

**Title: Eye Surgeries and your Specialty Contact Lens Patient: Pre and Post-Operative Considerations**

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Course Description: Specialty lens wearing patients have complex corneas and ocular surface challenges. These patients however may still require surgical intervention. This course reviews pre- and post-operative considerations for individuals dependent on specialty lenses for daily living.

**Objectives**

1. Understand pre- and post-operative considerations for specialty contact lens patients requiring surgical procedures
2. Understand when lenses must be discontinued before surgery and when wear can resume
3. Know how lenses need to be modified after surgery

**Outline:**

- A. Contact Lens Options
  - i. Soft lenses
  - ii. Gas permeable lenses (Corneal molding effect and spectacle blur)
  - iii. Hybrid lenses (Corneal molding present)
  - iv. Scleral Lenses (Range of sizes, designs, and fitting protocols)
- B. Cataract Extraction
  - i. Pre-op Protocols
    1. Manifest refraction
    2. Optical biometry measurements
    3. Need to optimize ocular surface for best results
    4. Macular OCT
    5. Topography and Tomography
    6. Discussion on discontinuation of lens wear prior to biometry and/or surgery
      - a. Correct storage of lenses when not being worn (during surgery/recovery)
  - ii. GP and soft lenses  
Must consider length of wear and corneal molding
  - iii. Scleral lenses
    1. Role in optimizing ocular surface in dry eye patients
    2. Effect of mild corneal flattening, which may affect biometry measurements
    3. Papers:

- a. Scleral lens influence on corneal curvature and pachymetry in keratoconus patients. Soeters N, Visser ES, Imhof SM, Tahzib NG. Cont Lens Anterior Eye. 2015 Aug;38(4):294-7.
- b. Effect of Scleral Lenses on Corneal Topography in Keratoconus: A Case Series of Cross-Linked Versus Non-Cross-Linked Eyes Severinsky B, Fadel D, Davelman J, Moulton E. Cornea. 2019 Aug;38(8):986-991.
- c. Effect of Scleral Lens Wear on Central Corneal Thickness and Intraocular Pressure in Patients with Ocular Surface Disease. Kevin Shahnazi, Veronica Isozaki, Gloria B Chiu. Eye Contact Lens. 2020 Nov;46(6):341-347

iv. Correction type

1. Distance, near, monovision
2. IOL selection
  - a. Matching the Patient to the Intraocular Lens: Preoperative Considerations to Optimize Surgical Outcomes. Yeu E, Cuozzo S. Ophthalmology. 2021 Nov;128(11):e132-e141.
3. Avoid toric IOLs in highly irregular corneas
4. Avoid toric IOLs in patients who will resume specialty CL wear
  - a. May consider in those who wish to be "CL free"

v. Surgical Technique Considerations

1. Scleral tunnel incision
2. Suture at main wound
3. Novel Method to Determine Target Refraction in Cataract Surgery for Patients Dependent on Therapeutic Scleral Lenses. Kevin K Ma, Zhonghui K Luo. Eye Contact Lens. 2021 Jun 1;47(6):352-355.

vi. Post-op Management

1. Topical Medications
2. Antibiotics, steroids, NSAIDs
3. Copious lubrication
4. When to resume lens wear
  - a. Lenses touching cornea: between 1-2 months
    - i. Must ensure surface healed
  - b. Scleral lenses: between 1-4 weeks
    - i. Scleral shape should be stable
5. How to determine new power
  - a. Can use prior habitual lens and over-refract
6. Challenges with ocular surface disease patients
  - a. Ocular Surface Disease Patients
  - b. SJS case/s demonstrating complications with infection, persistent epithelial defects and outcome

- C. Corneal Cross-Linking
    - i. Indications and Protocol
    - ii. Discussion of epi-on vs epi-off
      - 1. Difference in healing properties
    - iii. Post-Op procedures:
      - 1. Topical medications and BCL x 1 week
      - 2. Effect on corneal tissue and optical properties
        - a. Corneal typically flattens
          - i. This may change fit of some contact lenses
      - 3. Corneal haze and demarcation line demonstrating effectivity
      - 4. Changes in manifest refraction (SRx) over time
        - a. Would affect toric SCL fits
      - 5. When to resume CL wear
        - a. Typically 1-2 months in scleral lenses
          - i. Sooner for experienced scleral lens wearers
        - b. May be longer for CLs that rest on corneal tissue
          - i. May need to flatten fit in RGP/hybrid lenses
          - ii. Longer if new A/R training required
        - c. Need to ensure full healing of epithelium in epi-off protocols
        - d. Considerations
          - i. Changes may still occur structurally for months
          - ii. Need to get patients into visual correction as soon as possible
          - iii. How to manage consecutive procedures and vision correction
- D. Penetrating Keratoplasty
  - i. Indications for scleral lenses
    - 1. When to fit after transplant; consider healing process and stitch removal
  - ii. Graft Failure versus Graft rejection
  - iii. Age of Graft
  - iv. Considerations for scleral lens fit
    - 1. Graft edema
    - 2. Suction, tight fit
    - 3. Managing lens wear
  - v. Case Example
    - 1. 70 year old Caucasian male
    - 2. h/o HSV keratitis OD
    - 3. s/p penetrating keratoplasty OD
    - 4. Scleral lens fit
      - a. Graft edema after several hours of wear

- b. Fit optimized with fenestrated lens design (decreases suction and optimize oxygen permeability)

## E. Glaucoma Procedures

### i. Tubes

1. Types
2. Placement of tube
  - a. How long to wait before lens wear and fitting?
3. Scleral lenses
  - a. Accommodating the tube
    - i. Glaucoma surgical considerations for PROSE lens use in patients with ocular surface disease. Nguyen AH, Dastiridou AI, **Chiu GB**, Francis BA, Lee OL, Chopra V. Cont Lens Anterior Eye. 2016 Aug;39(4):257-61. doi: 10.1016/j.clae.2016.02.002. Epub 2016 Feb 11.
  - b. Image guided fitting
  - c. Impression molding
4. Case Example
  - a. 75 year old Asian male
  - b. Neurotrophic keratopathy
  - c. s/p CE
  - d. s/p Ahmed valve OD, OS
  - e. h/o neurotrophic corneal ulcerative keratitis OU
  - f. Custom fit with scleral lens incorporating channel to accommodate tube

### ii. Blebs

1. Scleral lenses
  - a. Impression molding
  - b. Image guided fitting
  - c. Case Example
    - i. 72 year old male
    - ii. s/p penetrating keratoplasty OD
    - iii. s/p superior bleb OD
    - iv. Fit with scleral lens to improve BCVA

## F. Keratoprosthesis (Kpro)

- i. Introduction to Kpro
  1. Type I, Type II
- ii. Management with contact lenses
  1. Bandage Lenses
  2. Scleral Lenses
- iii. Case Example

1. 65 year old Caucasian male
2. h/o recurrent retinal detachment OS
3. s/p scleral buckle OS
4. h/o corneal ulceration and perforation OS
5. s/p keratoprosthesis OS
6. Unable to retain bandage contact lens
7. Fit with scleral lens

G. Summary

- i. Specialty contact lens wearing patients may need surgery at some point
- ii. Need to know how lens wear may affect pre-op measurements
- iii. Need to know when lens wear can be safely resumed after surgery
- iv. Need to be prepared for lens modifications after surgery
  1. Know how surgery may affect ocular shape and surface
- v. Develop good communication with surgeons to ensure smooth process for patients