea to maintain transparency and avascularity to provide optimal vision and to protect the eye against infections and structural damage.
- Incidence: 1.4 million cases per year with an estimation of 12% experiencing subsequent vision loss.
- Ocular insults that may lead to CNV include: trauma, infectious diseases, inflammation, hypoxia, corneal degenerations and limbal stem cell deficiency.

## CASE PRESENTATION

- Chief Complaint:** 25 years old Hispanic female referred for medical contact lens evaluation for decreased vision due to history of advanced CNV in both right (OD) and left (OS) eye. Etiology is unclear. Corneal specialists want to delay penetrating keratoplasty (PKP) due to patient's age.
- Ocular History:** corneal ulcer left eye (OS) – date unknown, no history of trauma, never worn spectacles or contact lenses
- Medical History:** noncontributory
- Lab Tests:** bacterial & fungal corneal culture – negative
- Surgical History:** none
- Current Medications:** Prednisolone Acetate 1% - 1 drop both eyes once daily.
- Family Ocular & Medical History:** noncontributory
- Allergies:** none

## RESULTS

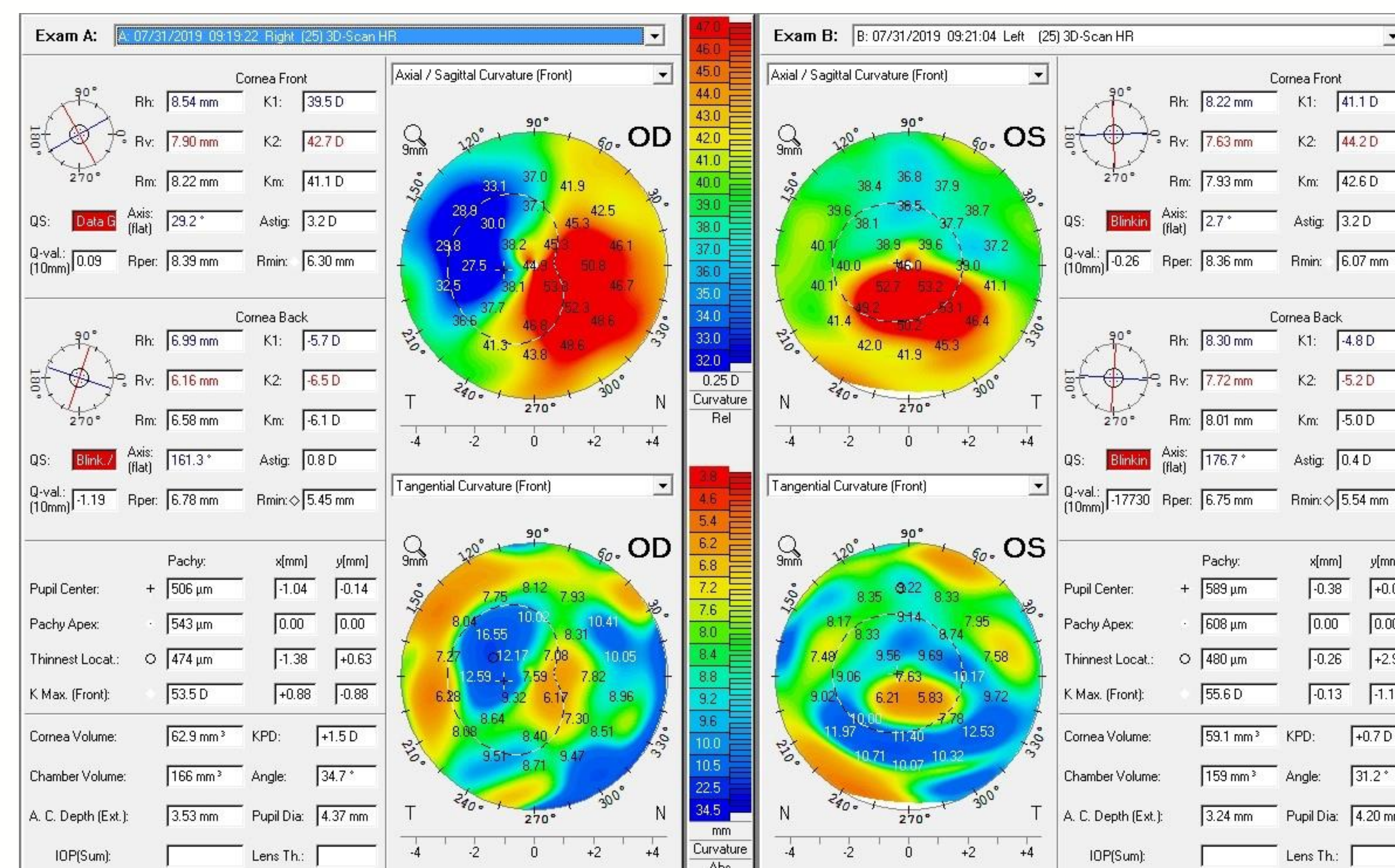


Figure 1: Tangential and Axial Topographic Maps of the front corneal surface of the OD and OS

Eye	Lens Design	BC	Rx	OAD	LCZ	SLZ	Material
OD	Custom Stable Elite	8.23	+1.50	15.8	1 Flat / 4 Lite	-2/-4	Infinite
OS	Custom Stable Elite	8.23	+1.50	15.8	1 Flat / 4 Lite	-1/-4	Infinite

## TREATMENT & MANAGEMENT

- Best corrected visual acuity in spectacles was 20/60 OD, OS. Scleral lenses corrected patient to 20/25 at distance OD & OS and 20/20 OD, OS at near.
- Return to clinic in 6 months to monitor corneal health in the presence of the scleral lenses.
- Delay the need for PKP. Continue care with cornea service as instructed.
- Continue Prednisolone Acetate 1% - 1 drop both eyes once daily.

## CONCLUSIONS

- Scleral lenses rehabilitate vision by reducing light diffraction caused by physical barriers of the blood vessels from CNV, deposition of lipids or proteins, and/or damage to corneal structure.
- Presence of CNV before corneal transplants doubles the risk of graft rejection and increases risk for graft failure by 30%.
- Scleral lenses may defer corneal transplantations in patients that are at a higher risk of corneal graft rejection/failure, reducing the necessity for multiple grafts in the future.
- Topical steroids and anti-VEGF are the primary treatment for CNV.

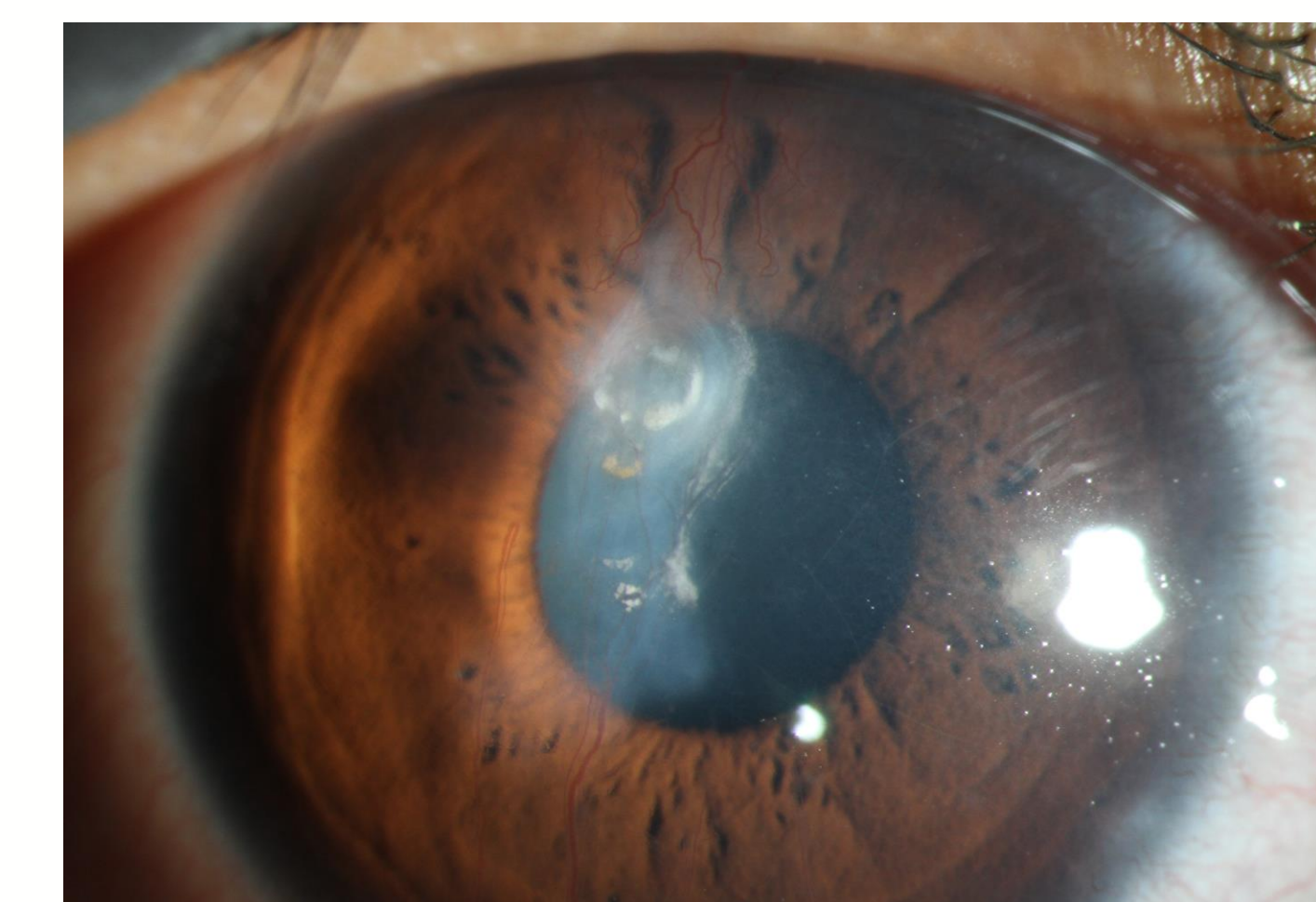


Figure 2: OD – central haze with anterior and deep stromal vessels extending from limbus at 6:00 & 12:00; central thinning with lipid deposits.

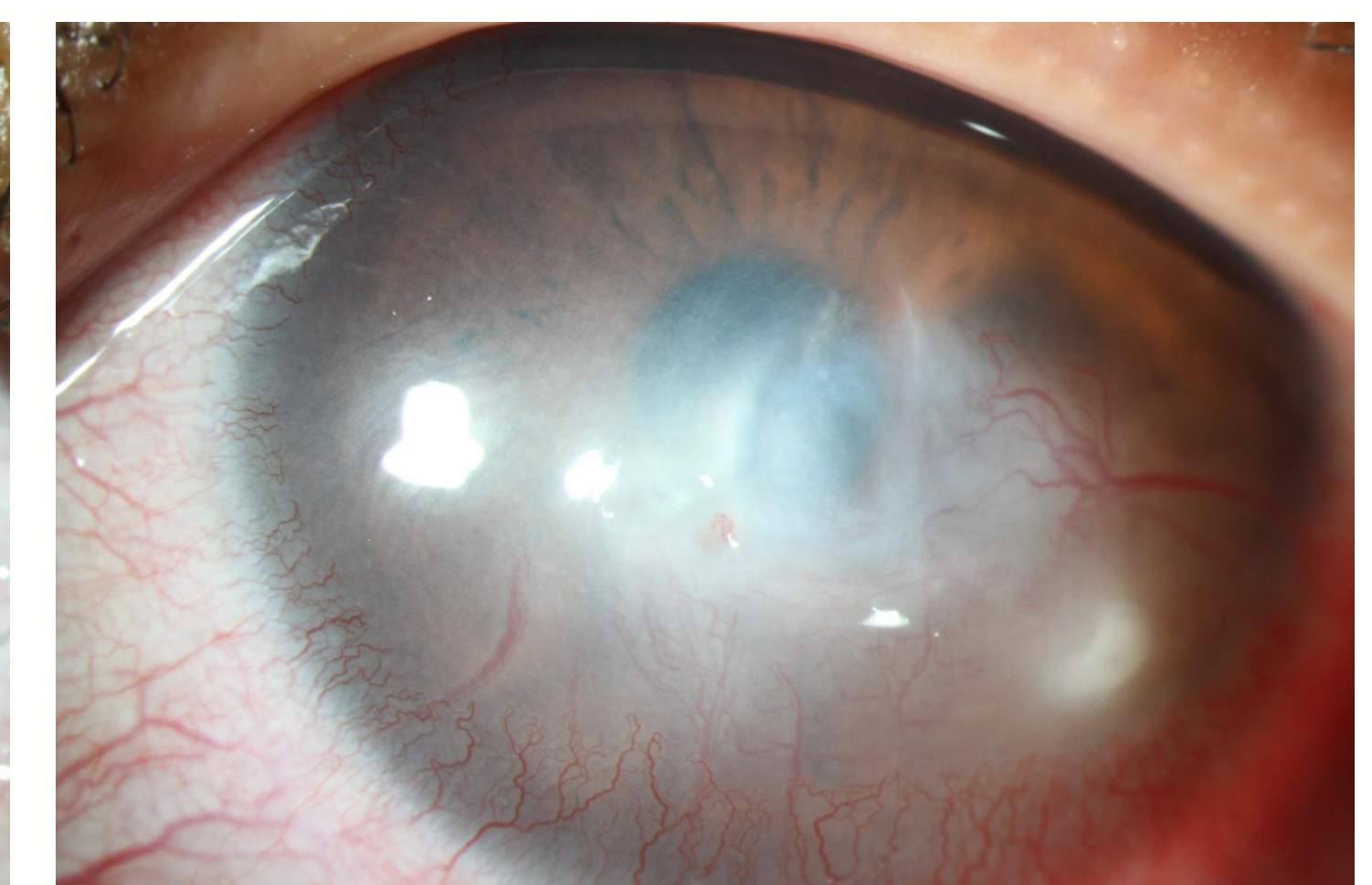


Figure 3: OS – central haze and thinning with posterior excavation; anterior and deep stromal vessels from 3:00 to 7:00 traveling centrally.

## REFERENCES

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