

ORIGINAL RESEARCH PAPER

Efficacy of trabeculectomy and manual small incision cataract surgery with posterior chamber intraocular lens implantation

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ABSTRACT

Introduction: Glaucoma co-existing with cataract is frequently encountered in the practice of ophthalmology. The proposed study aims to evaluate the results of Trabeculectomy and manual small incision cataract surgery with posterior chamber intraocular lens implantation (Triple procedure) in cataract with glaucomatous eyes on intraocular pressure control, and visual outcome. **Materials and methods:** The study was conducted on 30 cases admitted in Regional Institute of Ophthalmology, Gauhati Medical College. Cataract cases co-existing with primary open angle glaucoma previously receiving maximally tolerated medication, but with poor control; chronic angle closure glaucoma; intraocular pressure above 22mm of Hg and a visually significant cataract; lens induced glaucoma with field defect in the other eye; pigmentary glaucoma were only included for the study. A thorough ocular examination with slit lamp, tonometry, gonioscopy, ophthalmoscopy, field charting and operative procedure with pre-operative and post-operative care was performed after taking informed consent. **Results:** The mean age of the patients were 55.5 years. Thirty eyes of 30 patients underwent trabeculectomy and SICS with PCIOL. The follow ups were 6 weeks and 6 months. There is a significant decrease of intraocular pressure both in first and second post-operative check-up ($P < .05$). However, there is no significant difference of intraocular pressure between first and second post-operative check-up ($P > .05$). In present study it was found that visual acuity was improved after the surgical procedure in both first and second post-operative check-up as 86.67% and 84.21% respectively. **Discussion:** Triple procedure (Trabeculectomy and manual small incision cataract surgery with posterior chamber intraocular lens implantation) offers better visual rehabilitation, avoids multiple surgeries, economically more feasible and controls intraocular pressure adequately. **Conclusion:** There is significant control of IOP and

improvement in visual acuity in the patients undergoing triple procedure.

Keywords: Glaucoma; IOP control; triple procedure; visual outcome.

INTRODUCTION

The functional severity of the cataract, the amount of glaucomatous optic neuropathy, the level of intraocular pressure control that aid the surgeon in deciding among surgical approaches.¹ There are differing opinions with regard to management of patients with co-existing glaucoma and visually significant cataracts. According to some cataract extraction alone lowers intraocular pressure.²

However, nearly all eyes with combined intraocular pressure elevation and cataract will require standard medical treatment for glaucoma within the three to six months after cataract extraction.³ If surgical intervention for glaucoma is done first, the procedure may hasten the progression of the cataract.^{4,5}

There are two potential benefits to the combined surgery: The avoidance of transient increase in intraocular pressure in the post-operative period and long-term control of intraocular pressure with one surgical procedure while removing the visual impairment.⁶ That is why, recently the triple procedure has been widely accepted.⁷ Although long

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term pressure control was noted to be improved, the ability of combined procedure to protect against transient increase in intraocular pressure was not addressed.^{8,9}

To avoid the risk of exposure of the patient twice to the intra and post-operative complications; management of both the conditions at the same operative setting is beneficial to the patient.¹⁰

MATERIALS AND METHODS

The present study was conducted on 30 case admitted in Regional Institute of Ophthalmology, Gauhati Medical College over a period of one year.

Inclusion criteria were taken as: (1) Cases having intraocular pressure above 22 mm of Hg and a visually significant cataract. (2) Cases of primary open angle glaucoma previously receiving maximally tolerated medication, but with poor control. (3) Cases of lens induced glaucoma with field defect in the other eye. (4) Cases of chronic simple glaucoma with a field defect in the fellow eye. Cases excluded in this study were: (1) Patients with high myopia. (2) Advanced proliferative diabetic retinopathy of the eye. (3) Uveitis (4) Eyes that had undergone previous filtration surgery. Individual cases were investigated and operated.

A detailed history and clinical examination was done. A examination of eye under slit lamp was done. The examination of the fundus was done with the help of direct and indirect ophthalmoscope and 90 Dioptre lens with slit lamp biomicroscope to evaluate the cupping of optic disc in the operated eye and the fellow eye. Gonioscopy was performed using a three mirror gonio lens. Perimetry was done whenever possible using automated perimeter. Nuclear hardness was evaluated using a slit lamp after dilatation of the pupil to determine a cataract and its grading based on the lens opacity classification system (LOCS-III).

Procedure of trabeculectomy and Manual small incision cataract surgery with posterior chamber intraocular lens implantation was performed by a trained surgeon. All cases received topical steroid antibiotic preparation starting on the next post-operative day onward till the end of 6th week. Patients were examined at 6th week and 6th month to look for control of intraocular pressure and improvement in visual acuity or for any other post-operative complication.

RESULTS

Statistical analysis for the present study was done using IBM SPSS Version 22. The observations were depicted as below.

Table 1 Etiological diagnosis of the cases

| Diagnosis | No of Eyes | Percentage |
|--|------------|------------|
| Primary open angle glaucoma | 18 | 60% |
| Chronic angle closure glaucoma | 7 | 23.3% |
| Lens induced glaucoma with field defect in the other eye | 4 | 13.3% |
| Pigmentary glaucoma | 1 | 3.3% |

Table 1 shows the etiological diagnosis of cases who underwent trabeculectomy and manual small incision cataract surgery with posterior chamber intraocular lens implantation. The mean age of the patients were 55.5 years (range 31 to 80 years). Majority of the cases are Primary open angle glaucoma (60%) followed by Chronic angle closure glaucoma (23.3%), Lens induced glaucoma with field defect in the other eye (13.3%) and Pigmentary glaucoma (3.3%).

Table 2 Age wise distribution of the cases

| Age in Years | No of Cases | Percentage |
|--------------|-------------|------------|
| 31-40 | 3 | 10.00% |
| 41-50 | 14 | 46.67% |
| 51-60 | 7 | 23.33% |
| 61-70 | 5 | 16.67% |
| 71-80 | 1 | 3.33% |

Table 2 depicts highest number of cases (46.67%) is in the age group of 41- 50 years, followed by 23.33%, 16.67%, 10% & 3.33% in the age group 51-60, 61-70, 31-40 & 71-80 years respectively

Table 3 Distribution of cases according to Intraocular Pressure(IOP)

| Range of IOP (mm of Hg) | No of Eyes | Percentage |
|-------------------------|------------|------------|
| 21-30 | 1 | 3.3% |
| 31-40 | 16 | 53.3% |
| 41-50 | 8 | 26.7% |
| 51-60 | 3 | 10.0% |
| 61-70 | 2 | 6.7% |

Table 3 reveals Out of all the cases majority (53.3%) have IOP in the range of 31 - 40 mm of Hg.

Table 4 Showing mean and ±SD of Pre, 1st and 2nd Post-operative values of IOP (mm of Hg)

| | Pre-OP | 1st Post-Operative | 2nd Post-Operative |
|---------|--|--------------------|--------------------|
| Mean | 41.33 | 17.68 | 16.51 |
| ±SD | 10.82 | 7.39 | 2.76 |
| P value | Between Preoperative and respective column | --- | .00* |
| | Between 1st and 2nd post operative checkup | --- | .26** |

(p value * p <.05 = Significant)

The study reveals there is a significant decrease of intraocular pressure both in first and second post-operative check-up (P<.05). However, there is no significant difference of intraocular pressure between first and second post-operative check-up (P>.05) (**Table 4**).

Table 5 Response of visual acuity after surgery

| | 1st Post-Operative | Percentage | 2nd Post-Operative | Percentage |
|-----------|--------------------|------------|--------------------|------------|
| Improved | 26 | 86.67% | 16 | 84.21% |
| Unchanged | 2 | 6.67% | 1 | 5.26% |
| Worsened | 2 | 6.67% | 2 | 10.53% |
| Total | 30 | 100.00% | 19 | 100.00% |

Table 5 depicts that visual acuity was improved after the surgical procedure in most of the cases in both first and second post-operative check-up (86.67% and 84.21% respectively). Small number of patients shows unchanged or worsening of visual acuity, which can be attributed to other factors like intra operative complications, cystoids macularoedema etc.

However about one-third of the patients were lost in follow up, which can be attributed to higher percentage of cases showing worsening of visual acuity in second follow up.

DISCUSSIONS

Glaucoma and cataract are encountered fairly often in patients seeking relief from visual impairment. The visual rehabilitation of patients with glaucoma and cataract appears to be difficult. Extraction of cataractous lens alone rarely relieves glaucoma and hence medical treatment for glaucoma is necessary for life long after lens extraction.¹¹ The problem can be tackled either by doing filtering surgery first followed by lens extraction at a later date (two stage surgery) or filtering surgery and lens extraction with posterior chamber intraocular lens implantation (triple procedure) at the same time.¹² The advantage of triple procedure is enhanced visual rehabilitation and significant control of intraocular pressure.¹³ The avoidance of transient increase in intraocular pressure in the post-operative period and long term control of intraocular pressure with one surgical procedure while removing the visual impairment Hence the procedure is becoming more and more popular nowadays.¹⁴

From the study we found that there is a significant decrease of intraocular pressure in first and second post operative check-up ($P < .00$).¹⁵ In present study it was seen that in most of the cases visual acuity was improved after the surgical procedure in both first and second post operative check-up.¹⁶

The present study suggest that triple procedure is a cross-effective and better way to manage co-existing glaucoma with cataract cases.

CONCLUSION

Glaucoma and cataract are important causes of ocular morbidity in singly or in co-existence. Medical management for controlling intraocular pressure needs live long follow up, while triple procedure is an effective way of controlling intraocular pressure and improvement of vision

simultaneously. Another advantage of triple procedure is that only one time hospitalization and short recovery period is required for the patients suffering from glaucoma with cataract. That is why, recently the triple procedure has been widely accepted.

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