**Introduction**

Scleral lenses (SL) are large-diameter gas permeable (GP) lenses that vault the cornea and rest on the sclera. High refractive error, ocular surface disease and irregular corneas are reasons to consider fitting a SL. Outcomes are generally positive giving patients sharper vision with improved lens comfort. Practitioners should take special precautions when fitting a SL on post-penetrating keratoplasty (PKP) eyes where risks of corneal edema, graft rejection and failure are more prevalent. However, recent studies suggest increasing the lens oxygen permeability over a Dk of 100 Fatt provided no further reduction in corneal edema in healthy eyes. Practitioners without corneoscleral topography can decrease chair time with a toric landing zone SL fitting set that works for both oblate and prolate cornea.

**Case Presentation**

**VISIT 1:** 57-year-old Hispanic female presents for a new contact lens fitting

**Chief complaint:** poor vision when wearing traditional small diameter gas permeable lenses OU and accidental right lens ejection

**Ocular History:** (limited due to language barrier)
- Keratoconus OU
- Penetrating keratoplasty OS (10+ years ago)

**Medical History:**
- Hypertension x 15 years controlled with medications

**Presenting VAs:** 20/400 OS 6/0 DC - 23.00 MI - 20/400 OS 6/0 DC - 23.00 MI

- Minimal improvement in vision with manifest refraction OD, OS
- Slit lamp exam corneal findings:
  - OD: munson’s sign, moderate inferior stromal thinning and scarring, mild band keratopathy inferior, moderate pannus inferior
  - OS: mild to moderate neovascularization - greater inferior and trace edema surrounding corneal graft host junction 360 degrees, no residual surgical sutures

**Initial Trialed Diagnostic Lenses:** Corneal and Intralimbal GPs
- Immediate failure due to poor lens fit and discomfort, OU

**Diag nostic Scleral Lens:**
- OD: 6.04 BC / 16.5 OAD / 5400 SAG / -14.00 SPH / +6 SLZ Toric
- Sphero-cylindrical over-refraction (ORx): +0.50 +1.25x180 (20/40)
- Fit Description: good centration and limbal coverage, 300µm apical clearance and 100µm limbal clearance, (-) blanching
- OS: 7.34 BC / 16.5 OAD / 5200 SAG / -12.00 SPH / +6 SLZ Toric
- ORx: +6.75 (20/20)
- Fit Description: good centration and limbal coverage, 400µm AC and 50µm LC, (-) blanching

**Assessment:**
- Severe Keratoconus OD and post-PKP OS
- Poor fit and comfort in corneal GPs and intralimbal GPs
- Good comfort, fit and vision with ORx with scleral lens OD and OS

**Plan:**
- Ordered:
  - OD: 6.04 BC / 16.5 DIA / 5400 SAG / -14.50 SPH / +6 SLZ Toric
  - OS: 7.34 BC / 16.5 DIA / 5200 SAG / -4.75 SPH / +6 SLZ Toric
- Monitor OS carefully for possible corneal edema with lens wear
- RTC 2 weeks for scleral lens dispense, I&R training and DFE or RTC sooner if problems arise

**Conclusions**

Toric diagnostic SL fitting sets may expedite the fitting process for irregular corneas when scleral mapping technology is not available. When corneal GP lenses fail, SLs may provide improved vision and comfort. Consider utilizing reduced apical clearance and minimal lens center thickness to prevent corneal edema; the additional benefits of hyper-Dk lens materials has been questioned. As seen with this patient, one diagnostic fitting set was successfully utilized on two completely different ocular profiles in our patient. Versatile SL designs simplify the fitting process and allows practitioners the ability to handle a myriad of obstacles that may arise during the fitting period.

**References**


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