



Four point approach to anesthetise a mandibular molar

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Received: November 5, 2018; Published: December 14, 2018

Abstract

Fear of dental pain is one of the most common reasons for delaying dental treatment. Inferior alveolar nerve block is the most commonly employed technique for achieving pain control in mandibular molars. Standard inferior alveolar nerve block has been the traditional technique used which is associated with its own set of complications including pain, nerve injury, hematoma, trismus, facial palsy, and sustained soft tissue anesthesia. This technique describes a four point anesthesia with buccal and lingual infiltration supported by two interpapillary anesthesia adjacent to the mandibular molar operated upon.

Aim: This study was undertaken with the objective to determine pain, duration, profoundness and complications associated with administration of four point injection technique.

Materials and Methods: This study was conducted on 77 patients (male = 46, female = 31) who visited Riyadh elm university for dental extractions of mandibular molar teeth. The four point anesthesia was administered using a non-disposable stainless steel syringe with a 1.8ml cartridge containing lignocaine hydrochloride 2% with adrenaline 1:80000 with a 25 gauge needle at buccal (vestibule), lingual (vestibule), mesiobuccal and distobuccal aspect of mandibular molars. Feedback of patient pain experience was obtained using visual analog scale.

Results: Technique was successful in 84 percent patients. Success rate was measured by determining the pain ratings given by patient at the end of the procedure. In visual analogue scale, score above 7 was considered adequate anesthesia. Few patients needed inferior alveolar nerve block most of whom had a history of active inflammatory process around the tooth. Disadvantage of the technique included the very four point injection which involves multiple prick. However subsequent pricks can be delayed after some anesthesia is achieved with the first injection.

Conclusion: The study provided us with an alternative technique to anesthetise mandibular molars which could be helpful in patients who fear a nerve block. Since the technique achieved adequate anesthesia for extraction of mandibular molars which has a thick buccal cortical bone, the technique could be effective for other dental procedures too.

Keywords: Mandibular; Patients, Pain

Introduction

Fear of pain among dental patients is not uncommon. This fear is often the cause for patients delaying or avoiding treatment. Standard inferior alveolar nerve block is the most commonly employed technique for achieving pain control in mandibular molar and has been the traditional technique which has its own set of complications including nerve injury, hematoma, trismus, facial palsy, and sustained soft tissue anesthesia. Since infiltration anesthesia does not affect the mandibular molar, there has always been a depen-

dency on inferior alveolar nerve block. The technique described here is a four point anesthetic technique employing buccal and lingual infiltration supported by two intraseptal anesthesia adjacent to the mandibular molar treated upon.

Aim

This study was undertaken with the objective to determine duration, profoundness and complications associated with administration of four point injection technique when used for anesthetizing a mandibular molar tooth.

Materials and Method

Study was conducted on 77 patients (male = 46, female = 31) who visited Riyadh elm university for extraction of mandibular molar teeth.

Patient selection criteria included:

- Healthy individuals in the age group of 18 to 35 years.
- Patients needing extraction of mandibular first, second or third molar.
- Patients who were injected one 1.8 ml cartridge were included in the study.
- Only simple extraction cases were included in the study.

The four point anesthetic technique was administered using a non-disposable stainless steel aspirating syringe with a 25 gauge needle. Local anesthetic drug used was 2% lignocaine hydrochloride with 1:80000 adrenaline in a 1.8ml cartridge. Locations of anesthetic injections were buccal vestibule, lingual vestibule and intraseptal injections on mesiobuccal and distobuccal aspect of mandibular molar.

Technique- Following topical gel application, infiltration anesthesia was administered at four locations around the tooth being extracted. Buccal vestibular infiltration (0.5 ml) and lingual infiltration (0.5 ml) was followed by intraseptal injections at mesio-buccal (0.4 ml) and distobuccal (0.4 ml) aspect of the tooth.

Extraction was carried out under aseptic conditions using standard exodontia procedure using dental elevator and or forcep.

At the end of the procedure, feedback of patient’s pain experience was recorded on a scale from 0 to 10 using visual analog scale with 0 recorded as no pain and 10 recorded as severe pain.

Technique of injection

Area of insertion/target area – Point of injection of anesthesia is center of the interdental papilla adjacent to the tooth to be treated. Landmarks are papillary triangle, about 2 mm below the tip, equidistant from adjacent teeth. Stabilize the syringe and orient the needle correctly. Frontal plane: 45 degrees to the long axis of the tooth. Sagittal plane: at right angle to the soft tissue. Bevel should be facing the apex of the tooth. Slowly inject a few drops of local anesthetic as the needle enters the soft tissue and advance the needle until bone is contacted. Applying pressure, push the needle slightly deeper (1-2 mm) into the interdental septum. Deposit 0.4 ml of local anesthetic in a minimum of 20 sec.



Figure a: Mesiobuccal intraseptal injection for mandibular first molar.



Figure b: Buccal infiltration for mandibular first molar.

Gender	N	%
Male	46	59.7%
Female	31	40.3%
Total	77	100%

Table 1: Distribution of study subjects.

Results

Technique was successful in 65 (84 percent) patients out of a total of 77 patients. Success rate was measured by determining the pain ratings provided by patient at the end of the procedure. In visual analogue scale, score below 4 was considered adequate anesthesia and score above 5 was considered failed anesthesia. Among patients who did not achieve desired anesthesia, 8 patients needed

inferior alveolar nerve block to complete the extraction while 4 patients were administered periodontal ligament injection as supplementary anesthesia. In all the other patients who had successful anesthesia the extraction procedure was carried out painlessly with no signs of discomfort among patients.

67% males and 66% females recorded a pain score of less than 2 which indicates no pain or very little discomfort. Score below 4 was considered to be successful anesthesia and was recorded in 88% males and 76% females. Among 8 patients who required inferior alveolar nerve block after failure of four point technique, 5 patients had active inflammatory process around the tooth which could have acted as deterrent to the success of anesthesia. Pain intensity was compared between male and female groups, but no significant difference was noticed in perception of pain between the genders.

Painscale	Male		Female		Total	
	N	%	N	%	N	%
0.00	17	37.0	9	29.0	26	33.8
1.00	10	21.7	5	16.1	15	19.5
2.00	4	8.7	6	19.4	10	13.0
3.00	8	17.4	3	9.7	11	14.3
7.00	2	4.3	3	9.7	5	6.5
8.00	4	8.7	3	9.7	7	9.1
9.00	1	2.2	1	3.2	2	2.6
10.00	0	0.0	1	3.2	1	1.3
Total	46	100.0	31	100.0	77	100.0

Table 2: Pain frequency between gender.

Discussion

Four point injection proved to be successful in achieving adequate anesthesia for extraction of mandibular molars. Advantage of this technique was avoidance of a much deeper standard inferior alveolar nerve block and easy location of anatomical points for injection as compared to the nerve block which necessitates guidance towards mandibular foramen using anatomical landmarks such as pterygomandibular space. Positive feedback on buccal infiltration have been mentioned by several authors in different scenarios [1,9-12].

According to Atasoy, *et al.* single buccal infiltration did not provide adequate pulpal anaesthesia in the palatal root canals of maxillary first molar teeth with irreversible pulpitis with articaine [2].

Meechan JG., *et al.* in their study noted that mandibular first molar region buccal infiltration was much more effective than lingual infiltration of same tooth in achieving pulpal anaesthesia of first molar and premolar teeth with 4% articaine with 1: 100 000 epinephrine. Both techniques provided limited success in obtaining anaesthesia of lateral incisor teeth [3].

Disadvantage of the technique included the very four point injection which involves multiple prick. However subsequent pricks can be delayed after anesthesia is achieved with the first injection. Application of topical anesthesia further reduces the needle prick pain. In contradiction to the two study reports provided above where the authors did not achieve significant positive results, considering that our technique was successful in an invasive procedure such as extraction of a mandibular tooth where infiltration is supposed to have a lesser bearing owing to the compactness and thickness of the bone, the technique could be of much use in lesser

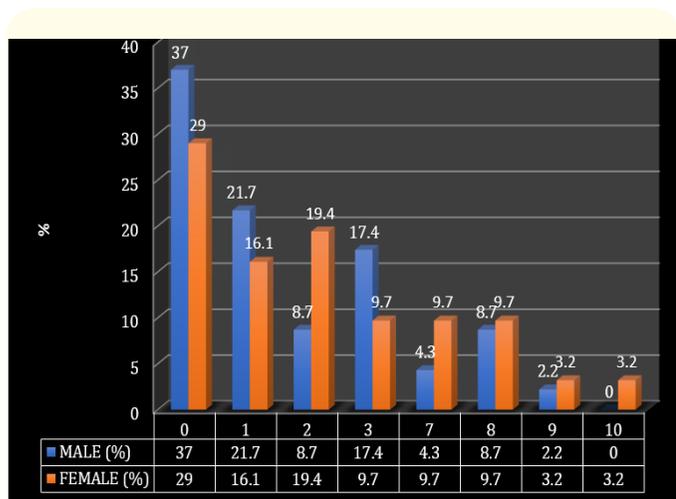


Figure 1: Frequency distribution of subjects on pain scale.

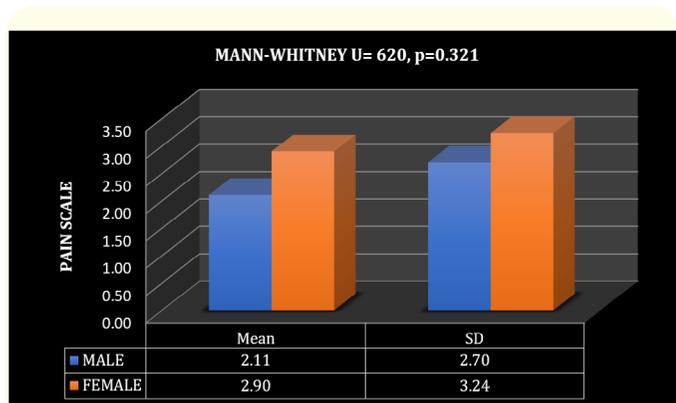


Figure 2: Comparison of pain intensity between male and females.

noninvasive procedures such as restoration and periodontal procedures. The technique could also be used for dental procedures on children who fear a nerve block. Although several studies have been carried out in the past with regard to buccal infiltration for mandibular tooth no study has concentrated on intraseptal injection [2-8,13,14].

Conclusion

The study provided us with an alternative technique to anesthetise mandibular molars which could be helpful in patients who fear a nerve block. Since the technique achieved adequate anesthesia for extraction of mandibular molars which has a thick buccal cortical bone, this technique could prove to be effective for other dental procedures too. Although the technique involves multiple pricks, patients were at ease since the injections were superficial penetrations adjacent to the tooth.

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Volume 3 Issue 1 January 2019

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