

## Study of risk factors leading to Precipitation of Lens induced Glaucoma

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### Abstract:

#### Background:

In majority of the cases Lens Induced Glaucoma occurs due to unoperated senile cataract. It is one of the most common cause of secondary glaucoma in India. The purpose of study is to know about different risk factors predisposing to Lens Induced Glaucoma.

#### Material and Methods:

A retrospective study on 44 patients was conducted in the ophthalmology department of Nalanda Medical College & Hospital, Patna. Detailed history regarding age, sex, residence, socioeconomic status, educational qualification, occupation and surgical history of the other eye were noted.

**Inclusion criteria:** Clinically diagnosed cases of Lens Induced Glaucoma attending the OPD of ophthalmology department of NMCH, Patna.

**Exclusion criteria:** Post traumatic cases of Glaucoma or isolated Glaucoma patients without cataract.

#### Results:

In present study of 44 Lens Induced Glaucoma patients, 25(56.82%) were female while 19(43.18%) were male, 35(79.54%) had pseudophakic fellow eye, 7(15.91%) patients with immature senile cataract and 2(4.55%) patients had mature cataract in other eye, 29(65.91%) were phacomorphic type, 13(29.54%) presented as phacolytic type while in 2(4.55%) cases cataractous lens were subluxated. Among 35 patients of operated one eye, 30(85.71%) patients had BCVA more than 6/12 and these patients visited hospital with Lens Induced Glaucoma in second eye 3 years after the first eye surgery. 5 (14.29%) patients with pseudophakic other eye had BCVA less than 6/12 (between 6/18 to 6/60) and these patients came to hospital with LIG in second eye within 2 years of the first eye cataract surgery.

#### Conclusion:

This study enlightens the knowledge about importance of educating the community for timely cataract surgery and danger of Lens Induced Glaucoma and encouraging people for timely cataract operation especially in fellow eye of rural and remote residing people of low socioeconomic status.

**Key Words:** Lens Induced Glaucoma, Pseudophakia, Cataract.

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### I. Introduction

Lens Induced Glaucoma (LIG) was first described in the year 1900 by Gifford<sup>1</sup> and Von Reuss<sup>2</sup> independent of each other. Gifford described it as a Glaucoma associated with Hypermature Cataract. Reuss described it as a Glaucoma associated with spontaneous absorption of Lens substance through intact Lens capsule. Lens Induced Glaucoma is one of the commonest cause of Secondary Glaucoma in India and other developing countries due to delay in cataract removal<sup>3,4</sup>. Cataract is the most common cause of blindness in India<sup>5</sup>. Senile cataract occurs when normal crystalline lens loose its transparency due to ageing process. When left untreated it swells due to osmotic effect of degenerated lens proteins.

Lens Induced Glaucoma presents as Secondary Glaucoma with pain, redness, diminution of vision, acute rise of intraocular pressure(IOP) having hypermature or mature or rarely immature senile cataract in affected eye and normal IOP & open angle in fellow eye, these symptoms relieved quickly after cataract extraction in affected eye<sup>6,7</sup>.

Definitive treatment of LIG is removal of cataractous lens after prompt medical control of IOP<sup>8,9</sup>. It is seen that visual outcome is better if LIG patients are operated earlier, otherwise due to long duration of preoperatively raised IOP causes Glaucomatous optic atrophy with guarded visual prognosis. So, late presentation of LIG is one of the most important cause of irreversible loss of vision in India.

## II. Aims of the study

The purpose of study is to know about different risk factors predisposing to Lens Induced Glaucoma.

## III. Material and Methods

A hospital based retrospective study was conducted in the ophthalmology department of Nalanda Medical College & Hospital, Patna. 44 patients with signs and symptoms of Lens Induced Glaucoma presenting to OPD were included in this study. Detailed history regarding age, sex, residence, socioeconomic status, educational qualification, occupation and surgical history of the other eye were noted. Informed consent was taken from each patient for the study. Diagnosis of Lens Induced Glaucoma was done mainly on the basis of clinical signs and symptoms which were painful loss of vision, redness, presence of an intumescent hypermature, mature or immature cataract with raised IOP in affected eye and normal IOP & open angle in fellow eye. In clinical examination Best Corrected Visual Acuity(BCVA) were noted through Snellen's Chart and tonometry of both eyes were done by Schiottz tonometer. During slit lamp examination(SLE) depth and angle of anterior chamber & status of lens were examined.

Phacolytic type of Lens Induced Glaucoma was diagnosed on Slit Lamp Examination when patient presented with severe pain and redness with longstanding diminished vision, having corneal oedema, normal or deep anterior chamber containing liquefied lens particles and hypermatureMorgagnian Cataract in some cases. Some cases of LIG also presents with subluxatedcataractous lens.

Patients of Phacomorphic type of Lens Induced Glaucoma presented with severe pain with red eye and longstanding diminished vision. On slit lamp examination ciliary congestion, corneal oedema, shallow anterior chamber, dilated and fixed pupil with intumescent cataract & raised IOP were noted in affected eye while normal IOP & open angle in the fellow eye.

### Inclusion criteria:

Clinically diagnosed cases of Lens Induced Glaucoma attending the OPD of ophthalmology department of NMCH, Patna.

### Exclusion criteria:

Post traumatic cases of Glaucoma or isolated Glaucoma patients without cataract.

## IV. Results

In present study of 44 Lens Induced Glaucoma patients, 25(56.82%) were female while 19(43.18%) were male (Table 1). Majority of patients 41(93.18%) belonged to remote and rural areas (Table2). Out of 44 patients 42(95.45%) were illiterate (Table3). Majority of the patients presented in 6<sup>th</sup> to 7<sup>th</sup> decades of life whether male or female(Table1). By occupation, 33(75%) were labourers and farmers while 11(25%) were dependent idle at home(Table4). So, neglected by family members. Almost all patients 42(95.45%) were from low socioeconomic status. Out of 44 patients 35(79.54%) had pseudophakic fellow eye, 7(15.91%) patients with immature senile cataract having visual acuity 6/36 to 6/60 and 2(4.55%) patients had mature cataract in other eye (Table5). 29(65.91%) patients out of 44 LIG were phacomorphic type, 13(29.54%) presented as phacolytic type while in 2(4.55%) cases cataractous lens were subluxated (Table6).

Among 35 patients of operated one eye, 30(68.18%) patients had BCVA more than 6/12 and these patients visited hospital with Lens Induced Glaucoma in second eye 3 years after the first eye surgery. 5 (11.36%) patients with pseudophakic other eye had BCVA less than 6/12 (between 6/18 to 6/60),(Table7) and these patients came to hospital with LIG in second eye within 2 years of the first eye cataract surgery.

**Table 1.**

Age(years)	Male		Female		Total	
	No.	%	No.	%	No.	%
51-60	1	2.27	2	4.55	3	6.82
61-70	10	22.73	16	36.36	26	59.09
71-80	7	15.91	6	13.64	13	29.54
>80	1	2.27	1	2.27	2	4.55
Total	19	43.18	25	56.82	44	100

**Table 2**

Residence	No.	%
Rural	41	93.18
Urban	3	6.82
Total	44	100

**Table 3.**

Literacy	No.	%
Illiterate	42	95.45
<5 <sup>th</sup> Standard	2	4.55
>5 <sup>th</sup> Standard	0	0
Total	44	100

**Table 4.**

Occupation	No.	%
Farmer	17	38.64
Labourer	16	36.36
Dependent	11	25.00
Total	44	100

**Table 5.**

Status of fellow eye	No.	%
Pseudophakic	35	79.54
Mature cataract	2	4.55
Immature cataract	7	15.91
Total	44	100

**Table 6.**

Type of Lig	No.	%
Phacomorphic	29	65.91
Phacolytic	13	29.54
Subluxated	2	4.55
Phacoanaphylactic	0	0
Total	44	100

**Table 7.**

Status of the fellow eye	Vision	No.	%
Pseudophakic	>6/12	30	68.18
Pseudophakic	<6/12	5	11.36
Immature cataract	6/36 – 6/60	7	15.91
Mature cataract	HM	2	4.55
Total		44	100

## V. Discussion

This study tells about predisposing factors that can precipitate Lens Induced Glaucoma. Useful good vision in the operated eye is the most common risk factor especially in illiterate patients residing in rural & remote areas. Low socioeconomic status and distance from hospital are other contributing factors. Since most of these patients have useful good vision in the operated eye which is sufficient for their daily work & day to day life, they are neglecting the other eye by themselves or neglected by family members together till they land up for Lens Induced Glaucoma.

In this study out of 44 patients of Lig, 25(56.82%) were female and rest 19(43.18%) were male. Similar female dominance was also seen in study conducted by Dr VenkateshPrajnaet al<sup>10</sup>.

In this study, phacomorphic type of Lig was highest i.e. 65.91%, phacolytic type was 29.54% while 4.55% had subluxated cataractous lens. Similar finding were seen in study of Dr VenkateshPrajnaet al<sup>10</sup> and Dr Raghunandan Kothari et al<sup>11</sup>.

## VI. Conclusion

This study enlightens the knowledge about importance of educating the community for timely cataract surgery and danger of Lens Induced Glaucoma. So, by spreading awareness by optometrist and health care workers regarding good results of cataract surgery, danger of Lens Induced Glaucoma, encouraging people for timely cataract operation especially in fellow eye of rural and remote residing people of low socioeconomic status may be helpful in reducing incidence of Lens Induced Glaucoma. Its incidence can also be decreased by educating the patient about danger of Lens Induced Glaucoma when they are undergoing cataract surgery of first eye.

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