

Scleral Lenses 101: Basic Fitting
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Course Description

Scleral lenses improve the lives of patients and practitioners who fit them. Scleral lens selection and follow-up care is reviewed by identifying key areas of concern. Common scleral lens problems and troubleshooting techniques are discussed. The scleral lens fitting process along with problem-solving are discussed at length. Specific care and handling of scleral lenses including solutions and advanced techniques are described. In-office management tips for scleral lens practitioners are discussed.

Learning Objectives

1. Describe three ways scleral lenses differ from corneal GP lenses
2. Explain scleral lens application
3. Describe two techniques used for scleral lens removal
4. Identify edge alignment with a photo
5. Explain central clearance and limbal clearance
6. Identify three good scleral lens candidates
7. Discuss the importance of non-preserved saline
8. Describe the OCT role in scleral lens fitting

Outline

- I. What are scleral lenses? (5 minutes)
 - a. Larger than corneal GPs (>14.0 mm)
 - b. Most designs vault the cornea completely
 - c. Must fill the lens bowl with non-preserved saline
 - d. Minimal movement and decreased lid interaction = COMFORT
 - e. Remarkable stability and centration
 - f. Ability to fit very IRREGULAR corneas

- II. Polymethylmethacrylate (PMMA) (1 minute)

Early 1900s

 - a. Made from impression mold of eye
 - b. Difficult to make

- c. Problem with hypoxia
- III. Scleral Lenses (1 minute)
 - a. First used in late 1800s and early 1900s
 - b. Manufacturing process now more reproducible
- IV. Patient Advantages over traditional lenses (1 minute)
 - a. Comfort
 - b. Large Diameter
 - c. Dryness
- V. Indications for fitting scleral lenses (5 minutes)
 - a. Corneal irregularity
 - b. Ocular surface disease
 - c. Refractive error
- VI. Contraindications (1 minute)
 - a. Corneas with significant edema from reduced endothelial cell count
 - b. Fuch's corneal dystrophy
- VII. How to Fit Scleral Lenses (5 minutes)
 - a. Scleral Lens Application
 - i. Many different ways to apply a scleral lens
 - ii. Filling the lens completely
 - iii. Preservative free solution is essential
 - iv. Types of solution
 - 1. FDA approved solutions
 - b. Scleral lens removal
 - i. Squeeze the moistened suction cup to grasp the lens
 - ii. Apply lens just below the line of sight
 - iii. Use the suction cup like a fulcrum tipping it up forward to remove the last
 - iv. You may also use the other hand to push gently with the lid on the edge of the scleral lens breaking the suction and allowing for removal
- VIII. Settling/Sinking (1 minute)
 - a. Allow time to settle
- IX. Scleral Lens Evaluation (5 minutes)
 - a. Scleral lens fits can be evaluated with a slit lamp, an OCT or both
 - b. Follow fitting guide instructions
 - c. Best method is to evaluate "inside-out"
 - d. Examples of scleral lens evaluation
 - i. Slit lamp

ii. OCT

- X. Limbus (2 minutes)
 - a. Compression at the limbus could damage delicate stem cells
 - b. View with optic section and fluorescein
 - c. Full limbal clearance!

- XI. Conjunctiva (3 minutes)
 - a. Should look like a well fit soft lens
 - b. Vessels should not drag or blanch
 - c. No impingement
 - d. The lens should not compress or dig in to the conjunctiva
 - e. This is easily seen with the OCT on raw image

- XII. How to Help Your Patients Succeed (1 minute)
 - a. Literature
 - b. Videos
 - c. Resources

- XIII. Videos and pictures with interactive questions (3 minutes)

- XIV. How to select a scleral lens diagnostic fitting set (2 minutes)
 - a. Each company's design is somewhat different in the curves fitting method.
 - b. Highly recommended to use the fitting set, follow the fitting guide for the specific lens design, and utilize consultants to fully understand the specific lens design.

- XV. Diameter selection (2 minutes)
 - a. How to measure corneal diameter - reticle, slit lamp, ruler
 - b. Based on Eye Condition
 - c. Evaluate patient from the side

- XVI. Topography (2 minutes)
 - a. Corneal
 - b. Scleral

- XVII. Case example of a patient with keratoconus (1 minute)

- XVIII. Lens notches (2 minutes)
 - a. Used to bypass conjunctival obstacles:
 - b. Elevated pingueculas
 - c. Conjunctival blebs
 - d. Notch size
 - e. Example before and after notching

- f. How to insert a lens with a notch
- XIX. Front Toric (3 minutes)
- a. Solution to residual astigmatism
 - b. Important to rule out lens flexure or toric scleral shape
 - c. Lens fit is not affected by adding front toric
 - d. Troubleshooting Lens Flexure
 - e. Determine if flexure is present
 - f. Astigmatism in the over-refraction?
 - g. Rule out flexure with topography or manual K's
- XX. Residual Astigmatism (2 minutes)
- a. Against the rule (Lenticular) over-refractive axis
 - b. Consistent amount and axis through multiple orders
 - c. No flexure noted on over-K's or over topography
 - d. An F1 toric could be the answer
- XXI. Front Toric Optics (5 minutes)
- a. Lens needs to be stable with no rotation
 - i. Designs:
 1. Double slab off
 2. Prism ballasting
 3. Truncation modifications
 4. Toric periphery
 5. Weighing in the limbal zone
 - b. Lenses do not fit differently because of front toric optics
 - c. Good option for patients desiring better vision and have residual astigmatism
 - i. Can achieve better vision in office with sphero-cyl over-refraction
 - ii. Not good for patients with lens flexure
 - iii. Not good for patients with < 0.75 D cyl
 - iv. Not good for patients with posterior cornea irregularities
- XXII. Toric Peripheries (2 minutes)
- a. Markers usually on the flat meridian
 - b. Lenses will rotate into place and lock in (like a glove)
 - c. Creates great stability for front torics
- XXIII. Scleral Multifocals (1 minute)
- XXIV. Impression Scleral Lens Technology (1 minute)