**Original Article**

# Complications of Hypermature Cataract and Its Visual Outcome

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**Purpose:** To evaluate the additional complications of hyper mature cataract and their low visual outcome after extra capsular cataract extraction.

**Materials and Method:** This study was conducted in the Department of Ophthalmology Abbasi Shaheed Hospital, Karachi from June 2006-2007. In this study evaluation of fifty patients with senile hyper mature cataract after preoperative assessment and investigations underwent extra capsular cataract extraction. Their surgical complications and postoperative complications were recorded. Their visual outcome was studied at each stage of follow up, conducted at 1st week, 3rd week, 6th week, 3rd month and 6th month. Best corrected visual acuity was obtained at 6 months.

**Result:** Total of fifty patients 27 male and 23 female had extra capsular cataract extraction. 8 of the eyes had surgery complicated by posterior capsule rupture, vitreous loss, phacodonesis and drop nucleus. On first post operative day most common complication noted was striate keratitis (60%). Best corrected visual acuity at 6 months was 6/18 or more in 38(76%) patients.

**Conclusion:** The operative and postoperative complication rate is higher in hyper mature cataracts. These complications can be reduced by early removal of cataract before it reaches the stage of hyper-maturity. Extra capsular surgery of hyper-mature cataract has good results after thorough preoperative assessment and if performed with expertise.

Pakistan is among the ones with highest number of blind people .The most prevalent cause of blindness and low vision being an un-operated cataract. A survey conducted in one region of Pakistan yielded all age blindness prevalence rates at 1.78% and thus cataract is a major cause of treatable blindness contributing of 66.7%of total blindness[1]. By the year 2020, the elderly population of 60 years and above is expected to double from today's number, thereby increasing the number of blind even more[2-3].

Mature and hyper mature cataracts constitute a significant volume of the cataract surgical load in ophthalmic practice in developing countries. Continuous curvilinear capsulorhexis (CCC) and emulsification of hard nucleus are the two steps that make phacoemulsification difficult in these cases[4-6]. After removal of a cataractous lens an intraocular (IOL) lens can be implanted or aphakic spectacles can be used for refractive outcome[7]. A survey conducted in UK regarding complications of cataract surgeries, posterior capsular rupture was 5%[8] and vitreous loss was 6.1% in a study in Harpreet Kapoor's[9]. The vitreous loss rate was 11% vitreous loss in a large study series of ECCE in Malaysia[10].

Postoperatively, the most frequent complication was striate keratopathy 8.4% in Harpreet Kapoor's[9] and endophthalmitis in 1.0% cases and residual lens matter in 10% of cases in study by Jehangir,s and Qadri[11].

The study was conducted in the department of ophthalmology, Abbasi Shaheed Hospital, Karachi, to evaluate the frequencies of complications that can occur with hyper mature cataract undergoing cataract extraction and assess their visual outcome.

## MATERIALS AND METHODS

A descriptive study was conducted in the department of ophthalmology at Abbasi Shaheed Hospital and it was completed in almost a year. 50 patients were selected from an eye OPD with senile hyper mature cataracts. Their complete history was taken, thorough ocular examinations including B scan and systemic investigations where required.

All the surgeries were planned day care extra capsular cataract extraction and were performed under local anaesthesia by a single experienced surgeon. Dispersive ophthalmic viscoadaptives were used during surgery. Complications encountered during and after surgeries were noted down. Sutures were removed after three months. Patients were followed regularly up to six months.

Data was entered and analyzed by SPSS computer software version 11.5.

Frequencies and percentages were computed for age, gender, preoperative, intra operative, postoperative complications and visual acuity.

## RESULTS

The study was conducted on total of 50 patients with hyper mature cataract and they were evaluated according to the designed performa. They consisted of 27 (54%) males and 23 (46%) females. 28 (56%) of them had right eye and 22 (44%) had left eye operated (Table 1).

The age range was 50 to 80 years with a mean age 63.78 years. s9 (18%) of these patients had other systemic illness like diabetes and hypertension.

Pre-operative VA was recorded which ranged from light perception (LP) to counting finger (CF) (Table 2). Majority of them had CF and HM i.e. 16 (32%) each. 3 (6%) of the patients presented with subluxated lenses preoperatively and 6 (12%) had posterior synechiae resulting in poor pupillary dilatation (Table 3).

Forty two (84%) of these patients had uneventful surgery while 8 (16%) of them developed some complications intraoperatively. Nine (18%) had poor pupillary dilation, 6 (12%) had posterior capsular rupture and vitreous loss, 2 (4%) had phacodonesis due to weak zonules and 1 (2%) developed dropped nucleus in vitreous (Table 4).

Most of the patients 42 (84%) had posterior chamber intra ocular lenses implanted. 4 (8%) of them were managed with anterior chamber intra ocular lenses and 4 (8%) were left aphakic.

**Table 1:** Gender Distribution

| **Sex** | **No. of Patients n (%)** |
|---|---|
| Male | 27 (54) |
| Female | 23 (46) |
| Total | 50 (100) |

**Table 2:** Visual acuity before surgical procedure

| **VA** | **No. of Patients n (%)** |
|---|---|
| CF | 16 (32) |
| HM | 16 (32) |
| PLPR | 14 (28) |
| PL | 04 (8) |
| Total | 50 (100) |

**Table 3: Pre operative complications**

| **Complications** | **No. of Patients n (%)** |
|---|---|
| Posterior synechiae | 6 (12) |
| Subluxated lens | 3 (6) |
| Total | 9 (18) |

**Table 4:** Complications encountered during surgery

| **Complications** | **No. of Patients n (%)** |
|---|---|
| Poor pupillary dilatation | 9 (18) |
| Pc rupture | 6 (12) |
| Vitreous loss | 6 (12) |
| Phacodonesis | 2 (4) |
| Drop nucleus | 1 (2) |

On the first post operative day their visual acuity ranged from hand movement to 6/12, 25 (50%) had visual acuity 6/60 and 6/36 (Table 6).this was

improved with pinhole. Post operative follow up was done at 1st week, 3rd week, 6th week, 3rd month and 6th month. Visual acuity had improved by the last follow-up and only 12 (24%) had vision between 6/60 and 6/24 (Table 6).

Early post operative complications were seen in 31 (62%) eyes (Table 5), the most common being striate keratopathy 30 (60%), iritis 5 (10%), irregular pupil 3 (6%), sub conjunctival hemorrhage 2 (4%), cystoid macular edema 2 (4%), hyphaema, lens matter in AC and primary capsular thickening in 1 (2%) respectively. The results are illustrated in the given tables.

**Table 5:** Early post operative complications

| **Complications** | **No. of Patients n (%)** |
|---|---|
| Striate keratopathy | 30 (60) |
| Iritis | 4 (8) |
| Irregular pupil | 3 (6) |
| Sub conjunctival hemorrhage | 2(4) |
| CME | 2 (4) |
| Lens matter | 1 (2) |
| Hyphaema | 1 (2) |
| PCO | 1 (2) |

**Table 6:** VA on 1st post operative day and 6 months

| **VA** | **1st postoperative day n (%)** | **Six months n (%)** |
|---|---|---|
| HM-CF | 13(26) | 0 |
| 6/60-6/24 | 29(58) | 12(24) |
| 6/18-6/12 | 08(16) | 16(32) |
| 6/9-6/6 | 0(0) | 22(44) |
| Total | 50(100) | 50(100) |

## DISCUSSION

Mature and hyper mature cataracts constitute a significant volume of the cataract surgical load in ophthalmic practice in the developing world[5,6 and 12.]

The prevalence of visual impairment and blindness is 1,140,000 (962,000–1,330,000) in Pakistan (2003 statistics). Blindness prevalence varies throughout the country. Rural areas had a higher prevalence of blindness than did urban areas (3.8% vs. 2.5%)[13].

In our neighboring country, there are 12.5 million blind and it is estimated that 50% to 80%[14,15] are blind due to cataract. Most patients have advanced stages of cataract with intumescent, mature or hyper mature cataracts. Majority of these patients are socioeconomically disadvantaged and cannot afford procedures such as phaco-emulsification. Conventionally an Extra Capsular Cataract Extraction with Posterior Chamber Intraocular Lens Implantation (ECCE-PC IOL) is considered to be an effective means of restoring visual function in developing countries. However, it has its own problems related to wound suturing and its associated complications and late visual rehabilitation[16].

One of the commonest complications encountered during an ECCE of hyper-mature cataract in this study was posterior capsule rupture with vitreous loss (12%), which is also the commonest in other studies[17, 18]. Their frequencies are far less as compared to ours i.e. 5.7% and 0%. All of the cataracts with which we are dealing are hyper mature, these are associated with capsular fibrosis and loss of elasticity. One of the study conducted in a local hospital at Rawalpindi[19] had similar complications like pupillary miosis, posterior capsular rupture, and vitreous loss (6.6%) and lens subluxation. 2% had dropped nucleus, which is not common in case of extra capsular cataract extraction.

The frequency of capsular rupture and vitreous loss can be reduced by staining the anterior capsule with trypan blue, to identify the capsular tear at an early stage[17]. The most common early post-operative complication was striate keratitis (60%). This complication was higher than other studies[20] since all the cataracts are hyper mature and had large incision cataract extraction. They are associated with high rate of vitreous loss requiring vitrectomy and prolonged surgical time and more endothelial cell loss. Ideally specular microscopy should be used preoperatively and post operatively[21]. These complications can be reduced by irrigation and aspiration in a closed chamber after insertion of an intra ocular lens and suturing.

Hemorrhagic complications (4.02) and inflammatory complications (8.72) are comparable to a study conducted in Russia[22].

Pupil distortion (6%) is comparable to one in Nigeria (5.6%)[23] but the rate of posterior capsular opacity is (2%) as compared to (7%). As ECCE with an IOL is associated with long-term complications and our follow up was up to 6 months. The long-term effect of posterior capsular opacification (PCO) needs to be assessed in larger populations[24]. Our sample size was only 50.

Preoperatively, the study population presented with poor vision i.e. less than 6/60 in all of the cases. The first post operative day visual acuity was poor (i.e. 6/60 or less) in 26%, border line (6/36 to6/24) in 58% and good visual acuity (i.e. 6/18 or above according to WHO) in 16% of cases. At 3 months and 6 months 76% had good best corrected VA i.e. 6/18 or better. It is comparable to the study related to visual outcome after vitreous loss[25] in which 91% of eyes had vitreous loss and they had best corrected visual acuity of 6/9 or better. Similarly the results of another study[26] also showed that most of the patients after vitreous loss do reasonably well however their final visual out come was affected by cystoid macular edema, which was 4% in this study. Two of our study population (4%) had VA less than 6/36 due to age related macular degeneration. In cases of coexistent ocular diseases, macular degeneration was the main cause of reduced vision, accounting for 50% of those eyes with less than 6/18 and 46% of those with less than 6/60 best corrected visual acuity[27]. 57% and 77% cases had uncorrected VA at 3 months more than 6/18 in Watson and Minassiana studies[28,16]. The results are comparable to a local study where final visual acuity reached 6/12 or better in 77% of eyes after ECCE[19] and 80% achieved a final VA of 6/18 or better in review of 400 cases[29] with similar complications. The good visual outcome signifies the importance of thorough preoperative assessment including macular function test, pupillary reflex and B-scan in cases where the fundus was not visible.

The outcomes of ECCE are good with fewer complications if performed with professional skills. ECCE also favors economic factors for the population of this region[19].

The incidence of blindness in Pakistan suggests that eye care facilities in general are inadequate. Vision screening programs should be implemented on larger scales[30]. A large number of population in developing countries are still presenting with hyper mature cataracts. They should be advised for early removal of cataract before its progression to hyper maturity. Early removal reduces the rate of complications and fastens the rate of rehabilitation. White cataracts require more professional skills.

## CONCLUSION

We conclude from our study that the chances of complications are higher in advanced cataracts. These complications can be reduced by irrigation and aspiration in a closed chamber after insertion of intraocular lens and suturing.
Patients should be advised to seek medical advise early for defective vision.

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## Glaucoma

Standard Automated Perimetry is still the gold standard for visual field testing. To assess any progression of disease in glaucoma visual field testing should be performed much more frequently during the first few years after diagnosis.

**M Lateef Chaudhry**
**Editor-in-Chief**