Arched Needle Technique for Inferior Alveolar Mandibular Nerve Block

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Although, needle breakage remains a rare complication during oral local anesthesia (LA) administration, there are ample reports mandating a careful technique and precautionary measures to prevent this complication [1–4]. Chakranarayan and Mukherjee [5] describe a method of inferior alveolar nerve block (IANB) by injecting a local anesthetic solution into the pterygomandibular space by arching the needle and changing the approach angle of the conventional technique. The authors describe arching the needle after the initial insertion and inserting it in a manner that it approaches the medial surface of the ramus at an angle almost perpendicular to it. Although Chakranarayan and Mukherjee highlight in their study that bending the needle was found safe in their study patients, advocating bending an advancing needle within the oral tissues may not be a safe surgical practice. The incidence of needle breakage is such a rare occurrence that studying a small group of patients can not endorse the safety of a technique. Pogrel has estimated the risk of needle breakage amongst Northern California dentists at 1 in 14 million inferior alveolar nerve blocks [2, 8]. If the needle was checked in vitro before using them in patients in their study [5], by theory, this practice further weakens the needle due to undue stress and strains on its material

before use. In a review of cases by Malamed et al. [8] intentional bending of the needle by the doctor before injection is reported to be an important factor for needle breakage. The very concept of inferior alveolar nerve block is to deposit the solution in the pterygomandibular space. Depositing the solution near the mandibular foramen may have an advantage of an early onset of LA, but in this case it is at the cost of potential risk of needle breakage. It should be noted that IANB remains the most susceptible technique to have an incidence of a needle breakage. It is not a common occurrence, but when it occurs it may be a detrimental event both for the patient and the treating dental surgeon. The rare incidence of needle breakage will mandate a high radiation imaging study to localize the needle and a surgical exploration under general anesthesia for its retrieval [2]. Okamoto et al. [6, 7] studied the spread of local anesthetic solution in the inferior alveolar nerve block and found that local anesthetic solution spreads and rapidly fills nearly the entire pterygomandibular space by completion of the injection, emphasizing the fact that targeting the mandibular foramen to deposit the solution may not be necessary for the success of IANB.

To conclude, there are numerous factors that contribute to the success of IANB. A thorough knowledge of the anatomy of the pterygomandibular space is essential for the successful administration of the inferior alveolar nerve block. Greater understanding of the nature and extent of variation in intraoral landmarks, altered nerve physiology in infection and histological understanding of the underlying structures should lead to improved success rates, and provide safer and more effective anaesthesia [9]. In advent bending of the needle within the oral tissues should be avoided to achieve better success rates with an intraoral anaesthetic technique.

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