Heart *of* America
Eye Care Congress

Contact Lens Complications in the Primary Care Setting: A Lens-by-Lens Approach

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Course Category:
Anterior Segment / CL

Course Description (30 words):
A comprehensive overview of contact lens complications in primary care optometry, including soft, RGP, hybrid, and scleral lenses, with emphasis on clinical recognition, differential diagnosis, patient management, and prevention strategies.

Course Learning Objectives:

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

1. Differentiate the common complications associated with soft, rigid gas permeable, hybrid, and scleral lenses.
2. Recognize clinical signs and symptoms of sight-threatening contact lens–related conditions such as microbial keratitis and corneal neovascularization.
3. Apply evidence-based strategies for prevention, patient education, and management of contact lens–associated complications.

Detailed Course Outline (50 minutes)

I. Introduction (2 minutes)
- a. Prevalence of contact lens use globally
- b. Importance of early detection of complications
- c. Overview of lens types in primary care

II. Soft Contact Lenses (12 minutes)
- a. Common Complications:
  - Corneal Abrasions
  - Contact Lens Acute Red Eye (CLARE)
  - Giant Papillary Conjunctivitis (GPC)
  - Jelly Bumps
  - Corneal Neovascularization
  - Microbial Keratitis (Pseudomonas, Acanthamoeba, fungal)

b. **Clinical Features & Diagnosis:**
    - Pain, photophobia, discharge, vision loss
    - Use of slit lamp, fluorescein staining, lid eversion

c. **Management:**
    - Immediate cessation of lens wear
    - Antibiotic therapy, anti-inflammatory drops
    - Hygiene education and daily disposable conversion

III. Rigid Gas Permeable (RGP) / Hard Lenses (10 minutes)

a. Complications Specific to RGPs:
    - 3 and 9 o'clock staining
    - Lens warpage
    - Dimple veiling
    - Epithelial microcysts and SPK
    - Endothelial bleb response

b. **Mechanisms:**
    - Lens fit issues
    - Incomplete blink mechanics
    - Reduced tear exchange

c. **Management Tips:**
    - Refitting, tear supplements, reduced wear time
    - Switching to high Dk materials

IV. Hybrid Lenses (6 minutes)

a. Common Challenges
    - Lens adherence (most common): steep GP base curve, excessive vault, or steep skirt → suction, difficulty removing.
      • Midperipheral/junction staining**:** seal-off at GP–skirt junction from steep GP or excess sagittal depth.
      • Central staining: GP too flat or vault too low.
      • Discomfort / instability: skirt too steep → indentation; skirt too flat → excess movement and fluctuating vision.

b. Clinical Strategy
    - Assess after removal with NaFl: check for central clearance, light touch at junction, and skirt bearing.
    - Modify fit based on staining:
        - Junction staining/adherence → flatten GP or reduce vault.
        - Central touch → increase vault or steepen GP.
    - Skirt issues → adjust skirt steepness accordingly.
        - Monitor for long-term effects: hyperemia, scarring, neovascularization.

- Reinforce application/removal technique: gentle application; proper removal to avoid delamination.

V. Scleral Lenses (10 minutes)

a. **Hypoxia**
   - Causes: Excessive vault, low Dk material, poor tear exchange.
   - Signs: Redness, photophobia, decreased vision.
   - Management: Reduce vault, switch to higher Dk lens, fenestration.

b. **Midday Fogging**
   - Cause: Tear reservoir debris (lipids, cells).
   - Management: Add PF artificial tears to fill, midday refill, address ocular surface disease.

c. **Conjunctival Prolapse**
   - Cause: Loose limbal fit.
   - Management: Reduce limbal clearance, decrease OAD, use quadrant-specific haptics.

d. **Limbal Touch/Staining**
   - Cause: Settling of lens leads to contact with limbus.
   - Management: Increase limbal vault zone, evaluate after settling.

e. **Edge Issues**
   - **Impingement:** Tight landing zone causing blanching.
   - Fix: Flatten haptics or use toric/quadrant-specific haptics.

f. **Edge Lift:** Poor alignment → bubbles/discomfort.
   - Fix: Steepen edge, increase diameter.

g. **Bubbles**
   - **Central:** Insertion error (air trapped).
   - **Peripheral:** Poor alignment.
   - Fix: Educate patient, reinsert, optimize fit.

h. **Surface Non-Wetting**
   - Cause: Deposits or poor surface quality.
   - Management: Alcohol cleaner, plasma treatment, Hydra-PEG.

i. **Solution Toxicity**
   - Cause: Preservative-containing fill solution.
   - Management: Use non-preserved saline (e.g., Addipak).

j. **Managing Anatomy**
   - Pinguecula: Use microvaults or notches.
   - Post-surgical eyes: Custom haptics for grafts, blebs.

k. **Insertion/Removal Difficulty**
   - Geriatric/arthritis patients may need aids (plunger, DMV).
   - Viscous fill helps reduce bubbles.

l. **Visual Issues**
   - Residual astigmatism, flexure.
   - Management: Front toric lens, refit.

VI. Diagnostic Approach in Primary Care (5 minutes)

a. Importance of case history: wear schedule, solution used, hygiene
b. Use of fluorescein with cobalt blue + yellow filter
c. Lid eversion for GPC
d. Anterior segment OCT (optional)
e. Culture in suspected microbial keratitis

VII. Prevention Strategies & Patient Education (3 minutes)

a. Replace lenses as directed
b. Do not sleep in lenses unless specifically approved
c. Avoid water exposure (showering/swimming)
d. Hand hygiene and storage case care
e. Encourage regular follow-up visits

VIII. VIII. Summary & Clinical Pearls (2 minutes)

a. Each lens type has unique risk profiles
b. Most complications are preventable with proper fit, hygiene, and education
c. High vigilance for microbial keratitis, especially in soft lens wearers

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