Scleral Contact Lens Complications

- Application bubble
- Surface non-wetting and depositions
- Difficulty with lens removal
- Corneal Changes
  - Solution sensitivities
  - Corneal neovascularization, bogging, fibrosis, scarring, ...
- Inflammation/Infection
- Conjunctival Changes
  - Prolapse/Chalasis
  - Impression Rings/Staining
- Apical / limbal / scleral bearing
- Tear film fogging

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Maria Walker OD, MS

Application

Step 1
Step 2
Step 3

Application Bubble

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Application Bubble

Dimple Veiling
Application Pearls

- CLEAN and DRY hands
- Grasp the eyelids at the lash margin
- Head parallel to ground and lens level during application

**Patient education is essential!**

Application Considerations

- Dexterity (Parkinsons/tremors)
- Eyelid apertures
- Visual Status

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Surface Non-Wetting

- Surface Non-Wetting
- Surface Deposits
**Rigid Lens Cleaning Products**

- Boston
- Menicon
- Optimum
- Polishes

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**Removal**

- Proper placement of plunger is key
- Wet the tip of the plunger for greater suction
- Slow and steady wins the race

**Removal Pearls**

- *“Lens is stuck on my eye!”*
  - Attempt different peripheral locations
  - Apply pressure to adjacent scleral tissue to break suction
  - Slide edge of plunger underneath lens and sclera

**“Lens is stuck on my eye!”**

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Baseline Data to Monitor
Corneal Changes
- Corneal Pachymetry (global)
- OCT
- Pentacam
- Endothelial Cell Density
- Corneal Staining
- Neovascularization
- Corneal Scarring
- Watch out for...
  - Neo
  - Microsystic edema
  - Endothelial blebs, poly/pleo-morphisms

What is in the Tear Fluid Reservoir (TFR)?
- Mucous Components
- Aqueous Components
- Proteins
- Lipids
- ... alterations in many anterior surface diseases

Epithelial “Bogging”
- Cause unknown
- Non-nutritious saline beneath lens
- Potential etiologies:
  - Loss of glycocalyx layer
  - Epithelial edema
  - Osmotic imbalance
- Patients asymptomatic
- Does not appear to be long-term effect

Corneal Epitheliopathy
- Treatment:
  - Change application solution
  - Change fit to decrease vault
  - Educate patients taking medicated drops
  - Educate patients on proper use of solutions

Patient education is the key to ScCL success
Preservative Toxicity

Corneal Staining and Scarring

Corneal Edema

Signs of Corneal Hypoxia

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Inflammatory Response
- Allergies
- Solution sensitivity
- Poor fitting lens
- Surface debris toxicity
- Infection
- Material sensitivity (rare)
Giant Papillary Conjunctivitis

Australian MK Incidence Study

Incidence per 10,000

Major Risk Factors:
- Ocular surface disease
- Steroid use

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Conjunctival Prolapse

Prolapse

Recessed Prolapse
Conjunctival Prolapse

- **Cause:**
  - Negative pressure forces beneath the lens
  - “low-lying” cornea
- **Effect:**
  - Potential neovascularization and limited nutrient availability to limbal cornea
- **Management:**
  - Adjust peripheral lens fit
  - Monitor if mild (<3 clock hours)

Conjunctival Impression Rings & Staining

- **Impression Ring**

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Fitting Technique: Fluorescein
Apical Bearing

Limbal Clearance Zone

Appropriate Limbal Clearance

Inadequate Limbal Clearance

Limbal Bearing

Corneal Erosion

Epithelial breakdown

Punctate Staining

Subepithelial fibrosis related to graft ectasia

Scleral Landing Zone

Well-aligned Scleral Landing

Scleral Bearing

Blanching

Impingement
Uneven Scleral Bearing

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Midday Fogging

Managing the Fog
Alter lens design to decrease excess clearance

Managing the Fog
Alter lens design to decrease excess clearance

Managing the Fog
High viscosity application solution
Additional Unknown Complications

Epithelial and Endothelial long-term Health

Long term effects of Conjunctival Compression

Long term Limbal Health Implications

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mk_walker@central.ub.edu