

An In Vivo Study of Intraocular Pressure (IOP) Control, Visual Prognosis and Complications among Phacomorphic Glaucoma Patients following Manual Small Incision Cataract Surgery

Mohammad Ahsan Dar¹, Shazya Gul², Mohammad Shafi Dar³

1-Deptt. Of Ophthalmology, Hind Institute of Medical Sciences Safedabad, Barabanki Road Lucknow. Uttar Pradesh. 2- PG Scholar, Deptt Of Anatomy, Govt Medical College Jammu. 3- Registrar, Deptt. Of Oral and Maxillofacial Pathology, Govt Dental College Srinagar

Correspondence to:
Dr. Mohammad Ahsan Dar, Deptt. Of Ophthalmology, Hind Institute of Medical Sciences, Safedabad, Uttar Pradesh.
Contact Us: www.ijohmr.com

ABSTRACT

Aim: To evaluate visual prognosis, intraocular pressure (IOP) control and complications following manual small incision cataract surgery (MSICS) among eyes with phacomorphic glaucoma. **Material and Methods:** This study included interventional case series of 37 patients with phacomorphic glaucoma who presented to Eye Care Centre Budgam in Kashmir region between March 2012 and June 2013. In order to rule out angle closure all these subjects underwent slit-lamp Biomicroscopy, applanation tonometry as well as gonioscopy. Intraocular lens implantation with small incision cataract surgery was performed in all patients and were followed by a complete ophthalmic examination at each follow-up visit. **Results:** A total of 37 patients with phacomorphic glaucoma were included in the present study. The preoperative mean IOP was assessed (39.8 ± 14.7 mmHg) and mean IOP at last follow-up was 12 ± 2 mmHg. Statistically significant difference between preoperative IOP and IOP recorded at last follow up was observed ($P < 0.001$). No significant intraoperative complications were observed, and none of the patients required long-term antiglaucoma medication. The final postoperative best corrected visual acuity was 20/40 or better in 25 patients. Corneal edema was seen in 4 patients and 18 eyes had anterior chamber inflammation. And later on, both these conditions were resolved with standard medicinal therapy. **Conclusion:** Though Manual small incision cataract surgery (MSICS) requires skill and patience during cataract surgery. it is a safe, effective and economical treatment and an alternative to phacoemulsification.

KEYWORDS: MSICS, Intraocular pressure, Phacomorphic glaucoma, Kashmir

INTRODUCTION

Glaucoma is an eye disorder in which the optic nerve suffers damage, permanently impacting vision in the affected eye(s) and if untreated progresses to complete blindness. It is often, but not always, associated with increased pressure of the fluid in the eye (aqueous humour). The term 'ocular hypertension' is used for cases having constantly raised intraocular pressure (IOP) without any associated optic nerve damage.¹ Cataracts typically progress slowly to cause vision loss and remain the most common treatable cause of blindness. Surgery remains the most effective method for treating cataract. Currently, there are three main most popular forms of cataract surgery in the world performed by the ophthalmologists, phacoemulsification, conventional extracapsular cataract extraction (ECCE) and manual small incision cataract surgery (MSICS).² Manual small incision cataract surgery (MSICS) is very popular in

developing countries as it is inexpensive compared to instrumental phacoemulsification and allows high volume cataract surgery without compromising the quality of medical care.³⁻⁶ Our study aimed to evaluate the intraocular pressure (IOP) control, visual prognosis and complications among phacomorphic glaucoma patients following manual small incision cataract surgery.

MATERIALS AND METHODS

This interventional case series study included 37 patients with phacomorphic glaucoma who presented to Eye Care Centre Budgam in Kashmir region between March 2012 and June 2013. Phacomorphic glaucomas were diagnosed by subjective complaints of acute pain and redness with objective signs such as the presence of corneal edema, shallow anterior chamber, an intumescent cataractous lens and intraocular pressure (IOP) above 21 mmHg. In

How to cite this article:

Dar MA, Gul S, Dar MS. An In Vivo Study of Intraocular Pressure (IOP) Control, Visual Prognosis and Complications among Phacomorphic Glaucoma Patients following Manual Small Incision Cataract Surgery. *Int J Oral Health Med Res* 2016;2(6):1-3.

lens implantation with small incision cataract surgery was performed in all patients and were followed by a complete ophthalmic examination at each follow-up visit. All patients were treated by topical beta blockers, antibiotic steroid drops, oral acetazolamide and oral glycerol. When the IOP was more than 45 mmHg, intravenous mannitol was given. All surgeries were performed by a single Ophthalmic surgeon. Postoperatively, patients were treated with topical antibiotics and steroids for the next six to eight weeks. On follow-up at the 90th postoperative day, patients underwent an independent ophthalmic examination by a trained ophthalmologist. All statistical analyses were performed using SPSS Version 16.0 (SPSS Inc, Chicago, Illinois, USA). Chi Square tests were used to compare the results of categorical variables, and Student t tests used to compare means, with *P* value 0.05 was considered as statistically significant.

RESULTS

A total of 37 patients of mean age 64 ± 3.2 years having phacomorphic glaucoma were analyzed during the study period of one year and two months. Posterior chamber intraocular lens (PCIOL) implantation was done by small incision cataract surgery to all patients. One patient had zonular dialysis, which was stabilized by a capsular tension ring, two had posterior capsule rupture, and 5 patients had intraoperative shallowing of anterior chamber due to positive pressure. On the first postoperative day, 9 patients were having severe corneal edema, 18 had severe iritis with fibrin membrane, two were having blood clot. Blood clot resolved with medical treatment over a period of 10 days. The resolution of fibrin membrane and corneal edema was by the use of topical medications over the next few days. Twenty five (67.5%) patients attained 20/40 or better vision, of which 15 (60%) had preoperative IOP between 25-40 mm Hg and 10 (40%) had IOP between 41-55 mm Hg. There was no association between preoperative IOP and postoperative BCVA (*P*=0.361) (Table 1).

Postoperative BCVA	Preoperative IOP		
	25-40mmHg	41-55mmHg	56-70mmHg
20/20 -20/40	15	10	-
20/60- 20/200	6	1	-
<20/200	1	1	-
HM,PL	1	1	1

Table 1: Comparative analysis of preoperative IOP and visual acuity at third month follow up visit

The BCVA and the duration of symptoms and at last follow-up are summarized in Table 2. Twenty one (56.7%) patients had 20/40 vision when the duration of symptom was less than 10 days, five had 20/40 or better vision when the duration of symptom was 11 days to 20 days. Comparing the patients having symptoms for less than 10 days against patients with symptoms of 10 days or longer, there was a significant association between duration of symptoms and postoperative BCVA (Chi square test *P*< 0.008).

Postoperative BCVA	Duration of symptoms (number)		
	0-10days	11-20 days	21-30 days
20/20 -20/40	21	5	-
20/60- 20/200	6	1	-
<20/200	1	-	-
HM,PL	2	1	-

Table 2: Effect of duration of symptoms on visual outcome

The mean IOP on the final visit recorded was 12.7 ± 2.4 mmHg (range, 5–20) without the use of antiglaucoma medications. At the last follow-up visit at 90th day, the BCVA was 20/40 or better in 26 patients, 20/60 to 20/200 in 7 patients, <20/200 in 1 patients and hand movement (HM) in three patients.

DISCUSSION

Phacomorphic glaucoma is a common occurrence in developing countries. To tackle the large backlog of cataract blindness, high quality high volume surgery is the preferred method of delivery. A large incision is required for Extra-capsular cataract extraction (ECCE) in a globe with very high IOP, which results in increases the risk of sight-threatening complications.^{3,5} MSICS with trypan blue staining of the anterior capsule has an advantage over ECCE and phacoemulsification. Gogate PM et.al showed that MSICS gives better uncorrected vision compared to Extra-capsular cataract extraction (ECCE) due to higher postoperative astigmatism in ECCE.³ Ruit *et al.*, suggested that both phacoemulsification and MSICS achieved excellent visual outcomes with low complication rates. MSICS may be considered as the more appropriate surgical procedure for the treatment of advanced cataracts in the developing world.^{7,8} Venkatesh *et al.* have reported that safe and effective management for phacolytic glaucoma patients is MSICS.⁹ Phacoemulsification is little difficult in phacomorphic glaucoma because there is an increased risk of the shallow chamber, iris prolapse, peripheral capsulorrhexis tears; the risk endothelial cell loss is greater because of the result of close proximity of the phaco tip during nucleus emulsification and the reduced endothelial reserve in these patients.¹⁰ In such cases Chang *et al.*, have suggested pars plana vitreous tap to expand the anterior segment which helps to deepen anterior chamber and permits successful completion of capsulectomy and cataract removal.¹¹ In contrast to phacoemulsification, MSICS does not require expensive equipment.

In the present study, a total of 37 patients of mean age 64 ± 3.2 years with phacomorphic glaucoma were analyzed for the period of one year and two months

Three months postoperatively, 25 (67.5%) of our patients had good visual outcome with BCVA of 20/40 or better and, 20/60 to 20/200 in 7 (18.9%) patients. These visual outcome results are in favour with other studies of ECCE performed in phacomorphic glaucoma.^{12,13} There was a significant association between the postoperative BCVA and duration of symptoms. 25 patients had visual acuity

better than 20/40, out of them a significantly more number of patients had the duration of onset of symptoms less than 10 days (60%; 15 of 25) compared to those with more than 10 days (40%; 10 of 25). In all our cases, the IOP was controlled without the need for long-term anti-glaucoma medications. This result is similar to IOP control of other studies on ECCE performed for phacomorphic glaucoma.^{12,13} Out of three patients with HM, two had optic disc pallor, one patient had glaucomatous atrophy. This was likely due to the prolonged raised IOP associated with the phacomorphic glaucoma. The corneal edema and anterior chamber inflammation along with fibrinous reaction which was detected on the first postoperative day is not unusual considering the intense inflammation associated with phacomorphic glaucoma¹⁰ and the same was resolved with medical therapy.

Manual small incision cataract surgery (MSICS) is inexpensive and popular in developing countries and has a shorter learning curve compared to phacoemulsification and it also allows high-volume cataract surgery without compromising the quality of medical care. phacomorphic glaucoma is not an uncommon presentation in the population in developing countries like India. Our study has only a few limitations, being a non-randomized study design and of having a short follow-up period, however, we would wish to show that Manual small incision cataract surgery (MSICS) could be more safe and effective in controlling IOP and attaining good functional visual recovery in the management of phacomorphic glaucoma with minimal complications.

REFERENCES

1. Thylefors B, Négrel AD, Pararajasegaram R, Dadzie KY. Global data on blindness. Bull World Health Organ. 1995; 73:115–21.
2. Murthy GV, Gupta SK, Bachani D, Jose R, John N. Current estimates of blindness in India. Br J Ophthalmol. 2005;89:257–60.
3. Gogate PM, Deshpande M, Wormald RP, Deshpande R, Kulkarni SR. Extracapsular cataract surgery compared with manual small incision cataract surgery in community eye care setting in western India: A randomised controlled trial. Br J Ophthalmol. 2003;87:667–72.
4. Venkatesh R, Muralikrishnan R, Balent LC, Prakash SK, Prajna NV. Outcomes of high volume cataract surgeries in a developing country. Br J Ophthalmol. 2005;89:1079–83.
5. Natchiar G, Dabralkar T. Manual small incision suture less cataract surgery: An alternative technique to instrumental phacoemulsification. Oper Tech Cataract Refract Surg. 2000;3:161–70.
6. Muralikrishnan R, Venkatesh R, Prajna NV, Frick KD. Economic cost of cataract surgery procedures in an established eye care centre in southern India. Ophthalmic Epidemiol. 2004;11:369–80.
7. Ruit S, Tabin G, Chang D, Bajracharya L, Kline DC, Richheimer W, et al. A prospective randomized clinical trial of phacoemulsification vs manual sutureless small-incision extracapsular cataract surgery in Nepal. Am J Ophthalmol. 2007;143:32–8.
8. Richard P. Wormald phacoemulsification vs small-incision manual cataract surgery: An expert trial. Am J Ophthalmol. 2007;143:143–5.
9. Venkatesh R, Tan CS, Kumar TT, Ravindran RD. Safety and efficacy of manual small incision cataract surgery for phacolytic glaucoma. Br J Ophthalmol. 2007;91:279–81.
10. Abdohali A, Naimi MT, Shams H. Effect of low-molecular weight Heparin on postoperative inflammation in phacomorphic glaucoma. Arch Iranian Med. 2002;5:225–9.
11. Chang DF. Pars plana vitreous tap for phacoemulsification in the crowded eye. J Cataract Refract Surg. 2001;27:1911–4.
12. Jain IS, Gupta A, Dogra MR, Gangwar DN, Dhir SP. Phacomorphic glaucoma-management and visual prognosis. Indian J Ophthalmol. 1983;31:648–53.
13. McKibbin M, Gupta A, Atkins AD. Cataract extraction and intraocular lens implantation in eyes with phacomorphic or phacolytic glaucoma. J Cataract Refract Surg. 1996; 22:630–3.

Source of Support: Nil
Conflict of Interest: Nil