Phacoemulsification Under Topical Anaesthesia Combined with Anxiolytic

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Abstract

Background: Local anesthesia in ocular surgery is a technique that mostly used now. Many type of procedures were applied including retrobulbar, peribulbar, subconjunctival and topical anesthesia.

Aim: To study the efficacy of tetracaine topical anesthesia technique combined with anxiolytic midazolam in cataract surgery, and to test patient's and surgeon's conviction by this method.

Patients and Method: Prospective study of one hundred three patients with dense cataract in Al-Basira eye center with mean age of 60.32 years (range: 50-70). Patients were 57 male and 46 female. Topical anesthesia was encouraged by intravenous anxiolytic, midazolam 0.1 mg/kg weight given in the beginning of surgery. We used a special patient's pain scoring and intraoperative surgeon's conviction score to analyze the reliability of this method. The study period lasted from October 2019 to March 2020.

Result: All patients had peaceful success phacoemulsification with an average surgery time of 15-20 minutes. Minimal or no movement noticed during surgery. No need for more anesthesia as there were no intolerable pain.

Conclusion: Cataract surgery can be safely and effectively done by topical anesthesia using this method.

Keywords: *Local anesthesia, phacoemulsification, anxiolytic.*

Introduction

Topical anaesthesia for cataract surgery is used after development of phacoemulsification as there is a closed system ignoring the squeezing of patient. In topical anesthesia, there is no risk of ocular perforation, muscle injury, or central nervous system effect and relatively short convalescent period as that may occur in other types of local anesthesia like retrobulbar and peribulbar[1]. By this method there is a blockage of trigeminal nerve supply of the cornea and the conjunctiva only, and there is no effect on the intraocular structures of the anterior segment[2]. There are many types and drugs used, the main two types are eye drops and viscous gel and drugs are lidocaine and tetracaine. Patient comfort, and history of allergy to local anesthetic agents decide the type of drug used[2]. Different sedatives or analgesics are used combined with topical anaesthesia including; midazolam, diazepam, propofol, fentanyl and ketamine[3]. We want to assess the effectiveness of tetracaine eye drops topical anesthesia technique combined with anxiolytic,midazolam in cataract cases, and to test patient's and surgeon's satisfaction with this method.

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Patients and Method

Prospective study of one hundred three patients with dense cataract in Al-Basira eye center with mean age of 60.32 years (range 50-70), were set for phacoemulsification cataract extraction under topical

anaesthesia combined with anxiolytic. Patients were 57(53.4%) male and 46(46.6%) female.

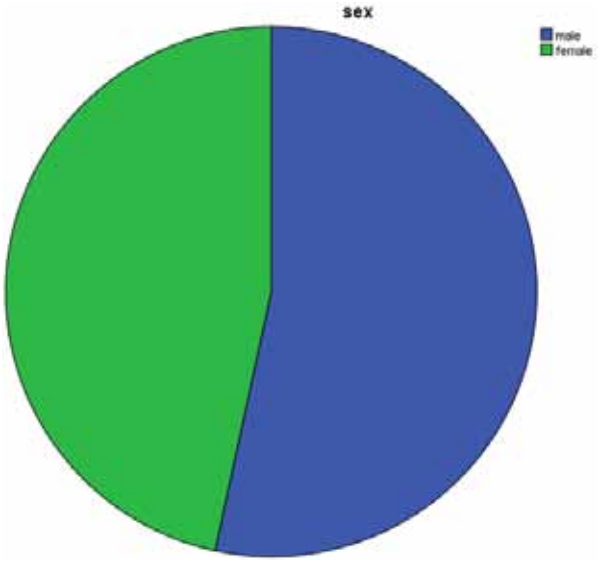

Table 1. Patient's pain scoring

Score	Patient condition
0	No pain or discomfort
1	Some discomfort
2	Mild tolerable pain
3	Moderate pain
4	Severe pain

Table 2. Intraoperative surgeon's conviction score

Score	Surgeon conviction
0	Poor
1	Fair
2	Good
3	Excellent

At the beginning, we talk with our patients to illustrate what we will to do. The topicalanesthetic tetracaine eye drops was used. Two drops of tetracaine were put in the conjunctival sac. Another 2 drops of tetracainewas put in the conjunctival sac of the other eye to conceal blinking reflex of the contralateral eye. The topical anaesthesia was combined with intravenous anxiolytic, midazolam 0.1 mg/kg weight. Patients were observed, in addition to the vital signs, forpain and sensitivity to light and touch. A reconnaissance method (Tables 1 and 2) used for both the patients and the surgeon that had been done in recovery room postoperatively, a subjective pain score for the patient was obtained .Surgeon conviction were reported intraoperatively.

Inclusion Criteria: Patients from 50-70 years old with dense cataract, no other ocular pathology, no previous ophthalmic surgery and controlled systemic diseases if they had (ASA class II and III).

Exclusion Criteria: Patients with early cataract, had any ocular pathology like glaucoma, had any uncontrolled systemic diseases, and uncooperative patients.

Results

All patients had peaceful success phacoemulsification surgery with an average surgery time of 15-20 minutes. Minimal or no movement notice during surgery. The analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 23 software.

Table 3 showed that 89 patients (86.4%) had no pain noticed intraoperatively and 9 patients (8.7%) had some discomfort especially to light and 5 patients (4.9%) had mild tolerable pain from the speculum with statistically significant association (P- value =.ooo).

Table 3. Subjective pain scoring

Pain Score	No. of Patients	Percentage	p-value
No pain	89	86.4	.000
Some discomfort	9	8.7	.000
Mild pain	5	4.9	.000
Moderate pain	O	0	
Severe pain	O	0	
Total	**103**	**100%**	

Surgeon conviction was excellent in 93 patients (90.3%), good in 7 patients (6.8%) as there was some blinking and fair in only 3 patients (2.9 %) of the patients where there was blinking and eye movement as demonstrated in(table4) with statistically significant association (P- value =.ooo). No patient was converted to another way of anesthesia.There were no any serious complications postoperatively.

Table 4. Surgeon's conviction score.

Surgeon conviction	No. of Patient	Percentage	p-value
Excellent	93	90.3	.000
Good	7	6.8	.000
Fair	3	2.9	.000
Poor	0	0	
Total	**103**	**100**	

Discussion and Conclusion

This study offer the use of a safe anesthetic technique with least intervention. It provided acceptable analgesia and surgery can be performed without akinesia or sort of ocular movement.Topical anesthesia is justified as a means of improving safety without causing discomfort to the patient even in complicated cases of cataract surgery[4] and has negligible complication as compared with other ways of local anesthesia using in ophthalmic surgery that increases intraocular pressures like retrobulbar and peribulbar[5]. Potentially life-threatening complications exist with all techniques except topical/intracameral local anesthesia[6]. In addition, significant pain during anesthetic administration, intraoperative surgery, or after the cataract procedure, is the major reasons for low patient satisfaction[7]. Many surgeons do not consider akinesia an important requirement for cataract surgery, but some prefer to operate under conditions in which eye movements are blunted if not complete paralyzed[8].Many type of drugs have been tried as a supplement to local anesthesia [9], but here we choose midazolam.

Midazolam is benzodiazepine medication used for anesthesia0.1mg per kg weight.Midazolam is commonly utilized for conscious sedation/anxiolysis/amnesia[9] that is mean it can prevent physical and psychological discomfort, and it provides good cooperation of the patient, and it arrest patients recall of intraoperative events The patient is awaked and cooperative and obey commands.Midazolam alone may produce optimal block conditions for the patient and it is satisfactory during the procedure[10]. The choice of sedatives is highly variable and opioids may be added for better pain relief and higher patient satisfaction. Any side-effects delaying the discharge after sedation are undesirable[11]. Alsoit is undesirable for patients with ocular surgery to get postoperative nausea and vomiting with strain oneye [12].All these undesired effects did not occur with our patients using this way of anesthesia.

We noticed previously on usingdiazepam for example, the patients went into deep sleep and awaked suddenly with abnormal reaction that affects the cooperation of the patients. Although there were patient squeezing and eye movement, they were neither a trouble to the surgeon nor to the patient. No additional supply of anaesthesia was required. We as surgeons were satisfied with this method, patients accepted this type of anaesthesia for the surgery of other eye in the future.

Ethical Clearance: Taken from Alzahraa Medical College committee

Source of Funding: Self

Conflict of Interest: Nil

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