

Better Together: Contact Lenses and Surgical Procedures for Keratoconus

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Abstract:

The management of keratoconus is ever evolving. The goal of this course is to address the comprehensive visual needs of the keratoconus patient and the importance of both surgical procedures and contact lenses. This case-based course will review the management and treatment of patients with keratoconus.

Course Learning Objectives:

1. Learn about new surgical and contact lens management for keratoconus
2. Understand that contact lens vision is only one part of the patient's visual needs
3. To show the importance of MD and OD collaboration in the comprehensive management of keratoconus

Outline:

1. Brief Keratoconus Background
2. Core Concepts in Modern Keratoconus Management
 - a. Diagnose early, Stop progression, Rehabilitate vision.
 - i. Diagnose early
 1. Modern devices
 - a. Refractions in early KC
 - i. Present CLEI Study on KC and Refractive Axis
 - ii. Stop Progression
 1. CXL
 - iii. Rehabilitate Vision
 1. Specialty contact lenses
 - a. BCLVA
 2. Surgical interventions
 - a. Corneal curvature
 - b. UCVA and BSCVA
 3. Don't Fear Corneal Transplantation
 - a. Modern transplantation
 - i. Laser-assisted
 - ii. DALK/ALK
3. Rehabilitating Vision
 - a. Contact lenses
 - i. Goals
 1. Improve vision while wearing
 - ii. Options
 1. Soft

2. Hybrid
3. GP
4. PB
5. Scleral
- iii. CLEI Study on corneal factors in lens selection
 1. >10D IS, >55Kmax, >50Kmean
 - a. Scleral and PB
 2. <10D IS, <55Kmax, <50Kmean
 - a. BCVA better than 20/30
 - i. Soft and Custom Soft
 - b. BCVA 20/30 or worse
 - i. GP and Hybrid
 3. Predominantly used lenses
 - a. Scleral and Custom Soft
- b. Surgery
 - i. Goals
 1. Improve corneal symmetry
 2. Improve non CL vision = more functional when not wearing CL
 - a. Improve BCSVA
 - b. Improved UCVA
 - ii. Options
 1. Intacs
 - a. PMMA arc segment implant
 - i. Fixed parameters
 - ii. Biocompatibility
 1. Present CLEI study on explantation
 - b. Moderate curvature change
 - i. Gross
 1. Present CLEI study on Intacs
 - ii. Role is changing
 1. Frequently used as the first step before TGPRK
 2. Present CLEI study on TGPRK after Intacs
 2. TGPRK
 - a. Ablation based on topography
 - i. Corneal curvature
 - b. Moderate curvature change
 - i. Precise
 - ii. Limited by corneal thickness/removal of corneal tissue
 - iii. Present CLEI study on TGPRK
 3. CTAK
 - a. Sterilized allograft corneal tissue inlay

- i. Fully customizable parameters
 - ii. Biocompatibility
 - b. Massive change
 - i. Precise/Gross
 - ii. Present CLEI study on CTAK
- 4. Cataract Surgery/ICL in KC
 - a. Goals are important
 - b. Potential to significantly reduce RX
 - c. Sequential procedures
 - i. Performed after TGPRK/Intacs/CTAK
 - 1. More symmetry = more accurate K's = better outcomes
- iii. CLEI Study on corneal surgery
 - 1. Intacs 7D Max Flattening
 - 2. TGPRK 4D Max Flattening
 - 3. CTAK up to 20D Max Flattening
- iv. Present QoL studies
 - 1. VA c CL = improved QoL
 - a. After CL removed = poor QoL
 - i. Pt video
- c. Surgery Influence on Lens Selection
 - i. Intacs
 - 1. Soft and Vaulting Designs
 - a. Avoid "plastic sandwich" = CL rub tissue over segment
 - i. PS leads to tissue disruption, inflammation, neo, extrusion
 - ii. TGPRK
 - 1. More symmetry = lower IS, Kmax, Kmean
 - a. Present CLEI data on lenses before and after
 - iii. CTAK
 - 1. More symmetry = lower IS, Kmax, Kmean
 - a. Present CLEI data on lenses before and after
- 4. CASES: Rehabilitate Vision: Refractive Surgical Interventions for KC
 - a. Hx 30 yo M with Moderate Keratoconus + Scleral Lens
 - i. Progressive KC
 - 1. Intacs + CXL
 - a. Improved symmetry & stop progression
 - i. Improved BCSVA and balanced
 - 2. Post Sx = Scleral lenses still best choice
 - a. BCLVA = 20/30
 - i. +HOA Scleral
 - 1. BCLVA = 20/20
 - a. Pt experience

- i. Improved QoL
 - ii. Take away:
 - 1. Yes, still needs a scleral, goal of Sx is not to eliminate CL, rather VA improved and balanced with glasses
 - a. More functional
 - b. Hx 32 yo M with Severe KC + Intacs
 - i. Pt unhappy with VA after Intacs, hates CL
 - 1. TGPRK
 - a. UCVA 20/100 and BCVA 20/40
 - 2. Custom soft
 - a. BCLVA 20/25
 - i. Pt experience
 - 1. Thrilled, glasses or CL
 - ii. Take away:
 - 1. Can improve VA after Intacs
 - a. More functional
- c. Hx 70 yo F with Moderate Keratoconus + Cataract + Scleral
 - i. No improvement with CL and very unhappy with Scleral
 - 1. Refer for CE
 - a. Sequential procedure
 - i. TGPRK = improved symmetry
 - ii. CE = 20/60 UCVA
 - 1. BCSVA = 20/30-
 - b. Custom Soft now possible
 - i. BCLVA = 20/25+
 - a. Pt experience
 - i. Functional all the time
 - ii. Improved QoL
 - ii. Take away:
 - 1. Sequential procedures can improve symmetry allowing for improved IOL calc = better out comes and less complex CL
- d. Hx 35 yo M with Severe Keratoconus + TECXL (C3R) + CXL
 - i. Progressive
 - 1. Refer for CXL
 - a. Repeat TECXL
 - i. Too thin for other intervention
 - 2. Scleral lens
 - a. BCLVA = 20/50
 - i. +HOA = 20/30
 - 1. Pt experience
 - a. Less stress about vision
 - i. Improved QoL
- e. Hx 22 yo M with Aysmetric Severe Keratoconus and FF Keratoconus + Scleral

- i. Scleral lens OD and Soft OS
 - 1. BCLVA OD 20/20 and OS 20/40
 - a. Unhappy when not wearing Scleral
 - i. CTAK
 - 1. Massive curvature change 25D
 - a. UCVA 20/60 from CF
 - ii. Custom soft
 - 1. 20/30
- 5. Conclusion
 - a. Diagnose early, Stop progression, Rehabilitate vision.
 - i. Stop Progression
 - 1. CXL
 - ii. Rehabilitate Vision
 - 1. Specialty contact lenses
 - 2. Refractive/Surgical interventions
 - a. BETTER TOGETHER
 - iii. Don't Fear Corneal Transplantation
 - 1. Modern transplantation