

Conquering Kerataconus: FDA Approved Corneal Crosslinking

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I. Corneal Crosslinking

- A. Indications: Progressive Ectasia
 - 1. Astigmatism changes
 - 2. Decrease in BVA
 - 3. Pachymetry
 - 4. Risk factors – age, FH
 - 5. Distorted mires
 - 6. Topography and Tomography – posterior changes noticed first
 - 7. History of LASIK/RK/PRK
- B. FDA-Approved Avedro
 - 1. Follows Dresden protocol
 - a. Topical anesthesia, removal of epithelium 8-10 mm centrally
 - b. Riboflavin 30 min before irradiation and at 5 min intervals during the course of a 30 min exposure to UV
 - c. Irradiation for 30 min to 370 nm UVA (@ 3 mWcm²)
 - d. Abx gtts and BCL
 - 2. Riboflavin – specific formulation FDA-approved
 - a. Photrexa - riboflavin
 - b. Photrexa Viscous – riboflavin w/ 20% dextran
 - c. Acts as photoenhancer and generates singlet oxygen responsible for the crosslinking
 - 3. Kxl System
- C. Major differences with CXL-USA and FDA-approved Avedro
 - 1. Epi off
 - a. Thickness requirements
 - b. Healing time, contact lens use
 - 2. Unilateral treatment
 - 3. Costs – Insurance Issues
 - 4. FDA-approval age (safety established in studies ages 14 – 65)

II. Crosslinking procedure

- A. Prepare cornea - epithelium debridement apx 9 mm
- B. Riboflavin loading or “soaking” period
 - 1. Drops used – **Photrexa Viscous**
 - 2. Duration - every 2 min for 30 min
 - 3. Clinical signs of adequate loading – check for yellow flare in AC after the 30 min. (proceed w/ addtl gtts until seen)
- C. Pachymetry
 - 1. If less than 400, instill 2 gtts **PHOTREXA** 5-10 sec until reaches 400

- D. Application of UV light – 30 min @ 3mW/cm²
 - 1. During Irradiation PHOTREXA VISCOUS every 2 minutes during the 30 min
 - 2. Px is lavaged, 1st dose of gtts instilled, BCL

III. Post-operative

- A. Medication
 - 1. Steroid
 - 2. ABX
 - 3. NSAID
 - 4. Pain management – BCL, Neurontin, *possible* narcotic (1-2 day only disp)
- F. Patient expectations
 - 1. Immediate (comfort/vision) – Counseled extensively preop
 - 2. Long-term (halting progression, not reversal)
- G. Follow-up visits
 - 1. 1 day
 - 2. 5-7 day
 - 3. possible 2 wk, then 1 month – this may vary
 - 4. 3mo (6/12 and yearly thereafter)
 - 5. Px may may return for cl fit at 1 mo - variable
- H. Adverse Reactions
 - 1. corneal opacity (haze)
 - 2. punctate keratitis
 - 3. epithelial defect
 - 4. reduced acuity/blurred vision
 - 5. eye pain
- I. Long-term management
 - 1. Visual aids/specialty contact lens fitting
 - 2. Monitoring for change
 - a. BVA
 - b. Cylinder correction
 - c. Serial Topographies – at least yearly to compare

IV. Sightline Experience

- 1. 6 years since 1st CXL USA, 4 months with Avedro
- 2. Patient database/eyes and classification
- 3. Stabilization v. Progression