

# ASCRS 2014 BOSTON

## VISUAL QUALITY AND CONTRAST SENSITIVITY DIFFERENCES OF 4 TYPES OF ACRYLIC DIFFRACTIVE MULTIFOCAL IOL's

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- mexicali, mexico
- No comercial interest

# 4 Acrylic diffractive IOL models

## ReSTOR +3 (Alcon)

Hydrophobic  
Asphericity -0.1  $\mu\text{m}$   
One piece  
Apodized

Bifocal +3



## AT Lisa 809 M (Zeiss)

Hydrophilic+Hydrophobic  
Aspheric + Smoothing  
Plate one piece  
Fully Diffractive

Bifocal + 3.75



## Fine Vision (Physiol)

Hydrophilic  
Aspheric -0.11  $\mu\text{m}$   
One piece angulated  
Fully diffractive  
apodized  
Trifocal +1.75/+3.5



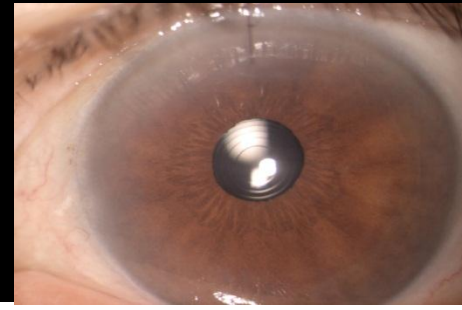
## Tecnis ZBMOO (AMO)

Hydrophobic  
Asphericity -0.27  $\mu\text{m}$   
One piece  
Fully Diffractive

Bifocal +4



# MATERIAL AND METHODS



- Prospective randomized study
- Controlled case series
- 4 groups of 10 patients each (bilateral implantation)
- Follow up 3 months
- Contraindications: ocular and / or systemic comorbidity  
corneal astigmatism  $> 1.0$  Diopter
- Statistical analysis (Anova tests / Holladay 2 HiSOAP-Pro)
- IOL Power calculation with Zeiss IOL Master v 5.4/Holl2 form.
- Phaco chop same surgeon (FAZ)
- Postop evaluation 1 day, 1 week, 1 month, 3 months
- Contrast sensitivity/ucdva/ucnva/univa/defocus curve  
(Glare and no glare) / Wavefront Measurements Tshering ; Hartmann-Shack and Optical Path Difference (OPD) technologies

# Results : binocular ucva (logMAR)

## 3 month postop evaluation

Near: (at preferred reading distance)

|                  |           |      |            |
|------------------|-----------|------|------------|
| Tecnis.....      | 0.00..... | 100% | (20/20)    |
| ATLisa.....      | 0.00..... | 100% | (20/20)    |
| Fine Vision..... | 0.18..... | 100% | (20/30) ** |
| Restor.....      | 0.00..... | 100% | (20/20)    |

Distance:

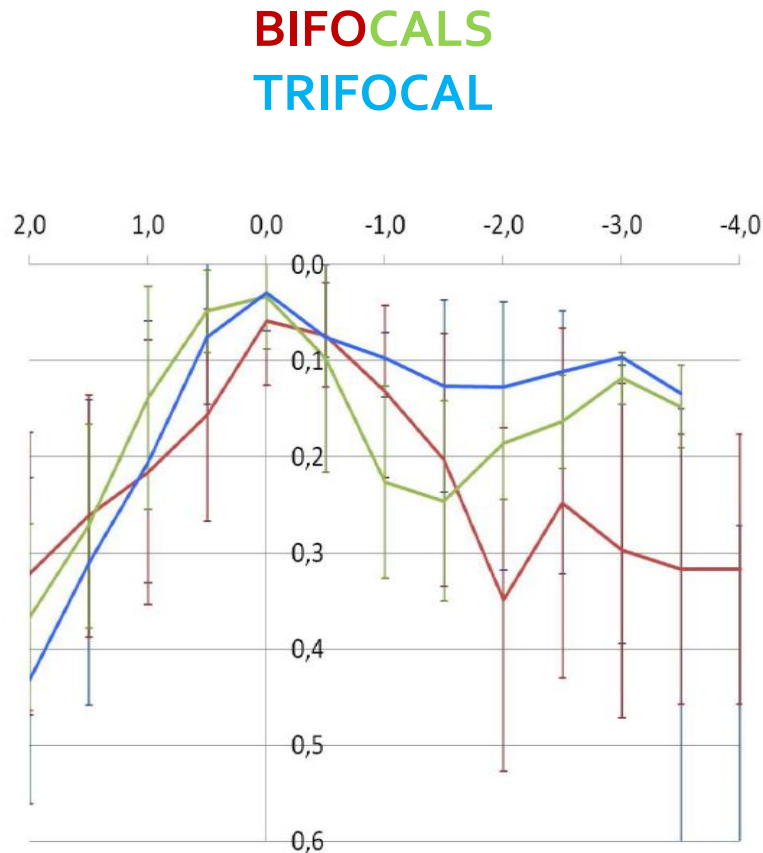
|                 |           |      |            |
|-----------------|-----------|------|------------|
| Tecnis.....     | 0.10..... | 100% | (20/25) ** |
| ATLisa.....     | 0.10..... | 100% |            |
| FineVision..... | 0.10..... | 100% |            |
| ReSTOR.....     | 0.10..... | 100% |            |

Intermediate (60 cm)

|                  |           |      |            |
|------------------|-----------|------|------------|
| Tecnis.....      | 0.30..... | 100% | (20/40)    |
| ATLisa.....      | 0.18..... | 100% | (20/30)    |
| Fine Vision..... | 0.10..... | 100% | (20/25) ** |
| ReSTOR.....      | 0.18..... | 100% | (20/30)    |

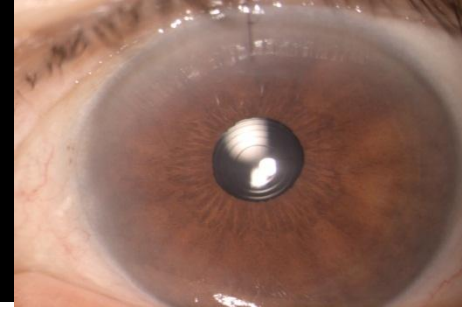
Non  
statistical  
significant

# Results: Defocus Curve / Wavefront findings



- Trifocal platform performed better at -2 defocus (intermediate) although non statistically significant (p 0.16)
- No WF technology gave consistent confident readings with any platform: OPD Scan / iTrace / COAS

# conclusion



## ■ *4 diffractive Multifocal acrylic IOL comparison*

Good UCDVA / UCNVA with 4 platforms ( > 90% 20/25 – 20/40 – J3)  
Trifocal platform gave better UCIntVA, but less UCNVA (non stat signif)  
High Level of Patient Satisfaction with 4 multifocals  
> 90% glasses independence with 4 multifocals

## ■ *Bifocal or Trifocal ???*

Task dependent choice  
Hydrophobic material / non pupil dependent technology are needed  
Less reported photic phenomena with smoothed diffractive multifocals  
Best compromise of visual performance and range of vision with Trifocal  
Needs: More Adds in pure diffractive and Trifocals (now available in Europe)

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