Scleral Lenses in the Management of Phlyctenular Keratoconjunctivitis

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PURPOSE

Modern scleral contact lenses are fit for a variety of regular and irregular corneal disorders. In patients who have severe corneal irregularity, such as from ectasia or scarring, scleral lenses can protect the ocular surface, serve as a fluid reservoir, provide vision improvement and reduce higher order aberrations[1]. In cases where there is existing corneal neovascularization, close monitoring is warranted.

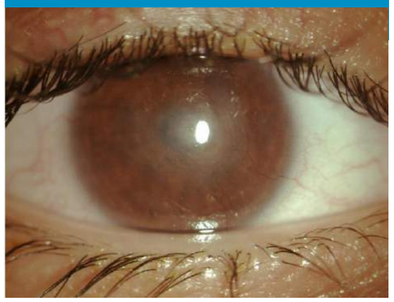
CASE

A 19-year-old African-American male presented with symptoms of "extreme dryness" related to pediatric blepharokeratoconjunctivitis. He felt like he was "starting to lose vision" in the left eye.

Ocular history was positive for allergic conjunctivitis, blepharokeratoconjunctivitis, phlyctenular keratoconjunctivitis and related corneal scarring and neovascularization. Medical history was positive for carpal tunnel syndrome.

Slit lamp evaluation revealed corneal scarring and neovascularization OU along with a central iron line (see Figure 1).

FIGURE 1: Right eye scarring and neovascularization

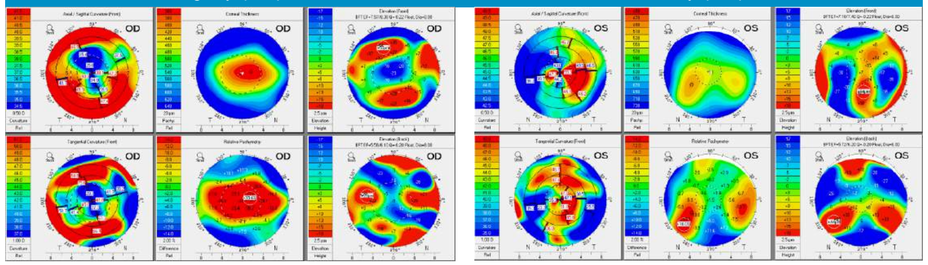


METHODS

Refractive management

Uncorrected acuity was OD 20/400 and OS 20/80. Acuity improved to 20/50 OS with manifest refraction. There was no improvement in OD acuity after manifest. Scleral lenses were chosen for management to both improve vision and protect the ocular surface. Tomography maps can be seen in Figure 2.

FIGURE 2: Pentacam tomography maps
Right eye (2018) **Left eye (2018)**



Medical management

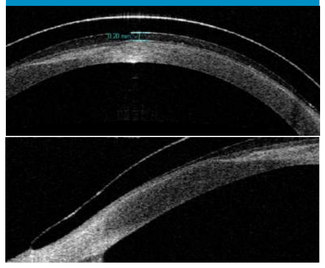
The patient's medication regimen included oral doxycycline, topical cyclosporine, preservative-free artificial tears, lid scrubs, and hypochlorous acid spray. He had been managed with topical steroid pulses during symptomatic episodes. The flare-ups of phlyctenular keratoconjunctivitis were initially co-managed with a corneal specialist, who cleared the patient for scleral lens fitting after there was no longer any sign of active phlyctenulosis.

RESULTS

Application of Jupiter 15.6mm diameter scleral lenses (Essilor/ABBA), improved vision to OD 20/30 and OS 20/20. The patient has been successfully managed in scleral lenses for the past 4 years with small adjustments to the edge landing over time to improve fit. The central clearance can be seen in Figure 3.

The patient's current lens parameters are:
OD Jupiter 15.6 7.10 (47.50) / -5.75 / STD
OS Jupiter 15.6 7.03 (48.00) / -8.00 / FL1

FIGURE 3: Lens fit imaging with Visante

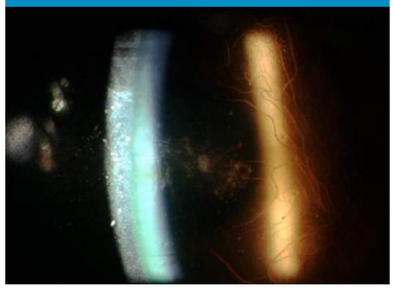


DISCUSSION

Corneal neovascularization (CNV) is ingrowth of blood vessels from the limbal vascular plexus into the cornea. CNV can have a variety of causes, including contact lens wear and corneal infection, as well as ocular surface diseases due to inflammation, chemical injury and limbal stem cell deficiency[2].

CNV can reduce visual acuity when blood vessels invade the cornea because they induce stromal opacification and surface irregularity which causes higher order aberrations[2]. This can be accompanied by extravasation of fluid and lipids, which leads to corneal edema and lipid keratopathy (see Figure 4).

FIGURE 4: Neovascularization and lipid keratopathy



New or progressing CNV can be of concern to scleral lens fitters, especially if it is arises during or as a consequence of scleral lens wear. In this case, the CNV existed prior to scleral lens wear and remained stable over time.

Lens adjustments should be made in cases of progressive CNV. Considerations include:
1. Use of hyper-Dk materials
2. Reduction in lens center thickness
3. Loosening peripheral curves (if lens too tight)
4. Increasing limbal clearance (if insufficient)

CONCLUSION

Patients with a history of phlyctenular keratoconjunctivitis and pediatric blepharokeratoconjunctivitis with residual corneal scarring and neovascularization can successfully wear scleral lenses to improve vision.

Close monitoring of these patients to ensure they are keeping up with their lid hygiene and ocular surface treatment regimens can be instrumental in their success and the prevention of inflammatory complications.

Periodic (frequency may be dictated by comorbidities) assessment of scleral lenses can allow for changes to be made to improve fit and prevent complications.

REFERENCES

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