Learning Objectives
1. Become aware of scleral lens classification.
2. Identify when scleral lenses are indicated.
3. Learn about scleral lens designs.
4. Identify scleral lens complications.
5. Obtain knowledge about how to insert and remove scleral lenses.

1. Scleral lens classification (2 minutes)
   a. Scleral Lens Education Society Classification

2. Major indications for scleral lenses (5 minutes)
   a. Ocular surface disease
   b. Corneal irregularity
   c. Refractive error

3. Scleral lenses for ocular surface disease (10 minutes)
   a. Overview
   b. Literature review
   c. Rationale
      i. Corneal hydration
      ii. Ocular surface protection
      iii. General considerations
   d. Conditions
      i. Undifferentiated dry eye syndrome
      ii. Sjögren’s syndrome
      iii. Chronic graft versus host disease
      iv. Stevens Johnson syndrome / toxic epidermal necrolysis
      v. Ocular cicatricial pemphigoid
      vi. Limbal stem cell deficiency
      vii. Neurotrophic keratopathy
      viii. Exposure keratopathy
      ix. Corneal dystrophy
x. S/P ocular trauma
e. Placement of scleral lenses within overall management strategy
f. Informed consent
   i. Risks / benefits

4. Scleral lenses for corneal irregularity (12 minutes)
a. Literature review
b. Rationale
   1. Lubrication and support of the ocular surface
   2. Protection from exposure
   3. Protection from the eyelid
      i. Trichiasis
      ii. Distichiasis
      iii. Keratinized eyelid margins
   4. Attenuation of pain
   5. Vision rehabilitation
c. Conditions
   i. Primary corneal ectasias
      1. Keratoconus
      2. Keratoglobus
      3. Pellucid marginal corneal degeneration
      4. S/P penetrating keratoplasty
   ii. Secondary corneal ectasias
      1. Post-LASIK
      2. Post-PRK
      3. Post-RK
   iii. S/P ocular trauma
   iv. Corneal scars
   v. Salzmann’s nodular degeneration
   vi. Persistent epithelial defects
d. Placement of scleral lenses within overall management strategy
e. Informed consent
   i. Risks / benefits

5. Scleral Lenses for Refractive Error (10 minutes)
a. Astigmatism
b. High myopia
c. High hyperopia
d. Presbyopia
e. Aphakia
f. Dry eye
g. Gas permeable contact lens intolerance
h. Piggyback patients
i. Athletes
6. Scleral lens design (10 minutes)
   a. Optical zone
   b. Transition zone
   c. Landing zone
   d. Front toric lenses
   e. Diameter
   f. Clearance – central and limbal
   g. Lens edge
   h. Toric peripheral curves
   i. Microvault
   j. Prolate and oblate designs

7. Scleral Lens Selection Concepts (10 minutes)
   a. What constitutes an ideal fit?
      1. Ideal vault
         a. Too little vault results in lens bearing
         b. Too much vault may compromise corneal health
         c. Even vault creates a better fit
      2. Ideal diameter
         a. How do we arrive at an ideal diameter?
         b. Corneal diameter
         c. Scleral shape
      3. Evaluation of Sagittal Height
         a. Approximating the needed depth
            i. Visually
            ii. OCT
            iii. Topography
            iv. Pentacam

8. Sagittal depth (5 minutes)
   a. Definition
   b. Excessive sagittal depth
   c. Useful comparison for amount of clearance
   d. Settling of scleral lens into conjunctiva
   e. Limbal clearance

9. Materials (2 minutes)
   a. Plasma treatment
   b. Dk
   c. HydraPeg

10. Solutions (5 minutes)
    a. Disinfection
b. Cleaning
c. Storage
d. Application
e. Types and alternative solutions

11. Handling (12 minutes)
   a. Lens application
   b. Lens removal
c. Lens bubbles
d. Technique
e. Specialized tools for handling
f. Scleral Lens Education Society Video

12. Using sodium fluorescein to evaluate lenses (5 minutes)
   a. Initial evaluation
   b. Evaluation after wearing lenses hours later
c. Follow up visit after wearing lenses

13. Corneal complications of scleral lenses (5 minutes)
   a. Diffuse staining
   b. Localized staining
c. Limbal microcystic edema

14. Conjunctival complications of scleral lenses (10 minutes)
   a. Blanching
   b. Impingement
c. Compression
d. Conjunctivochalasis
e. Pingueculae
f. Conjuntival prolapse

15. Lens Flexure (3 minutes)
   a. Central lens flexure
   b. Peripheral lens flexure

16. Debris (5 minutes)
   a. Anterior surface
   b. Tear film debris

17. How to notch a scleral lens (8 minutes)
   a. Measure the size (both height and width) of the conjunctival abnormality using a slit beam.
   b. Measure the height and width of the conjunctival abnormality while the scleral lens is on the eye.
c. Mark the scleral lens with a permanent (e.g., Sharpie) or dry erase marker while the lens is on the eye.
d. Measure the tracing on the lens after removing it from the eye.
e. Call the laboratory consultant to discuss the plan and send the lens to the laboratory.

18. Microcystic corneal edema (5 minutes)
g. Our view in / patient’s view out
h. Solutions to resolve microcystic edema
   i. Solutions
   ii. Topical drops, medications and lubricants
   iii. Eliminate suction of lens, refit if necessary
   iv. Increase diameter of lens to provide more tear exchange
   v. Increase Dk of material
   vi. Fenestrate to eliminate suction and increase oxygenation

19. Patient cases (25 minutes)
a. Severe dry eye
   i. Treatment options for dry eye
   ii. Scleral lenses for dry eye
   iii. Debris with scleral lenses and dry eye
b. Glaucoma S/P Baerveldt glaucoma implant
   i. How to notch a scleral lens
c. Multifocal scleral lenses for presbyopia
   i. Currently available multifocal scleral lenses
   ii. Types of multifocal scleral lenses
   iii. Where to obtain multifocal scleral lenses
   iv. How to fit multifocal scleral lenses
d. Lattice corneal dystrophy
   i. Fitting philosophy
   ii. Collaborative care

A. Literature Review
e. Status-Post Penetrating Keratoplasty (10 minutes)

a. Reverse geometry curves

b. Endothelial cell count

A. Supportive Literature


