ROLE OF CATARACT SURGERY IN LOWERING INTRAOCULAR PRESSURE

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ABSTRACT

Objective: To study the effects of cataract surgery in lowering of intraocular pressure (IOP).

Study Design: Retrospective study.

Place and Duration of Study: The Department of Ophthalmology, Combined Military Hospital, Rawalpindi from January 2011 to December 2013.

Patients and Methods: The study included a total of 250 patients; of which 100 cases had simple cataract with no coexisting disease, 100 cases had cataract with primary open angle glaucoma and 50 cases of cataract had accompanying pseudoexfoliation glaucoma. All patients were assessed and recorded preoperatively for their IOP, vision, depth of anterior chamber (ACD), angle of anterior chamber by gonioscopy and glaucoma medications being used. Cataract surgery was performed by phacoemulsification and IOL implantations in all cases. These patients were followed up for a period of six months.

Results: The intraocular pressure of all these patients was recorded at monthly interval for six months. The IOP showed a significant decrease in all cases and remained constant till the end of the study. A marked improvement of vision was noted in all cases. The depth of the anterior chamber increased and the angle also widened in all cases.

Discussion: Cataract surgery has been found to reduce IOP along with improvement in vision. Patients with glaucoma have a dual benefit of reduced IOP and visual improvement after cataract surgery.

Keywords: Ant chamber depth (ACD), Intraocular pressure (IOP), Primary open angle glaucoma (POAG), Pseudo-exfoliation glaucoma (PEG).

INTRODUCTION

Cataract and glaucoma are common diseases of old age. Modern cataract surgery (phacoemulsification technique) helps us to improve the vision of our patients. This procedure has been found to have an additional benefit of lowering the IOP permanently[1,2]. This effect has a very important bearing for the patients of glaucoma.

The purpose of our study was to find the effect of phacoemulsification on IOP, ACD, widening of ant chamber angle besides improvement in visual aquity.

MATERIAL AND METHODS

Our study included a total of 250 cases, selected from outpatients of CMH Rawalpindi from Jan 2011 to Dec 2013. Out of 250 patients, one hundered had simple cataract, one hundred had cataract with POAG and 50 had cataract with PEG. The IOPs of the glaucoma patients, on medication, were within the normal range Patients who had undergone any ocular surgery previously were excluded from this study. None of the subjects had undergone laser trabeculoplasty before cataract surgery. Patients with peroperative complications were dropped from the study as well.

A detailed documentation of IOP lowering medications along with levels of IOP measured by Goldmann Applanation Tonometer number of glaucoma medications used, anterior chamber depth (ACD), and gonioscopic evaluations were noted both pre and post-operatively. The UCVA and BCVA were measured according to Snellen`s chart. A-scan ultrasonography by (Quantel Medical biometer) was done to measure ACD (anterior chamber depth). Goldmann[3] mirror lens was used to assess the iridocorneal angle and was graded according to the Schaffer classification. The visual acuity was documented according to the Snellens chart. All these evaluations were done

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both pre and post-operatively by the same examiner.

SURGICAL TECHNIQUE

All 250 surgeries were performed under topical anaesthesia using (proparacaine hydrochloride 0.5%). A 2.75 mm corneal incision was made at 120 degrees. Cataract was removed by phacoemulsification using Laureatte emulsification system by Alcon Laboratories. A dispersive viscoelastic containing 3% sodium hyaluronate and 4% chondroitin sulphate (Viscoat by Alcon laboratories) was used to protect the corneal endothelium and maintain a deep anterior chamber during surgery. A sterile intraocular irrigating solution (BSS by Alcon Laboratories) was used for hydrodissection and continous irrigation. A continuous capsulorrhexis was done, the nucleus was divided and removed by phacoemulsification. All the soft cortical matter was aspirated and a foldable posterior chamber IOL (Acrysof IQ; Alcon Labs) was implanted in the capsular bag through a dedicated titanium injector system. At the end of surgery all the viscoelastic material was completely aspirated and the incision was sealed by stromal hydration. Intracameral moxifloxacin 0.5% (0.1ml Vigamox; Alcon Labs) was given. All patients were put on moxifloxacin 0.5% and a combination of tobramycin and dexamethasone 4 hourly postoperatively for the first 7 days and 8 hourly for the next 2 weeks. All patients were informed about the study and an informed consent was signed by them before they were enrolled.

RESULTS

Mean preoperative IOP was documented to be 17 ± 2mmHg. At the end of 1st month after surgery it was found to be 13 ± 2mmHg and 14 ± 2mmHg after 3 and 6 months. In the patient group with glaucoma the IOP reduction led to a significant decrease in the requirement of anti glaucoma medicines[3,4]. The ACD was increased by 1.5 mm as measured by the A scan ultrasonography and an increase in ICA was also noted by Goldmann 3 mirror lens. Mean age ± standard deviation of the patients was 70.9 ± 2.1 years. Data analysis was done using SPSS version 17.0. Independent sample t-test was applied and p value was found to be 0.04.

DISCUSSION

In this study, we observed a definite lowering of IOP in all cases. The mechanism of reduction of IOP after cataract surgery is not fully understood. The likely cause of reduction in IOP is considered to be increase in uveoscleral outflow and decrease in production of aqueous humour. The debris in the trabecular meshwork which consists of glycosaminoglycans is removed by the high fluid flow during aspiration. The trabecular meshwork produces PGF2 in response to the minimal insult caused by the high fluid flow during phacoemulsification which in turn increases the aqueous outflow thus decreasing the IOP. Removal of the Cataract shifts the iris backwards by 10^0 thus opening the angle of the anterior chamber and increasing the outflow of aqueous[5,6]. Pseudoexfoliation is a known cause of hampering the blood aqueous barrier. Phacoemulsification may be leading to an increased blood-aqueous barrier (BAB) permeability by removal of the pseudoexfoliatve material produced by the anterior lens capsule causing a reduction in IOP[7-10].

In summary cataract surgery improves not only the visual acuity but also helps to reduce the IOP. This is specifically beneficial for the comorbid glaucoma patients. The cataract surgery is recommended to be done through a clear corneal incision in order to save the overlying conjunctiva for any future filtration surgery.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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