Scleral Contact Lenses

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That’s a BIG lens!!

Size matters

- Average RGP lens = 9.5 mm
- Soft Contact lens = 14.0 to 14.5 mm
- Mini-scleral lens = 15.0 to 18.0 mm
- Scleral lens = 18.0 to 24.0 mm

Average Corneal diameter = 11.5mm

RGP

Soft Contact Lens
Scleral Lens

What makes Sclerals different?
- Rest on the sclera (don’t touch the cornea)
- Vault over the cornea
- Tear Reservoir between the contact lens and the eye
- Insertion and removal process

So What?
- Who is a good patient for scleral lenses?
  - Corneal irregularity
  - Corneal scarring or post trauma
  - Keratoconus
  - S/P refractive surgery
  - Advanced dry eye or incomplete lid closure (exposure)
  - S/P corneal transplant
  - Extreme astigmatism
  - Cosmetic (albinism, trauma, aniridia)

Advantages
- No corneal touch = no chance of worsening scar progression
- No corneal contact and less movement = less awareness (kinda)
- Tear reservoir can be therapeutic
- Better VA (sometimes dramatic)
- Easier to compensate for crazy corneal shapes

Resurgence
- Increased O2 permeability of new lens materials
- New digital manufacturing processes

Messed Up Corneas
Can we fix this cornea with scleral lens?

Corneal Topography (normal)

Corneal Topography (astigmatism)

Corneal Topography (Keratoconus)
Corneal Topography

Fitting
- Alignment with sclera
- No bearing on limbus
- Based on sagittal height
- Little to no movement
- Must settle for 30 minutes
- No conjunctival impingement
- Spherical over-refraction

Fitting

Must be fit diagnostically

Vault Reduction

Therapeutic Sclerals
- Tear Reservoir promotes healing in Ocular Surface Disease
  - Sjogren’s
  - Stevens Johnson Syndrome
  - Graft vs Host
  - Ocular cicatricial pemphigoid
  - Neurotrophic corneal disease
  - Exophthalmos
  - Ectropion
  - Eyelid Coloboma
1. Fill the lens with non-preserved saline
2. Place lens on formed "tripod" (thumb, index, and middle finger) or use scleral cup
3. Position face parallel to a horizontal plane, typically the table/mirror and open eyelids wide using opposite hand.
4. Insert lens edge into lower cul-de-sac while pushing the lens onto cornea

Must break the negative pressure underneath the lens
- Manual method –
  - Using fingers, guide eyelid margin under the bottom edge of the lens. This will break suction and allow lens to come out
  - Plunger method –
  - Place the plunger on bottom portion of lens
  - NEVER place the plunger centrally on lens – may result in corneal damage

Use anesthetic for initial lens dispense
- Study: Reduces long term drop outs by 75%
- Patients may be intimidated by size of lens and handling – Doc presentation is the key
Complications

Contact Lens Optics
- Sagittal height
- Increased sagittal height steepens corneal-lens fit

Systemic Conditions that Affect CLs
- Diabetes
- Collagen Vascular Disorders
- Pregnancy
- Birth Control
- Thyroid Eye Disease
- Allergy
- Anti-histamine use

Cosmetic Sclerals
Cosmetic Sclerals

Hollywood Sclerals

Why fit scleral lenses?
- Differentiate your practice
- Incredibly grateful patients = more referrals
- Full scope of professional practice
- More referrals from Ophthalmology/cornea

Hollywood Sclerals

Case
- Patient AW - 55 year old Male
- + Severe Keratoconus OD > OS
- Has been wearing Rose K lenses OU for many years
- Lenses have begun to spontaneously eject
- VA cCLs: OD 20/40- OS 20/40
- BVA with specs: 20/400 OD, OS
Slit lamp:
- Central corneal scarring OD > OS
- Significant apical thinning OU
- 2-3+ central SPK OU

Refit to SynergEyes Ultrahealth hybrid CL
- Poor comfort and limited wear time
- Significant protein build-up on lenses

Case

Refit to scleral lens – diameter 18.0 mm
- BVA cCL: OD 20/30 OS 20/30+
- 16 hours of comfortable wearing time
- No corneal contact on central scarring

References