Managing Keratoconus with Contact Lenses

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The Basics…

- Keratoconus: a thinning disorder of the cornea that causes distortion and reduced vision.
- Ocular signs: Munson sign; striae; Fleischer’s ring; corneal ectasia; prominent corneal nerves; corneal scarring
- Topography: Irregular astigmatism; area of inferior/temporal steepening.
Show & Tell
Treatment Options

- Spectacles
- Soft Contact Lenses
- Rigid Gas Permeable Contact Lenses
- Hybrid Contact Lenses
- Intacs
- C3-R
- Keratoplasty
Soft Contact Lenses

- Advantages:
  - Comfort
  - Acceptable for mild cases
  - Easy(?) to fit

- Disadvantages:
  - Does not fully correct irregular astigmatism
  - Corneal hypoxia
  - Difficult to get exact CLRx
  - Not customizable
Soft K (Eni-Eye)

- Thick optic zone to mask irregular astigmatism.
- Fenestrated to help with pressure balancing
- Back Toric design to incorporate -1.75D of cylinder
- Dk = 29
- Good or bad idea?
Rigid Gas Permeable Contacts

- Advantages:
  - Fully corrects irregular astigmatism
  - Customizable
  - Healthy for the eyes

- Disadvantages:
  - Adaptation process
  - More difficult fitting process(?)
What’s available?

- Soper
- DynaZ Kone
- Valley I-Kone
- ComfortKone
- Rose K
- Collaborative Longitudinal Evaluation of Keratoconus (CLEK)
KC Fitting Goals

- Optimal Vision
  - 20/40 or better?
- Patient Comfort
  - Full day wear
- Optimal Fit
  - FDACL; good tear exchange
- Maintain corneal health
  - Minimal NaFl staining

✗ Will not halt the progression of KC
Fitting Philosophies

■ Fit flat?
  □ Advantages: Supposedly better vision
  □ Disadvantages: Too much bearing on apex; massive edge lift; compromise corneal health

■ Fit steep?
  □ Advantages: Clear the cornea
  □ Disadvantages: Bubbles; dimple veiling; NaFI staining; poorer vision; less wear time
The two extremes...
Finding the middle ground…

- "Three Point Touch"
  - Advantages: Not complete bearing on apex
  - Disadvantages: Still some bearing centrally

- FDACL (First Definite Apical Clearance Lens)
  - Advantages: No/minimal bearing on apex; uses secondary curves to fit
  - Disadvantages: Sometimes difficult to achieve
Where to start?

- Readings from topography or manual K’s are guidelines only.
- Steep K, avg. K
- Keep going flatter until you get mild apical touch.
- Check for centration, bubbles in mid-periphery, and peripheral clearance
Troubleshooting

- Mid-peripheral Bubbles?
  - Shrink the optic zone (OZ)
- Decentered?
  - Increase overall diameter (OAD)
- Lens imprints?
  - Blend; increase peripheral clearance
- Flare/glare?
  - Aspheric; blend; increase (OZ)
Troubleshooting (cont.)

- Dimple veiling?
  - Decrease base curve (BC); change peripheral curve (PC)

- NaFl Staining?
  - Change BC; Change OZ; artificial tears; piggyback
Thinking Outside the Box

- Piggyback Contact Lens System
- Large OAD for KC?
- RGP upgrades & add-ons
- Synergeyes
Piggyback Contact Lens System

- RGP and soft CL used in tandem.
- Helps with comfort, centration, and corneal staining.
- Use with CIBA N&D or AV Oasys
- Fit with using over-top K’s of SCL.
Large OAD

- KC patients with dramatic Munson sign.
  - Helps to keep lens from popping out.
- Problem with bubbles.
- Mini-sclerals and sclerals?
RGP Upgrades & Add-ons

- Flat/Steep Option
- Dyna IL Quad Sym
- F1 Toric?
- Bitoric?
Synergeyes

- Series A, KC, M, and PS
- Paragon HDS 100 GP center with (Group 1) soft skirt
- Fitting Guide: Apical Clearance without bubbles; start with steep skirt
- Clinical Impressions?
Other Considerations:

- Spectacles over contacts
  - Presbyopes
  - Correct residual astigmatism
- Spare pair of spectacles
  - Emergencies
- “Keratoconus Cocktail”
  - Pataday, Systane, and/or Blink
When to refer?

- Ophthalmology
  - Chronic corneal problems (hydrops)
  - Good candidates for INTACS or PK
  - Contact lens intolerant patients
  - Post-PK patient has rejection episode

- Contact Lens Specialist
  - Fancy fits
  - Taking up too much chair-time
Take Home Messages

- Topography helpful, but not the absolute determining factor in CL fitting.
- Rely on your FPs to help you make lens changes.
- Look for corneal signs.
- There won’t be a perfect lens.
- Refer accordingly.
- Be creative!
Questions?

Thank you!