LENS INDUCED GLAUCOMA (LIG): AN EXPERIENCE IN TERTIARY EYE CARE CENTER IN AMBIKAPUR SURGUJA C.G.

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ABSTRACT

Introduction: Lens-induced glaucoma (LIG) was first described in the year 1900 by Gifford and von Reuss independent of each other. While the former described it as a glaucoma associated with hypermature cataract, the latter described it as a glaucoma associated with spontaneous absorption of lens substance through intact lens capsule.

Aims & Objectives: To study the outcome of cataract surgery in subjects with lens induced glaucoma and measures the outcomes in terms of visual acuity and IOP control.

Materials and Methods: This is a Case series of LIG. Fourty patients diagnosed as LIG were included in the study from 1st March 2024 to 30th may 2024 at Department of Ophthalmology RSDKS GMC Ambikapur after taking proper informed consent.

Result: Over a three-month period, 40 cases of lens-induced glaucoma were studied. Phacomorphic glaucoma was the most common type (87.5%), followed by phacolytic (10%) and phacotopic (2.5%). The mean age of patients was 63 ± 10 years, with a female predominance

(57.5%, female-to-male ratio of 1.3:1). At presentation, all patients had visual acuity limited to hand movement or light perception in the affected eye. Fellow-eye examination showed 62.5% with immature cataracts, 27.5% pseudophakic, and 10% with mature cataracts. Most patients (75%) delayed presentation beyond a month due to lack of awareness, financial constraints, and other logistical issues.

Conclusion: LIG remains a preventable cause of vision loss, with timely diagnosis and surgical intervention playing a crucial role. Community awareness programs targeting early cataract management could significantly reduce the burden of LIG in rural areas like Ambikapur.

Keywords: Lens-Induced Glaucoma, Phacomorphic Glaucoma, Phacolytic Glaucoma, Cataract.

INTRODUCTION

Lens Induced Glaucoma (LIG), one of commonest cause of secondary glaucoma due to senile cataracts, mandates an early recognition and management to prevent blindness. It was first described independently by Gifford and Von Reuss. Gifford (Grifford H, 1900) [1] described it as glaucoma associated with hypermature cataract, while Reuss (Reuss V, 1900) [2] described it as glaucoma associated with spontaneous absorption of lens substance through intact lens capsule. The definitive treatment for lens induced glaucoma is cataract extraction (Prajna, 1996; Pradhan, 2001; Rijal, 2006) [3, 4, 5].The outcome following surgery in lens induced glaucoma is primarily related with the duration between the onset of symptoms and the treatment (Rohatgi, 1972; Jain, 1983) [6, 7] Hence detailed knowledge of LIG is necessary for early diagnosis and effective treatment to reduce the ocular morbidity and blindness. The present study comprises consecutive 40 cases of LIG for analysis of demographic profile, visual outcome, IOP control following cataract extraction at Department of Ophthalmology RSDKS GMC Ambikapur, serving patients from Surguja division. To study the outcome of cataract surgery in subjects with lens induced glaucoma and measures the outcomes in terms of visual acuity and IOP control.

MATERIAL AND METHODS

This is a Case series of LIG. Fourty patients diagnosed as LIG were included in the study from 1st March 2024 to 30th may 2024 at Department of Ophthalmology RSDKS GMC Ambikapur after taking proper informed consent.

The data recorded were in terms of age, sex, eye involved, visual acuity, slit lamp examination for corneal edema, anterior chamber depth, pre and post-operative IOP and visual acuity. The duration between symptoms and surgery was also noted. Diagnosis of phacomorphic glaucoma was made when patients presented with symptoms of pain, redness of involved eye, headache, IOP above 21 mmHg and on slit lamp examination shallow anterior chamber (both centrally and peripherally), conjunctival injection, and intumescent lens. Diagnosis of phacolytic glaucoma was made in patient presenting with raised IOP of above 21mmHg, hypermature cataract, deep anterior chamber and flare and cells in anterior chamber.After obtaining informed consent, a proper history was taken, complete ophthalmological examination was conducted and Guarded visual prognosis for surgery explained, the patients (irrespective of the type of LIG) were subjected to further treatment & management. Initially, control of IOP was done with Acetazolamide 250 mg oral two times a day. Topical Timolol maleate 0.5% 12 hourly. Intravenous Mannitol 20% with a dose of 5 ml/kg was given over 30 minutes in cases where intraocular pressure (IOP) was above 30 mmHg prior to the cataract surgery.Topical Prednisolone (1%) six times a day was given to reduce inflammation in phacolytic glaucoma ..All the patients were examined daily post operatively and discharged on second post-operative day. Topical medication comprising of a combination of Gatifloxacin and Prednisolone was started 1 hourly daily for 3 days and tapered over six weeks. A topical Timolol were given. During the discharge, a complete ophthalmological examination was performed. Follow up was carried out in OPD at 1 week and 2nd week from the day of discharge.

RESULT

Table 1: Association between Age in Year and Gender

Age in Year	Male		Female		Total	
	N	%	N	%	N	%
51-60	2	5%	1	2.50%	3	7.50%
61-70	10	25%	16	40%	26	65%
71-80	4	10%	5	12.50%	9	22.50%
>80	1	2.50%	1	2.50%	2	5%
TOTAL	17	42.50%	23	57.50%	40	100%

Table 2: Distribution of Type of Lig.

Type of Lig.	No	%
Phacomorphic	35	87.50%
Phacolytic	4	10%
Phacotopic	1	2.50%
Total	40	100%

Table 3: Distribution of Status of Fellow Eye

Status of Fellow Eye	No	%
Pseudophakic	11	27.50%
Mature	4	10%
Immature	25	62.50%
Total	40	100%

Table 4: Association between IOP (mmHg) & On Admission/ On Discharge

IOP (mmHg)	On Admission	%	On Discharge	%
<10	-	-	2	5%
10-19	-	-	34	85%
20-29	24	60%	3	7.50%
30-39	14	35%	1	2.50%
40-49	2	5%	-	-
>50	-	-	-	-

Table 5: Association between Visual Acuity & On Admission/ On Discharge

Visual Acuity	On Admission	%	On Discharge	%
6/6-6/9	-	-	-	-
6/12-6/18	-	-	11	27.50%
6/24-6/36	-	-	9	22.50%
6/60-1/60	-	-	13	32.50%
CF-1/2M	-	-	5	12.50%
HM	9	22.50%	2	5%
PL	31	77.50%	-	-
NO PL	-	-	-	-
TOTAL	40	100%	40	100%

Table 6: Distribution of Complication

Complication	Number	%
PCR	3	7.50%
Aphakia	5	12.50%

Table 7: Distribution of Duration (In days)

Duration (In days)	Number	%
0-7	2	5%
8-15	3	7.50%
16-30	5	12.50%
>30	30	75%

Over three months period 40 cases of lens induced glaucoma were enrolled. In our study, phacomorphic glaucoma was found to be more common 35 (87.5%) than phacolytic 4 (10%) and Phacotopic 1 (2.5%). The mean age of the study was 63±10 years. There was a female preponderance (57.5%) compared to the male (42.5%) with female to male ratio of 1.3:1. At presentation all patient in the affected eye had visual acuity hand movement or perception of light in the affected eye. Examination of the fellow eye revealed that 62.5% had immature cataract, 27.5% were pseudophakic and 10% were Mature. As many as 75% of patients

presented after 1 month and only 5% presented within a week of their symptoms. When asked specifically said lack of awareness and monetary constraints as the reason for delay in presentation while other reasons being distance to the hospital, nobody to accompany. 32 out of 40 patients underwent small incision cataract surgery with PCIOL implantation, 3 patients had Posterior capsular rent and 5 patients leave Aphakia due to lack of capsular support and irregular anterior chamber. At discharge, 33 of 40 operated eyes (82.5%) had 1/60 or better and 7 (17.5%) had less than 1/60. The IOP at presentation ranged from 21-60 mm Hg and the total mean preoperative intraocular pressure was 39±10 mm Hg. 60% had IOP more than 20 mm Hg at presentation. Following surgery, 32 of 40 eyes (90%) had an IOP of 21 mm Hg or less at discharge without any antiglaucoma medication Intraoperative complications encountered in this study. While performing the surgery, shallow anterior chamber due to posterior vitreous pressure was seen in five patients. Posterior capsular tear resulting in loss of the vitreous occurred in three patients. At discharge, 33 of 40 operated eyes (82.5%) achieved 1/60 or better, 7(17.5%) had less than 1/60 and 12 (30%) less than 3/60.

DISCUSSION

There were 40 case of lens induced glaucoma that underwent cataract surgery in our hospital over a period of three months out of total of 355 senile (>50 years) cataract operated during the same time period. Lens Induced glaucoma accounted for 14.2% of all senile cataract operated. Nirmalan et al [13] reported a prevalence of phacomorphic glaucoma of 3.9% of all cataract surgeries. Mean age of out cohort was 63±10 years similar to the study by other authors (Angara, 1991; Prajna, 1996; Ramakrishanan R, 2010) [3].

Lack of awareness is the main cause of delay in treatment in remote areas. In our study, females seemed to have a significant increased risk of having these glaucomas. The female to male ratio in our study was 1.3:1; it was 1.7:1 in the study by Pradhan et al [4].

The reason for more number of female presenting with LIG may be due to the fact that older females are given less attention to and they are dependent on other family members financially and physically. Secondly, prevalence of cataract itself is more common in females than males (Chaterjee et al) [9].

Moreover females having shallower anterior chamber depth thus making them more prone for angle closure due to phacomorphic glaucoma (Chaterjee et al) [9]. Out of all LIGs in department of ophthalmology RSDKS GMC Ambikapur, phacomorphic was more common (87.5%) than phacolytic (10%) similar to in study by Prajna et al whereas in study by Pradhan et al percentage of Phacomorphic was as high as 72%. We also documented the status of the lens in the fellow eye, more than half of the patients were Immture cataract (62.5%) and pseudophakia (27.5%) in contrast to previous studies where only 3.8% and 6% were pseudophakic (Pradhan, 2001; Prajna, 1996). This statistic points towards improving eye care service. At discharge, 32 (82.5%) patients attained VA 6/60 or better and 7 (17.5%) patients attained VA less than 3/60. In our study the VA at discharge was better compared to Lahan study (Pradhan et al, 2001), but (Prajina et al, 1996) reported that higher than 50% of their study attained VA 6/12 or better.IOP after cataract surgery was below 21 mm of Hg in 90% of our study. Reasons of IOP returning to normal after cataract extraction are the removal of the lens which is the offending cause. In case of Phacomorphic glaucoma the Anterior chamber deepens following lens extraction thereby relieving the angle closure. Similarly in Phacolytic glaucoma the leaked lens protein that are responsible for blocking the Trabecular meshwork are removed from the eye following cataract surgery. Angra et al have recommended combined surgery in patients. Similarly in Phacolytic glaucoma the leaked lens protein that are responsible for blocking the Trabecular meshwork are removed from the eye following cataract surgery. Angra et al have recommended combined surgery in patients with longer duration of attack (>7 days) but a recent study (Senthil et al, 2016) [14] has shown that 97% of their study had IOP <21 mmHg at 6 months follow up following cataract surgery alone and had a faster visual than combined group and hence recommends cataract surgery alone.

CONCLUSION

This study highlights the importance of educating the community about timely cataract surgery and the dangers of lens induced glaucoma. As a result, people in the community would break away from popular belief that cataract should not be operated unless it is matured. Removal of the cataractous lens is the definite and best management of LIG. It is best to counsel the patients about timely surgery in the second eye at the time of discharge after the first eye surgery.

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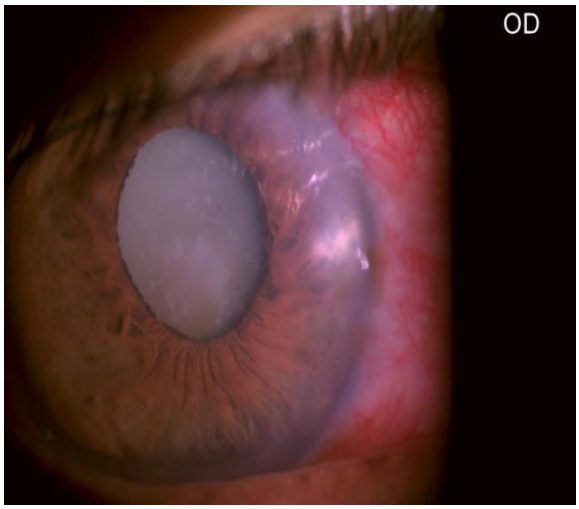
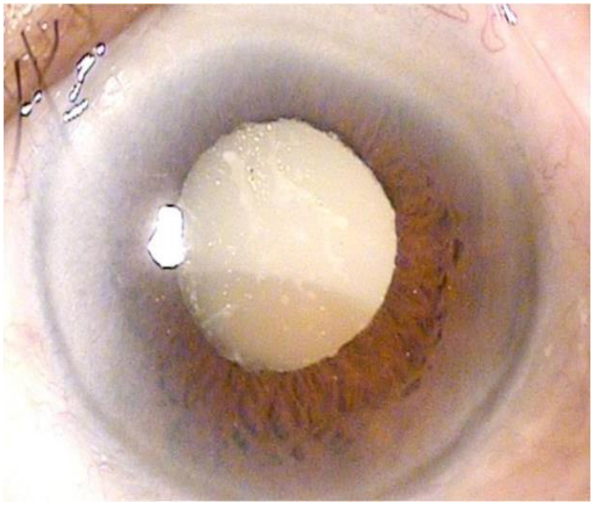
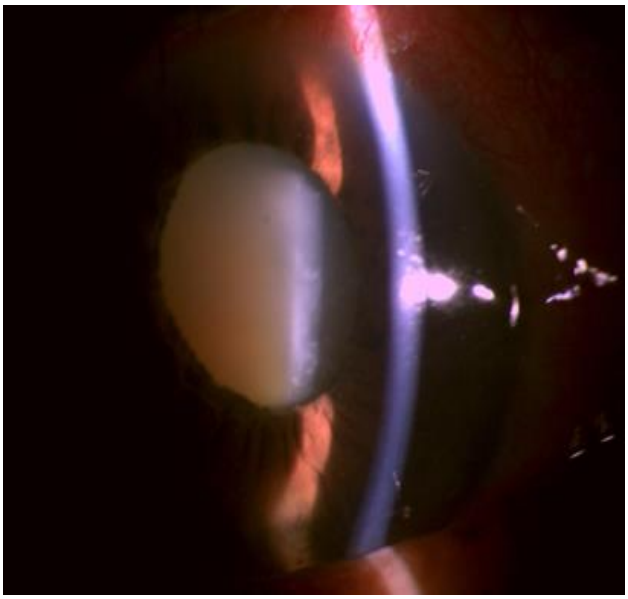


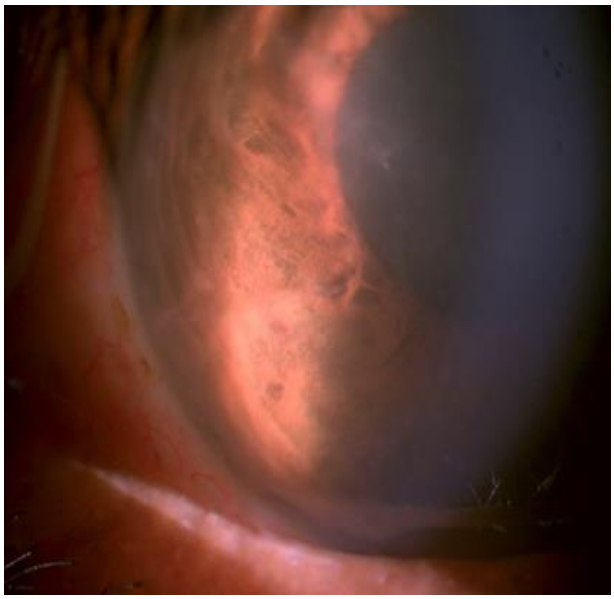
Picture 1: Phacomorphic LIG



Picture 2: Phacolytic LIG



Picture 3: Phacomorphic LIG



Picture 4: Phacolytic LIG