

Using Corneal Refractive Surgery to Enhance Pseudophakic Patients

Steven J. Dell, M.D.
Austin, Texas



Notice Anything?

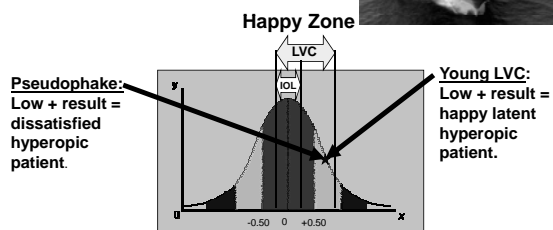
1/19th

Enhancing Pseudophakic Patients

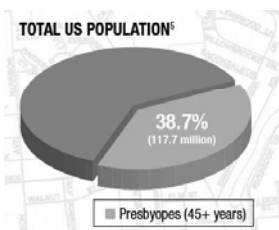
- Cataract Surgery = Refractive Surgery
 - Premium IOL Surgery = Hyper-refractive Surgery
 - IOL pts offer less room for error than young LVC pts.
 - Young LVC: Low + result = latent consecutive hyperopia.
 - Premium IOL: Low + result = dissatisfied patient.
- Achieving emmetropia important with all IOLs
 - Critical with Premium IOLs
- LVC offers a means to deliver the precision needed with these IOLs

IOL Calculation Accuracy

- The acceptable landing zone is narrower than LVC



Market Opportunity for Presbyopia Correction

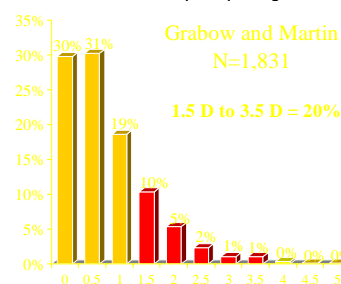


- 38.7% of population significantly presbyopic
- Of the 117.7 Million US Presbyopes, over 20.4 Million have Cataracts

Data from US Census Bureau-Market Scope Projections

Incidence of Pre-op Astigmatism in Cataract Patients

- 70% of patients have ≥ 0.5 D of pre-op astigmatism

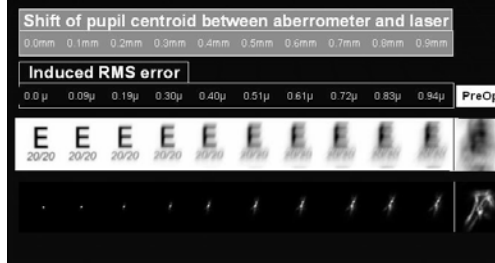


Wavefront-Guided Enhancements

- When wavefront data are available and of high quality, patients can have custom enhancement
- Iris registration prevents cyclotorsion errors
 - High astigmats benefit most
 - Doane, Dell and Probst, ASCRS 2006
- Address HOA and quality of vision
- Better outcomes compared to conventional LVC

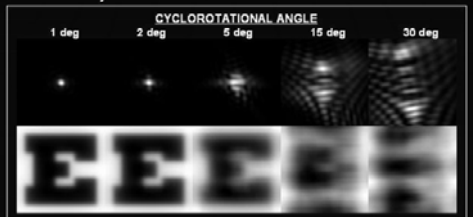
Pseudophakic LVC enhancement is off-label

Clinical Impact of Pupil Centroid Shift



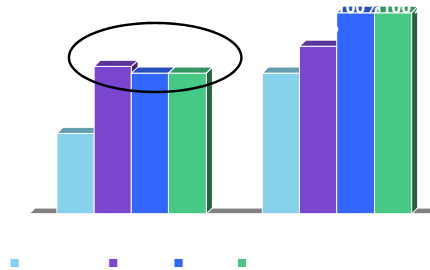
Error Induced from Cyclotorsional Movements

- Residual PSF and Blurred Eye Chart Letters
- Real eye: $-0.15DS -1.01DC \times 0^\circ$



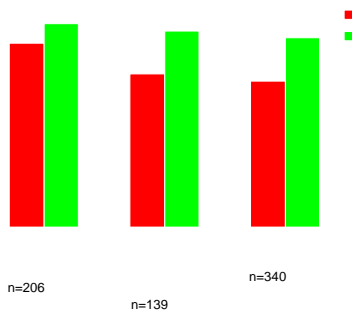
UCVA in High Astigmats (>2.5D)

With Custom IR 20/20 Rates Went from 82% to 91%



Doane, Dell, Probst Study: Courtesy John F. Doane, MD

Wavefront-Guided LVC Beats Traditional Across Multiple Platforms

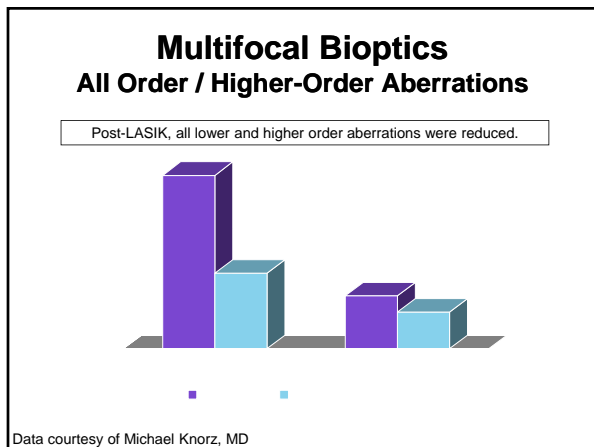
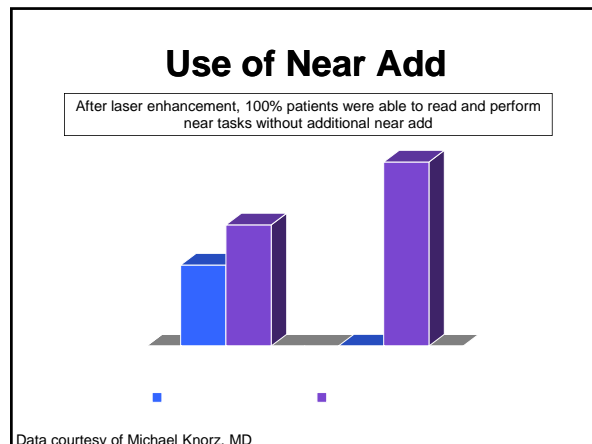
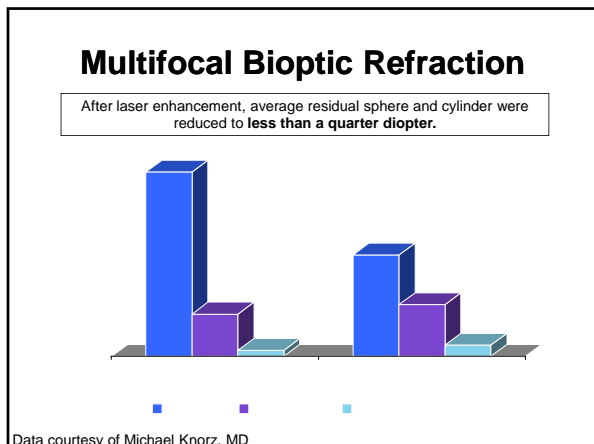


Netto et al, AJO 2006;141:360-8

Multifocal Bioptics – Clinical Results

- 23 eyes (18 patients)
 - 9 eyes IntraLase flaps pre-IOL
- Wavefront-Guided LASIK after multifocal IOL
 - Tecnis multifocal (n = 18)
 - ReSTOR (n = 4)
 - ReZoom (n = 1)

Data courtesy of Michael Knorz, MD



Study Design

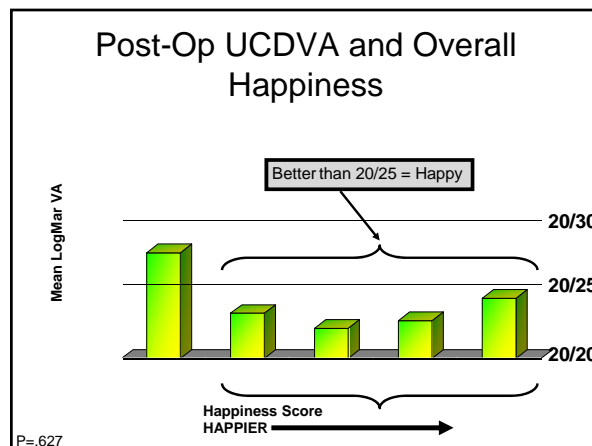
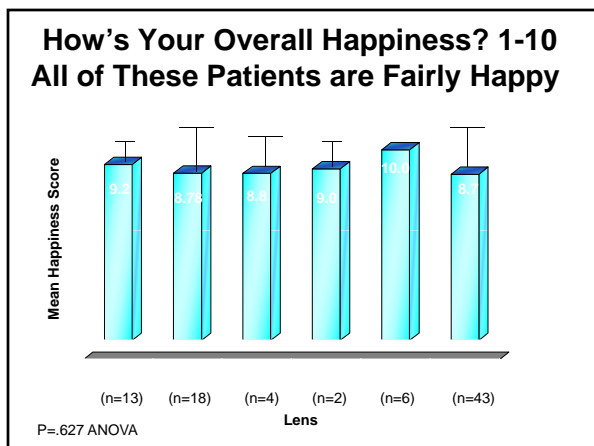
- Cataract and RLE patients. **No refractive enhancements.**
- n = 43 pts, 86 eyes
 - Within 0.25D of target (no more than 0.50D cyl)** ←

Real world situation of dissimilar groups, slightly dissimilar targets

- **Crystalens:** -0.25/-0.75D
- **Rezoom** -0.25D/-0.50D
- **Restor** +0.25 Bilat ←
- **RZ/RS** plano ou
- **Crystalens/RS** Plano ou

- Mean age 64.27
- Mean post-op interval 8.3 months.
- Surveyed Post-op on overall visual quality, happiness and desire to have the same surgery again.

What actually happens if I hit my refractive targets? ←



Post-Op UCNVA and Overall Happiness

Slight near trouble is tolerated much better than any distance trouble.

No correlation!



Post-IOL Wavefront Enhancements Assuming Data is High Quality and “Makes Logical Sense”

- After Monofocal spherical or aspheric: Yes
- After Crystalens: Yes
- After Restor: Yes
- After Tecnis Multifocal: Yes
- After Rezoom: No

Summary

- Demand for excellent UCDVA, *especially* with premium IOLs is increasing
- Multifocal IOLs very sensitive to ametropia-related image degradation
- Laser vision correction is the most accurate method for treating sphere and cylinder
- This demand is opening up a new class of patients to the benefits of laser vision correction