

# Cataract Surgery with Irregular Astigmatism

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## Financial Disclosure

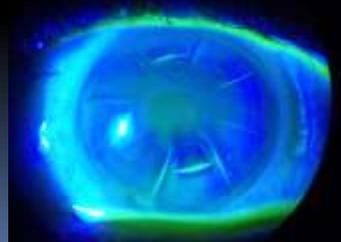
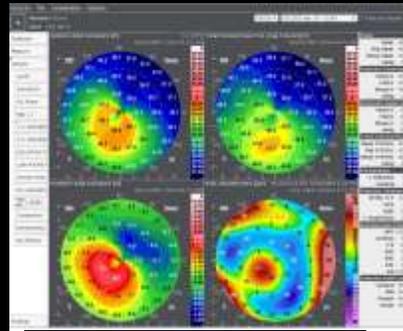
- ALCON Consultant
- ZIEMER Consultant

## CHALLENGES and CHALLENGES...

- Pre-op challenges:
  - Irregular Cornea
  - Management of irregular cornea
  - Biometry

## Irregular Cornea

- KERATOCONUS
- Post-RK or other incisional Refractive Surgery
- Trauma, pterygium, etc

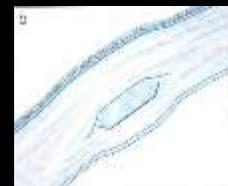


## Management of Irregular Astigmatism

- QUESTIONS:
- If the astigmatism is really irregular, should we try to improve it before cataract surgery?
- If yes, how do we manage it?

## Management of Irregular Astigmatism

- Keratoconus
- Intracorneal rings (different types and strategies)
- Crosslinking ??? (cataract patients age is no more suitable)



## Management of Irregular Astigmatism

- POST-RK
- Topo-guided PRK with or without mytomicin



## Management of Irregular Astigmatism

- Pterygium
- Only very developed pterygia cause irregular astigmatism
- Pterygium surgery before cataract surgery



## BIOMETRY in Irregular Astigmatism

- Few published studies in irregular corneas (SRK-T ?????)- target -1.00 to -1.50
- Formulas like Haigis or Shamas are more reliable as they do not use K to estimate ELP
- Ray –tracing methods

## CHALLENGES and CHALLENGES...

- Per-op challenges:
  - Biometry
  - Type of IOL
    - a) Spherical or Toric
    - b) Monofocal or Multifocal
    - c) Pinhole (?)

## BIOMETRY

- Intraoperative aberrometry
- After cataract surgery, fill the AC with saline or visco until the pressure is between 15-20mm Hg



## Intraoperative Aberrometry

ORA

Dr. John Smith - CAS Eye Center - Sunday, April 16, 2017 8:25:40 PM

Surgery in Progress: OD IOL, Lat I1, First

End Surgery

Pre-OP Data

Holladay 1  
 I7.5D -0.75 Power  
 OD

1.25D X 100°  
 IOL Master V's

-0.15D  
 Target Reduction

25.50  
 Axial Length

Reticle

Logout

1.17D X 105°

Lens	Power	SE
SN60WF	16.00	0.51
	16.50	0.18
	<b>17.00</b>	<b>-0.15</b>
	17.50	-0.47
	18.00	-0.80

Add

Add Lens List

View as Table

Measure

8.25 PM IOL Power  
 +8.78 +1.17 X 105°  
 Alpha

SE (9.37D)

Take Measurement

## Spherical or Toric IOL ?

- In irregular astigmatism, spherical IOL is the rule
- However if there is a coincidence of topographic and subjective axis (keratoconus) Toric IOLs may be used with good results (Fourier Analysis map)



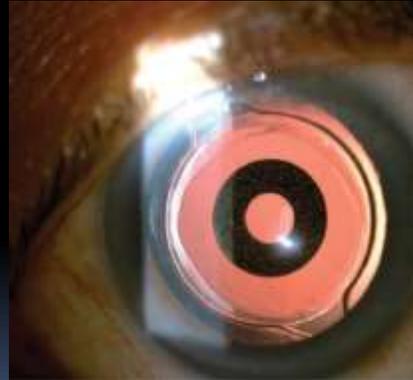
## Monofocal or MULTIFOCAL ?

- Monofocal IOL always
- Multifocal NO:
  - Decrease contrast sensitivity
  - Decrease quality of vision
  - Irregular corneas have some multifocality



## PIN-HOLE IOL

- IOL with a pin-hole effect
- Similar to KAMRA inlay
- Useful in very irregular corneas
- Promising...



## CHALLENGES and CHALLENGES...

- Post-op challenges:
- BSCVA
- QUALITY OF VISION

## BSCVA/QOV

- The visual results of cataract surgery in irregular corneas are sometimes deceiving so the following rule applies:
- "UNDER PROMISE AND OVER DELIEVER"

## TAKE HOME MESSAGES

- Keratoconus and Incisional refractive surgery are the main causes of irregular cornea
- Try to "regularize" the cornea before cataract surgery (ICR and Topoguided PRK) and WAIT 3 to 6 months
- Biometry is challenging (consider intraoperative aberrometry)
- Spherical monofocal IOL are the rule
- Pin-hole IOL for extreme cases