Pain Perception of Patients Undergoing Root Planing with Anesthesia Gel and Infiltration: A Comparative Study

Dr. Sashi Rekha Kosuri, Dr. Potluri Venkata Durga Rao, Dr. Vinay Rama Krishna Kaipa, Dr. Tanmai Kaveti, Dr. Dandu Siva Sai Prasad Reddy, Dr. Kotya Naik Maloth

1Assistant Professor, Department of Periodontics, Malla Reddy Dental College for Women, Hyderabad, Telangana, India.
2Professor and Head, Department of Periodontics, Malla Reddy Dental College for Women, Hyderabad, Telangana, India.
3Assistant Professor, Department of Periodontics, Mamata Dental College, Khammam, Telangana, India.
4Assistant Professor, Department of Periodontics, CKS Theja Dental College, Tirupati, Andhra Pradesh, India.
5Assistant Professor, Department of Oral Medicine and Radiology, Mamata Dental College, Khammam, Telangana, India.

Article Info

Article History:
Received on 04th March, 2019
Peer Reviewed on 18th March, 2019
Revised on 11th April, 2019
Published on 27th April, 2019

Keywords:
Local Anesthesia, Infiltration, Pain Perception.

Abstract

Background: Pain control is considered to be an important outcome measure for successful periodontal therapy. Injectable local anesthetics have been used to secure anesthesia for scaling and root planing. An alternative to injection, topical anesthesia have been developed and tested to avoid patient’s discomfort caused by injection. Aim: To compare the patient’s pain perception while performing scaling and root planing procedure using lignocaine 2% local anesthesia in gel form and by local infiltration. Materials and methods: 30 patients of both sexes who have previously undergone supragingival scaling with PD ≥4mm bilaterally in the same arch either maxillary or mandibular were selected in this split mouth study. Root planing is performed with administration of local anesthetic (LA) gel on one quadrant and infiltration on other quadrant of the same arch of the same patient after a two hrs interval. The anesthetic used is 2% lignocaine hydrochloride in gel form and injection (Infiltration method). Patient’s pain perception was recorded using VRS (verbal rating scale). Results: In LA gel group the standard deviation and range were 0.556 and 2 respectively. The mean VRS with LA gel group is 0.97 ± 0.0556. In LA infiltration group the standard deviation and range were 0.089 and 3 respectively. The mean VRS scores of LA infiltration group were 1.03 ± 0.809. There was no statistically significant difference in the VRS scores among the two groups (p<0.722) as analyzed by paired t test. Conclusion: Topical anesthesia using lignocaine 2% gel can be used to obtain adequate pain control and comfort to the patient while performing scaling and root planing. The results from this study have to be evaluated with caution as topical anesthesia with lignocaine does not reliably achieve anesthesia during the procedure and not the sole method of achieving pain control.

Corresponding Author: Dr. Sashi Rekha Kosuri, Assistant Professor, Department of Periodontics, Malla Reddy Dental College for Women, Hyderabad, Telangana, India.

Br J Phar Med Res Copyright©2019 Sashi Rekha Kosuri et al. This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License (http://creativecommons.org/licenses/by/4.0/), allowing third parties to copy and redistribute the material in any medium or format and to remix, transform, and build upon the material for any purpose, even commercially, provided the original work is properly cited and states its license.
INTRODUCTION:

Pain control is considered important for successful periodontal therapy. For this purpose to be achieved, injectable local anesthetics have been used to secure anesthesia for various periodontal therapeutic purposes. But these injectable local anesthetics are associated with some adverse effects. Also, injectable anesthetics are cause for discomfort and fear among patients.[1] The main disadvantages associated with injectable anesthetics are pain caused due to needle insertion and long duration of numbness of surrounding tissues such as lips and tongue.[2]

To avoid these side effects and discomfort caused by injection, topical and sulcular anesthesia procedures have been developed. Topical anesthesia without the need of needles would play a role in reducing fear and anxiety not only in children but also in adults.[2] As a topical option, transmucosal patch containing 10% or 20% lidocaine was used for non surgical periodontal therapy. However this product was a failure in daily practice because of certain disadvantages like high cost and adherence of patch in posterior regions.[2]

An intra-pocket anesthesia gel containing lidocaine (2.5%) and prilocaine (2.5%) have been used as an alternative to control intra operative pain during various treatment modalities.[1,3,4] Studies have shown that intrapocket anesthesia gel has a lower analgesic efficacy than injectable anesthesia.[5] The aim of this study is to compare the patient’s pain perception while performing root planing procedure during scaling and root planing using same anesthetic agent, Lignocaine 2% local anesthesia in gel form and the same in injectable form. Both gel form and infiltration anesthesia on both sides of the same arch were administered at two hours interval. Pain perception of the patients undergoing treatment procedure was recorded by blinded examiner. The type of anesthesia that was administered was not revealed to the examiner. The patients were individually instructed of a five step verbal rating scale (VRS) to record experienced pain levels.

Statistical analysis: The variables obtained in the study are summarized by descriptive statistics, standard error and standard deviation. The data is analyzed by paired ‘t’ test to identify the differences among LA gel and LA infiltration groups. All the data was analyzed using SPSS 14 software.

RESULTS:

In LA gel group the standard deviation and range were 0.556 and 2 respectively. [Table 2] The mean VRS with LA gel group is (0.97±0.0556). [Table 2] In LA infiltration group the standard deviation and range were 0.089 and 3 respectively. [Table 3] The mean VRS scores of LA infiltration group were 1.03 ± 0.809. [Table 3] There was no statistically significant difference in the VRS scores among the two groups (p<0.722) as analyzed by paired t test. [Table 4]
**Figure 1:** Reveals infiltration of local anesthesia (a) probing depth measuring greater than or equal to 4 mm (b)

**Figure 2:** Reveals infiltration of local anesthesia gel (a) probing depth measuring greater than or equal to 4 mm (b)

**Table 1: Study Design**

<table>
<thead>
<tr>
<th>Eligible individuals (N = 44)</th>
<th>Refusal to participate, Fear of pain (n=14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randomization by sextant (2), (N = 30)</td>
<td></td>
</tr>
<tr>
<td>LA Gel Group A (N = 30)</td>
<td>LA Infiltration Group B (N = 30)</td>
</tr>
</tbody>
</table>
**Table 2: Descriptive Statistics (LA Gel Group)**

<table>
<thead>
<tr>
<th>N</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAR00001</td>
<td>30</td>
<td>2</td>
<td>0</td>
<td>.97</td>
<td>.102</td>
</tr>
</tbody>
</table>

**Table 3: Descriptive Statistics (LA Infiltration Group)**

<table>
<thead>
<tr>
<th>N</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAR00002</td>
<td>30</td>
<td>3</td>
<td>0</td>
<td>1.03</td>
<td>.148</td>
</tr>
</tbody>
</table>

**Table 4: Paired Samples Test**

<table>
<thead>
<tr>
<th>PAIRED DIFFERENCES</th>
<th>MEAN</th>
<th>STD. DEVIATION</th>
<th>95% CONFIDENCE INTERVAL OF THE DIFFERENCE</th>
<th>T</th>
<th>DF</th>
<th>SIG. (2-TAILED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA Gel and LA Infiltration Groups</td>
<td>-.067</td>
<td>1.015</td>
<td>.185</td>
<td>-.446</td>
<td>.312</td>
<td>-.360</td>
</tr>
</tbody>
</table>

**DISCUSSION:**

Adequate pain control may be extremely important in gaining patient compliance during various debridement procedures like Scaling and Root planing. Though the use of injectable anesthetics is the most reliable method of achieving anesthesia for performing these procedures, it was reported that more than 25% of adult patients expressed some fear of dental injections at some point or another. Various methods to achieve topical anesthesia showed good results in achieving patient comfort during the scaling and root planing.

However, intrapocket anesthesia gel has a lower analgesic efficacy than injectable anesthesia. The aim of this study is to compare the patient’s pain perception while performing root planing procedure during scaling and root planing using local anesthesia gel or injectable local anesthesia. Previous studies have compared two different agents, but not the efficacy of the same anesthetic agent, both for infiltration or for using as topical anesthetic gel. Thus the local anesthetic drug that was used in this study was 2% lignocaine hydrochloride gel and the same in injection form.

In the present study, Lignocaine 2% gel was found to provide topical anesthetic effectiveness similar to injectable lidocaine as there were no significant differences observed in the mean VRS scale between the two groups. The results of our study are in agreement with similar kind of studies done to compare the anesthesia induced by topical anesthetic gel form or by infiltration. Previous studies were done to compare the efficacy of two different anesthetic agents. A number of studies evaluating topical intrapocket anesthesia were done to compare the effectiveness of either Oraqix, EMLA,
Bupivacaine gel [11] with different injectable anesthetic. The selection of the anesthetic agents was done on their proven clinical efficiency which may induce a bias in the selection process of the anesthetic agent. To reduce the bias as mentioned above, this study offers a comparison of the effectiveness of same anesthetic agent lidocaine 2% which is provided both in gel form and as injectable form for infiltration. The sole aim of this study in comparing the pain control provided by topical anesthetic gel and infiltration was hence achieved. There was no statistically significant difference in the VRS scores among the two groups (p<0.722) as analyzed by paired t test. [Table 4]

A survey done by Matthews et al. asked people to state their preference for either a local anaesthetic injection, the administration of a non-injectable anaesthetic gel or no anaesthetic at all for their regular dental hygiene visits. The overwhelming majority chose the dental gel as their first preference. [12] Our findings suggest that topical anesthetic gel can be used as an adjuvant for eliciting topical anesthesia for performing scaling and root planing procedures, but not the sole method in achieving the pain control.

CONCLUSION:
Topical anesthesia using lignocaine 2% gel can be used to obtain adequate pain control and comfort to the patient while performing scaling and root planing. The results from this study have to be evaluated with caution as topical anesthesia with lignocaine does not reliably achieve anesthesia during the procedure and not the sole method of achieving pain control. The acceptance of topical anesthesia.

REFERENCES:
How To Cite This Article:

Source of Support: Nil Conflict of Interest: None declared

Your next submission with British BioMedicine Publishers will reach you the below assets
• Quality Editorial service
• Swift Peer Review
• E-prints Service
• Manuscript Podcast for convenient understanding
• Global attainment for your research
• Manuscript accessibility in different formats
  (Pdf, E-pub, Full Text)
• Unceasing customer service

Track the below URL for one-step submission
http://www.britishbiomedicine.com/manuscript-submission.aspx