

BACKGROUND

Specialty contact lenses are a mainstay in the management & visual correction of keratoconus. While utilizing these lenses various clinical findings can affect the fitting process. Probably the most foreboding of these findings are corneal hydrops. Corneal hydrops are a sudden rupture of Descemet's membrane causing an influx of aqueous into the cornea causing sever swelling, and a painful, sudden opacification of the cornea ensues. Critical steps must be taken for proper healing of the cornea.

CASE DESCRIPTION

A 37-year-old black female was being fit for new scleral lenses for her progressing keratoconus. Her most recent follow-up resulted in ordering new sclerals with changed parameters to promote best fit and vision. Ten days later the patient presented to the emergency service with a red painful left eye and photophobia with a noticeable blue haze. Slit lamp examination revealed large corneal bullae inferiorly with haze and edema, confirmed by anterior segment photos and OCT. The patient was diagnosed with corneal hydrops, started on a regimen of Muro 128 and other palliative drops and educated to discontinue lens-wear until resolution.

As the cornea healed over the next 6 months, the patient also consulted with a corneal specialist to discuss long term implications and potential surgeries needed in the future. Upon follow up, slit lamp examination revealed grossly resolved edema with few remaining bullae and extensive corneal scarring OS. Tomography demonstrated significant corneal flattening and increased thickness from the edema. Pachymetry maps were monitored on follow up until resolution.

After the cornea was deemed adequately healed, the following empirical lens was evaluated on the patient.

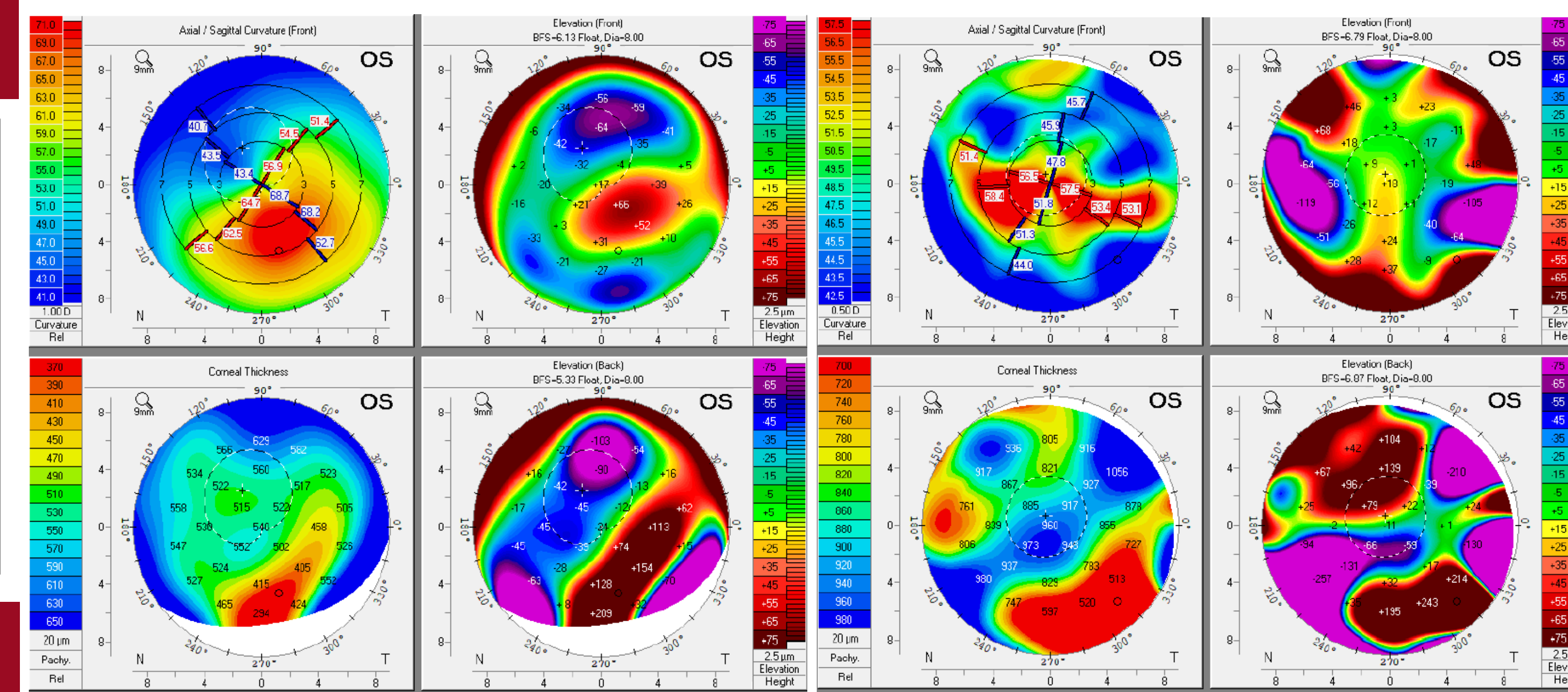
Lens Parameters

	Diam	BC	Pwr	Sag	SLZ	BCVA
OS	15.80 mm	6.25	-13.00	5.61 mm	Toric	20/100

Fit evaluation showed excessive lens clearance with a tear film to corneal ratio of about 3:1. Base curves were flattened to correct for the excessive lens clearance & the following lenses were ordered.

Lens Parameters

	Diam	BC	Pwr	Sag	SLZ	BCVA
OS	15.80 mm	6.49	-11.50	4.89 mm	Toric	20/40



Figures 1 & 2 : Topographical mapping of the patient's left cornea prior to (left) and after the hydrops event (right). Pachymetry increased to almost twice normal central corneal thickness.

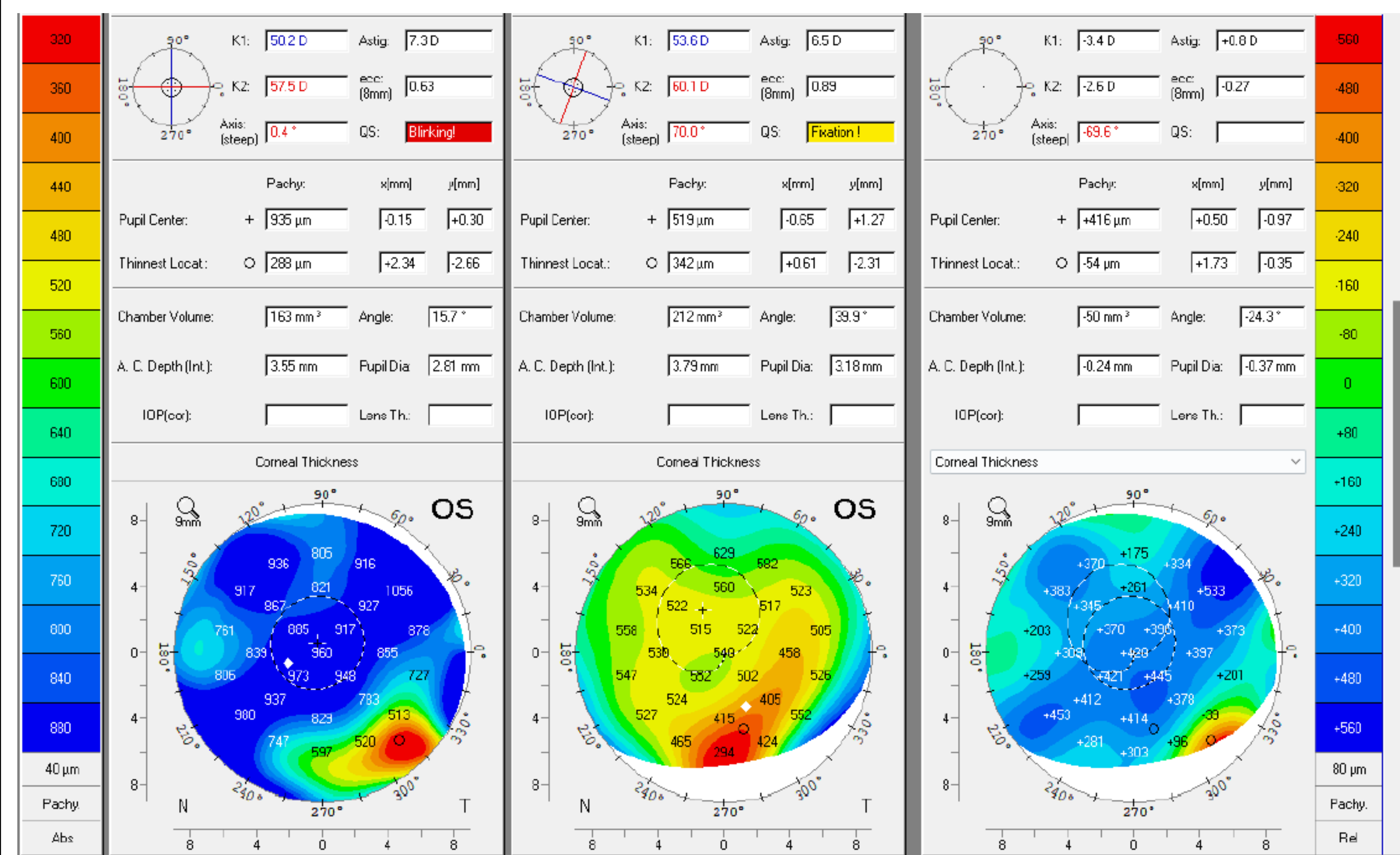


Figure 3: Comparison pachymetry maps were done over the course of the hydrops resolution to monitor improvement

RESULTS

At follow up 2-3 weeks later the patient reported adequate comfort and vision. She was able to wear them all day with no swelling in Optimum Infinite material. Central clearance of the fit was 150 microns post settling with no limbal touch or blanching. Sphero-cylindrical over refraction showed greater BCVA resulting in a final lens.

Lens Parameters

	Diam	BC	Pwr	Sag	SLZ	BCVA
OS	15.80 mm	6.49	-12.50-1.25x90	6.49	Toric	20/25

Management with steroid drops was important in this case to decrease the risk of scar formation. Thankfully there was no lasting significant scar within the visual axis. Due to this, the patient was still able to achieve good VA outcome after being refit into a scleral lens.

Conclusion

This case is a great example of how corneal hydrops can completely overhaul the fitting of lenses in keratoconus. This event extended the fitting process to over a year accounting for the fact that the patient had to discontinue lens wear to allow for healing. Then once the patient had healed, the landscape of the cornea had completely changed. The entirely new lens parameters and measurements essentially necessitated starting the new fit from scratch. Also of note is the importance referring these patients to a corneal specialist. While this may further delay the fitting process, it is important to minimize risk of central scarring. In the event of central opacification, a transplant may be necessary to have functional vision through their cornea.

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