ORIGINAL ARTICLE

MANUAL SMALL INCISION CATARACT SURGERY UNDER TOPICAL ANESTHESIA ALONE, IN PATIENTS WITH CARDIAC DISEASE

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ABSTRACT: AIM: To evaluate the outcome of manual small incision cataract surgery (MSICS) under topical anesthesia alone in patients at risk for local invasive anesthesia due to cardiac disease. **MATERIALS AND METHODS:** A retrospective analysis of all patients with underlying cardiac disease and operated for cataract under topical proparacaine, was done. Data was analyzed for demographic variants, operative experience, intra- and postoperative complications, need of conversion to peribulbar block, visual outcome and effect of surgery on cardiac disease. **RESULTS:** A total of 78 eyes of 60 patients with existing cardiac disease underwent manual small incision cataract surgery under topical anesthesia were analyzed. All patients underwent surgery without any major surgery related complications. No patient had complications related to IHD both intra- and early postoperative period. **CONCLUSION:** MSICS under topical anesthesia with proparacaine is safe and effective for high risk patients with coexisting cardiac disease without any compromise in visual outcome.
KEYWORDS: Manual small incision cataract surgery, topical anesthesia, cardiac disease.

INTRODUCTION: Cataract is the leading cause of blindness in India. The prevalence of cataract in people aged ≥60 is 58% in north India and 53% in south India.(1) As cataract is seen in elderly age, many patients have coexisting morbidities making local invasive anesthesia a risky venture, especially patients with cardiac disease on antiplatelet and/or anticoagulant medications. In India, the prevalence of cardiac disease was found to be 4.1% in patients undergoing surgery for senile cataract.(2)

In countries like India where majority of the patients with cataract are operated under mass camp organizations, the rural population is screened for the cataract and then patients are taken to the hospital for cataract surgery. Many a patients come alone for the surgery with no close relatives to take care. In such a situation, it is difficult to proceed with MSICS under local anesthesia without cardiac fitness.

Cataract surgery under topical anesthesia has been shown to be feasible option. The authors analyzed data of all patients who underwent MSICS under topical anesthesia alone with underlying cardiac disease, from a single tertiary eye care center in south India.

MATERIALS AND METHODS: The medical record of all patients with underlying cardiac disease who underwent MSICS under topical anesthesia during January 2013 to January 2015 was collected and analyzed retrospectively. All the records were analyzed by patient's hospital number and no information regarding patient identity was included. The data included age, gender, type

and grade of cataract, coexisting morbidities, medications, intra- and postoperative complications, need of conversion to peribulbar block.

All surgeries were done by the same surgeon using same approach (sclerocorneal tunnel) and followed by a rigid posterior chamber intraocular lens implantation.

The proparacain hydrochloride 0.5% eye drops were instilled in conjunctival cul-de-sac of the eye to be operated, 15 minutes and 5 minutes before the surgery.

RESULTS: A total of 78 eyes of 60 patients were operated (MISC) under topical anesthesia during the study period. All patients included had ischemic heart disease in recent past. Patients' and disease characteristics were noted (table 1). The median age was 63 years (57-75 years) with male predominance (63.33%). Majority of the patients were on a combination of drugs with aspirin (acetyl salicylic acid) with clopidogrel.

All patients underwent surgery without any major surgery related complications. Three patients were uncooperative during surgery and needed repeated instructions due to inappropriate eye movements. No patients required conversion to peribulbar anesthesia. No patients complained of pain or uneasiness during the surgery.

Being a retrospective study, modified visual analogue scale could not be used in evaluating patients comfort. But overall patients comfort was evaluated based on patients cooperation during surgery.

Sixty four eyes had visual acuity better than 20/40 on first postoperative day. The causes for less postoperative visual acuity in remaining 14 eyes were age related macular degeneration in 12 and macular hole in 2 eyes. Guarded visual prognosis was explained preoperatively to these patients.

Being retrospective study we could not calculate the exact surgeons score. The surgeon's evaluation of the technique in terms of surgical ease and complications was favorable.

No patient had complications related to IHD both intra- and early postoperative period.

DISCUSSION: Cataract is a treatable cause of blindness. Most common treatment modality for cataract used in mass camps is MSICS with posterior chamber intraocular lens implantation under invasive local anesthesia either peribulbar or retrobulbar injection of lignocaine 2% with or without adrenaline. Many patients with IHD do not get clear fitness for surgery under invasive local anesthesia for various reasons like recent myocardial infarction (MI), ST wave changes in electrocardiogram, arrhythmias and risk of bleeding due to medications.

Many anesthetic modalities are studied for the cataract surgery like general anesthesia, invasive local (peribulbar, retro-orbital and subtenon), topical anesthesia and intracameral injection.[3,4,5] The authors used proparacaine as the topical anesthetic agent which belongs to the ester group of anesthetics with a short duration of action (20 min) but is least toxic to the epithelium.

Not only sight-threatening but a significant number of life-threatening complications like grand mal fit, apnoea, angina pectoris, vaso-vagal episodes, atrial fibrillation, cardiac arrest, unresponsiveness to speech, legs numbness have been reported with peribulbar, retrobulbar and subtenons anesthesia in patients with preexisting cardiac disease.[6]

Glantz et al[7] showed that 31 % of patients with IHD, who underwent cataract surgery under general or local anesthesia had MI during the surgery thus, making anesthesia (general anesthesia more than the local anesthesia), a high risk factor for patients at risk for MI undergoing cataract surgery.

In a study done by Cupo G et al[8] a significantly higher percentage of patients receiving peribulbar anesthesia showed more than 10% reduction of heart rate which might be related to a mild oculocardiac reflex. Thus they recommended the use of topical/ intracameral anesthesia for cataract surgery due to more stable heart rate, diastolic and mean blood pressures.

Topical anesthesia is used to block the long and short ciliary nerves, nasociliary, and lacrimal nerves which mainly carry the sensations from cornea and the conjunctiva. Though this technique eliminates the possible complications of invasive local anesthesia, it does not eliminate pain sensitivity of the iris, the zonule, and the ciliary body.

Important factors to be considered in deciding the type of anesthesia are skill and experience of surgeon, co-operation of patient, type of cataract, associated ocular co-morbidity, etc. A survey of members of the American Society of Cataract and Refractive Surgeons (ASCRS) in 2000 revealed a major shift in local anesthesia practice away from sharp-needle periocular injections (retrobulbar, peribulbar) and towards less invasive (topical) techniques.

Though many studies have shown cataract surgery by phacoemulsification safe and feasible under topical anesthesia [3, 5, 9, 10] there are limited studies showing outcome of MSICS under topical anesthesia alone. In developing countries like India, it is difficult to perform phacoemulsification in mass camp organizations due to limited resources and huge burden of patients.

Our experience with topical anesthesia alone has been very encouraging because none of our patients had any sight threatening or life threatening complication.

Our study however has its own limitations. Being a noncomparative and retrospective study, definite evidence of superiority of topical anesthesia over local anesthesia for MSICS in patients with cardiac disease cannot be given. All the surgeries were done by a single surgeon. This factor might have masked the differences in the outcome induced by individual variations in the surgical technique and skill. Thus further prospective and comparative studies involving multiple centers and surgeons are needed.

To conclude, experienced surgeons can safely use topical anesthesia alone for patients undergoing MSICS with coexisting cardiac disease without any compromise in visual outcome.

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Number of patients	**60**
Male	38
Female	22
Age	63 years (49-70 years)
Rural	48
Urban	12
Systemic diseases	
Hypertension	56
Diabetes mellitus	40
Chronic kidney disease	6
Medications	
Antiplatelets alone	06
Anti platelets and anticoagulants	54
Unilateral	42
Bilateral	18
Total number of eyes	78
Type of cataract	
Senile immature cataract	44
Senile mature cataract	34
Poor papillary dilatation	7
DM	2
Pseudoexfoliation syndrome	5

Table 1: Patient and disease characteristics

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