

## **Scleral Lenses – From Start to Finish (2 hours)**

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### **Summary**

Scleral lenses have changed the way care for a number of corneal conditions. It is critical to understand the fitting process but also the safety concerns when fitting this lens. This course will take the attendee through the process of scleral lens fitting from start to finish.

### **Learning Objectives**

- 1) Understand those patients most appropriate for scleral lenses
- 2) Discuss appropriate handling of scleral lenses for appropriate insertion and removal including appropriate care and solutions
- 3) Understand appropriate central corneal clearance with scleral lenses along with technologies to assist with the process
- 4) Discuss limbal clearance and strategies to obtain it
- 5) Understand the scleral landing zone and how to optimize its relationship including spherical and toric peripheral curves
- 6) Understand the strategies for trouble shooting commonly encountered problems with scleral lenses

### **Course Outline**

- 1) Understand conditions that would warrant scleral lenses
  - a. Corneal ectasias
    - i. Keratoconus
    - ii. Pellucid Marginal degeneraton
  - b. Corneal trauma
  - c. Penetrating keratoplasty
  - d. Severe ocular surface disease
    - i. Dry Eye
    - ii. Epithelial basement membrane dystrophy
    - iii. Persistent epithelial defects
  - e. High ametropia
    - i. Astigmatic patients
- 2) When do you consider scleral lenses
  - a. Other options may not of adequately corrected problems
  - b. Visual
    - i. Have usually tried soft lenses but vision was compromised

- ii. May have tried gas permeable (GP) lenses but there issues with comfort
  - c. Ocular surface
    - i. May have tried traditional treatments – topical medications
    - ii. May have tried and failed with soft contact lenses
- 3) Discuss handling and care of lenses
  - a. Multipurpose solution – similar to traditional GP lenses
    - i. Conditioning solutions
    - ii. Cleaners
    - iii. All in one systems
  - b. Peroxide cleaning and disinfecting systems
    - i. Clear care
  - c. Preservative free saline
    - i. Necessary that the bowl of the lens is free of preservatives
    - ii. Must be rinsed free of preservatives after storage
    - iii. Bowl of lens is then filled with non-preserved saline
    - iv. Options:
      1. Addipak inhalation saline
      2. ScleralFil
      3. Lacripure
      4. Preservative free refresh tears
      5. Systane Ultra
      6. Celluvisc
  - d. Lens insertion
    - i. Bowl of lens must be completely filled with non-preserved solution
      1. Two to three fingers need to be utilized to balance the lens
      2. Large DMV for balance
      3. See Green System/Plunger
    - ii. Patients head should be parallel to the ground
    - iii. Lens is then placed directly over the cornea
  - e. Lens removal
    - i. Place DMV on the outer third of the lens before removing
    - ii. Consider a fulcrum action when removing lens
- 4) Understand the fitting process
  - a. Understanding initial lens selection
    - i. Sagittal depth
      1. Increased with greater corneal irregularity
      2. Greater sagittal depth with steeper base curve or larger lenses
  - b. Central clearance
    - i. Ideal is between 100-300um
    - ii. Important to know central thickness of the lens that is being fit in order to be able to estimate the amount of clearance;

Difficult to use corneal thickness as a gauge because irregular shape of cornea

- iii. OCT measurements
  - 1. Utilized to measure central corneal clearance
  - 2. Estimating Scleral Lens Clearance and Comparing it to OCT Measured Clearance. Brujic M, 2016. Presented at Global Specialty Lens Symposium
- iv. Low clearance
  - 1. Requires increased sagittal depth
  - 2. Steepen base curve
  - 3. Steepen limbal clearance
- v. Excessive clearance
  - 1. Requires decreased sagittal depth
  - 2. Flatten base curve
  - 3. Flatten (decrease) limbal clearance
- c. Limbal clearance
  - i. Low clearance
    - 1. Increase sagittal depth
    - 2. Steepen limbal curve
  - ii. Excessive clearance
    - 1. Decrease sagittal depth
    - 2. Flatten limbal curve
- d. Scleral landing
  - i. Alignment
    - 1. Many sclera's are not spherical
    - 2. Often times vertical meridian of scleral is steeper than horizontal meridian
    - 3. May require a toric peripheral curve if interaction horizontally differs from the interaction superiorly and inferiorly
  - ii. Impingement
    - 1. Excessive pressure at the edge of the lens on the conjunctiva
    - 2. May cause vascular blanching
    - 3. Requires flattening scleral landing
  - iii. Compression
    - 1. Excessive pressure at the most central portion of the scleral landing zone
    - 2. May cause vascular blanching at the transition between the limbal clearance zone and scleral landing zone
    - 3. Requires scleral landing steepening
- 5) Clinical considerations
  - a. Independent zone manipulation
    - i. Each zone discussed previously can be manipulated independent of one another
  - b. Fitting lenses on a toric sclera

- i. Discussion of toric scleral landing zones in order to fit over toric scleral
  - c. Fitting lenses in the presence of pterygia
    - i. Discussion of notching the scleral landing zone
    - ii. Consideration of a toric scleral landing zone
- 6) Trouble shooting
  - a. Clouding under the lens – Common causes
    - i. Too much central corneal clearance
    - ii. Edge lift causing lens-conjunctival interaction pulling excessive mucin under the lens
    - iii. A spherical landing zone on a toric shaped sclera
    - iv. Inappropriate solution use
  - b. Lens impingement
  - c. Conjunctival prolapse
    - i. Discuss the landing zone surface area and when to consider smaller or larger diameter lenses
  - d. Residual astigmatism
  - e. Excessive deposits
  - f. Poor wetting with initial lens on the eye
    - i. Discussion of DMV to help immediately increase wettability of the surface of the lens
- 7) Implementing into clinical practice
  - a. What type of fitting sets do you need to start the process
    - i. Understand the various fitting sets
    - ii. Discuss the appropriate starting points
  - b. Setting proper patient expectations
    - i. Important for patients to know what to expect
    - ii. Discuss the time and the process of fitting the lens so they are familiar with it prior to the fitting
  - c. How do manage in a busy schedule
    - i. Discussion of lens settling
      - 1. OCT images while lens is settling
  - d. How long do you wait after lens is placed on the eye to assess
    - i. 20 minutes for the lens to settle
  - e. How is the over-refraction performed
  - f. How do you communicate this to your laboratory
  - g. How do you schedule the follow up
  - h. Case presentations will be utilized to demonstrate concepts discussed