

## Scleral Lenses: An Oasis for Dry Eye

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Ocular surface disease (OSD) is a highly prevalent and chronic condition with a multitude of ocular and systemic causative factors. This course will review basic scleral fitting techniques and problem solving techniques for successful therapeutic scleral lens wear in the ocular surface disease population. Additionally, case examples will be reviewed.

### Objectives

1. Identify patients with OSD that may be good candidates for scleral lenses.
2. Review appropriate care regimens to maintain the surface quality of scleral lenses.
3. Understand how to concurrently manage OSD to improve success with scleral lens wear.
4. Review cases of patients using scleral lenses to manage their OSD.

### Outline

1. Introduction
  - a. Scleral contact lenses were reintroduced into the market with the possibility to manufacture them in gas permeable material
  - b. GP scleral lenses proven beneficial
    - i. Visual rehabilitation in irregular corneas
    - ii. Therapeutic treatment of ocular surface disease
2. Therapeutic use of scleral lenses characterized as a positive risk/benefit ratio
  - a. All other alternatives exhausted
  - b. Scleral Lens vs Surgery
    - i. Gundersen Flap
    - ii. Tarsorrhaphy
    - iii. Keratoprosthesis
    - iv. High Risk Penetrating Keratoplasty
  - c. Exceptions: compromised endothelial cells layer

- i. S/P PKP
  - ii. Fuch's Dystrophy
- 3. Scleral lenses: an adjunctive therapy
  - a. Ocular Protection and Continuous Lubrication
  - b. Best application: severe/complex disease
  - c. Mild to moderate disease
- 4. Therapeutic scleral lens indications
  - a. Neurotrophic Keratitis
  - b. Grave's Ophthalmopathy
  - c. Graft vs Host disease
  - d. Stevens-Johnson Syndrome
  - e. Ocular Cicatricial Pemphigoid
  - f. Exposure Keratopathy
  - g. Chemical Burns
  - h. Limbal Stem Cell Deficiency
  - i. Basic Scleral Lens Fitting
- 5. Basic Fitting Considerations
  - a. Diameter: large vs. small
    - i. Measure HVID
    - ii. Considerations for OSD cases vs. irregular cornea
    - iii. Larger diameter = more coverage, but more toricity
  - b. Lens shape: prolate vs. oblate
    - i. Corneal topography/tomography
    - ii. Viewing in profile
  - c. Sagittal depth: lens must fully vault cornea
    - i. Understanding difference between curvature and elevation
- 6. Evaluating Fit and Vision
  - a. Central corneal clearance
  - b. Limbal clearance

- c. Scleral haptic alignment
  - d. Centration
  - e. Over-refraction: spherical vs. front surface toric
    - i. Troubleshooting residual astigmatism
  - f. Settling characteristics of sclerals
7. Scleral lenses for OSD – common problems
- a. Lens Awareness
  - b. Chamber Debris
  - c. Poor Lens Wetting
  - d. Deposits
  - e. Corneal Edema
  - f. Hypoxia
8. Troubleshooting: Chamber Debris and Lens Awareness
- a. Improve Haptic Alignment
    - i. Spherical
    - ii. Toric
    - iii. Quad
    - iv. Free Form
  - b. Advanced haptics
    - i. Notch
    - ii. Microvault
    - iii. Impression based technology
    - iv. Advanced scleral imaging exists to aid in understanding scleral shape
  - c. Traditional Haptics
    - i. No blanching of conjunctival vasculature
    - ii. Varied based on guide
      - 1. Some state quadrant of blanching acceptable
9. Troubleshooting: Poor Front Surface Wetting and Deposits
- a. Daily Cleaning Regimen

- b. Advanced lens treatments (Plasma treatment, Progent, Extra Strength Cleaners)
- c. Tangible Hydra-PEG
- d. Patient hygiene and external factors (Make-up, lotions)
- e. Concurrent home therapy/lid hygiene
  - i. Education of appropriate techniques
  - ii. Take-home handout for patients
- f. Concurrent in office management of dry eye (evaporative, aqueous deficient, exposure)
  - i. Lid margin debridement & expression
  - ii. In office advanced procedures
  - iii. Considerations for use of OTC drops, gels, ointments
  - iv. Considerations for use of topical medications

#### 10. Case Examples

- a. Grave's Ophthalmopathy
- b. Sjogren's Syndrome
- c. Facial Nerve Palsy with Exposure Keratopathy
- d. Limbal Stem Cell Deficiency
- e. Moderate Dry Eye Multifocal Scleral Lens

#### 11. Importance of regular follow-up care