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## Original Research

### Efficacy of bupivacaine and lignocaine in controlling pain in root canal treatment- A comparative study

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#### ABSTRACT:

**Background:** The present study compared bupivacaine and lignocaine in root canal treatment. **Materials & Methods:** The present study was conducted on 40 patients requiring root canal treatment in mandibular anterior teeth. Patients were divided into 2 groups of 20 each. Group I patients was administered 2% lignocaine and the group II with 0.5% bupivacaine. The pain in patients was compared using the visual analogue scale (VAS) before treatment and 6, 10, 24, and 48 hours after root canal treatment. **Results:** The mean VAS before treatment in both group I was 6, at 6 hours was 4.8 in group I and 4.2 in group II, at 10 hours was 4.2 in group I and 3.0 in group II, at 24 hours was 3.6 in group I and 2.2 in group II, at 48 hours was 2.4 in group I and 1.3 in group II. The difference was significant ( $P < 0.05$ ). **Conclusion:** Authors found that 0.5% bupivacaine is better in terms of controlling pain as compared to lignocaine.

**Key words:** Bupivacaine, lignocaine, VAS

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#### INTRODUCTION

Postoperative pain control is frequently performed with the administration of short-acting local anesthetic and oral analgesics. Theoretically, pain control can be increased by using a local anesthetic with prolonged action. The perceived association of pain with endodontic therapy is a great source of fear for many patients and can prevent them from seeking treatment. Controlling post-operative pain represents a meaningful challenge to many practitioners. Local anesthetics provides adequate pain relief for the majority of dental treatments, however, failures do occur. These may be the result of anatomical, pharmacological, pharmaceutical, pathological, psychological or technical or iatrogenic factors.<sup>1</sup>

A range of local anesthetic drugs have been used in dentistry. Lidocaine, the first commercialized amide local anesthetic, is still the most widely used anesthetic in some countries. It is considered as a reference for new local anesthetics. Lidocaine, the first commercialized amide local anesthetic, is still the most widely used anesthetic in some

countries. Bupivacaine, a long-acting anesthetic, demonstrate duration of anesthesia ranging between 7 and 11 h for inferior alveolar nerve block and a mean of 9 h for infiltration.<sup>2</sup> Fernandez et al<sup>3</sup> compared the amount of pulpal anesthesia obtained with bupivacaine and lidocaine in inferior alveolar nerve blocks. They reported significant anesthetic success with lidocaine for all teeth except the first molars. The present study compared bupivacaine and lignocaine in root canal treatment.

#### MATERIALS & METHODS

The present study was conducted in the department of Endodontics. It comprised of 40 patients requiring root canal treatment in mandibular anterior teeth of both genders. All patients were informed and written consent was obtained. Ethical clearance was taken prior to the study.

General information such as name, age, gender etc was recorded. Patients were divided into 2 groups of 20 each. Group I patients was administered 2% lignocaine and the

group II with 0.5% bupivacaine. The pain in patients was compared using the visual analogue scale (VAS) before treatment and 6, 10, 24, and 48 hours after root canal treatment. Results thus obtained were subjected to

statistical analysis. P value less than 0.05 was considered significant.

## RESULTS

### Graph I Distribution of patients

Groups	Group I (2% Lignocaine)	Group II (0.5% Bupivacaine)
Number	40	40

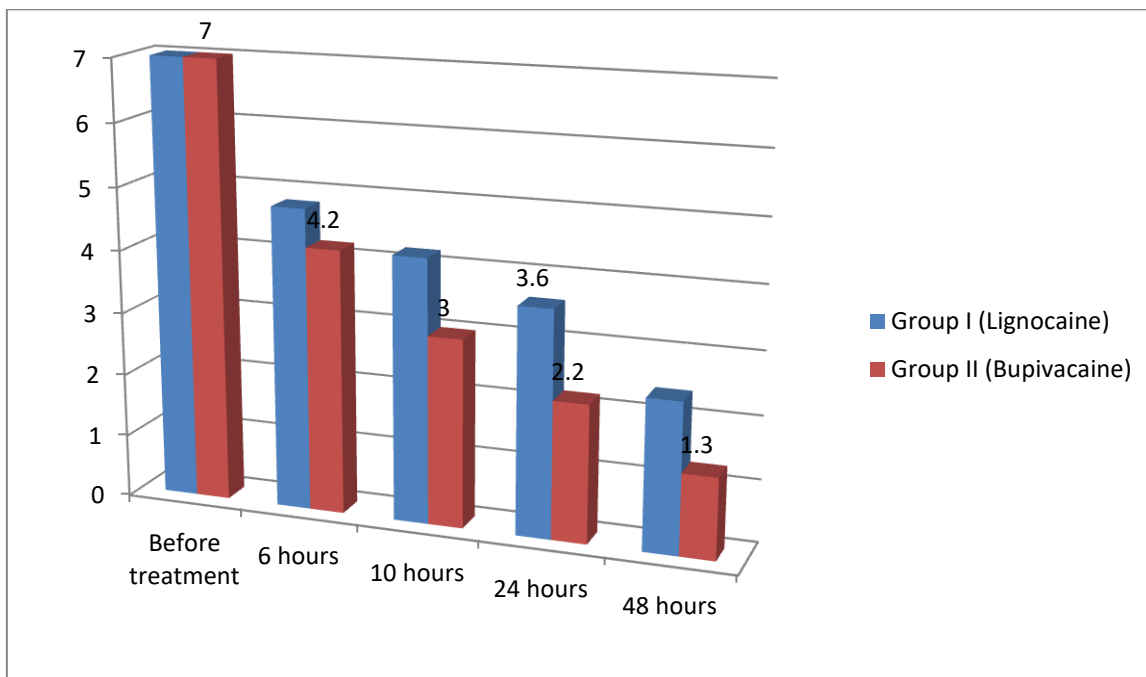
Table I shows that group I patients was administered 2% lignocaine and the group II with 0.5% bupivacaine. Each group had 20 patients each.

### Table II VAS in both groups

Time	Group I	Group II	P value
Before treatment	7	7	0.01
6 hours	4.8	4.2	
10 hours	4.2	3.0	
24 hours	3.6	2.2	
48 hours	2.4	1.3	

Table II, graph I shows that mean VAS before treatment in both group I was 6, at 6 hours was 4.8 in group I and 4.2 in group II, at 10 hours was 4.2 in group I and 3.0 in group II, at 24 hours was 3.6 in group I and 2.2 in group II, at 48 hours was 2.4 in group I and 1.3 in group II. The difference was significant (P< 0.05).

### Graph I VAS in both groups



## DISCUSSION

Studies have shown that postoperative pain can be reduced if local anesthesia has been achieved by long acting local anesthetics. Researchers found that 0.5% bupivacaine with 1:200,000 epinephrine when used for inferior alveolar nerve block for first or second mandibular molars had lesser pain score at 6 and 12 h after RCT compared with patients who received 2% lignocaine with 1:80,000 epinephrine, and the use of analgesics was lower than in the lignocaine group. Crout et al<sup>4</sup> studied the effectiveness of long acting anesthesia to reduce pain after periodontal surgery. They concluded that etidocaine postpones the onset of pain and using only lidocaine induced more analgesics use by patients. Also there was no significant difference between etidocaine and bupivacaine in both quality and quantity of anesthesia and post operative pain. The present study compared bupivacaine and lignocaine in root canal treatment.

In present study, group I patients was administered 2% lignocaine and the group II with 0.5% bupivacaine. Each group had 20 patients each. Nespeca et al<sup>5</sup> compared bupivacaine with lidocaine. They found that post-operative pain and use of analgesics were less in the bupivacaine group than the lidocaine group. They also found that there was no significant difference between 0.25% and 0.5% of bupivacaine

We found that mean VAS before treatment in both group I was 6, at 6 hours was 4.8 in group I and 4.2 in group II, at 10 hours was 4.2 in group I and 3.0 in group II, at 24 hours was 3.6 in group I and 2.2 in group II, at 48 hours was 2.4 in group I and 1.3 in group II. The difference was significant ( $P < 0.05$ ). Brunetto et al<sup>6</sup> found that a total of fifty patients with symptomatic irreversible pulpitis were selected to be included in the study. The patients were randomly divided into two groups: Group A patients were given lignocaine as local anesthetic and Group B were given bupivacaine. The mean overall postoperative pain for bupivacaine was lesser than that for lignocaine, and the difference was statistically significant.

During the last 20 years, many researchers have conducted studies to determine the efficacy of long-acting local anesthetics versus the more commonly used anesthetic agents. If successful, patients should report less pain and require fewer analgesics postoperatively.<sup>7,8</sup> Most of these studies found that the prolonged anesthesia that results from the use of long acting local anesthetics was followed by a period of analgesia. Researchers have demonstrated that there was less postoperative pain and fewer analgesics were required when 0.5% bupivacaine with 1:200,000 epinephrine was used during periodontal surgeries compared to 2% lidocaine with 1:100,000 epinephrine.<sup>9</sup> Moradi et al<sup>10</sup> conducted a double blind and randomized clinical trial on 30 patients' anterior maxillary teeth. The patients were divided into two groups of fifteen. One group was administered lidocaine (2% with 1:100000 epinephrine) local anesthesia and the other group was given

bupivacaine (0.5% without epinephrine). The pain in patients were compared using the visual analogue scale (VAS) at definite times i.e. before treatment, during treatment and 2,4,6,8,10,12,24,36 and 48 hours after operation. Bupivacaine significantly decreased postoperative pain compared to lidocaine. Postoperative pain was directly related to preoperative pain. Women reported more pain, though significant difference in postoperative pain report was not found between different ages.

## CONCLUSION

Authors found that 0.5% bupivacaine is better in terms of controlling pain as compared to lignocaine.

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