Assessment of Efficacy of Electronic Dental Anaesthesia with 2% Lignocaine In Patients Undergoing Dental Surgical Procedure: A Comparative Study

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ABSTRACT
Background: Fear and anxiety are most common issue faced by clinician during treatment of paediatric patient. Dental environment and especially injections increases the level of fear and anxiety. Administration of local anesthesia remains a herculean task for dentist thus the need of an alternative method was felt.

Aim: The aim of this study is to compare and assess the efficacy of electronic dental anaesthesia with 2% lignocaine in patients undergoing dental surgical procedure.

Materials and Methods: 120 patients were included in the present study. Age group selected for the present study was children aged between 4 to 12 years. Patients were divided in to two groups. 60 patients in each group, group 1 received 2% lignocaine and group 2 received electronic dental anesthesia. Visual analogue and verbal pain scale was used.

Results: In Visual Analogue Scale it was found that patients felt minimum pain in group 2 i.e. TENS (23.3%). In VPS 86.6% felt no pain in TENS group.

Conclusion: TENS can be used as an alternative method for administration of local anesthesia. It is efficient in controlling pain and is comfortable for patients.

Key words: Lignocaine, TENS, Paediatric Patient, Pain, Fear.

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INTRODUCTION
Local anesthesia is required for most of the procedures performed in dentistry like extractions, pulpotomies, root canal treatment, drainage of abscess, etc. unpleasant stimulus like site of needle, drilling noise, equipment's leads to fear and anxiety among children. Pain control is very important part in paediatric patients. Some children have needle phobia and injecting such a child because completely impossible for dentist. Methods to control pain have been divided in two categories pharmacological and non-pharmacological methods.

Local anesthesia administration during dental procedure is considered to be the most common pharmacological means to reduce pain in dentistry followed by analgesics for the postoperative pain. Transcutaneous electrical nerve stimulation is the non-pharmacological method for pain control. TENS was first introduced in 1967 to help control chronic pain.12 Health professionals use TENS for acute and chronic pain management.34

In spite of having potential to control pain its use it not very common in dentistry. So, we aimed to compare and assess the efficacy of electronic dental anaesthesia with 2% lignocaine in patients undergoing dental surgical procedure.

MATERIALS AND METHODS
A total of 120 patients were included in the present study. Age group selected for the present study was children aged between 4 to 12 years. Of the 120 patients 55 were males and 65 were females. Ethical committee clearance was obtained before initiating the study. A written informed consent was obtained from parents/guardians before starting the procedure. Patient’s parents/guardians were explained in detailed regarding the procedure to be formed. Patients were divided in to two groups. 60 patients in each group, group 1 received 2% lignocaine and group 2 received electronic dental anesthesia. Visual analogue and verbal pain scale was used. Each group was further divided into subgroups.
based on the patient’s requirement of treatment. Endodontic procedures such as pulpotomy and pulpectomy, cavity preparation where caries extended were performed.

**Group 1:** 2% lignocaine; **Group 2:** Electronic dental anesthesia

**Inclusion Criteria**
1. Age group 4 to 12 years
2. Those in need of dental treatment
3. No history of LA allergy

**Exclusion Criteria**
1. Patients not willing to participate
2. Patients with mental disorders
3. Patients with chronic illness

Visual analogue scale was used, the child was asked to rate the discomfort VAS, with a smiling child at one end and a tearful child at the other. The distance along the scale from the smiling child was taken as the pain score. In addition, the child was asked which side was least painful. Verbal pain scale and Likert’s scale for comfort and effectiveness of anesthesia was also used.

**Data Analysis**
Data was collected safely. Data so collected was subjected to analysis using Statistical Package for Social Sciences (SPSS) Version 15.0. Non-parametric data has been represented as frequencies and percentages. All variables that were significantly different were recorded at a p < 0.005 level.

**Table 1: Demographic characteristics of patients**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>55</td>
<td>45.8%</td>
</tr>
<tr>
<td>Female</td>
<td>65</td>
<td>54.1%</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Table 2: Distribution of Group**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1- 2% lignocaine</td>
<td>60 (50%)</td>
</tr>
<tr>
<td>Group 2- TENS</td>
<td>60 (50%)</td>
</tr>
</tbody>
</table>

**Table 3: Transcutaneous electric nerve stimulation and 2% lignocaine in relation to visual analogue scale**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>12</td>
<td>20%</td>
</tr>
<tr>
<td>Group 2</td>
<td>14</td>
<td>23.3%</td>
</tr>
</tbody>
</table>

**Graph 1: Transcutaneous electric nerve stimulation and 2% lignocaine in relation to verbal pain scale**

**RESULTS**
A total of 120 patients were included in the present study. Of the 120 55 were males i.e. 45.8% and 65 were females 54.1%. Age group selected for the present study was children aged between 4 to 12 years (Table 1). All 120 patients were divided in two groups. Group 1 consisted of 60 children, 2% lignocaine was used for all 60 patients. Group 2 consisted of 60 children, electronic dental anesthesia i.e. TENS (Table 2).

In Visual Analogue Scale showed that of the 60 patients in group 1, 12 patients reported minimum pain was felt with 2% lignocaine i.e. 20%, and 14/60 patients said they felt minimum pain in group
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