



## MAGNITUDE OF CHANGE IN THE INTRAOCULAR PRESSURE AND ANTERIOR CHAMBER DEPTH AFTER UNEVENTFUL PHACOEMULSIFICATION CATARACT SURGERY

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### KEYWORDS :

#### INTRODUCTION

In 2010 study conducted by I Dooley et al<sup>1</sup> on Changes in intraocular pressure (IOP) and anterior segment morphometry after uneventful phacoemulsification cataract surgery concluded that mean anterior chamber depth (ACD) and IOP showed a statistically significant increase and decrease respectively after an uneventful cataract surgery. Also in a number of prior studies the above mentioned relationship is established<sup>2,3,4</sup>. So here in our study we are trying to prospectively investigate the above mentioned parameters and trying to find out the correlation of ACD and IOP before and after an uneventful phacoemulsification cataract surgery.

#### Review of literature

IOP is an important parameter in diagnosing and treatment of glaucoma. Information about the magnitude of change in the IOP after cataract surgery can significantly change the treatment decision taking in glaucoma.

In 2008 Yang Kyeung Cho et al<sup>2</sup> conducted a study on Early intraocular pressure and anterior chamber depth changes after phacoemulsification and intraocular lens implantation in non-glaucomatous eyes concluded that there was a statistically significant postoperative IOP decrease and an increase in ACD after an uneventful phacoemulsification cataract surgery.

In 2016 sabyasachi sengupta et al<sup>3</sup> conducted a study on IOP reduction after Phacoemulsification versus Manual Small-Incision Cataract Surgery, concluded that there is a significant reduction in the IOP after a phacoemulsification and MSICS cataract surgery.

In 2022 Pramod Kumar Sahu et al<sup>4</sup> conducted a study on Changes in IOP after Phacoemulsification in Eyes with Occludable Angle of Anterior Chamber concluded that Removal of the cataract using phacoemulsification serves as a modality to decrease IOP in eyes showing borderline raised IOP.

In our study we are trying to understand the magnitude of change in the IOP and ACD after an uneventful cataract surgery.

#### Aims And Objectives

To study the change in anterior chamber depth (ACD) after an uneventful phacoemulsification cataract surgery.

To understand the change in the intraocular pressure (IOP) after an uneventful phacoemulsification cataract surgery.

#### Study design

Prospective observational study.

#### Study population

50 non-glaucomatous and otherwise healthy eyes were selected for the study. Patients were recruited randomly from the out patient's department.

Dooley et al<sup>1</sup> conducted the study on 101 non glaucomatous patients to obtain a statistically significant result on ACD change and IOP change after an uneventful phacoemulsification cataract surgery, similarly Yang Kyeung Cho et al<sup>2</sup>, Pramod Kumar Sahu et al<sup>4</sup>, Osman Cekic et al<sup>5</sup> conducted study on similar topics with 70, 60 and 51 Patients respectively to obtain statistically significant result.

#### Inclusion criteria

Any patient attending undergoing phacoemulsification cataract surgery

#### Exclusion criteria

Pre-existing glaucoma or ocular hypertension  
Age less than 50 years  
Any other ocular pathology  
History of prior ocular surgery or trauma  
Complicated cataract surgery

#### MATERIALS AND METHODS

50 non-glaucomatous otherwise healthy eyes were selected for the study. Patients were recruited prospectively from the out patient's department. Patients with any other ocular comorbidities or prior ocular surgeries were excluded from the study. Patients were recruited from December 2021 to June 2022.

Initial data collection was done from two weeks prior to the date of cataract surgery to the day of surgery. Subjects were selected randomly among the patients undergoing cataract surgery, data was collected after obtaining written consent. Data collected included name, age, gender, BCVA, IOP measured by Topcon CT-80 non-contact tonometer, ACD measured by BioMedix Echorule2 A scan, slit lamp bio microscopy, fundus examination with 90D.

Patients underwent phacoemulsification cataract surgery under topical anaesthesia by same surgeon. Foldable intraocular lens was implanted. Post-operative data was collected 4 weeks after the surgery, which included ACD, IOP, BCVA, slit lamp bio microscopy, fundus examination.

#### RESULTS

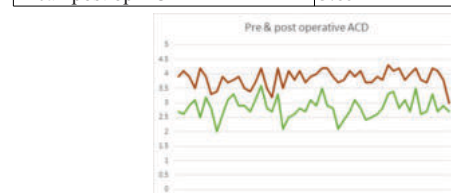
Out of 50 patients selected 23 were males and 27 were females. And out of 50 eyes 26 eyes were right and 24 eyes were left.

Males	23
Females	27

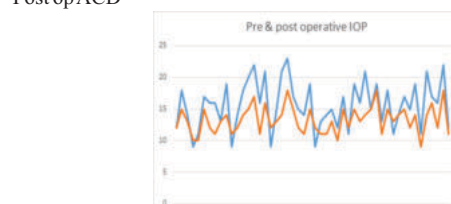
Out of 50 patients 24 were less than 60 years old and 26 were more than 60 years old.

The mean pre-operative IOP was 15.7 mmHg and the mean pre-operative ACD was 2.8mm. The mean post-operative IOP was 13.28 mmHg and the mean post-operative ACD was 3.85 mm.

Mean pre op IOP	15.7
Mean post op IOP	13.28
Mean pre op ACD	2.8
Mean post op ACD	3.85



Pre op ACD ———  
Post op ACD ———



Pre op IOP ----  
 Post op IOP ----

	Males	Females
Pre op IOP	15.3	17.3
Post op IOP	13.52	14.12
Pre op ACD	3.1	2.82
Post op ACD	4.06	3.96

Mean pre-operative IOP among males were 15.3 mmHg and the mean post-operative IOP among males were 13.52 mmHg. The mean pre-operative IOP among females were 17.3mmHg and the mean post-operative IOP among females were 14.12mmHg. The mean pre-operative ACD among males were 3.1mm and the mean post-operative ACD among males were 4.06mm. The mean pre-operative ACD among females were 2.82mm and the mean post-operative ACD among females were 3.96mm.

## DISCUSSION

Cataract is opacification of the lens, age related denaturation of the lens protein is the most common cause. Which can be successfully managed by phacoemulsification cataract surgery and intra ocular lens implantation in most of the cases.

Glaucoma causes irreversible optic nerve damage. The prevalence of glaucoma increases with increase in age. With effective achievement of target IOP in these patients we can successfully prevent the further optic nerve damage. So in patients who are on anti-glaucoma medications undergoing cataract surgery it is important to decide whether the cataract surgery has to be combined with trabeculectomy for achieving target IOP. Having a prior idea about the magnitude of change in IOP and ACD after cataract surgery will help the surgeon to take an effective decision regarding the same.

Several studies have studied the correlation Between ACD and IOP.

Dooley et al <sup>1</sup> conducted a study in 101 non glaucomatous eyes, concluded that there is a significant increase in the ACD and a significant decrease in the IOP after an uneventful cataract surgery.

Pramod kumar sahu et al <sup>4</sup> conducted a study in previously diagnosed glaucoma patients with occludable and open angles to assess the trend of IOPN change after cataract surgery and observed a significant decrease in IOP after cataract surgery, the decrease was more in patients with occludable angle than open angle.

In our study we observed significant decrease in the IOP after an uneventful phacoemulsification surgery, also ACD also decreased after an uneventful phacoemulsification surgery.

## CONCLUSION

Uneventful phacoemulsification cataract surgery decreases IOP significantly and increases ACD significantly.

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