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Evaluation of Toric Intraocular Lens Implantation in Cataract Surgery

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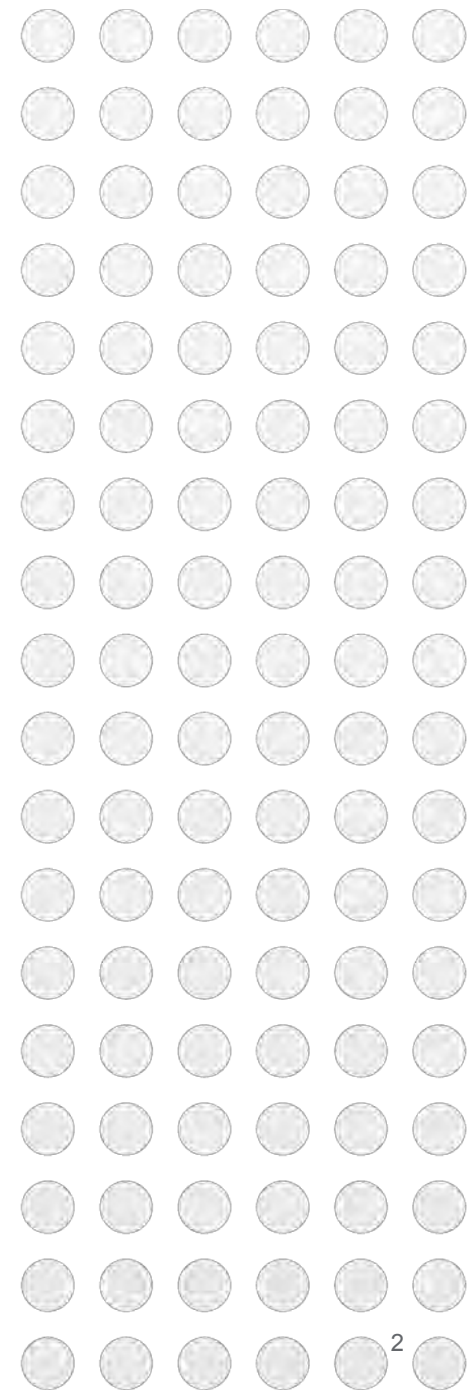
Financial Disclosures

CS:

None

AJK:

Alcon



Introduction

- Approximately 15-29% of patients with cataracts have >1.50 D or corneal astigmatism.
- Toric IOLs can reduce post-op astigmatism and dependency on distance vision spectacle correction in patients with cataracts and corneal astigmatism
- Two FDA-approved toric IOLs in the U.S.:
 - Staar Toric IOL (Staar Surgical, Monrovia, CA)
 - Acrysof Toric IOL (Alcon Laboratories Inc., Fort Worth, TX)

Purpose

To evaluate the safety, efficacy and clinical parameters of the Acrysof Toric IOL in cataract surgery.

Methods

- 111 eyes of 78 consecutive patients
- Pre- and post-operative evaluation:
 - Age
 - UCVA
 - BSCVA
 - Refraction
 - Cylinder
 - Topographic cylinder change (Pentacam, Oculus, Inc.)
 - Endothelial cell count
 - Degrees of planned-to-achieved IOL axis deviation (Ad)
- Keratometry measured with IOL Master (Zeiss,)
- Acrysof Toric Calculator used to determine IOL model and alignment
- Surgically induced astigmatism of 0.50 D assumed in all cases.

Acrysof toric IOL calculator

ACRYSOF IQ TORIC ASTIGMATISM IOL		Alcon CE	
<p>Alcon does not receive or retain any patient data. Please print a copy of the final output for your records. Contact your Alcon representative for available AcrySof® IQ Toric IOL models and diopter ranges.</p>			
<input type="button" value="Print"/>			
Lens Recommendation			
Surgeon & Patient Information		<div style="text-align: center;"> <h3>OD (Right)</h3> <p>IOL: SN6AT6 9.0D SE, Cyl:3.75D @ 118° Flat K:44.20D @ 28° Steep K:47.60D @ 118° P-IOL:9.0D SIA:0.50D IL:118° [M3.1.3] 495d58e77c77db421cb25f047cb37eff 4/17/12 23:56:11</p> </div>	
Surgeon Name			
Patient Name			
Additional Patient Information (I.D., Case, etc.)			
Lens Details			
AcrySof® IQ Toric IOL	SN6AT6		
IOL Spherical Equivalent (SE)	9.0 D		
Axis of Placement	118°		
Cylinder Power (IOL Plane)	3.75 D		
Cylinder Power (Corneal Plane)	2.57 D		
Calculation Details			
Pre-Op Corneal Astigmatism:	3.40 D X 118°		
Surgically Induced Astigmatism:	0.50 D X 28°		
Crossed-Cylinder Result (corneal plane):	2.90 D X 118°		
Anticipated Residual Astigmatism:	0.33 D X 118°		
Pre-Op Information			
Patient Data		<div style="text-align: center;"> <p>Flat K:44.20D @ 28° Steep K:47.60D @ 118° P-IOL:9.0D SIA:0.50D IL:118° [M3.1.3] 495d58e77c77db421cb25f047cb37eff 4/17/12 23:56:12</p> <p>Steep Axis ***** Flat Axis ***** Incision</p> </div>	
Flat K			
⊙ Flat Axis			
Steep K			
⊙ Steep Axis			
IOL Spherical Power (P-IOL)			
Surgically Induced Astigmatism (SIA)			
Incision Location (IL)			
Notes:			
495d58e77c77db421cb25f047cb37eff 4/17/12 23:56:11			
V: 3.1.3			

Pre-operative Pentacam: UCVA 20/80



LaserVision.gr

Prof. A. J. Kanellopoulos, MD

Associate Professor, NYU Medical School

WAVELIGHT - ALLEGRO OCULYZER

Last Name: [REDACTED]
 First Name: [REDACTED]
 ID: [REDACTED]
 Date of Birth: [REDACTED] Eye: Right
 Exam Date: 16.01.2009 Time: 13:22:30
 Exam Info: [REDACTED]

Cornea Front

Rh: 7.66 mm K1: 44.1 D
 Rv: 7.23 mm K2: 46.7 D
 Rm: 7.44 mm Km: 45.3 D

QS: OK Axis: 37.1° Astig: -2.6 D
 ecc: (7mm) 0.40 Rper: 7.77 mm Rmin: 6.31 mm

Cornea Back

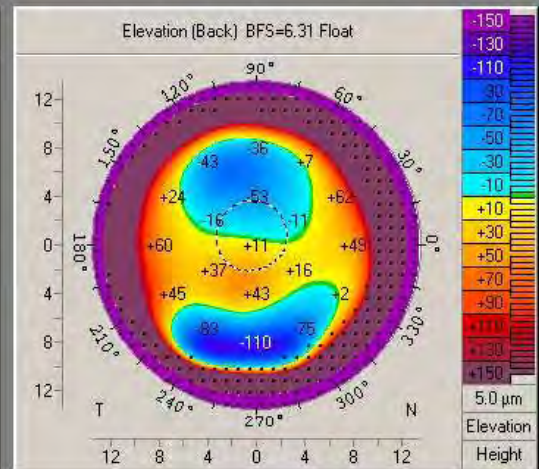
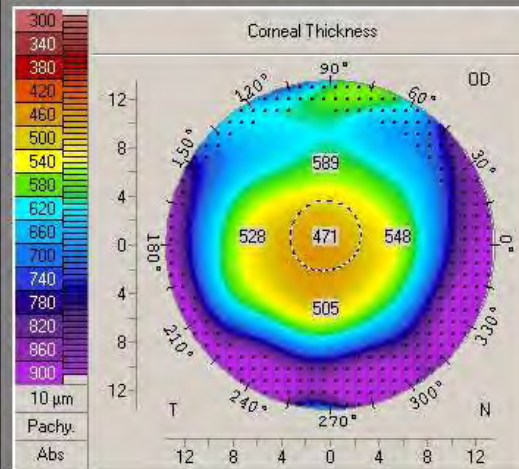
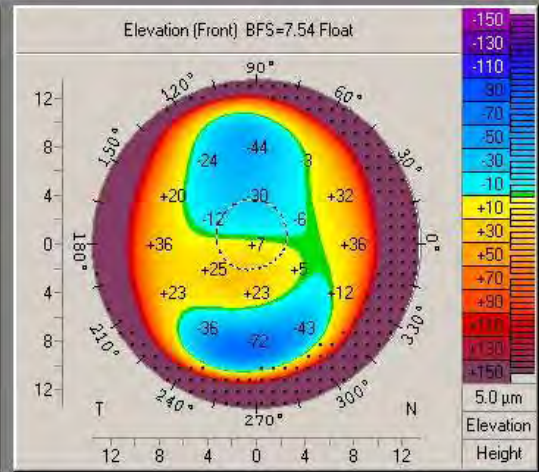
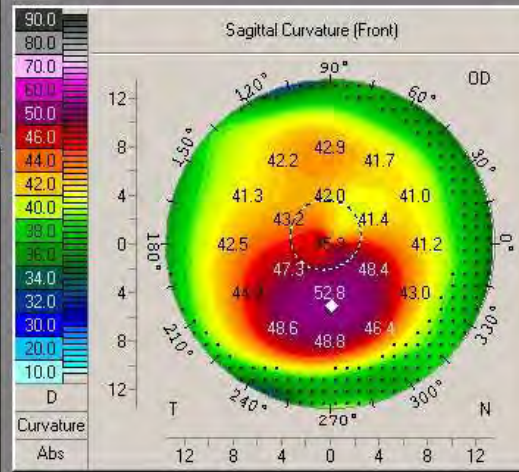
Rh: 6.42 mm K1: -6.2 D
 Rv: 5.94 mm K2: -6.7 D
 Rm: 6.18 mm Km: -6.5 D

QS: OK Axis: 30.4° Astig: +0.5 D
 ecc: (7mm) 0.53 Rper: 6.61 mm Rmin: 5.10 mm

Pupil Center: + Pachy: 471 μm x[mm] -0.21 y[mm] +0.39
 Pachy Apex: • 468 μm [0.00] [0.00]
 Thinnest Locat: ○ 461 μm [-0.53] [-0.68]

Cornea Volume: 54.2 mm³ KPD: +1.2 D
 Chamber Volume: 225 mm³ Angle: 42.9°
 A. C. Depth (Int.): 3.46 mm Pupil Dia: 2.83 mm
 Enter IOP IOP(Sum): +5.5 mmHg Lens Th.: [REDACTED]

Refractive



Post-operative Pentacam: UCVA 20/25+



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Prof. A. J. Kanellopoulos, MD

Associate Professor, NYU Medical School

WAVELIGHT - ALLEGRO OCULYZER

Last Name: Fouseka
 First Name: Ksanthi
 ID:
 Date of Birth: 01.01.1959 Eye: Right
 Exam Date: 19.03.2009 Time: 12:20:10
 Exam Info:

Cornea Front

Rh: 7.57 mm K1: 44.6 D
 Rv: 7.22 mm K2: 46.7 D
 Rm: 7.39 mm Km: 45.7 D
 QS: Axis: 24.4° Astig: -2.1 D
 ecc: (7mm) 0.57 Rper: 7.77 mm Rmin: 6.35 mm

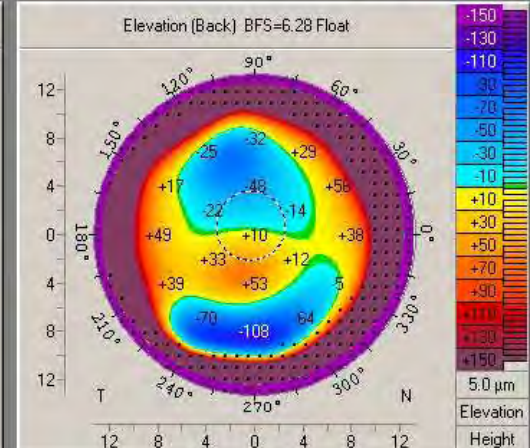
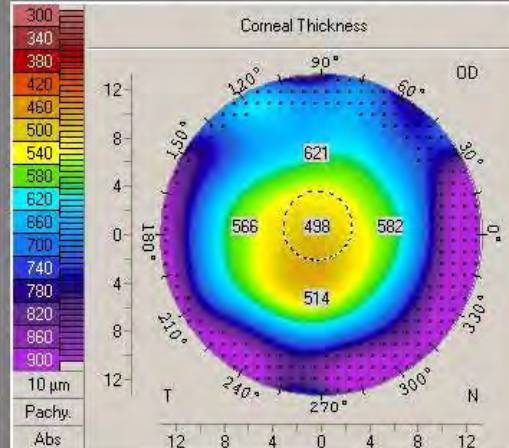
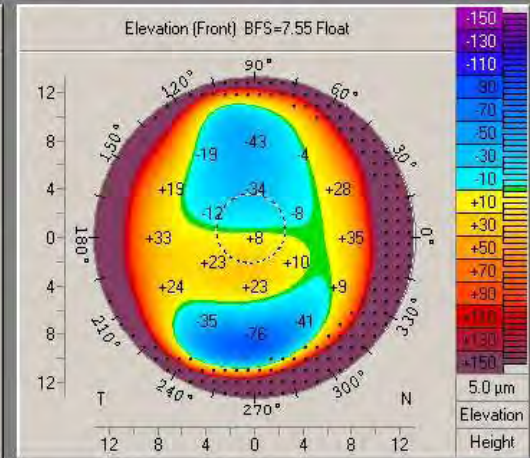
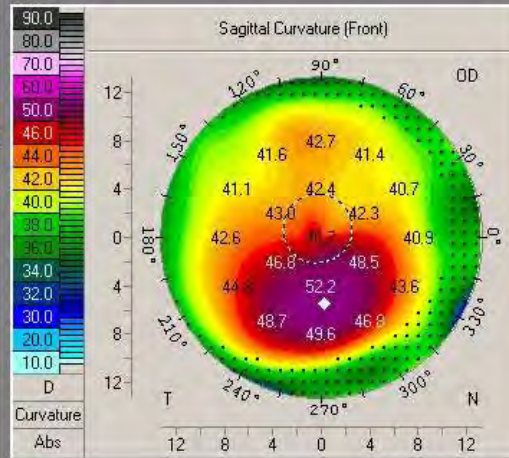
Cornea Back

Rh: 6.04 mm K2: -6.6 D
 Rv: 6.45 mm K1: -6.2 D
 Rm: 6.25 mm Km: -6.4 D
 QS: Axis: 58.0° Astig: -0.4 D
 ecc: (7mm) 0.28 Rper: 6.59 mm Rmin: 5.03 mm

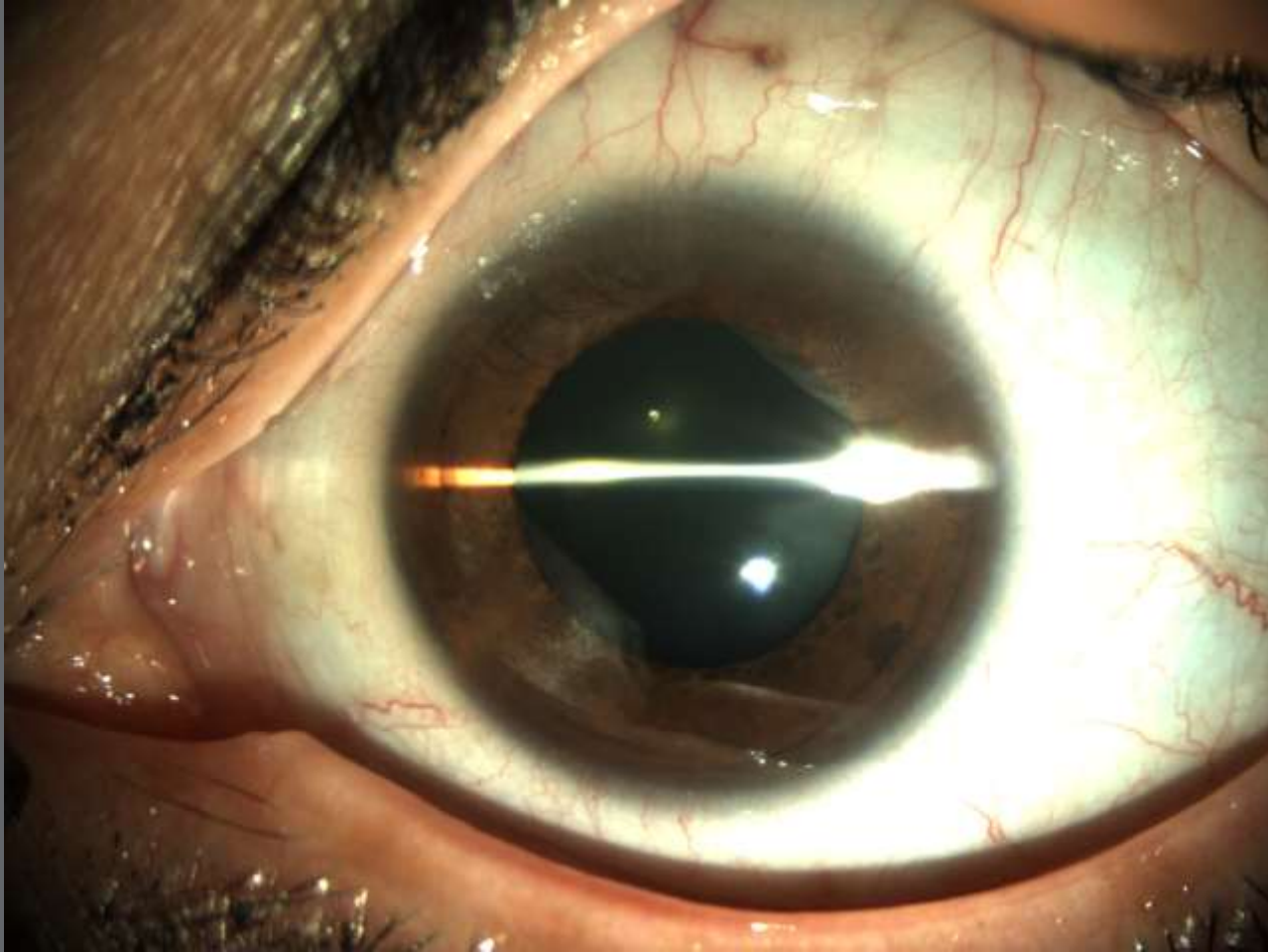
Pachy: x [mm] y [mm]
 Pupil Center: + 498 μm -0.16 +0.38
 Pachy Apex: 493 μm 0.00 0.00
 Thinnest Locat: 476 μm -0.44 -1.40

Cornea Volume: 56.4 mm³ KPD: +1.2 D
 Chamber Volume: 219 mm³ Angle: 52.7°
 A. C. Depth (Int.): Pupil Dia: 2.80 mm
 Enter IOP IOP(Sum): +3.7 mmHg Lens Th:

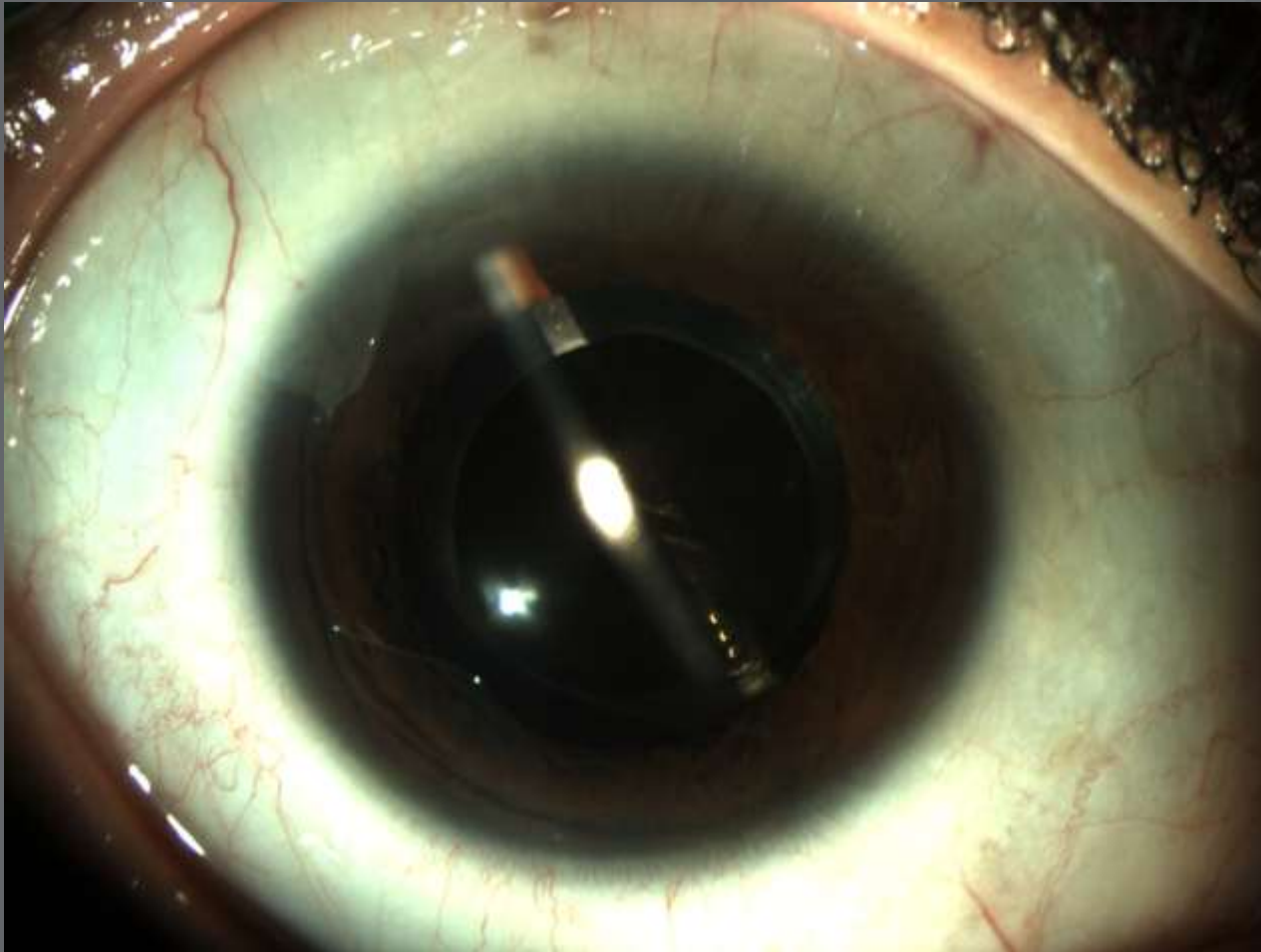
Refractive



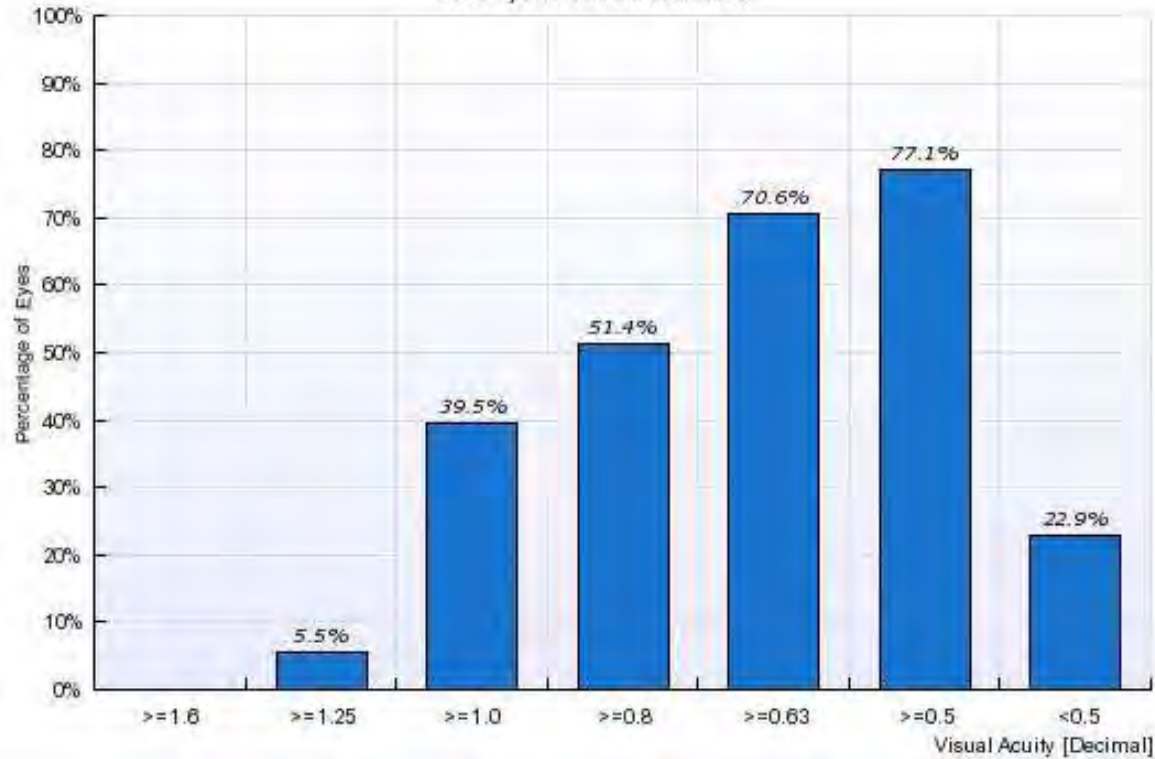
Pre-operative determination of the horizontal axis



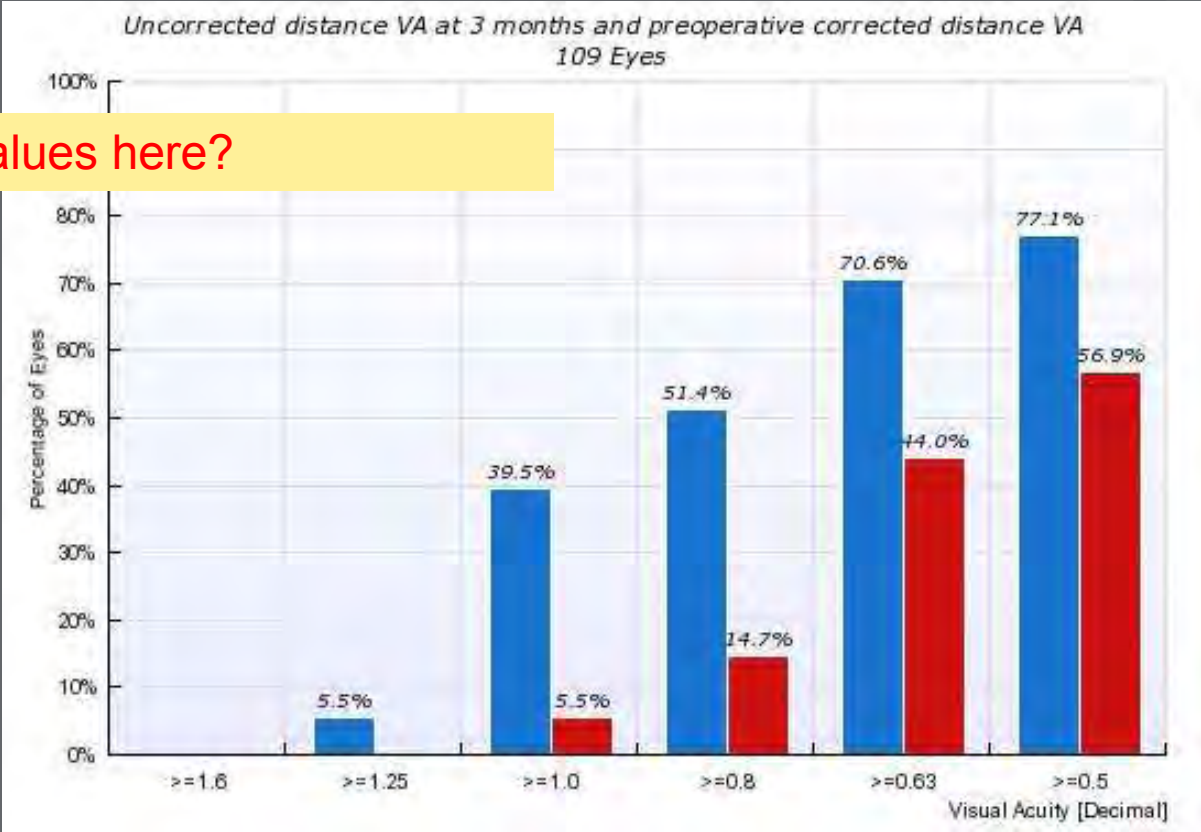
Post-op result with proper alignment of toric IOL



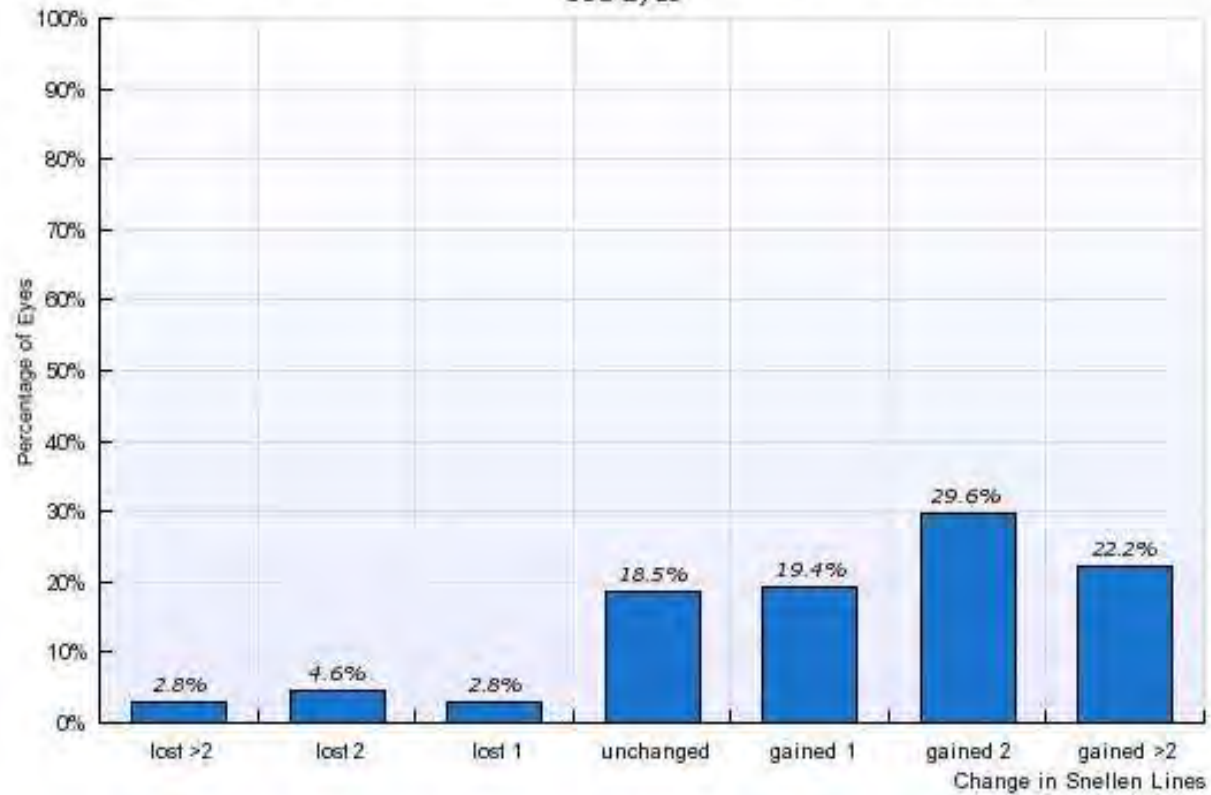
Uncorrected Distance Visual Acuity
109 Eyes at 3 Month Visit



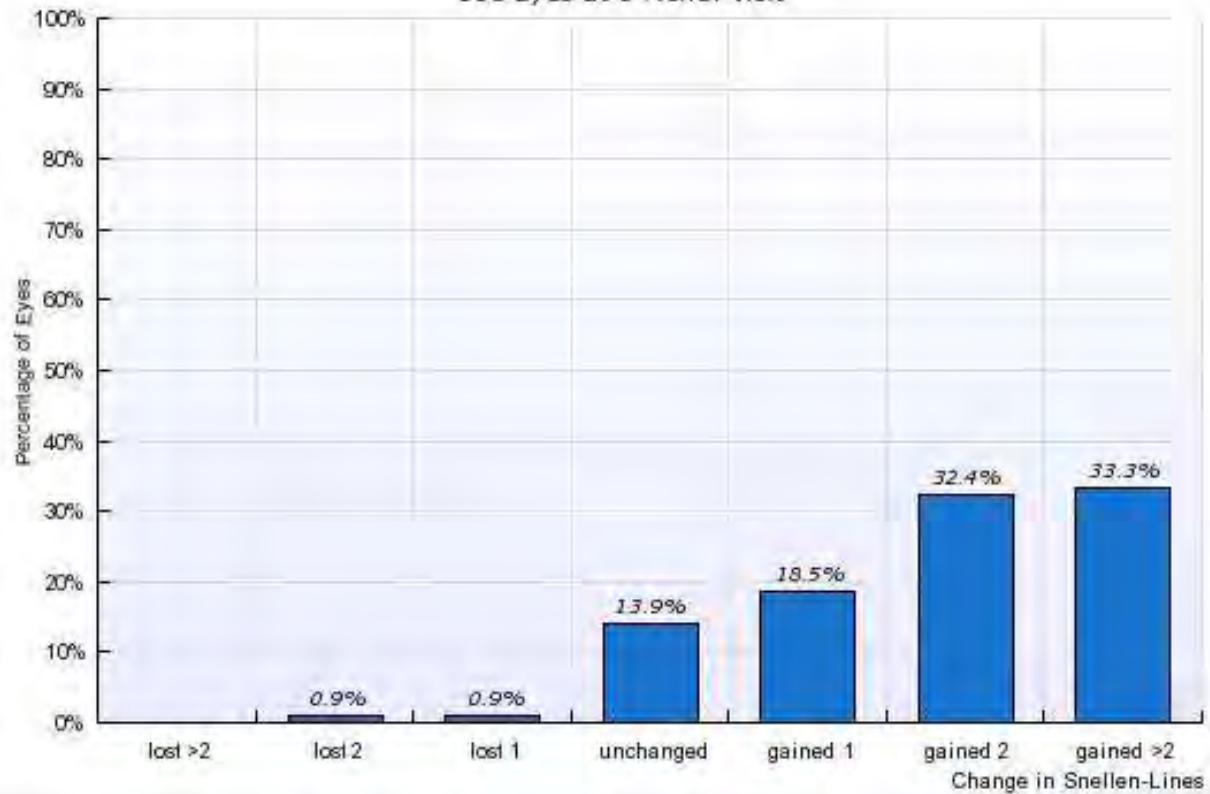
Are there p values here?



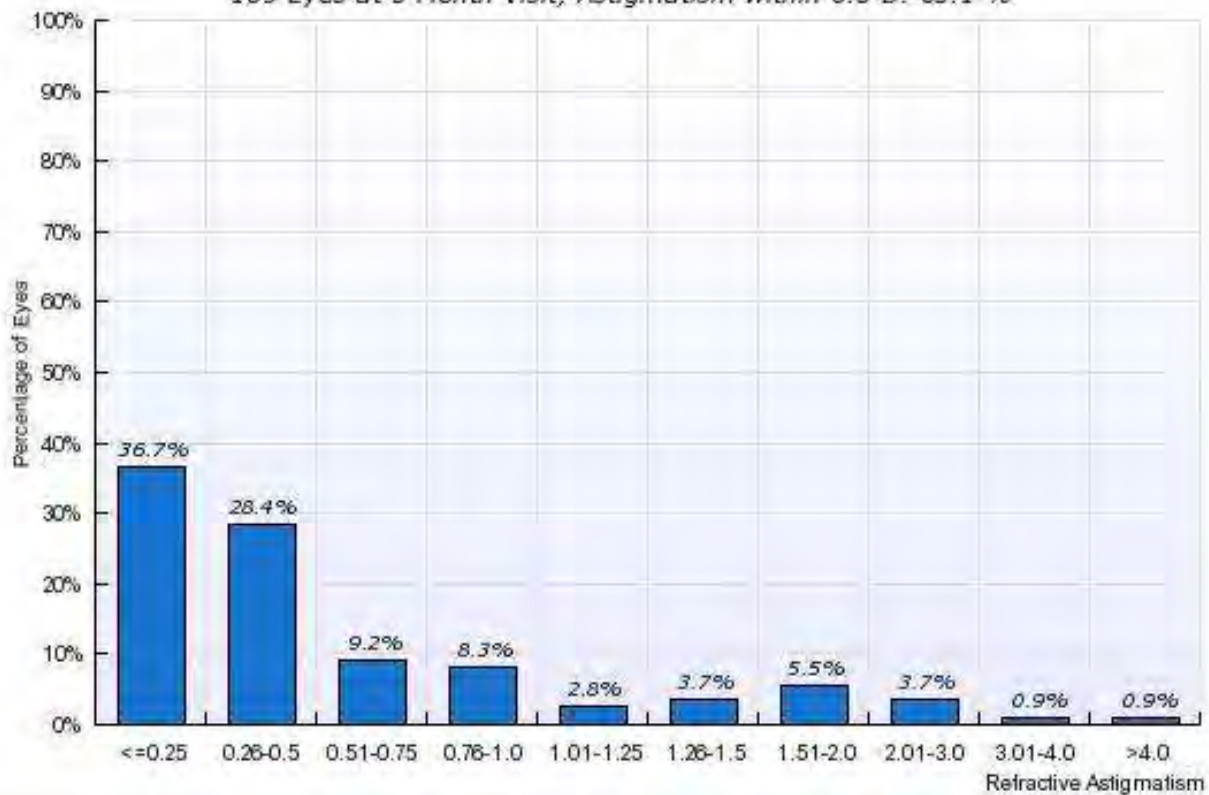
Efficacy Distance Visual Acuity (UDVA at 3 Month Visit - CDVA pre)
108 Eyes



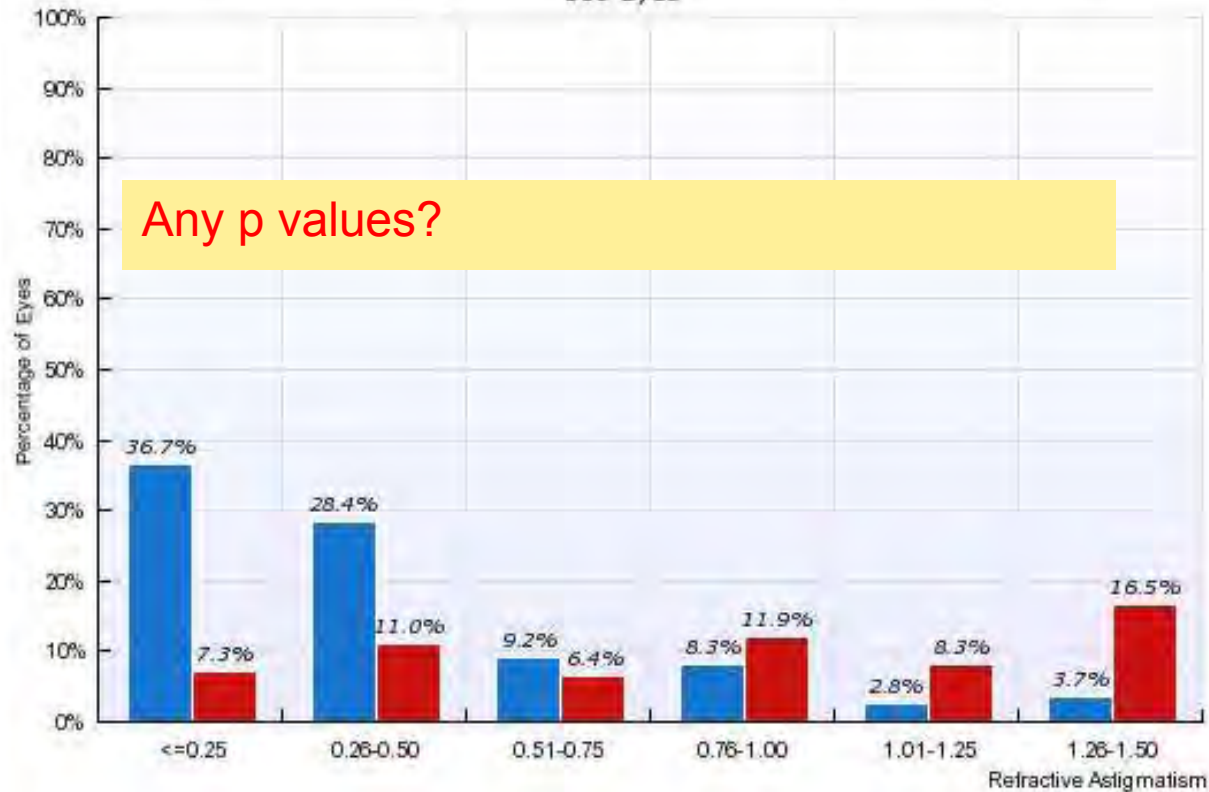
Safety Distance Visual Acuity
108 Eyes at 3 Month Visit



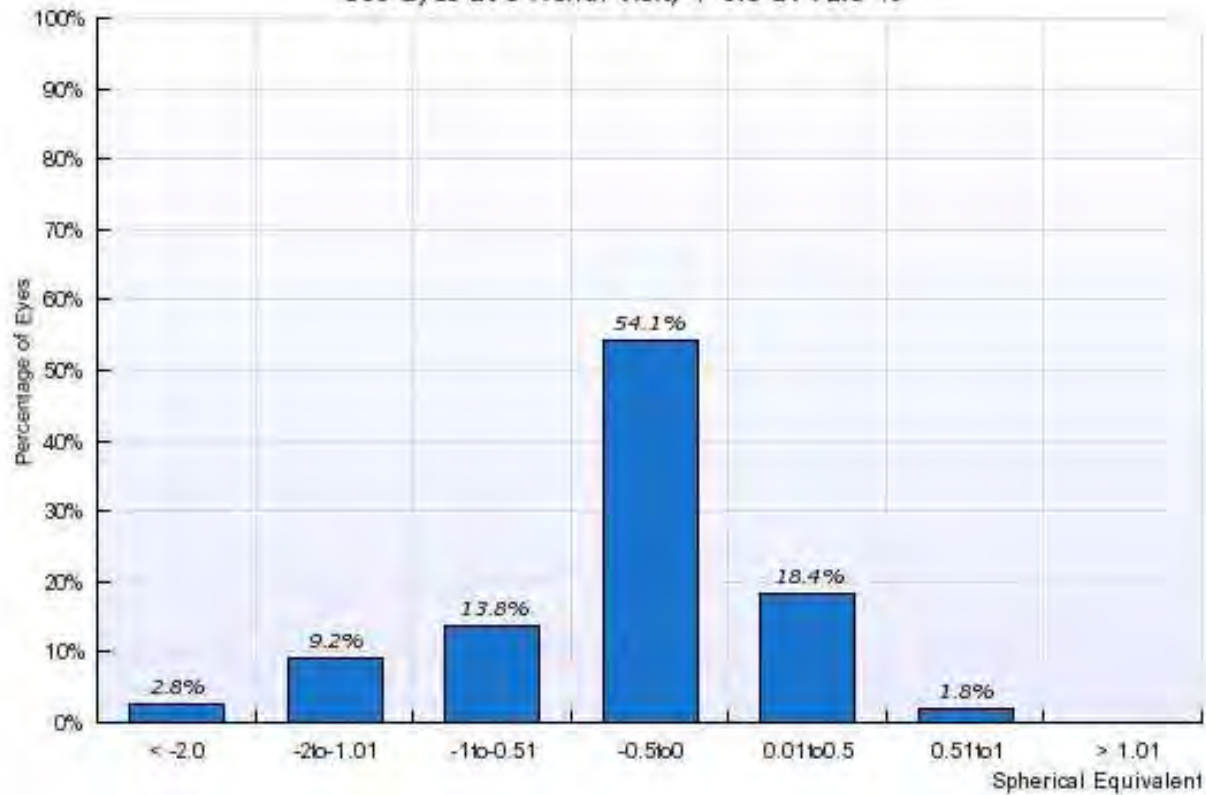
Refractive Astigmatism
109 Eyes at 3 Month Visit; Astigmatism within 0.5 D: 65.1 %



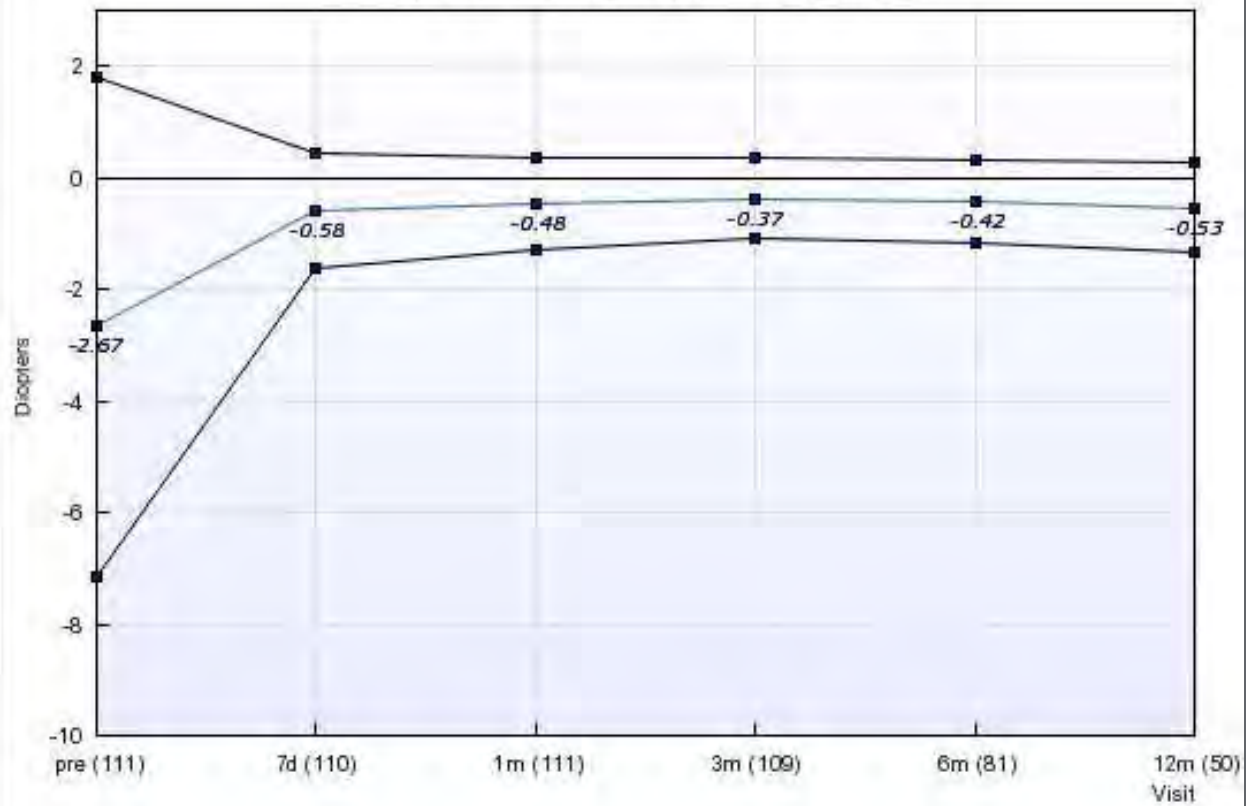
Refractive astigmatism at 3 months and preoperative refractive astigmatism
109 Eyes



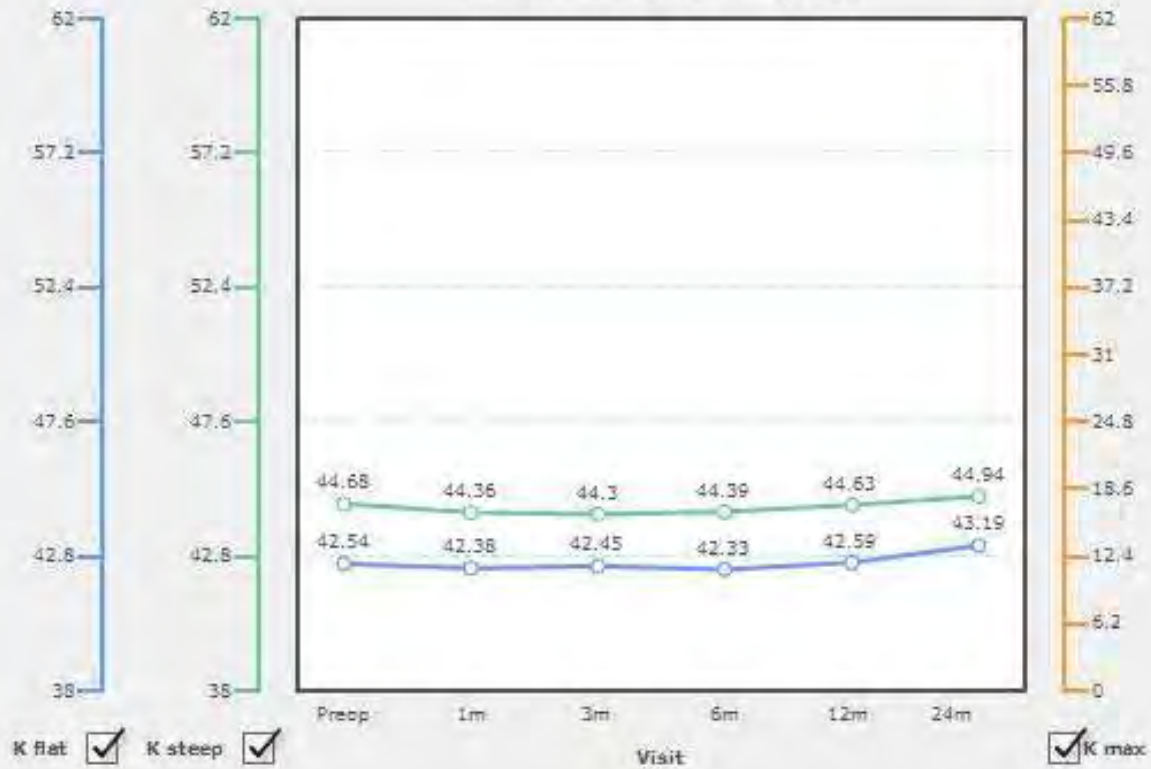
Spherical Equivalent Refraction
109 Eyes at 3 Month Visit, ± 0.5 D: 72.5 %



Stability of Postoperative Spherical Equivalent

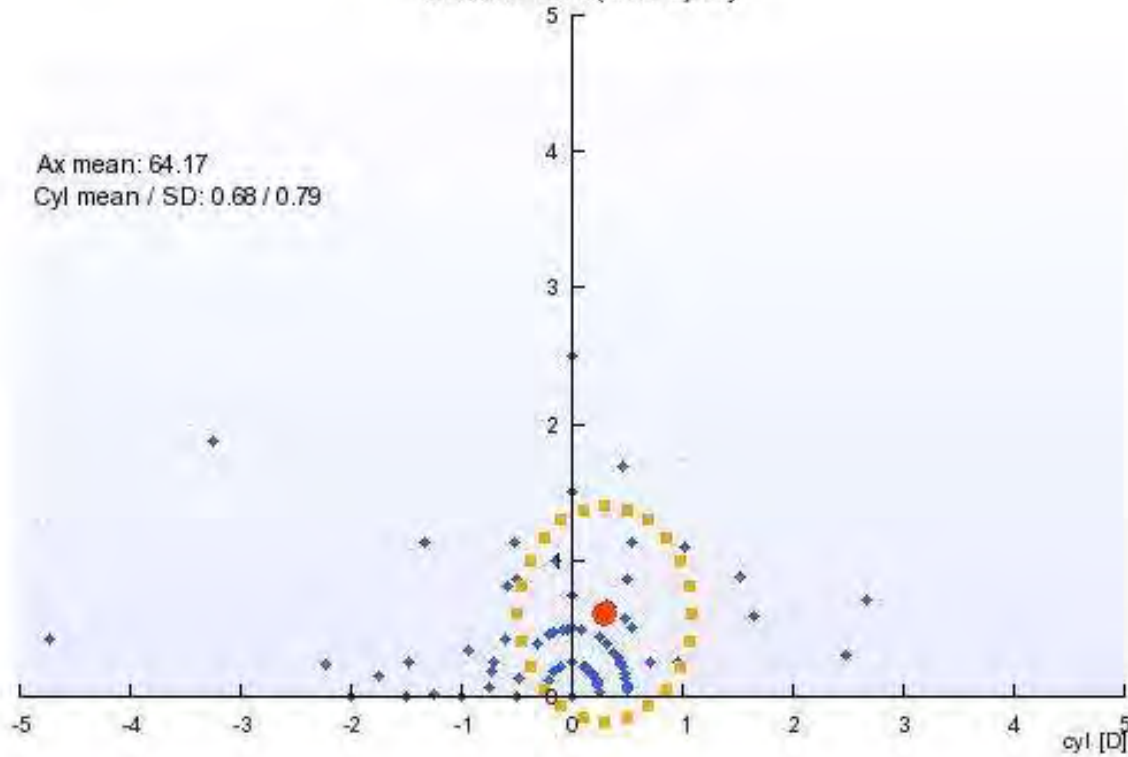


Keratometric Readings [D]



Cylinder Vectorgram
3 Month Visit (109 Eyes)

Ax mean: 64.17
Cyl mean / SD: 0.68 / 0.79



Conclusions

- This Acrysof Toric IOL appears to be safe and effective in facilitating emmetropia in routine cataract surgery.