

Modification of the Conventional Posterior Superior Alveolar Nerve Block Technique

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Abstract

To prevent complications of the posterior superior alveolar nerve block by reinforcing an additional stability to syringe. To overcome the drawback of hand tremors in certain individuals while giving nerve blocks.

Key Words: Maxillary Nerve, Local Anesthesia, Nerve block.

Introduction

Nerve blocks have been an integral part of dentistry. Clinical exposure of all those aspirants to pursue dentistry starts at the age of 20 years and continues for life. Posterior superior alveolar (PSA) nerve block technique has been most common intraoral local anesthesia technique potentially associated with hematoma formation. Primary source of esthetically unappealing hematoma formation during PSA nerve block is PSA artery; also, it may be secondary facial artery and pterygoid plexus of veins injury.¹ One of the reasons for this complication is uncontrolled needle movements and instability during changing syringe grip. Uncontrolled needle movements and instability during changing syringe grip can be due to hand tremors seen in any age group and even in normal individual or in individuals associated with some underlying diseases and conditions. In normal individuals short-term hand tremors that disappear quickly can be due to an anxiety attack or stress; which is more common among students in training/academic institutes. By using a simple modification in technique we targeted to achieve better stability of the syringe and less incidence of hematoma formation.

Technique

Basic injection technique for PSA nerve block remains same as been described in various books and authors.^{1,2} For a right handed operator, left hand index finger is used to palpate zygomatic buttress/zygomatic process of maxilla, which is followed by inserting needle in height of muco-buccal fold above the roots of second molar. Once target area is reached (Figure 1), a simple modification of rotating the left hand thumb is recommended to hold and stabilize syringe even when index finger is

in contact with zygomatic process of maxilla (Figure 2). This is followed by multiple plane aspiration and injecting adequate volume of local anesthetic solution. Stabilizing syringes with thumb is applicable for both right and left side nerve block. Ethical permission was approved from Institutional research review board, College of Dental Science, Amargadh (Gujarat, India).

Discussion

Various reasons for hematoma formation in posterior superior alveolar nerve block includes insertion of needle too far distally, rapid rate of injection, uncontrolled needle movements, failure to aspirate in multiple planes, use of non aspirating metal syringes. Even with use of plastic aspirating disposable syringes chances for hematoma formation persists especially when one is inexperienced. Instability during changing syringe grip from pen grasp after reaching target area (posterior surface of maxilla) to grasp for aspirating (plunger), can also lead to blood vessel injury and hematoma.

There are few studies which evaluated/ compared PSA nerve block and infiltration for surgeries related to maxillary molars.^{3,4} According to these studies both techniques are equally effective and main reason for using infiltration was to avoid hematoma formation. Hence, syringe stabilizing technique will be better not only avoiding/ decreasing hematoma formation; it will also have advantage of administering nerve block over infiltration.

Hand tremors which can be a potential cause of instability of syringe grip and its uncontrolled movements; can be associated with variety of different diseases, disorders, and conditions and can be seen in any age group. The category of hand tremors that are of significance to discuss in this context are

Action tremors and Essential tremor. Action tremors are movements that occur when hand is performing a voluntary action, such as gripping a fork or signing name or grasping a syringe while giving nerve blocks due to an anxiety attack or stress; which is more common among students in training/academic institutes. Essential tremor is most common of the many types of tremor. This type of tremors is inherited from parents in many cases. Essential tremor is usually amplified by extreme emotion, stress, physical exhaustion, and low blood sugar. Other conditions include drug withdrawal, stroke, brain tumor, and multiple sclerosis which can be evident in general dental practitioners.

Conclusion

The modified posterior superior alveolar nerve block is advisable in the training institutes and even for all general dental practitioners who possess the above mentioned conditions to stabilize the syringe thereby avoiding any complications from happening.

References

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