

Efficacy of Manual Small Incision Cataract Surgery at the Base Hospital at Tertiary Level in West Bengal

Mohammed Nazarul Islam¹, Mita Saha (Dutta Chowdury)², Sushmita Mukherji³, Begam Sabiha Masuda Khanam³

¹Associate Professor, Department of Ophthalmology, R.G. Kar Medical College & Hospital, Kolkata, West Bengal, India, ²Assistant Professor, Department of Ophthalmology, R.G. Kar Medical College & Hospital, Kolkata, West Bengal, India, ³Post-graduate Trainee, Department of Ophthalmology, R.G. Kar Medical College & Hospital, Kolkata, West Bengal, India

Abstract

Introduction: Cataract has been documented as a leading cause of blindness in India where vision $<3/60$ in the better eye on presentation is defined as blindness.

Materials and Methods: A prospective observational study was conducted where consecutive cataract patients were recruited during a period of 1 year. Cataract surgeries were performed in uncomplicated cases after selection in screening camps by manual small incision cataract surgery technique with posterior chamber intraocular lens implantation. Postoperatively patients were treated with antibiotic-steroid eye drops for 6 weeks in tapering dose, homatropine 2% eye drops twice for 2 weeks, oral ciprofloxacin 500 bid for 5 days, and analgesic tablet with antacid for 3 days. All patients were followed up on 2nd post-operative day, 1 week, and at 6th week. Spectacles were prescribed at 6 weeks after retinoscopy.

Results: Out of 228 patients, 99 (43.42%) patients were male, and 129 (56.57%) female; 162 (71.05%) were above the age of 60 years, 66 (28.94%) were between 40 and 60 years; 148 (64.91%) patients had senile immature cataract and 80 (35.08%) had senile mature cataract. Post-operative unaided visual acuity was 6/12 (Snellen's chart) or better by 6th week in 176 (77.19%) cases. Best-corrected visual acuity of 6/12 to 6/9 and even better by the 6th week was found in 213 (93.42%) cases, and the remaining 15 (6.61%) cases had low vision $\leq 6/18$.

Conclusion: There was the good visual outcome in hospital based large volume cataract surgery with the average astigmatism of 2.00 D. This can be opted as the method of choice on large scale surgery in developing countries.

Key words: Hospital based cataract surgery, Manual small incision cataract surgery, Visual outcome

INTRODUCTION

Cataract has been documented as a leading cause of blindness in India 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.^{1,2} The survey conducted by the World Health Organization (WHO) revealed that the worldwide blindness caused

by cataract comprises 47.8% and in the South East Asia including India contributed 51% blindness due to cataract.³ Approximately 4 million people are blind because of cataract annually adding to the backlog of cataracts in our country, and only 5 million cataract surgeries are performed annually in the country.⁴ With the improved quality of life, health indices, and the increased life expectancy, there is an increase in a number of cataract patients. The only remedy is to perform hospital based cataract surgery on a large scale. The earlier studies conducted in India reported that extracapsular cataract extraction (ECCE) by manual small incision cataract surgery (SICS) which involves the removal of nucleus through a scleral tunnel through 5.5-8 mm incision with posterior chamber intraocular lens (IOLs) implantation is the best rehabilitation of patients with cataract.^{5,6} Owing to complex mechanism

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Corresponding Author: Dr. Mohammed Nazarul Islam, 75, Dr. Biresh Guha Street, Kolkata - 700 017, West Bengal, India.
E-mail: nazarul_islam24@yahoo.com

and less cost-effectiveness of phacoemulsification, its use is limited and not practiced widely in cases of the large volume of surgeries.⁷ More recently, the WHO global initiatives have called for a dramatic increase in surgical volumes worldwide.⁸ Due to the variable outcome of cataract surgery, the aspect of surgical services needs further evaluation.⁹ In majority part of the world' eye surgery in camps is not practiced owing to lack of safety of the procedure, higher incidence of intraoperative complications during cataract surgery may result in severe visual loss, and thus, there is a debate on the continuation of surgery in camps. In recent times, 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 under strict guidelines made by Ministry of Health, Government of India under National Programme for Control of Blindness. This study was to report the outcomes of cataract screening camps combined with base hospital surgery, in terms of visual outcome.

MATERIALS AND METHODS

A prospective observational study where consecutive cataract patients were recruited during a period of 1 year from April 2014 to March 2015. The eye screening camp for cataract was conducted in the suburban area of Kolkata. Ethics approval was obtained from the Institutional Ethics Committee of a Tertiary Hospital of West Bengal before the commencement of the study. Informed consent was taken from all the diagnosed cases. A total of 228 patients were selected using the inclusion and exclusion criteria that explained in one of the following sections.

Inclusion and Exclusion Criteria

The study has included the patients agreeing to cataract surgery using the SICS procedure and aged above or equal to 40 years. The study excluded the patients who had a complicated cataract, traumatic cataract, uveitis cataract, and other ocular comorbidities which may affect the visual outcome.

Ophthalmic Examination

The detailed medical history was obtained for hypertension, asthma, ischemic heart disease, and diabetes mellitus. Detailed demographic information, pre-operative visual acuity assessment, anterior segment evaluation using slit lamp biomicroscopy, intraocular pressure measurement by Goldman applanation tonometer, biometry. Fundus examination by 90 D, direct ophthalmoscopy, and indirect ophthalmoscopy were done before surgery.

All patients underwent ECCE with posterior chamber IOLs in the capsular bag by manual SICS technique under peribulbar anesthesia. All patients were operated

by ophthalmic consultants. In the case of nuclear sclerosis Grade V and hard cataract, the tunnel was extended. Subconjunctival injection of dexamethasone and gentamicin (80 mg/2 ml) was given. Postoperatively all patients received oral antibiotic (tablet ciprofloxacin 500 mg for 5 days with tablet ibuprofen 400 mg for 3 days) and topical antibiotic-steroid (moxifloxacin with prednisolone acetate) eye drops for 6 weeks in tapering dose along with homatropine 2% eye drops for 2 weeks was advised. The follow-up post-operative schedule was on day 1, 1st week and 6th week to check for best-corrected visual acuity (BCVA) and post-operative complications if any. Every visit slit lamp and fundus finding were recorded in addition to visual acuity. Refractive status was checked on every visit using Streak Retinoscope. Spectacle correction was given at the end of 6th week. Unaided and pinhole visual acuity was recorded using the Snellen's chart from a distance of 6 m. Patients were discharged after 24 h with counseling for post-operative care and follow-up following routine procedures.

RESULTS

All 228 patients underwent ECCE with SICS technique with posterior chamber IOLs implantation under local anesthesia by different consultants. The age of the patient was between 40 and 82 years. Tabel 1 and Figure 1 shows various demographic profile of the patient as follow:

- The sex distribution of the patients showed 99 (43.42%) male and 129 (56.57%) females
- Age wise distribution depicted 162 (71.05%) were above 60 years and 66 (28.94%) were between 40 and 60 years of age
- 148 (64.91%) patients had senile immature cataract, and 80 (35.08%) were senile mature cataract
- Pre-operative visual acuity in 131 (57.45%) had vision counting finger 3 m or even less, 33 (14.47%) had hand movement, 64 (28.04%) had a perception of light only.

Table 2 shows post-operative unaided visual acuity was 6/12 (Snellen's chart) or better by 6th week in 176 (77.19%) cases. Figure 2 shows BCVA of 6/12 to 6/9 and even better by the 6th week in 213 (93.42%) cases and remaining 15 (6.61%) cases having low vision (visual acuity \leq 6/18) was mainly attributed to age-related macular changes, myopic fundus, and optic atrophy.

DISCUSSION

The study was conducted in a series of cases to find the visual outcome selected from outreach screening camps with an aim to find out the visual outcome after hospital based camp surgery. With a schedule of follow-up on

Table 1: Demographic profile of the patients

Characteristics	n (%)
Sex distribution	
Male	99 (43.42)
Female	129 (56.57)
Age wise distribution (years)	
40-60	66 (28.94)
Above 60	162 (71.05)
Stages of cataract	
Immature cataract	148 (64.91)
Mature cataract	80 (35.08)
Pre-operative visual acuity	
<3/60	131 (57.45)
Hand movement	33 (14.47)
Perception of light	64 (28.04)

Table 2: Post-operative visual acuity at 6th week

Characteristics	n (%)
Unaided visual acuity	
6/12 or better	176 (77.19)
BCVA	
6/12-6/9	213 (93.42)
Low vision	15 (6.61)

BCVA: Best-corrected visual acuity

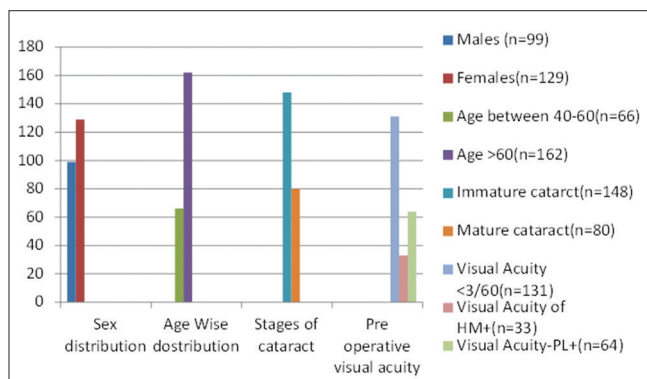


Figure 1: The demographic profile of the patient (n=228)

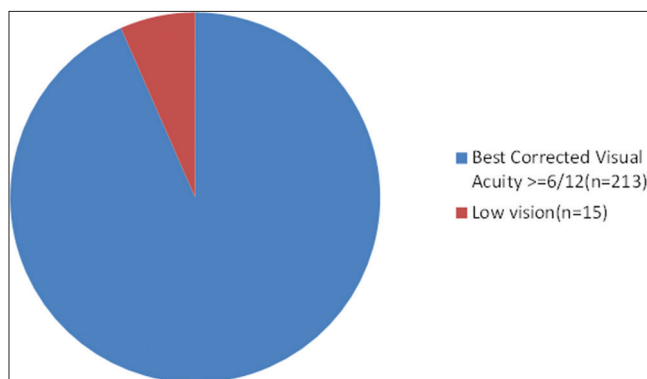


Figure 2: Post-operative visual acuity (n=228)

2nd day, 1st week, and 6th week, BCVA in better eye was found to be 6/12-6/9 in 213 (93.42%) cases which are similar and corroborative to earlier studies of Sudhakar

et al.,¹⁰ who reported a visual acuity of 6/12 or better in 80.7% of cases and Venkatesh *et al.*,¹¹ Ravindra and Rekha,¹² and Kapoor *et al.*¹³ observed and reported a visual acuity of 6/12 or better in 80.7% and 6/18 or better in 80.7 % cases, and 79.9% eyes obtained 6/18 or better, respectively. The study results by Venkatesh *et al.*¹¹ showed that the high quality cataract surgery (94% BCVA 6/18 or better) can be attained in a high volume setting which is very much similar to our study, which depends on choice of surgical technique, standardized protocols and an above all, facilities available in terms of manpower, availability of high quality consumables supporting high turnover and flow of patients. In our study, postoperative astigmatism was 2.0 D with manual SICS with posterior chamber IOLs implantation and it was high compared with the average astigmatism of 0.5 D in the phaco and 1.50 D in the manual SICS reported by Gogate *et al.*⁶ study. The main limitation of this study was that we could not compare the cause for BCVA <6/12 with other studies, as postoperatively follow-up was for 1½ month in small sample size. The study would have given more observation if it had a long duration follow-up.

CONCLUSION

Conclusively it can be said that there is the good visual outcome in hospital based large volume cataract surgery with the average astigmatism of 2.00 D. However, it requires much larger sample size with long-term follow-up.

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