

Satisfaction level with topical versus peribulbar anesthesia experienced by same patient for phacoemulsification

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ABSTRACT

Background: Various studies have assessed patient satisfaction with topical versus peribulbar anesthesia with conflicting results. Aim of study was to determine satisfaction level in same patient who gets topical anesthesia in one eye and peribulbar block in another eye. We propose that evaluation of various indicators of patient satisfaction will enable better selection of cases for topical anesthesia in the future. **Methods:** Eighty patients scheduled for phacoemulsification were enrolled in prospective, randomized, double-blind study. Each patient scheduled twice for one eye under topical anesthesia and other in peribulbar block. Pain, discomfort and pressure during application of local anesthetic, during phacoemulsification and at 2 hours after procedure were assessed on standard scales. Before discharge patient satisfaction level was checked with lowa satisfaction with anesthesia scale (ISAS). The Student's *t*-test was used to determine the significance of IOWA score in both groups. $P < 0.05$ was considered significant. **Results:** Feeling of pain, pressure and discomfort scores during administration of topical anesthesia were all significantly lower compared to peribulbar anesthesia ($P = 0.004$, 0.000 , 0.002 , respectively). In contrast, intraoperative scores were significantly higher in the topical anesthesia group compared to peribulbar anesthesia ($P = 0.022$, 0.000 , 0.000 , respectively). Patient satisfaction measured with ISAS shows that peribulbar anesthesia with $P = 0.000$ is strongly significant. **Conclusion:** Peribulbar anesthesia provided significantly better patient satisfaction in comparison with topical anesthesia when used for cataract surgery.

Key words: Patient's satisfaction, phacoemulsification, topical versus peribulbar

INTRODUCTION

Topical anesthesia for phacoemulsification was first reported by Kershner^[1] in 1993. Topical anesthesia has steadily gained popularity due to speed and ease of administration, rapid visual recovery postoperatively and the lack of block-related complications.^[2] Furthermore it is believed that patients feel less discomfort and pain.

Patient satisfaction is an important component and quality indicator in healthcare because it reflects the degree of

fulfilling a patients' expectations.^[3] Various studies have assessed patient satisfaction with topical versus peribulbar anesthesia with conflicting results.^[4,5]

In this investigation, we study patient satisfaction in individuals underwent topical anesthesia in one eye and peribulbar block in another eye during phacoemulsification. We propose that evaluation various indicators of patient satisfaction will enable better selection of cases for topical anesthesia in the future.

METHODS

In this prospective, randomized, double-blind study, we administered the Iowa Satisfaction in Anesthesia Scale (ISAS) that measures the satisfaction in Monitored Anesthesia Care.^[6] This questionnaire is a well documented, published survey for the purposes of the current study. Approval of the local Institutional Review Board and written approval from Dr. Dexter (original inventor of ISAS)

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were obtained. The ISAS was translated to Arabic language. Patients scheduled for phacoemulsification underwent an informed consent procedure that explained the surgery and the study in detail. Patients with American society of Anesthesiologist (ASA) physical status I–III, aged 50-70 years scheduled for phacoemulsification for cataract surgery were enrolled. The study cohort was comprised of 80 patients. Each patient was scheduled to undergo phacoemulsification with topical anesthesia in one eye and peribulbar block in the fellow eye. Usual standard monitoring was used for all patients. Tetracaine hydrochloride 1% drops and lidocaine gel 2% were applied 15 minutes before surgery for topical anesthesia. An inferotemporal injection was delivered with 6-10 ml bupivacaine 0.5%, in a mixture with lidocaine 2% in 2:3 volume ratios and hyaluronidase 5 IU/ml. The block was supplemented with 3-5 ml of the same solution superonasally if required. A simple akinesia score originally described by Crawford^[7] was used for assessment of the peribulbar block. Eye movement was assessed in four directions of gaze -inferior, superior, medial and lateral. Normal movement was scored as 2, reduced movement as 1 and zero denoted flickering or total akinesia. The quality of the block was assessed after 10 minutes for all patients which is the maximum fixation time for the local anesthetic solution. A block was considered acceptable if there was slight flicker to no movement. The patient was masked to the type of anesthetic used in each eye.

Pain, discomfort and a feeling of pressure in the eye were assessed at the time of application of local anesthetic, intraoperatively and 2 hours after the procedure. (Verbal pain score: No pain=0, Mild pain=1, Moderate pain=2, Severe pain=3). Discomfort and a sensation of pressure in the eye during injection were assessed as Yes=1, No=2. The need for additional intraoperative analgesia was recorded and the surgeon's opinion about the ease surgery was also recorded immediately postoperatively.

Patient satisfaction was assessed by a one research assistant only, using the ISAS. This research assistant was masked to the type of anesthetic used in each eye. The ISAS questionnaire is considered feasible, reliable, and a valid tool to measure patient's satisfaction in cataract surgery under topical anesthesia and monitored sedation.^[8,9]

The sample size of the study group was calculated using N-Quary software version 4, based on $\alpha=0.05$ and equivalence rate=0.2. Eighty patients of either sex were enrolled. The Student's *t*-test was used to determine the significance of IOWA score in both groups. The statistical analysis was performed in Minitab 16 (Minitab Inc, State College, PA, USA). A two-sample *t*-test was used to compare the age, height, weight, and other normally

distributed data. Numerical data were analyzed using unpaired, two tailed *t*-test, and the Chi-square test was used for categorical data. Nominal data and proportions were compared with Chi-squared analysis. A $P<0.05$ was considered statistically significant.

RESULTS

The mean IOWA score is presented in Figure 1. There was no significant difference in age, height, weight and axial length for both groups. Feeling of pain, pressure and discomfort during administration of topical anesthesia were all significantly lower compared to peribulbar anesthesia ($P=0.004, 0.000, 0.002$, respectively) [Figures 2 and 3]. In contrast, intraoperative pain score, discomfort and pressure were significantly higher in the topical anesthesia group compared to peribulbar anesthesia ($P=0.022, 0.000, 0.000$, respectively). There was no statistically significant difference in any parameters with respect to their gender ($P>0.05$, all comparisons). Results of the ISAS indicated that patient were highly and statistically significantly more satisfied with peribulbar anesthesia ($P=0.000$) compared to topical anesthesia. Statistically significantly more intraoperative analgesia was required for patients undergoing topical anesthesia compared to the peribulbar block ($P=0.014$). Surgeons faced statistically significantly less difficulty in patients who underwent a peribulbar block ($P=0.046$) [Table 1].

DISCUSSION

This study demonstrated that patients were more anxious and felt more discomfort or pain in the eye that received topical anesthesia. This resulted in statistically greater satisfaction with the eye that underwent a peribulbar block compared to the fellow eye that received topical anesthesia during phacoemulsification ($P=0.000$). Our

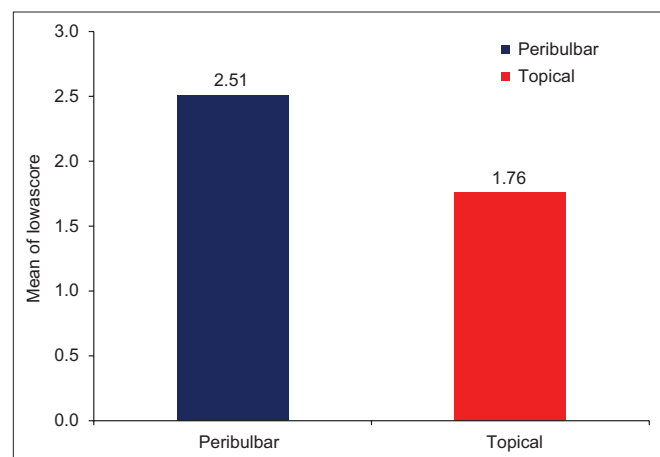


Figure 1: Mean IOWA score for patients undergoing surgery with topical anesthetic in one eye and peribulbar block in the fellow eye

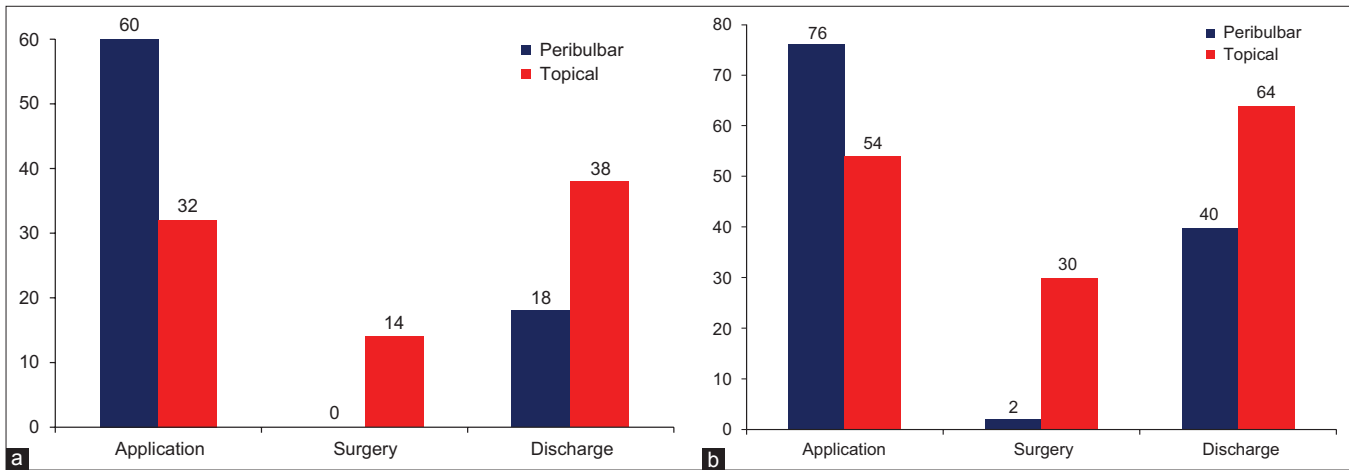


Figure 2: (a and b) Patient reported pain and discomfort during administration of anesthetic, intraoperatively and postoperatively for patients undergoing surgery with topical anesthetic in one eye and peribulbar block in the fellow eye

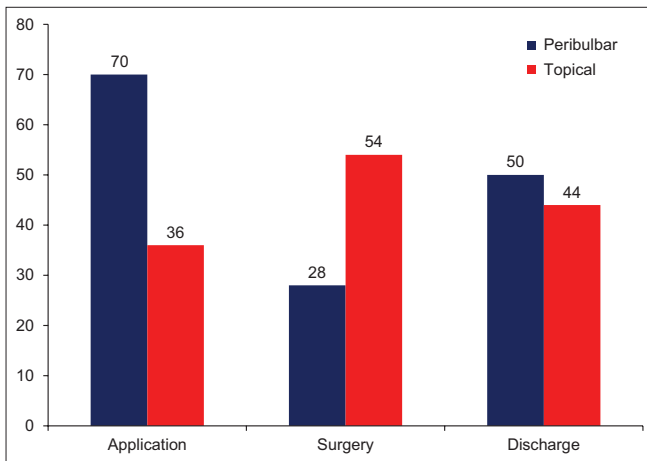


Figure 3: Patient reported pressure during administration of anesthetic, intraoperatively and postoperatively for patients undergoing surgery with topical anesthetic in one eye and peribulbar block in the fellow eye

Table 1: Surgeon’s ratings of ease of surgery and use of analgesia in patients who received a peribulbar block in one eye and topical anesthesia in the fellow eye during phacoemulsification

Surgeon’s opinion (Ease of procedure)	Topical	Peribulbar
No difficulty	62	76
Slight difficulty	16	4
Moderate difficulty	2	0
Intraoperative analgesia requirement	18	2

finding is consistent with Boezaart *et al.*^[10] who reported that patients who never experience a needle block may be satisfied with topical anesthesia while those that experienced both techniques clearly preferred the injection. In our study surgical pain, pressure and discomfort were higher with topical anesthesia. In contrast, surgery under peribulbar anesthesia was completely painless despite the fact that patients felt comparatively more pain, pressure and

discomfort during the injection. This is most likely due to greater eyelid anesthesia resulting in no speculum-related discomfort, presence of akinesia and better tolerance of the microscope light during surgery with the needle block.

Previous reports have indicated that topical anesthesia is as safe and as effective as peribulbar anesthesia for cataract surgery. However, conflicting results have been presenting regarding pain, anxiety, patient discomfort and patient satisfaction postoperatively. These studies have assessed the degree of pain experienced by the patient during surgery in a subjective manner by asking the patients to use a Visual Analog Scale. Results of these studies show that most patients who received topical anesthesia do not feel major pain, similar to patients who underwent surgery under peribulbar or retrobulbar anesthesia.^[11] However, other reports have shown that patients under topical anesthesia alone were more likely to experience discomfort during iris manipulation and zonular stretching.^[12]

Results from several studies show that there is higher patient satisfaction if postoperative pain is well controlled.^[13,14]

Patient satisfaction is considered as an important healthcare outcome measure.^[15] A credibility instrument to measure patient satisfaction must be valid and reliable. Our survey of the literature during this study indicated several patient satisfaction questionnaires were available for feedback on anesthesia. A report by Dexter *et al.*^[6] using the ISAS seems to offer one of the best psychometric approaches for collection of patient satisfaction data and contains all of the psychometric properties necessary for useful measurement based on the established criteria.^[16]

Our study explored more than overall satisfaction. We also carefully evaluated and interpreted the data from the patients who had higher values of satisfaction (score >2

according to the IOWA satisfaction scale). Studies have shown that there could be a bias from higher score to lower satisfaction score once the patient is completely cured.^[13] Our study attempted to minimize this type of bias by having a single research assistant as interviewer. The majority of our patients possessed a low level or no academic qualifications. They were elderly and visually impaired. It was observed that they replied exactly what they felt without hesitation. We found no or a negligible element of bias while evaluating the clinical data. Most of the patients who underwent peribulbar block did remain totally calm throughout the procedure once the block was established as opposed to the topical group where most patients were anxious intraoperatively. Pain with discomfort was noted by most of the patients during delivery of the peribulbar block as opposed to topical anesthesia. However, the patients rated higher satisfaction with peribulbar block due to the overall comfort. Roman *et al.*^[17] found increased surgical difficulty with topical anesthesia and a distinct learning curve was reported.^[18] In our study all the operations were performed by two experienced surgeons who faced slight difficulties during surgery with topical anesthesia. This observation concurs with a previous report of more difficulty intraoperatively with topical anesthesia.^[17]

CONCLUSIONS

Peribulbar anesthesia provides statistically significantly better patient satisfaction in comparison to topical anesthesia during cataract surgery. Operating conditions from the surgeon's point of view were also superior with the peribulbar block than with topical anesthesia. Knowledge of patient preferences and satisfaction can guide the surgeon to correct approach for better outcomes.

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