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Research Article

Post-Surgical Outcomes and Complication Patterns in Lens-Induced Glaucoma: A Prospective Observational Study from South India

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ABSTRACT

Background: Lens-induced glaucoma (LIG) is an important cause of secondary glaucoma in developing countries, usually occurring in association with neglected cataracts and presenting with a sudden rise in intraocular pressure (IOP). Despite advances in cataract surgery, delayed presentation and intervention remain major barriers to achieving good visual prognosis.

Aim: This study assesses post-surgical visual outcomes and complication rates in various subtypes of LIG.

Objective: To study the different types of LIG, preoperative clinical features, postoperative complications, and visual outcomes following cataract extraction.

Methods: A prospective observational study including 80 patients (age >45 years) with clinically confirmed LIG was conducted at PESIMSR, Kuppam, over 18 months. All patients underwent cataract extraction with IOL implantation. Outcomes were evaluated at day 1, week 1, and week 4 post-surgery, focusing on changes in intraocular pressure (IOP), visual acuity, and surgical complications.

Results: Phacomorphic glaucoma was the most common subtype (48.75%), followed by phacolytic (30%). The mean pre-op IOP (38.59 ± 8.91 mmHg) significantly reduced to 16.69 ± 3.91 mmHg at 4 weeks ($p < 0.05$). Visual acuity improved markedly, with 65% achieving 6/6–6/24 vision. Corneal edema (31.25%) was the most frequent complication. A significant association was found between LIG subtype and complication incidence ($p = 0.02$).

Conclusion: Cataract surgery provides favorable visual outcomes in LIG if performed timely. Early diagnosis and aggressive post-op management are key in minimizing complications and preventing irreversible vision loss.

Keywords: Lens-Induced Glaucoma, Phacomorphic, Cataract Surgery Outcomes, Intraocular Pressure, Visual Prognosis, South India.

INTRODUCTION

Lens-Induced Glaucoma (LIG) refers to a spectrum of secondary glaucomas arising from advanced cataracts, often observed in underserved regions. Delayed presentation and suboptimal care contribute to acute rises in IOP, optic nerve damage, and irreversible blindness. LIG includes phacomorphic, phacolytic, phacoanaphylactic, and phacotopic subtypes. Prompt surgical management remains the cornerstone of intervention. This study aims to evaluate post-operative outcomes across LIG subtypes and outline complication profiles.

MATERIALS AND METHODS

Study Design and Setting

A hospital-based prospective observational study conducted at PES Institute of Medical Sciences and Research, Kuppam, from Jan 2023 to June 2024.

Participants:

80 patients aged >45 years diagnosed clinically with LIG.

Inclusion Criteria

- Acute elevation of IOP with associated cataract
- Confirmed subtype: phacomorphic, phacolytic, phacoanaphylactic, phacotopic

Exclusion Criteria

- <45 years of age
- Other secondary glaucomas or trauma-related ocular issues
- Procedures & Assessments:
- All patients received preoperative IOP-lowering therapy (IV mannitol) followed by

cataract surgery (primarily MSICS with IOL implantation). Parameters recorded:

- IOP via non-contact tonometry
- Visual Acuity (Snellen's chart)
- Slit-lamp biomicroscopy
- Fundus and gonioscopic evaluation (when feasible)

Follow-up

Post-op Day 1, Week 1, and Week 4 assessments focused on IOP trend, BCVA (best-corrected visual acuity), and complications.

Statistical Analysis

Performed in SPSS v23. Paired t-test and chi-square test applied; significance at $p < 0.05$.

RESULTS

Demographics:

1) Mean age: 62.34 ± 6.98 years
2) Subtypes of LIG:
    - Phacomorphic: 48.75%
    - Phacolytic: 30%
    - Phacoanaphylactic: 15%
    - Phacotopic: 6.25%

3) IOP Reduction:

- Preoperative: Mean IOP = 38.59 ± 8.91 mmHg
- Post-op Day 1: 22.99 ± 4.27 mmHg
- Post-op Week 1: 17.73 ± 5.43 mmHg
- Post-op Week 4: 16.69 ± 3.91 mmHg

4) Visual Acuity Gains:

- Pre-op: 26.25% had HM; 20% had CF/PL
- Post-op Week 4: 65% attained BCVA of 6/6–6/24

5) Surgical Complications:

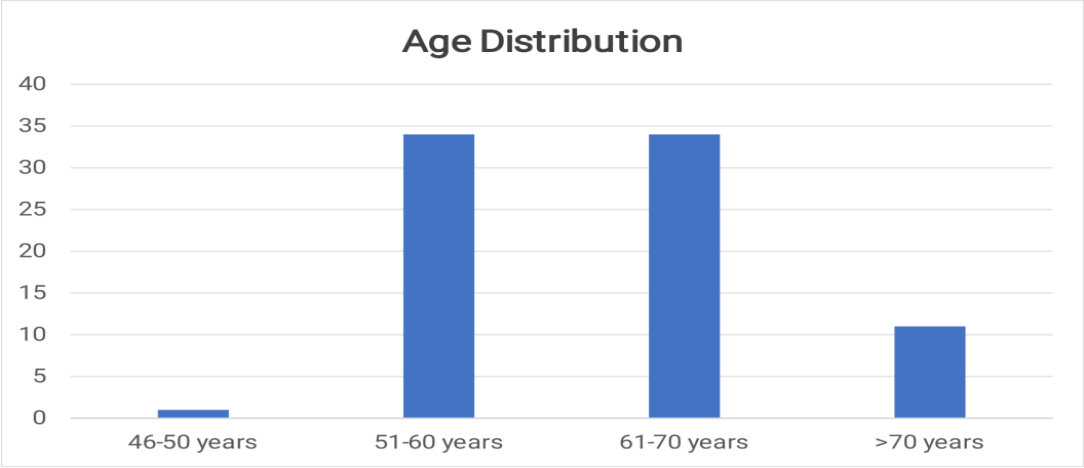
- Corneal edema: 31.25%
- Iritis and AC reactions: ~34%
- Exudative membranes: 8.75%
- Glaucomatous optic atrophy: 1.25%

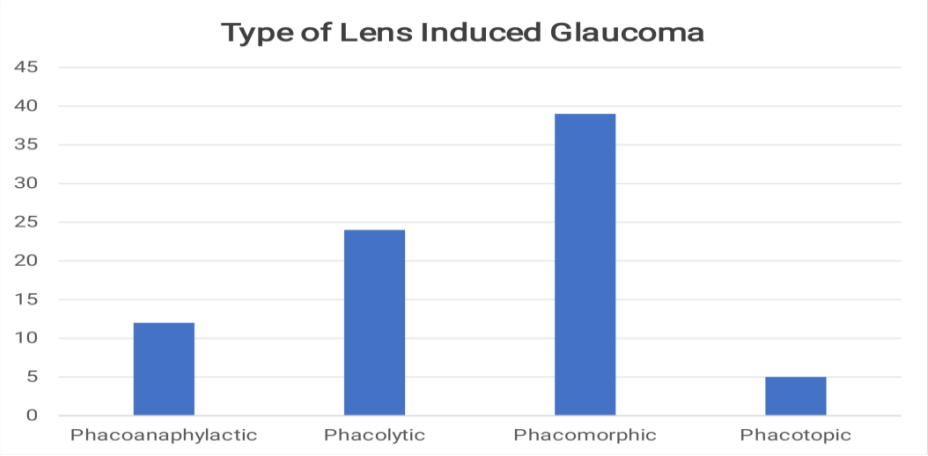
Statistically Significant Associations

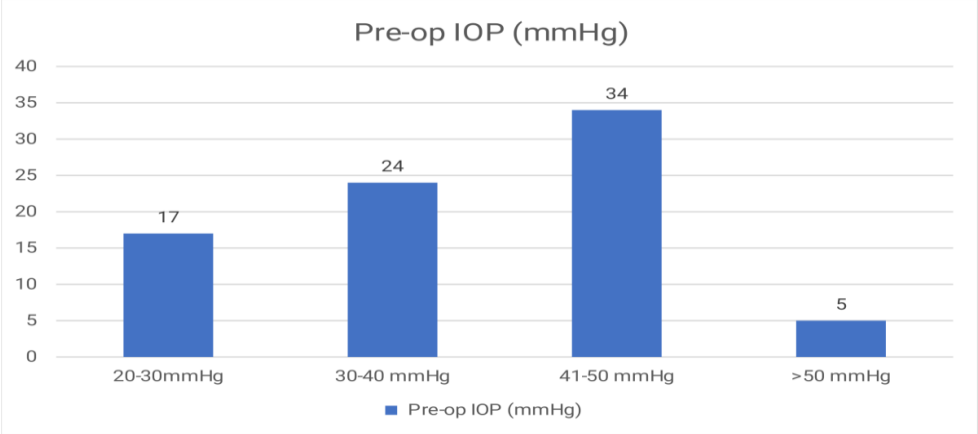
Type of LIG and complication profile: $\chi^2 = 9.11$, $p = 0.0278$

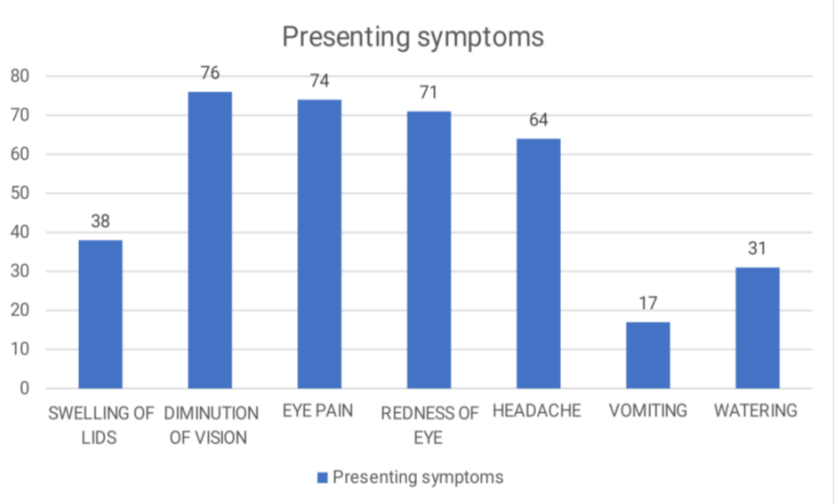
Cataract maturity and LIG incidence: $\chi^2 = 19.08$, $p = 0.00007$

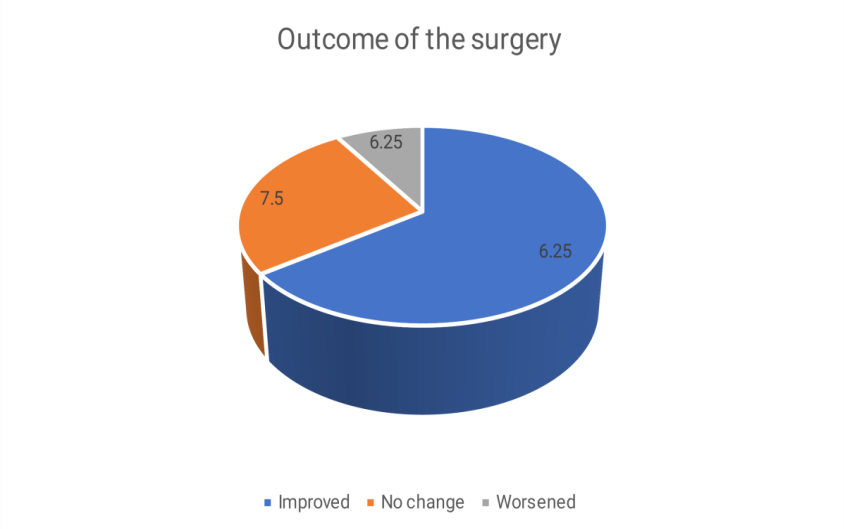
Visual acuity improvement post-op: $p < 0.001$











DISCUSSION

LIG remains prevalent in cataract-endemic populations with limited surgical access. The high proportion of phacomorphic glaucoma reinforces the need for primary eye care awareness. Visual acuity outcomes improved significantly, especially when surgeries were timely. Corneal edema and AC inflammation were common, especially in phacolytic and phacoanaphylactic subtypes, linked to profound inflammatory responses.

Comparison with literature confirms similar trends in complication rates and visual prognosis. The study further validates MSICS as a reliable and cost-effective intervention,

especially in eyes with mature or hypermature cataracts.

CONCLUSION

LIG, though preventable, leads to substantial visual morbidity in underserved populations. This study underscores that early identification, prompt MSICS-based intervention, and meticulous post-op care provide good visual recovery and IOP control, even in advanced cases. Raising community awareness and extending surgical outreach remain essential strategies.

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