Incidence of trismus following inferior alveolar nerve block given by undergraduate students

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ABSTRACT

Aim: This study aims to assess the opinion of dental students and interns about the success rates of inferior alveolar nerve block (IANB). Materials and Methods: A cross-sectional questionnaire-based study was conducted among final years and interns in Saveetha Dental College, Chennai. A questionnaire containing two sections was formulated; the 1st section included questions of age, gender, and academic year, while the 2nd section included 10 questions related to IANB. Conclusion: It was concluded that IANB was the most frequently used technique during various surgical and endodontic procedures. About 52.9% of the interns and 42.7% of dental students had rarely faced IANB failure in clinics. Both the students and interns were aware of other alternative techniques, such as Gow–Gates and Akinosi techniques of mandibular block anesthesia although they did not practice these techniques much in their day-to-day practice.

KEY WORDS: Alternative techniques, Dental students, IANB

INTRODUCTION

Inferior alveolar nerve block is the most commonly used nerve block in the surgical and endodontic procedures of mandibular teeth.⁹ Sometimes, there may occur failures in inferior alveolar nerve block (IANB) due to various reasons, such as anatomical variations, bifid inferior alveolar nerve,⁶ and increased bone density in elderly patients.⁴ The mylohyoid nerve may have a sensory component and, hence, may give accessory innervations.⁶ Other causes of the IANB failure include contralateral innervations of the anterior teeth,⁸ pulpitis/apical periodontitis, and patients’ anxiety, and fear.⁶

Other than surgical and endodontic procedures, IANB is quite important for procedures, such as periodontal surgery, dental implantology, and apicoectomy.⁷ Even the experienced clinician might face the failure of IANB at times, with the failure rate ranging from 15% to 20%.⁹

It not only involves the patients’ comfort but also the dentists’ name and fame, as a successful and patient-friendly deliverer, that make anesthesia delivery so important. The patients rated the dentists based on previous experience of painless procedures.⁹

The problems and their impacts faced by students during their learning/training period may haunt them throughout their life. If not adequately solved in time, their performance gets impaired, which, in turn, affects their career opportunities and openings in an undesirable manner, in addition to hampering their day-to-day service accomplishments.

Hence, a study was conducted to assess the opinion of interns and dental students about the success of IANB and its other related aspects.

MATERIALS AND METHODS

A cross-sectional questionnaire-based study was conducted among final years and interns in Saveetha Dental College, Chennai. All dental students who were willing to participate in the study and were pursuing final year and internship of Bachelors in Dentistry program were included in the study. A convenient sample of 122 was included in the study. A questionnaire containing two sections was formulated; the 1st section included questions of age, gender, and academic year, while the 2nd section included 10 questions related to IANB. The questions enquire about the frequency of administering...
IANB to the patients while performing endodontic/surgical procedures; their familiarity with alternative techniques to IANB; and about the frequency of failure of IANB faced in clinics. Furthermore, it enquire about the opinions on the common reasons for the failure of IANB as well as the commonly seen complications for the same. The internal validity of the questionnaire was assessed using bar Graphs 1-10. The close-ended questionnaire was hand-delivered to the study participants, and the duly filled questionnaires were collected the same day from the students as well as interns. To avoid the nonresponse bias, confidentiality of the responses was assured to the respondents.

RESULTS

In the present study, the age of subjects ranged from 20 to 25 years; among the total subjects, 95 were females, while the rest 25 were males; 80 were final years and 42 were interns.

In the present study, the majority of interns 65% and dental students 34% said that they always administered IANB while doing surgical and endodontic procedures in mandibular posterior teeth. When the respondents were asked about their awareness about alternative techniques (such as Gow–Gates alternative technique and Vazirani–Akinosi) to classical IANB, the majority of interns 65% and dental students 34% were found to be aware about these techniques, but only theoretically. About 14.3% of interns and 11.2% of the dental students had practically used these alternative techniques.

About 52.9% of the interns and 42.7% of dental students had rarely faced IANB failure in clinics. About 41.4% of interns and 53.9% of dental students felt that the type of procedure makes no difference to the failure of IANB. About 48.3% of the dental students would call their supervisor in case of failure of IANB, while 47.1% try again with the same technique. Majority of interns (70%) and dental students (71.9%) believe that anatomical variation is the common cause for IANB failure; while 22.9% interns and 20.2% dental students said that the IANB failure was due to wrong technique [Graph 1]. Most of the interns and students did not have any complications after delivering IANB to the patients, while 15.7% of interns and 18% of students faced hematoma in patients as a complication of IANB, and 11.4% of interns and 7.9% of students said that they observed trismus as the most common complication of IANB in patients. The majority of interns and students agreed that they took the medical and previous dental history from the patients before administering IANB to them.

DISCUSSION

In the present study, the majority of interns (70%) and final year students (50.6%) said that they always adopted IANB while doing surgical and endodontic procedures in mandibular posterior teeth. The IANB has been documented in earlier studies as the most frequently used technique.[10] The IANB, along with infiltration of lingual and long buccal nerves, anesthetizes the ipsilateral mandibular teeth and gingiva, body and inferior ramus of mandible, and anterior two-thirds of tongue, and floor of mouth.[11]

The results of the present study showed that most of the interns (81.4%) and final year students (82%) were found to be aware, though only theoretically, of the alternative techniques (such as Gow–Gates technique and Vazirani–Akinosi) to classical IANB, whereas just 14.3% of interns and 11.2% of the dental students had practically used these alternative techniques. These findings were in accordance with the previous study, wherein a lesser percentage of respondents used alternative techniques, such as Gow–Gates technique or the Vazirani–Akinosi technique.[12] It might have been due to the inadequate training with respect to alternative techniques as found in the earlier study.[13]
It has been recorded earlier that the Gow–Gates technique provides a much better anesthetic effect when compared with that of the conventional IANB technique, notwithstanding the fact that onset of anesthesia takes a little longer time (around 5–7 min).

A closed-mouth mandibular nerve block technique was introduced by Akinosi. Both the Gow–Gates and Akinosi techniques cause anesthesia to larger areas, as the injection site is proximal to that of the conventional one. Akinosi technique is applied with the mouth being closed, and thus it is quite advantageous in cases of trismus. Onset of anesthesia takes only 40 s in case of the Akinosi technique of providing mandibular anesthesia.

In the present study, the majority (52.9%) of the interns and 42.7% of dental students had hardly faced IANB failure in clinics, while 34.3% of interns and 29.2% of students seldom faced IANB failure. Around 10% of interns and 9% of students had faced IANB failure often or very often. These findings were in accordance with the findings of previous studies.

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In this study, a considerable number of the interns (47.1%) said that they try again with the same (IANB) technique in case it fails when applied for the 1st time, whereas almost as many of students (48.3%) said that they ask for their supervisors’ advice in such cases. These findings are indicative of the fact that neither the students nor the interns try the alternative techniques of anesthesia in cases of failure of the IANB technique; and in all probability, it might be due to their lack of expertise in the alternative techniques. These findings fairly match with the results of the previous study conducted on interns and students in Riyadh.

In the present study, the majority of interns (70%) and dental students (71.9%) believe that anatomical variation is the common cause for IANB failure, while 22.9% interns and 20.2% dental students said that IANB failure was due to wrong technique. These results are similar to the findings of the previous study wherein the majority of students reported the same. These findings of the present study are similar to those mentioned in a previous study but the variation in the morphology of the ramus of the mandible and the location of the mandibular foramen were the causes for failure of IANB. Netherless, the most common cause is found to be the wrong procedure of injection. Other causes of failure of IANB that have been documented include insufficient mouth opening (due to which the inferior alveolar nerve does not come in close approximation to medial wall of ramus), inappropriate needle insertion, the branches of cranial nerve V3 (which sometimes fail to get anesthetized by conventional IANB due to their origin being proximal to the site of injection), 16 and chances of positive aspiration (which are more due to the insertion target being nearer to the neurovascular bundle).

The results of the present study showed that 15.7% of the interns and 18% of final year students reported hematoma as the most common complication after IANB delivery; another 11.4% of interns and 7.9% of students stated trismus as the most common complication; whereas 5.7% of interns and 9% of students believed facial paralysis to be the most common complication in case of IANB. These findings were similar to the results of a previous study. In previous studies, the common complications of IANB that have been reported are trismus, caused by mucosa tear at the time of needle insertion/withdrawal; needle breakage has also been found to be a common complication while administering IANB; needle breakage has also been found to be a common complication while administering IANB; and hematoma has also been found as a complication due to the insertion of
needle into a blood vessel followed by deposition of solution of anesthetic.\cite{24}

This study showed that 68.6\% of the interns and 78.7\% of final year students confirmed that they take down the medical and previous dental history from patients every time before administering the IANB. These findings establish the fact that most of the interns, as well as final year students, were aware of the significance of taking into account the medical and dental history before undertaking any dental procedure.

CONCLUSION

It can be concluded that IANB is the most frequently used technique during various surgical and endodontic procedures. About 52.9\% of the interns and 42.7\% of dental students rarely faced IANB failure in clinics. The students, as well as the interns, were spotted as to be aware of other alternative techniques, such as Gow–Gates and Akinosi techniques of mandibular block anesthesia, though more theoretically than practically.

REFERENCES


Graph 6: Q6 - What in your opinion is the most common cause of inferior alveolar nerve block failure?

Graph 7: Q7 - What is the most common complication you have observed after inferior alveolar nerve block?

Graph 8: Q8 - Do you take into account the medical and previous dental history of the patient every time you administer an inferior alveolar nerve block?

Graph 9: Q9 - Do you think age affects the patient’s response to pain after administration of inferior alveolar nerve block?

Graph 10: Q10 - Do you think gender affects the patient’s response to pain after administration of inferior alveolar nerve block?
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