International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

A Prospective Study of Lens-Induced Glaucoma and Visual Outcomes Following Cataract Surgery at a Tertiary Eye Care Hospital

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Abstract: ***Lens-induced glaucoma (LIG) is a secondary glaucoma resulting from neglected cataracts and remains a significant cause of preventable blindness in developing countries. Early diagnosis and timely cataract surgery can effectively control intraocular pressure (IOP) and restore vision. This prospective study was conducted to evaluate the clinical profile of lens-induced glaucoma and assess visual outcomes following cataract surgery at a tertiary eye care hospital. Forty patients diagnosed with lens-induced glaucoma were included in the study. All patients underwent detailed ocular examination and were managed with preoperative antiglaucoma medications followed by small incision cataract surgery (SICS) with posterior chamber intraocular lens implantation and peripheral iridectomy. Postoperative follow-up was done at one week and six weeks. Phacomorphic glaucoma was the most common type (70%). At presentation, 90% of patients had IOP greater than 30 mmHg. Postoperatively, most patients achieved good IOP control and significant improvement in visual acuity. At six weeks, 60% of patients attained best-corrected visual acuity of 6/6–6/12. The study concludes that lens-induced glaucoma is a preventable cause of blindness and timely cataract extraction offers excellent visual and pressure outcomes [1–5].***

Keywords: Lens-induced glaucoma; Phacomorphic glaucoma; Phacolytic glaucoma; Small incision cataract surgery; Visual outcome

1. Introduction

Lens-induced glaucoma (LIG) is a distinct clinical entity in which the crystalline lens plays a primary role in the development of secondary glaucoma. It is commonly associated with mature or hypermature cataracts and remains an important cause of ocular morbidity in developing countries [1,2]. Cataract is the leading cause of preventable blindness in India, accounting for approximately 63.7% of cases [2].

With advancing age, the lens continues to grow in thickness and curvature, leading to shallowing of the anterior chamber and increased iridolenticular contact [3,4]. These changes predispose the eye to pupillary block and secondary angle-closure glaucoma, commonly known as phacomorphic glaucoma. In hypermature cataracts, leakage of lens proteins into the anterior chamber can obstruct the trabecular meshwork, resulting in secondary open-angle glaucoma, referred to as phacolytic glaucoma [5].

Despite the availability of effective cataract surgical services, lack of awareness, poor socioeconomic status, and delayed presentation contribute significantly to the persistence of lens-induced glaucoma, especially among the elderly, rural, and female populations. This study aims to evaluate the clinical profile of lens-induced glaucoma and to assess visual and intraocular pressure outcomes following cataract surgery.

2. Materials and Methods

This prospective study was conducted in the Department of Ophthalmology at a tertiary eye care hospital in Ahmednagar from April 2025 to September 2025 [6,7]. Forty patients clinically diagnosed with lens-induced glaucoma were included in the study.

Patients presenting with phacomorphic or phacolytic glaucoma associated with mature or hypermature cataracts were included. Patients with primary glaucoma, other causes of secondary glaucoma, or previous intraocular surgery (except in the fellow eye) were excluded.

All patients underwent detailed ocular examination, including slit-lamp biomicroscopy and measurement of intraocular pressure using Schiotz and applanation tonometry [3,4]. Phacomorphic glaucoma was diagnosed based on symptoms of pain, redness, shallow anterior chamber, corneal edema, intumescent cataract, and raised IOP. Phacolytic glaucoma was diagnosed in eyes with hypermature cataract, intact capsule, anterior chamber flare, and elevated IOP [5].

Preoperative management included intravenous mannitol (100 cc), oral acetazolamide, topical timolol, and topical steroids in cases of phacolytic glaucoma. All patients underwent small incision cataract surgery with posterior chamber intraocular lens implantation and peripheral iridectomy under peribulbar anesthesia. All surgeries were performed by the same surgeon. Postoperatively, patients were treated with antibiotic-steroid eye drops, cycloplegics, and antiglaucoma medications as required. Follow-up was done at one week and six weeks [6–8].

3. Results

A total of 40 patients were included in the study. Females constituted 60% of cases, while males accounted for 40%. The majority of patients were in the 61–70-year age group.

Table 1: Age Distribution of Patients with Lens-Induced Glaucoma (n = 40)

Age Group (years)	Number of Patients	Percentage
51–60	4	10%
61–70	24	60%
71–80	12	30%
Total	40	100%

Table 2: Gender Distribution

Gender	Number of Patients	Percentage
Male	16	40%
Female	24	60%
Total	40	100%

Phacomorphic glaucoma was the most common type of lens-induced glaucoma.

Table 3: Distribution of Types of Lens-Induced Glaucoma

Type of Glaucoma	Number of Patients	Percentage
Phacomorphic Glaucoma	28	70%
Phacolytic Glaucoma	12	30%
Total	40	100%

At presentation, most patients had markedly elevated intraocular pressure.

Table 4: Intraocular Pressure at Presentation

IOP (mmHg)	Number of Patients	Percentage
>30	36	90%
≤30	4	10%
Total	40	100%

The status of the fellow eye varied among patients.

Table 5: Status of Fellow Eye

Fellow Eye Status	Number of Patients	Percentage
Pseudophakic	10	25%
Mature cataract	6	15%
Immature cataract	24	60%
Total	40	100%

Postoperative intraocular pressure showed significant improvement.

Table 6: Postoperative Intraocular Pressure at Discharge

IOP Range (mmHg)	Number of Patients	Percentage
<10	3	7.50%
10–19	28	70%
20–29	9	22.50%
Total	40	100%

Visual acuity improved progressively during follow-up.

Table 7: Visual Acuity at Different Follow-Up Intervals

Visual Acuity	On Admission	On Discharge	1 Week	6 Weeks
6/6–6/12	0 (0%)	4 (10%)	12 (30%)	24 (60%)
6/18–6/60	4 (10%)	24 (60%)	22 (55%)	14 (35%)
<6/60	36 (90%)	12 (30%)	6 (15%)	2 (5%)
Total	40	40	40	40

4. Discussion

Lens-induced glaucoma continues to be a significant cause of preventable blindness in India [1,2]. In the present study, phacomorphic glaucoma was more common than phacolytic glaucoma, consistent with prior studies [6,9]. Female preponderance was observed, likely due to delayed healthcare access [8].

Most patients presented with markedly elevated intraocular pressure, emphasizing the importance of early surgical intervention [3,4]. Small incision cataract surgery with posterior chamber intraocular lens implantation and peripheral iridectomy effectively controlled IOP and restored vision [6,7].

The significant postoperative improvement in visual acuity confirms that the lens was the primary cause of glaucoma in these patients. Similar outcomes have been reported in studies from India and Nepal [10,11].

5. Conclusion

Lens-induced glaucoma is a preventable cause of blindness resulting from neglected cataracts. Early diagnosis and timely cataract extraction provide excellent control of intraocular pressure and good visual outcomes. Small incision cataract surgery is a safe, effective, and affordable treatment option. Public awareness and early cataract intervention are essential to reduce the burden of lens-induced glaucoma [1–5,7].

References

[1] Ministry of Health and Family Welfare. **Problem of blindness in India.** Status of National Programme for Control of Blindness (NPCB). New Delhi: Government of India; 1993. p. 2.

[2] Minassian DC, Mehra U. **3.8 million blinded by cataract each year: projections from the first epidemiological study of incidence of cataract in India.** Br J Ophthalmol. 1990; 74: 341–343.

[3] Sharma RG, Verma GL, Singhal B. **A direct evaluation of Scheie's operation with sclerectomy along with lens extraction in lens-induced glaucoma.** Indian J Ophthalmol. 1983; 31: 639–641.

[4] Jain IS, Gupta A, Dogra MR, Gangwar DN, Dhir SP. **Phacomorphic glaucoma: management and visual prognosis.** Indian J Ophthalmol. 1983; 31: 648–653.

[5] Dhar GL, Bagotra S, Bhalla A. **Lens-induced glaucoma: a clinical study.** Indian J Ophthalmol. 1984; 32: 456–459.

[6] Sharanabasamma M, Vaibhav K. **Management and visual outcome in patients of lens-induced glaucomas at a tertiary eye care hospital in South India.** J Curr Glaucoma Pract. 2016;10(2):68–72.

[7] Rajkumari V, Kaminibabu KS, Bhabanisana RD, Victor R. **Manual small incision cataract surgery in phacomorphic glaucoma: surgical technique and outcome in north-eastern India.** J Curr Glaucoma Pract. 2013;7(2):43–48.

[8] Prasad M. **Lens-induced glaucoma: an entity revisited.** Int J Res Rev. 2020;7(12):404–411.

[9] Jarwal PN. **Clinical study of lens-induced glaucoma at a community health center in India.** TNOA J Ophthalmic Sci Res. 2020;58(3):162–168.
[10] Shrestha R, Godar MS, Gurung S, Devkota P, Manandhar LD, Shrestha N. **Lens-induced glaucoma in a tertiary eye care centre in Western Nepal.** Nepal J Ophthalmol. 2019;11(22):145–151.
[11] Tyagi R, Tarannum S, Dhawan A, Mishra S. **Clinical profile of lens-induced glaucoma at a tertiary centre in North India.** Indian J Clin Exp Ophthalmol. 2019;5(2):169–175.