

Commentary: Assessment of a software-guided system to reduce pre-existing astigmatism in cataract surgery

Always know the axis of every curve and surface.

As we all know that cataract surgery is no more a lens extraction surgery but a very demanding refractive surgery and hence to achieve emmetropia, newer and older astigmatism correcting methods are very much in trend to achieve a near-perfect pure and clear vision. The idea is to look better and go beyond vision 20/20.^[1-3]

To manage astigmatism is one of the major problems in patients with cataracts. There are various methods and techniques been tested to correct astigmatism in patients undergoing cataract surgery. The importance of latest IOL calculating formulas to assess preoperative astigmatism cannot be simply undermined. Then comes the hard part of dealing with the existing lower level of astigmatism with corneal astigmatic incisions, including limbal relaxing incisions (LRIs) utilizing either a blade or a femtosecond laser. For the moderate and higher grades of astigmatism, toric intraocular lenses (IOLs) are being commonly used. Advent of newer technology like femtosecond laser astigmatic keratometry over manual LRIs is proving to be far superior as per many randomised clinical trials. Also there are intraoperative advanced image and axis-guided systems like the VERION (Alcon Laboratories, Inc.) and CALLISTO (Carl Zeiss, Germany). The inclusion of these modern devices in the armoury of ophthalmologists will lead to more accurate preoperative measurements of the intended correction needed for patients with cataract in synergism with astigmatism. Nowadays, intraoperative aberrometry is proving to be superior and very useful in negating the amount of residual astigmatism during cataract surgery. This application can not only measure the refractive error after cataract extraction but also measure the degree and axis of astigmatism. This advanced technology can also be used to assess intraoperative measurements while implanting a toric IOL.^[1-3]

But all said and done, all these newer technologies are quite expensive to be used by every ophthalmologists. This paved way to develop a much economical and widely acceptable technology by our Indian team of researchers. It is a novel software-guided surgical technique for guiding surgeon towards the near-perfect hypothetical shape of the cornea. This system consists of a handheld keratoscope mounted on an operating microscope which is 3D printed and two LEDs to assess the central 2.5 mm of the cornea. So these data are being collected and sent online to a K2K validated algorithm which process these data and share necessary details back to

the operating surgeon to correct the preexisting astigmatism. This helps in achieving the near-perfect hypothetical shape of the cornea without having to change the site or size of the main incision. Although this software seems promising, still lots of validation and trials are needed with larger sample size to prove this to be a viable and widely acceptable technique to correct astigmatism.^[4]

Arvind K Morya


Additional Professor & HOD, Cataract, Glaucoma, Refractive, Paediatric Ophthalmology & Medical - Retina Services, Department of Ophthalmology, All India Institute of Medical Sciences, Bibinagar, Hyderabad, Telangana, India

Correspondence to: Dr . Arvind Kumar Morya, Additional Professor & HOD, Department of Ophthalmology, All India Institute of Medical Sciences, Bibinagar, Hyderabad, Telangana - 508 126, India. E-mail: bulbul.morya@gmail.com

References

1. Chen W, Zuo C, Chen C, Su J, Luo L, Congdon N, *et al*. Prevalence of corneal astigmatism before cataract surgery in Chinese patients. J Cataract Refract Surg 2013;39:188-92.
2. Ferrer-Blasco T, Montes-Mico R, Peixoto-de-Matos SC, Gonzalez-Mejome JM, Cervino A. Prevalence of corneal astigmatism before cataract surgery. J Cataract Refract Surg 2009;35:70-5.
3. Hoffmann PC, Hutz WW. Analysis of biometry and prevalence data for corneal astigmatism in 23,239 eyes. J Cataract Refract Surg 2010;36:1479-85.
4. Raut RM, Jeswani KD, Raut MR, Raut BR. Assessment of a software guided system to reduce pre-existing astigmatism in cataract surgery. Indian J Ophthalmol 2021;69:1306-9.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Access this article online	
Quick Response Code:	Website: www.ijo.in
	DOI: 10.4103/ijo.IJO_718_21

Cite this article as: Morya AK. Commentary: Assessment of a software-guided system to reduce pre-existing astigmatism in cataract surgery. Indian J Ophthalmol 2021;69:1310.