Scholars Journal of Dental Sciences (SJDS) **ISSN 2394-496X (Online)**
Sch. J. Dent. Sci., 2014; 1(1):1-3 **ISSN 2394-4951 (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjds.2014.v01i01.001

Research Article

Comparison of Success Rate of Inferior Alveolar Nerve Block Performed By 5th and 6th Year Dental Students of Babol, Iran

Mohammad Mehdizadeh[1], Arash Shamshirian[2], Mahtab Hamzeh[3*]
[1]Assistant Professor, Department of oral and Maxillofacial Surgery, Faculty of Dentistry, Babol University of Medical Sciences, Babol, Iran
[2]Private Dentist, Babol, Iran
[3]Assistant Professor, Department of Pediatric Dentistry, Faculty of Dentistry, Babol University of Medical Sciences, Babol, Iran

***Corresponding author**
MahtabHamzeh
Email:dr.mahtabhamzeh@yahoo.com

Abstract: Pain management is a key factor in success of any dentist. Inferior alveolar nerve block is one of the most commonly used techniques to obtain mandibular anaesthesia. Due to importance of theoretical and practical training during the course of study, the aim of this study was to evaluate the success rate of standard inferior alveolar nerve block technique performed by the fifth and sixth year students**.** This cross sectional study was performed on 29 sixth year and 32 fifth year dental students. Patients needed tooth extraction or dentoalveolar surgery in mandible, were randomly distributed between the students. The students performed standard inferior alveolar nerve block and after 5 and 10 minutes, numbness of the corner of the lip, floor of the mouth and buccal mucosa was tested by pin prick test with a dental explorer. Data were analyzed by SPSS software version 18.0 and chi-square test was used for statistical analysis and $p<0.05$ was considered statistically significant.Only in achieving numbness of the corner of the lip after 5 minutes, there was significant difference between males and females ($p<0.05$). The mean success rate of sixth and fifth year students was 76.2 ± 7.2% and 55.5 ± 13.1%, respectively. The success rate of sixth year students was significantly higher than fifth year ones ($p < 0.05$). In conclusion, Experience and the skill of the operator play a critical role in success of the inferior alveolar nerve block injection.
Keywords: Success, Injection, Student.

INTRODUCTION

Today, pain management is central and indeed challenging to the success of any dentist [1,2]. Indeed, many patients choose their provider based on perceived ability to deliver painless dentistry [1]. Dentists are aware of the relative ease of successfully performing pain-free intraoperative procedures in maxillary teeth. The maxillary bone is relatively porous and allows for the use of straightforward local anesthetic techniques of field blocks or infiltrations. But, the mandible is different. The outer layer of thick and nonporous cortical bone normally requires the use of a nerve block at a site away from the teeth being treated [2]. Although there are many techniques described, the direct inferior alveolar nerve block (IANB), also known as the direct thrust approach, remains one of the most commonly used techniques to obtain mandibular anaesthesia [3]. This technique, however, has a success rate of only 80 to 85 percent, with reports of even lower rates [4]. One of the reasons of such a relatively low success rate is that the dentist might make technique errors such as improperly locating a landmark or angling the syringe. These problems are resolved easily by reviewing the landmarks and steps for performing the technique involved [2]. Due to importance of theoretical and practical training during the course of study, the aim of this study was to evaluate the success rate of standard inferior alveolar nerve block technique performed by the fifth and sixth year students of Babol Dental School, Babol University of Medical Sciences, Babol, Iran.

MATERIALS AND METHODS

The study population of this analytical applied study consisted of 61 dental students of Babol University of Medical Sciences, Babol, Iran; including 29 sixth year and 32 fifth year students. The study was approved by Ethics Committee of Babol University of Medical Sciences. Patients referred to Department of Oral and Maxillofacial Surgery for tooth extraction or dentoalveolar surgery in mandible, were randomly distributed between the students. Patients who used alcohol, opioids and narcortic drugs and those who had dental abscess were excluded. The students performed standard inferior alveolar nerve block by a 27 gauge

long needle using 1.8ml cartridges of 2% lidocaine with 1:80,000 epinephrine (Persicaine; Darupakhsh, Tehran, Iran) during one minute. After 5 and 10 minutes, numbness of the corner of the lip, floor of the mouth and buccal mucosa was tested by pin prick test with a dental explorer. In the case of a vital tooth, vitality was tested using a pulp tester (Denjoy Dental CO.LTD;Changsha, China).Data were subjected to SPSS 18.0 and chi-square test was used for statistical analysis and $p<0.05$ was considered statistically significant.

RESULTS

Sixty one students including 29 sixth year and 32 fifth year students implemented a total of 150 injections. Distribution of injections according to sex and grade were as follows: sixth year males, 39 injections; sixth year females 38 injections; fifth year males, 36 injections and fifth year females, 37 injections.

Tables 1 and 2 show the success rate of sixth and fifth year students, respectively, in different sites after 5 minutes according to their sex. As seen, only in achieving numbness of the corner of the lip, there was a significant difference between males and females ($p < 0.05$).

Tables 3 and 4 show the success rate of sixth and fifth year students, respectively, in different sites after 10 minutes according to their sex. No significant difference was found between males and females ($p > 0.05$).

Table 1: The success rate of sixth year students in inferior alveolar nerve block after 5 minutes in different sites according to their sex

Area	Sex		p-value
	Male Number (%)	Female Number (%)	
Buccal mucosa	31 (79.5)	23 (60.5)	0.069
Floor of the mouth	30 (76.9)	22 (57.9)	0.075
Corner of the lip	30 (76.9)	20 (52.6)	0.026
Pulp	6 (66.7)	10 (71.4)	0.800

Table 2: The success rate of fifth year students in inferior alveolar nerve block after 5 minutes in different sites according to their sex

Area	Sex		p-value
	Male Number (%)	Female Number (%)	
Buccal mucosa	18 (50.0)	23 (62.2)	0.29
Floor of the mouth	20 (55.6)	22 (59.5)	0.73
Corner of the lip	20 (55.6)	21 (56.8)	0.91
Pulp	4 (50)	5 (29.4)	0.31

Table 3: The success rate of sixth year students in inferior alveolar nerve block after 10 minutes in different sites according to their sex

Area	Sex		p-value
	Male Number (%)	Female Number (%)	
Buccal mucosa	34 (87.2)	30 (78.9)	0.33
Floor of the mouth	33 (84.6)	30 (78.9)	0.51
Corner of the lip	33 (84.6)	26 (68.4)	0.09
Pulp	6 (66.7)	10 (71.4)	0.80

Table 4: The success rate of fifth year students in inferior alveolar nerve block after 10 minutes in different sites according to their sex

Area	Sex		p-value
	Male Number (%)	Female Number (%)	
Buccal mucosa	25 (69.4)	25 (67.6)	0.86
Floor of the mouth	25 (69.4)	25 (67.6)	0.86
Corner of the lip	24 (66.7)	24 (64.9)	0.87
Pulp	4 (50.0)	5 (29.0)	0.31

The mean success rate of sixth and fifth year students was 76.2 ± 7.2% and 55.5 ± 13.1%, respectively. As seen, the success rate of sixth year students was significantly higher than fifth year ones ($p < 0.05$).

DISCUSSION

Regarding the results of current study, the success rate of inferior alveolar nerve block performed by 5th and 6th year dental students was 55.5% and 72.9%, respectively. The difference between two groups was statistically significant ($p<0.05$).

According Keetley*et al*. [5], the mean success rate of inferior alveolar nerve block performed by experienced dentists was 91% and the most important influential factor in success of this technique was the experience of the dentist performing the injection.Although this reported success rate is significantly higher than the current study, it can justify this fact that experience plays a critical role in success of inferior alveolar nerve block.

In the study of Ajarmah*et al*. [6], the success rate of inferior alveolar nerve block performed by oral and maxillofacial surgeons was 96%. They reported that the most important factor in success of this technique is experience and specialty of the operator.[6] On the other hand, according to Robertson [7] and Potocnik [8] and Malamed [9], the success rate of inferior alveolar nerve block was 71, 55 to 70 and 80 to 85 percent, respectively. A probable cause of this discordance is that performing a successful injection is a multifactorial task and some other factors such as anatomic variations, type of the anaesthetic agent and infection and inflammation in the site of injection are involved beside the experience of the operator. In a study performed by Waikakul*et al*. [10], the success rate of inferior alveolar nerve block implemented by 5th year dental students was in the range of 58.8 to 88.2 percent. Although the mean success rate of the injections performed by 6th year dental students in the current study stands in the same range, but the success rate of 5th year students is lower than the aforementioned study. A probable cause of this difference can be a higher degree of experience due to a different training protocol.

Regarding the results of previous studies, it seems that performing a successful inferior alveolar nerve block is a multifactorial task and depends on anatomic factors, type of the anaesthetic agent, infection and inflammation in the site of injection and experience and skill of the operator.

Based on the results of current study, experience and the skill of the operator play a critical role in success of the inferior alveolar nerve block injection. Thus, it is suggested to use phantom models in the preclinical period for efficient training of the dental students prior to entrance to clinical period.

REFERENCES

1. Johnson TM, Badovinac R, Shaefer J; Teaching alternatives to the standard inferior alveolar nerve block in dental education: Outcomes in clinical practice. J Dent Educ., 2007;71(9):1145-1152.
2. Hass DA; Alternative mandibular nerve block technique: A review of the Gow-Gates and Akinosi-Vazirani closed mouth mandibular nerve block techniques. JADA, 2011;142(suppl 3):8-12.
3. Khoury J, Townsend G; Neural blockade anaesthesia of the mandibular nerve and its terminal branches: rationale for different anaesthetic techniques including their advantages and disadvantages. Anesthesiol Res Pract.,2011; 2011: 307423.
4. EzoddiniArdakani F, Bahrololoumi Z, ZangouieBooshehri M, NavabAzam A, Ayatollahi F; The position of lingula as an index for inferior alveolar nerve block injection in 7-11-year-old children. J Dent Res Dent Clin Dent Prospects, 2010;4(2):47-51.
5. Keetley A, Moles DR; A clinical audit into the success rate of inferior alveolar nerve block analgesia in general dental practice.Primary Dental Care 2001;8(4):139-142.
6. Ajarmah JA, Tbashat JM, Omor RA, Rassas EA, Abu Arman KK. Operators experience and the success rate of inferior alveolar nerve block anaesthesia. Pak Oral Dental J., 2013;33(1):137-140.
7. Robertson WD; Clinical evaluation of mandibular conduction anesthesia.General Dentistry, 1979;27(5):49-51.
8. Potocnik I, Bajrovic F; Failure of inferior alveolar nerve block in endodontics. Endod Dent Traumatol., 1999;15(6):247-251.
9. Malamed SF; Handbook of local anaesthesia. 5th edition, St Louis: Mosby, 2004.
10. Waikakul A,Punwutikorn J; A comparative study of the extra-intraoral landmark technique and the direct technique for inferior alveolar nerve block.J oral MaxillofacSurg., 1991;49(8):804-808.