

Questionnaire on Astigmatism Management in Cataract Surgery

UPSOS Correspondent : Mohit Khattri
 Consultant, Regency Hospital Ltd, Kanpur

Expert Panel



Dr. Arup Chakrabarty (AC)

Director,
 Chakrabarti Eye Care Centre,
 Trivandrum



Dr. Vinod Arora (VA)

Director,
 Navjyoti Eye Hospital,
 Dehradun



Dr. Mohan Rajan (MR)

Director,
 Rajan Eye Care,
 Chennai



Dr. Dharmendra Nath (DN)

Director,
 Agre Eye Hospital,
 Agra

Management of astigmatism in present day cataract practice is one of the frontline frontiers and toric IOLs are the proven gold standards for its management. In this issue, we have the opportunity to learn from the practice patterns of four eminent cataract surgeons across the country. Here we go...



Q.1: Do you change the location of main incision corresponding to steeper axis in routine phacoemulsification?

AC: No.

MR: Yes. I always make the incision in the steeper axis based on the

keratometry.

VA: Any incision on cornea causes flattening on the axis of incision. An incision on steep axis can flatten 0.5 – 0.75 D of astigmatism with more than 2.4 mm incision. But with 2.2 mm or less longer incision, the effect may be less than 0.5 D. My incision site is fixed in all cases at 110°. If required I do make some changes but do not do temporal.

DN: In my routine phacoemulsification I always go along steep axis to reduce 0.50 - 1.00 D of astigmatism.

Q.2: Have you calculated your SIA (Surgically induced astigmatism)? If yes, then how?

AC: YES, Warren Hill site.

MR: Yes. I have calculated the SIA using my own data and doctorhill.com website. My SIA is 0.5 D. nowadays since I

am using a 2.2 mm incision, it is the CENTROID VALUE (not SIA) which comes into play. Normal CENTROID value is around 0.2

VA: I used SIA calculator. In my case it is 0.25. It is available for free at www.doctor-hill.com Try first 50 cases and you will know your exact SIA.

DN: Yes. Its 0.60D

Post-op Ks – Pre-op Ks will give you SIA and adding the SIA to the pre op Ks will give you the Post op Ks on the next case. Toric IOL should always be aligned with the steepest axis of cornea.

Q.3: At what minimum astigmatism would you like to go for a toric IOL?

AC: I use barrett toric calculator for all cases and recommend a toric IOL if the formula suggests a toric lens.

MR: Minimum of 1.25 cylinder for Toric IOLs.

VA: I generally place toric IOL for astigmatism with the rule (WTR) more than 1.25 D, for and for against the rule (ATR) 0.5 D.

In most people WTR will drift to ATR gradually.

DN: 1.5D

Q.4: In your opinion, for a toric IOL, does the design of IOL matter (C loop Vs Plate haptic)?

AC: Yes

MR: In my opinion, the design of IOL does not matter for a Toric IOL.

Both C loop and plate haptic designs are equally good. Among the C loop, ACRYSOF TORIC is the probably the best as far as rotational stability is concerned.

VA: The C loop IOL has tendency for late rotation while plate haptics IOL are more prone for early IOL rotation. The realignment in plate haptic is more difficult.

DN: Plate haptic – during operation a little difficult to dial but post operatively we never encounter any rotation

Q.5: Do you practice LRI in your practice? If yes, then how?

AC: No longer after the advent of toric IOLs

MR: I do not practice LRI in my practice.

I do ASTIGMATIC KERATOTOMY (AK) using my femto CATALYS system for astigmatism less than 1.25 dioptres.

VA: Not as a primary procedure, but for the pseudophakes and refractive surprise following IOL surgery. One requires a micrometer diamond knife and pachymeter to do precise LRIs. It gives better results in hyperopic cylinder because of coupling effect.

The online nomogram can be downloaded at www.lricalculator.com

DN: No

Q.6: How do you place reference markings in your toric IOL patient (Air bubble vs Slitlamp)?

AC: Slit Lamp

MR: I use routinely use the MARKER LESS system,CALLISTO on my zeiss lumera 700 which is connected to the IOL MASTER.

If I have to mark, I use the SLIT LAMP for marking for my TORIC IOLs.

VA: I prefer slit lamp marking. I always take reading in sitting position, head staright and face aligned. The slit lamp is also checked for accuracy by using smartphone axis assistant or BRC Axis Toric Marker from Joja surgicals. I ask the patient to blink 2-3 times before taking reading.

DN: To me slit lamp marking is perfect. Slit passes through visual axis and very much in your control. I make a thin horizontal slit, make it to pass through the centre of

cornea, ask the patient to see the light, head is fixed with the help of head band don't ask assistant to hold. Mark at the ends of the slit on clear cornea.

Q.7: What are the two most precious surgical pearls you would like to give readers for toric IOL surgery?

AC: Proper axis marking and Proper IOL alignment

MR: SURGICAL PEARLS

1. Consistent circular centric capsulorhexis (5 mm)
2. Removal of viscoelastic from behind the IOL in Toto

VA: When initially implanting IOL, leave the IOL 20* short of target axis. Then do the fine adjustments.

Be sure to remove all of the viscoelastic from behind the lens or better use hydro implantation.

DN: Proper reference and axis marking, removal of visco from behind the optics, Air in A/C to make close apposition of IOL against Posterior Capsule.

Q.8: What's your experience with toric multifocal implants?

AC: Satisfactory

MR: TORIC MF

Good experience

Implanted more than 500 till date.

Excellent results

Very happy patients (ReStor ,TMF,Acrilisa)

VA: I have done some cases. My number is gradually increasing with advancement in technology. Getting a perfect result and satisfied patient is not easy as the two variables have to be perfected in ideal patient. One should try toric MFIOL after perfecting MFIOL and toric IOL implantation separately.

DN: Considering angle Kappa and angle Alpha patients land on comfortable platform but do not get 100%.satisfaction. Toric EDOF and Zeiss AT LISA are result oriented IOLs.

Q.9: If there is discrepancy between patient's refraction and Keratometry readings, then how do you go about it?

AC: I use barrett toric calculator which factors in the posterior corneal astigmatism

MR: I always go only by keratometry readings and not the refraction.

The refraction may be lens induced.

VA: The most crucial part of procedure is determining the

exact axis as accurately as possible. Measurements should be done before putting anaesthetic or dilating drugs. Contact lens should be discontinued two weeks before the checkup. Make sure that two Ks are 90° apart. Always repeat the measurements for verification. Inconsistent keratometry readings are commonly caused by a poor tear film and dry eye syndrome.

The refraction includes total astigmatism that includes lens also. In lenticular and cataractous lens the K reading and refraction may not coincide. Since we are removing natural lens, the keratometry readings are reliable.

DN: Patients refraction I don't consider it. I consider only keratometry. Lenticular astigmatism is waved off in cataract surgery.

Q.10: Which tool do you trust most for keratometry in toric IOL cases- Autorefractometer(ARK)/ Optical biometer/Pentacam? Why?

AC: Topographer for axis and optical biometer for magnitude of astigmatism

MR: OPTICAL BIOMETER

esp.LENSTAR

LENSTAR is the only machine which gives a 2 zone Keratometry (2.3 mm & 1.65 mm).Also 648 point measurements.

Most accurate keratometry only with LENSTAR.

VA: If there are discrepancies between the readings, I tend to rely on manual or automated keratometry for the magnitude of the astigmatism, and topography for the axis.

DN: We do assay with Autorefractometer and also with Optical biometer

Manual Keratometer ----- OK

MK+ARK -----Good

ARK+Opti.Bio(IOLmaster)---Excellent

If you have topographic value it adds to your confidence. Everyone does not have it.

Q.11: With toric IOL what's your preference-Injection of IOL under BSS or under OVD?

AC: OVD

MR: I always implant TORIC IOLs under OVD. I prefer cohesive viscoelastic like HEALON since it expands the CAPSULAR bag and also easy to remove.

VA: I prefer to do hydro implantation for toric IOL. The advantages are – lower risk of TASS, lower risk of IOP spikes following surgery, lower risk of IOL rotation post operative period, less manipulation inside the chamber.

If one wants to use viscoelastic, it is better to use cohesive visco, which comes out as bolous and chances of retained viscoelastic is less.

DN: Under OVD it facilitates rotation in bag.

Q.12: What's the follow up schedule for your toric IOL patient?

AC: Non ambulatory for 1 hour.. rest routine like any other postop situation.

MR: FOLLOW UP on:

DAY 1

DAY 7

DAY 30

All patients are dilated at day 7 to confirm the axis of location of the IOL.

Also I keep the Toric IOL patients for 1 to 2 hrs after surgery in the supine position. Always check the axis on slit lamp before discharge.

VA: The follow up is very important. At the table I confirm the IOL alignment before sending the patient out. On very next day we record the vision and see if there is any misalignment. The follow up visits are after one week and one month.

DN: They come on 2nd day 10th day and 30th post operative day and keep monitoring on VA and astigmatic fan. After 45 days I allow them for mild outdoor games.