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Original Research

To evaluate the effect of conducting media on efficacy of electric pulp test

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ABSTRACT:

Background: The present study was conducted to evaluate the effect of conducting media on efficacy of electric pulp test. **Materials & Methods:** The present study was conducted on 60 maxillary central incisors of 30 males and 30 females. 2 conducting media tested were lox 2% Jelly (Group I) and sensodyne repair tooth paste (Group II). Each medium was tested twice on the tooth with 1 minute interval. The sensory threshold value and the pain scores were recorded. Results were tabulated and subjected to statistical analysis. **Results:** It was found that mean sensory threshold in group I was 0.612 and in group II was 0.934. The difference was significant ($P < 0.05$). VAS score in group I was 51.6 and in group II was 5.89. The difference was non-significant ($P > 0.05$). **Conclusion:** It was found that sensory threshold values shown by Lox 2% Jelly was significantly lower than sensodyne repair tooth paste.

Key words: Conducting media, Lox, Sensodyne

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INTRODUCTION

Identification of diseases at their earliest stages allows the clinician to initiate the most conservative management techniques and avoid possible complications and expenses that may arise if a disease is left undiagnosed and untreated for a longer period.¹

Unambiguous determination of pulp vitality or non vitality is essential for the successful diagnosis of endodontic pathology. Certain pulp tests, along with a detailed patient history, clinical & radiographic examination aid in achieving the same. Accurate assessment of the state of the health of the dental pulp, which is a key step for the successful diagnosis of oral diseases, is achieved through a detailed patient history, thorough clinical and radiographic examinations and the use of special diagnostic tests.² Pulp sensibility tests (thermal and electric) are used to assess the condition of the nerves within the dental pulp and indirectly assess the pulpal health. Although, research depicts that cold test and electric pulp test (EPT) provide equally accurate diagnosis on

status of pulp vitality in majority of the cases, EPT does have some limitations.³

Assessment of the blood supply within the dental pulp (pulp vitality) is the earliest indicator and may be the only available true indicator of the actual state of pulpal health. Despite being a better indicator of the state of a tooth's pulpal health that can overcome most problems associated with pulp sensibility tests, vitality tests may fail to reflect the true state of health of the dental pulp.⁴ The present study was conducted to evaluate the effect of conducting media on efficacy of electric pulp test.

MATERIALS & METHODS

The present study was conducted in the department of Endodontics. It comprised of 60 maxillary central incisors of 30 males and 30 females. All were informed regarding the study and written consent was obtained. Ethical approval was obtained prior to the study. Name, Age, gender of all patients was recorded. 2

conducting media tested were lox 2% Jelly (Group I) and sensodyne repair tooth paste (Group II). Each medium was tested twice on the tooth with 1 minute interval. The tooth probe of the tester was coated with a thin layer of the test medium and a stimulus was applied on the tooth. The sensory threshold value and the pain scores were recorded. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

| Groups | Group I | Group II |
|--------|--------------|------------------------------|
| Medium | lox 2% Jelly | Sensodyne repair tooth paste |
| Number | 30 | 30 |

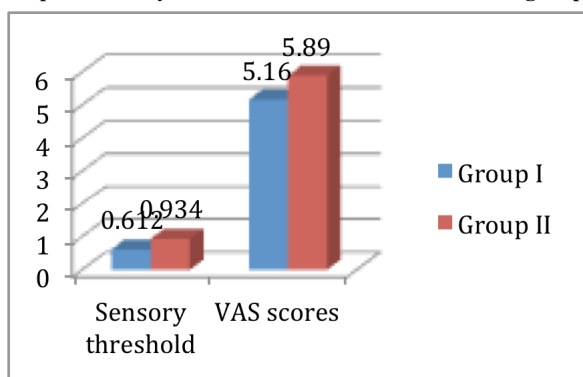
Table I shows that each group had 30 patients and group I had lox 2% Jelly and group II had sensodyne repair tooth paste.

Table II Sensory threshold and VAS scores in both groups

| Parameters | Group I | Group II | P value |
|-------------------|---------|----------|---------|
| Sensory threshold | 0.612 | 0.934 | 0.01 |
| VAS scores | 5.16 | 5.89 | 0.62 |

Table II, graph I shows that mean sensory threshold in group I was 0.612 and in group II was 0.934. The difference was significant (P<0.05). VAS score in group I was 5.16 and in group II was 5.89. The difference was non-significant (P>0.05).

Graph I Sensory threshold and VAS scores in both groups



DISCUSSION

The current gold standard for determining the actual state of pulpal health is histological examination of the dental pulp. The implementation of such a gold standard requires the extraction of the tooth shortly after the use of the diagnostic tests and is thus

impossible in the majority of cases where sacrificing the tooth is not clinically indicated. Instead, less invasive reference standards, such as direct inspection of the dental pulp, may be used for comparison.

Lidocaine, the chief constituent of Lignox 2% Gel has a higher dissociation constant causing it to be more ionic in nature than benzocaine.⁵ Conduction of impulse through a medium depends on factors such as viscosity and surface tension between the medium and the tooth surface. Lower the surface tension, better will be the adaptation of the medium to the tooth which may result in improved conduction.⁶ The constituents of the toothpaste may also affect the conduction of electric impulses from the pulp tester to the tooth. It is known to increase viscosity of the toothpaste which may negatively affect its ability of conduction.⁷ The present study was conducted to evaluate the effect of conducting media on efficacy of electric pulp test.

In present study, each group had 30 patients and group I had lox 2% Jelly and group II had sensodyne repair tooth paste as medium. We found that mean sensory threshold in group I was 0.612 and in group II was 0.934. The difference was significant (P<0.05). VAS score in group I was 5.16 and in group II was 5.89.

Chunhacheevachaloke et al⁸ conducted a study to determine the pulpal sensory thresholds in human teeth using different conducting media and to check presence of gender based differences. The study was performed on 40 maxillary central incisors in 40 healthy participants, 20 males and 20 age-matched females. The three conducting media tested were gel based product – Lox 2% Jelly and toothpastes- Sensodyne Repair and Protect & Meswak. It was found that sensory threshold values elicited by lox 2% jelly were significantly lower than the other conducting media (P < 0.001). Gender wise comparison revealed that males have a higher sensory threshold value. Significant difference was noted between male and female readings in Lox 2% Jelly group (P = 0.003) whereas highly significant difference was noted in Sensodyne Repair & Protect (P < 0.001) and Meswak groups (P < 0.001).

Pulp vitality is determined in its true sense by the vascular supply to the pulp. Presence of reactive A delta fibres in the pulp chamber can be detected by an EPT but, no information on the pathological status of the pulp can be deciphered. Furthermore, EPT produces flawed results in scenarios like crowned teeth, teeth during and post orthodontic treatment, immature teeth, consumption of alcohol and narcotics. Moreover, as EPT works by stimulation of sensory nerves and relies on patient’s judgement and interpretation of the impulse generated on to the tooth.⁹

CONCLUSION

It was found that sensory threshold values shown by Lox 2% Jelly was significantly lower than sensodyne repair tooth paste.

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