Optic Bench Testing & Premium IOL’s

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Acknowledgments

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Correct Astigmatism

- “At 1-3 months 57.6% of premium IOL eyes may not have received full benefit due to refractive error”
  - R. Lindstrom 2012
- Multifocals disproportionately affected
M IOL’s - Astigmatism

- ReStor 3 & 4
- Astigmatism up to 1.00 D tolerated

Hayashi, Manabe  JCRS Aug. 2010

Adaptive-Optics IOL Metrology System

Wet Cell & Inc.

Colloidal Polymer: Displays Letter Chart

Colloidal Polymer: Changes Object Distance

Defeasible Mirror: Induces Corneal Aberrations

CCD Sensor: Captures Image of Letter Chart

Univ. of Rochester Study

Corneal Astigmatism & Premium IOLs

Pupil = 4.0 mm

Depth Of Field = region of contrast > 50% of peak contrast of AcrySof Monofocal

Yoon, MacRae 2012
Recent Multifocal IOLs

- FineVision MicroF
- Oculentis Mplus
- Alcon ReSTOR 3D
- Alcon AcrySof

- Apodized diffractive trifocal: 1.75D & 3.3D add power
- Rotationally-asymmetric refractive multifocal 3D add power
- Apodized diffractive Aspherical 3 & 2.5 D add power
- Spherical monofocal

Effects of Corneal Astigmatism on Through-Focus Image Quality of IOLs

Yoon, Zheleznyak, MacRae Univ. of Rochester

Effects of Corneal Higher Order Aberrations Through-Focus Image Quality of IOLs

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Corneal Astigmatism (> 0.5 Diopters) & Higher Order Aberrations

Affects All Multifocals

M IOL Refinement:

- Correct Astigmatism (& Sphere)
  - CRITICAL to correct in multifocals
  - LRI’s – mixed astigmatism
  - PRK/LASIK
    - Mini PRK 7 mm Epith. removal diameter
      - Quicker recovery
      - Less Epi Defect risk
      - Less discomfort

Thank You