Hold My Beer: *Lessons Learned While Managing Corneal and Ocular Surface Disease with Scleral Lenses*

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Course length: 1 hours

Abstract:

"Hold my beer" - idiom - the speaker is about to engage in risky behavior that is either doomed to fail or be totally epic. In the context of this lecture, Hold My Beer means managing high-risk patients with scleral lenses where the outcome could be success or disaster. This rapid case-based lecture will focus on good and bad outcomes, reviews of the peer-reviewed literature supporting or refuting our choices, and the pearls we learned that apply to any practitioner, no matter the skill level. Come learn from our mistakes so you can make better choices.

Learning objectives:

1. Teach the pros and cons of scleral lens fitting
2. Teach how to manage complications
3. Review the literature on scleral lens management

Outline:

1. Ectasia and Scleral Lenses
    a. Case: KC + scleral lens
        i. Risk = missed progression
        ii. Benefit = improved vision
        iii. Alternative = glasses, other CL, corneal surgery, corneal transplant
        iv. Pearls
            1. Don't rely on cCL vision to detect progression
                a. CL masks progression
            2. Pre wear baselines
                a. Diagnostics
                    i. Tomography
                        1. Anterior and posterior elevations
                        2. Global corneal pachymetry
                            a. AI multimetric analysis
            3. Utilize CXL early
                a. Review US FDA clinical trial results

        b. Review 10 year study results
    4. Fitting pearls
        a. Clear the apex
        b. Remove the lens and evaluate
2. Corneal Transplantation and Scleral Lenses
    a. Case: Old graft + scleral lens = corneal edema
        i. Risk = destabilize graft
        ii. Benefit = improved vision
        iii. Alternatives = other CL, DMEK, repeat PK
        iv. Pearls
            1. Symptoms of corneal edema
                a. Sattler's veil
                b. Progressive visual blur
            2. Signs
                a. Microcystic edema
                b. Bullae
                c. Descemet's membrane folds
                d. Stromal thickening
            3. Pre wear baselines
                a. Diagnostics
                    i. Tomography
                        1. Global corneal pachymetry
                    ii. Specular microscopy
                        1. Endothelial cell assessment
                            a. Lass et al
                                i. Decreased endothelial cell count over 5 to 10 years
            4. Fitting pearls
                a. Role of an in-office scleral lens wear challenge
                    i. Lens on, monitor at 1-hour intervals for signs of edema
                b. Frequent follow-up
                c. Repeat diagnostic scans
                    i. Subtractive maps for pachymetry
                        1. Objective measurement of corneal edema
                            a. Kumar et al
                                i. Edema is common in PK
                            b. Schear et al
                                i. Corneal edema is a limitation of PROSE treatment
                d. Lens parameter considerations
                    i. High Dk system
                        1. Vincent et al

                a. A reduced clearance is the most important
            ii. Use of fenestrations
                1. Must have a mobile bubble to avoid Dellen formation
3. Glaucoma Filtering Procedures and Scleral Lenses
    a. Case: Bilateral Exposure keratitis with bilateral
        i. Risk = tube exposure, endophthalmitis
        ii. Benefit = reduced pain, visual improvement, corneal healing
        iii. Alternatives = bandage CL, surgical revision
            1. History
                a. Cause of exposure
                    i. Blepharoplasty
                b. Cause for referral
                    i. Abrasion over the tube due to previous scleral lens wear
                    ii. Previous infection with bandage CL and prophylaxis
            2. Symptoms
                a. Pain
                b. Blurred vision
            3. Signs
                a. Incomplete lid closure
                b. Inferior corneal scarring
                c. Reduced but intact corneal sensitivity
            4. Fitting pearls
                a. Must use advanced technology to contour over a tube
                    i. Impression based
                    ii. Profilometry based
                b. Must remove the lens for tube over tissue evaluation
                    i. Stain, stain, stain
                c. Consider photography
4. Persistent Epithelial Defect and Scleral Lenses
    a. Case: Neurotrophic cornea with long-standing PED
        i. Risk = infection, perforation
        ii. Benefit = healing and long term opacity resolution
        iii. Alternatives = cenegermin-bkbj, lateral tarsorrhaphy, bandage CL, nerve transplantation
            1. History
                a. Cause of PED
                    i. Neurotrophic
                        1. Infection
                            a. It’s always herpes
                        2. Systemic disease

3. Exposure
4. Trauma
5. Iatrogenic
6. Toxic

b. Onset and duration

2. Symptoms
    a. Blurred vision
    b. Redness
        i. No pain
3. Signs
    a. Defect with heaped rolled white edges
        i. Sterile
4. Pre wear baselines
    a. Diagnostics
        i. Photography
            1. Short-term surface quality improvement
            2. Long-term vascular regression and opacity resolution are possible
                a. Cirasky et al
                    i. Standardized approach
                    ii. 24hr wear
                    iii. Removal for disinfection
                    iv. Addition of non-preserved antibiotic (moxifloxacin)
                b. Xu et al
                    i. Temporization of descemetocele
                c. Gelles et al
                    i. Resolution of descemetocele
5. Fitting pearls
    a. Daily follow-up
    b. Must remove the lens for surface evaluation
        i. Stain, stain, stain
    c. Repeat photography
    d. Parameter consideration
        i. Design with highly adjustable limbal zone
            1. Avoid contacting the limbus!