

ORIGINAL RESEARCH

Comparison Of Phacotrabeculectomy And Conventional Combined Technique In Coexisting Glaucoma And Cataract Patients

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ABSTRACT

Background: To compare Phacotrabeculectomy and conventional combined technique in coexisting glaucoma and cataract patients.

Materials and Methods: Eighty- eight patients of primary open angle glaucoma with coexisting cataract of both genders were divided into 2 groups of 44 each. Group I patients were treated with Phacotrabeculectomy (PET) and group II patients with extracapsular lens extraction with IOL implantation with Phacotrabeculectomy (ECCE + Trabeculectomy). Parameters such as operative and postoperative complications, control of IOP and visual outcome was recorded at follow up 1 week, 2 weeks, 4 weeks, 6 months and 12 months.

Results: Group I had 24 males and 20 females, group II had 18 males and 26 females. There was significant difference in post- operative IOP recorded at 1 week, 2 weeks, 4 weeks, 6 months and 12 months in both groups. The difference was significant ($P < 0.05$). Visual fields & fundus status was static seen in 100% at 1 week and 2 weeks in both groups, 95% at 4 weeks in both groups, 84% at 6 months in both groups and 80% at 12 months in both groups. It was progressive in 5% at 4 weeks in group I, 11% at 6 months in group I and 13% in group II and 15% at 12 months in group I and 17 in group II. Post- operative complications observed were uveitis in 1 and 3, shallow AC in 3 and 2, hyphaema in 2 and 5 and significant striate in 3 and 6 in group I and II respectively. The difference was significant ($P < 0.05$).

Conclusion: Phacotrabeculectomy provides effective and efficient visual recovery and adequate control of intraocular pressure as compare to conventional combined procedure.

Keywords: Phacotrabeculectomy, intraocular pressure, glaucoma, Visual fields.

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INTRODUCTION

Glaucoma is characterized by cupping the disc, apoptotic degeneration of retinal ganglion cells, and corresponding vision loss. Based on anterior chamber anatomic status monitored by gonioscopy examination, it is classified into open-angle glaucoma and angle-closure glaucoma, and primary angle-closure is intraocular pressure increase because of pupil block.¹

Cataract and glaucoma are globally the most common causes of blindness and they frequently coexist. It is believed that up to 10% of the elderly with cataracts have ocular hypertension (OHT) or glaucoma and in 2040, glaucoma is estimated to affect 111.8 million individuals

worldwide.² Elevated intraocular pressure (IOP) is the only modifiable risk factor for the progression of visual field loss in patients with glaucoma. Among those who cannot achieve satisfactory target IOP and preservation of visual function, the current best practice is to consider filtration surgery.³

The Phacotrabeculectomy, also known as a triple procedure, comprises Phacoemulsification, lens implantation, and Trabeculectomy in one procedure, which aims to remove lens obstacles, improve visual acuity, and decline intraocular pressure. Comparatively, the Phacoemulsification only removes the lens, and the deepens anterior chamber. Today, both procedures are technically mature.⁴ Since small incision phacoemulsification surgery has emerged as the most ideal and widely accepted technique in the management of cataract and considering the safety and efficacy of a valve incision for a closed chamber surgery for cataract it is very much justified to apply this qualitatively superior technique to patients with coexisting cataract and glaucoma as well.⁵ We performed this study to compare phacotrabeculectomy and conventional combined technique in coexisting glaucoma and cataract patients.

MATERIALS & METHODS

A sum total of eighty- eight patients of primary open angle glaucoma with coexisting cataract of both genders were enrolled, after considering the utility of the study and obtaining approval from ethical review committee. A written consent was obtained before starting the study.

Data such as name, age, gender etc. was recorded. All patients were subjected to ocular and systemic evaluation prior to surgery. The visual acuity, anterior segment biomicroscopy, gonioscopy visual field recording and fundus examination was performed. Intraocular pressure was recorded. Patients were divided into 2 groups of 44 each. Group I patients were treated with Phacotrabeculectomy (PET) and group II patients with extracapsular lens extraction with IOL implantation with Phacotrabeculectomy (ECCE + Trabeculectomy). Parameters such as operative and postoperative complications, control of IOP and visual outcome was recorded at follow up 1 week, 2 weeks, 4 weeks, 6 months and 12 months. The results were compiled and subjected for statistical analysis using chi- square test. P value less than 0.05 was set significant.

RESULTS

Table I Patients distribution

Groups	Group I	Group II
Method	PET	ECCE +PET
M:F	24:20	18:26

Group I had 24 males and 20 females, group II had 18 males and 26 females (Table I).

Table II Comparison of post-operative IOP

Period	Groups	11-14 mm	15-20 mm	21-25 mm	26-35 mm	P value
1 week	Group I	28	16	0	0	0.92
	Group II	22	14	6	2	
2 weeks	Group I	20	14	8	2	0.02
	Group II	14	12	10	8	
4 weeks	Group I	12	20	8	4	0.04
	Group II	14	22	6	2	
6 months	Group I	10	16	8	10	0.05
	Group II	8	18	7	11	
12 months	Group I	0	22	20	2	0.03

	Group II	0	14	18	12	
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There was significant difference in post-operative IOP recorded at 1 week, 2 weeks, 4 weeks, 6 months and 12 months in both groups. The difference was significant ($P < 0.05$) (Table II).

Table III Assessment of visual fields & fundus status

Period	Static		Progressive changes	
	Group I	Group II	Group I	Group II
1 week	100%	100%	0	0
2 weeks	100%	100%	0	0
4 weeks	95%	95%	5%	0
6 months	84%	84%	11%	13%
12 months	80%	80%	15%	17%

Visual fields & fundus status was static seen in 100% at 1 week and 2 weeks in both groups, 95% at 4 weeks in both groups, 84% at 6 months in both groups and 80% at 12 months in both groups. It was progressive in 5% at 4 weeks in group I, 11% at 6 months in group I and 13% in group II and 15% at 12 months in group I and 17 in group II (Table III).

Table IV Comparison of post-op complications

Complications	Group I	Group II	P value
Uveitis	1	3	0.02
Shallow AC	3	2	0.92
Hyphaema	2	5	0.01
Significant striate	3	6	0.02

Post-operative complications observed were uveitis in 1 and 3, shallow AC in 3 and 2, hyphaema in 2 and 5 and significant striate in 3 and 6 in group I and II respectively. The difference was significant ($P < 0.05$) (Table IV).

DISCUSSION

Trabeculectomy is often performed prior to cataract surgery since the optic nerve head in these patients is at high risk of damage from postoperative IOP spikes, which is a known phenomenon after cataract surgery and also because postponing the trabeculectomy may increase the risk of visual field loss.^{6,7} On the other hand, performing a trabeculectomy in a phakic eye is challenging due to vitreous pressure that pushes the phakic lens forward during the operation. Trabeculectomy may advance cataract progression, and 6–58 % of the patients have been reported to convert from no cataract at the time of filtration surgery to cataract requiring surgery within the first year.^{8,9} Trabeculectomy-induced cataract progression which necessitates cataract surgery may lead to a subsequent increase in IOP due to bleb failure. It is believed that bleb failure is related to postoperative inflammation and a change in the microenvironment, causing the closure of the filtration route of the aqueous humor, thereby making the filtering bleb dysfunctional.^{10,11} We performed this study to compare phacotrabeculectomy and conventional combined technique in coexisting glaucoma and cataract patients.

Our results showed that group I had 24 males and 20 females, group II had 18 males and 26 females. SM et al¹² compared efficacy and outcome after single site phacotrabeculectomy and conventional combined surgery in 50 cases of coexisting primary open angle glaucoma and cataract. The mean medically controlled preoperative intraocular pressure was 22 mm of Hg by applanation method of tonometry. The range of postoperative intra-ocular pressure after one year was 11 to 22 mm of Hg in first and 14 to 26 mm Hg in second group. Failure to maintain optimum postoperative IOP without Beta-blocker was more frequent after conventional combined procedure. There was no significant difference in incidence and pattern of postoperative complications.

Our results showed that there was significant difference in post-operative IOP recorded at 1 week, 2 weeks, 4 weeks, 6 months and 12 months in both groups. Ahmadzadeh A et al¹³ identified 25 studies with a total of 4,749 eyes. The IOP did not differ significantly between those who underwent phacotrabeculectomy versus trabeculectomy with or without later phacoemulsification. However, phacotrabeculectomy was associated with lower risk of complications and better visual acuity corresponding to a 1.4-line difference compared to trabeculectomy. Other secondary outcome measures did not differ significantly (visual field, needling or revision, number of antiglaucomatous medications, and surgical success).

Our results showed that visual fields & fundus status was static seen in 100% at 1 week and 2 weeks in both groups, 95% at 4 weeks in both groups, 84% at 6 months in both groups and 80% at 12 months in both groups. It was progressive in 5% at 4 weeks in group I, 11% at 6 months in group I and 13% in group II and 15% at 12 months in group I and 17 in group II. Our results showed that post-operative complications observed were uveitis in 1 and 3, shallow AC in 3 and 2, hyphaema in 2 and 5 and significant striate in 3 and 6 in group I and II respectively. Xie et al¹⁴ performed pooled 10 randomized controlled trials. Phacotrabeculectomy has a superior effect in postoperatively intraocular pressure and postoperative anti-glaucoma medications versus phacoemulsification, but an equal effect in best-corrected visual acuity. The complication ratio of phacotrabeculectomy is higher than phacoemulsification.

CONCLUSION

Phacotrabeculectomy provides effective and efficient visual recovery and adequate control of intraocular pressure as compare to conventional combined procedure.

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