

# **TROUBLESHOOTING CONTACT LENS PROBLEMS**

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## **SOFT LENS TROUBLESHOOTING**

### **PROBLEMS RELATED TO LENS FIT (10 minutes)**

- Lens too tight or too steep
  - Evaluate movement
    - . Thicker lenses must move more
    - . Conjunctival drag may simulate movement
  - Look for:
    - . Trapped air bubbles
    - . Circumcorneal injection
    - . Scleral indentation after lens removal
  - Evaluate patient symptoms
    - . Sensation of soreness
    - . Foggy, misty, hazy, smokey, steamy vision
    - . Fluctuating vision (clearing after blink)
    - . Ghost images
  - Refit with flatter and/or smaller lenses
  
- Lens too loose or too flat
  - Evaluate movement
    - . Excessive drop in upward gaze
    - . Excessive lag on lateral eye movements
  - Evaluate position of lens
    - . May be high and/or temporal
    - . May have edge standoff (pucker) inferiorly or nasally
  - Evaluate patient symptoms
    - . Foreign body sensation
    - . Excessive lens awareness
    - . Blurring immediately after blink
  - Refit with steeper, larger, or thinner lenses
  
- Corneal exposure
  - Causes:
    - . Lens diameter too small for patient's cornea
    - . Tight lids cause lenses to decenter
    - . Displaced corneal apex
  - Signs and symptoms
    - . Foreign body sensation

- . Conjunctival injection adjacent to area of exposure
- . Burning sensation
- . Ghost images
- . Fluorescein staining or dellen formation
- Remedies:
  - . Use larger and/or thinner lenses

**PROBLEMS RELATED TO REDUCED VISUAL ACUITY (5 minutes)**

- Ghost images
  - . Uncorrected astigmatism
    - Use thicker or stiffer material
    - Use toric soft lenses
    - Refit with RGPs
  - . Dry eyes
    - Use lubricants
    - Refit with mid-water-content lens
    - Refit with thicker lens
  - . Coated lenses
    - Replace lenses
    - Review lens care with patient
    - Check for GPC
  - . Steep lenses
    - Flatten base curve
    - Decrease diameter
  - . Decentered lenses
    - Refit with lathe-cut lenses
    - Refit with larger or thinner lenses
- Fluctuating visual acuity
  - . Rule out dehydration
    - Windy or dry environment
    - Tired patients
    - Non-blinking during prolonged close work
    - Medications
      - Antihistamines
      - Decongestants
      - Birth control pills
      - GI medications with atropine (belladonna)
      - Diuretics
      - Acutane
      - MAO inhibitors
    - Health & age
      - Menopausal and post-menopausal women
      - People over 40 in general
      - Thyroid problems

- Arthritis and other collagen diseases
  - . Refit dry-eyed patients with thicker MWC lenses
  - . Suspect inside-out or mixed lenses as cause of fluctuation
  - . Make sure lenses are not too flat or too steep
- Irregular peripheral cornea
  - Causes waves in surface of lens & induces astigmatism
  - Refit with thicker or stiffer lenses
- Difficulty with near vision
  - Presbyopia
    - . Earlier onset in CL-corrected myopes
    - . Later onset in Cl-corrected hyperopes
  - Reading difficulty in young myopes used to reading without glasses
  - Blur in downgaze looking through base of prism in toric SCLs
- True diplopia
  - Pre-existing motility problem
  - Prism induced when toric lens is worn in one eye only
    - . Try double slab-off toric in unilateral astigmats
  - Prism induced by low-riding contact lens (especially plus lens)

### **PROBLEMS RELATED TO LENS CARE (10 minutes)**

- Cloudy vision
  - Is it the lens or the cornea?
    - . Let lens dry to see deposits better
    - . Do not try to salvage badly-coated lenses
    - . Review cleaning & disinfection with patient
    - . Consider disposables or planned replacement for daily wear only
- Is the lens clouding due to chemical incompatibility?
  - Mixing of incompatible solutions
  - Use of generic H<sub>2</sub>O<sub>2</sub>
  - Use of USP salt tablets
  - Gray discoloration from thimerosal
  - Yellow discoloration from sorbate
  - Reheating lenses in old solution
  - Heating lenses in cold disinfecting solution
- Does the patient have GPC?
  - Increased mucus secretion
  - Itching after lens removal
  - Foreign body sensation
  - Lens displacement with blink
- GPC management
  - In severe cases D/C wear and treat with Cromlon or Alomide
  - Refit with disposable or planned replacement lenses
  - No extended wear!
  - Use only preservative-free solutions
  - Emphasize importance of compliance

## **PROBLEMS RELATED TO LENS DISCOMFORT (10 minutes)**

- Dehydration
- Corneal exposure
- GPC
- Old, coated, or damaged lenses (use 7X or 10X loupe to inspect)
- Debris trapped between lens and eye
  - Swizzle and swirl
  - Remove and clean lens
- Calcium deposits
- Staining
  - Deposits
  - Trapped debris
  - Faulty insertion and removal techniques
  - Corneal exposure
  - Smile staining
- Epithelial splitting
- Inside-out lenses
  - Taco test
  - Visual inspection
  - Pinching between fingers

## **PROBLEMS RESULTING IN RED EYES (10 minutes)**

- Solution sensitivity
  - Injection
  - Itching
  - SPK
  - May mimic other allergies, infections, ulcers
  - Superior limbal keratitis (SLK)
- Mixed solution syndrome
- Infections & corneal ulcers
- CLARE
- Lens spoilage
  - Soiled lenses
  - Micro-organisms growing on lens deposits or in lens matrix
- Corneal infiltrates
- Microbial keratitis
  - Acanthamoeba keratitis
  - Bacterial ulcers
  - Fungal ulcers
  
- Extended wear
  - Extended wear means extended care!
  - When in doubt, take it out!
  - Extended wear is not an endurance contest!

## **PROBLEMS RELATED TO HYPOXIA (10 minutes)**

- Myopia creep
- Changes in K-readings
  - Flatter
  - Steeper
  - Irregular mires
- Vertical striae (Edematous Corneal Formations)
- Visible edema
  - Rule out corneal dystrophies
  - Refit with thinner, higher-water-content lenses
  - Use extended wear lenses for daily wear
  - Use superpermeable RGPs
- Corneal infiltrates
  - Hypoxia
- SLACH syndrome
- Microcysts
- Epithelial breakdown
- Vascularization
  - Check superior limbal area for new vessels
  - Area covered by upper lid stays warmer, gets less oxygen

## **RGP TROUBLESHOOTING**

### **NORMAL ADAPTIVE SYMPTOMS (2 minutes)**

- Watery eyes
- Lid irritation
- Difficulty looking up
- Intermittent blurring
- Excessive blinking
- Incomplete blinking

### **PROBLEMS WITH DISCOMFORT (8 minutes)**

- Poor laboratory finishing
  - Edges (should be rolled slightly inward)
  - Surface quality
  - Blends
- Residual pitch or solvents
  - Use lab cleaner in office
  - Do not polish (heat will cause wax to spread)
  - Overpolishing will cause burnt or mottled surface
  - Return to lab if poor wetting persists

## **INCREASE IN FOREIGN BODY SENSATION**

- Return of corneal sensitivity in former PMMA lens wearers
- Nature of silicone/acrylate polymer
- Improper cleaning & storage
- Scratched or coated lenses

## **DRYNESS**

- Nature of silicone/acrylate polymer
- Check patient's medical history
  - Medications
  - Arthritis or thyroid disease
- Check patient's cleaning habits

## **IMPROVING COMFORT**

- Use only solutions specifically formulated for RGPs
- Make sure lenses are cleaned nightly
- Make sure lenses are stored wet
- Try to achieve superior, lid-attachment fit
- Use fluoropolymers
- Use junctionless aspheric designs
- Use back or bi-torics on high astigmats to eliminate rocking

## **PROBLEMS WITH CORNEAL INTEGRITY (10 minutes)**

- Persistent edema with RGPs
  - Signs & symptoms
    - Central corneal clouding
    - Overwearing syndrome (OWS)
      - Stabbing pain
      - Severe photophobia
      - Tearing
      - Coalesced central staining
    - Halos around lights
    - Steepening of K-readings
    - Spectacle blur
      - Edema
      - Mechanical molding
  - Causes
    - Undiagnosed corneal dystrophy
    - Patient is not actually wearing RGPs
    - Patient requires greater-than-normal O<sub>2</sub>
  - Remedies

- Refit with superpermeables
- Eliminate mechanical molding with aspherics or inside torics

### **CORNEAL WARPAGE FROM PMMA OR LOW Dk RGP LENS WEAR (8 minutes)**

- Distorted mires
- Poor retinoscopic reflex
- Failure to achieve good refractive end point

### **REFITTING THE WARPED CORNEA**

- Get new K's early in day to minimize edema
- Do not discontinue current lens wear
- Keep wearing old lenses until new ones are ready
- Dispense from inventory if possible
- Change lens parameters if K's or refraction change  $>0.50$  D

### **CORNEAL STAINING (10 minutes)**

- Three-and-Nine O'clock Staining
  - Peripheral desiccation
  - Burning
  - Stinging
  - FB sensation
  - Dryness
  - Compromised cornea
  - Possible point of entry for microorganisms
- Causes of 3 & 9 staining
  - Low-riding lenses
  - Incomplete blinking
    - Minimizes edge sensation & lid bumping
    - Peripheral cornea is not resurfaced with tear film mucin
- Remediation of 3 & 9 staining
  - Thin lenses
  - Blinking instructions
  - Liberal use of lubricants
  - Aim for lateral lens movement with eye versions to resurface area
  - Refit with soft lenses if significant staining persists
- Arcuate staining
  - Check lens for debris
  - Check patient's insertion & recentering techniques
  - Check blends and edges

- Foreign body tracks
  - Vertical tracks
  - Swirl patterns
  
- SPK
  - Corneal edema
    - Tight, steep lens
  - Infectious keratitis
  - Solution sensitivity
  
- Dimple veiling
  - Bubbles in periphery: Lens too flat
  - Bubbles centrally: Lens too steep

### **CHANGES IN CORNEAL TOPOGRAPHY (3 minutes)**

- Recovering PMMA wearer
- Lenses too flat
- Corneal edema
- Mechanical molding

### **INFILTRATES & INFECTION (3 minutes)**

- Refer to ECP
- Check lens case
- Make sure patient rinses case & uses fresh solution nightly
- Make sure patient is not using saliva to wet lenses

### **PROBLEMS WITH LENS POSITIONING (5 minutes)**

- High-riding lenses
  - With-the-rule astigmatism
  - High myopia
  - Displaced corneal apex
- Low-riding lenses
  - Plus lenses (weight + forward center of gravity)
  - Against-the-rule or oblique astigmatism
  
- Lateral decentration
  - Against-the-rule or oblique astigmatism
  - Displaced corneal apex
  - Unusual corneal topography
- Remediation of positioning problems
  - Lenticulate high minus and plus lenses
  - Use thin lens design to reduce weight of low-riding lenses

- Use posterior toric designs to improve centration
- Consider soft toric or soft spherical lenses

### **PROBLEMS RESULTING IN VISUAL DISTURBANCES (8 minutes)**

- Flare
  - Causes
    - Large pupils
    - OZ or overall diameter (OAD) too small
    - Poor centration
  - To eliminate flare
    - Increase OZ or OAD
    - Use junctionless back surface aspheric
    - Use posterior toric to improve centration
    - Refit with soft lenses if flare persists
- Residual astigmatism
  - Give spherical equivalent for small amounts
  - Refit with spherical or toric SCL
- Lens Flexure
  - Increase lens thickness
  - Use stiffer material
  - Use posterior torics on high astigmats
- Lens warpage
  - Failure to store lenses wet
  - Flattening common in high myopes
  - Cleaning between fingers instead of in palm of hand
  - Use of hot water to rinse lenses
  - Storage on top of hot object such as radiator or appliance

### **PROBLEMS WITH LENS CLOUDING (3 minutes)**

- Manufacturing residues
- Soap or cosmetic contamination
- Use of improper solutions
- Mixing of incompatible solutions
- GPC or blepharitis
- Accumulation of deposits on badly-scratched lenses

### **PROBLEMS RESULTING IN DECREASED LENS LIFE (2 minutes)**

- Tendency of lenses to scratch if inserted in dry case
- Tendency to crack, warp, or evert if cleaned between fingers
  - Suspect eversion if lens suddenly changes position in eye
- Tendency to suction onto case if stored concave-side-down
  - Use only cases with ridges to store lenses
- Tendency of bowl to separate from carrier in lenticular designs

### **DIFFICULTY WITH LENS REMOVAL (3 minutes)**

- Large, lid-attachment lenses are harder to remove
- Adhesion
  - Signs & symptoms
    - Non-moving lens usually locked on over limbus
    - Band of mucus trapped under lens
    - Fluorescein brings out impression ring, even though lens is currently moving
    - Patient asymptomatic or uncomfortable in eye with good movement
    - Occasional complaints of cloudy vision
  - Remediation
    - Refit with small, steep lenses
    - Avoid aspherics (parallel cornea too closely)
    - Refit with SCLs if binding persists

### **AVOID CONTACT LENS PROBLEMS BY:**

- Selecting patients carefully
- Fitting them properly
- Instructing them thoroughly
- Making sure that they use proper solutions at all times
- Stressing importance of regular checkups
- Stressing importance of regular lens replacements
- Stressing importance of immediate treatment for emergencies

# MANAGING DECENTRATION IN RGP LENS WEARERS

<u>Type</u>	<u>Causes</u>	<u>Results In</u>	<u>To Remedy</u>
Inferior	Forward center of gravity of plus lenses High specific gravity High astigmatism Tight lids Keratoconus	Peripheral corneal desiccation  Poor tear exchange Inhibition of blink Mechanical molding Lens adherence Reduced comfort	Reduce center & edge thickness  Reduce lens mass & weight Use material with low specific gravity Use aspheric or inside toric designs Lenticulate low minus or plus lenses with myoflange Lenticulate high minus with hyperflange Add CN bevel to high minus lenses Aim for lid attachment & alignment
Superior	Flat lens/cornea relationship Tight lids With-the-rule astigmatism High myopia Displaced corneal apex	Excessive edge clearance Superior bearing Apical staining Apical displacement Inferior bubbles Flare Poor tear exchange Corneal molding	Steepen base curve Increase center thickness Minimize edge thickness Aim for alignment fit or slight apical clearance Add CN bevel or hyperflange to minus lenses Blend & flatten peripheral curves Increase specific gravity of material
Lateral	Lack of fulcrum in horizontal meridian Decentered corneal apex Against-the-rule astigmatism Oblique astigmatism Unusual corneal topography Flat lens/cornea relationship	Variable vision Reduced comfort Lens adherence Corneal molding Flare Erratic lens/cornea relationship	Increase capillary attraction by decreasing center thickness Use small, thin, steep apical clearance lenses Use back or bi-torics on high astigmats Use posterior aspherics Steepen base curve if fluorescein pattern looks flat