Visual Outcome after Cataract Surgery in Phacolytic Glaucoma

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Abstract

A prospective study was conducted between March 2021 and February 2022 in the National Institute of Ophthalmology & Hospital, Dhaka, Bangladesh involving 30 patients who underwent cataract surgery for phacolytic glaucoma. The aim of this study was to see the postoperative visual outcome of cataract surgery in patients with phacolytic glaucoma. Visual acuity and development of any postoperative complications were recorded. The mean age of the patients was 60.7 years. Female to male ratio was 1.3:1. Most of the patients (67%) presented after 1 week of symptoms. On the first visit, mean preoperative intraocular pressure (IOP) was 37.5 mm of Hg. Following surgery, 93.33% had an intraocular pressure less than 21 mm Hg at discharge. Visual acuity (VA) as perception of light (PL) was found doubtful in 2 (6.67%), while PL was positive in 17 (56.66%) and HM <3/60 was in 11 (36.66%) preoperatively. At discharge, 73.33% achieved VA 6/24 or better, 5 (16.67%) had less than 6/24 and 3 (10%) less than 3/60. Cataract surgery is effective to restore visual acuity and lowering the intraocular pressure (IOP) in patients with phacolytic glaucoma.

CBMJ 2022 July: vol. 11 no. 02 P: 120-124

Keywords: Cataract, phacolytic glaucoma, visual outcome, intraocular pressure, intraocular lens

Introduction

Lens-induced glaucoma was first described in the year 1900 by Gifford and von Reuss.[1,2] Gifford described it as a glaucoma associated with hypermature cataract, while von Reuss described it as a glaucoma associated with spontaneous absorption of lens substance through intact lens capsule. This preventable and curable condition though rare in developed countries is still prevalent in developing countries due to large backlog of cataract, poor health education, poor socioeconomic status, fear of operation.[3] The definitive treatment for lens induced glaucoma is cataract extraction.[4-6] The outcome following surgery in lens induced glaucoma is primarily related with the duration between the onset of symptoms and the treatment and the presence of optic atrophy, uveitis and corneal edema.[4-8] Mode of treatment at present days is extra capsular cataract extraction with posterior chamber intraocular lens (ECCE with PCIOL) implantation. The aim of our study was to see the outcome of cataract surgery in subjects with phacolytic glaucoma and measure the outcomes in terms of visual acuity and control of intraocular pressure.

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Methods

This prospective study was done involving 30 cases of phacolytic glaucoma admitted in the National Institute of Ophthalmology & Hospital, Dhaka, Bangladesh, between March 2021 and February 2022. All patients were diagnosed as phacolytic glaucoma based on clinical symptoms and signs included pain, loss of vision, redness of the eye, headache, presence of mature or hypermature cataract associated with raised intraocular pressure (IOP) (>21 mm of Hg). Patients with primary glaucoma, secondary glaucoma other than phacolytic glaucoma, trauma and previous ocular surgery were excluded. Written and informed consent for the surgery was taken from patients. At presentation, visual acuity, IOP, inflammation including corneal changes were recorded.

A detailed clinical examination of both eyes with slit lamp biomicroscope, included the conjunctiva, cornea, anterior chamber, status of the lens and IOP recording by Goldmann applanation tonometry. Phacolytic glaucoma was diagnosed when patients presented with acute pain in the eye with long-standing poor vision. On examination, the eye showed marked diminution of vision, conjunctival injection, corneal edema, normal or deep anterior chamber containing floating lens particles, and/or with pseudohypopyon in severe cases, and hypermature Morgagnian cataractous lens in few cases. Diffuse keratic precipitates and intense flare were seen. None of the cases had fundal glow at presentation. The aim of treatment for these cases was to preserve useful vision, relief from pain, and reduction of the elevated ocular tension to almost normal levels, which was achieved by both medical and surgical methods.

Analgesia was achieved by lowering down the IOP and by systemic administration of analgesics.

Antiemetics were given in cases of severe vomiting. In all cases, preoperative medication to reduce IOP included either topical timolol 0.5% twice a day, oral acetazolamide 500 mg thrice a day, or intravenous mannitol 20% alone or in combination; and intravenous mannitol 20% was also used before the surgery in refractory cases. Topical phenylephrine 10% was used just before surgery to achieve mydriasis so as to facilitate adequate capsulorhexis. Moxifloxacin eye drops were instilled in all the cases three times per day from the time of admission till the day of surgery as a prophylactic measure to make the conjunctival sac sterile. Systemic, oral ciprofloxacin (500 mg) 12 hourly was given as prophylaxis to prevent postoperative infection as intracameral antibiotics were not used. After obtaining informed consent and explanation of relatively guarded prognosis for surgery, the patients were subjected to Small Incision Cataract Surgery (SICS). Irrespective of the level of fall of tension, all the patients were taken for surgery either on same day or on following day, depending upon patient's condition. In all the patients, after peribulbar block, gentle digital pressure was applied for nearly 8 to 10 minutes to achieve good hypotony. Planned manual small-incision cataract surgery (SICS) with IOL implantation was done in all cases. Thorough anterior chamber wash was given. At the end of the procedure, subconjunctival injection of steroid and antibiotic was given. Postoperatively all the patients received topical antibiotic, steroid; and mydriatic-cycloplegic if required. If severe uveal inflammation was present, then oral prednisolone 1 mg/kg body weight was given in a tapering

dose over 2-3 weeks. If the IOP was above 20 mm Hg, topical timolol 0.5% twice daily or brinzolamide 1% thrice daily were instilled. In cases where tension was above 25 mm Hg, oral acetazolamide was given. All the subjects were followed up regularly at day 1, day 7, day 14 and day 42. At every visit, patients were evaluated for visual acuity with Snellen's chart, IOP by air puff tonometer, slit lamp examination of cornea and anterior segment and optic disc examination with +78D lens.

Results

The study participants were 30 clinically diagnosed phacolytic glaucoma patients. There were 17 females and 13 males. Females outnumbered the males 1.3:1. Their age ranged from 57 to 82 years with a mean of 60.7 years. The youngest patient was a 57years old female and the oldest an 81years old male (Table-I). Visual acuity examined Pre- and post-operatively at 6 weeks has been shown in the table-II. Pre-operative VA was PL in most of the patients: 17 (56.66%), while post-operative VA was found 6/18 – 6/24 in 19 (63.33%) patients. Pre-operative mean intra ocular pressure (IOP) was 37.5 mm Hg (range 25–58 mm of Hg), while post-operative IOP reduced to 12-24 mm Hg (Table-III). While performing the surgery, shallow anterior chamber was observed (due to posterior vitreous pressure) in 10 (33.33%) patients. Posterior capsular tear resulting in loss of the vitreous occurred in 2 patients, and in 3 patients, complete removal of the cortical material could not be achieved. Intraoperative and postoperative complications encountered in this study are as shown in Table-IV.

Table-I: Baseline characteristics of the patients (n=30)

Variables	Number (Percentage)
Age group (in years)	
51-60	17 (56.67%)
61-70	9 (30%))
71-80	3 (10%)
>80	1 (3.33%)
Sex	
Male	13 (43.33%)
Female	17 (56.67%)

Table-II: Visual Acuity (VA) Pre- and Post-operative (n=30)

Variables	Number (Percentage)
Preoperative	
PL doubtful	2 (6.67%)
Pl positive	17 (56.67%)
HM <3/60	11 (36.67%)
Post-operative	
6/6 - 6/12	3 (10%)
6/18 - 6/24	19 (63.33%)
6/36 - 6/60	5 (16.67%)
HM <6/60	3 (10%)

Table-III: Pre- and Post-operative intraocular pressure (IOP)

IOP (mm of Hg)	Number (Percentage)
Preoperative	
<30	7 (23.33%)
30-40	13 (43.33%)
41-50	8 (26.67%)
>50	2 (6.67%)
Post-operative	
10-15	17 (56.67%)
16-20	11 (36.66%)
>20	2 (6.67%)

Table-IV: Intraoperative and postoperative complications

Complications	Number (Percentage)
Intraoperative	
Posterior capsular rent	2 (6.67%)
Shallow AC	3 (10%)
Post-operative	
Anterior uveitis	13 (43.33%)
Striate keratopathy	7 (23.33%)
Optic atrophy	2 (6.67%)

Discussion

Cataract remains the most important cause of blindness in developing countries, affecting mostly the older rural population. Delayed reporting for treatment leads to serious complications like phacolytic glaucoma causing irreversible visual loss. Despite easy availability of surgical facilities with government agencies, NGOs and private practitioners, cataract surgery being a very cost effective and rewarding surgery, still many people are becoming blind due to lack of awareness about significance of early management. Illiterate, older, and rural population are the worst affected. In this study, the age range was 51 to 82 years with a mean age of 62±10 years. Highest number of cases occurred in the age group 50 to 60 years (56.66%). In Lahan study, it has been found that the occurrence of lens induced glaucoma (LIG) is in the age range of 40 to 80 years and highest in the 60 to 69 years (43.1%) age group, indicating that the LIGs are a condition of old age.[5] Females had an increased risk of phacolytic glaucoma over males with a ratio of 1.3:1 in this study, which is comparable to that of a study conducted in Madurai with female preponderance (p=0.05).[4] The ratio between females and males in Lahan study was 1.7:1. It is possible that these entities are more common in females because of socioeconomic repression, and also because of the fact that cataract is more prevalent among females than males. This finding was consistent with data from the Punjab study in India.[5] In this study, good visual acuity of better than 6/60 (6/12-6/60) was achieved in 80% cases. Singh *et al.*[9] had 100% good visual acuity in a study done in India, this may be because of earlier surgical intervention in their series at 6 days of presentation. Main cause of poor visual outcome was optic atrophy in this study, i.e., 3 cases (10%) which is less than earlier studies done at Lahan[4], but similar to the studies at India. At presentation, IOP was more than 30mm Hg in 23 cases (76.66%), which was controlled to normal level 10-21 mm Hg in (93.33%) cases after cataract surgery, alike as it was found in Lahan study where preoperative IOP was >30mm in 79% and postoperative IOP after cataract surgery in 80.7% cases was below 21mmHg.[5] Our study has some limitations, e.g., the duration of this study was only one year and sample size was small (30 cases) and frequent follow-up was challenging for the surgeons.

Conclusion

Phacolytic glaucoma is a condition of old age with increased risk in females. The results have shown that good visual acuity can be achieved in phacolytic glaucoma with meticulous control of IOP and inflammation with medications preoperatively. Planned manual small-incision cataract extraction with IOL implantation, minimal tissue handling, a good follow-up with efficient management of attendant complications, and inflammation are the key factors in the management. Further studies should be done with larger sample size and longer duration along with multicentre involvement.

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