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# ORIGINAL RESEARCH

## ASSESSMENT OF EFFICACY OF TWO DIFFERENT LOCAL ANAESTHETIC SOLUTIONS IN PATIENTS UNDERGOING DENTAL EXTRACTION

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**ABSTRACT:)**
**Background:** Painless tooth extraction using the local anesthetic agent is the requirement for the comfort of the patient. The present study was conducted to compare the efficacy of ropivacaine and lignocaine with adrenaline in dental tooth extractions. **Materials & Methods:** The present study was conducted on 48 patients of both genders requiring dental tooth extraction. Patients were divided into 2 groups of 24 each. Group I patients received 0.75% ropivacaine and group II patients received 2% lidocaine with 1:200,000 adrenaline. All patients underwent dental extractions under aseptic conditions. Pain on injection, Pain during the extraction, Onset of anesthesia and Duration of anesthesia was assessed and compared in both groups. **Results:** Out of 48 patients, males were 30 and females were 18. Onset of anesthesia (mins) in group I was 7.12 minutes and in group II was 9.25, duration of anesthesia (hours) in group I was 3.17 and in group II was 3.45, pain on injection was 0.98 in group I and 1.20 in group II, pain during procedure was 1.73 in group I and 1.36 in group II. The difference was non- significant (P> 0.05). **Conclusion:** Both ropivacaine and lignocaine found to be equally effective in dental extraction cases.
**Key words:** Lignocaine, Local anesthetic, Ropivacaine

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## INTRODUCTION

Extraction is the most common minor oral surgical procedure in oral and maxillofacial surgery. Painless tooth extraction using the local anesthetic agent is the requirement for the comfort of the patient.[1] Local anesthesia is an important part of the daily routines for a dentist. Vasodilator activity affects both the anesthetic potency and the duration.[2] Greater vasodilator activity leads to increased blood flow to a region, which leads to a rapid removal of anesthetic molecules from the injection site. This drug class has an impressive history of safety and efficacy, but all local anesthetics have the potential to produce significant toxicity if used carelessly.[3] Local anesthesia is an effective method of pain control since 1884. In dentistry, 2% lidocaine is most frequently used. However, lidocaine is short acting (vasodilator). To increase the depth and duration of anesthesia, epinephrine was added to lignocaine. Adding vasoconstrictor reduces the pH of the solution (acidic), rendering the injections uncomfortable to the patients.[4] Ropivacaine is a new aminoamide local anaesthetic. It is the monohydrate of the hydrochloride salt of 1- propyl-2,6-pipecoloxylidide and is prepared as the pure S-enantiomer.[5] It is one of a group of local anaesthetic drugs, the pipecoloxylidides which were first synthesized in 1957. When lignocaine and adrenaline are used in combination, they prevent pain transmission passing from the area of injection to the brain and so it numbs the surgical area.[6] The present study was conducted to compare the efficacy of ropivacaine and lignocaine with adrenaline in dental tooth extractions.

## MATERIALS & METHODS

The present study was conducted in the department of Oral & Maxillofacial surgery. It comprised of 48 patients of both genders requiring dental tooth extraction. The study was approved from institutional ethical committee. All participants were informed regarding the study and written consent was obtained. Data related to participants such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 24 each. Group I patients received 0.75% ropivacaine and group II patients received 2% lidocaine with 1:200,000 adrenaline. All patients underwent dental extractions under aseptic conditions. Pain on injection, Pain during the extraction, Onset of anesthesia and Duration of anesthesia was assessed and compared in both groups. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

## RESULTS

**Table I Distribution of patients**

**Total- 48**

| Gender | Males | Females |
|---|---|---|
| Number | 30 | 18 |

Table I shows that out of 48 patients, males were 30 and females were 18.

**Table II Distribution of patients in two groups**

| Groups | Group I | Group II |
|---|---|---|
| Solution | 0.75% ropivacaine | 2% lidocaine |
| Number | 24 | 24 |

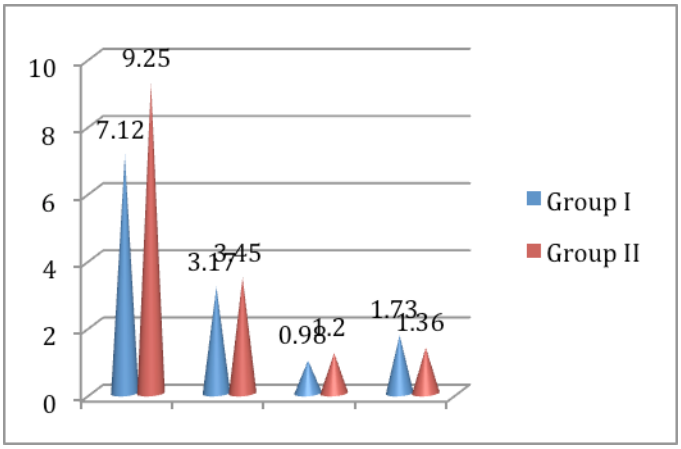
Table II shows that group I patients received 0.75% ropivacaine and group II patients received 2% lidocaine with 1:200,000 adrenaline. All patients underwent dental extractions under aseptic conditions.

**Table III Comparison of parameters**

| Parameters | Group I | Group II | P value |
|---|---|---|---|
| Onset of anesthesia (mins) | 7.12 | 9.25 | 0.05 |
| Duration of anesthesia (hours) | 3.17 | 3.45 | 0.12 |
| Pain on injection (VAS) | 0.98 | 1.20 | 0.24 |
| Pain during procedure (VAS) | 1.73 | 1.36 | 0.81 |

Table III, graph I shows that onset of anesthesia (mins) in group I was 7.12 minutes and in group II was 9.25, duration of anesthesia (hours) in group I was 3.17 and in group II was 3.45, pain on injection was 0.98 in group I and 1.20 in group II, pain during procedure was 1.73 in group I and 1.36 in group II. The difference was non- significant (P> 0.05).

**Graph I Comparison of parameters**




## DISCUSSION

Adrenaline prolongs the duration as well as the depth of anesthesia. It is effective in preventing or minimizing blood loss during surgical procedures.[7] The addition of epinephrine (adrenaline) to xylocaine increases the efficiency, duration of the analgesia, and reduces the risk of generalized toxicity. Xylocaine fulfills all the ideal requirements of local analgesic drugs. However, there are certain contraindications to the use of xylocaine in cases of cardiovascular diseases, hypertension, and hyperthyroidism, etc.[8] Ropivacaine is a local anaesthetic drug belonging to the amino amide group. Ropivacaine causes reversible inhibition of sodium ion influx, and thereby blocks impulse conduction in nerve fibres. This action is potentiated by dose-dependent inhibition of potassium channels.[9] The lower lipophilicity of ropivacaine versus bupivacaine correlated with the lesser cardiodepressant effects of both ropivacaine isomers than of the bupivacaine isomers in animal studies. The CNS effects occurred earlier than cardiotoxic symptoms during an intravenous (IV) infusion of local anaesthetic (10 mg/min of ropivacaine or bupivacaine) in human volunteers and the infusion was stopped at this point. Significant changes in cardiac function involving the contractility, conduction time and QRS width occurred and the increase in a QRS width was found to be significantly smaller with ropivacaine than with bupivacaine.[10] The present study was conducted to compare the efficacy of ropivacaine and lignocaine with adrenaline in dental tooth extractions.

In present study, out of 48 patients, males were 30 and females were 18. Group I patients received 0.75% ropivacaine and group II patients received 2% lidocaine with 1:200,000 adrenaline. All patients underwent dental extractions under aseptic conditions.

Kumar et al[11] conducted a study in which a total of 100 patients were included which randomly divided into two study groups with 50 patients in each group as follows: Group A: Patients undergoing dental extraction under the local anesthetic effect of 2% lignocaine with 1:80000 concentrations of adrenaline, Group B: Patients undergoing dental extraction under the local anesthetic effect of 2% lignocaine with 1:200000 concentrations of adrenaline. Mean time for the objective onset of local anesthesia among the subjects of group A and group B was 3.20 minutes and

3.33 minutes respectively. Mean duration of anesthesia among subjects of group A and group B was 150.5 minutes and 140.8 minutes respectively. No significant results were obtained while comparing the onset and duration of LA among the subjects of the two study groups.

We observed that onset of anesthesia (mins) in group I was 7.12 minutes and in group II was 9.25, duration of anesthesia (hours) in group I was 3.17 and in group II was 3.45, pain on injection was 0.98 in group I and 1.20 in group II, pain during procedure was 1.73 in group I and 1.36 in group II.

Dar et al[12] conducted a study on 148 patients of both genders. Patients were divided into 2 groups of 74 each. Group I received 0.75% ropivacaine while group II received 2% lidocaine with 1:200,000 adrenaline. Pain on injection, onset of anesthesia, pain during the extraction and duration of anesthesia was assessed and compared in both groups. Mean onset of anesthesia in group I was 7.02 minutes and in group II was 9.52 minutes. Duration of anesthesia in group I was 3.24 hours and in group II was 3.68 hours, Pain on injection was 0.94 and 1.28 in group I and II respectively. VAS during procedure was 1.84 in group I and 1.32 in group II.

## CONCLUSION

Both ropivacaine and lignocaine found to be equally effective in dental extraction cases.

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