

A study to evaluate visual outcome, IOP control, and complications in patients with lens induced glaucoma following manual SICS

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Abstract

Introduction: Glaucomas in which the lens plays a role, either by size or by position or by causing inflammation have been classified as lens induced glaucomas. Abnormalities of crystalline lens may incite elevation of intraocular pressure often accompanied by intraocular inflammation. In majority of the cases of lens induced glaucoma the management is essentially surgical. However, intensive medical management is tried first to normalize IOP and inflammation.

Methodology: This prospective study to evaluate visual outcome, intraocular pressure control, and complications in patients with lens induced glaucoma following manual Small incision cataract surgery was conducted in the Upgraded Department of Ophthalmology, Govt. Medical College Jammu. A total of 40 patients were included in the study.

Results: Total mean IOP, at presentation was 44.18 ± 11.61 mm Hg (range 22- 60 mm Hg), after medication it was 28.71 ± 9.06 mm Hg and at last follow up it was 16.44 ± 6.54 mm Hg. Finally after the analysis of the data, it was concluded that higher IOP at presentation, the poorer the visual prognosis. In the 40 cases under study, none of the patient had vision better than hand movements close to face at presentation.

Keywords: LIG, SICS, IOP, Visual acuity, Lens induced glaucoma

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Introduction

Glaucoma, in which the lens plays a role, either by size or by position or by causing inflammation is known as lens induced glaucoma. Abnormalities of lens may incite elevation of IOP often accompanied by intraocular inflammation. These pathological conditions are known as phacogenic or lens induced glaucoma¹. These heterogenous group of secondary glaucomas can develop through either open angle or angle closure mechanism.

Lens induced glaucoma has been classified into: A) Phacomorphic and phacotopic glaucoma – secondary angle closure glaucoma B) Secondary open angle glaucoma which may develop in different clinical situations as: Phacolytic glaucoma, Lens particle glaucoma, Phacoanaphylactic glaucoma. Cataract is the most significant cause of bilateral blindness in India as well as on a global scale. The estimated burden of blindness in India is about 12.5 million, with cataract being the cause in 50 to 80%^{2,3}. The lack of need for better vision, concurrent systemic disease, old age and economic constraints are among other reasons for patients not receiving treatment⁴. The management of

lens induced glaucoma is essentially surgical. However, intensive medical management is tried first to normalize IOP and inflammation. The prognosis for good postoperative visual recovery in these conditions remains guarded whatever be the mode of surgical intervention, unless diagnosed early and managed efficiently⁵.

Methods

This study was conducted on 40 patients with LIG to evaluate visual outcome, IOP, and complications following Small incision cataract surgery in Dept. of Ophthalmology, Govt. Medical College Jammu. The inclusion criteria included patients with senile cataract (immature/mature/hyper mature) with the symptoms of pain, redness, watering, nausea, vomiting or headache/fever and with raised IOP. Gonioscopy of the other eye to rule out primary and other secondary glaucoma was done. The patient with symptoms more than 7 days were excluded from the study along with patient with history of glaucoma.

A detailed clinical examination of both eyes by slit lamp biomicroscopy was done and IOP was measured with schiottz tonometry. Based on the slit lamp examination the type of LIG was determined. The clinical features were noted in the study-defined Performa, after patients signed the written and informed consent. At presentation visual acuity, IOP, inflammation including corneal changes were recorded, which were repeated after institution of medical line of treatment. None of the cases had fundal glow at presentation. The detailed history including the duration and progression of diminution of vision, onset of pain,

redness, lacrimation and photophobia in the affected eye and associated systemic symptoms like nausea, vomiting and headache were inquired. In cases where there was corneal edema, IOP was measured after reducing the pressure with iv Mannitol. A detailed examination of the other eye was also done. Medical management consisting of topical steroids, antiglaucoma drugs, analgesics and if pupillary block mydriatic was instituted. Dexamethasone eye drops was the preferred topical steroid instituted at hourly interval which helps to bring down the inflammation. Local antibiotics like ciprofloxacin, moxifloxacin, ofloxacin, gatifloxacin were used in different combination to make the conjunctival sac sterile. To reduce the IOP, Inj. Mannitol 20%, 300ml was given IV along with oral Acetazolamide 500mg stat followed by 250 mg 6th hourly. This was supplemented with topical beta-blockers preferably 0.5% Timolol maleate eye drops bd. After control of IOP, manual small incision cataract surgery with PCIOL implantation was done under local (peribulbar) anaesthesia. The patients were evaluated post operatively for conjunctival congestion, corneal edema, aqueous flare, cells and depth of anterior chamber, fundus, visual acuity and IOP. Patients were followed up on first, fourth and sixth week.

Results

- Forty patients were enrolled in our study. In our study, 80% of the patients were above the age of 55 years, the most frequent type of LIG was Phacomorphic Glaucoma (70%) followed by Phacolytic Glaucoma (25%). Total mean IOP at presentation was 44.18±11.61 mm Hg (range 22- 60 mm Hg), after medication it was 28.71±9.06 mm Hg and at last follow up it was 16.44±6.54 mm Hg (Table 1). In the present study at the end of first week, 47.5% were having poor vision and 65% of the patients developed fairly good vision while 35% still presented with poor vision at 4 weeks postoperatively. At 6 weeks postoperatively (Table 2) only 20% of the patients had vision less than 6/60 while 80% of the patients showed fairly good vision. The intraoperative and postoperative complications were uveitis (40%), cystoid macular edema (2.50%), bullous keratopathy (5%), vitreous loss (7.5%), hyphaema (5%), posterior capsular opacity (2.5%). At the end of the study, it was concluded that if the patients with higher IOP at presentation had worst visual outcome.

Table 1: IOP status at presentation and at 1, 4 and 6 week after Manual SICS

IOP (mmHg)	At presentation	At 1 week	At 4 weeks	At 6 weeks
0 – 21	0	23 (57.50)	29(72.50)	34 (85.00)
22 – 30	4 (10.00)	10 (25.00)	8(20.00)	3 (7.50)
31 – 40	15 (37.50)	3 (7.50)	2 (5.00)	2 (5.00)
>40	21 (52.50)	4 (10.00)	1(2.50)	1 (2.50)
Total	40 (100.00)	40 (100.00)	40(100.00)	40(100.00)

Table 2: Visual acuity at last follow-up (6 weeks)

BCVA	Number	Percentage (%)
6/6 – 6/12	11	27.50
6/18 – 6/60	21	52.50
<6/60	8	20.00
Total	40	100.00

Discussion

In our study, mean age of patients was 45.39±3.78 years with age ranging 38-82 years with highest number of cases 16 (40%) in the age group 66-75 years. Lahan study described LIG presented in 40 to 80 years of age group with highest in the age range of 60 to 69 years (43.1%), indicating that the lens induced glaucomas are a condition of old age⁶. In the present study, statistically (p>0.05), show that no significant association exist between the age group of patients and the disease under study.

Females tend to have a higher risk of developing LIG compared to males with ratio of 1.22:1 in our study. A similar study done at Madurai in 1994 reported significant increased risk of having these glaucoma in females⁵. Lahan study has reported female to male ratio

of 1.7:1⁶. In the present study, 30 (75%) patients were having good vision in the other eye, while the remaining patients 25% had poor vision in the other eye. The patients with fairly good vision in one eye neglected the other eye till affected had undergone complications like LIG. This emphasises on the importance of early treatment of other eye in patients with bilateral cataract.

In our study, it was noted that the most frequent type of LIG was Phacomorphic Glaucoma 28 (70%) followed by Phacolytic Glaucoma 10 (25%). Similar occurrence was noted by Madurai study (52.68%) (Prajna et al., 1996) and Lahan study (72%) (Pradhan et al., 2001). In this study, all the patients with Phacomorphic Glaucoma were above 50 years of age depicting that phacomorphic glaucoma is a disease of

old age, and the finding was consistent with the 1991 Delhi study⁷.

In the 40 cases under study, none of the patient had vision better than hand movements close to face at presentation at presentation, only 10% of the total patients had defective vision. BCVA of 6/18 or better was taken as good visual acuity, and less than 6/60 as poor visual outcome. In this study, BCVA of 6/18 or better is slightly higher 21 (52.50%) than Lahan study series (31.40%) as reported by **Pradhan et al. (2001)**. In our study, number of patients with poor vision of BCVA < 6/60 was higher (8,20%) and patients with good vision with BCVA in this study of 6/12 or better was low 11 (27.50%) in contrast to Madurai study having 59.13% and 11.82% respectively (**Prajna et al., 1996**). The correlation between height of IOP and visual outcome was statistically insignificant ($p > 0.05$). The study also had found no statistically significant association final BCVA and preoperative IOP (**Prajna et al., 1996**). The IOP at last follow up was reduced to normal limits (16.44 ± 6.54 mm Hg) thus indicating that in LIG, IOP should be reduced preoperatively with antiglaucoma medicines followed by surgery and achieving stable IOP postoperatively with no further medications. The IOP was controlled in 95% of patients (less than 21 mm Hg) without the need for any antiglaucoma medication. The 1991 Delhi study on phacomorphic glaucomas was not able to control IOP in 37.5% eyes (**Angra et al., 1991**). The 1990 Vellore study (**Braganza et al., 1998**) on phacolytic glaucoma has found no significant correlation between duration of symptoms and the presenting IOP, as in the present study⁸.

Conclusion

This study has shown the characteristics, risk factors and their sequelae in lens induced glaucomas, and also the importance of early diagnosis, and efficient medical management to control IOP and inflammation, with meticulous surgery and IOL implantation and also proficient postoperative management and follow up would probably achieve excellent visual prognosis. At the end of the study it was concluded that the patients have to be stressed on undergoing surgery when the cataract is still immature and not wait till they develop significant visual symptoms. Also in bilateral cataracts the patients have to be convinced to get both eyes operated rather than being satisfied with the good vision in one eye after surgery. A proper preoperative medical management is necessary to bring the IOP to normal before surgery. Surgical removal of lens with IOL placement is the only surgery of choice in a patient with LIG.

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