

Original research article

An Analytical Study to Assess Intra-operative and Post operative Complications among Cataract Patients at a Government Tertiary Care Hospital.

**Dr. Rajendra Choudhary¹, Dr. Utkarsh Prabhakar Deshmukh²,
Dr. Thory Prakash Tilokaram³**

¹Assistant Professor, Department of Ophthalmology, Pacific Medical College and Hospital, Bedla.

²Senior Resident, Department of Ophthalmology, Pacific Medical College and Hospital, Bedla.

³Senior Resident, Department of Ophthalmology, JNUIMSRC, Jaipur

**Corresponding Author: : Dr. Thory Prakash Tilokaram,
E-mail: drrajendra2204@gmail.com**

Abstract

Introduction: Cataract is defined as an opacification of the crystalline lens leading to visual impairment, usually manifested in ageing people. Several types of cataract correcting surgeries are prevalent. Intra-operative and post operative complications are also common following the cataract surgery.

Aim: To study the complications and visual outcome in patient of mature or hypermature cataract undergoing cataract surgery.

Method: Study was done at GMERS Medical College & Hospital, Gandhinagar, Gujarat. It was a prospective study conducted at Ophthalmology department of GMERS Medical College & Hospital, Gandhinagar, Gujarat. Patients who attended outpatient department of ophthalmology department of GMERS Medical College & Hospital, Gandhinagar, Gujarat.

Results: According to OCTET grading, 21 (26%) patients had one or more intra-operative complication. 16.2% patients had OCTET grade I, 6.3% had grade II and 3.7% patients had OCTET grade III complications. Overall, 42 (52.5%) patients had one or more post-operative complication.

Conclusion: MSICS promises to be a viable cost-effective alternative to the more expensive phacoemulsification. Most of the post-operative complications had subsided at the end of 6 weeks.

Keywords: cataract, lens, post operative complications, intra operative complications

Introduction

Cataract is defined as an opacification of the crystalline lens leading to visual impairment, usually manifested in ageing people. The lens is derived from ectodermal tissue and contains epithelial cells that produce lens fibres throughout life-time. With increasing age, these lenticular fibres become more compact and thicker, and gradually there is an accumulation of yellow-brown pigment in the fibres. These changes reduce light transmission, and when there is a loss of optical clarity, the lens is cataractous. Since cataract most commonly appear in elderly people, it is called —senile cataract.¹

Cataract is not always due to ageing. Other causes include congenital disorders, metabolic conditions, and various forms of trauma, e.g. direct penetration and contusion.² Furthermore, cataract development is enhanced by environmental factors such as smoking,³ and ultraviolet radiation.⁴ Systemic and inhaled corticosteroids have been associated with posterior subcapsular cataract, and higher doses and longer duration increase the risk for cataract.⁵ In several epidemiological studies, diabetes has also been considered a risk factor for cataract.^{6,7} Second-eye surgery has increased as well, from 29% in 1992 to 40% in 2008. Having cataract extraction on both eyes if, of course, there is a vision-disturbing cataract in the fellow eye, results in significantly better visual functional outcome than first eye surgery alone.⁸ Improvement and satisfaction with vision is most frequently found in patients going through surgery of both eyes with a short interval between procedures.^{9,10} The current research was conducted with the aim to study the complications and visual outcome in patient of mature or hypermature cataract undergoing cataract surgery.

Methodology:

Study was done at GMERS Medical College & Hospital, Gandhinagar, Gujarat. It was a prospective study conducted at Ophthalmology department of GMERS Medical College & Hospital, Gandhinagar, Gujarat. Patients who attended outpatient department of ophthalmology department of GMERS Medical College & Hospital, Gandhinagar, Gujarat. The study was conducted for two years (01/10/2014 to 30/09/2016).

All cases of mature and hypermature cataract undergoing cataract surgery were included in the study.

Exclusion criteria: Patient not willing to undergo surgery. • Congenital cataract • Complicated cataract • Grade 1-3 cataract • Macular lesions •

A sample size of 80 is obtained by using the hypothesis testing method and based on following assumptions: Population size (for finite population correction factor or fpc)(N): 1000. Hypothesized % frequency of outcome factor in the population (p): 94% +/-5. Confidence limits as % of 100(absolute +/- %)(d): 5%. Design effect (for cluster surveys-DEFF). Collected data was entered in the excel data sheet and data analysis was done with the help of Epi. Info.7.2 software.

Results:

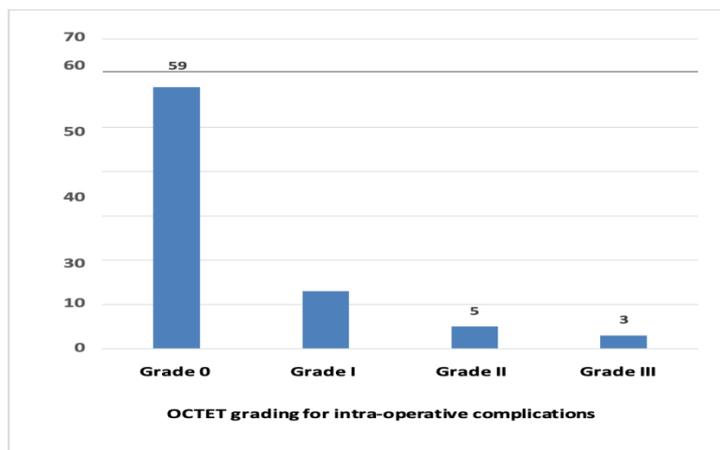
The majority (75%) of the patients were more than 60 years of age in our study. Only one patient belonged to the age group less than 40, which was the case of traumatic cataract. The mean age of the study population was 67.75 ± 10.76 years with a range of 38 – 82 years. Our study group consisted of 42.5% males and 57.5% females. more than two third (70%) of the patients belonged to lower socioeconomic class.

88.2% of the patients with pre-operative poor vision were evaluated as having good vision at the end of 6 weeks post-operatively, 9.2% of them were having borderline vision and only 2.6% of them were having poor post-operative vision at 6 weeks.

Table 1: Pre-operative BCVA v/s post-operative BCVA [Best Corrected Visual Acuity]

Pre-operative BCVA	Post-operative BCVA			Total
	Good	Borderline	Poor	
6/18 – 6/6 (good)	0	0	0	0
<6/18 – 6/60 (borderline)	3 (75.0)	1 (25.0)	0	4 (100.0)
<6/60 (poor)	67 (88.2)	7 (9.2)	2 (2.6)	76 (100.0)
Total	70 (87.5)	8 (10.0)	2 (2.5)	80 (100.0)

According to OCTET grading, 21 (26%) patients had one or more intra-operative complication. 16.2% patients had OCTET grade I, 6.3% had grade II and 3.7% patients had OCTET grade III complications.

**Figure 1: OCTET grading for intra-operative complications (N=80)****Table 2: Types of intra-operative complications and post-operative best corrected visual acuity at 6 weeks.**

Intra-operative complications	Post-operative BCVA		Total
	Good	Borderline + Poor	
Iris prolapse (OCTET I)	6(7.5)	1 (1.3)	7 (8.7)
Residual cortex (OCTET I)	2 (2.5)	1 (1.3)	3 (3.8)
Iridodialysis(OCTET I)	2 (2.5)	0	2 (2.5)
Descemet membrane detachment (OCTET I)	1 (1.3)	0	1 (1.3)
Posterior capsule tear without vitreous loss (OCTET II)	2 (2.5)	1 (1.3)	3 (3.7)
Zonular dialysis (OCTET II)	1 (1.3)	1 (1.3)	2 (2.5)
Posterior capsule tear with vitreous loss (OCTET III)	0	3 (3.7)	3 (3.7)
Incomplete CCC	11 (13.7)	1 (1.3)	12 (15.0)
No complications reported	45(56.3)	2(2.5)	47 (58.8)
Total	70(87.5)	10(12.5)	80(100.0)
*Incomplete CCC has been counted as intra-operative complications, though it not included in OCTET grading. Hence only 47 patients has been listed as no complications reported.			
Odd's Ratio: 7.2, 95% CI=1.41 – 36.5, p value= 0.01			

The most common intra-operative complication was iris prolapse(8.7%) followed by residual cortex (3.8%), posterior capsular tear with (3.7%) and without (3.7%) vitreous loss, iridodialysis (2.5%), zonular dialysis (2.5%) and descemet membrane detachment (1.3%). Posterior capsular tear with vitreous loss was the major reason (3.7%) for poor visual outcome after surgery.

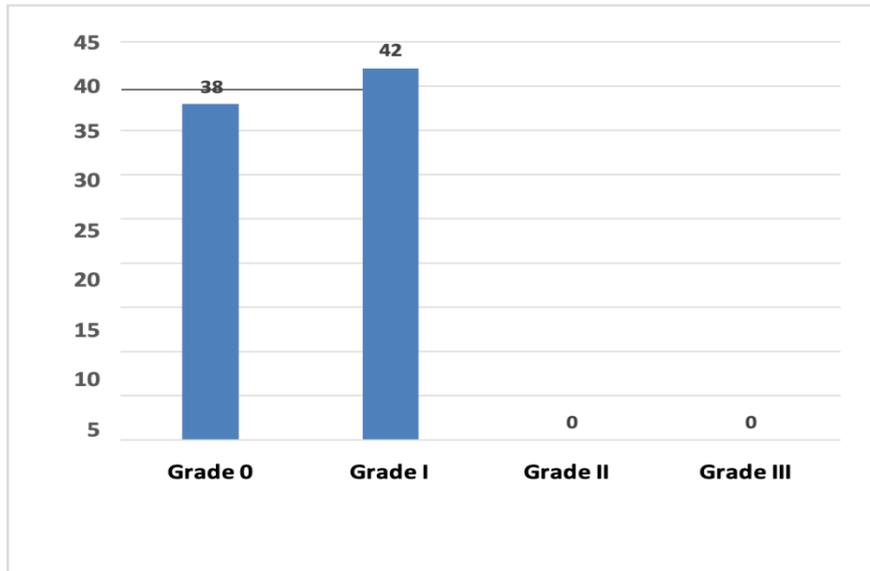


Figure 2: OCTET grading for post-operative complications (N=80)

Overall, 42 (52.5%) patients had one or more post-operative complication. All of them had OCTET grade I complications. Total of 47.5% patients remained uneventful till 6 weeks after surgery. The most common post operative complication with BCVA [Best corrected visual Acuity] were mild iritis (13.7%), followed by residual cortex (12.5%), corneal edema with descemet membrane folds (12.5%), IOL pigmentation (5%), hyphema (5%), misshapen pupil (2.5%) and IOL decentration in 1.3%.

Table 3: Types of post-operative complications and post-operative best corrected visual acuity at 6 weeks.

Post-operative complications	Post-operative BCVA		Total
	Good	Borderline + Poor	
Corneal edema or Descemet membrane folds (OCTET I)	8 (10.0)	2 (2.5)	10(12.5)
Pigmentation in IOL (OCTET I)	3 (3.7)	1 (1.3)	4(5.0)
Mild iritis (OCTET I)	10 (12.5)	1 (1.3)	11(13.7)
Hyphema(OCTET I)	2 (2.5)	2 (2.5)	4(5.0)
Misshapen pupil (OCTET I)	0	2 (2.5)	2(2.5)
Posterior capsular opacity (OCTET II)	0	0	0
IOL decentration (OCTET I)	1 (1.3)	0	1(1.3)
Pupil displacement (OCTET II)	0	0	0
Cystoid macule edema (OCTET III)	0	0	0
Residual cortex (OCTET I)	10 (12.5)	0	10(12.5)
No complication reported	36(45.0)	2(2.5)	38(47.5)
Total	70(87.5)	10(12.5)	80(100.0)
Odd's Ratio: 4.2, 95% CI=0.83 – 21.3, <i>p</i> value= 0.08			

Discussion:

The age characteristics of the current study are similar to study conducted by Parul Desai et al¹¹ wherein 80% of the patients were above 60 years of age. Similar results were also obtained in the study by Reidy et al¹² and Madhu Chanchlani et al¹³. In a study conducted in China by Jing Yuan et al¹⁴, the mean age was 69.6 ± 10.6 years with a range of 41 – 88 years. A Pakistani study by ErumShahid¹⁵ showed mean age of 63.78 years. The number of males and females were equal in study by Jing Yuan et al¹⁴. 70% of the patients belonged to lower socioeconomic class. This may be due to the fact that the study was conducted in Government Civil Hospital and majority of the patients in OPD came from nearby rural areas.

According to OCTET grading, 21 (26%) patients had one or more intra-operative complication. 16.2% patients had OCTET grade I, 6.3% had grade II and 3.7% patients had OCTET grade III complications. Total of 74% patients remained uneventful during surgery. These findings are higher than those reported in study by MadhuChanchlani et al¹³, which showed the rate of intra-operative complications as 5.5%. In a study done by JyoteeTrivedy et al¹⁶, intra-operative complications were present in 1.6% of the study patients. This findings were also similar to study by Natchier et al¹⁷.

In the intra operative complications, our findings were similar to findings observed in Jing Yuan's study in China¹⁴. In a developing nation like India, where cataract backlog is still a socioeconomic problem, procedures like phacoemulsification remain an expensive modality of management, and majority of the population find it difficult to afford it. MSICS promises to be a viable cost effective alternative in this regard¹⁸. The safety of this procedure in cataract surgery is enhanced by the adjunctive use of trypan blue dye¹⁹. The success rate of CCC using trypan blue as adjunctive was 85% in this study. Jacob et al²⁰ reports a failure of CCC with adjunct use of trypan blue in 3.85% of eyes with white cataract. All those failed CCC were converted to can-opener type. The incomplete CCC encountered was possibly due to increased intralenticular pressure.

In the index study, a total of 47.5% patients remained uneventful till 6 weeks after surgery. Venkatesh et al²¹ reported that 23% patients suffered from post-operative complications. The rate of post-operative complications in a study done by Parikshit Gogate et al²² was reported to be 34%, and almost all of them were OCTET grade I. Lower rate (12%) of post-operative complications were found in study by JyoteeTrivedy et al¹⁶. Similar study by Jing Yuan et al¹⁴ showed that immediate postoperative complications were found in 47% of the patients. However it is noteworthy all these studies included immature, intumescent, mature and hyper mature cataract. But this study included only mature and hyper mature cataract. Evidence has suggested that hyper mature cataract surgeries has higher rate of post-operative complication than others. Desai P et al¹¹ reported that most common complication in his study was corneal edema. In this study, major post-operative complication responsible for immediate poor visual outcome after surgery were descemet membrane folds, hyphema and misshapen pupil. All patients with post-operative complications received appropriate treatment as per the existing protocols. Hence during successive follow up visits these complications subsided and vision was improved in these patients.

Conclusion:

In a developing country like India, which has significant volume of mature and hyper mature cataract surgical load, MSICS promises to be a viable cost-effective alternative to the more expensive phacoemulsification. Most of the post-operative complications subside at the end

of 6 weeks. Thus, all patients with borderline and poor vision were attributed to one or other ocular co-morbidities. Such patients should receive appropriate attention for their ocular pathologies and proper rehabilitation must be ensured. In spite of poor vision, cataract extraction will help to improve field of vision in such patients.

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