

BACKGROUND

The cornea is a resilient tissue with a multitude of functions for the eyes. It withstands foreign bodies, focuses light, and can usually self-repair after undergoing various surgeries and trauma. Even then, there are limitations, and the cornea can become susceptible to disease, infection, and other detrimental pathologies. While rare, some patients experience irregular astigmatism and ectasia after refractive surgery resulting in visual degradation. However, with the advancement of technology, scleral lenses offer rehabilitation and correction for various conditions especially for post-surgical eyes.

CASE DESCRIPTION

A 59 y/o white male presents to the office for a new scleral lens fitting. This patient has a history of LASIK refractive surgery in the past with a successful outcome. Afterwards he had cataract extraction in 2006, which caused his vision to decline from 20/20 to 20/40 in the left eye after surgery and post operative period. The patient underwent a LASIK enhancement which led to development of corneal ectasia. Ultimately, the patient had to undergo a Penetrating Keratoplasty OS, which did not provide him with clear uncorrected vision. In attempts to correct this issue, the surgeon performed PRK over the graft cornea. After the PRK procedure, the patient's vision was decreased but was stable with no further thinning noted. This roller coaster made the patient feel discouraged with his ability to see properly in the left eye; however, a properly fit scleral lens was able to provide clear 20/20 vision once again.

METHODS

Pentacam scans were taken of patient's corneal surface showing irregular astigmatism. Patient was fit using Custom Stable™ scleral lens with prolate parameters. Initial lens design is stated above.

Lens Parameters

	BC	Dia	Pwr	Sag	Flat edge	Steep edge
OS	6.89 mm	15.8mm	-5.75 sph	5390 um	60 um	150 um

Figure 1

Figure 1 highlights the cornea s/p PK and PRK of the patient's left eye. Based on the topography there is a lot of irregular astigmatism induced after the procedures which the lens was able to vault over.

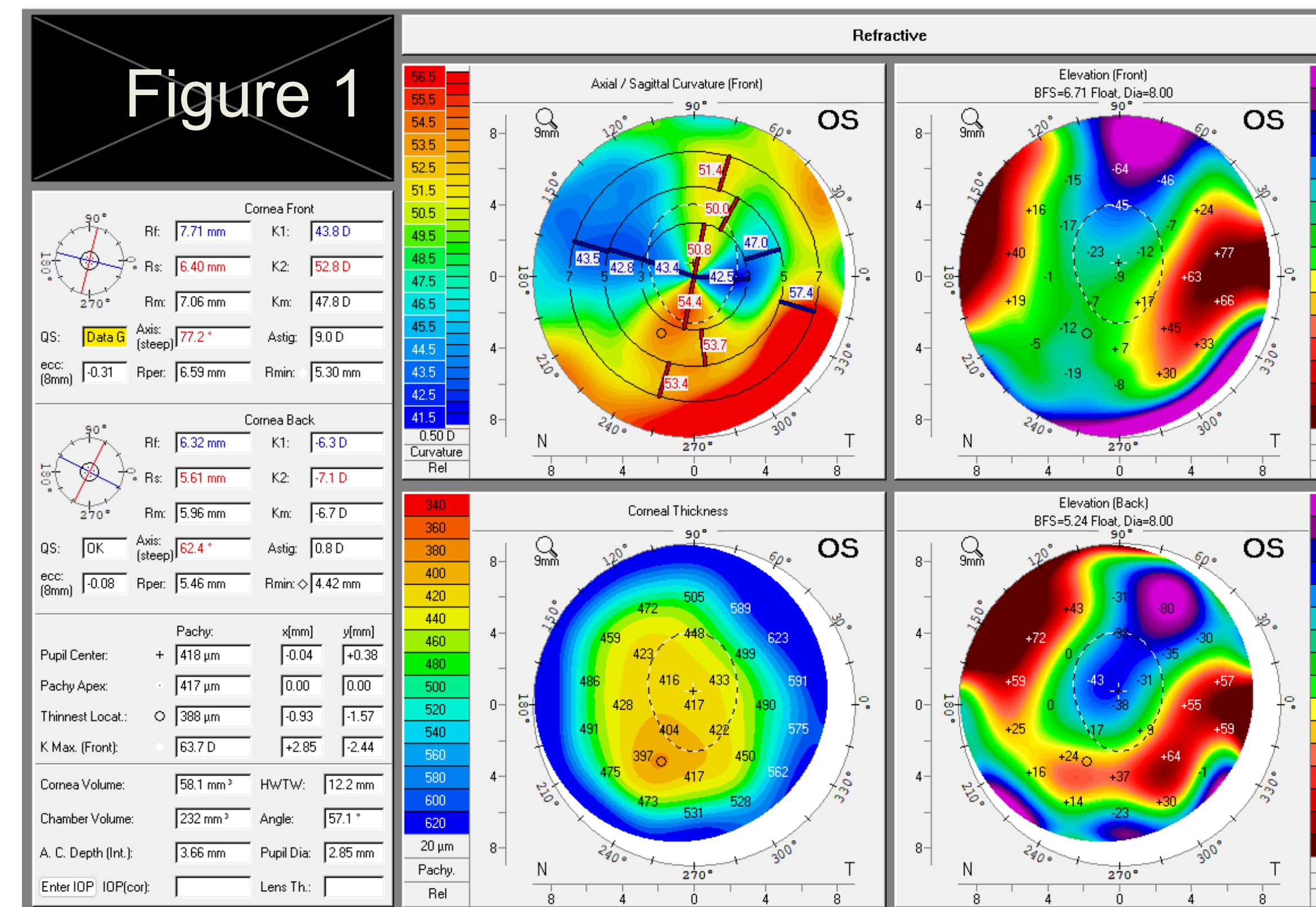


Figure 2

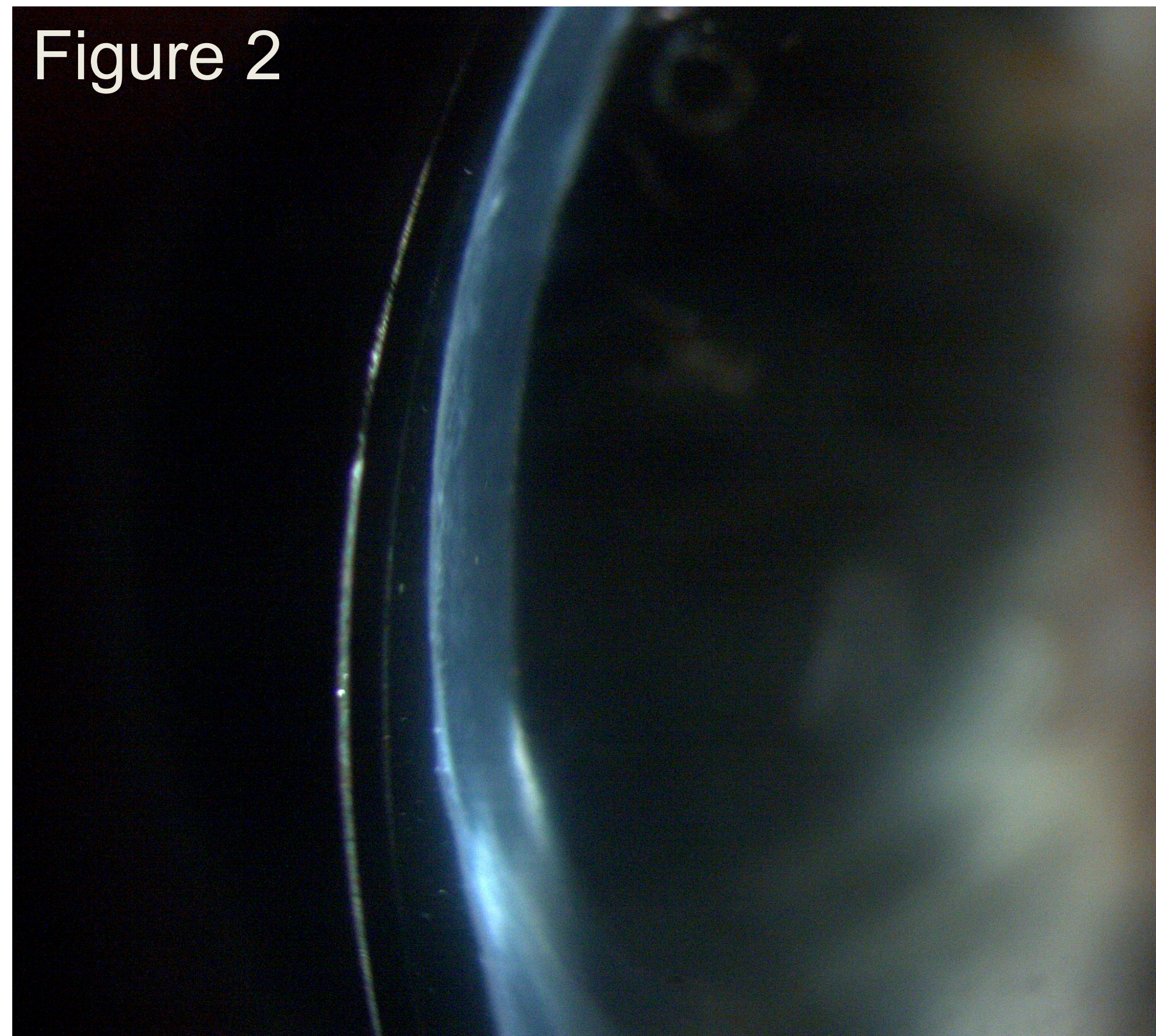


Figure 2 shows the central clearance of the Custom Stable™ lens showing that there is about 300 microns of clearance which allowed vaulting over the corneal irregularities. With this, a smoother surface and better acuity was provided to the patient. Parameters of the lens is based on Table 1.

Figure 3

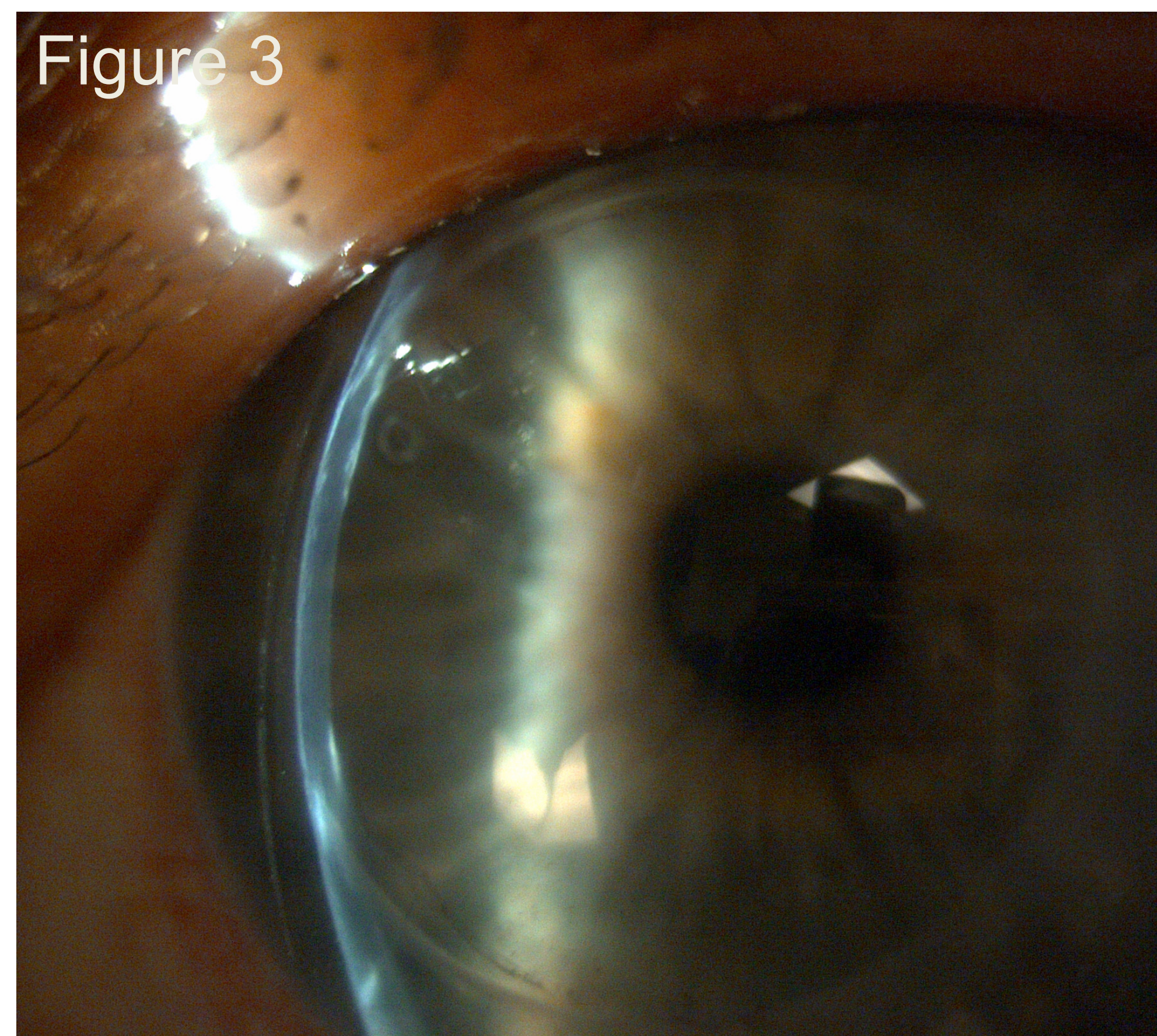
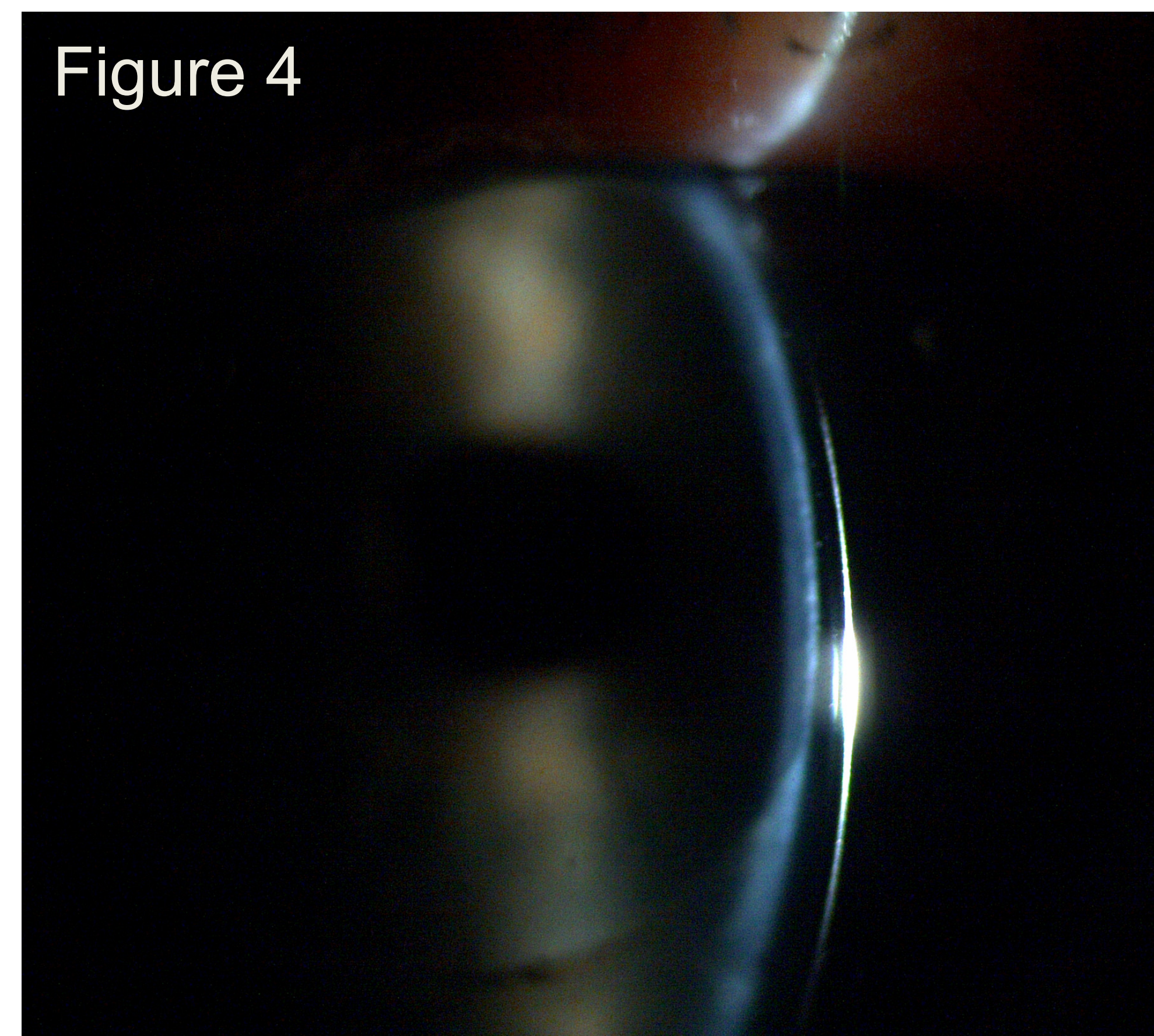


Figure 4



Figures 3 and 4 show that the Custom Stable lens is vaulting over the graft host junctions and not causing any irritation. This is critical as unwanted contact and compression at this junction can result in graft rejection over a period of time. It is critical to avoid contact as much as possible, while maintaining a healthy balance of oxygen permeability to the cornea.

RESULTS

Patient's habitual lens were not fitting properly and BCVA was 20/25- with mid-day fogging due to loose edges and poor wettability. Initial fit demonstrated good central clearance, and excessive amount of clearance over the graft host junction and limbus. The peripheral landing curves were too flat 360 which resulted in excessive movement of the lens with blinks as well. Based on the initial fit, the limbal clearance was decreased by 200 microns, the peripheral curves were also steepened for better alignment, and Tangible Hydra-Peg coating was incorporated for better wettability of the lens surface. After these adjustments were made, the patient achieved 20/20 vision, the mid-day fogging he was experiencing was eliminated, and the lens surface had the proper wettability to eliminate any discomfort the patient was experiencing.

CONCLUSION

This case was a prime example of why difficult and rare fittings are worth it. For years, the patient experienced self-doubt, uncertainty, and fear about his decreasing sight due to all the surgeries he had experienced. He was especially concerned after the refractive surgeries resulted in irregular astigmatism and ectasia. In this case, a scleral lens was able to maintain clear vision for him and assuage his worries about never recovering his previous acuity. As optometrists, our responsibility is to advocate for our patients and ensure they receive the best care to meet their needs no matter how extensive their history is.

ACKNOWLEDGMENTS

Thank you to Custom Stable and Pentacam for their support to allow our students and patients to experience the benefits of scleral lens fitting and design.