

# Surgically Induced Astigmatism After Cataract Surgery With Different Wound Sizes

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The authors have no financial interest in the subject matter of this poster

# Background

- ◆ With continuous advances in cataract surgery, patients have higher expectations of surgical and visual outcomes
- ◆ Astigmatism has considerable impact on quality of vision and can affect patients' satisfaction with the postoperative outcome.
- ◆ A significantly better control of astigmatism and corneal aberrations have been demonstrated related to the reduction of corneal incision size for over 3 mm to less than 2 mm. <sup>2</sup>

1. Alió J, Rodríguez-Prats JL, Galal A, Ramzy M. Outcomes of microincision cataract surgery versus coaxial phacoemulsification. *Ophthalmology*. 2005 Nov;112(11):1997-2003.
2. Jorge L. Alió, Bassam Elkady, and Dolores Ortiz. Corneal Optical Quality Following Sub 1.8 mm Micro-Incision Cataract Surgery vs. 2.2 mm Mini-Incision Coaxial Phacoemulsification. *Middle East Afr J Ophthalmol*. 2010 Jan-Mar; 17(1): 94–99.

# Purpose

- ◆ To compare surgically induced astigmatism (SIA) following co-axial cataract surgery through a 1.8 mm, 2.2 mm and 3.0 mm clear corneal wound.

# Methods

- ◆ Prospective comparative interventional case series.
- ◆ 144 eyes undergoing cataract surgery were randomly allocated into three groups based on the size of the Clear Corneal Wound.
- ◆ Group one (n= 50) underwent cataract surgery through a 1.8 mm wound while group two (n= 50) and group three (n= 44) through a 2.2 mm and 3.0 mm respectively.
- ◆ All subjects underwent preoperative biometry with IOL master (version 5.4) and had intraocular lens (IOL) placed in the capsular bag with a customized injector designed to deliver the IOL through a 1.8 mm CCI.
- ◆ Keratometry was repeated four weeks postoperatively. SIA was calculated using EyePro (version 1.5).

# Methods

## ◆ Demographic

<b>Number of patients (n)</b>	<b>144</b>
<b>Median Age</b>	<b>73 +/- 9</b>
<b>R: L eye</b>	<b>84:60</b>

◆ **Group 1 and 2: Hydrophilic IOL (CT ASPHINA , Carl Zeiss Meditec, Germany). Injector: BLUEMIXS® 180 injector**

◆ **Group 3: Hydrophilic IOL (C-flex®, Rayner, Hove, UK)**

## ◆ EyePro 2012 @ EB EYE 2010-14

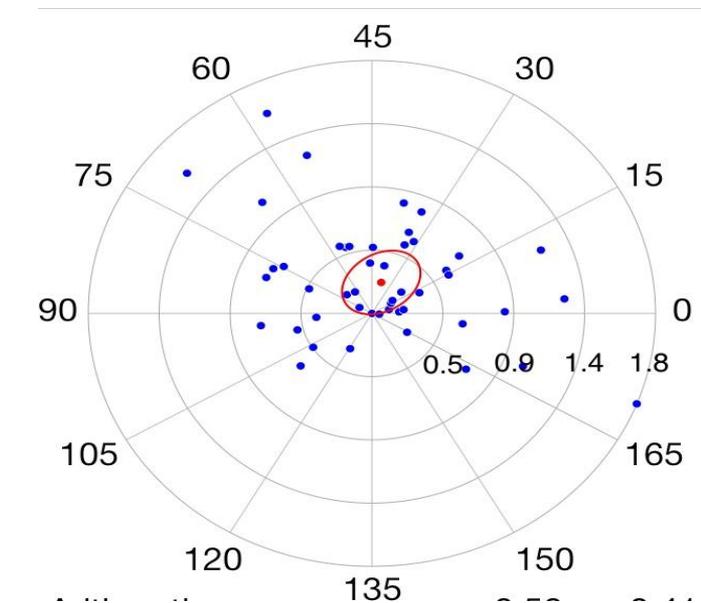
- Calculates the mean vector astigmatism and displays final value as traditional Polar Notation.
- Displays individual astigmatisms on a Doubled-Angle Polar Plot.

# Results

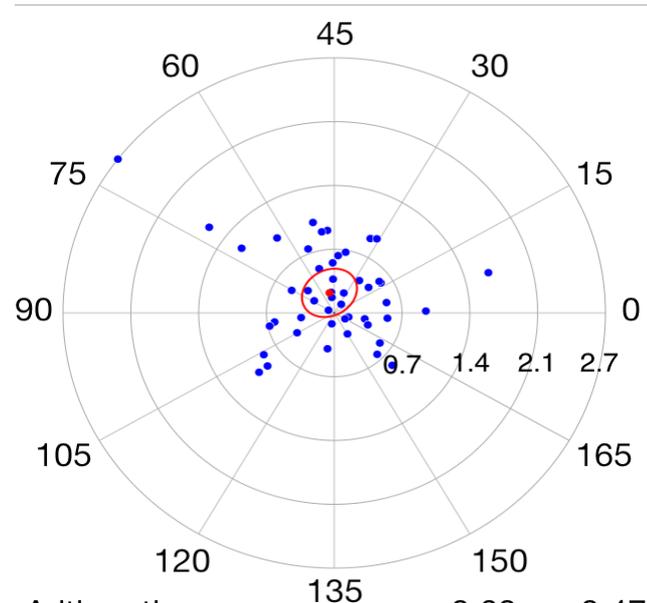
## Surgical Induced Astigmatism

**Incision size: 1.8 mm**

**Incision size: 2.2 mm**



Mean Astig  $0.23D \pm 0.68D$   
Mean Meridian  $37^\circ \pm 18^\circ$

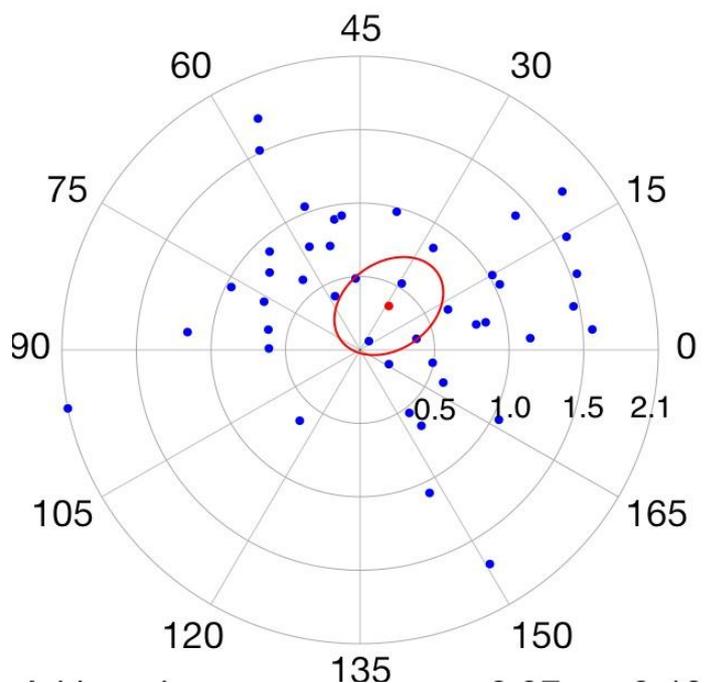


Mean Astig  $0.22D \pm 0.76D$   
Mean Meridian  $51^\circ \pm 20^\circ$

# Results

## Surgical Induced Astigmatism

**Incision size: 3.0 mm**



Mean Astig       $0.37 \text{ D} \pm 1.02 \text{ D}$   
Mean Meridian     $29^\circ \pm 18^\circ$

- There were no intraoperative or postoperative complications.
- The SIA between the 1.8 mm and 2.2 mm groups were found to be statistically significant less when compared to the 3.0 mm group ( $p=0.02$ ).

Polar Notation of Surgically Induced Astigmatism of Individual Cases

# Discussion

- ◆ Microincision cataract surgery (MICS) is defined as the surgery performed through incisions of less than 2.0 mm aiming to reduce the surgical trauma and surgically induced astigmatism (SIA).<sup>1</sup>
- ◆ Our findings are consistent with Alio et al, which reported significant less surgically induced astigmatism in MICS compared to 3.0 mm incision.<sup>1</sup>

1. Alió J, Rodríguez-Prats JL, Galal A, Ramzy M. Outcomes of microincision cataract surgery versus coaxial phacoemulsification. *Ophthalmology*. 2005 Nov;112(11):1997-2003.

# Conclusion

- ◆ Implantation of an IOL through a 1.8 mm incision was found to be safe and induced smaller amounts of SIA when compared to cataract surgery performed through a 3.0 mm wound. This information may help the surgeon when customizing a toric IOL.