How to select Soft Multifocal Contact Lenses to Manage Near Point Problems in: Non-Presbyopes and for Myopia Control.

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This workshop is designed as an introduction for clinicians NEW to utilizing Multifocal Contact Lens treatment for non-Presbyopes who could benefit from the near point prescription

Background:

- While not typical, some non-presbyopic patients may require different near point and far point prescriptions.
- Common problems or conditions are:
  - Convergence Excess:
    - Greater esophoria at near than at distance
    - High AC/A, frontal headaches; Asthenopia with near work
    - Other Binocular Disorders
  - Accommodative Dysfunction // Insufficiency:
    - Non-presbyope that has difficulty stimulating and sustaining accommodation
    - Reduced amplitude of accommodation / Reduced accommodative facility
    - Reduced PRA (positive relative accommodation)
    - Also included: Accommodative infacility, CVS: Computer Vision Syndrome
  - Pediatric Patients and Myopic Progression

Traditional modes of Therapy for these non-presbyopic patients:

- Reading Glasses
  - Limited practicality in situations where patient must look quickly back-and forth from near to distance to near.
- Multifocal (progressive) spectacles
- Bifocal spectacles
  - Despite their therapeutic benefits, patients (and with children often their families) frequently object to appearance of flat-top bifocal spectacle lenses for cosmetic and social reasons.

Multifocal contact lenses for binocular and functional accommodative challenges.

- Challenges to Clinicians fitting Multifocal Contact Lenses on non-presbyopes
  - Can’t rely on poor near VA or NRA/PRA as with true presbyopes
  - Unlike presbyopes, all of these non-presbyopic patients often well see at near, so traditional, acuity based contact lens fitting techniques do not work.
  - Most of the contact lenses are simultaneous vision designs
    - Both the Dist. and Near Rx - viewed simultaneously through pupil
    - Pt’s visual system must select/utilize appropriate power.
  - Non-presbyopes may inadvertently utilize distance portion of CL for near
    - Not benefit from the plus power available
    - Very similar to looking over the top of a flat-top bifocal in glasses.
- Challenges to Multifocal Contact Lenses for Myopic Progression
  - Based on current studies:
    - Adds greater than +2.00D recommended
    - Peripheral retinal defocus
    - Distance clarity often impacted with higher adds
Purpose: This workshop provides a very basic / hands-on approach:

- To Calculating & Selecting the appropriate multifocal lens for a non-presbyopic patient
  - Fitting techniques
  - Appropriate Multifocal types
  - Add powers

Determining: Initial Contact Lens Power for Convergence & Accommodative problems

- Use the Response AC/A ratio & near point phoria (technique described by Libassi and Edmondson)¹ ² to determine if the patient is utilizing the “plus” power of the Multifocal Contact Lens at near..

- If Patient is requires plus power at near
  - Determine distance RX:
    - Take Phoria at near (40 cm) through both:
    - Distance Manifest Refraction
    - Distance Rx with a +1.00D
    - May use either Prism Cover Test or Phoropter
  - Determine Stimulus AC/A Ratio
    - Difference of the two near phorias / 1 diopter = AC/A Ratio

Example:
  - Phoria at near in phoropter through
    - Distance Subjective: 8 eso
    - Distance Rx with a +1.00D: 2 eso
  - Stimulus AC/A Ratio -> 6/1
  - +1.00D multifocal “add” should reduce the near phoria by about 6 prism diopters or to around 2 esophoria.

Follow-up testing:
  Near phoria of patient with initial diagnostic multifocal lenses

Put on Multifocal CL (Soft)
  - Take phoria at near through contact lens
  - From the example of the 8 eso patient, with 6/1 Response AC/A ratio
    - If phoria with the contact lens is at or near 2 esophoria
      - Confirms that the patient is “Using” about 1.00D of the plus power and the contact lens will provide the near Rx required
    - If the patient’s near phoria through the lenses was 8 eso, then the patient is not utilizing add at near.

Binocular Disorder: Convergence Excess (CE)

Signs are: Greater esophoria at near than at dist.
- Typically a high AC/A
- accommodative convergence to accommodation ratio
  - Low negative fusional range at near
  - Patient cannot compensate for near phoric posture

Symptoms with near work include
- Asthenopia and eye strain / Diplopia
- Frontal headaches (patient attempts to maintain single binocular vision)

Current Convergence Excess Treatments -> More plus at near:
- Utilizes high AC/A ratio to relieve near esophoria.
Case 1: Chrissy: 24 YOF – 3rd Yr in Professional School -- Convergence Excess

- Reports significant eyestrain
  - during (extensive) studying
  - holds reading material in lap

Hab CL:
- O.U. Dist : 20/15^2 N:20/20^2
- Near Phoria: 12 Esophoria // Near point with +1.00 D: 6 Esophoria
- AC/A: 6/1 // Stereoacuity: 70 arcsec

Proclear Multifocal 1-Day:
- OD: dist. 20/20 near: 20/20^3 OS: 20/20 OU 20/20
- Near Phoria: 6 Esophoria
- Stereoacuity: 40 arcsec
- Comfortable with extended near work

Accommodative Dysfunction: (insufficiency / In-facility); case examples

Case #2  “JD” 28 YOF Medical Billing Specialist

- Previous contact lenses: distance only R: -2.00 L: -2.50 (20/30- O.D., O.S.)
  - This exam Spec Rx: O.D. ~-2.00-0.50X165 O.S. ~-2.00-0.75x015 (20/20 O.D., O.S.)
  - Hx of “trouble seeing” computer screen
    - Just started new job as a medical billing specialist.
  - Near phorias Rx: 2exo at dist./ 6 exo at near:
    - 10 exophoria at near through +1.00 over dist. Rx
      - AC/A = 4/1 FCC +0.50 NRA: +3.00 / PRA -1.25
    - Dx: Accommodative insufficiency / Accommodative infacility

- The EP Multifocal lens only has one near power and is appropriate for pts requiring “up to “ +1.25D add
- Lenses provided pt with comfortable 20/20 vision dist. & near
  One exophoria at near – indicates pt is “using” about +0.75 add at near

Case #3  “P” YOF, 11th grade: Accommodative Insufficiency / Dysfunction

Current Spec (PAL) x 1yr: Rx: O.D. -3.25 / +1.00 add O.S. -2.75/ +1.00 add
  - Pt recalls Hx of frontal headaches prior to wearing bifocal glasses.
  - Pt doesn’t experience headaches once being placed in PAL spec.

New Dist Spec Rx: OD: -3.50 DS and OS: -3.50 DS with +1.00 add
  - Phorias through -3.50D Rx: ortho at dist./ 2 eso at Near:
  - 3 exophoria through +1.00 over dist. manifest at Near
  - AC/A = 5/1 FCC +1.00
  - Dx: Accommodative insufficiency

RX: Proclear EP Multifocal CL: -3.50 O.U. distance Rx
- The EP Multifocal lens only has one low near power
  - EP features aspheric optics with a center distance spherical zone transitioning to the near power
  - originally designed for the emerging presbyope
- One exophoria at near – indicates pt is “using” about +0.75 add at near.
  - Lenses provided pt with comfortable 20/20 vision dist. & near
Power Initial Contact Lens Power for Control of Myopic Progression

- **Background:** recent studies indicate higher adds required for peripheral retinal defocus
- **Both Non-Custom Multifocals & Custom Multifocal CLs are available**
  - Distance Rx of non-presbyopic “subject” student attendee is known
  - Participating Doctors diagnostically fit “subject”
    - with 2.25D – 3.00D adds to evaluate dist acuity
    - Discussion of the contact lenses & their designs
- **Recommendations for selecting patients for this treatment modality**

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**Discussion:**

**Advantages of the Contact Lens Multifocals for Non-Presbyopes with near problems**

- Better than “reading glasses” in situations where patient must look quickly back-and forth from near to distance to near.
- **Simultaneous vision of Multifocals assures the patient:**
  - Doesn’t have to “search “ for the plus power of a multifocal glasses
  - Doesn’t have to look for separate reading glasses when needed.
- Children are unable to avoid using near portion if included in “simultaneous vision” contact lens multifocal
- Viewing angle is better for computer use is straight ahead rather than the downward angle required with spectacle PAL.
- **Cosmetic benefits**

**Possible Disadvantages**

- In some patient, spectacles may correct phorias better than multifocal lenses
- A patient’s visual system with enough accommodation could choose distance image over near image (Children or Young adults with CE/AI)

**Conclusions:**

- Multifocal contact lenses are another option for many non-presbyopic patients with near point problems who are looking for a convenient and cosmetically appealing solution.

- The Stimulus AC/A ratio and near phoria (using Libassi – Edmondson Technique) can provide the data needed to determine:
  - The multifocal contact lens power that can provide the appropriate near Rx for these special patients.
- Subsequent evaluation of near phoria will determine if the patient’s visual system is utilizing near image from the simultaneous multifocal.

**Workshop:**

Participants will work in groups with subjects:

1. Using Prism cover testing
   - a. Determine near phoria and near phoria through +1.00 add
   - b. Calculate the AC/A ratio
2. Select appropriate Multifocal CL
3. Fit on Subject and Check near point phoria/acute
References:


