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A PROSPECTIVE STUDY OF KNOWLEDGE, AWARENESS, AND PRACTICE OF DIFFERENT NERVE BLOCKS FOR MANDIBULAR MOLAR ROOT CANAL TREATMENT

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Abstract

Introduction: The most important skill required of all dental practitioners is the ability to provide safe and effective local anesthesia. Local anesthetic agents block the peripheral nerves and prevent the conduction of pain perception, making the patient and the dentist more comfortable. The injection of local anesthetic is perhaps the greatest source of patient fear and inability to obtain adequate pain control with minimal discomfort remains a significant concern of dental practitioners.

Materials and methods: The questionnaire was sent to 160 participants and all responded. In the present KAP survey, the study population that was included as part of the study included general dentist and postgraduates in the field of endodontics as these are the participants who are primarily involved in administering Local Anaesthesia during a root canal treatment on an everyday basis. The study was circulated in the form of an online survey collecting responses from the participants. This is a first of its kind study and thus the questionnaire was unique for the same.

Results: A total of 160 responses were received. The responses were then verified and the results were tabulated. The results were plotted in the forms of graphs and then analysed. Out of the study population, 39.5 % of the participants were practitioners and 60.5 % of the participants were post graduate students in the field of endodontics.

Conclusion: Root canal treatment is the most commonly performed endodontic procedure and the administration of proper LA and creating a painless experience for the patient is very important. The inferior alveolar nerve block alone is sufficient for a lower molar root canal

treatment but the knowledge regarding the amount of LA and type of block to be administered is not documented. This is currently leading to unnecessary pain being inflicted on the patient.

Key words: Local anesthetic agents, KAP survey, endodontics, dental practitioners.

INTRODUCTION

The most important skill required of all dental practitioners is the ability to provide safe and effective local anesthesia. Local anesthetic agents block the peripheral nerves and prevent the conduction of pain perception, making the patient and the dentist more comfortable. The injection of local anesthetic is perhaps the greatest source of patient fear and inability to obtain adequate pain control with minimal discomfort remains a significant concern of dental practitioners.[1]

Dental practitioners, before beginning the procedure, identify a good anaesthetic agent and technique to focus solely on the operative procedures without distractions from pain-induced patient movements. Research has shown that the major fear during a dental procedure is the fear of pain associated with intraoral administration of local anaesthetics, which is the most common method for blocking pain during dental procedures.[2] This is considered aversive due to the pain associated with the injection and the perceived threat of needle puncture prior to the injection. Another survey finding was that those individuals who reported as highly fearful of dental procedures were worried about receiving oral injections and demonstrated an association between high dental anxieties and missed or / and delayed appointments.[3]

There is no doubt that the most widely used method for pain management during dental, and particularly endodontic, procedures is to administer intraoral local anaesthesia. Pain management approaches during root canal therapy can be based on one or a combination of such mechanisms. Blocking the nociceptive impulses during root canal treatment is performed with the administration of local anaesthesia Pain management during and after root canal treatment is a major challenge for dental practitioners.[4] Various studies of investigations have been performed to overcome pain during and following root canal therapy. Patient care should always put as the first priority during any clinical procedure. However the correct anaesthetic protocol to be followed for a root canal treatment has not been adequately documented, this further leads to various practices that lead to issues regarding the quality of life of the patient. This is a first of its kind study where the anaesthetic requirement for a root canal treatment is being assessed.[5]

MATERIALS AND METHODS

The questionnaire was sent to 160 participants and all responded. In the present KAP survey, the study population that was included as part of the study included general dentist and postgraduates in the field of endodontics as these are the participants who are primarily involved in administering Local Anaesthesia during a root canal treatment on an everyday basis. The

study was circulated in the form of an online survey collecting responses from the participants. This is a first of its kind study and thus the questionnaire was unique for the same.

Study duration: January 2024 to December 2024.

Study location: Jaipur City.

Various questions that were included as part of this study were:

1. Employment Status as an Endodontist.

2. What nerve block do they give for the root canal treatment of a Mandibular Molar?

3. How much ml of LA do they use for a lower molar RCT.?

4. What type of LA do they use?

5. What Branches do they anaesthetise for a lower molar RCT.?

6. In 10 cases of lower molar RCTs, how many cases do they repeat the block.

7. How many cases do they give an Intra pulpal dose of LA as well in about 10 cases?

8. How effective do they think their block is?

9. Do they accompany their block with an infiltration?

In which state of the treatment does the patient experience maximum pain?

RESULTS

A total of 160 responses were received. The responses were then verified and the results were tabulated. The results were plotted in the forms of graphs and then analysed. Out of the study population, 39.5 % of the participants were practitioners and 60.5 % of the participants were post graduate students in the field of endodontics.

S.No	Employment Status	Percentage
1	Post graduate student	61%
2	Practitioner	39%

Table 1: Employment Status as an Endodontist

S.No	Type of Local Anaesthesia	Percentage

1	With adrenaline	100%
2	Without adrenaline	0

Table 2: Type of Local Anaesthesia Used

S.No	Quantity of LA Used	Percentage
1	2 ml	31.6%
2	3 ml	65.8%
3	4 ml	2.6%

Table 3: Quantity of LA Used for Lower Molar RCT

S.No	Branches of IAN	Percentage
1	Only inferior alveolar nerve	18.4%
2	inferior alveolar nerve along with Lingual nerve	26.3%
3	inferior alveolar with long buccal nerve	5.3%
4	All of the above	50%

Table 4: Branches of IAN that are Anaesthetized

S.No	Whether Nerve Block is Accompanied with Infiltration	Percentage
1	Yes	50%
2	No	50%

Table 5: Whether Nerve Block is Accompanied with Infiltration

A question was posed as to what nerve block, should they give for a lower molar root canal treatment and the entire study population (100 %) had opted for classical nerve block, none of the study participants opted for Gow Gates or Vazirani technique. The most commonly used type of LA is incorporated along with adrenaline through the responses received as part of the present study as 100 % of the participants opted for using lignocaine along with adrenaline.

DISCUSSION

In the present study it is observed that for a lower molar root canal treatment practitioners relied more on classical inferior alveolar nerve block that other techniques. This can be attributed to the fact that the method is the most widely taught method of inferior alveolar nerve block administration and the ease of the same.[6]

Although Gow Gates uses a more geometric and mathematical approach based on planes and provides good success rates the same has not been incorporated into clinical practice. All participants voted that they administer local anaesthetic in combination with adrenaline, The use of adrenaline prolongs the duration and depth of anaesthesia as well as helps to have a better onset of action of the same and hence it can be considered beneficial that the present study population prefer that over the alternative without adrenaline.[7] But it has to be taken into account that when lignocaine is used along with adrenaline there is a significant change in the blood glucose level that is observed and adequate precautions have to be taken regarding the same in patients with systemic conditions such as diabetes.[8]

There is no literature that is available that suggests the amount of local anaesthetic agent that is required to be deposited for a lower molar Root canal treatment. Further studies to be done to standardise the same which can be brought into clinical practice. However it has been reported that doubling the amount of LA does not increase the incidence of pulpal anaesthesia with the inferior alveolar nerve block. Thus in the present day scenario there is a chance of systemic toxicity with unnecessary reasons.[9]

There could be a number of reasons for failure of pulpal anaesthesia using Inferior alveolar nerve block such as altered membrane excitability of peripheral nociceptors or due to Tetrodotoxin resistant channels which are basically a class of sodium channels that are resistant to the action of the local anaesthetic agent, a related factor is the increased expression of sodium channels in pulp diagnosed with irreversible pulpitis, psychological factors or due to the most common factor which is hot tooth. There are various strategies to tackle a hot tooth situation and the administration of Intra pulpal anaesthesia is definitely one of them and hence the candidates are adequately informed regarding the same.[10]

CONCLUSION

Root canal treatment is the most commonly performed endodontic procedure and the administration of proper LA and creating a painless experience for the patient is very important. The inferior alveolar nerve block alone is sufficient for a lower molar root canal treatment but the knowledge regarding the amount of LA and type of block to be administered is not documented. This is currently leading to unnecessary pain being inflicted on the patient.

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