



## PREOPERATIVE AND POSTOPERATIVE KERATOMETRY COMPARISON OF PHACOEMULSIFICATION SURGERY WITH RIGID POSTERIOR CHAMBER INTRAOCULAR LENS IMPLANTATION (PCIOL)

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### ABSTRACT

**OBJECTIVES:** To study and compare pre and post-operative keratometry in phacoemulsification surgery with rigid posterior chamber intraocular lens (PCIOL) implantation.

**METHOD:** Hospital based prospective observational study which included 100 presenile and senile cataract cases with superior scleral incision (5.5mm) phacoemulsification surgery and rigid PCIOL implantation.

The data was analyzed by paired 't' test and 'p' value <0.05 considered significant. The preoperative and postoperative keratometry was compared at 6 weeks.

**RESULT:** There was significant difference between pre operative and post operative Keratometry ( $P < 0.05$ ) at 6 weeks. Postoperatively majority of patients developed against the rule astigmatism (76% of patients).

**KEYWORDS :** Superior scleral incision, phacoemulsification, rigid posterior chamber IOL, keratometry.

### INTRODUCTION:

Blindness due to cataract is one of the major community health problems in India. Cataract surgery with IOL implantation restores vision to near normal. Safe surgery, early visual rehabilitation and post operative emmetropia are the requirements of present day cataract surgery.<sup>1,2</sup>

Various techniques have been used for management of cataract one of which is phacoemulsification.<sup>3</sup> The clinical significance of rapid wound healing and less induced astigmatism with small incision has constantly been demonstrated by various workers.<sup>4</sup>

The length and location of incision are important factors influencing postoperative astigmatism.<sup>5,6</sup>

An analysis of pre and post-operative keratometry readings helps to minimize induced astigmatism and thus enhance surgical outcome, hence present study was carried out.

### AIMS AND OBJECTIVES:

To study and compare pre and post-operative keratometry in phacoemulsification surgery with rigid posterior chamber intraocular lens (PCIOL) implantation.

### MATERIALS AND METHODS:

The study was hospital based prospective observational study conducted between Feb 2007 to Feb 2009 in Dept of ophthalmology at Deenanath Mangeshkar Hospital, Erandwane Pune.

Total 100 cases of uncomplicated presenile and senile cataract irrespective of age, sex and preop astigmatism undergoing phacoemulsification surgery were included.

### EXCLUSION CRITERIA:

Patients with complicated cataract, traumatic cataract; subluxated cataract, co-existing glaucoma; Pseudoexfoliation, Pterygium, patients with any retinal pathology, previous ocular surgery, complicated surgery due to PCR, history of use of steroids, (topical and systemic) patients not giving informed consent were excluded from study.

### INCLUSION CRITERIA:

- All patients were diagnosed cases of visually significant cataract with reasonable visual potential.
- Informed consent was obtained from each patient.

### Preoperative assessment :-

The preoperative evaluation of each subject was done:- Detailed medical history, general and systemic examination, visual acuity on Snellen's chart, examination of anterior and posterior segment, IOP, sac syringing and routine blood investigation. All preoperative and

postoperative keratometry was done on KM6 keratometer by the same person. An axial length and IOL power calculation was done using AXIS2 Biometer. SRK-T formula was used.

**Surgical technique:-** All cases were operated by 5.5 mm scleral incision phacoemulsification Surgery with Rigid PCIOL by same surgeon.

### Postoperative evaluation :-

Each subject was followed up postop on day 1<sup>st</sup>, 1<sup>st</sup> week and the 6<sup>th</sup> week. Patient was examined for visual acuity on Snellen's chart along with slit lamp examination.

Refraction with subjective acceptance and keratometry was done at 6 weeks. Analysis of amount and type of astigmatism was restricted to keratometry and refraction

### Statistical analysis :-

Statistical analysis was done by using a paired 't' test, statistical significance was considered when p value was less than 0.05

### RESULTS :-

- A total 100 cases included in the study
- Age ranged from 45-78 years. Majority of patients were in range of 61-70 years
- Majority of patients had grade III NS (49%) followed by grade II NS (44%)

**Table 1: Type of Astigmatism in study**

Type of astigmatism	Preoperative	Postoperative
With rule astigmatism	48	15
Against the rule astigmatism	41	76
Oblique astigmatism	1	2
No Astigmatism	10	7
Total	100	100

From above table preoperatively majority of patient were having with rule astigmatism (48 %).

postoperatively majority of patient were having against the rule astigmatism (76 %).

**Table 2:- Preoperative and postoperative keratometry difference in study**

Preoperative keratometry difference	Postop keratometry difference	'P' value
Mean $\pm$ SD n=100 0.835 $\pm$ 0.59	Mean $\pm$ SD n=100 1.218 $\pm$ 0.72	<0.05 (0.00017)

### DISCUSSION:-

The aim of modern cataract Surgery is rapid visual rehabilitation, best

uncorrected visual acuity with less postoperative astigmatism<sup>7</sup>.

SIA (surgically induced astigmatism) is still obstacle for achieving excellent uncorrected<sup>8</sup> visual acuity.

SIA is related to incision length site, architecture, location and closing technique. Smaller incision size is associated with less change in corneal contour and multiplanar incisions give greater wound stability allowing self sealing of the wound thus avoid sutures.

The present study was intended for keratometric comparison for patient undergoing phacoemulsification through superior scleral incision (5.5mm) at end of 6 weeks.

**Limitations :-**

Small sample size

Shorter durations of follow up

**CONCLUSIONS:-**

Mean +/- SD Preoperative Keratometry difference was 0.835 +/-0.59 and post operative Keratometry difference was 1.218 +/- 0.72. There was significant difference between pre operative and postoperative Keratometry ( $p < 0.05$ ).

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