

SUB-CONJUNCTIVAL ANAESTHESIA IN TRABECULECTOMY AN EXPERIENCE WITH 80 CASES

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ABSTRACT

Objective: To determine the patients tolerability, comfort, ease of application and surgeons convenience with sub-conjunctival anaesthesia for trabeculectomy in our clinical setup.

Material and Methods: It was a prospective and observational study conducted at the department of Ophthalmology, Postgraduate Medical Institute, Hayatabad Medical Complex and Khyber Teaching Hospital, Peshawar. All patients were injected with up to 1 ml of a 1:1 mixture of 2% lignocain with epinephrine and 0.75% bupivacaine sub-conjunctivally and operated for trabeculectomy. Intra-operative pain, presence of eye movements and complications of anaesthesia were monitored. Bleb leak and ptosis were assessed postoperatively. Patient discomfort was assessed intraoperatively and 24 hours postoperatively using a standardized verbal descriptive chart with 0 to 4 pain scoring levels.

Results: Eighty patients underwent sub-conjunctival anaesthesia for trabeculectomy. Sixty-eight (85%) patients remained comfortable throughout the procedure. Only 3 (3.75%) patients required supplemental subconjunctival anaesthesia block during surgery, while 7 (8.75%) patients required a facial block. Two (2.5%) patients needed retrobulbar block. No surgery was postponed and none of the patient required general anaesthesia. Most common complication noted was chemosis of the conjunctiva (70%). In two cases (2.5%) it interfered with the surgery and the surgery time was prolonged. Small sub-conjunctival hemorrhage developed in 43 (53.75%) patients; however, this did not interfere with the surgery. No case of postoperative bleb leak and ptosis was noted.

Conclusion: The technique of subconjunctival anaesthesia is safe, effective, tolerable, and convenient. It is not associated with any remarkable postoperative complications because it is performed under direct visualization.

Key Words: Retrobulbar Anaesthesia, Trabeculectomy, Sub-conjunctival Anaesthesia, Lignocain, Bupivacaine.

INTRODUCTION

Majority of trabeculectomy surgery is currently performed under retrobulbar or peribulbar block. These offer satisfactory akinesia and analgesia¹. Retrospective studies have demonstrated the ease and safety of subconjunctival anaesthesia for various ocular surgeries^{2,3}, thus sub-conjunctival anaesthesia has been suggested for trabeculectomy^{4,5}. This form of anaesthesia has several advantages over retrobulbar and peribulbar block. These are known for the complications like retrobulbar haemorrhage, retinal vascular occlusion, retinal detachment, globe perforation⁶⁻⁹, brain stem anaesthesia, and optic nerve trauma^{10,11}. Life-threatening adverse events include brain-stem depression (via presumed injection into cerebrospinal fluid surrounding the optic nerve)^{12,13}

and cardiovascular depression¹⁴ (via presumed systemic absorption of anaesthetic agents or oculocardiac reflex) deaths have been reported¹⁵. Secondly, elevation of orbital pressure related to volume of retrobulbar anaesthetics is less likely to occur with subconjunctival anaesthesia¹. For patients with glaucoma who have already compromised optic nerve functions, this may be of importance. The primary consideration, however, is the patient's tolerance of this procedure. Therefore, we designed this study to evaluate the use of subconjunctival anaesthesia for trabeculectomy for patients' comfort, ease, and surgeons' convenience.

MATERIAL AND METHODS

This study was carried out on 80 patients from 1st August 2003 to 31st December 2004. The first eight months of the study was done at

VERBAL DESCRIPTIVE PAIN SCORING¹⁶

0	No pain nor discomfort
1	Slight discomfort but no pain
2	Mild pain that is tolerable
3	Moderate pain that requires relief of pain killers
4	Severe distressing pain requiring relief of strong pain killers

Table 1

Hayatabad Medical Complex, Peshawar where 53 cases studied. The last nine months of the study was done at Eye Department, Khyber Teaching Hospital, Peshawar where 27 cases were studied. All the surgeries were done by the first author. Patients admitted for the glaucoma surgery were included in the study except those patients who were having co-morbidity (Coronary artery disease, Diabetes Mellitus, hypertension), patients with history of previous ocular surgery on the same eye and children below 15 years of age. Mean age of the patients was 58.1 ± 21.9 years. Fifty-five (68.75%) patients were male and 25 (31.25%) were female. The details of the procedure were properly discussed with the patient and informed consent was obtained. Sedatives and analgesics were not employed as pre-medications. An intravenous line was established in case of need to give total intravenous anaesthesia. Patients were hooked to a cardiac monitor and pulse oxymeter and were monitored by a consultant anaesthesiologist throughout the procedure. Before anaesthesia injection, topical 0.5% proparacaine hydrochloride was instilled in the eye. A drop of 5% povidone iodine was routinely instilled in the operated eye for asepsis and to test for corneal sensitivity. Conjunctival sensitivity was assessed by mechanical stimulation of the inferior conjunctiva using sterile blunt forceps. Once the patient did not complain of any pain or discomfort, subconjunctival injection was given. The patients received upto 1ml of a 1:1 mixture of 2% lignocain with epinephrine and 0.75% bupivacaine. This was done under direct visualization with the operating microscopes via a 30-gauge needle over the anterior portion of the superior rectus muscle. A continuous bleb of anaesthetic solution extended

for 180 degrees. The volume of anaesthetic solution administered was recorded. Supplemental anesthesia of 0.5% proparacaine hydrochloride was administered only when required. For intolerable pain supplemental retrobulbar block or sub-conjunctival anaesthesia was given. Facial block was administered in case of severe squeezing of eyelids.

The standard surgical procedure for trabeculectomy was then carried out in all the 80 patients. Intraoperative pain, presence of eye movements, and complications of surgery such as retrobulbar haemorrhage, globe perforation, retinal vascular occlusion, subconjunctival haemorrhage and optic nerve trauma were monitored. Bleb leak and ptosis were assessed postoperatively. Patient discomfort was assessed intraoperatively and 24 hours postoperatively using a standardized verbal descriptive chart used by Koay et al¹⁶ (Table 1).

The duration of anaesthesia was monitored from the time no pain or discomfort was felt when the conjunctiva was stimulated with a blunt forceps to the time the patient experienced discomfort or pain intraoperatively, requiring supplemental anaesthesia.

RESULTS

Eighty patients included in this descriptive study received subconjunctival anaesthesia of 1:1 mixture of 2% lignocain with epinephrine and 0.75% bupivacaine. All the patients underwent Limbal-based conjunctival trabeculectomy. Average time of surgery was 25 minutes. The procedures were essentially uneventful, that is, no untoward incidents occurred intraoperatively and

PAIN SCORE AT THE TIME OF SURGERY

(N = 80)

Score	Indicator	No. of Cases	Percentage
0	No pain or discomfort	40	50.0%
1	Slight discomfort but no pain	21	26.25%
2	Moderate pain that is tolerable	14	17.50%
3	Moderate pain that requires relief of pain killers	3	3.75%
4	Severe distressing pain requiring relief of strong pain killers	2	2.50%

Table 2

COMPLICATIONS ENCOUNTERED DURING SUB-CONJUNCTIVAL ANAESTHESIA (N=80)

S. No.	Complications	No.	Percentage
1	Conjunctival chemosis	70	87.50%
2	Ocular Akinesia	62	77.50%
3	Sub-conjunctival hemorrhage	43	53.75%
4	Mild discomfort need to have topical supplemental anaesthesia	14	17.50%
5	Need for facial block due to severe squeezing	07	08.75%
6	Supplemental sub-conjunctival injection of lignocain	03	03.75%
7	Conjunctival chemosis interfering with surgery of eyelids	02	02.50%
8	Need for a retrobulbar block due to patient non-tolerant to microscope light	02	02.50%
9	Sub-conjunctival hemorrhage needed to be drained	01	01.25%

Table 3

postoperatively. Vital signs remained stable during the whole course. A maximum of 1 ml of anaesthesia was used in each patient. Most of the patients remained comfortable during surgery (Table 2). The need to convert to general anesthesia or total intravenous anaesthesia or to abandon the procedure did not ensue. In 2 (2.50%) cases a supplemental sub-conjunctival injection had to be given during the surgery because of intolerable pain in one and lack of co-operation by the other patient. Seven (8.75%) patients needed facial block due to severe squeezing. Two patients (2.50%), needed a retrobulbar block due to discomfort caused by operating microscope light and on the patients' request based on their previous experience of the surgery on the other eye. In three cases (3.75%) patient needed a supplemental sub-conjunctival injection due to moderate pain during surgery. Most common complication noted was chemosis of the conjunctiva seen in 70 cases (87.5%). In two cases (2.5%) it interfered with the surgery and the surgery time was prolonged. Small sub-conjunctival hemorrhage developed in 43 (53.75%) patients; however, this did not interfere with the surgery. One patient (1.25%) developed sub-conjunctival hematoma. Ocular motility was noted in 62 (77.50%) cases, but it was controlled by verbal command; thus, it did not interfere with the procedure (Table 3). No post-op bleb leak or

ptosis was observed. Pain score after 24 hours of surgery is given in Table 4.

DISCUSSION

Retrobulbar and peribulbar anaesthesia is currently the gold standard for trabeculectomy. These procedures involve the blind insertion of a needle through the lower lid at the junction of the lateral and middle third of the inferior orbital rim, with the needle initially directed parallel to the floor of the orbit and then directed to the orbital apex¹.

In our series, almost all the patients did well except 2 (2.5%) patients who were photophobic to microscope light and had to be given a retrobulbar block. We could never attain a full akinesia but all the surgeries were done successfully and the patients followed the commands very well. Nadeem et al⁽²⁾ also reported lack of full akinesia in all of their patients, which was dealt with by constant verbal commands. As reported by Roman et al⁽¹⁷⁾ in the sub-tenon's anaesthesia, full akinesia was never achieved. They also reported chemosis of conjunctiva and sub-conjunctival hemorrhage in more than 56% of the cases. Also in our series, almost all patients had some degree of conjunctival chemosis but it proved beneficial during fashioning of conjunctival

PAIN SCORE 24 HOURS AFTER SURGERY (N = 80)

Score	Indicator	No. of Cases	Percentage
0	No pain or discomfort	53	66.25%
1	Slight discomfort but no pain	21	26.25%
2	Moderate pain that is tolerable	4	5.00%
3	Moderate pain that requires relief of pain killers	2	2.50%
4	Severe distressing pain requiring relief of strong pain killers	Nil	Nil

Table 4

flap and the chemosis disappear following that. In our series small sub-conjunctival hemorrhage developed in 53.75% of the cases. For the surgeon severe squeezing of the eyelids observed in seven cases (8.75%) was problematic for which a facial block was needed and all the surgeries were done successfully. The squeezing was more at the time of insertion of the speculum and irrigating the conjunctiva. Verbal commands and taking care not to flush too much fluid at once controlled it. As reported by Nadeem et al² facial block was given in 1.53% of their cases.

In our study the sub-conjunctival anaesthesia proved very helpful and all the surgeries were completed successfully without a single case of serious complications, the same was reported by Nadeem et al⁽²⁾. No case of postoperative bleb leak attributable to the injection was noted. There was no case of post-operative ptosis, which is a common complication of peribulbar anaesthesia.

Nadeem AR et al⁽²⁾ reported success of sub-conjunctival anaesthesia in surgery for cataract. They encountered no complications attributable to anaesthesia in their series except for lack of akinesia, which was dealt with verbal commands. All of their patients remained comfortable. Redmond and Dallas⁽¹⁸⁾ have reported superior analgesia and much few complications of sub-conjunctival anaesthesia as compared to retrobulbar anaesthesia for extra-capsular cataract extraction. They also reported less anaesthesia time required for sub-conjunctival anaesthesia compared to retrobulbar anaesthesia as seen in our series.

CONCLUSION

Sub-conjunctival anaesthesia as an alternative to retrobulbar block in Trabeculectomy is recommended. This technique is safer than retrobulbar anaesthesia because it is performed under direct visualization. Further potential benefits are the smaller volume of local anaesthetic required, minimal risks of retinal hemorrhage and ocular perforation, and reduced surgical time, as it is not necessary to wait for the retrobulbar to work.

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