

Scleral Lenses in Dry Eye  
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**Abstract:** This 50-minute lecture is on the topic of scleral lenses in dry eye disease. In this course, we will learn about the various indications for scleral lenses including dry eye and how scleral lenses can be used to restore the ocular surface. Case studies are presented.

**Course Learning Objectives:**

To provide participants with knowledge and management of fitting scleral lenses in dry eye disease. Several photographic histories will be presented and will be selected from a large collection of cases Attendees will be exposed to various scleral lens technologies available for managing and treating dry eye disease. Guidelines and problem-solving tips can be applied to the practice of participants.

At the conclusion of this lecture, the attendee will be able to:

1. Understand the clinical presentation of dry eye disease
  2. Understand what tools to use to design lenses for this condition
  3. Outline a management plan using scleral lenses for dry eye disease
  4. Troubleshooting complications that can occur with scleral lenses in dry eye disease.
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**I. Scleral Lens Terminology, Design and Indications**

**A. Size classifications**

- a. Mini scleral lens: up to 6mm larger than patient's HVID
- b. Large scleral lens: greater than 6mm larger than patient's HVID

**II. Dry Eye Disease**

- c. Definition and classification
- d. Epidemiology
- e. Pathophysiology

**B. Evaporative Dry Eye**

- a. Case presentation
- b. Ddx: contact dermatitis, bacterial conjunctivitis, ocular rosacea
- c. Workup: meibography, in office gland expression
- d. Summary of the DEWSII Report on Evaporative DES
  - i. Majority of DES is evaporative, some mixed some aqueous deficient DES
- e. What is Evaporative DES? How does it relate to MGD?
- f. Role of Biofilm in Blepharitis
- g. How do diagnose it, the use of Meibography in today's practice for meibomian gland imaging
  - i. LipiView II,
  - ii. LipiScan
  - iii. Oculus Keratograph 4
  - iv. Topcon
  - v. Meibox
- h. Treatment and management overview

- i. Warm compresses (homemade, far infrared, microwave)
- ii. Lipiflow/miboflow
- iii. Blephex/Lidpro
- iv. Avenova/Ocusoft/Other/Baby Shampoo
- v. Artificial tears

**C. Aqueous Deficient Dry Eye (ADDE) (20 minutes)**

- a. Case presentation
- b. Ddx: Neurotrophic keratitis, allergic conjunctivitis, Toxic keratopathy
- c. Overview
- d. Summary of the DEWSII Report on ADDE
- e. Epidemiology
- f. Causes
- g. Evaluation
- h. Diagnostic testing
  - i. History and physical
  - ii. Corneal sensation
  - iii. Ocular surface staining
    - 1. Lissamine Green/Rose Bengal
    - 2. Sodium Fluorescein
    - 3. Lid wiper epitheliopathy
  - iv. Schirmer Test
  - v. Delayed Tear Clearance
  - vi. MMP-9
  - vii. Tear Osmolarity
  - viii. Tear Film Interferometry
  - ix. Sjo test
- i. Management
  - i. Artificial tears
  - ii. Longer acting agents
  - iii. Tear conserving interventions
    - 1. Tear gel, ointments
  - iv. Prescription medications
    - a. Cyclosporin (0.05%, 0.09%)
    - b. Lifitegast 0.05%
    - c. Topical Ophthalmic steroids
    - d. Oral flaxseed or fish oil supplements
    - e. Autologous serum tears
    - f. Biologic eye drops

**II. Scleral lens indications**

- j. Regular cornea patients
  - i. Presbyopes
  - ii. High refractive error
- k. Irregular cornea patients
  - i. Primary and secondary corneal ectasias

ii. Post-surgical/refractive

1. Ocular surface disease

**a.** Definition and classification

**b.** Epidemiology

**c.** Pathophysiology

**d.** Various conditions:

i. Exposure keratopathy

ii. Sjogren's Syndrome

iii. Stevens Johnson Syndrome

iv. Grave's Disease

III. Discussion of various new scleral technologies

i. Scleral evaluation technologies

1. Anterior Segment OCT

ii. Scleral mapping technologies

1. sMap3d

2. Eaglet Eye ESP

3. Pentacam CSP

iii. Corneal impression molding technologies

1. EyeprintPRO

iv. New gas permeable material and treatments

1. Hyper-Dk materials (200 Dk)

a. Optimum infinite

b. Acuity 200

2. Treatments

a. Tangible Science Hydra-PEG