

# Visual Outcome in Lens Induced Glaucoma

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## ABSTRACT

### BACKGROUND

Lens Induced Glaucoma (LIG) is a type of secondary glaucoma and is an ocular emergency. It has varied visual outcomes depending on the type and time of presentation after the onset of attack. Thus, the analysis of the magnitude of LIG and assessment of visual outcome after cataract surgery in patients attending tertiary care centers like Regional Eye Hospital, Kurnool, would provide valuable information regarding its morbidity and incidence of blindness.

### METHODS

This is a prospective study done in Regional Eye Hospital, Kurnool, conducted from November 2017 to May 2018.

### RESULTS

In this study, we observed that about 50% of cases were above 60 yrs. of age. The incidence of LIG was more common in females than males in a ratio (F:M-3:2). Phacomorphic glaucoma (67%) was more common than other types. Most patients presented within 3 days of onset. 90% of cases had IOP > 30 mmHg at the time of presentation. SICS/ECCE with PCIOL with peripheral iridectomy was done in 60% of cases. We observed that postop IOP was under control in patients who underwent simple lens extraction with peripheral iridectomy. With early intervention and surgery, post-op complications like exudative membrane, iritis, & glaucomatous optic atrophy was found to be less. In this study, visual acuity after post-op was good in patients (48%) who underwent early treatment and surgery along with peripheral iridectomy after onset of attack.

### CONCLUSIONS

Incidence of LIG is increasing in our society due to the negligence of older people in India due to the lack of attention given to them, especially older women. At the end of 6 weeks, we observed good visual outcome in patients who presented early and treated early after the onset of the attack. In the case of late presentation, lens extraction with PCIOL with peripheral iridectomy showed good visual outcomes.

### KEYWORDS

Lens-Induced Glaucomas (LIG), Intraocular Pressure, Peripheral Iridectomy, Trabeculectomy, Visual Acuity

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**BACKGROUND**

Cataract is one of the preventable causes of blindness, and lens-induced glaucoma is one of the important causes of secondary glaucoma in our population and a common cause of ocular morbidity in the developing world.<sup>1</sup> As the backlog of cataract is increasing, the incidence of lens-induced glaucoma is more often an ocular emergency. Lens-induced glaucoma may be phacomorphic, phacolytic, phacoanaphylactic, & phacotopic. Out of these phacomorphic & phacolytic glaucomas are more common which are seen frequently in our day to day practice.<sup>1</sup> The patient presents with features like pain, redness, watering, circumcorneal congestion, corneal oedema, IOP > 30 mmHg, pupil not reacting to light, lens is in the intumescent stage with shallow chamber. Phacomorphic glaucoma occurs 10yr later than acute congestive glaucoma on an average.<sup>2</sup> It indicates that a swollen lens is mainly responsible for increased IOP rather than narrow angles. Depending on time and type of presentation lens-induced glaucomas has varied visual outcome. Phacotopic, phacoanaphylactic glaucoma is less common when compared with phacomorphic and phacolytic glaucoma. Delayed treatment of senile hypermature cortical cataract leads to lens-induced glaucoma, which compromises the function of the optic nerve due to the rise in intraocular pressure and results in glaucomatous optic atrophy.<sup>3</sup>

In India, barriers like financial, cultural, and psychosocial factors in accessing excellent surgical services still exist.<sup>3</sup> Lack of awareness of complication of cataract and utilization of the available cataract surgical services by the rural community is being sub-optimal, lens-induced glaucoma is a common cause of ocular morbidity in developing countries like India. This study was done with the fact that the swollen lens is the chief causative factor in the production of secondary glaucoma and removal of the causative factor, that is, the lens by surgical method controls IOP and improves the visual outcome. The main aim of the study is to assess the varied visual outcome and intraocular pressure control following lens extraction.

This study aims to observe varied visual outcome in LIG patients attending REH, Kurnool, after cataract surgery. We wanted to compare the visual outcome in patients of lens-induced glaucomas who underwent lens extraction with PCIOL with peripheral iridectomy with that of patients who had undergone simple lens extraction with PCIOL alone. We also wanted to assess the factors affecting visual outcome in lens-induced glaucomas.

**METHODS**

This is a prospective study done in Regional Eye Hospital, Kurnool, conducted from November 2017 to May 2018. 30 patients who were referred from the outpatient department to Glaucoma Clinic with features suggestive of Lens Induced

Glaucoma were included in the study. Cases of LIG due to trauma, secondary cataract, posterior segment pathology were excluded from the study. We recorded a detailed history including the demographic factors and clinical history related to the illness with the duration of the symptoms like a decrease in vision, pain, redness and watering. Complete clinical examination of both eyes was done which included slit-lamp biomicroscopy, Snellen's Visual acuity, intraocular pressure (IOP) measurement by Goldman's applanation tonometer, Gonioscopy, B scan, and Indirect Ophthalmoscopy to assess anterior segment of the eye like lens, depth of the anterior chamber, angle of the anterior chamber and to exclude the posterior segment pathology.

Simple statistical methods were used to analyse the recorded data.

**RESULTS**

Out of 30 cases, 20 were clinically diagnosed as phacomorphic, while nine as phacolytic and one phacotopic aetiology.

Type of LIG	No. of Cases	Percentage
Phacomorphic Type	20	67%
Phacolytic Type	9	30%
Phacotopic Type	1	3%

**Table 1. Types of Lens-Induced Glaucomas and Their Incidence**

Duration	No. of Cases	Percentage (%)
3 Days	16	53%
4 -7 Days	8	27%
8 -15 Days	5	17%
>15 Days	1	3%

**Table 2. Time of Presentation after Onset of Attack**

Type of Surgery	No. of Cases	Percentage (%)
SICS with PCIOL	6	20
SICS with PCIOL with PI	10	33
ECCE with PCIOL	3	10
ECCE with PCIOL with PI	9	30
Combined Surgery	2	7

**Table 3. Types of Surgeries Done**

Post-Op Vision	6/60 or Less	6/60 -6/18	6/18-6/6
With PI(19/30)	5	6	10
Percentage (%)	24	28	48

**Table 4a. Post-Op Visual Outcome after Cataract Surgery with PI**

Post-Op Vision	6/60 or Less	6/60-6/18	6/18-6/6
Without PI(11/30)	5	3	1
Percentage	56	33	11

**Table 4b. Post-Op Visual Outcome after Cataract Surgery without PI**

Complications	With PI (19 out of 30)	Without PI (11 out of 30)
Corneal Edema	30%	60%
Ac Reaction	30%	70%
Iritis	30%	60%
Exudative Membrane	35%	65%
Increased IOP	20%	40%
Glaucomatous Optic Atrophy	30%	60%

**Table 5. Post-Op Complications after Surgery**

## DISCUSSION

Cataract is reported to be the most significant cause of bilateral blindness both in India as well as on a global scale.<sup>1-3</sup> It has been estimated that there are about 12.5 million blind people in India, of which 50 to 80% of this group are blind due to cataract.<sup>4</sup> LIG is a common occurrence in India. LIG may be due to poor health conditions, low socioeconomic status, under controlled systemic diseases like hypertension, diabetes, & negligence, finally fear of second surgery., delayed surgical removal of cataract lens.<sup>5,6</sup> Lens induced glaucoma develops when a long-standing senile cortical cataract becomes mature or hyper mature. Phacomorphic and phacolytic type is being the most common. Though Lens Induced Glaucoma is a preventable and curable condition, it is still prevalent in India, inspite of the easy availability of cataract surgical facilities under the National Programme for Control of Blindness (NPCB) with Government Organizations, NGOs and private practitioners.<sup>7</sup> This is due to late presentation to hospital for treatment, especially in the rural population due to lack of awareness about the disease and utility of available services.

In this study, we observed that 50% of cases were above 60yrs of age, which correlates with study of Raghunandan et al. were 66% cases were found to be in 61-70 years of age, the study of Payal Gupta et al.<sup>7</sup> were 56% cases were found in 61-70 years of age, and the study of Mohindar Singh et al.<sup>8</sup> were 52% cases are above 60 years of age. Incidence of LIG in female was more common than males in this study in a ratio (F:M-3:2) probably due to lack of attention received by older women in India, which correlates with 64% of females and 36% of Males with the ratio of 1.8: 1 in the study of Raghun and an Kothari et al.,<sup>3</sup> 70% females and 30% males (2.3:1) in the study of Ramakrishnan et al,<sup>9</sup> 56% females and 44% males (1.3:1) in the study of Payal Gupta et al,<sup>7</sup> 55% of females and 45.0% of males (1.3:1) in the study of AP Rijal et al<sup>5</sup> and 59% Females and 41% (1.5:1) in the study of Mohindar Singh et al.<sup>8</sup>

In our study, phacomorphic glaucoma (67%) are more common than other types. Most patients presented within 3 days of onset of attack. About 90% of cases had IOP >30 mmHg at the time of presentation. SICS/ECCE with PCIOL with peripheral iridectomy was done in 60% of cases and only SICS/ECCE with PCIOL without peripheral iridectomy done in 40% of cases. Visual acuity after post-op was good in patients (48%) who underwent early intervention along with peripheral iridectomy after the onset of attack. We observed less incidence of post-op complications like an exudative membrane, iritis, and glaucomatous optic atrophy on early intervention. Postop IOP was under control in patients who underwent simple lens extraction with peripheral iridectomy.

LIG is an ocular emergency presenting with acute symptoms. An early diagnosis and management within seven days of onset of symptoms gives good visual outcome.<sup>10</sup>

## CONCLUSIONS

A good visual outcome was observed in patients who presented early and were treated early after the onset of attack. Lens extraction with PCIOL with peripheral iridectomy showed better results. Increasing age, female gender, rural, illiteracy, and delayed presentation to the hospital are the common risk factors for the development of Lens Induced Glaucoma in spite of the easy availability of cataract surgery services. Incidence of lens-induced glaucoma is increasing in our society due to the negligence of older people due to lack of attention given to them, especially older women and lack of awareness about the disease condition and utility services. So, there is a need to educate the patient about the complications of cataract and dangers of lens-induced glaucoma and provide utility services available for easy accessibility and early management to improve the visual outcome.

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