

# Visual Outcome among Patients Undergone Manual Small Incision Cataract Surgery Following their Identification in Screening Eye Camp in Jammu Province.

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## ABSTRACT

**Introduction:** One of the documented leading cause of blindness in India is cataract as many patients with cataract do not have access to hospitals and surgery and to avoid blindness due to cataract, the only remedy is to perform hospital based cataract surgery on a large scale. There is an increase in a number of cataract patients due to improved quality of life, health indices and increased life expectancy. Study aimed to see the visual outcome and complications among patients undergone manual SICS with PC-IOL implantation.

**Material and Methods:** The present prospective observational study was conducted on 72 patients who were selected in various screening eye camps to undergo cataract extraction surgery by manual small incision cataract surgery technique with posterior chamber IOL implantation (MSICS with PC-IOL).

**Results:** Total of 72 eyes of patients who underwent manual small incision cataract surgery were studied. Best corrected preoperative visual acuity of  $\geq 6/60$  was found in 13 patients while postoperatively on day1 total of 60 patients had visual acuity of  $\geq 6/60$ . The final 6<sup>th</sup> week postoperative best corrected visual acuity of 6/12-6/9 was found in 65 patients. Iris prolapse was seen in 3 patients followed by posterior capsule rent which was seen in 2 patients. Mild postoperative uveitis was seen in 20 followed by striate keratopathy in 8 patients while hyphaema was seen in 2 patients.

**Conclusion:** MSICS is a safe and effective procedure, due to its low rates of intraoperative and postoperative complications which are easily treatable. Visual acuity is only one measure of the functional success of cataract surgery and the good postoperative visual outcomes achieved by our patients further adds on to its benefits as a good surgical technique. MSICS can be performed as procedure of choice for large volume cataract surgeries.

**Keywords:** Cataract, Screening eye camps, Visual outcome.

## INTRODUCTION

The documented leading cause of blindness in India is cataract where vision  $<3/60$  in the better eye on presentation is defined as blindness. It was estimated that 314 million people were visually impaired worldwide and 39.1% of the global blindness was due to cataract. The World Health Organization (WHO) conducted a survey where it has been revealed that the worldwide blindness caused by cataract comprises 47.8% and India contributed 51% blindness due to cataract.<sup>1</sup> More than 3/4th of Indian populations live in rural areas which are away from medical facilities, eye care services need to be planned and executed in these areas.

An outreach camps play a significant role in reducing the burden of cataract in rural areas as these camps are primarily targeted at poor, illiterate or ignorant rural population who have limited access to eye care services.<sup>2</sup> Ministry of Health, Government of India under National Programme for Control of Blindness made strict guidelines that surgery on a mass scale in camp is discouraged and replaced by screening camp in mass level and surgery in well-equipped hospital based modern operation theater.<sup>1</sup> Cataract surgery is the most successful and commonly performed surgical procedure in patients above the age of 65 years. Majority of the patients with visually significant cataract are economically backward, cannot afford modern and expensive techniques of cataract surgery like Phacoemulsification. Manual Small Incision Cataract Surgery (MSICS) has gained the distinction of being a safe, effective and inexpensive type of cataract surgery which is alternative to phacoemulsification.<sup>3</sup> The present study had been conducted to see the visual outcome among patients undergone manual small incision cataract surgery following their identification in screening eye camps in Jammu province.

## MATERIAL AND METHODS

The present prospective observational study was conducted over a period of 10 months on patients who had been admitted for manual small incision cataract surgery with implantation of posterior chamber intraocular lens in the tertiary care hospital Jammu. All the patients who had been participated were screened for cataract surgery in various eye camps in Jammu province. The informed written consent from all the patients were undertaken before inclusion in the current study.

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### Inclusion Criteria

Individuals of both sexes,  
Diagnosed with cataracts with surgical indication.

### Exclusion criteria

- Uncooperative patients.
- Patients who had a complicated cataract, traumatic cataract, uveitis cataract or other ocular comorbidities which may affect the visual outcome.
- Congenital/developmental cataract.
- Patient refused to participate in study.

All the patients underwent complete ophthalmological examination as under:

**History:** The complete ophthalmic history as, diminution of vision, its onset, duration and progress, redness of eyes, pain, watering or any discharge from eyes, intolerance to light, ocular surgery etc. Relevant personal medical history as trauma, steroid exposure or drug intake, diabetes mellitus, asthma, hypertension, tuberculosis, past history of any other surgery etc. Family history was also collected from all patients.

**Ocular examination:** Best corrected visual acuity (BCVA) was measured using Snellen's visual acuity chart preoperatively and postoperatively (day 1 and 6weeks), IOP was measured by applanation tonometer, Gonioscopy was done to see status of angle/any other pathology involving angle, Detailed slit lamp examination was done before and after pupillary dilatation to grade the nucleus and to look for the pseudoexfoliative deposits on the cornea, iris, pupillary margin and on the anterior capsule of the lens, Dilated fundus examination, blood pressure measurement and laboratory tests like haemoglobin, bleeding time, clotting time, fasting blood sugar, urine examination etc were done.

**Procedure:** Manual Small incision cataract surgery with implantation of posterior chamber intraocular lens (MSICS with PC-IOL).

All patients were admitted one day prior to surgery, were started on systemic antibiotic (ciprofloxacin) and topical non-steroidal anti-inflammatory drug. On the day of surgery in the morning eyelashes of the eye to be operated were trimmed. Mydriasis was achieved with instillations of tropicamide (1%) and phenylephrine (10%) combination preoperatively. To sustain the mydriasis flurbiprofen eyedrops were used. SICS with posterior chamber intraocular lens (PCIOL) implantation was performed in all the patients by the same surgeon. After an adequate sized capsulorrhexis careful hydrodissection was carried out with minimal stress on the zonules. In cases of posterior capsular rent, a good anterior vitrectomy was done and IOL was placed in the sulcus. The patients were monitored for one to two days for any post-operative complications and were discharged if there were not any. Postoperatively systemic antibiotic was given for 3 days and a topical antibiotic-steroid preparation was given for 6 weeks in tapering doses. The patients were asked to follow up after 6 weeks but if any warning sign appear as explained to patient can report early. On follow

up, visual acuity testing and anterior segment examination was performed on slit lamp. BCVA was measured 6 weeks postoperatively.

### STATISTICAL ANALYSIS

Analysis of data was done using statistical software MS Excel / SPSS version 17.0 for windows. Data presented as percentage (%) as discussed appropriate for quantitative and qualitative variables.

### RESULTS

The mean age of studied patients was 66.5 years.

Table-1 shows best corrected preoperative visual acuity of  $\geq 6/60$  was seen in 13 patients while postoperatively on day1 total of 60 patients had visual acuity of  $\geq 6/60$ . The final 6<sup>th</sup> week postoperative best corrected visual acuity of 6/12-6/9 was found in 65 patients.

Table-2,3 shows that among intraoperative complications iris prolapse was seen in 3 patients followed by posterior capsule rent which was seen in 2 while postoperatively mild uveitis was seen in 20 followed by striate keratopathy in 8 patients whereas hyphaema was seen in 2 patients.

Blindness has a significant weight on family, community, social and health service and major cause of blindness in many third world countries is constituted by cataract which

Visual Acuity	Pre-operative BCVA (no. of patients)	Post-operative BCVA day1(no. of patients)	Post-operative BCVA 6weeks(no. of patients)
PL	16	0	0
HM close to face	21	0	0
FC close to face	6	4	0
<6/60	16	7	0
6/60-6/36	7	8	1
6/24-6/18	6	29	1
6/12-6/9	0	23	65
6/6	0	0	5

PL-perception of light, HM-hand movement, FC-finger count, BCVA: best corrected visual acuity

**Table-1:** Preoperative and postoperative best corrected visual acuity day 1 and after 6 weeks.

Complications	Number
Premature A/C entry	1
Scleral flap button hole	0
Iris prolapsed	3
Iridodialysis	1
Hyphaema	0
Difficulty in delivery of nucleus	2
Constricted pupil	2
Retained cortex	0
PC rent	2
Vitreous loss	0
Descemet's membrane stripping	0
No complication	61
Total	72

**Table-2:** Intraoperative complications among studied subjects

Complication	Number
Wound leak	0
Mild postoperative uveitis	20
Striate keratopathy	8
Hyphaema	2
Iris prolapsed	0
Cystoid macular oedema	0
Secondary glaucoma	0
No complication	42
Total	72

**Table-3:** Postoperative complications among studied subjects.

could be because of lack of access for surgery, proper diet, constant exposure to sunlight in their occupation as well as biomass fuel use, genetic factors are also important.<sup>4</sup> In the present study PCIOL was placed in all 72 eyes but IOL was placed in sulcus in 2 patients (because of posterior capsular rent). No patient lost follow up which might be due to reason, that patients were called only once after surgery and all patients were coming in groups so reported.

## DISCUSSION

Increasing age is one of the important cause of cataract which is clouding of the lens in the eye and is treated by a surgery but treating cataract blindness worldwide continues to be a big challenge because of significant barriers which comprises cost, lack of population awareness, shortage of trained personnel and poor surgical outcomes.<sup>5</sup> Big task to a surgeon is to manage advanced cataract and the choice of surgical technique is determined by the status of cataract. Different medical or pathological conditions of the eye may favour one technique over the another and factors that dictate technique are the availability of equipment as well as level of training of the surgeon.<sup>6</sup> Therefore, early diagnosis, detailed examination, knowledge and surgical skills to manage complications during surgery and meticulous postoperative follow up in cataracts can increase the success rate of the surgical outcome. Manual small incision cataract surgery (MSICS) involves removing the cataract lens from the eye through a small incision by various methods of nucleus delivery is faster, less expensive, less technology dependent and provides excellent visual outcomes with lower complication rates and might be the preferred technique in the developing world where high volume cataract surgery is a priority.<sup>5</sup>

In the present study best corrected preoperative visual acuity of  $\geq 6/60$  was seen in 13 patients while postoperatively on day1 total of 60 patients had visual acuity of  $\geq 6/60$ . The final 6<sup>th</sup> week postoperative best corrected visual acuity of 6/12-6/9 was found in 65 patients. This might be due to reason that timely and appropriate management of the complications yields good postoperative visual outcomes. Only 2 patients in the present study didn't improved upto 6/12-6/9 due to reason of ARMD. Various strategies that were adopted in this procedure for better outcome are well maintained anterior chamber, avoidance of intraocular fluctuations, liberal use of viscoelastics. Moreover, the preoperative use of non-

steroidal anti-inflammatory drugs maintained good pupillary dilatation, an adequate or slightly large size capsulorrhexis minimized the stress on the zonules and the capsular bag, meticulous hydrodissection achieved gentle decompression of capsular bag and minimized the stress on the zonules, also the tissue handling during nucleus delivery was minimized by selecting the appropriate nucleus delivery method on an individual basis. Satyavathi G et al. in a study on 30 eyes at 6 weeks follow up found that all cases(100%) achieved 6/12 to 6/6 visual acuity post-operatively.<sup>6</sup> Maiya AS et al. in a study found that postoperatively after 45 days, 48 patient's had a best corrected visual acuity of 6/9 or better and 2 patients had 6/12-6/18.<sup>7</sup> Maiya AS et al. found that the final visual outcome in their study as, 95% had achieved excellent best corrected visual acuity of  $> 6/9$  and 5% had best corrected visual acuity between 6/18-6/12.<sup>3</sup> Islam MN et al in a study found that 6<sup>th</sup> week post operative best-corrected visual outcome of 6/12-6/9 seen in 213 patients whereas only 15 had low vision.<sup>1</sup> Venkatesh et al. in a study showed that the high quality cataract surgery (94% BCVA 6/18 or better) can be attained in a high volume setting which depends on choice of surgical technique, standardized protocols and facilities available in terms of manpower, availability of high quality consumables supporting high turnover and flow of patients.<sup>8</sup> In the present study among intraoperative complications iris prolapse was seen in 3 patients followed by posterior capsule rent which was seen in 2 patients only while postoperatively mild uveitis was seen in 20 followed by striate keratopathy in 8 patients whereas hyphaema was seen in 2 patients. Corneal edema following cataract surgery is usually transient and often caused by intraoperative trauma to the endothelium by contact with instruments, lens matter or the intraocular lens as mentioned in Kanski. A complicated, prolonged surgery and postoperative intraocular pressure spike may also contribute to this.<sup>9</sup> Madhavi C et al in a study found that iris prolapsed in 8 and posterior capsular rent in 7 patients intraoperatively and corneal edema in 34 patients postoperatively that subsided within 1-2 days were the most commonly reported complications.<sup>5</sup> Satyavathi G et al in a comparative study on 30 eyes, found major complication in study group intra operatively was posterior capsule rent in 1 eye where they implanted AC IOL while postoperatively mild striate keratopathy in 2eyes and mild to moderate inflammatory reaction in 4 eyes were managed well.<sup>6</sup> Maiya AS et al in study on 50 eyes found intra-operatively, rhexis run off to the periphery in 10 patients and none of the patients had posterior capsular rupture or zonular dialysis while postoperatively, corneal edema was seen in 5 eyes, mild postoperative uveitis in 4 eyes, severe postoperative uveitis in 1 patient and postoperative IOP spike in one patient.<sup>7</sup> Moreover Maiya AS et al in a another study on 60 eyes found striate keratopathy in 5 patients, 1 patient had a Descemet's membrane detachment and 1 patient had microcystic corneal edema.<sup>3</sup>

Visual acuity is only one measure of the functional success of cataract surgery. Patients who undergo cataract surgery have significant improvement in quality of life, quality of

performance of community and home activities, mental health and life satisfaction.<sup>6</sup>

#### Limitation of study

1. Small sample size.
2. The follow up period was only 6 weeks and late post-operative complications such as posterior capsular opacification and IOL related complications were not evaluated.

#### Recommendations

Authors recommend that there is need to organize much more camps so that maximum patients can be examined, screened for cataract and therefore shifted in well equipped hospital where surgery can be performed.

#### CONCLUSION

From present study, it has been concluded that MSICS is a safe and effective procedure, due to its low rates of intraoperative and postoperative complications which are easily treatable. Visual acuity is only one measure of the functional success of cataract surgery and the good postoperative visual outcomes achieved by our patients further adds on to its benefits as a good surgical technique. MSICS can be performed as procedure of choice for large volume cataract surgeries in rural hospitals where the patients cannot afford phacoemulsification.

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