

Anastasia Logotheti

¹New England College of Optometry, Boston, MA

Introduction

- New patient: 43 F w/ severe keratoconus OU
- Patient received CXL 5 years ago, but developed a (+) MRSA corneal ulcer following CXL OD, after forgetting to use antibiotic drops
- Patient was lost to follow up; ulcer healed as a prominent opacified scar
- Personal medical history: (+) type 2 diabetes mellitus, hypertension, hyperthyroidism (Grave's)
- Patient interested in both improving her vision, and improving the cosmesis of her right eye

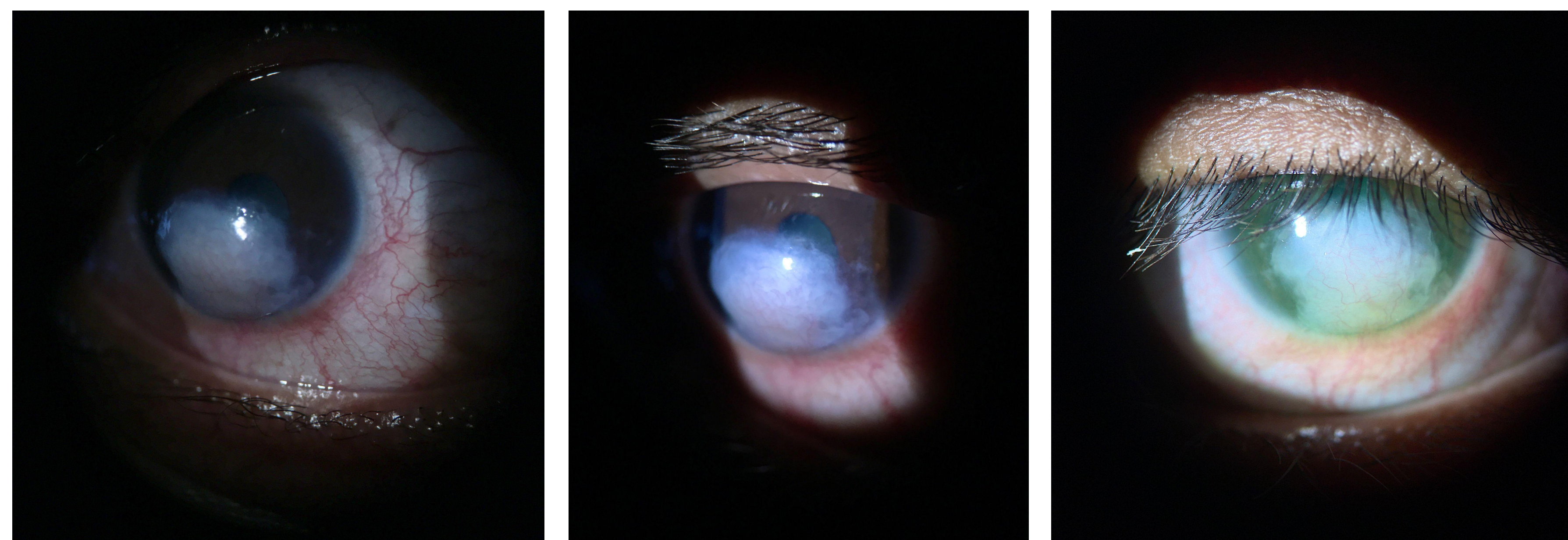
Findings

- Entering VA with spectacles:
 - **OD:** CF at 3 feet
 - **OS:** 20/200
- Gross examination: eyes were proptotic
- CT cc at D and N: 30pd constant RXT
- Slit lamp examination:
 - **OD:** Deep, opacified scar extending from inferior limbus to about 40% into the central cornea with surrounding Dellen, grade 3 exposure keratopathy, (+) Vogt's striae, (+) Munson's
 - **OS:** grade 3 exposure keratopathy (+) Vogt's striae, (+) Munson's
- Pentacam findings:
 - **OD:** K1: 88.9, K2: 108.8, Kmean: 97.9 **Kmax: 119.4**
 - **OS:** K1: 47.9, K2: 55.6, Kmean: 51.4 **Kmax: 62.6**

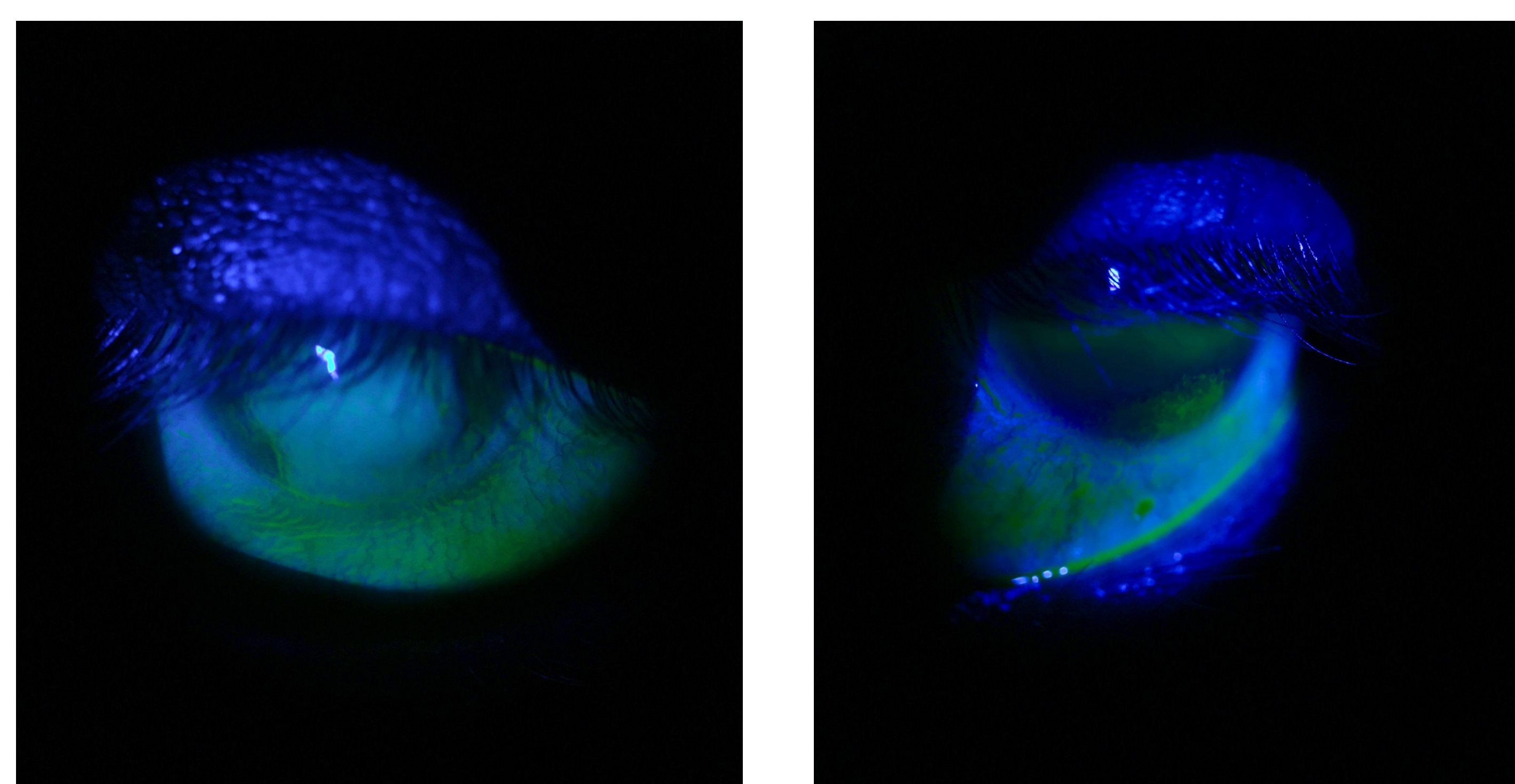
Scleral Lens Fitting

- Trial lens parameters:
 - **OD:** 3.4 sag/8.0 BC/18.5mm/FSE 1
 - **OS:** 3.0 sag/8.0 BC/18.5mm/FSE 1
- VA cc ORx :
 - **OD:** 20/40
 - **OS:** 20/30
- **CL Trial Fit (Visit 1):**
 - **OD:** Acceptable initial fit, excessive limbal clearance
 - **OS:** Acceptable initial fit, excess apical clearance
- Custom ordered lens parameters:
 - **OD:** 3.4 sag/8.0 BC/18.5mm/FSE 1
 - **OS:** 2.7 sag/8.0 BC/18.5mm/FSE 1
- **CL Ordered Fit (Visit 2):**
 - **OD:** Improved limbal and central clearance, pinguecula nasally; lens seems to be rocking
 - **OS:** Improved fit and clearance overall

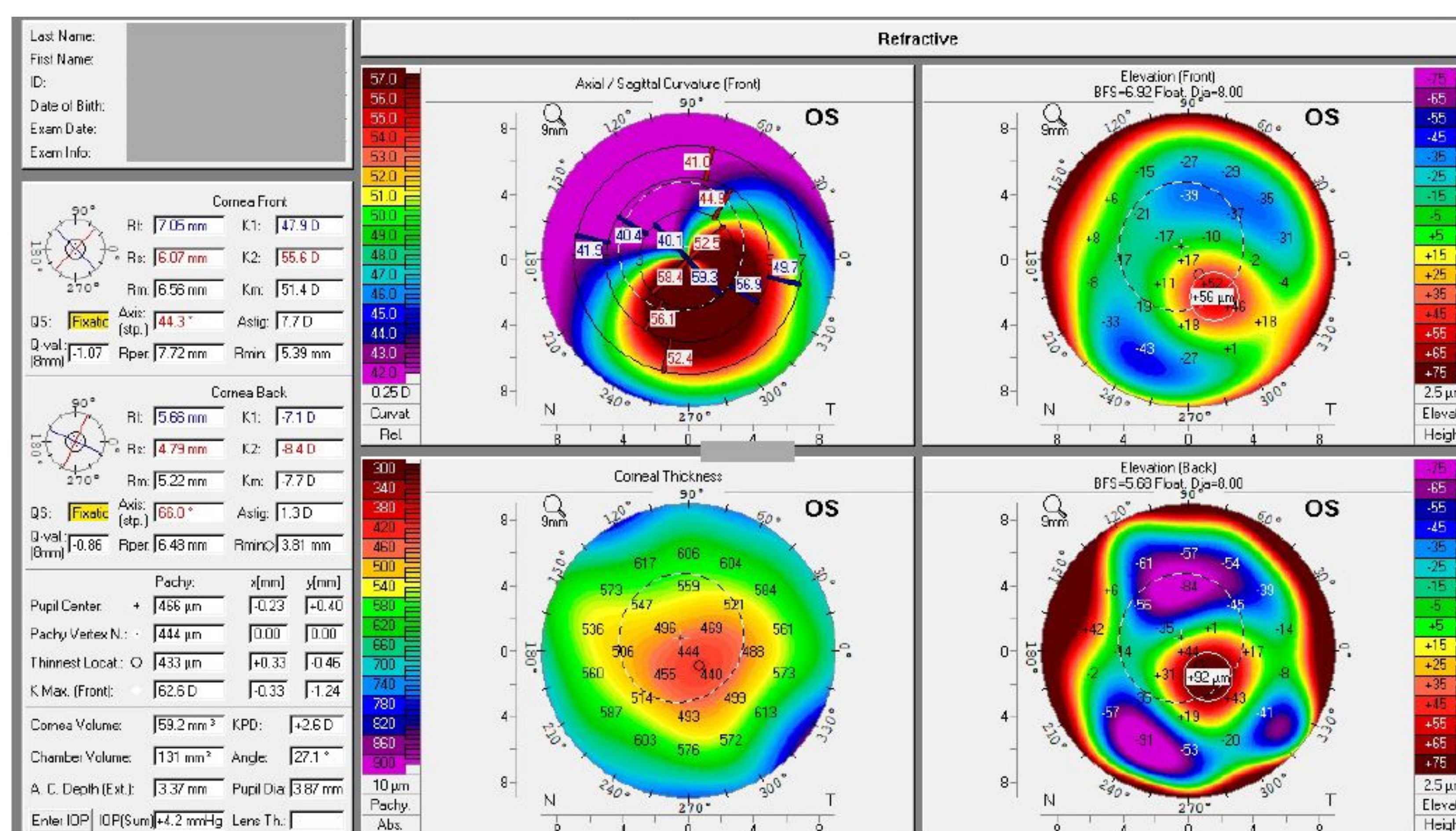
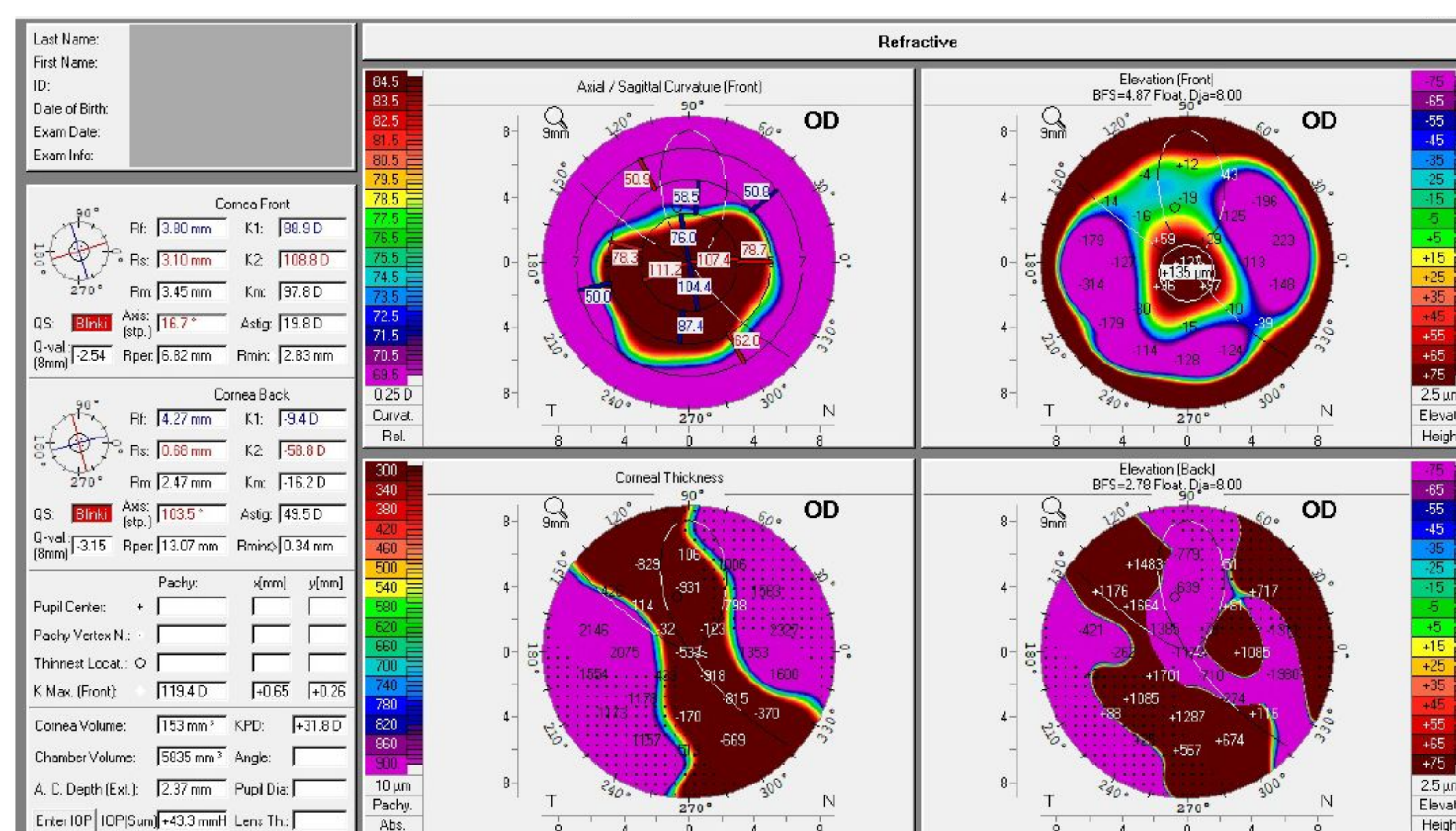
Corneal Scar OD



Exposure Keratopathy OD/OS



Corneal Tomography OD/OS



Discussion

"I can see what my mom looks like"

"I can see what I look like"

Patient-specific considerations:

- Irregularity and difference in elevation requires scleral contact lens
- Advanced KC requires high sagittal depth
- Proptosis poses risk for globe subluxation
 - Large diameter lens risks eyelids becoming trapped behind proptotic eye
- Patient education on proper I&R technique
 - Despite young age, poor patient health, mobility and stamina may render I&R difficult

Patient concerns immediately addressed:

1. Improved vision: Besides the VAs that we were able to measure, the patient's subjective visual experience was much improved
2. Right exotropia was reduced from 30pd, to 15pd; improving patient cosmesis
3. Cosmetically, corneal scar OD is less prominent under scleral lens

Conclusions/Next steps

Goal 1:

- Patient able to insert and remove: Patient's mother assists with I&R as the patient had spent the last week in the hospital

Goal 2: Functional vision

- Maximize VA through the lenses
- Patient can meet driving requirement
- Ideal fit suitable for all day wear

Goal 3: Improved cosmesis of her right cornea

- Evidence that scleral lens wear can improve the fibrosed appearance of corneal scar over time
 - Chiu et al (2014), Liao et al (2022)
- Placing colored soft CL overtop of the scleral CLs
 - Concerns with piggybacking lenses given exposure keratopathy
- Hand painted scleral lenses

References

- 1 Chiu, G. B., Bach, D., Theophanous, C., & Heur, M. (2014). Prosthetic Replacement of the Ocular Surface Ecosystem (PROSE) scleral lens for Salzmann's nodular degeneration. *Saudi Journal of Ophthalmology*, 28(3), 203–206. <https://doi.org/https://doi.org/10.1016/j.sjopt.2014.06.001>
- 2 Jennifer Liao, O. D., Bita Asghari, O. D., & Karen G. Carrasquillo PhD, O. D. (2022). Regression of corneal opacity and neovascularization in Stevens-Johnson syndrome and Toxic Epidermal Necrolysis with the use of prosthetic replacement of the ocular surface ecosystem (PROSE) treatment. *American Journal of Ophthalmology Case Reports* (Vol. 26, Issues 101520-). Elsevier. <https://doi.org/10.1016/j.ajoc.2022.101520>
- 3 <https://scleralens.com/prosthetic-scleral-lens-now-available/>, Scleralens.com, 2021