

Study to ascertain outcome of cataract surgery in glaucoma patients attending ophthalmology unit in a teaching hospital, Telangana State, south India

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Abstract

Background: Cataract and glaucoma are said to be the 2 major causes of bilateral Blindness with prevalence of 62.6% and 5.80% in India. Phacomorphic glaucoma accounts for 3.9% of all cataract extractions in India. **Aims and Objectives:** To access visual outcome and Intraocular pressure control after cataract extraction in phacomorphic glaucoma patients. **Methodology:** Hospital-based observational, prospective study; conducted from June 2019 to November 2019(6months). 30 Patients diagnosed as Phacomorphic glaucoma are selected for the study. **Results:** The mean age of the study population was 58.25 ± 9.8 years. Most of them are females 22(73%) and males 8 (27%). In 18 cases (60%), the right eye was affected while in 12 cases (40%) left eye was affected. The mean axial length is 23.4 ± 1.2 mm. Anterior chamber depth mean was 2.26 ± 0.72 mm. A total of 12 cases (40%) presented with IOP less than 40 mm Hg, 18 cases (60%) with IOP between 41-50 mm Hg. The highest pressure recorded during the study was 54 mm Hg. Postoperative intraocular pressure was <20 mm of Hg without any medication in 23(77%) of cases and 7(23%) required anti-glaucoma medication to control IOP. Postoperatively gonioscopy was performed after cataract surgery at 6 months follow up showed open angles irrespective of preoperative intraocular pressure. 94% of all operated cases show normal visual fields irrespective of the duration of symptoms. **Conclusion:** Cataract surgery alone is effective in controlling IOP and good visual outcomes with minimal complications. The higher the IOP preoperatively, the prognosis following surgery is poor.

Key Words: Phacomorphic glaucoma, cataract, Intracranial pressure

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INTRODUCTION

Acute secondary angle closure glaucoma due to intumescent cataractous lens is known as Phacomorphic glaucoma. ¹ Intumescent or hyper mature cataracts is an important cause of secondary angle closure glaucoma in India. Cataract and glaucoma are widely prevalent of about 62.6% and 5.80%, These two are major causes of blindness in India.²Phacomorphic glaucoma accounts for 3.9% of all cataract extractions in India.³Phacomorphic glaucoma refers to 'lens-shape' or 'lens-form' according to Greek mythology.⁴ These cases were common in rural areas where eye care services are limited. Duration of symptoms and delayed treatment of cataract extraction is responsible for pre and post-operative complications,

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which is more when compared with a simple, uncomplicated cataract. Prognosis and visual outcome also are affected in some cases. Hence proper, time bound intervention is very important for achieving best results. Even after cataract extraction, there is a chance of recurrence of glaucomatous changes and progression of glaucoma. This study was conducted to ascertain clinical outcome after cataract extraction in phacomorphic glaucoma, i.e. post-operative visual outcome, intraocular pressure control.

METHODOLOGY

This is a hospital based observational, prospective study conducted from June 2019 to November 2019. 30 diagnosed phacomorphic glaucoma patients who attended the Ophthalmology unit of RVM Institute of Medical Sciences and Research Centre, Siddipet, Telangana State.

INCLUSION CRITERIA

All patients diagnosed as phacomorphic glaucoma on the basis of clinical symptoms and signs

EXCLUSION CRITERIA 1.Other eye with primary open angle glaucoma 2.Complicated cataract 3. Other associated ocular diseases 4. Patients who were not willing to participate in the trial.

Ethics and Statistical analysis

The Ethics Committee approval has been taken. Informed and written consent obtained from all patients. Data Analysis was done by using SPSS, version 21, results expressed as percentages.

RESULT

The mean age is 58.25 ± 9.8 years. The range of distribution is 40-68 years. Most of them are females 22(73%) and males 8 (27%). (Figure 1) In 18 cases (60%), right eye was affected while in 12 cases (40%) left eye was affected. (Figure 2) Out of 30 cases, 18 cases (60%) presented with immature cataract and 4 cases (13%) with mature cataract, 8 cases (27%) presented with Pseudophakia. The axial length of phacomorphic eye were divided into three groups as <22 mm, 22-25 mm and

>25 mm. Out of 30 cases, the majority of cases were 22-25 mm i.e., 26(86%), 2 cases had AL of <22 mm and 2 cases had AL of 25 mm. The mean axial length is 23.4 ± 1.2 mm. (Table 1) Majority of the cases, 23(77%) had anterior chamber depth < 2.5mm with a mean of 2.26 ± 0.72 mm. (Table 2) Duration of symptoms of phacomorphic glaucoma prior to the intervention were ranging from 1 - 30 days. Most of them were 12(40 %) in the group of 11-20 days, 8(27%) had 0-5 days, 7(23%) had 6-10 days and 3(10%) had 21-30 days of duration of symptoms. (Figure 3) Pre-operative intraocular pressure ranges vary from 22-54 mm of Hg. A total of 12 cases (40%) presented with IOP less than 40 mm Hg, 18 cases (60%) with IOP between 41-50 mm Hg. The highest pressure recorded during the study was 54 mm Hg. (Figure 4) Among 30 cases, post-operative intra ocular pressure control occurred in 23 (77%) within 1 week of cataract surgery, 5 patients (18%) had IOP control within 2 weeks with topical β -blockers, 2 patients (5%) had IOP control with continuous use of topical β -blockers after 6 weeks. (Figure 5) Out of 30 cases, Postoperative intraocular pressure was <20 mm of Hg without any medication in 23(77%) of cases and 7(23%) required anti glaucoma medication to control IOP. (Table 3) Out of 18% cases, the patients who used anti glaucoma medication (β blockers) post operatively, intraocular pressure was within normal within 2 weeks. Postoperatively gonioscopy was performed at 6 weeks, 3 months and at 6 months. Out of 30 cases, majority of the cases, 22 (64%) reported with open angles without peripheral anterior synechiae, 5 cases (22%) were observed with open angles with PAS <90° and 3 cases (10%) had open angles with PAS <180°. (Table 4) All cases after cataract surgery at 6 months follow up showed open angles irrespective of preoperative intra ocular pressure. But patients presented with preoperative IOP of > 40 mm of Hg showed peripheral anterior synechiae. 94% of all operated cases show normal visual fields irrespective of the duration of symptoms.

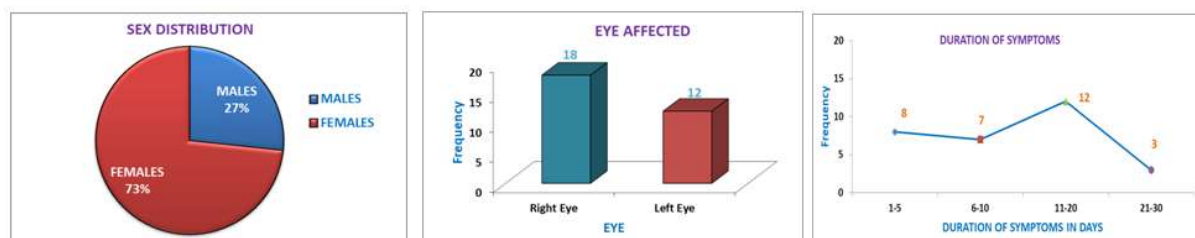


Figure 1: Distribution of cases according to sex; **Figure 2:** Most common eye effected; **Figure 3:** Duration of symptoms prior to intervention.

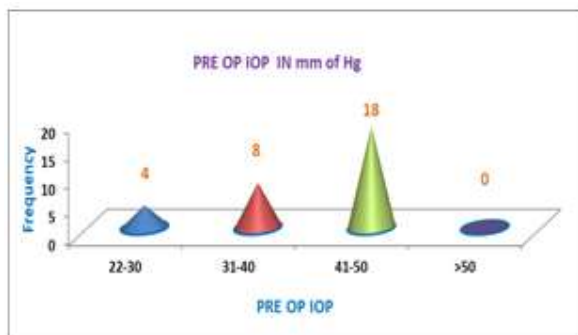


Figure 4: Pre-operative intra-ocular pressure

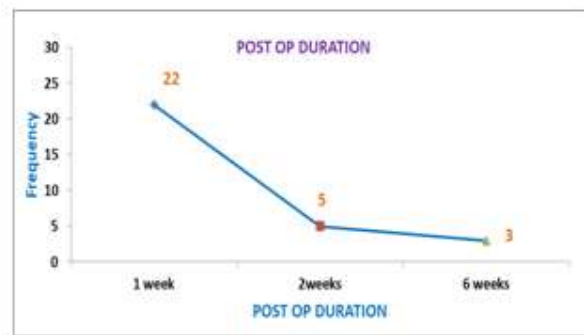


Figure 5: Post-operative IOP Control

Table 1: showing the axial length of the phacomorphic eye

AXIAL LENGTH OF EYE	FREQUENCY	PERCENTAGE
<22 mm	2	7
22-25 mm	26	86
>25 mm	2	7
Total	30	100

Table 2: showing anterior chamber depth of phacomorphic eye

AC DEPTH	FREQUENCY	PERCENTAGE
<2.5mm	23	77
2.5-3 mm	7	23
Total	30	100

Table 3: showing postoperative IOP control with medication

POST OP IOP CONTROL	FREQUENCY	PERCENTAGE
WITH MEDICATION	7	23
WITHOUT MEDICATION	23	77
Total	30	100

Table 4: Post op gonioscopy findings correlated with pre-operative intra ocular pressure

Pre op IOP in mm of Hg (no of cases)	Open angles without PAS	Open angles with PAS <90°	Open angles with PAS <180°
22-30(4)	4(100%)	-NIL-	-NIL-
31-40(8)	7(87.5%)	1(12.5%)	-NIL-
41-50(18)	10(55.5%)	9(50%)	3(19%)
51-60(0)	-NIL-	-NIL-	NIL

DISCUSSION

The mean age of the sample group in the present study is 58.25 Years. The range distribution of age of the patients is from 40-68 years. These findings are similar to the studies conducted by Ramakrishnan *et al*⁵ which reported that the age of the patients ranged from 40-89 years with a sample of 74 eyes. The mean age of the study is 66.6 years, in another study conducted by Jain *et al*⁶, the mean age of the study is 62 years. In this study, females seemed to have an increased risk of having phacomorphic glaucoma compared to males with ratio of 3:1. It is also found that the majority (73%) of cases were females. These findings are similar to the study conducted by Ramakrishnan *et al*⁵ majority of the study group were females accounting 70%, in JWY Lee *et al*⁷. 66% were

females and in Jain *et al*. females included was 53.5%. All cases of phacomorphic glaucoma studied were unilateral. In 18 cases (60%) right eye was affected while in 12 cases (40 %) left eye was affected. Good visual acuity achieved, in cases presented within 20 days (90%) , than the cases presented beyond 3 weeks (10%), whereas poor visual acuity of less than 6/60 was more in cases presented beyond 2 weeks (16%). Pre-operative IOP in present study ranges from 22-54 mm of Hg .The highest IOP recorded in this study was 54 mm of Hg. These findings are near similar to the study conducted by Ramakrishnan *et al*⁵ where preoperative intraocular pressure ranges from 25-70 mm of Hg, the highest IOP recorded in their study was 70 mm of Hg. In Lee *et al*⁷ the pre op intraocular pressure ranges from 24-74 mm of

Hg, the highest IOP recorded in their study was 74 mm of Hg. Axial length of phacomorphic eye out of 30 cases, the majority of cases 26(86%) were included in the group 22-25 mm, 2 cases had AL of <22 mm and 2 cases had AL of 25 mm. The mean axial length is 23.4 ± 1.2 mm which is similar to a study conducted by Lee *et al*⁷, the mean axial length of phacomorphic eye was 23.7 mm which was near similar to study conducted by Sreenivasulu *et al*⁸, the mean axial length of phacomorphic eye was 22.8 mm. Anterior chamber depth of the eye was < 2.5mm in 23(77%) with mean of 2.26 ± 0.72 mm which was similar to the study conducted by Sreenivasulu *et al*⁸, the mean anterior chamber depth of phacomorphic eye was 2.35mm. Post-operative intraocular pressure control in the present study was 23 (77%) within 1 week of cataract surgery, 5 patients (18%) had IOP control within 2 weeks with topical β -blockers, 3 patients (5%) had IOP control with continuous use of topical β -blockers after 6 weeks, this findings differed from study conducted by Ramakrishnan *et al*. and a study by Vidyarani Rajakumari *et al*⁹, the intraocular pressure was under control after cataract extraction. They stopped anti-glaucoma medication immediately after surgery. Out of 23 cases who had postoperative IOP control without any anti glaucoma medication, majority of them showed normal fundus and one patient had glaucomatous disc change. Out of 7 cases, in whom IOP controlled with anti-glaucoma medication postoperatively 6 cases showed glaucomatous disc changes and 1 case had normal fundus, this findings are comparable with study conducted by Jacky Y Lee *et al*¹⁰, all the cases showed normal fundus changes. Postoperatively gonioscopy was performed at 6 weeks, 3 months and at 6 months. Out of 30 cases, majority of the cases 21 cases observed with open angles without peripheral anterior synechiae, 10 cases were observed with open angles with PAS <90° and 3 cases had open angles with PAS <180°. Similar findings were observed by a study conducted by Jacky Lee *et al*. 1110 cases of phacomorphic eyes after cataract extraction gonioscopy findings were observed. 3 cases (30%) showed open angles with PAS <90°. Patients who had undergone early intervention within 1 or 2 days showed open angles without any PAS. 28 (94%) of all operated phacomorphic glaucoma cases, showed normal visual fields irrespective of duration of symptoms.

CONCLUSION

Phacomorphic glaucoma predominantly occurs in elderly female, Time delay between onset of symptoms and surgical intervention plays a major role. Early surgical

intervention shows good visual recovery and IOP control. Late surgical intervention cases showing persistent glaucomatous changes, which require long term anti glaucoma medication and regular follow up. Cataract surgery alone is effective in controlling IOP and good visual outcomes with minimal complications. The higher the IOP pre-operatively, the prognosis for good vision following surgery is poor. A sustained rise of pressure for a long time is a bad prognostic factor for post-operative development of good vision. Hence from the present study and other related studies conclusion is early diagnosis and treatment would prevent blindness from phacomorphic glaucoma.

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