



**RESEARCH ARTICLE**

**TO ASSESS SUBJECTIVE VISUAL OUTCOME AFTER BILATERAL  
IMPLANTATION OF TORIC INTRAOCULAR LENSES**

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**ABSTRACT**

Toric intraocular lenses (IOLs) are the practice of choice to correct corneal astigmatism of 1 D or more in cases enduring cataract surgery. The consequences after toric IOL implantation are influenced by numerous factors, right from the preoperative case selection and investigations to accurate intraoperative alignment and postoperative care. An ideal IOL power calculation formula should take into account the surgically induced astigmatism, the posterior corneal curvature as well as the effective lens position. A probable observational study was executed on 216 eyes of 108 patients canned between 2016 to 2020 for Cataract with astigmatism (cylinder -4.00 Diopters). The 216 consecutive eyes that had endured for bilateral cataract surgery with phaco and implantation of Toric Intraocular lens. Refractive certainty, change in mean spherical equivalent refraction, postoperative uncorrected visual acuity (UCVA), and subjective visual outcome were compared at, 1 month following surgery. In subjective questioner patient show rating between 7 to 10 out of 10, this shows satisfaction for distance & near vision after implantation of toric intraocular lens. Overall patients were satisfied with visual performance because of less amount of refractive power.

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**INTRODUCTION**

Toric intraocular lenses (IOLs) were first presented in 1992 by Shimizu et al. as 3-piece non foldable polymethyl methacrylate implants to be inserted through a 5.7 mm incision.<sup>(1)</sup> Since then, the improved certainty and greater safety of toric IOL implantation has decisively customary it as the practice of choice to correct momentous corneal astigmatism in cases undergoing cataract surgery.<sup>(2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20)</sup>

A preoperative corneal astigmatism of 1 D or more may be present in up to one-third of the cases experiencing cataract surgery, with 22% having beyond 1.5 D of astigmatism and 8% having beyond 2.0 D of astigmatism.<sup>(9,21)</sup> In these cases, toric IOLs aid to attain postoperative spectacle liberation and peak patient pleasure. Scientific encroachments in terms of IOL material as well as design have ensued in better rotational stability and accurate visual outcomes.<sup>(2,7,8,9,11)</sup> Cataract, or clouding of the crystalline lens in the eye, is presently the foremost form of visual impairment in the biosphere and surgery to remove cataracts is now the utmost communal surgical procedure in the developed world, undertaken by ophthalmologists.<sup>(21)</sup>

The demand for cataract extraction and intraocular lens (IOL) implantation has grown-up due to enrichments in the healthcare formation, which has increased life expectancy (Foster, 2000). In addition, visual prospect and task demands are accumulative within the older population, principally with the hassles of mobile communication. Since the commencement of intraocular lenses (IOLs) in the 1950's, designs have advanced to not only elevate the spherical power of the eye for distance vision, but also aim to achieve spectacle independence through rectification of astigmatism and by aggregate the range of clear focus in the presbyopic eye.<sup>(22, 23)</sup>

**MATERIAL AND METHODOLOGY**

It was an Involved, Multidisciplinary, observational study piloted at Keshvi eye hospital; Surat with purposive sample of 216 eyes of 108 patients who justifies the inclusion criteria to estimate the subjective visual experiences after bilateral implantation of toric intraocular lenses. Study also considers the certainty and firmness of bilateral toric intraocular lens (IOL) implantation in cases of cataract with former astigmatism.

In present study Preoperative Assessment includes Patient’s Demographic data, detailed history, and complete structured 10-item questionnaire. Questionnaire include questions like, spectacle dependency, vision comparison, experience of glare and hallos, and how often patient need of spectacles etc.

## RESULTS

108 patients with both eyes astigmatism and Cataract were agreed for cataract surgery with toric IOL. The population included was 60 males and 48 females subjects ranged from 18 to 85 years of age. Pre operatively 216 eyes of 108 patients had visual acuity between 1mFC to 6/18. After implanted toric IOL 166 patients have 6/6 visual acuity and 49 patients had 6/9 visual acuity and 1 patients have 6/12 visual acuity. post-operative visual acuity was better and there was no residual astigmatism because it was corrected by implantation of toric IOL.

Demographic and Preoperative parameters in astigmatic eyes that underwent cataract surgery with Toric intraocular lens implantation	
Parameter	Toric IOL (n= 108 patients, 216 eyes)
Male/female (%)	44/56
Age (Y)	59.39
Sphere (D)	-0.3495
Cylinder (D)	-1.09954
Mean Spherical Equivalent Refraction (D)	-0.89931
postoperative parameters in astigmatic eyes that underwent cataract surgery with Toric intraocular lens implantation	
Parameter	Toric IOL (n= 108 patients, 216 eyes)
Sphere (D)	-0.03
Cylinder (D)	-0.02
Mean Spherical Equivalent Refraction (D)	-0.04

### Specify the frequency with which you have needed glasses for distance

Never Rarely Always

QUESTION-1		
OPTION	PRE -OPERATIVE (Blue Bar)	POST -OPERATIVE (Red Bar)
A. Never	6	83
B. Rarely	1	0
C. Always	101	25

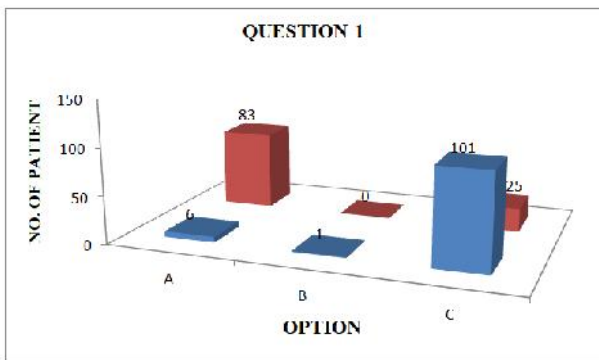


Table no 1 shows spectacle dependency for Distance, here was the main difference in spectacle status for pre - operative & Post-operative status.in preoperative out of 108 patient 83 patient require spectacle for distance while in post-operative

only 6 patients require spectacle for distance, that was the major Advantage of toric IOL.

### Experiences of halos and glare

Never Rarely Always

QUESTION-2		
OPTION	PRE-OPERATIVE (Blue Bar)	POST OPERATIVE (Red Bar)
A. Never	7	108
B. Rarely	82	0
C. Always	19	0

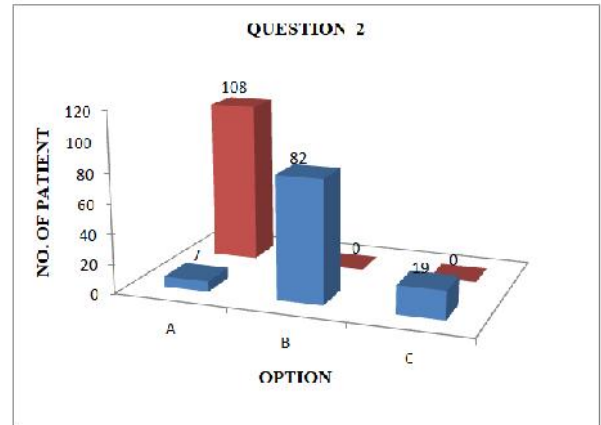


Table no 2 shows comparison of pre & post-operative halloos and glare, it was the third main difference in pre - operative & Post-operative status.in preoperative out of 108 patients 82 patient rarely felt halloos and glare while in post-operative status this problem was almost nullified.

### Experiences Satisfaction with Distance vision (give score from 0 to 10)

QUESTION-3		
RATING	PRE-OPERATIVE (Blue Bar)	POST -OPERATIVE (Red Bar)
0-3	65	0
4-6	43	0
7-10	0	108

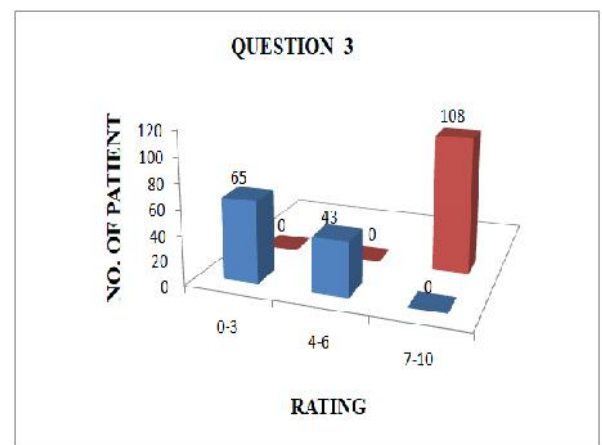


Table no 3 shows comparison of pre & post-operative rating of visual satisfaction scoring. Pre -operatively out of 108 patient 65 patient score in between 0-3, while 43 patient score 4-6 while post operatively almost all patient visual rating from 7-10. Which shows visual satisfaction after implantation of toric Intra Ocular Lens.

### Post-operative Satisfaction with near vision (give score from 0 to 10)

QUESTION-4		
RATING	PRE – OPERATIVE (Blue Bar)	POST – OPERATIVE (Red Bar)
0-3	64	0
4-6	45	0
7-10	0	108

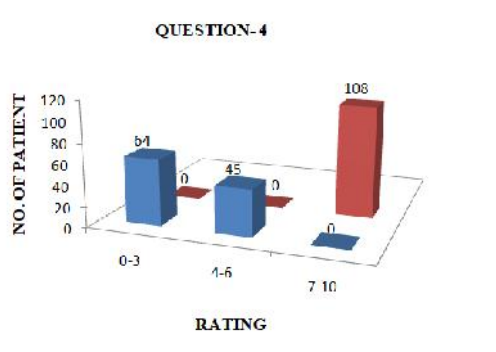


Table no 4 shows comparison of pre & post-operative rating of visual satisfaction scoring for nearby. Pre -operatively out of 108 patient 64 patient score in between 0-3, while 45 patient score 4-6 while post operatively almost all patient score visual rates from 7-10. Which shows visual satisfaction even for near after implantation of toric Intra Ocular Lens. The p-value was <0.0000001 which is <0.05, i.e. statistically significant when testing with pre-operative & Postoperative visual satisfaction for distance & near.

### CONCLUSION

Present study summaries that the implantations of binocular toric IOL in astigmatic patients were effective option to correct pre-existing astigmatism in cataract surgery with implantation of toric IOL. Post-operative visual acuity was better and there was no residual astigmatism because it was corrected by implantation of toric IOL. Overall patients were satisfied with visual performance because of less amount of refractive power. Patient also grade high satisfaction visual rating in post-operative subjective visual experience.

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