

SUB CONJUNCTIVAL VERSUS PERIBULBAR LOCAL ANAESTHESIA IN CATARACT SURGERY

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ABSTRACT

Background: Cataract surgery can be performed with different methods of local anaesthesia. This study was conducted to compare the pain score and analgesia with sub-conjunctival versus peribulbar anaesthesia.

Material & Methods: This comparative study was conducted on patients for cataract surgery from March 2010 to December 2010. One hundred and thirty consecutive patients with age related cataract were included in the study. They were divided in two groups A and B each with 65 patients. In group A sub-conjunctival 2% lidocaine mixed with adrenaline, while in group B 2% lidocaine mixed with adrenaline was given peribulbar. The results of the two groups regarding analgesia were compared using χ^2 test.

Results: Among 130 patients, 62(47.7%) were males and 68(52.3%) females. In group A, 57(87.7%) patients had 0 pain score, 2(3.1%) score 1, 1(1.5%) patients score 2, 2(3.1%) score 3 and 3(4.6%) had score 4. In group B, 55(84.6%) patients has score 0, 5(7.7%) score 1, 3(4.6%) score 2 and 2(3.1%) score 4. The difference between the analgesic effect of the two methods was found to be statistically insignificant ($p > 0.05$).

Conclusion: Both the types of local anesthesia i.e. sub-conjunctival and peribulbar are comparable regarding analgesia.

KEY WORDS: Local anesthesia, Cataract, Sub-conjunctival, Peribulbar.

INTRODUCTION

Preventable blindness is one of the main health problems. About 45 million people in the world encounter blindness to some extent. High prevalence of blindness is due to cataract in Africa and Asia. In Pakistan cataract is the main cause of blindness affecting all provinces nearly at the same ratio.

There have been many methods for management originated evolutionary from worse to better achievement. Susruta an Indian surgeon started couching in thought to be the pioneer of cataract surgery.^{1,2}

Cataract surgery is done under different types of anesthesia like general Anesthesia (GA), local anesthesia (LA) but later is commonly practiced. LA can be given through different techniques like peribulbar (PB), retrobulbar (RB), sub-conjunctival, Subtenon (ST) and topical.³

RB with injection inside and PB with injection outside the muscle cone are the two most commonly used.^{4,5} RB was introduced by Atkinson in 1936. RB and its modified form PB anesthesia remained the standard of many surgeons. PB has replaced RB due to more complications of the later like eyeball perforation, orbital haemorrhage, optic nerve trauma and brain stem anesthesia.

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Sub-conjunctival injection of LA is preferable method due to less pain at the time of injection and effectiveness but patient cooperation is needed. Topical anesthesia with addition of sub-conjunctival LA gives good results.⁶

This study was conducted to compare the pain score and analgesia with sub-conjunctival versus peribulbar anaesthesia in cataract surgery.

MATERIAL AND METHODS

This study was conducted in Department of Ophthalmology, Bannu Medical College, Bannu, from March 2010 to December 2010. One hundred and thirty consecutive patients suffering from age related cataract were included. Proper proforma including age, sex, type of cataract, blood pressure, ocular and systemic diseases, past history of ocular trauma and informed consent was prepared for each patient. Patients with any other ocular problem, trauma, and previous ocular surgery were excluded. Hypertensive patients were also excluded.

Pain score and analgesia proforma was made according to 4-point pain score scale method. (Table 1)

Table 1: Four point score scale for pain assessment.

Pain Score	Verbal discussion
0	No Pain / discomfort.
1	Slight discomfort / tolerable.
2	Mild pain still tolerable continue surgery, no additional anesthesia.
3	Moderate pain relieved with topical alcaine.
4	Severe pain further subconjunctival LA given.

Patients were divided in two groups; Group A and B each comprising of 65 patients. Informed consents were taken from all the patients and they were informed about the type of injection and were asked for cooperation during surgery. They were educated to quantify pain, and discomfort during the surgery.

In group A patients 2-3 drops of topical alcaine were instilled in to the eyes and after 2 minutes, 1-1.5 ml adernaline mixed 2% lidocaine were injected sub-conjunctivally 6 mm away from the superior limbus. Gentle pressure for 3-4 minutes was applied over the globe and surgery was started.

In group B 5-7 ml adrenalin mixed with 2% lidocaine was given PB. Pressure was applied for 10-15 minutes and after eye became soft surgery was started.

Cataract extraction in both the groups was performed with scleral tunnel method.

RESULTS

Out of 130 patients, 62 (47.7%) were males and 68 (52.3%) females, with age range from 50 to 75 years.

In group A; 57 (87.7%) patients had 0 pain score, 2 (3.1%) had score 1, 1 (1.5%) patients had score 2, 2 (3.1%) had score 3 and 3 (4.6%) had score 4.

In group B; 55 (84.6%) patients has score 0, 5 (7.7%) had score 1, 3 (4.6%) had score 2 and 2 (3.1%) had score 4.

The results of the two groups regarding analgesia were compared using χ^2 test and found to be insignificant ($p > 0.05$). (Table 2)

DISCUSSION

The main objective of this study was to search for better and easy technique of anesthesia for

Table 2: Patients pain, analgesia score scale response.

Pain score	Group A (Sub conjunctival LA)	Group B (Peribulbar LA)
0	57 (87.7%)	55 (84.6%)
1	2 (3.1%)	5 (7.7%)
2	1 (1.5%)	3 (4.6%)
3	2 (3.1%)	0
4	3 (4.6%)	2 (3.1%)

cataract extraction which is the commonest ocular surgery. This goal has been the focus of many ophthalmologist and keeping in mind different factors like age, sex, type of cataract and systemic diseases, the type of anesthesia technique kept on varying from time to time. There has been a dramatic change of anesthesia practice for eye surgery over the recent past. The use of LA has risen from 20% in 1991⁷ to 75% in 1996⁸ and 86% in 1997.⁹ First some sedation was given to the patient along with LA but this has been brought down from 45% in 1991 to 6% in 1997.

As evident from our study that group A and group B patients results regarding pain and analgesia are comparable and keeping in mind the complications of PB, subconjunctival LA is preferable over the PB. In cataract surgery most of the patients are reluctant to local anesthesia either due to psychological distress or fear of damaging the eyes. In case of subconjunctival LA after instillation of topical alcaine, patients may not be aware of injection. In our study most of the patients disliked PB due to pain and needle puncture and all the patients were happy with subconjunctival LA. Some surgeons have been come across with patients who had pain and stress in topical and PB anesthesia¹⁰. In one study of topical versus ST local anesthesia many surgeon needed augmentation of topical anesthesia with subconjunctival injection during the procedure to facilitate surgery¹¹ indicating that subconjunctival injection can be given during surgery and achieving good response. In the study of Fichenhas who investigated BP, pulse rate, respiratory rate with topical augmented with subconjunctival injection found no major changes showing less systemic affects.¹² Study of Javed EA, shows 100% pain free surgery with subconjunctival LA.¹³ The results of this study are better than our study. Probably the difference would be in the type of surgery because we did scleral tunnel surgery in all the patients, while phaco was done in the reference study. Although subconjunctival LA has many advantages but it is

limited to anterior segment while PB can be used in vitreo retinal and other ocular surgical procedure.^{14,15} The efficacy of PB can be increased by addition of hyaluronidase for better tissue penetration.¹⁶ In PB injection has given outside muscle cone and large volume of about 5-8 ml is deposited in the orbit resulting in tense eyeball and lids which needs pressure for more time¹⁷. While in the case of subconjunctival LA, small volume about 1-1.5ml is injected which needs minimum pressure for spread.

Redmond Smith study shows that out of 175 patients operated on subconjunctival LA only one patient complained of severe pain in 3 years study.¹⁸ Study of Hamid SA et al shows pain score of 1 in 14.2% patients for PB, LA⁶ as compared to our study which shows pain score 1 in 4.6% patients. From these studies it is clear that subconjunctival LA is safe, effective and well replaces other types of anesthesia for anterior segment surgery.

CONCLUSION

Both the types of local anesthesia i.e. subconjunctival and peribulbar are comparable regarding analgesia.

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