# COMPARISON OF 2% LIGNOCAINE WITH 1:200,000 ADRENALINE AND MIXTURE OF 2% LIGNOCAINE WITH 1:200,000 ADRENALINE AND 0.5% BUPIVACAINE AS PERIBULBAR ANAESTHESIA

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## SUMMARY

**A prospective study was conducted to compare the efficacy of 2% lignocaine with 1:200,000 adrenaline aline and 50:50 mixture of 2% lignocaine with 1:200,000 adrenaline and 0.5% bupivacaine peribulbar anaesthesia for cataract surgery in Pakistani patients. One hundred consecutive patients undergoing cataract surgery were at random placed either in group 1 or group 2. Each patient in group I was given peribulbar injection of 6 ml of 2% lignocaine with 1:200,000 adrenaline and each patient in group II received a single peribulbar injection of 6 ml of a 50:50 mixture of 2% lignocaine with 1:200,000 adrenaline and 0.5% bupivacaine. Complete lid akinesia was achieved in 60% of group I patients and 70% of group II patients. Complete globe akinesia and anaesthesia was achieved in 88% of group I and 96% of group II patients during surgery. Six hours after surgery, there was mild pain in 38%, moderate pain in 14%, and severe pain in 4% of group I patients while in group II patients there was mild pain in 4% and moderate pain in 2% of cases. Twelve hours after surgery, patients in group I experienced mild, moderate, and severe pain in 18%, 20%, and 32% of the cases respectively. On the other hand in group II patients 4% had mild pain while another 2% experienced moderate degree of pain. We believe that a 50:50 mixture of lignocaine with 1:200,000 adrenaline and 0.5% bupivacaine is a more suitable peribulbar anesthetic agent than 2% lignocaine with 1:200,000 adrenaline alone.**

## INTRODUCTION

Local anaesthesia is the preferred method of anaesthesia for many ocular surgical procedures. Soon after the discovery of local anaesthesia, ophthalmology was the first field to appreciate is clinical implications.[1] Knapp introduced retrobulbar anaesthesia in 1884.[2] However, the much safer peribulbar anaesthesia has largely replaced the retrobulbar anaesthesia.[3,4]

Lignocaine is the most commonly used local anaesthetic. Due to its short duration of action of 20-60 minutes, it is not ideal for lengthy surgical procedures. This may necessitate a repeat injection, a procedure not without hazards. Moreover, patients usually require analgesia in the immediate post operative period to relieve pain. Bupivacaine belongs to the chemical class of amide anesthetic agents that have a prolong duration of action of 4-12 hours.[5]

A mixture of lignocaine and bupivacaine makes an ideal anaesthetic solution which is expected to produce not only anaesthesia and analgesia during but analgesia in the post-operative period as well.

We conducted a prospective study to compare the efficacy of lignocaine with

adrenaline and a mixture of lignocaine with adrenaline and bupivacaine for anaesthesia and analgesia during surgery and analgesia in the immediate post-operative period.

## MATERIAL AND METHODS

We recruited one hundred cases undergoing cataract extraction with or without an IOL at the department of Ophthalmology, Postgraduate Medical Institute, Lady Reading Hospital Peshawar. Exclusion criteria included the existence of language barrier, deafness, and dementia. All patients underwent similar pre-operative assessment, including a detailed history, complete physical examination and laboratory tests. Informed consent was obtained from each patient.

Patients were divided into two groups. Group I patients received 2% lignocaine with 1:200,000 adrenaline as peribulbar anaesthesia. Group II patients received a mixture of 2% lignocaine with 1:200,000 adrenaline and 0.5% bupivacaine in a 50/50 ratio, as peribulbar anaesthesia. Anaesthesia was administered by the resident who had been extensively trained for the procedure. The quantity remained 6 ml for each patient. Any supplemental anaesthesia, if required, was recorded. No patient received any intravenous analgesia during or before surgery. Neither the patients nor the surgeon was aware of the type of anaesthetic agent being administered.

TABLE – I

LID AKINESIA

| | Group I | | Group II | |
|---|---|---|---|---|
| | No | % | No | % |
| Complete | 30 | 60 | 35 | 70 |
| Moderate | 12 | 24 | 8 | 16 |
| Mild | 8 | 16 | 7 | 14 |

TABLE – II

GLOBE AKINESIA

| | Group I | | Group II | |
|---|---|---|---|---|
| | No | % | No | % |
| Complete | 44 | 88 | 48 | 96 |
| Moderate | 4 | 8 | 2 | 4 |
| Mild | 2 | 4 | 0 | 0 |

TABLE – III

GLOBE ANAETHESIA

| | Group I | | Group II | |
|---|---|---|---|---|
| | No | % | No | % |
| Complete | 44 | 88 | 48 | 96 |
| Moderate | 4 | 8 | 2 | 4 |
| Mild | 2 | 4 | 0 | 0 |

Peribulbar anaesthesia was administered using a disposable syringe with 16mm, 27 guage needle. The patient was asked to fixate in the primary portion and the drug was injected at two sites ie supero-medial and iferio-lateral aspects of the orbit.

Immediately following the surgical procedure, the surgeon filled out a questionnaire. Lid akinesia, globe akinesia, and globe anaesthesia were rated on a three point

TABLE – IV

PATIENT'S EXPERIENCE OF PAIN DURING SURGERY

| Level of pain | Group I | | Group II | |
|---|---|---|---|---|
| | No | % | No | % |
| Nil | 35 | 70 | 38 | 76 |
| Slight | 6 | 12 | 7 | 1 |
| Moderate | 9 | 18 | 7 | 14 |
| Severe | 0 | 0 | 0 | 0 |

scale. Akinesia and anaesthesia was considered complete when it was total. It was considered moderate where anaesthesia or akinesia was adequate to proceed but not quite total. Mild anaesthesia or akinesia meant that it was inadequate to proceed. Patient's experience of pain was recorded during the surgery, 6 hours, and 12 hours after the surgery on a four point scale.

## RESULTS

Of the 100 patients studied, equal number were assigned to each group. There were 57 male and 43 female patients. Their age ranged between 25-70 years. Of the 100 cases, 49 underwent ECCE alone while 51 were implanted with an intra-ocular lens as well.

### Lid akinesia

Both groups had similar levels of lid akinesia. In Group I, complete lid akinesia was noted in 30 (60%) cases, moderate in 12 (24%), and mild in 8 (16%) cases. In Group II, complete moderate and mild lid akinesia was witnessed in 35 (70%), 8 (16%) and 7 (14%) cases respectively. Table-I

### Globe akinesia

Table II shows the breakdown of the levels of globe akinesia. Forty four (88%) cases belonging to Group I and 48 (96%) cases of the Group II showed complete globe akinesia. Moderate globe akinesia was seen in 4 (8%) of Group I and 1 (4%) cases of Group II cases.

TABLE – V

PATIENT'S EXPERIENCE OF PAIN AFTER 6 HOURS

| Level of pain | Group I | | Group II | |
|---|---|---|---|---|
| | No | % | No | % |
| Nil | 22 | 44 | 45 | 90 |
| Slight | 19 | 38 | 4 | 8 |
| Moderate | 7 | 14 | 1 | 2 |
| Severe | 2 | 4 | 0 | 0 |

TABLE – VI

PATIENT'S EXPERIENCE OF PAIN AFTER 12 HOURS SURGERY

| Level of pain | Group I | | Group II | |
|---|---|---|---|---|
| | No | % | No | % |
| Nil | 3 | 6 | 47 | 94 |
| Slight | 28 | 56 | 2 | 4 |
| Moderate | 16 | 32 | 1 | 2 |
| Severe | 3 | 6 | 0 | 0 |

### Globe Anaesthesia

The results are identical with those for globe akinesia. Table III

### Experience of pain by the patient

During surgery there is not much of a difference between the two group as regard pain. Seventy percent of Group I and 76% of Group II patients experience no pain. It was slight in 6 (12%) and 7 (14%) cases respectively. Moderate degree of pain was experienced by 9 (18%) cases belonging to Group I and 7 (14%) cases belonging to Group II. Table IV

Table V shows the breakdown of the levels of pain experienced by the patient after 6 hours of surgery. Twenty two (44%) cases of Group I and 45(90%) reported no pain at all. Group I patients who reported slight, moderate, and severe pain comprised 19 (38%), 7 (14%), and 2 (4%) case respectively. Severe pain was not reported by any of the Group II patients.

Twelve hours after the surgery, 3(6%) cases of Group I and 47(94%) cases of Group II had no pain Table VI. Slight pain was reported by 28(56%) cases of Group I and 3(8%) cases of Group II respectively. Sixteen (32%) cases of Group I reported

moderate pain while only one (2%) case of Group II experienced moderate pain. Non of Group II patients and 3(6%) of Group I cases reported severe pain.

**Post operative analgesic requirement**

Thirty nine (78%) cases of Group I as compared to 5(10%) cases of Group II required analgesics during the first 6 hours after surgery. During the first 12 hours post operatively, 42(84%) cases of Group I and 15(30%) cases of Group II required analgesia to relieve their pain.

## DISCUSSION

Local anaesthesia is now extensively used for almost all ocular procedures in adult patients. Lignocaine is suitable for ocular operations like cataract and glaucoma. However, due to its short duration of action it is not suitable for long procedures like retinal detachment surgery and patient experience pain during the immediate post op period. This short coming, can be easily over come by mixing lignocaine with bupivcaine which has a longer duration of action.

Our study, limited to the cataract surgery only, has shown that there were no significant differences in both the groups as far as lid akinesia, globe akinesia, and anaesthesia during the operation in concerned. However, during the post operative period significant differences exit between the two groups of patients. The group II patients who received the mixture of lignocaine with bupivacaine were more comfortable and needed analgesics less frequently than the group I patient who received lignocaine only.

We believe that a mixture of lignocaine with bupivicaine is much superior as it will provide a much more comfortable post operative period for the patient.

## REFERENCES


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