

Hematoma Following Nerve Block of a Branch of Maxillary Nerve: A Case Report

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Abstract

The nerve block given to obtain anesthesia in maxillary molars and its supporting structures is the posterior superior alveolar nerve (PSAN) block. One of the common complications of the block is extraoral hematoma which occurs because of the needle penetration to far posteriorly placing it in the vicinity of pterygoid plexus of veins, maxillary artery resulting in probable inadvertent nicking of the vessel causing effusion of blood into the surrounding soft tissue resulting in swelling and discoloration. This case report describes this complication and its management.

Keywords: Hematoma; Posterior superior alveolar nerve; Local anesthesia.

Introduction

Pain is a complex psychological phenomenon, and it becomes a challenge for each practitioner to supply care with less anxiety and discomfort to their patients. With the development of anesthesia, the science behind pain management has continued to evolve, although these anesthetics are thought-about safe, care should be taken regarding the administration of appropriate anesthetics along with correct technique. In the field of Dentistry, Posterior Superior Alveolar Nerve Block (PSANB) is a technique used to attain anesthesia before performing any surgical and non-surgical treatment on maxillary molars and its surrounding structures. A major sensory branch of the maxillary division of the trigeminal nerve, the Posterior superior alveolar (PSA) nerve supplies the buccal gingiva, periodontium, and alveolus related to the upper molar teeth as well as pulpal innervations

of all the maxillary molar teeth except the mesiobuccal root of the first molar, that is equipped by the middle superior alveolar nerve in or so five-hundredths of people. Generally notwithstanding the care utilized in the administration of Posterior superior anesthetic technique, complications occur that include hematoma formation, transient visual impairment, blurred vision and temporary visual defect.¹

Hematoma formation occurs when the needle nicks the vessels (artery or vein) in its vicinity unintentionally during the administration of anesthesia which ends in filling of blood into the extravascular spaces. A venous puncture by needle might not lead to the formation of hematoma that can be appreciated however the size of hematoma observed after arterial perforation can be appreciated clinically and rapidly because of considerably greater blood pressure within the artery. This article presents a case of hematoma formation following the Posterior superior alveolar nerve block (PSANB).

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Case Report: A female patient age 33 years reported to our Department with a chief complaint of pain in the left maxillary posterior region for two days which did not alleviate even after the intake of prescribed medications. After a thorough medical and dental history, clinical and radiographic examination was done which

revealed Class II (mesio-occlusal) carious involvement of enamel, dentin with exposure of pulp of maxillary left second molar (tooth#27) and endodontic treatment followed by a fixed prosthesis in the form of the crown was planned for the tooth. The patient was positioned so that the maxillary occlusal plane was at 45 degrees angle to the floor and 1.5 ml of 2% lidocaine with 1:100000 adrenaline was administered using the PSA nerve block technique following negative aspiration of the needle. After a few minutes of administration of anesthesia, a gradual swelling along the lower left mandibular region (Left Cheek) was observed (Figure 1) without evidence of breathing problems or impaired consciousness. The dental treatment was halted and the patient was enquired about any discomfort. As she became apprehensive, she was informed regarding the cause of the condition and was assured of it being temporary. She was advised to use ice pack 20-30 minutes per hour for the first 24 hours followed by intermittent use of hot moist packs to resolve the condition. The patient was also prescribed analgesics and antibiotics, along with the application of a heparin cream on the affected area. The follow up of the case was done and clinical examination five days after the incident revealed a discrete swelling with a visible outline of the regressing hematoma (Figure 2). A complete resolution of hematoma was observed three weeks post-incident (Figure 3) after which root canal treatment of tooth#27 was initiated.



Figure 1. Hematoma few minutes post administration of LA



Figure 2. Five days post-incident revealing a visible outline of the regressing hematoma



Figure 3. Complete resolution of hematoma three weeks post-incident.

Discussion

The problems associated with anesthesia of the maxillary nerve is attributed to the individual variances of traditional anatomic nerve pathways through maxilla. The failure of infiltration anesthesia in maxillary molars can be due to the flaring of palatal roots towards the midline of the palate. Thus, in these flared root cases and even in the presence of infection, PSANB provides

a reliable anesthesia to the pulpal innervations of maxillary molars.²

PSANB is a technique-sensitive procedure, and as stated by Malamed even after following strict administration protocol, complications occur because of the anatomic variation in patient's soft and hard tissue. The danger of hematoma formation in patients receiving PSANB is high, and it produces the biggest and most unappealing hematoma. The infra-temporal fossa into which bleeding occurs, could be a place which can accommodate an outsized volume of blood. There's a colorless swelling that appears at the side of the face, few minutes after LA administration, and this size increases and extends to include the lower front region of the cheek as well. As the blood vessels are settled posterior, superior, and medial to the maxillary tuberosity, it is difficult to use pressure wherever the trauma has occurred.

The application of digital pressure in the medial and superior direction within the mucobuccal fold as far as distally (without eliciting a gag reflex to the patient) is typically found to help counteract the gradual swelling.³ But in the present case report, digital pressure couldn't be applied as the swelling had progressed inferiorly and anteriorly obliterating the maxillary left buccal vestibule. Employment of ice pack (extraorally) to the affected region was suggested to control the size of the swelling as it is believed to cause vasoconstriction of the vessels along with palliative effects followed by intermittent hot moist packs after twenty-four hours that induce dilatation of the vessels thereby increasing the speed at which the blood components are resorbed, although its advantages are debatable. As hematoma places pressure on lacerated tissues/wounds, it acts as a nidus initiating the event of infection and inflammation. Since the dimensions of swelling in the present case report was quite large, antibiotics were prescribed.⁴

To avoid the formation of hematoma, intensive information on the anatomy of that specific region is extremely necessary. The use of short needle and aspiration in two different planes keeping the needle in the same position before and during drug deposition are recommended as these avoid unintended intravascular injection into the approximating blood vessels. Few studies have conjointly prompted precurving of a 24-millimeter needle at a distance of ten to twelve millimeters that deposits the anesthetic solution near to the nerve at the posterior surface of the maxilla. This

technique as expressed by the authors avoids over-penetration of the needle because of its curvature from the initial site of insertion.^{5,6}

Above all the precautionary measures and management mentioned, it is important to notify the patient concerning the attainable complications of PSA nerve block before administration of anesthesia to reduce the psychological impact of the complication as well as maintaining patient's trust about their capability regarding the management of the condition.

Conclusion

Complications with the employment of local anesthetics like hematoma related to PSANB cannot be completely prevented. However, the temporary nature of the complication ought to be assured to the patient as an unaesthetic look because of the discoloration and swelling on the side of the face causes psychological impact. Therefore, it's crucial for a practitioner to bear in mind of the clinical signs of hematoma and to suitably manage them.

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