



## Central Corneal Thickness Changes After Phacoemulsification Cataract Surgery

### KEYWORDS

phacoemulsification, Central Corneal Thickness (CCT), Intraocular pressure (IOP).

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**ABSTRACT** Purpose: To evaluate changes occurring in Central Corneal Thickness after uneventful phacoemulsification cataract surgery

Methods: This was a prospective study. Study was conducted at the ophthalmology department of Smt. Kashibai Navale Medical College, Pune. 40 patients were included in the study. All patients were above 50 years of age, having approximately grade II nuclear cataract. The surgery was performed by the same surgeon under same surgical parameters. Central corneal thickness was measured preoperatively, on post op day 1, post op day 7 & post op day 30. Statistical analysis of the data done.

Results: Mean age of the patient in this study was 58 years, out of which 60% were males & 40% were females. The mean CCT prior to surgery was  $542.8 \pm 38.7 \mu$  that increased to  $605.0 \pm 85.3 \mu$  on post op day 1 & changed to  $570.0 \pm 45.3 \mu$  on post op day 7 & decreased to  $550.3 \pm 40.3 \mu$  on post op day 30

Conclusion: The mean CCT increased substantially after uneventful phacoemulsification cataract surgery but returned to normal over 30 days. Intraocular pressure measured post operatively during first week may be false & may be elevated to some extent because of increased CCT in immediate post operative period.

### Introduction:

Cataract surgery is the commonest surgical procedure performed worldwide.<sup>1-2</sup> Various researchers have investigated different anterior segment parameter changes after uneventful phacoemulsification cataract surgery.<sup>3</sup> Central corneal thickness (CCT) increases significantly immediately after cataract surgery & gradually returns to normal value over next few weeks.<sup>4,5,6</sup> This increased CCT may lead to false higher readings of IOP post operatively.<sup>7</sup> Therefore care should be taken while interpreting post operative rise in IOP, & for this corrected IOP is reliable parameter.<sup>8</sup> Changes in the CCT are described by various studies.<sup>4,9</sup> This study was conducted to determine when CCT returns to normal after uneventful cataract surgery.

### Materials & methods:

#### Inclusion criteria:

- Age > 50 years
- Patients with approximately grade II nuclear cataract

#### Exclusion criteria:

1. Patient with mature cataract
2. Patient with anterior segment pathology
3. Patient with history of refractive surgeries
4. Patient with primary / secondary glaucoma
5. Patient with chronic contact lens wearer
6. Patient who had undergone ocular surgeries in the past.

This was a prospective study, conducted at ophthalmology dept. of Smt. Kashibai Navale Medical College, Pune. 50 patients were included in the study. Informed consent was taken from all participants before surgery. Detail examination of the patient was done on Zeiss slit lamp IOP was recorded on Topcon non contact tonometer. CCT was measured with ultrasound pachymetry (Tommy SP 3000 Japan). Data was collected regarding patient's age /sex, medical & ocular history. Routine investigations & preanaesthetic check up were done.

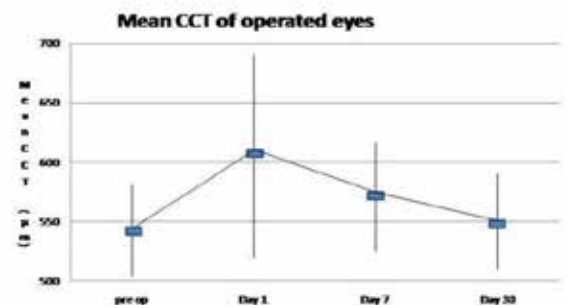
Cataract surgery was performed under suitable anesthesia

& with same surgical parameters by experienced phaco surgeon. Temporal clear corneal phacoemulsification and IOL implantation was done with AMO white star phaco machine. Statistical analysis was done using statistical package for social science version 180. (SPSS, SPSS Inc Chicago, IL, USA)

### Results:

Among 50 patients 60% were male & 40% were female patients.

Age	No. of patients	
	Male	Female
50 - 60 yrs.	12	08
60 - 70 yrs.	10	05
>70 yrs.	02	03



The mean CCT prior to surgery was  $542.8 \pm 38.7 \mu$ , that increased to  $605.0 \pm 85.3 \mu$  on post op day 1, changed to  $570.0 \pm 45.3 \mu$  on post op day 7 & decreased to  $550.3 \pm 40.3 \mu$  on post op day 30. There was statistically significant difference between pre operative values & values on post op day 1 & post op day 7 ( $p < 0.05$ ). But there was no statistically significant difference between values prior to surgery & post op day 30.

**Discussion:**

Central corneal thickness changes after cataract surgery.<sup>4,6,9</sup> Our study showed that the mean CCT increases after uneventful phacoemulsification cataract surgery & returned to normal values at one month post op period. Increased CCT after cataract surgery appears to be due to corneal edema, which gradually settles over next 1 - 4 weeks. Our findings were similar to those with other studies.<sup>4, 5, 9</sup> As compared to preoperative normal CCT values the mean increase in CCT values on post op day 1 was 62.2 which is higher than other studies like Salvi et al.<sup>4</sup> & Tanveer et al.<sup>5</sup> The possible explanation for this may be the grade of cataract, duration of surgery & type of machine used.

This study provides valuable information regarding post operative rise in IOP which may be falsely elevated due to increased CCT in immediate post operative period.<sup>5</sup> Corrected IOP is a reliable parameter in such situation. This is described by Kolhaas et al.<sup>8</sup> which states association between the IOP reading & CCT, showing 1 mm of Hg correction for every 25  $\mu$  deviation from CCT of 550  $\mu$ .

**Conclusion:**

CCT increases immediately after uneventful phacoemulsification cataract surgery & tends to normalize over 30 days. Corrected IOP is a reliable parameter in immediate post operative period so as to treat transient spikes of raised IOP.

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