

## Original Article

# A Prospective Study of Clinical Profile and Factors Affecting Visual Outcome in Phacolytic Glaucoma

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### ABSTRACT:

**Background:** The incidence of phacolytic glaucoma is very common in India, especially in rural areas and in patients of poor socioeconomic status, owing to the delay in getting the cataract removed. **Aim of the Study:** To analyse the clinical profile and factors affecting visual outcome in phacolytic glaucoma. **Materials and Methods:** We carried out a prospective study on 60 clinically diagnosed cases of phacolytic glaucoma. Patients underwent cataract extraction with or without posterior chamber intraocular lens implantation depending upon the feasibility. BCVA was estimated following retinoscopy and refraction at 6 weeks follow up. In those whom intraocular lens could not be implanted. BCVA with aphakic correction was taken for analyzing the visual outcome. The patients were followed up from the time of admission and surgery till 6 weeks post-operatively. **Results:** The age range of subjects included in this study was 56-83 years, with a mean age of 69.84 years. We found 42 (70%) females and 18 (30%) males in our sample. Phacolytic glaucoma was more prevalent in rural areas (75%) and in the lower socioeconomic status group. All cases of phacolytic glaucoma studied were unilateral. In 55% of cases left eye was affected. On analyzing the status of the other eye, 53.33 % of the subjects were found to be pseudophakic and 65% had better than 6/60 visual acuity. We found that 10% of patients presented after 10 days of onset of symptoms, of whom none had better than 6/18 final BCVA. Whereas of those who presented within 3 days of onset of symptoms 66.33% attained final BCVA better than 6/18. Majority (51.66%) of the subjects presented with IOP>40 mmHg. **Conclusion:** There is a significant correlation between duration of symptoms and level of initial IOP and final visual acuity.

**Keywords:** Cataract, Intraocular pressure, Phacolytic glaucoma, Visual acuity, Visual outcome

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### INTRODUCTION:

Cataract in India is the most important cause of preventable blindness accounting to 63.7 percent. Refractive errors and Glaucoma being the second and third respectively.<sup>1</sup> Lens Induced Glaucoma (LIG) which includes many types of secondary glaucoma i.e. phacomorphic and phacolytic glaucoma. Phacolytic glaucoma usually is associated with a mature or hypermature cataract and typically occurs in elderly patients. It occurs in cataractous lenses with intact lens capsules. It typically occurs in older adults. Large mononuclear phagocytes accumulate in masses around the capsule and laden with lenticular material, these clog the trabecular spaces at the angle of anterior chamber and thus induce a rise of ocular tension usually manifesting itself as an acute or subacute glaucoma. Rise in

intraocular pressure will lead on to optic nerve damage and finally result in blindness.<sup>1-3</sup>

An alternative theory is that High molecular weight (HMW) soluble protein from the lens directly obstructs the aqueous outflow. HMW protein is known to increase in the cataractous lens and has been demonstrated in the aqueous of eyes with phacolytic glaucoma in quantities sufficient to obstruct aqueous outflow.<sup>3,4</sup>

Giffords et al in 1900 first described the clinical picture of phacolytic glaucoma. The usual clinical presentation of phacolytic glaucoma consists of abrupt onset of pain and redness in a cataractous eye that has had poor vision for some time. The cornea may be edematous and significant reaction occurs in the anterior chamber. Initial treatment of phacolytic glaucoma consists of controlling intraocular pressure with anti-glaucoma

medications and managing inflammation with topical corticosteroids. Surgical removal of the lens is the definitive treatment.<sup>5-7</sup>

The aim of our study was to analyse the clinical profile and factors affecting visual outcome in phacolytic glaucoma.

**MATERIALS AND METHODS:**

We carried out a prospective study on 60 clinically diagnosed cases of phacolytic glaucoma who attended Ophthalmology outpatient department at Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, Telangana state, India. The study was done during a period of two years, from January 2016 to September 2017 after obtaining institutional ethical clearance and consent from all the patients.

**Exclusion criteria:**

1. Primary Glaucomas, Secondary Glaucomas other than phacolytic glaucoma,
2. Corneal dystrophies and corneal opacities with cataract and
3. Patients lost for follow up.

A detailed history, including presenting complaints, duration of symptoms, cataract surgery in the other eye, was taken. All the patients were subjected to a detailed slit lamp examination. Fundus examination, IOP measurement by applanation tonometry and gonioscopy were done in all cases. Best corrected visual acuity (BCVA) of both eyes were recorded using snellens chart following retinoscopy and refraction. Phacolytic

glaucoma was diagnosed by the presence of corneal edema, deep anterior chamber with a variable content of cells and flare, floating chunks of white lens material and the presence of hypermature morgagnian cataractous lens and IOP above 21 mmHg.<sup>8</sup>

After explaining to the patients about the study procedure, an written informed consent was obtained. After adequate preoperative preparation patients underwent cataract extraction with or without posterior chamber intraocular lens implantation depending upon the feasibility. Patients were hospitalized for at least one day after surgery. On post operative day 1, recording of visual acuity and slit lamp examination were done, focusing on the condition of wound, corneal transparency, anterior chamber activity based on SUN (standardization of Uveitis Nomenclature) working group and positioning of Intraocular lens. Patients were asked to review after 1 week, 3 weeks and 6 weeks subsequently. On each review recording of visual acuity, slit lamp examination, IOP measurement and fundus examination were done. Best corrected visual acuity was estimated following retinoscopy and refraction at 6 weeks follow up. In those whom intraocular lens could not be implanted. BCVA with aphakic correction was taken for analyzing the visual outcome. The patients were followed up from the time of admission and surgery till 6 weeks post-operatively.

Statistical product and service solutions (SPSS) version 19.0 was used for computation of statistical tests. Analysis was done by Chi-Square test and Probability values (p); p value < 0.05 was considered statistically significant.

**RESULTS:**

The age range of subjects included in this study was 56-83 years, with a mean age of 69.84 years and we found 42 (70%) females and 18 (30%) males in our sample. (Table 1).

**Table 1:** Age and Sex Distribution

| Age in Years      | Female | Male | Total |
|-------------------|--------|------|-------|
| 56-60             | 7      | 6    | 13    |
| 60-70             | 15     | 11   | 26    |
| >70               | 20     | 1    | 21    |
| <b>Total</b>      | 42     | 18   | 60    |
| <b>Percentage</b> | 70%    | 30%  | 100%  |

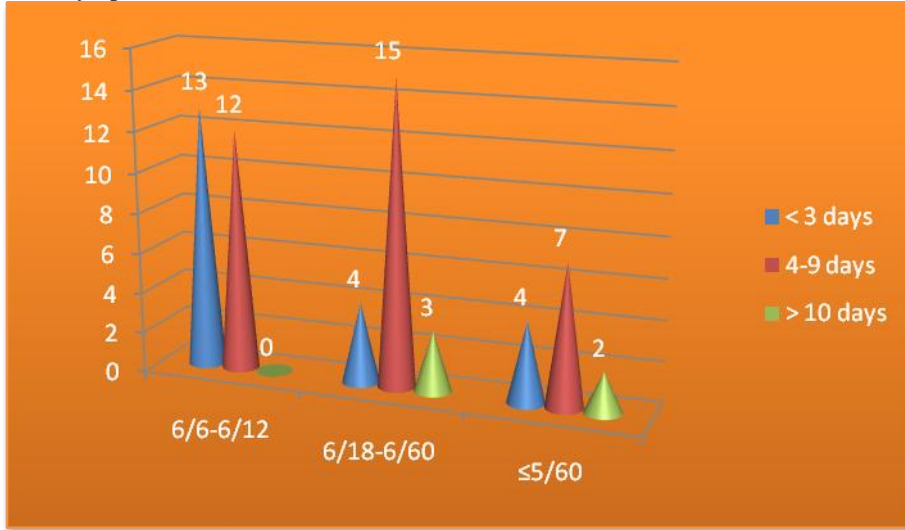
All cases of phacolytic glaucoma studied were unilateral. In 55% of cases left eye was affected (Table 2).

**Table 2:** Distribution Of Cases According To Laterality

| Laterality       | Females | Males | Total | Percentage |
|------------------|---------|-------|-------|------------|
| <b>Right Eye</b> | 19      | 8     | 27    | 45%        |
| <b>Left Eye</b>  | 23      | 10    | 33    | 55%        |
| <b>Total</b>     | 42      | 18    | 60    | 100%       |

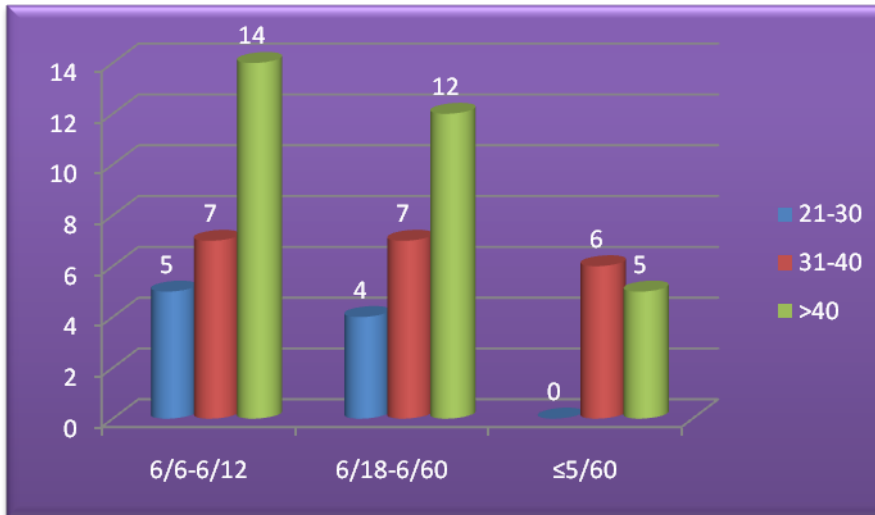
The results are tabulated in the form of Duration of symptoms and final BCVA (Graph 1), which shows that 21 patients had a duration of less than 3 days, 34 had 4-9 days of duration and 5 had a duration of 10 days or more.

**Graph 1:** Duration of Symptoms and Final BCVA



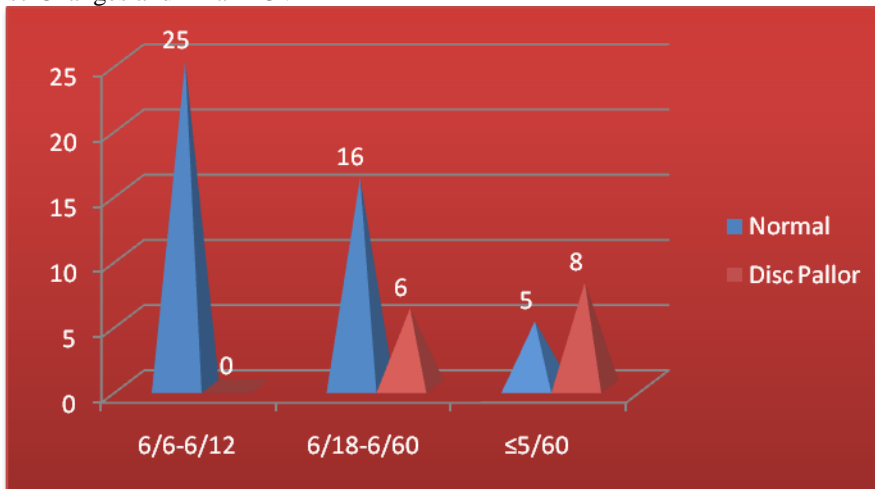
IOP at presentation and final BCVA (**Graph 2**), which shows that 9 patients had a IOP between 21-30, 20 patients between 31 to 40 and 31 patients had an IOP more than 40.

**Graph 2.** IOP at Presentation and Final BCVA



Optic disc changes and final BCVA (**Graph 3**), which shows that 14 had disc pallor and remaining 46 had a normal disc.

**Graph 3.** Optic Disc Changes and Final BCVA



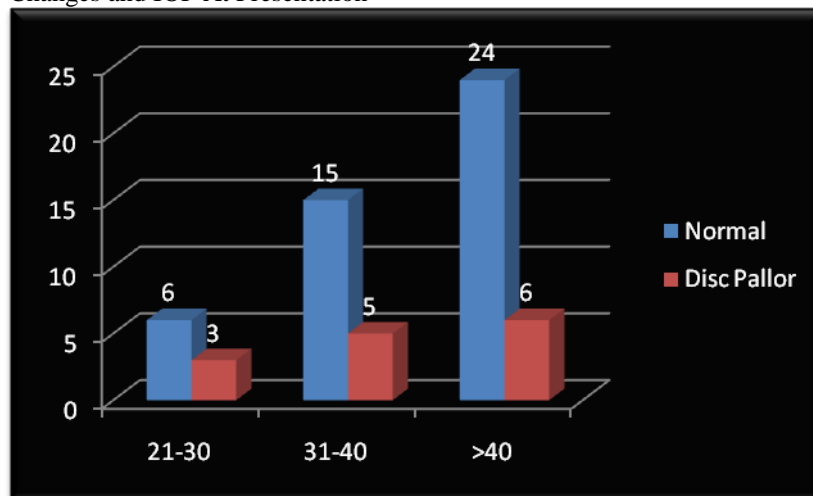
Optic disc changes and duration of symptoms (**Graph 4**) which shows that there were 19 patients with normal disc and 3 with disc pallor, making 22 patients with duration of symptoms less than 3 days, 26 patients with normal disc and 7 with disc pallor, making 33 patients with duration of symptoms less than 4 to 9 days and one patient with normal disc and 4 with disc pallor, making 5 patients with duration of symptoms of more than 10 days.

**Graph 4:** Optic Disc Changes and Duration of Symptoms



Optic disc changes and IOP at presentation (**Graph 5**), showed that there were 6 patients with normal disc and 3 with disc pallor, making 9 patients with IOP between 21-30, 15 patients with normal disc and 5 with disc pallor, making 20 patients with IOP between 31-40 and 24 patients with normal disc and 6 with disc pallor, making 30 patients with IOP greater than 40.

**Graph 5:** Optic Disc Changes and IOP At Presentation



**DISCUSSION:**

Phacolytic glaucoma is a common cause of ocular morbidity. It is characterized by sudden rise in IOP.

**Age:** Our study revealed the age range of patients as 56-83 years, with a mean age of 69.84 years. Our findings are similar to **Gnanadurai et al (2016)**. This finding that phacolytic glaucoma occurred more commonly with increasing age may be probably due to the aggregation of high molecular weight protein over time.<sup>3</sup>

**Sex Incidence:**

We found 42 (70%) females and 18 (30%) males in our sample. **Gnanadurai et al (2016)** found 22 (44%) males and 28 (56%) females in their study.<sup>3</sup> It is possible that phacolytic glaucoma is more common in females because

of socio-economic constraints, but the fact that the prevalence of cataract itself is more common in females than in males should also be considered. The other reason could be lesser attention received by old women in rural India, and also females having shallow anterior chamber, thus making them more prone to angle closure. This finding was also consistent with **Singh et al (1994)**.<sup>9</sup>

**Background:**

Phacolytic glaucoma was more prevalent in rural areas (75%). This might be due to the delay in getting the cataract removed.

**Socioeconomic Status:**

The incidence of phacolytic glaucoma was found to be more in the lower socioeconomic status group in this

study, constituting 83.33% of study subjects. This might be due to the financial constraints which prevent the patients from seeking early medical care for cataract and eventually leading to the stage of phacolytic glaucoma.

#### Unilateral/Bilateral and Risk Factors:

All cases of phacolytic glaucoma studied were unilateral. In 55% of cases left eye was affected. This could be due to surgeons' preference of right eye for doing cataract surgery in patients with equal cataract in both eyes. On analyzing the status of the other eye, 53.33 % of the subjects were found to be pseudophakic and 65% had better than 6/60 visual acuity. Our findings are in accordance with **Kumar VK et al (2011)**. According to them most patients with lens induced glaucoma are pseudophakic in other eye. Hence it can be understood that negligence of one eye with cataract due to satisfactory vision in other eye, poor socioeconomic status, and ignorance of the possible complications of cataract all play a significant role in the incidence of phacolytic glaucoma.<sup>10</sup>

#### Duration of Symptoms:

We found that 10% of patients presented after 10 days of onset of symptoms, of whom none had better than 6/18 final BCVA. Whereas of those who presented within 3 days of onset of symptoms 66.33% attained final BCVA better than 6/18. Though not statistically significant (p value=0.20), it is clinically significant. **Pradhan et al (2001)** found that longer duration of symptoms was associated with poor visual outcome in phacomorphic group, while in phacolytic group, no such association were made out.<sup>11</sup>

#### Intraocular Pressure Findings:

Majority (51.66%) of the subjects presented with IOP>40mmHg. 33.33% of patients presented with IOP between 31 and 40 mmHg. Mean IOP was 37.86 and standard deviation 7.198. IOP range was from 24-56 mmHg. In the study of **Venkatesh et al (2006)**, the mean pre-operative IOP was 46.2mmHg.<sup>12</sup> **Podhorecki J and Munir A (2002)** reported IOP range from 22-71 mm Hg.<sup>7</sup>

#### Management and Outcome:

All patients in the study underwent cataract extraction and intra ocular lens could be implanted in 83.33% of patients; PCIOL in 70% and ACIOL in 11.66%. The rest 18.33% were left aphakic. The final BCVA was assessed at the end of 6 weeks. 41.66% of patients had better than 6/18 visual acuity, 37.33% of patients had visual acuity between 6/18 and 6/60 and 21% of patients had less than 6/60 visual acuity. Final IOP was normal without any medication in 100% of cases at 6 weeks follow up. **Mandal et al (1998)** found that IOP was controlled in all subjects and concluded that lens extraction is the definite treatment of lens induced glaucomas.<sup>13</sup>

Optic disc condition was assessed post operatively and was categorized into two categories, normal and disc pallor. 76.66% of study subjects had normal optic disc. and 23.33% had optic disc pallor. Our findings were similar to **Lisha J Das et al (2017)**.<sup>2</sup>

#### CONCLUSION:

There is a significant correlation between duration of symptoms and level of initial IOP and final visual acuity. Majority of the patients belonged to lower socioeconomic class. IOP became normal in all patients following cataract extraction. Intraocular lens could be implanted in majority of the patients.

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