

## ORIGINAL RESEARCH

# Assessment of clinical profile and visual outcome following treatment in phacolytic glaucoma

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### ABSTRACT

**Background:** Phacolytic glaucoma is characterized by sudden rise in IOP. It is clinically diagnosed by the presence of corneal oedema, aqueous flare with cells, and a normal or deep anterior chamber with floating lens particles in the presence of a hypermature cataractous lens. The present study was conducted to assess clinical profile and visual outcome following treatment in phacolytic glaucoma. **Material & Methods:** 30 cases of phacolytic glaucoma of both genders were selected. Best corrected visual acuity (BCVA) of both eyes were recorded using snellens chart. Visual acuity, slit lamp examination, IOP measurement and fundus examination were done on all recall visits. Small Incision cataract surgery with posterior chamber intraocular lens implantation (IOL) was done after the control of intraocular pressure and inflammation. Postoperative complications were noted. The data was analyzed by simple statistical methods. **Results:** Out of 30 patients, males were 18 and females were 12. There were 16 right and 14 left eyes. 8 patients had <3 days, 12 between 4-9 days and 10 had >10 days history of symptoms. The difference was significant ( $P < 0.05$ ). Pre-operative and post-operative PL doubtful cases were 5 and 0, PL positive were 12 and 0, HM- <3/60 were 13 and 2 and 3/60- <6/60 were 0 and 8 respectively. Patients with visual acuity pre operative and post operative in 6/60- <6/18 were 0 and 18 and 6/18 -6/6 were 0 and 2 respectively. The difference was statistically significant ( $P < 0.05$ ). **Conclusion:** Small incision cataract surgery with PC IOL implantation with controlled preoperative IOP and inflammation is an effective method in the management of phacolytic glaucoma.

**Key words:** Phacolytic glaucoma, corneal oedema, Visual activity

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### INTRODUCTION

Phacolytic glaucoma is characterized by sudden rise in IOP. It is clinically diagnosed by the presence of corneal oedema, aqueous flare with cells, and a normal or deep anterior chamber with floating lens particles in the presence of a hypermature cataractous lens.<sup>1</sup> The pathogenetic mechanism is an inflammatory response due to the micro leakage of high molecular weight lens proteins through an intact anterior lens capsule leading to obstruction of the trabecular meshwork by lens proteins, protein-laden macrophages, and inflammatory debris and was shown to be reversible by lens extraction alone.<sup>2</sup> Phacolytic glaucoma was first described by Gifford in 1900 but it was Flocks et al in 1955 who for the first time showed that it is associated with a leaking hypermature cataractous lens. Various other authors later described the reason for the rise of intraocular pressure (IOP) and demonstrated blockage of the drainage channels by

macrophages that had engulfed lens proteins as well as blockage by the cortical fluid that had escaped from the ruptured lens capsule.<sup>3</sup> More recently, it was shown that high-molecular weight proteins are the causative element of trabecular block in this disease entity. Initially intracapsular lens extraction was the established surgical treatment for phacolytic glaucoma as it was thought that since the capsular and zonular system is weak in these cases, doing an extracapsular cataract extraction (ECCE) could be harmful and could lead to a severe anaphylactic type of uveitis.<sup>4</sup> Since the introduction of modern microsurgical small incision cataract surgery with posterior chamber intraocular lens (PC IOL) implantation, various investigators have shown beneficial results of this surgical procedure even in cases of phacolytic glaucoma.<sup>5</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>6</sup> The present study was conducted to assess clinical profile and factors affecting visual outcome in phacolytic glaucoma.

**MATERIAL AND METHOD**

The present study consisted of 30 cases of phacolytic glaucoma of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. were recorded. A detailed slit lamp examination was done. Fundus examination, IOP measurement by applanation tonometry and gonioscopy if possible were done. Best corrected visual acuity (BCVA) of both eyes were

recorded using snellens chart. After adequate preoperative preparation patients underwent cataract extraction by small incision cataract surgery with or without posterior chamber intraocular lens implantation depending upon the feasibility. On postoperative day 1, recording of visual acuity and slit lamp examination were done, focusing on the condition of wound, corneal transparency, anterior chamber activity. Visual acuity, slit lamp examination, IOP measurement and fundus examination were done on recall visits. The results were evaluated at completion of 6-8 weeks. in relation to visual outcome IOP control and postoperative complications if any. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

**RESULTS**

**Table 1: Distribution of Patients**

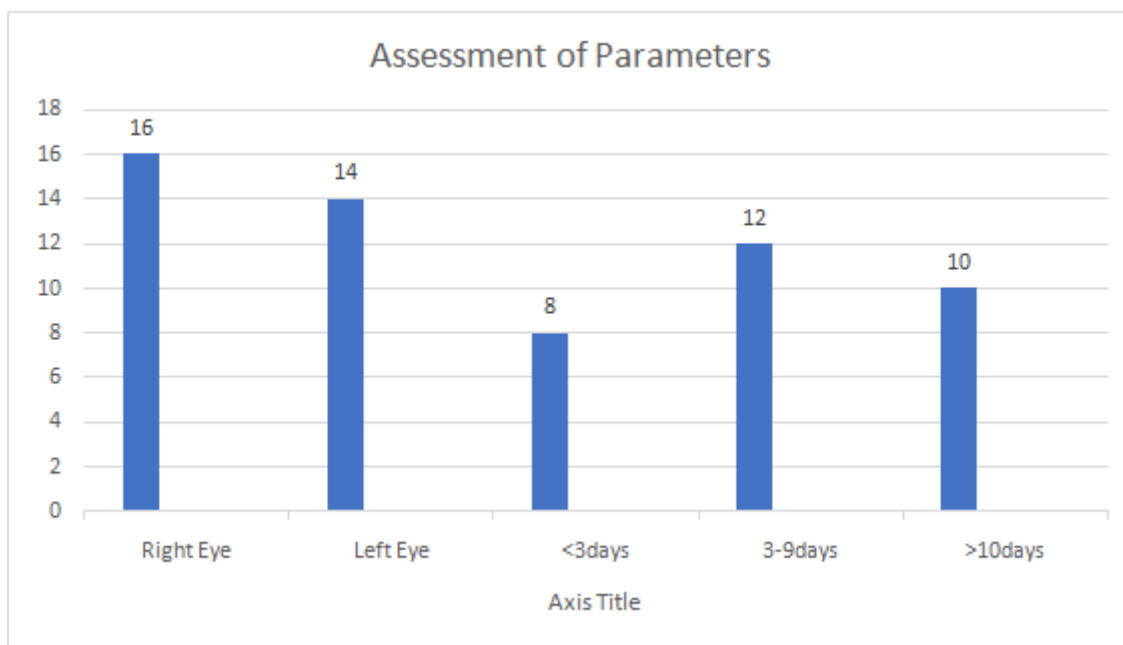
Gender	Male	Female
Number	18	12

Table 1 shows that out of 30 patients 18 were males and 12 were females.

**Table 2: Assessment of Parameters**

Parameters	Variables	Number	P value
Laterality	Right	16	0.91
	Left	14	
Symptoms	<3 Days	8	0.05
	4-9 Days	12	
	>10 Days	10	

Table II, graph I shows that there were 16 right and 14 left eyes. 8 patients had <3 days, 12 between 4-9 days and 10 had >10 days symptoms. The difference was significant (P< 0.05).



**Table 3: Assessment of Visual Acuity**

Snellen's VA	Variables	Preoperative	Postoperative	P value
<6/60	PL doubtful	5	0	0.01
	PL positive	12	0	

	HM-<3/60	13	2
	3/60-<6/60	0	8
>6/60	6/60-6/18	0	18
	6/18-6/6	0	2

Table III shows that pre- operative and post- operative PI doubtful cases were 5 and 0, PL positive were 12 and 0, HM- <3/60 were 13 and 2 and 3/60- <6/60 were 0 and 8 respectively in patients having VA <6/60. In patient with VA >6/60, it was 0 and 18 and 0 and 2 with 6/60- <6/18 and 6/18-6/6 respectively. The difference was significant (P< 0.05).

**DISCUSSION**

Cataractous lenses manifest a number of changes such as protein modification, lipid disturbances, and lens electrolyte imbalance.<sup>7,8</sup> There is increased in the formation of heavy molecular weight (HMW) protein aggregates characterized by linkage of the polypeptide chains through disulfide bonds formed as a result of oxidation of thiol groups on the protein.<sup>9,10</sup>

This leads to an increase in the water insoluble fraction of protein. The lens fibers are broken down into coarse angular fragments and then into smooth eosinophilic globules (Morgagnian globules).<sup>11</sup> As degeneration proceeds, proteins coagulate, lipids, crystals of cholesterol, tyrosine, leucine, and deposits of calcium carbonate and phosphate are formed. Subsequent events depend largely on the state of the capsule.<sup>12</sup> This study of phacolytic glaucoma was to determine the postoperative visual outcome following a planned small incision cataract extraction with PC IOL after the control of raised IOP and inflammation.

We found that out of 30 patients, males were 18 and females were 12. Gnanadurai et al<sup>13</sup> clinically evaluated the presenting features, management, factors affecting the visual outcome and post-operative control of intraocular pressure (IOP) in phacolytic glaucoma. Phacolytic glaucoma occurs mainly in the age group of 50-70 years with a female preponderance. 46% of patients presented with hand movements, 40% with perception and projection of light, 14% with a defective projection of light. The mean pre-operative IOP was 44 mmHg. Iritis (34%) was the most common post-operative complication followed by hyphema (2%). A best corrected visual acuity of 6/12 or better was attained in 66% of patients. Out of 14% of patients presenting with a defective projection of light, only 2% had poor visual recovery

We found that there were 16 right and 14 left eyes. 8 patients had <3 days, 12 between 4-9 days and 10 had >10 days symptoms. Peram et al<sup>14</sup> evaluated the visual outcome of phacolytic glaucoma, a common cause of ocular morbidity. Age group distribution was 19 (63.3%) in >50-60 yrs, 9 (30.0%) in >60-70 yrs and 2(6.4%) in >70 yrs. Sex distribution was 21 (70.0%) of males and 9 (30.0%) of females. Mean age of the all the patients was 60.7 yrs (males 59.95 yrs and females 62.6 yrs). Laterality was RE in 16 (70.9%) and LE in 9 (30.0%). Duration of the presenting symptoms before

reporting to the hospital was 1 week in 13 (43.3%). Mean IOP was 45.8 mmHg preoperatively. Visual Acuity was PL doubtful in 2 (6.6%), PL +ve in 15 (50.0%) and HM6/60 in 22 (73.3%). Postoperative complications were bullous keratopathy in 5 (16.6%), anterior uveitis with membrane on IOL in 7 (23.3%), posterior capsular tear in 3 (10.0%) and Zonular dialysis in 2 (6.6%). Fellow eye showed pseudophakia in 22 (73.4%), immature cataract in 6 (20.0%) and Aphakia in 2 (6.6%)

We found that pre- operative and post- operative PI doubtful cases were 5 and 0, PL positive were 12 and 0, HM- <3/60 were 13 and 2 and 3/60- <6/60 were 0 and 8 respectively having VA <6/60. In patient with VA >6/60, it was 0 and 18 and 0 and 2 with 6/60- <6/18 and 6/18- 6/6 respectively. Raghu et al<sup>15</sup> found that 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 mm Hg.

The limitation the study is small sample size.

**CONCLUSION**

Authors found that small incision cataract surgery (SICS) with PC IOL implantation with controlled preoperative IOP and inflammation is an effective method in the management of phacolytic glaucoma

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