Project Title

CLINICAL OUTCOMES OF TORIC INTRAOCULAR LENS IMPLEMENTATION AFTER CATARACT SURGERY

BACHELOR OF OPTOMETRY

GALGOTIAS UNIVERSITY

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B.OPTOMETRY **Signature of Department Signature of Head of the Department Dissertation supervisor with Seal**

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DISSERTATION

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TOPIC : CLINICAL OUTCOMES OF TORIC INTRAOCULAR LENS IMPLEMENTATION AFTER CATARACT SURGERY

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SUBMITTED ON 02/08/2021

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CERTIFICATE

This is to certify that the Dissertation titled" Clinical outcomes of toric intraocular lens implementation after cataract surgery" submitted by"NANDITA VERMA " is in partial fulfillment of the requirements for the award of BACHELOR OF OPTOMETRY DEGREE a record of bonafide work done under my/our guidance. The contents of this Dissertation, in full or in parts, have neither been taken from any other source nor have been submitted to any other Institute or University for award of any degree or diploma and the same is certified.

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(Organization stamp)

Objective of the Dissertation is satisfactory /unsatisfactory

Examiner-1
Miss. Adiba zaheen

Examiner2
Mr . Prashant

CERTIFICATE FROM THE INSTITUTE

This is to certify that NANDITA VERMA bearing Admission No 17SMAS103006 has completed objective formulation of Research Project titled, " Clinical outcomes of toric intraocular lens implementation after cataract surgery" under my guidance and supervision. To the best of my knowledge, the present work is the result of her original investigation and study. No part of the thesis has ever been submitted for any other degree at any University.

The Dissertation is satisfactory for submission and the partial fulfillment of the conditions for the award of Bachelor of Optometry

Signature

NANDITA VERMA
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DECLARATION

I, NANDITA VERMA ,student of BACHELOR OF OPTOMETRY (Program name) under the Departmentof in Galgotias University, Greater Noida, hereby declarethat all the information furnished in this dissertation is based on my own intensive research and is genuine.

This Dissertation, which has been submitted for the award of my degree, does not, to the best of my knowledge, contain any part of research work, either of this university or any other university without proper citation.

enrollment No. 171210301
NANDITA VERMA

Date : 02/08/21

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A brief Bio-data of the student should be included on the last page of the Thesis/dissertation

GUIDELINES FOR PROJECT/DISSERTATION WRITING

- The Thesis shall be computer typed (English- British, Font)
- The name of the candidate, degree (specifying the specialization), year of submission, name of the University including college name shall be printed in black on the cover for hard bound copies.
- One copy should be submitted to HOD and 1 copy to the respectiveguide.
- A soft copy of the project should be submitted to the respectivefaculty.

- A complete CV of the student with a passport photograph should is placed at the end of the Dissertation

ACKNOWLEDGMENT

I take this opportunity to express my sincere gratitude to all of the department and respected faculty members for their help and support without which the project would not be completed within proper time and criteria.

I would like to express my special thanks of gratitude to my senior optom " Miss Adiba zaheen" for their able guidance and support in completing my project .

I would alos like to extend my gratitude to my research moderator " Miss . Aditya Singh" for providing me all the facility that was required.

1.INTRODUCTION

1. TITLE OF PROJECT

"Clinical outcomes of toric intraocular lens implementation after cataract surgery".

2. AIM

To analyse the clinical outcomes of toric iol implantation in patients who underwent cataract surgery in a secondary eye hospital in Northern India.

3. OBJECTIVES

- ★ To assess the residual astigmatism after toric iol implantation.
- ★ To find the post-operative visual outcomes along with the toric iol stability.

4. INTRODUCTION

- ★ Cataract is an aging process in which natural lens of eye becomes cloudy that causes gradual vision loss which cannot be corrected by prescription glasses, contact lenses, or various refractive surgeries. To restore clear vision, the cloudy lens is replaced with an intra ocular lens.
- ★ Toric intra ocular lenses are the procedure of choice to correct corneal astigmatism of 1 D or more in cases undergoing cataract surgery. The outcomes after toric IOL implantation are influenced by numerous factors - the preoperative case selection and investigations to accurate intra operative alignment, and postoperative care. Increased accurate keratometry readings must be accomplished by multiple measurements from different devices based on different principles.
- ★ Refractive error <0.50 D results in increased spectacle independence. Decreased or no residual astigmatism result in spectacle independence and better unaided distance visual acuity.
- ★ Toric iol referred to astigmatism correcting intraocular lenses used at the time of cataract surgery to decrease postoperative astigmatism.

5. LITERATURE REVIEW

1. [The study done by "Satish S Modi" in the year 2020 Dec has demonstrate that the residual refractive astigmatism was higher in aphakic lower than pseudoaphakic.]1

2. [This study done by "Tiago B Ferreira" et al in the year 2016 explained that the mean value of unaided VA after the precizion toric iol implant in patient provide good visual outcomes.]2

3. [The study done by " Wojciech Lubinski "et al in the year 2016 has reported that toric iol implantation in patient provide good satisfaction with refractive correction and corneal astigmatism in eyes due to proper positional stability.]3

4.[Another study done by "Cinzia Mazzini" Case Rep Ophthalmol in the year 2013 has demonstrated that the new aphakic Tecnis ZCT toric iol in eye provide low to moderate corneal astigmatism.]4

2.1. METHODOLOGY

Study design	Retrospective study
Study size (N)	100 patients 120 Eyes
Study duration	Oct20 to Jan21
Study location	Eye7 Choudhary , Daryaganj New Delhi

2.2 MATERIALS

Variable	Instrument
Visual acuity	Snellen chart
Refraction	Retinoscope,Auto Refractor
Lenstar	Iol power , K-reading
Verion	Incision, position & alignment

2.3 INCLUSION CRITERIA

- ★ Grades of nuclear cataract (NSI,NS II, NS III and NS IV).
- ★ Cortical Cataract
- ★ Posterior subcapsular Cataract
- ★ Age Limit – 40-70 yrs
- ★ Pre-operative cylinder -1.00cyl to -4.00 cyl
- ★ Patients who had undergone Phacoemulsification and MICS cataract surgery .

2.4 EXCLUSION CRITERIA

- ★ Traumatic cataract, Congenital cataract ,Complicated cataract, Developmental cataract ,Steroid Induced cataract and Polar cataract.
- ★ Patients with retinal diseases.
- ★ Patient with postoperative complication & PCR during surgery.
- ★ Patients having glaucoma.

2.5 DATA COLLECTION

	CR.NO	AGE	GENDER	EYE
1				
2	CR.NO	AGE	GENDER	EYE
3	D338081	70	F	LE
4	D341168	64	M	RE
5	D338913	61	F	RE
6				LE
7	D341181	55	F	LE
8				RE
9	220142	65	F	LE
10	249675	58	F	RE

CR.NO	PRE OPERATIVE REFRACTION	PRE OPERATIVE KERATOMETRY
		44.54 X 26
D341168	-3.00 / -3.50 X 85 –6/18P	45.41 X 90 47.80 X 180
D338913	-12.50 / -2.00 X 90 –6/18– NI	46.54 X 72 47.63 X 162
	-11.50 / -1.25 X 95 –6/12–NI	45.84 X 90 47.39 X 180
D341181	––-	42.13 X 72 44.65 X 162
	––-	43.38 X 105 45.02 X 15
220142	––-	42.89 X 98 44.79 X 8
249675	––-	41.91 X 38 43.77 X 128
DG-157869	––-	45.98 X 2 47.17 X 92
D341347	-1.25 / -2.00 X 40	43.41 X 37 44.77 X 127
D339207	-11.00 / -2.50 X 165 –6/18P	44.09 X 167 46.08 X 77
D341282	NA	42.07 X 76 43.64 X 166

CR.NO	PRE OPERATIVE CYL	IOL POWER(CYL)
D341168	2.39	19.5 (3.75)
D338913	1.09	6.0 (1.50)
	1.55	6.0 (1.50)
D341181	2.52	25.5. (4.50)
	1.64	25.5 (2.25)
220142	1.9	24.00 (3.00)
249675	1.86	15.0 (2.25)
DG-157869	1.19	15.5 (1.50)
D341347	1.36	20.5 (2.25)
D339207	1.18	9.0 (2.25)
D341282	1.57	16.0 (2.25)
D341075	2.42	20.5 (3.75)

CR.NO	POST OPERATIVE REFRACTION	SURGICAL IN
D338081	0	35
D341168	0	35
D338913	-0.25 / -0.50 X 75	165
	-0.50 X 75	10
D341181	+0.25 / +1.00 X 100	10
		135
220142	-0.75 / -0.25 X 180	10
249675	PLANO	135
DG-157869	-0.75 / -0.50 X 70 – 6/6	135
D341347	-1.00 X 150 – 6/9	130
D339207	-0.25 –6/6	10
D341282	PLANO	45

3.DISCUSSION

Recently, the correction of corneal astigmatism in cataract surgery by implanting Toric IOLs has gained popularity due to the increased patient demands and the Excellent clinical outcomes reported with these IOLs. In the current study we Evaluated aspecific modality of aspheric toric IOL, allowing the correction of a Great variety of corneal astigmatism as it is available in cylinder powers of 1.00, 1.50, 2.25, 3.00, and 4.00 D (equivalent to 0.69, 1.03, 1.54, 2.06 ,and 2.74 D at The corneal plane ,resp.).Some cases of higher corneal astigmatism which Can not be completely controlled with the available cylinder power so this IOL Model shave never the less been included in our series. In general, good visual and Refractive outcomes have been obtained with the Toric IOL, mainly due to its Good positional stability.

Our results confirmed the results of previous studies evaluating the same IOL And demonstrating its ability as an effective method of corneal astigmatism reduction. Specifically, we found a mean reduction in refractive astigmatism of -0.75D (as we assume average preoperative astigmatism equivalent to1.00) that was statistically significant.

In agreement with the good refractive outcomes, excellent UDVA results were Obtained which was the main reason for the high level so post operative patient Satisfaction.

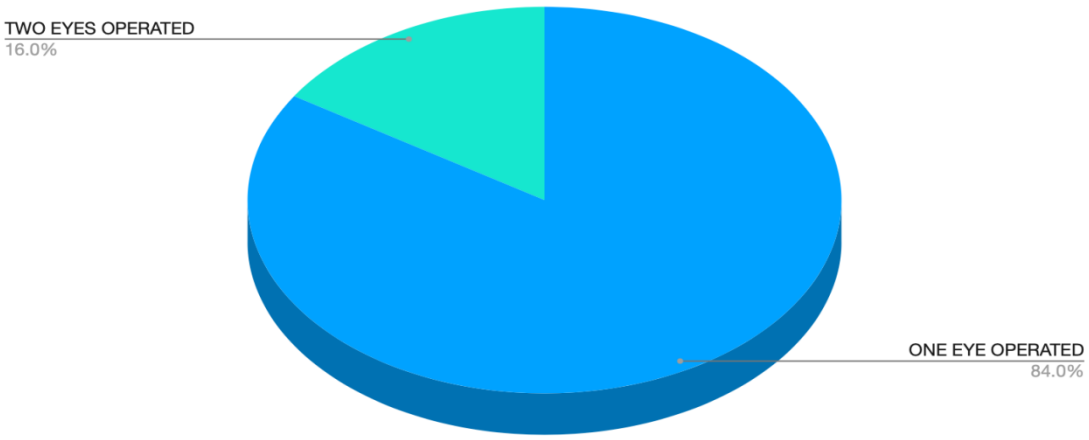
4.Conclusion

In this study, we have examined postoperative visual acuity as one measure of visual outcomes for cataract surgery. In conclusion, cataract surgery with implantation of the Toric IOL provides an effective and predictable refractive correction in eyes with low to high levels of preexisting corneal astigmatism, providing high levels of visual quality and patient satisfaction. This might be due to the excellent rotational behavior of the IOL. Future studies should be conducted in order to evaluate the long term clinical outcomes with Toric IOL.

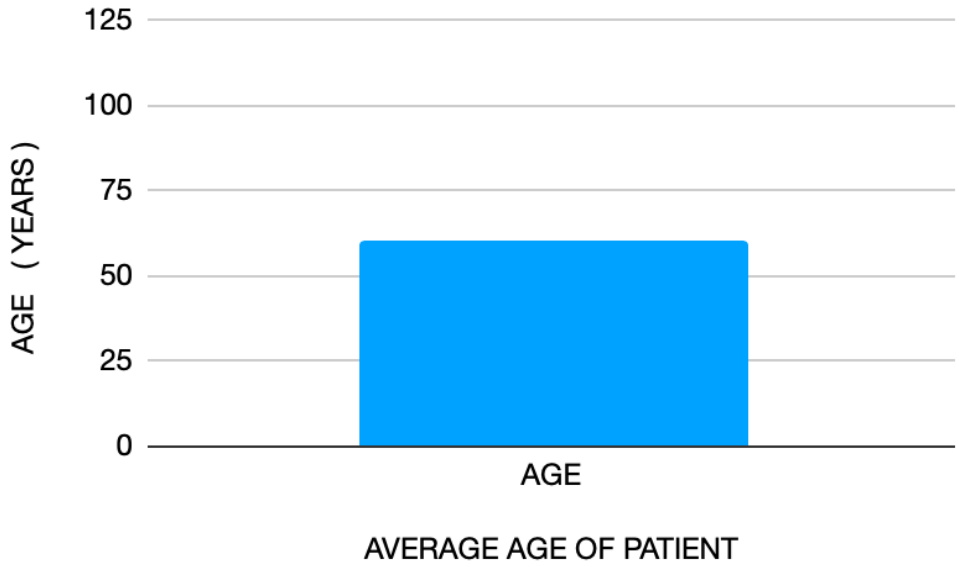
5. Result

Following the application of selection criteria, 119 eyes of 100 patients were enrolled in the study. Figure1 shows, During the study period, 100 (84.0%) patients had one eye operated on and 19 (16.0%) patients had both eyes operated on.

FIGURE 1. POPULATION SELECTION AND NUMBER OF EYES INCLUDED IN THE STUDY



The average age of the patients in volved in the study was 60.22 years (range 40 years to 70 years). The study excluded patients under the age of 40 years and those over the age of 70 years. (figure 2)



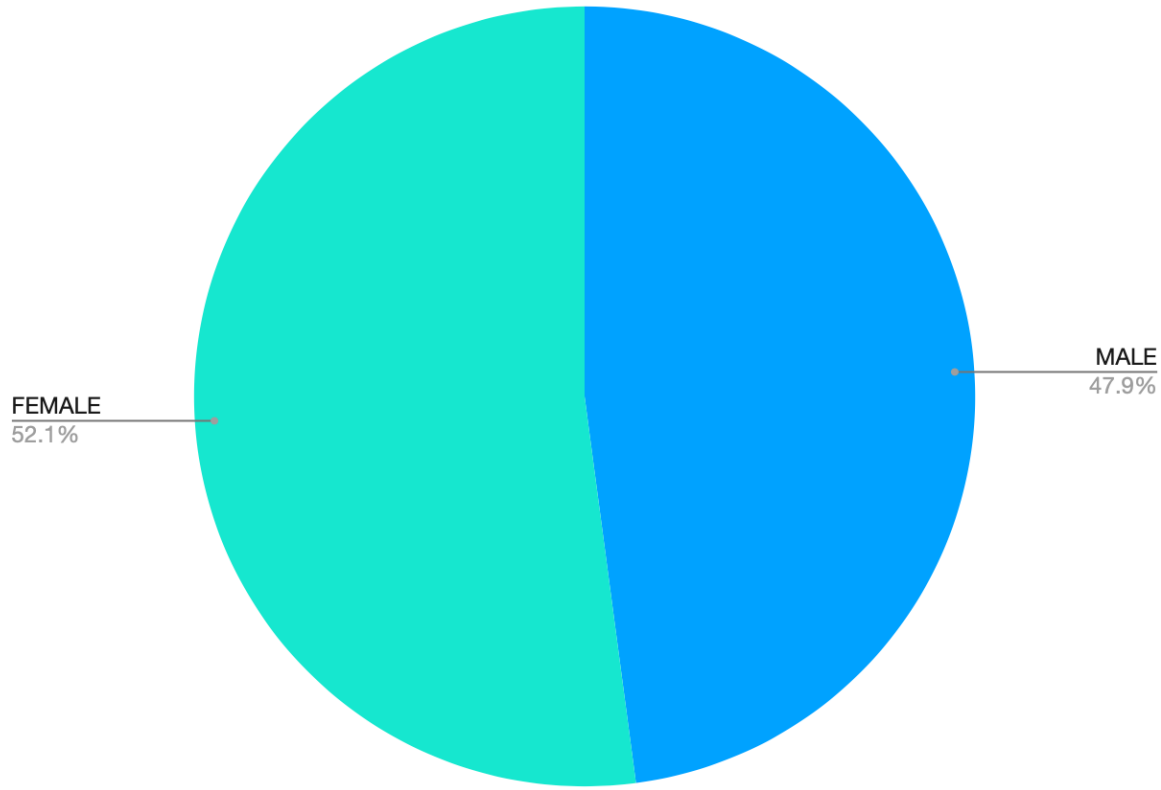
PATIENT CHARACTERISTICS

There are 119 patients in total, in which (figure 3)

•57 (47.9%) patients were men

•62 (52.1%) patients were women

FIGURE 3. NUMBER OF MALES AND FEMALES INCLUDED IN THE STUDY FOR TORIC INTRAOCULAR LENS IMPLANTATION IN CATARACT SURGERY

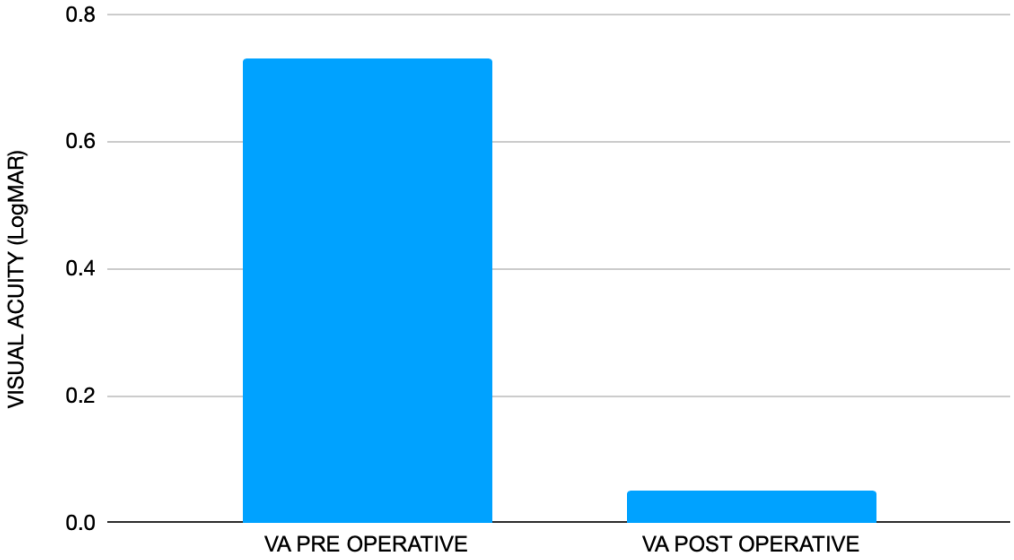


PREOPERATIVE VISUAL ACUITY AND POSTOPERATIVE VISUAL ACUITY.

The preoperative and two-week post operative visual outcomes are shown in figure 4. Uncorrected distance visual acuity (UDVA) and pinhole VA , were used to calculate visual acuity. To ensure vision stability two weeks after cataract surgery, UDVA measurements were taken. The postoperative UDVA calculated using the logMAR Scale. The average preoperative visual acuity in 119 patients is 0.73 and average postoperative visual acuitys 0.05 . A significant improvement

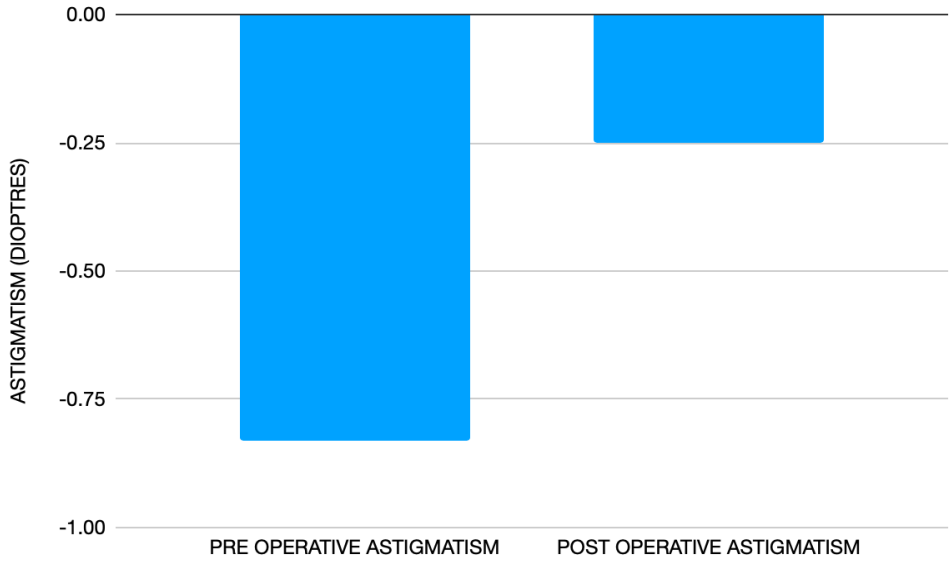
was found after surgery in LogMAR UDVA. The residual astigmatism postoperatively was found to be negligible. Refractive cylinder decreased significantly.

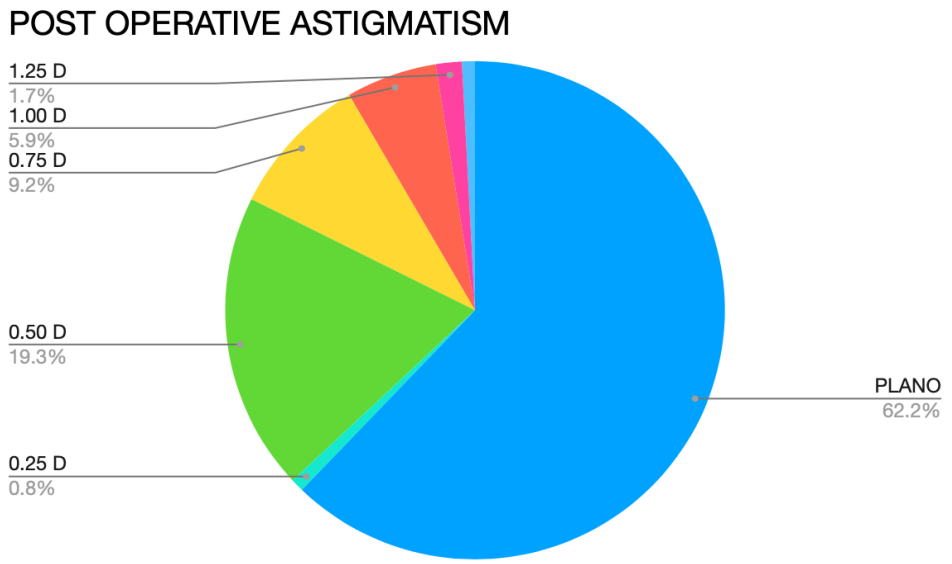
FIGURE 4. COMPARISON BETWEEN PREOPERATIVE VISUAL ACUITY AND POST OPERATIVE VISUAL ACUITY



PREOPERATIVE ASTIGMATISM AND POSTOPERATIVE ASTIGMATISM

For each of the 119 eyes, preoperative keratometry was identified. The average corneal cylinder preoperatively was -0.83, which is equivalent to1.00. The average corneal cylinder postoperatively was -0.05. Specifically, we found a mean reduction in refractive astigmatism of +/-0.75D (as we assume average preoperative astigmatism equivalent to1.00D) that was statistically significant. The residual astigmatism postoperatively was found to be negligible. Refractive cylinders decreased significantly 3.75D +/ -0.75 D to 1.50D +/-0.00 D. Of these, 62.2% (74patients) achieved Plano / no astigmatism in refraction, 0.8% (1patient) had 0.25 D of astigmatism, 19.3% (23patients) had 0.50 D of astigmatism, 9.2% (11patients) had 0.75D of astigmatism, 5.9% (7patients) had 1.00 D of astigmatism, 1.7% (2patient) had 1.25 D of astigmatism, 0.9% (1patient) had 1.50 D of astigmatism, No postoperative optical / visual disturbances were reported.


0.00
-0.25
-0.50
-0.75
-1.00
ASTIGMATISM (DIOPTRES)
PRE OPERATIVE ASTIGMATISM
POST OPERATIVE ASTIGMATISM


POST OPERATIVE ASTIGMATISM
1.25 D
1.7%
1.00 D
5.9%
0.75 D
9.2%
0.50 D
19.3%
0.25 D
0.8%
PLANO
62.2%

6. REFERENCES

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