

How to Utilize Various Techniques for Scleral Lens Success

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Course Outline

- I. The use of correct scleral lens (SL) terminology
- II. Improve knowledge of scleral lens fitting procedures and assessment with different techniques
- III. Learn how to know the benefits and limits of each technology
- IV. Vital stains in scleral practice
The use of vital stains in SL practice, is important to assess corneal and conjunctival health and the fitting relationship of the lens with the underlying ocular surface.
 - a. Sodium fluorescein
 - b. Lissamine green
 - c. Mixture of dyes
 - d. Assessment:
 - i. Lens alignment on the conjunctival tissue
 - ii. Lens periphery
 - iii. Edge lifting
 - iv. Scleral toricity
 - v. Influx of the stained fluid in the fluid reservoir
 - vi. Conjunctival impingement
 - vii. Conjunctival tissue integrity
- V. Grading scales
 - a. Van Bjsterveld
 - b. Caffrey and Josephson
 - c. Contact Lens Research Unit (CCLRU)
 - d. Efron grading scales
- VI. How technologies contribute to increase SL fitting success
 - a. Better determine initial lens selection
 - b. Reduces the number of lenses applied on the eye, and concern of the patient
 - c. Allow the customization of the lens
 - d. More accurate lens assessment with fewer lens reorders
 - e. Reduces chair time, costs, and frustration for both practitioners and patients
- VII. Live general ocular assessment before lens fitting with a slit lamp
Different ocular measurements should be documented. The use of a reticule with the slit-lamp provides a more accurate measurement. The purpose is:
 - a. To predict fitting results

- b. To regulate patients' expectations
- c. To choose the appropriate lens geometry
- d. To monitor issues or complications
- e. To modify the landing to optimize lens geometry

Factors and parameters to consider in choosing the first diagnostic lens:

- a. Visible iris diameter
- b. Pupil size
- c. Palpebral aperture
- d. Eyelid position
- e. Ocular health assessment
 - i. Eyelashes
 - 1. Blepharitis
 - 2. Meibomitis
 - 3. Irregularities
 - 4. Demodex
 - ii. Eyelid margin
 - 1. Meibomian gland dysfunction
 - 2. Meibomian gland cysts
 - 3. Infectious
 - 4. Inflammatory
 - 5. Lagophthalmos
 - 6. Eyelid tonicity
 - 7. Blepharitis
 - 8. Lid-wiper epitheliopathy
 - 9. Eyelid lesions
 - iii. Palpebral conjunctiva
 - 1. Palpebral conjunctival hyperemia
 - 2. Follicles
 - 3. Papillae
 - iv. Bulbar conjunctiva
 - 1. Bulbar conjunctival hyperemia
 - 2. Conjunctival staining
 - 3. Conjunctival irregularities (pingueculae, pterygium, blebs, glaucoma drainage device)
 - v. Cornea
 - 1. Corneal profile
 - 2. Corneal staining
 - 3. Corneal opacities
 - 4. Corneal edema
 - vi. Limbus
 - 1. Neovascularization
 - 2. Limbal staining
 - vii. Anterior chamber and iris
 - 1. Anterior chamber depth
 - 2. Iris anomalies (irregular pupils, synechiae, iris pigmentation or nevi)

- viii. Crystalline lens
 - 1. Opacities of the crystalline lens or intraocular lens implant
 - ix. Retina
 - 1. Irregularities
 - 2. Diseases
 - 3. Causes of best corrected visual acuity
- VIII. Live ocular surface shape assessment with different techniques:
 - a. Using slit lamp and diagnostic scleral lenses
 - i. Clinical signs observed with a spherical scleral lens applied on the eye
 - 1. Sectorial conjunctival blanching
 - 2. Dye influx into the post lens liquid reservoir
 - 3. Lens edge lift
 - ii. Clinical signs observed with a toric SL applied on the eye
 - 1. Lens behavior
 - 2. Evaluation of different amounts of toricity on the eye
 - iii. Clinical signs observed after scleral lens removal
 - 1. Rebound conjunctival hyperemia
 - 2. Arcuate conjunctival staining
 - iv. Summary of possible toric pattern when fitting a spherical SL on a toric sclera
 - 1. Flat spherical SL on with-the-rule toric sclera
 - 2. Steep spherical SL on with-the-rule toric sclera
 - v. Classification: A scleral lens for each scleral profile
 - b. Using corneal topography
 - i. Corneal profile
 - ii. Corneal sagittal height
 - c. Using OCT
 - i. Pachymetry for position and thickness of any cone or ectasia
 - ii. Sag, visual axis and Caliper measurements
 - iii. Edge landing
 - iv. Decide on next steps according to fit
 - v. Repeat after settling if suitable
 - vi. Look for bubbles / tear quality / conjunctival prolapse
 - vii. Describe and educate the patient
 - d. Using scleral topography
 - i. Mapping the ocular surface
 - ii. Evaluation of the topography
 - iii. Analysis of the data
 - iv. First lens selection
 - v. Lens design customization
 - e. Using Scheimpflug tomography
 - i. Ocular sagittal height
 - ii. Ocular surface profile
 - iii. Imaging of the anterior segment
 - iv. Global pachymetry
 - v. Scanning technology
 - f. Using total aberrometry

- i. Corneal pachymetry
 - ii. Corneal topography
 - iii. Total aberrometry
- IX. Supplementary testing
 - i. Pachymetry
 - ii. Specular microscopy (endo cell count)
 - iii. Anterior segment photography
- X. Other testing
 - i. Infra-red Meibography
 - ii. Corneal biomechanics (ORA, Corvis)
 - iii. Pneumotometry and transpalpebral tonometry: intraocular pressure
 - 1. Theory behind an increased intraocular pressure (IOP) when wearing SLs
 - a. Effect of the lens on the conjunctival tissue, drainage channels, episcleral veins)
 - b. Total diameter of a SL influence on aqueous humor outflow
 - c. Effect of SL fitting
 - 2. Comparison of the measurement of IOP while wearing:
 - a. Soft lens
 - b. Scleral lens
 - 3. Results of the studies showing:
 - a. Increased IOP
 - b. No significant changes in IOP
 - c. Limitations of the studies
 - 4. Conclusion and indications for well-designed studies
- XI. Live lens assessment on the eye using different techniques:
 - a. Using slit lamp
 - i. Corneal and limbal vault
 - ii. Lens alignment on the conjunctiva
 - iii. After lens removal, the effect of the lens wear on the eye
 - 1. Corneal staining
 - 2. Conjunctival staining
 - b. Using corneal topography
 - i. Lens flexure
 - c. Using OCT
 - i. Corneal and limbal vault
 - ii. Lens alignment on the conjunctiva
 - iii. Corneal pachymetry
 - iv. Lens thickness
 - d. Using total aberrometry
 - i. Effect of the lens on high order aberrations
 - e. Pneumometry: intraocular pressure
 - f. Transpalpebral tonometry: intraocular pressure
- XII. Assessment of ocular surface after lens removal

- a. Using slit lamp
 - i. Corneal and limbal staining
 - ii. Conjunctival staining
- b. Using corneal topography
 - i. Changes in corneal topography
- c. Using OCT
 - i. Corneal pachymetry
- d. Using corneoscleral topography
 - i. Changes in corneal and scleral topography
- e. Using total aberrometry
 - i. Corneal pachymetry
 - ii. Corneal topography
- f. Pachymetry
- g. Specular microscopy (endo cell count)
- h. Infra-red Meibography
- i. Corneal biomechanics (ORA, Corvis)
- j. Pneumometry (monitoring intraocular pressure)
- k. Transpalpebral tonometry: intraocular pressure

XIII. Conclusion