

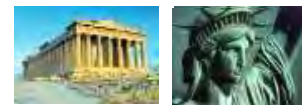
# Femto refractive and anterior segment surgery



**Anastasios John Kanellopoulos, MD**

**Director, Laservision.gr Institute, Athens, Greece**

**Clinical Professor NYU Medical School, NY**



# Financial disclosures

Alcon/Wavelight

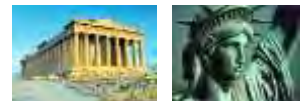
Bausch & Lomb

Seros Medical

Avedro

Ocular Therapeutix

Keramed



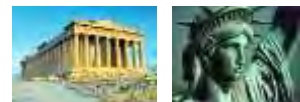
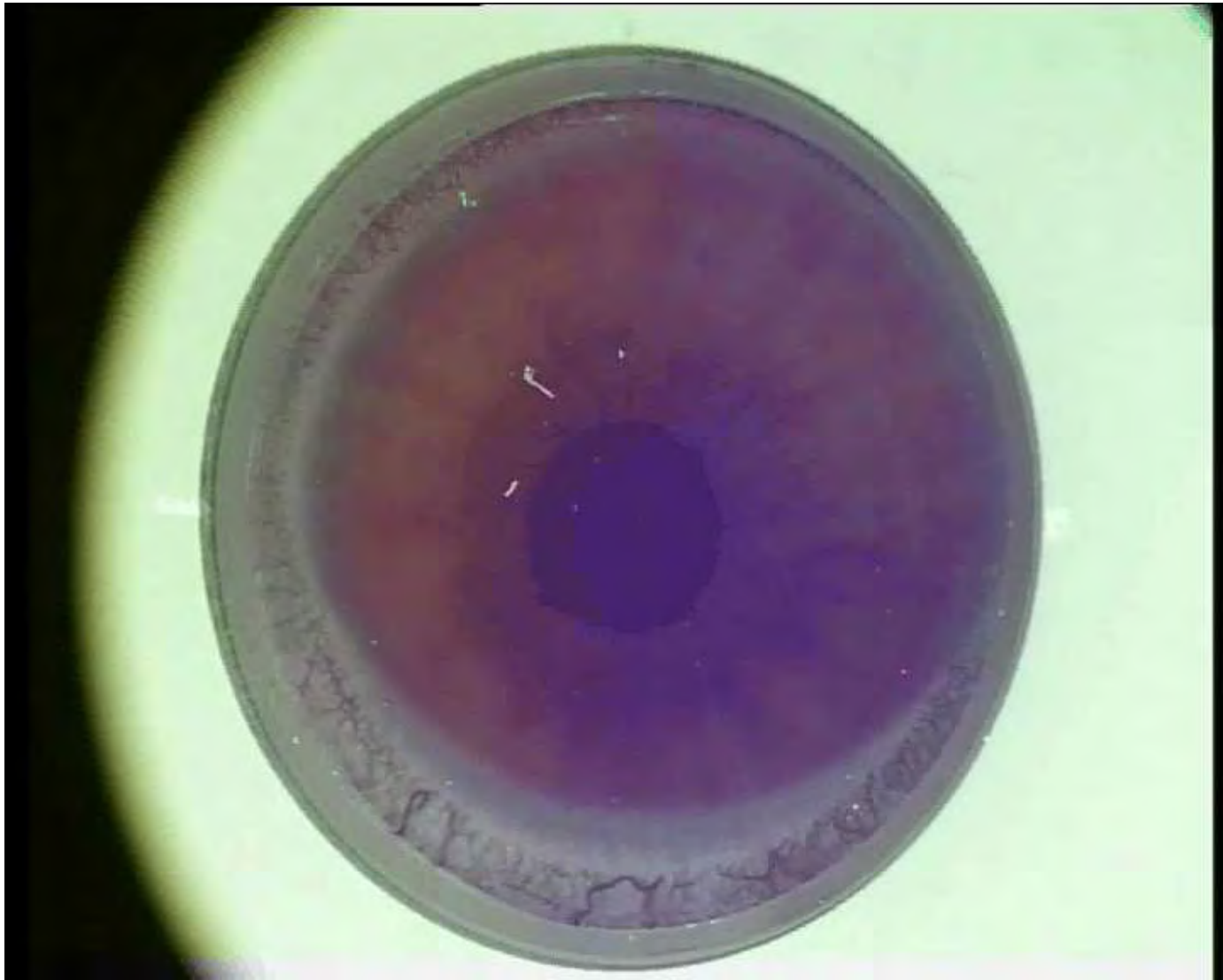
# LASIK experience with the FS200 femto and EX500 excimer (the Refractive Suite)



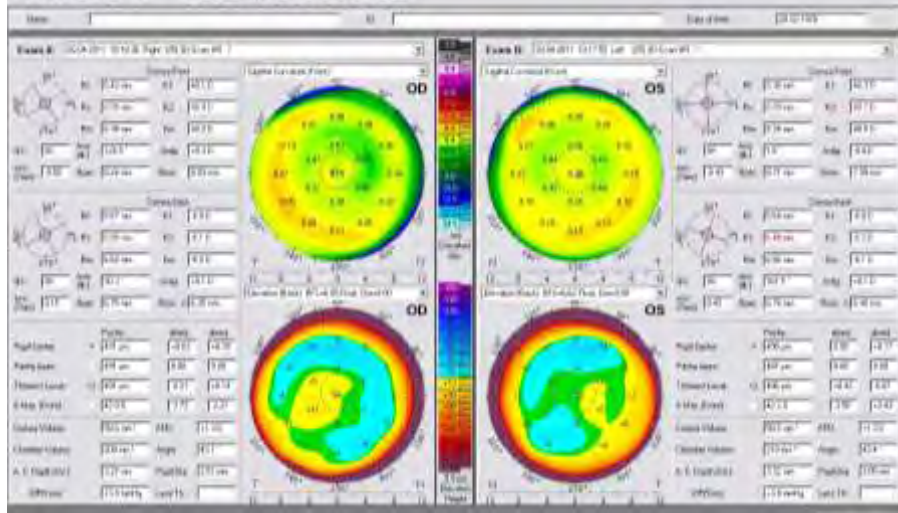
A. John Kanellopoulos, MD

Clinical Professor of Ophthalmology, NYU, New York, USA

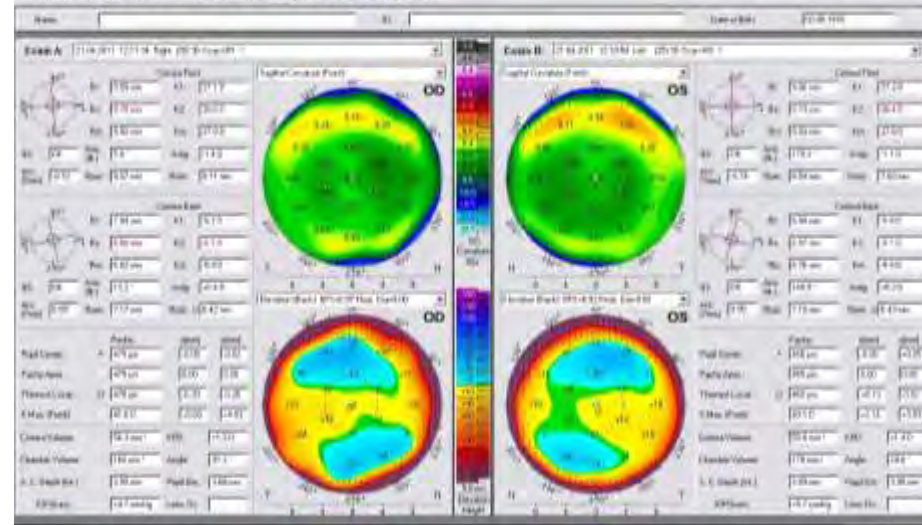
Medical Director, Laservision.gr Institute, Athens, Greece



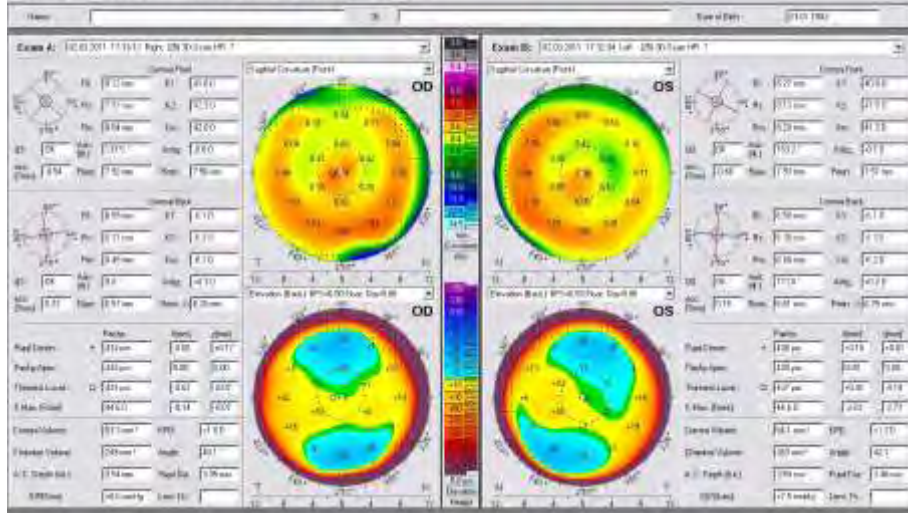
### WAVELIGHT - ALLEGRO OCULYZER



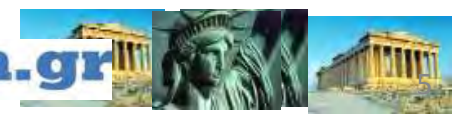
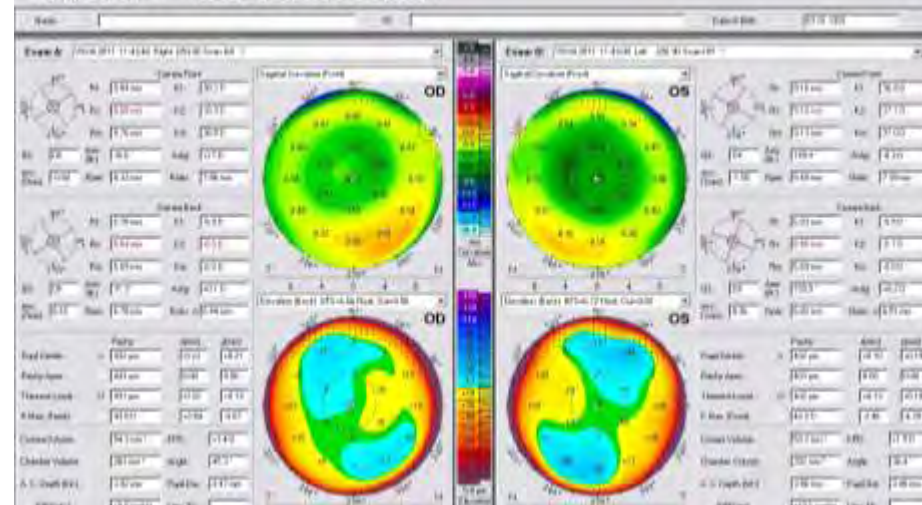
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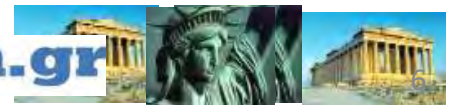
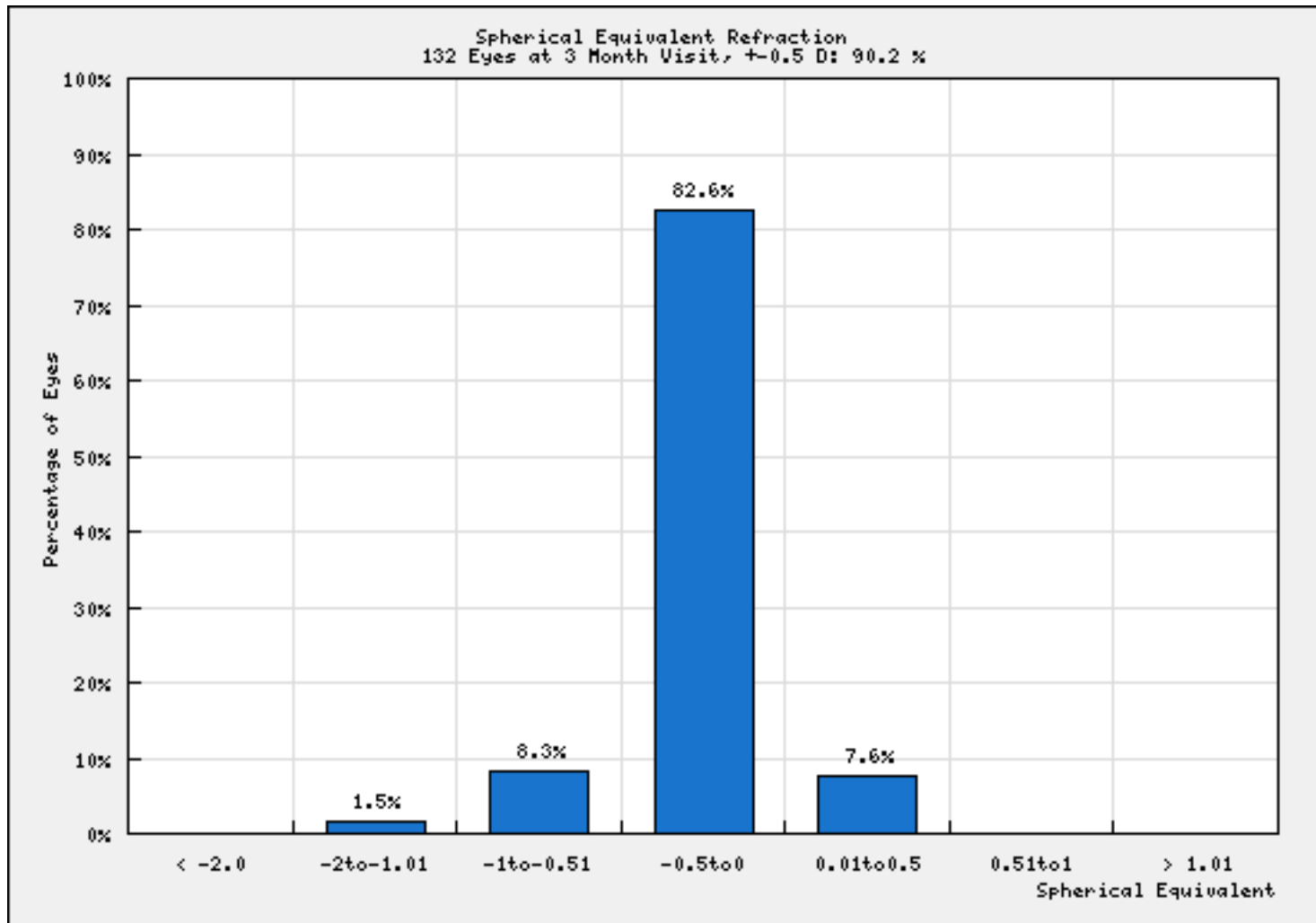
### WAVELIGHT - ALLEGRO OCULYZER



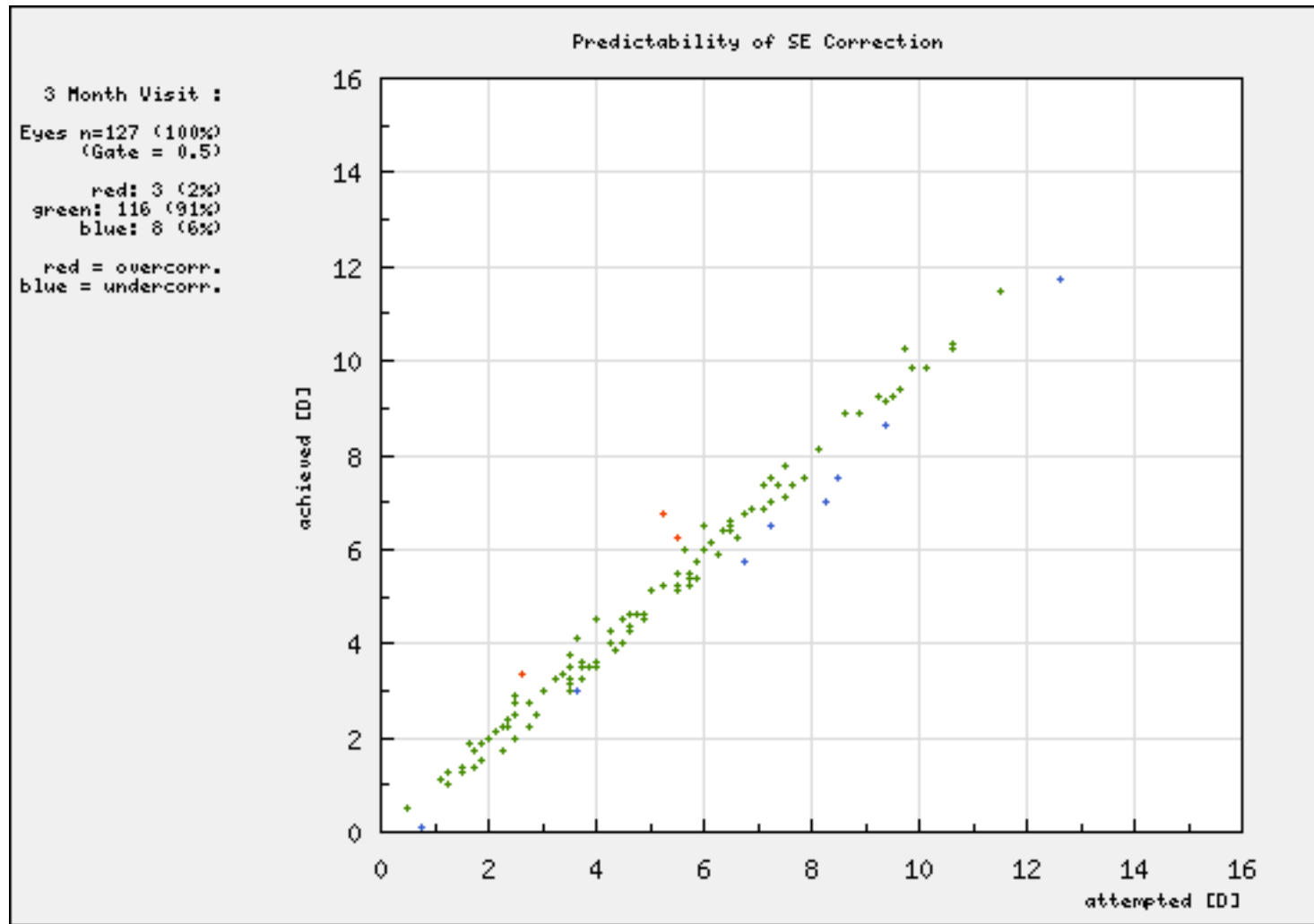
### WAVELIGHT - ALLEGRO OCULYZER



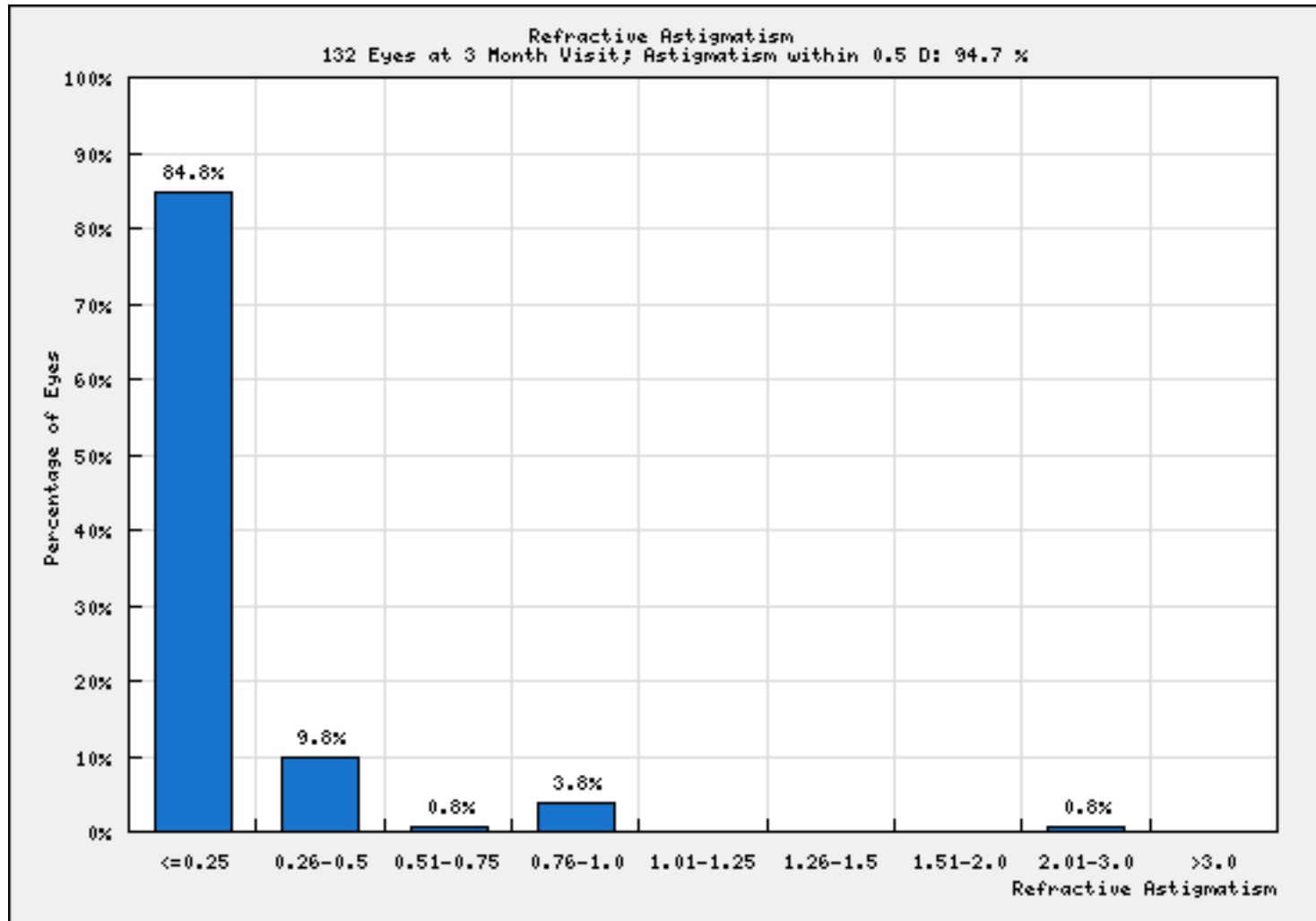
# Myopic LASIK 3 mos



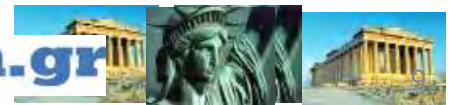
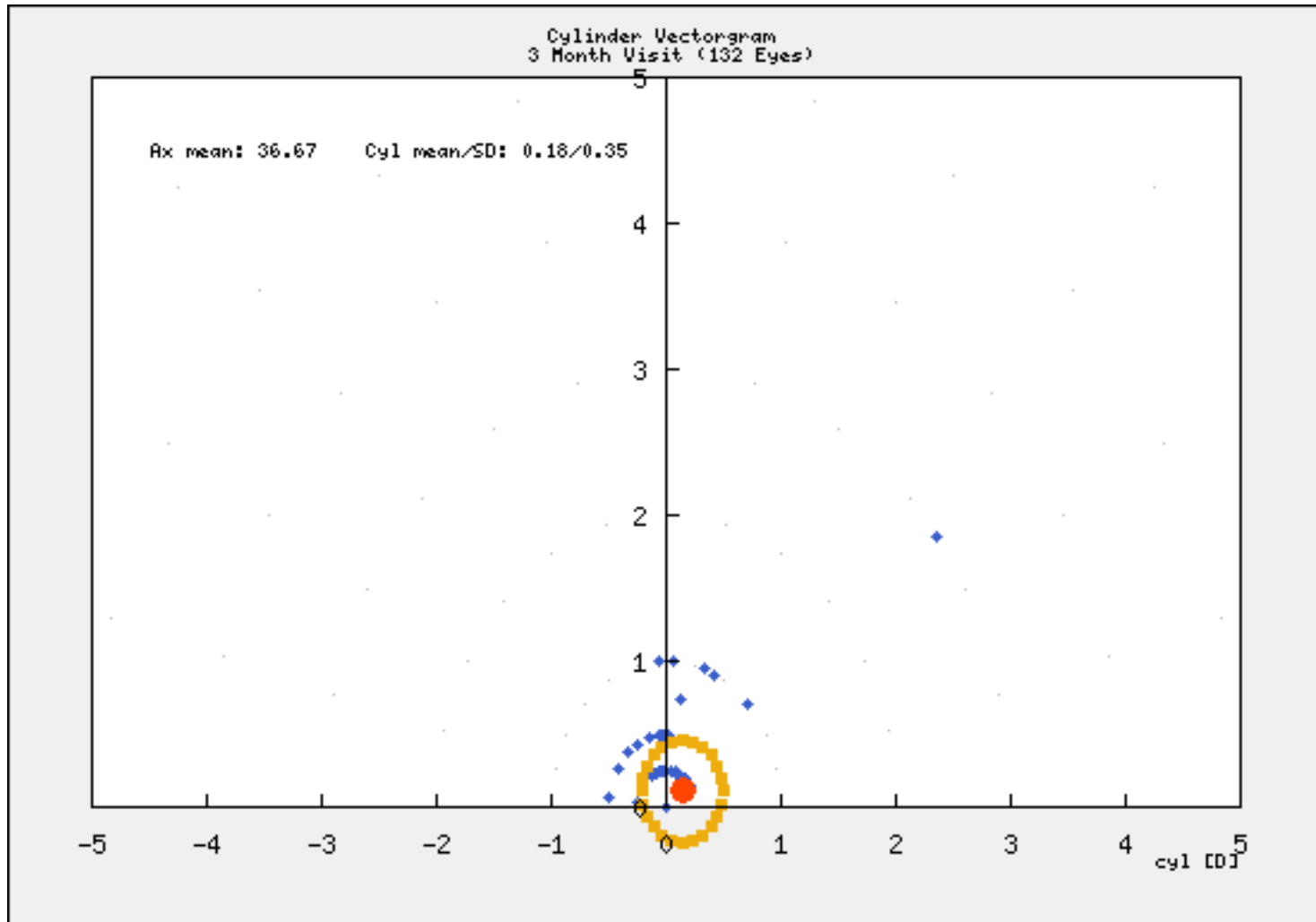
# Myopic LASIK 3 mos



# Myopic LASIK 3 mos



# Myopic LASIK 3 mos



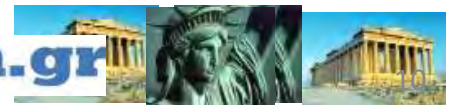
# HYPEROPIA with CXL!

Group B: Average RE: +2.5D (+1.50 to +5.50D) to -0.25;  
UCVA: 20/60 to 20/15 with  
mean flap (135um, 9.5mm was planned) 132 microns (+/-7)  
and 9.4 mm diameter.

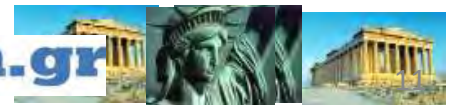
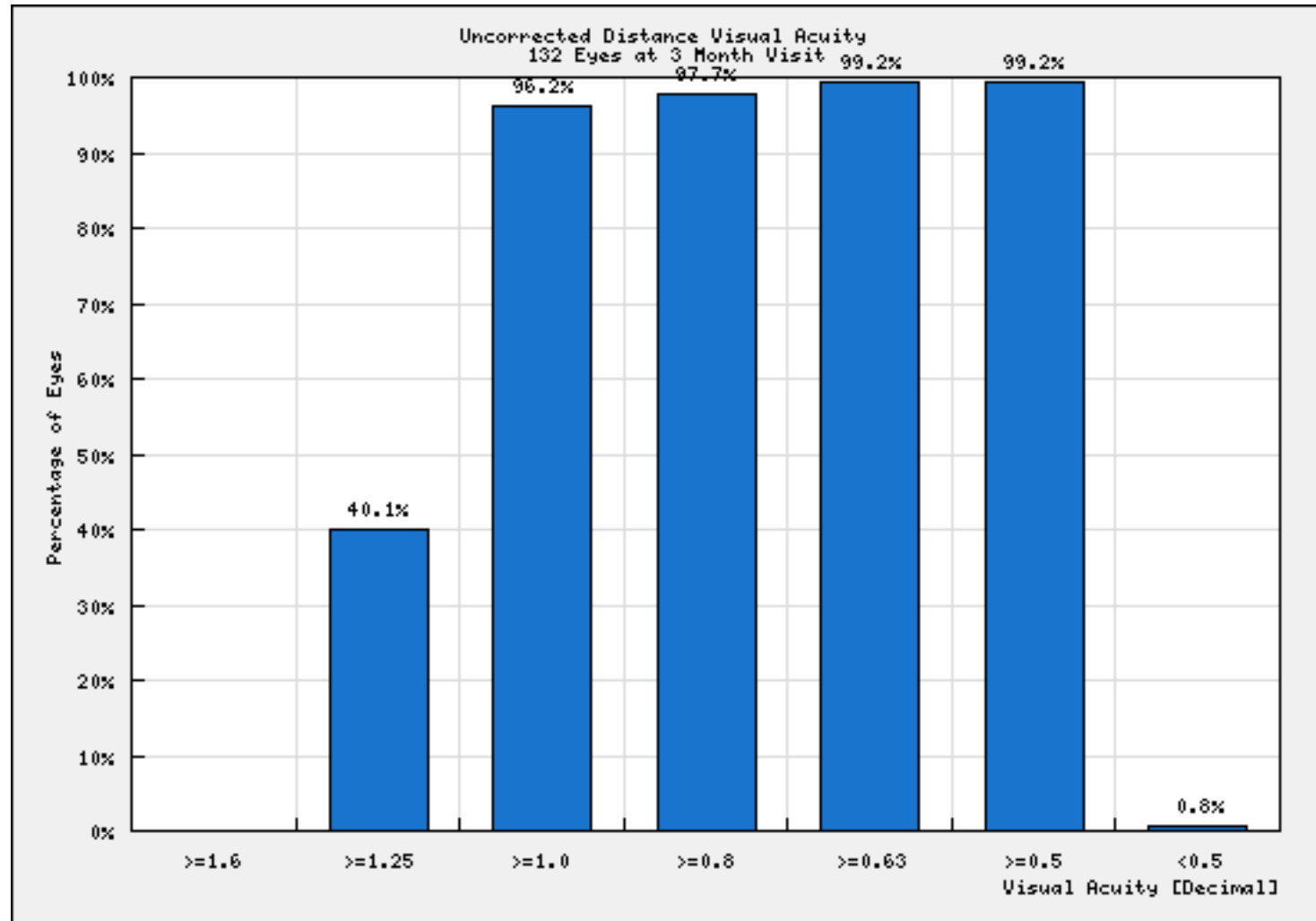
FC: was 15 sec *for Group A and* 19 sec for Group B.

ELA was 28 and 32 seconds respectively for group B.

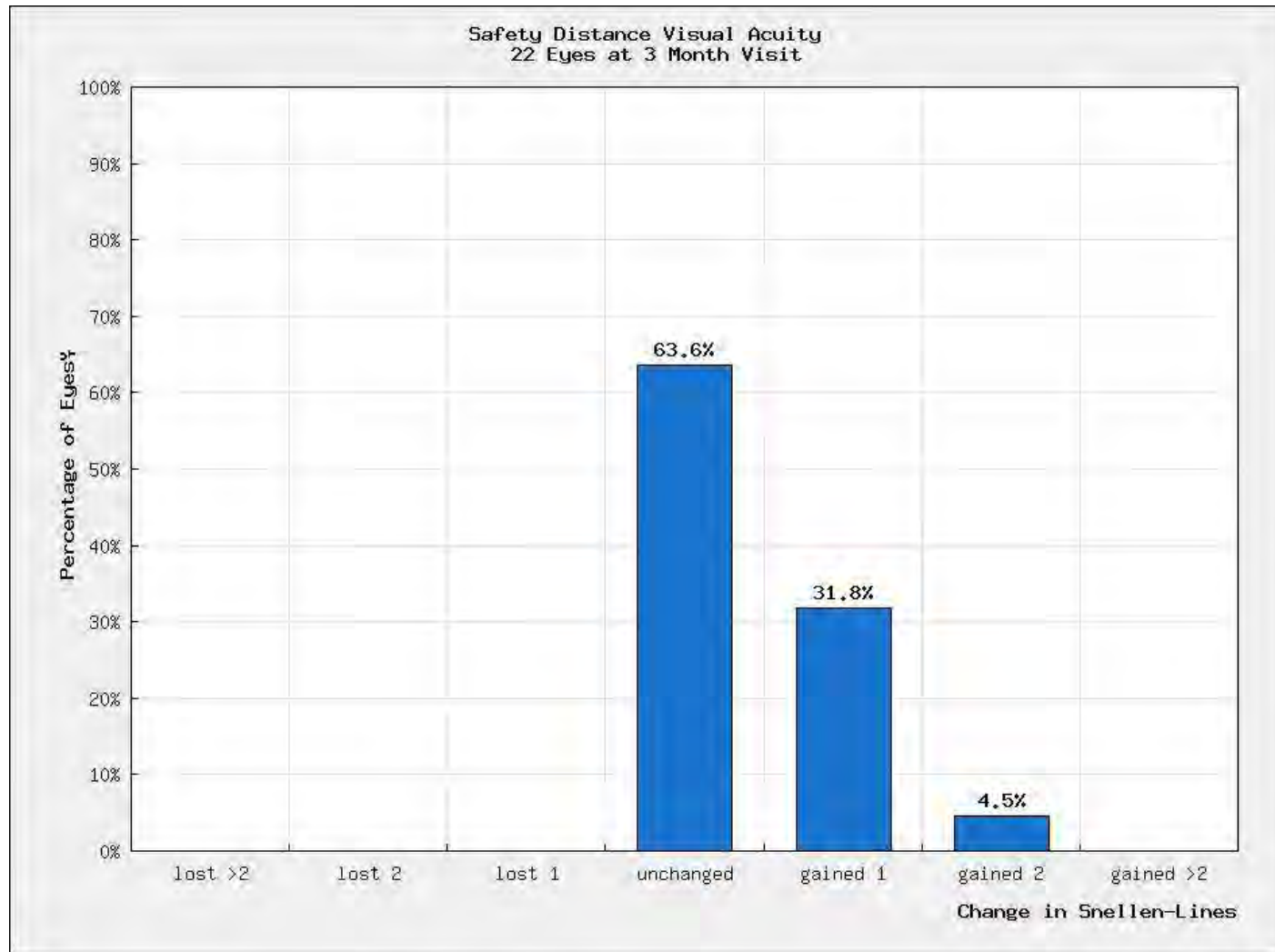
OP was 7.2 minutes for group A and 7.4 minutes for group B.



# Hyperopic LASIK 6 mos



# Hyperopic LASIK 6 mos



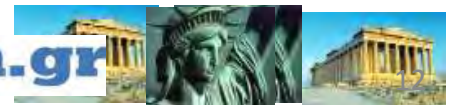
New York University  
School of Medicine

Kanellopoulos, MD

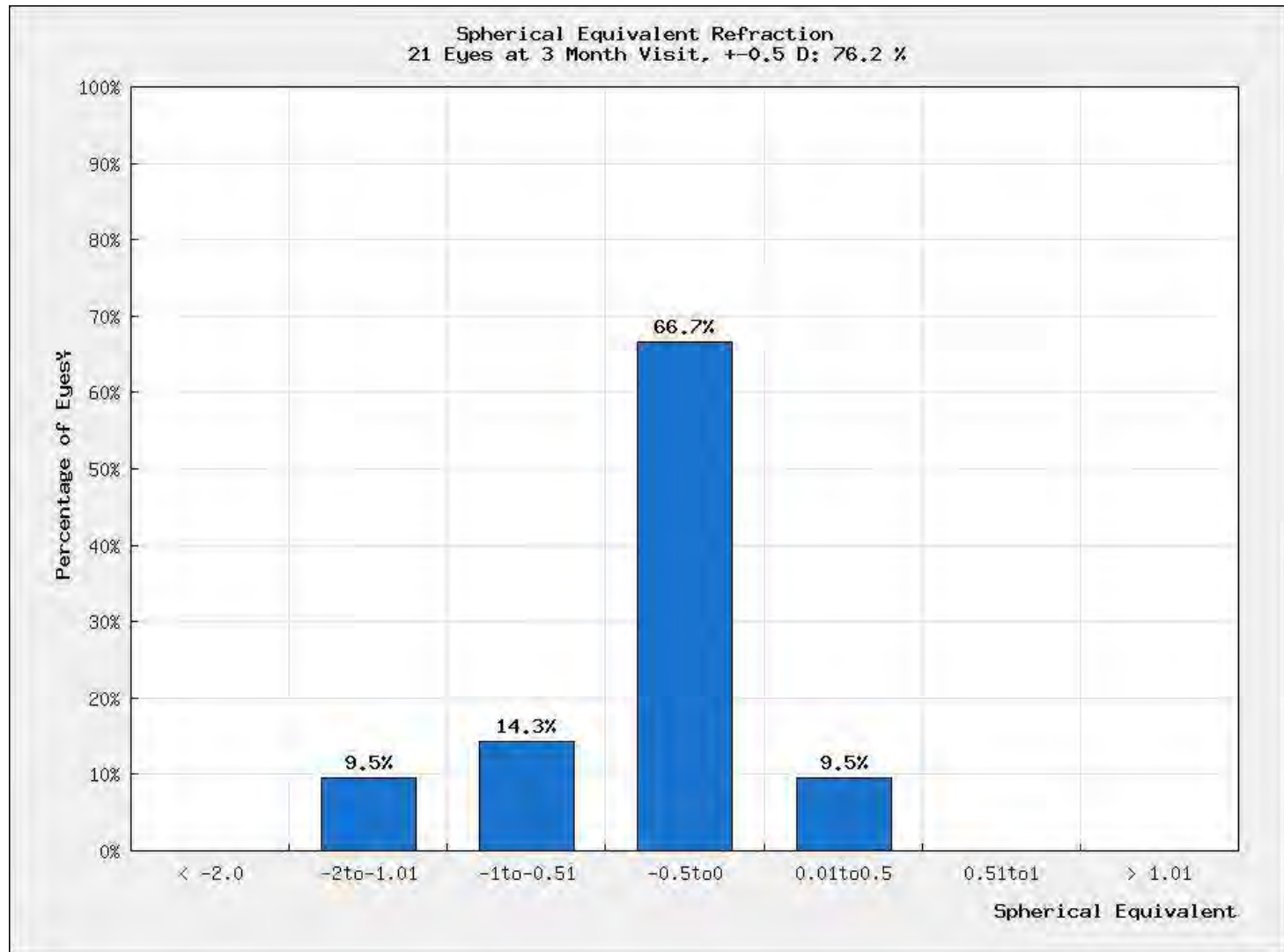
te for laser

[www.LaserVision.gr](http://www.LaserVision.gr)

Institute for laser



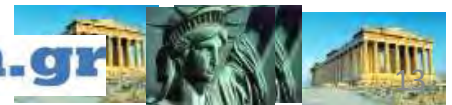
# Hyperopic LASIK 6 mos



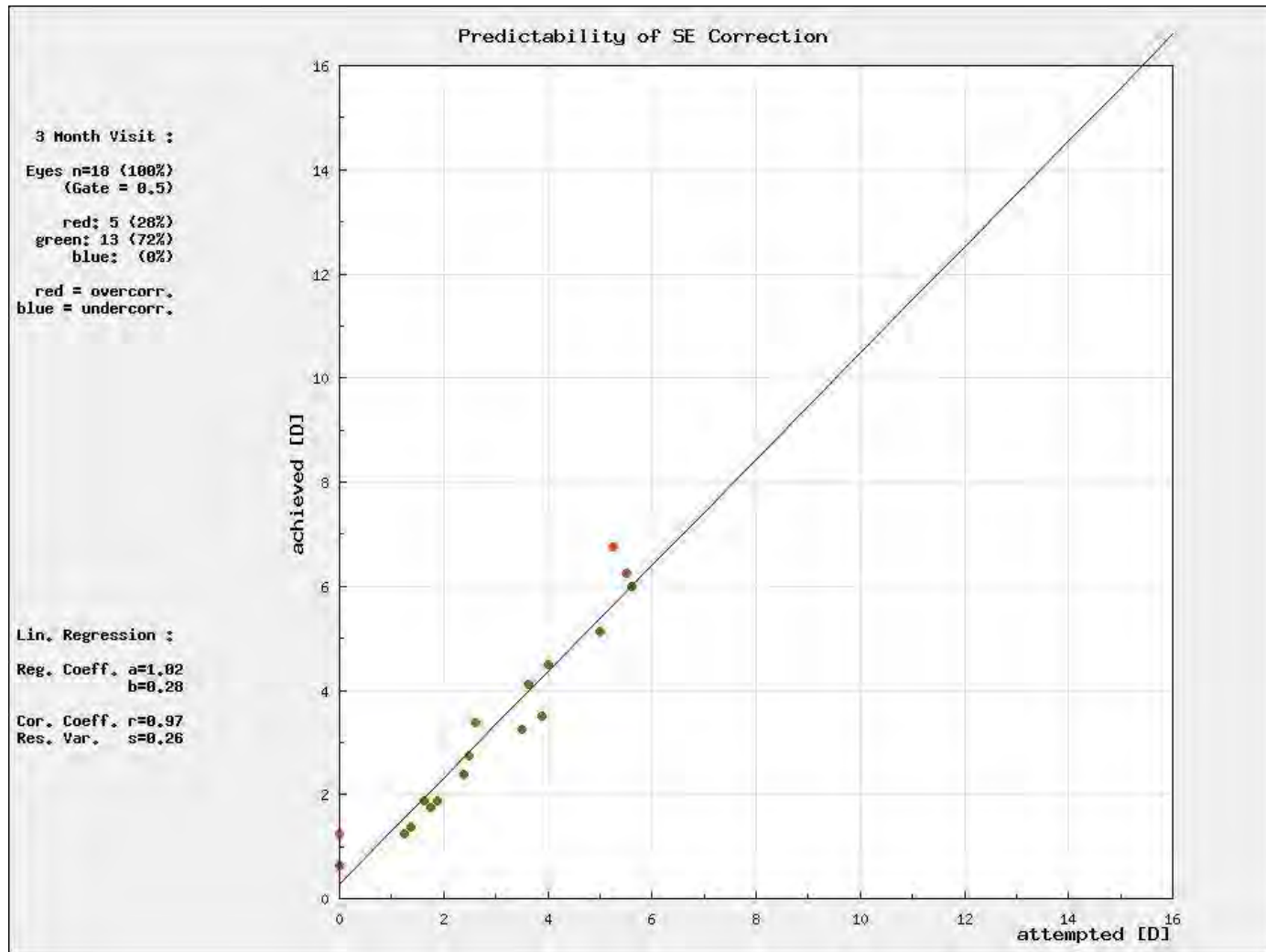
New York University  
School of Medicine

Kanellopoulos, MD

ase Laser Vision.gr  
Institute for laser

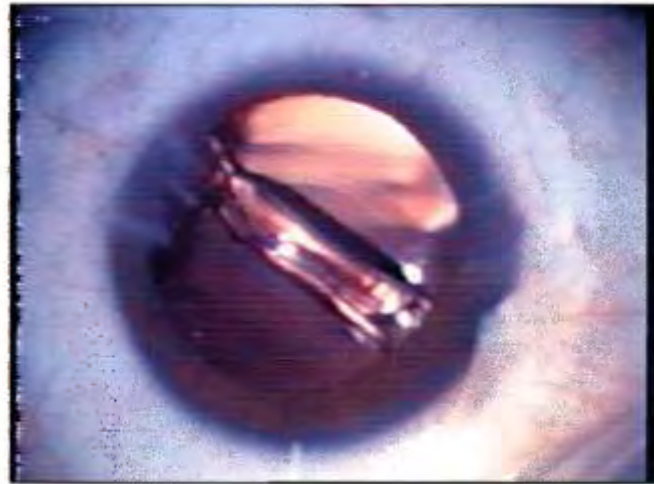
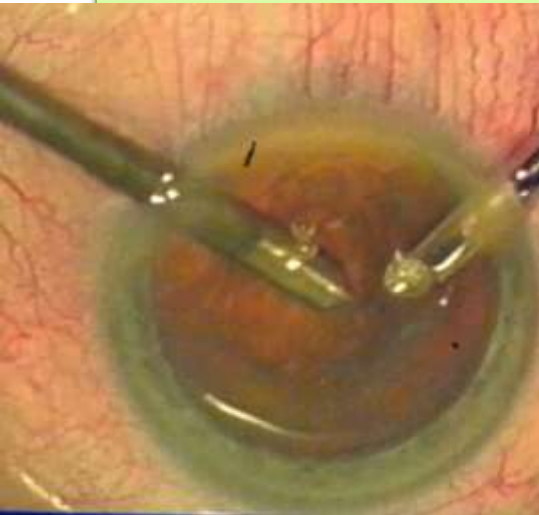


# Hyperopic LASIK 6 mos



# 1999-2 mm barrier

In pursuit of endocapsular CE  
True accommodative IOL



## Ophthalmology Times

### 2-mm incision barrier is broken in Greece

**By David C. Johnson, MD**  
 Athens, Greece—A 2-mm incision barrier was broken in Greece on August 2, 1999, when Dr. [Name] performed a phacoemulsification procedure through a 2-mm incision in the cornea.



**Dr. [Name]** performed a phacoemulsification procedure through a 2-mm incision in the cornea. The procedure was successful, and the patient is recovering well.

**Laser cataract removal was done through two clear corneal paracenteses of about 1.5 mm in width.**



Placement of a phacoemulsified IOL, following laser capsulotomy. The incision is 2 mm in length and the width of the paracentesis is 1.5 mm.

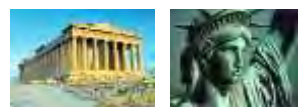
The 2-mm incision barrier was broken in Greece on August 2, 1999, when Dr. [Name] performed a phacoemulsification procedure through a 2-mm incision in the cornea. The procedure was successful, and the patient is recovering well.

**Figure 1**: Shows the initial incision and the placement of the IOL.

**Figure 2**: Shows the lens capsule being manipulated during the procedure.

**Figure 3**: Shows the IOL being positioned within the eye.

**Figure 4**: Shows the final placement of the IOL and the closure of the incision.



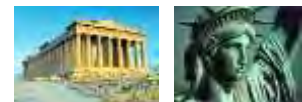
# Surgical Systems



**LenSx®**



**LensAR™**

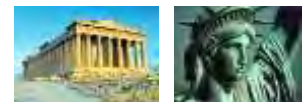


# Surgical Systems

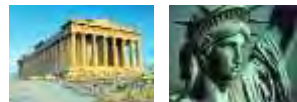


**Technolas™**

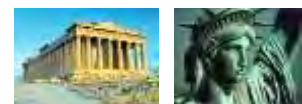
**Catalys™**



# Femto-Cataract work: 2 Years

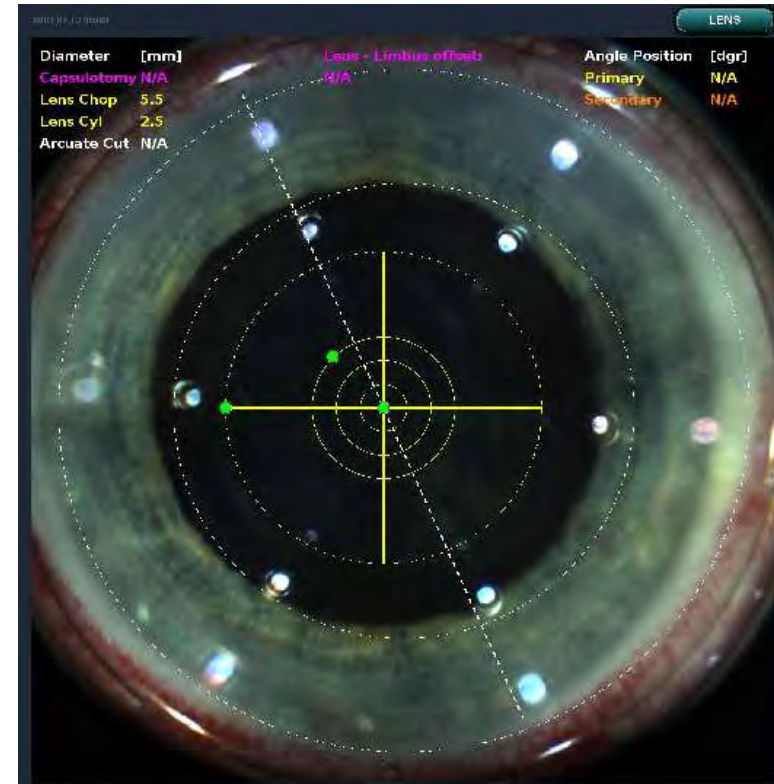


Prof. Kanellopoulos, MD



# New Hybrid Fragmentation Pattern

- Combination of Cylinder and Chop Patterns
- Efficient for All Cataract Grades
- Rapid Lens Removal with Minimal Phaco Required
- Preferred Pattern for Surgeons going Forward

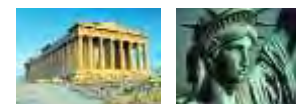


## LenSx® Laser Hybrid Pattern

- Used for all Cataract Grades
- # Cuts/Cylinders Customizable

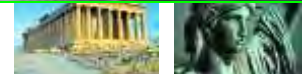
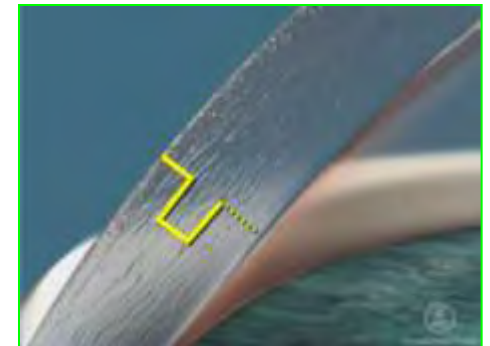
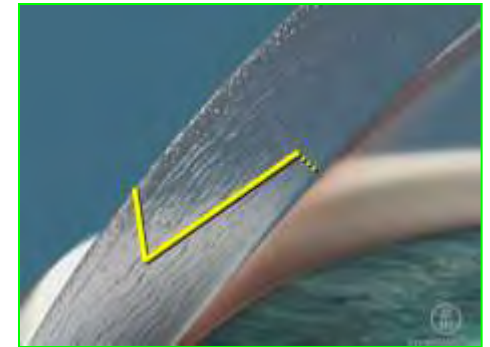
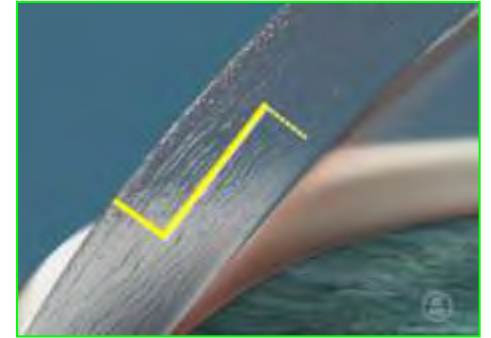
\*510(k) Premarket Notification to the FDA, LenSx Laser System, K101626, 2010.

LSX12001SK



# Improved Cataract Incision

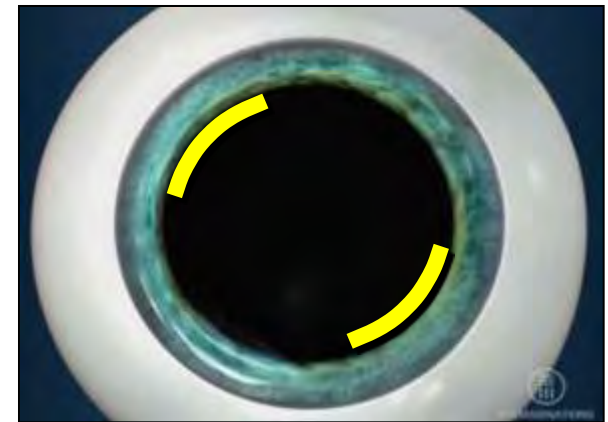
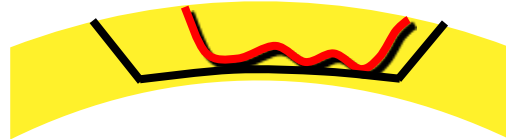
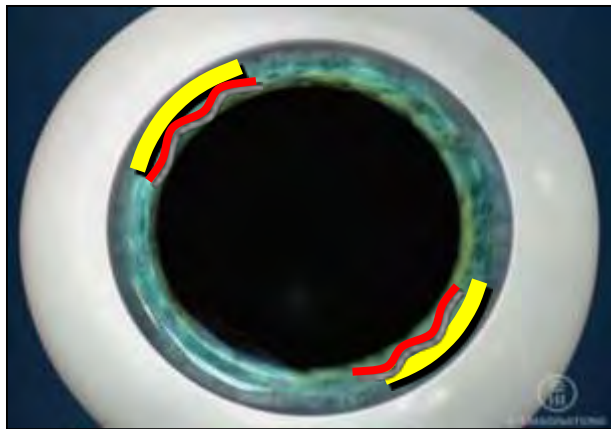
Improved cataract incisions  
could  
lead to the following:  
A tighter self-sealing sealing  
wound  
More consistent incision  
Unique incision architecture



# Refractive Results: A more precise relaxing incision

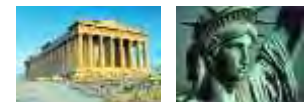
LRI with Femtosecond Lasers:

Potentially more consistent and predictable astigmatic management compared to manual LRIs<sup>1,2</sup>

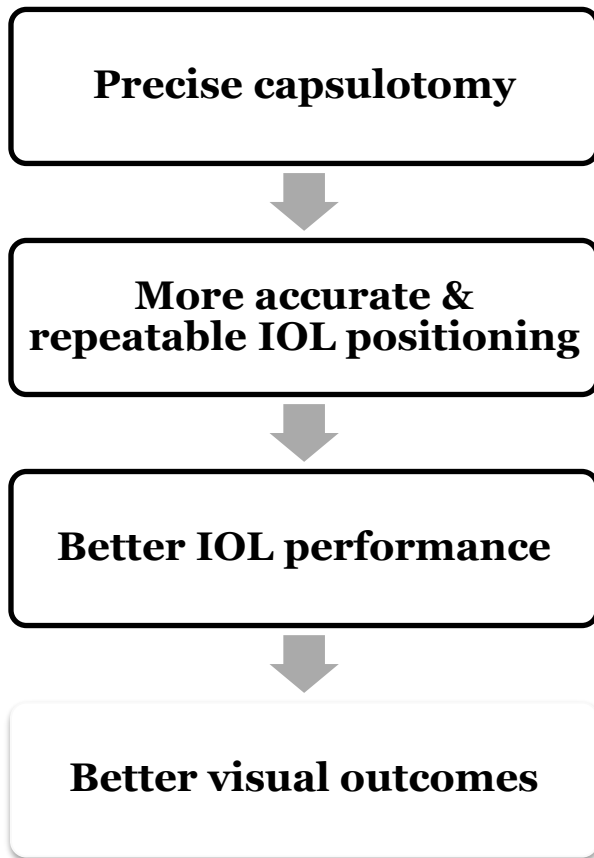


<sup>1</sup>Slade S. Donnenfeld Femtosecond Lasers in Refractive cataract Surgery. AAO, October 2010.

<sup>2</sup>Slade S MD, Culbertson W MD, & Krueger R MD. Femtosecond Lasers for Refractive Cataract Surgery. CRST, August 2010

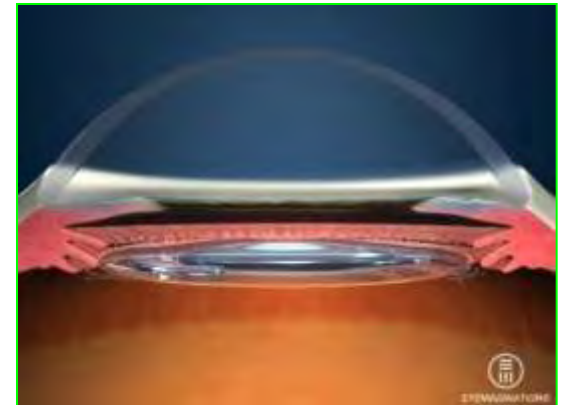


# Refractive Results: A more precise capsulotomy



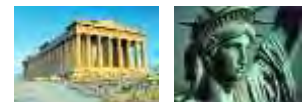
The size, shape, and positioning of the capsulorhexis is a key determinant for effective lens position<sup>1</sup>

A 0.5 mm axial plane deviation from intended ELP results in 1D of refractive error<sup>2</sup>



<sup>1</sup>Yanoff M, Duker J: Ophthalmology: Expert Consult 3<sup>rd</sup> edition, Mosby, 2008.

<sup>2</sup>Cekic O, Batman C: The relationship between capsulorhexis size and anterior chamber depth relation. *Ophthalmic Surg Lasers* 1999, 30(3):185-90.

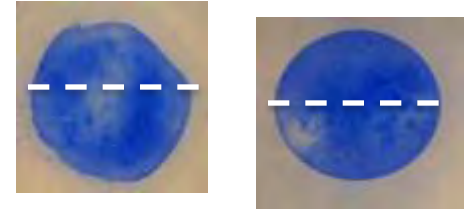


# Capsulotomy size is more precise

Capsulotomy/capsulorhexis disc excised during surgery

Disc diameter measured and recorded

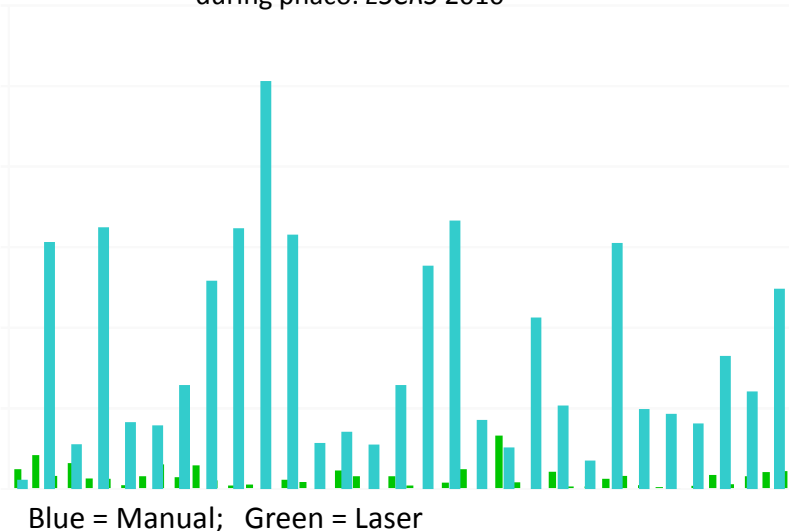
Deviation between intended and observed diameter calculated



<sup>1</sup>Lane, Stephen MD. Accuracy and Predictability of the OptiMedica Femtosecond Laser Capsulotomy. AAO 2010

<sup>2</sup>Data courtesy of LensAR

<sup>3</sup>Nagy, Z. Comparative analysis of femtolaser-assisted and manual capsulorhexis during phaco. ESCRS 2010



**Company**

**Manual**

**Laser**

**OptiMedica<sup>1</sup>**

0.339 ±  
0.250mm

0.027 ±  
0.025mm  
(p < 0.001)

**(μ ± SD)**

**LensAR<sup>2</sup>**

0.42 ±  
0.54mm

0.16 ±  
0.17mm  
(p=0.03)

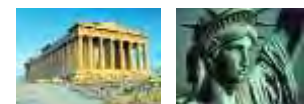
**(μ ± SD)**

**LenSx<sup>3</sup>**

10% <  
0.25mm

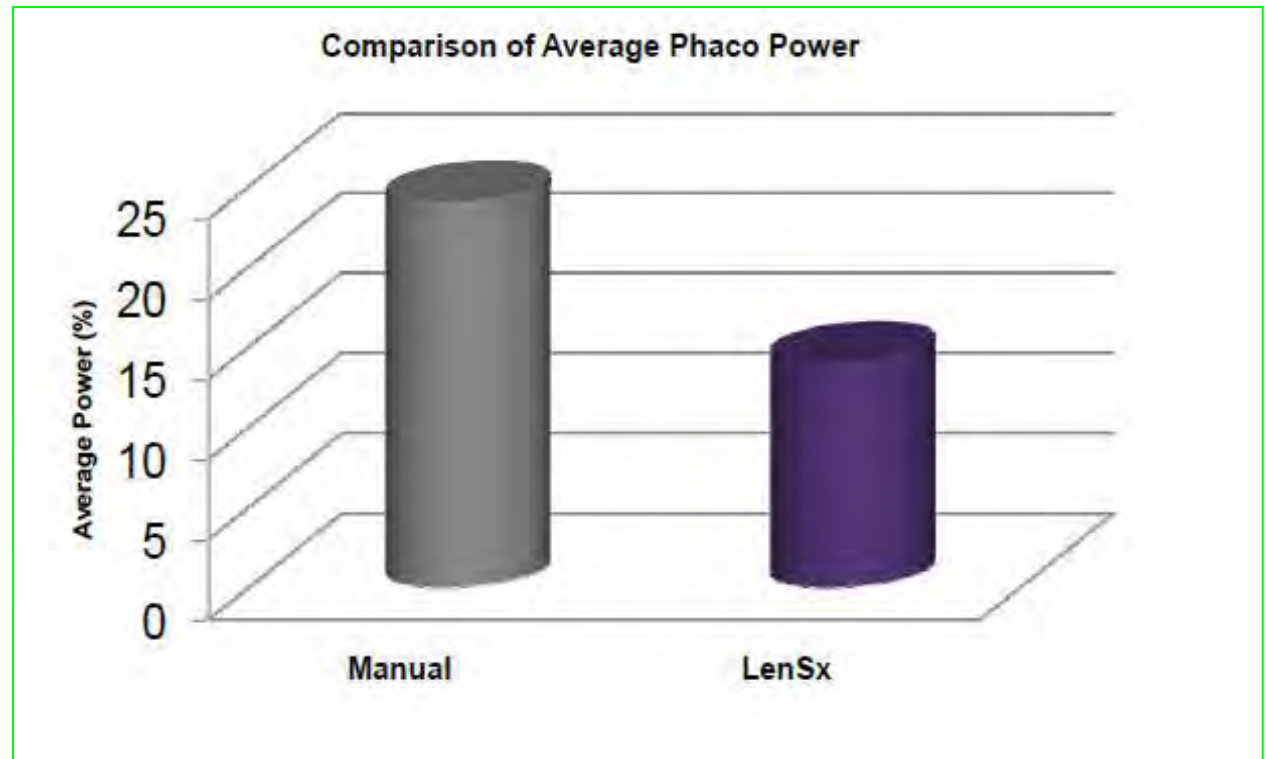
All <  
0.25 mm

**Graph from: Lane, S MD et al. Accuracy and Predictability of OptiMedica Femtosecond Laser Capsulotomy. AAO 2010**

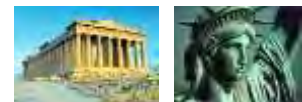


# Reduced phaco energy and endothelial loss

46% reduction in phaco power  
28% decrease in endothelial loss following laser cataract surgery vs. manual

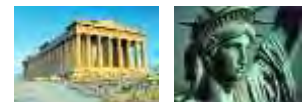


Source: Knorz. Royal Hawaiian Eye Meeting Presentation, January 2011.



# Arcuate Incisions with the LenSx® Laser

Development of a nomogram for laser created arcuate incisions based previous experience with manual LRI nomogram

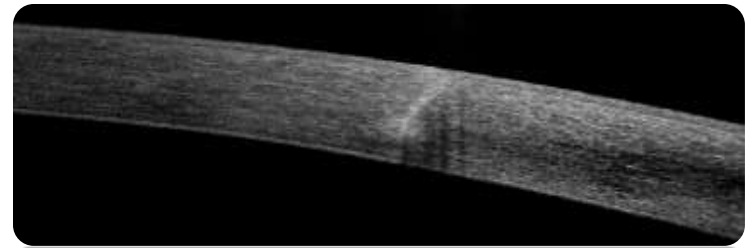


# Laser Refractive Cataract Surgery - Arc Incisions

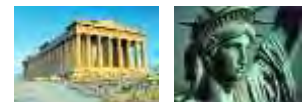
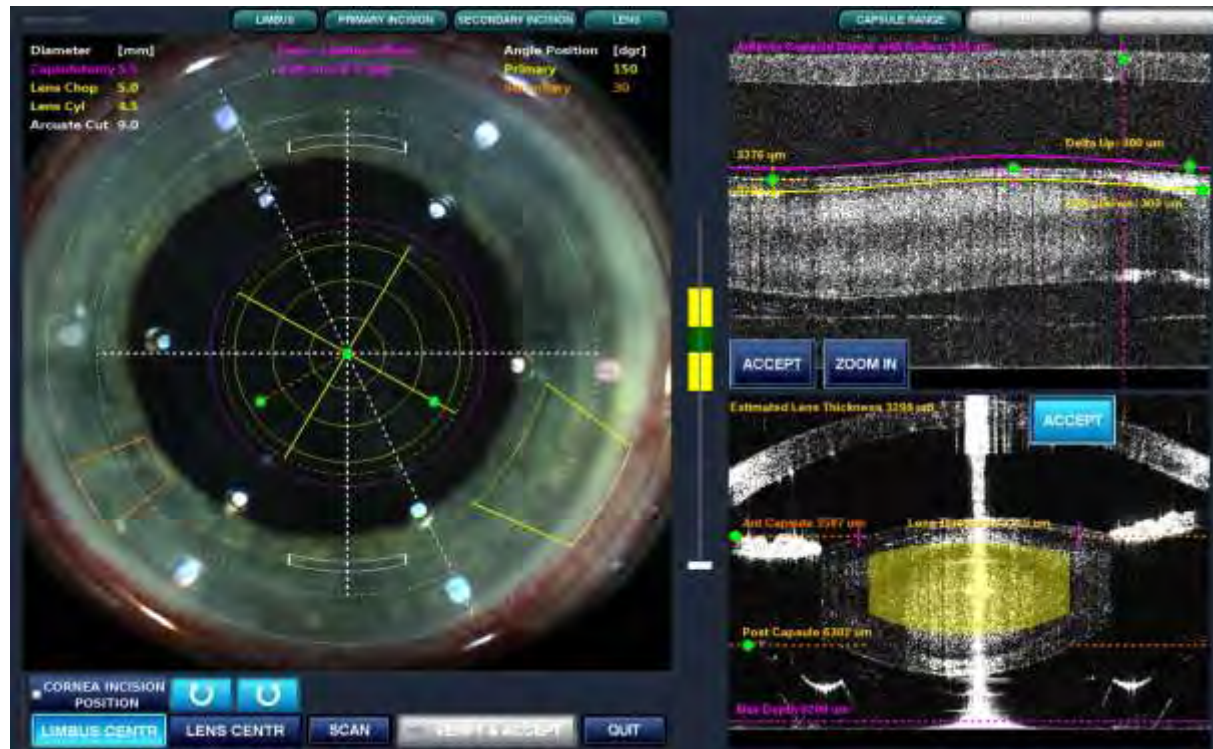
Fully Customizable and adjustable

Refractive incisions are no longer an art form. They are a science.

Place Desired Incisions:  
EXACT Size  
EXACT Place  
EXACT Depth  
Every Time



# A promising view of an anterior segment surgeon!





Thank you



**LaserVision**

Institute for laser

Kanellopoulos, MD  
Kanellopoulos MD

[www.brilliantvision.com](http://www.brilliantvision.com)

