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ROLE OF OPERATOR'S EXPERIENCE IN EFFICACY OF INFERIOR ALVEOLAR NERVE BLOCK: A RANDOMIZED, DOUBLE BLIND STUDY

Dental Science

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ABSTRACT

The inferior alveolar nerve (IANB) block is the most frequently used technique for mandibular anesthesia. Difficulty experienced in obtaining satisfactory anesthesia after (IANB), remains a common clinical problem. So we decided to conduct a prospective, double blind, randomized study to compare the success of inferior alveolar nerve blocks based on experience of operator in patients requiring mandibular teeth extraction.

Materials and Methods: A prospective, double blind, randomized, single center study was conducted amongst 50 patients requiring extraction of mandibular teeth. Random allocation of patients was done using computer-generated randomization chart into three groups' i.e. Undergraduate trainees, house surgeons and Staff. Following things were assessed:- efficacy of anesthesia, onset of anesthesia and complications. Data on 100 subjects was entered in Microsoft excel & subjected to statistical analysis using SPSS version-11 statistical package.

Result: The success of anesthesia reported by the under graduates was 61%, House surgeons was 61.1% and staff was 75%. No statistical significant difference was found in the anesthetic success based on the experience of operator (p>0.05). The result of our study seems to suggest that the experience of operator does not have any effect on anesthetic efficacy and onset of anesthesia with inferior alveolar nerve blocks.

KEYWORDS

INTRODUCTION

Most dental procedures are performed under local anesthesia. The inferior alveolar nerve (IANB) block is the most frequently used technique for mandibular anesthesia.[6] Although the inferior alveolar nerve block is the technique of choice but not all IANB injections result in success.

Difficulty experienced in obtaining satisfactory anesthesia after (IANB), remains a common clinical problem. Following factors contribute to anesthetic failure: Operator dependent (Choice of technique and solution, Poor technique) and patient dependent (Anatomical, Pathological, and Psychological).[6] Literature appears to suggest that very few studies are there to compare success of local anesthesia in relation to expertise and experience of operator, especially in inferior alveolar nerve blocks.[7] So we decided to conduct a prospective, double blind, randomized study to compare the success of inferior alveolar nerve blocks based on experience of operator in patients requiring mandibular teeth extraction.

MATERIALAND METHODS

A prospective, double blind, randomized, single center study was conducted amongst 50 patients requiring extraction of mandibular teeth. The Inclusion criteria consisted of patients aged 14 years and above, included both sexes requiring Mandibular teeth extraction. Patients having Allergy to amide group of local anesthetic solutions, Refusal of informed consent, acute inflammation / infection at the site of injection and Impacted teeth were not included in the study. Random allocation of patients was done using computer-generated randomization chart into three groups' i.e. Undergraduate trainees, house surgeons and Staff. The patient and examiner were blinded as the operator did not use designation name tags and examiner entered the operatory after the administration of local anesthetic injection. After two minutes of administration of inferior alveolar nerve block, patient was asked about the subjective symptoms every minute. If the subjective symptoms were present, patient was checked objectively for pain after every one minute in canine region. Inferior alveolar nerve block was considered failure, if the subjective symptoms were absent or pain was present during instrumentation after 10 minutes of administration of local anesthesia. Faces Rating Scale (FRS) was used to record pain immediately after extraction. Patients were advised to report to the Department in case of any complication. Following things were assessed:- efficacy of anesthesia, onset of anesthesia and complications. Data on 100 subjects was entered in Microsoft excel & subjected to statistical analysis using SPSS version-11 statistical package. The comparison between categorical variables was done by applying chi-square test. The critical level of significance was set at p<0.05.

RESULTS

The study group consisted of 57 males and 43 females. A total of 77 inferior alveolar nerve blocks were administered by under graduates (UG), 18 by house surgeons and 4 by staff.

Successful anesthesia was achieved in 61 patients (61.6%) out of 99 patients. 33 (57.89 %) males and 28 (66.66%) females achieved successful anesthesia with first injection. No statistical significant difference in success of anesthesia was seen based on gender of patients (p>0.05)

The success of anesthesia reported by the under graduates was 61%, House surgeons was 61.1% and staff was 75%. No statistical significant difference was found in the anesthetic success based on the experience of operator (p>0.05). The mean of onset of anesthesia was 6.26 minutes in ug group, 6.30 minutes in house surgeon group and 6.22 in staff group.

The Faces Rating Scale pain score of 0, 2, 4 and 6 were reported in 48.9%, 36.2%, 9.67% and 2.1% respectively in ug group, 54.5%, 45.5%, 0% and 0% respectively in house surgeon group and 100%, 0%, 0% and 0% respectively in staff group.

Table 1: Gender

			Male	Female	
Injection	Success	Count	33	28	61
	Failure	Count	24	14	38

Table 2: Effect of Experience of operator on success

Experience of operator	Success	Failure	Chi Square test	*p value*
UG	47	30	0.316	0.854
	61.0%	39.0%		
HOUSE SURGEON	11	7		
	61.1%	38.9%		
STAFF	3	1		
	75.0%	25.0%		

Graph: 1

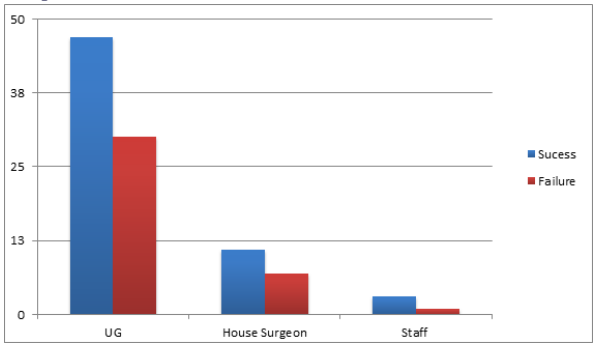
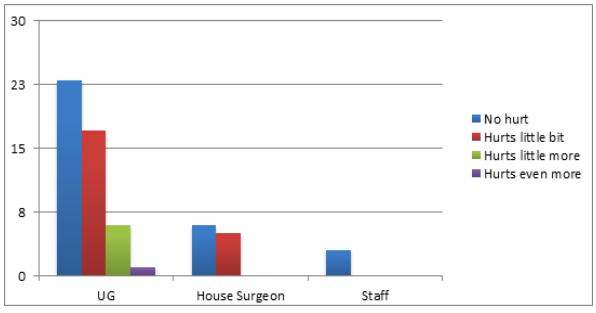


Table 3: Effect of Experience of operator on FRS score

Experience of operator	FRS score				P value
	No hurt	Hurts little bit	Hurts little more	Hurts even more	
UG	23	17	6	1	0.277
	48.9%	36.2%	12.8%	2.1%	
PG	6	5	0	0	
	54.5%	45.5%	.0%	.0%	
Staff	3	0	0	0	
	100.0%	.0%	.0%	.0%	



DISCUSSION

Pain has been associated with dentistry since time immemorial but with the advent of newer drugs and techniques to control the same, pain should not be a factor preventing patients from getting the necessary dental treatment. However, the inability to consistently provide profound Mandibular anesthesia remains a major problem. [6,7,4]

'The 'gold standard' method for anaesthetizing Mandibular teeth is by one of the regional block techniques, such as Helstead, Gow Gates or Vazirani Akinosi method'.[8] Classical Inferior alveolar nerve block (Helstead technique) is the most frequently and possibly the most important used technique among these'.[6] However, inferior alveolar nerve block does not always result in successful anesthesia. The failure rate of inferior alveolar nerve block reported by various studies ranges from 15 to 65%.[9. 10, 3, 11, 12] Failure of inferior alveolar nerve block is being attributed to many factors one of which is failure to follow proper technique and the experience of operator.[7,4] In our study we found that the experience of the operator does not seem to have any effect on the anesthetic efficacy and time of onset of anesthesia. In contrast to our finding, A Keetley and DR Moles found borderline statistical significant difference in success rate of inferior alveolar nerve block based on experience of operator. We also found out that the gender of patient have no bearing on rate of successful inferior alveolar nerve block.

In patient with successfully Inferior alveolar nerve blocks, comparable results were found between mean onset of anesthesia and Face rating scale in Undergraduate, house surgeon and staff.

We found the mean onset of anesthesia of inferior alveolar nerve block within 6-7 minutes. Some studies had reported shorter latency period with lignocaine.[5, 11] This variation may be because they recorded the onset of anaesthesia as latency time i.e. period from the time of administration of the local anaesthetic until the onset of the sensation of labial numbness while we recorded the time of onset of anaesthesia as a period from the time of complete deposition of local anaesthetic until the absence of pain sensation on instrumentation..

In contrast to other studies, we used Faces Rating Scale pain score instead of Visual Analogue Scale and Electric pulp tester to assess pain.[11, 12] Visual Analogue Scale is considered a very popular tool for pain assessment and a sufficiently reliable in acute pain settings.[1] But this tool has its own disadvantages. Illiterate, uncooperative and children have problem using it. Our patients consisted of a homogeneous group of rather low education, who usually has the problem in interpreting pain scales. Visual analogue scale and Faces rating scale can be used interchangeably for evaluation of acute postoperative pain.[2] So, we decided to use Faces Rating Scale pain score. Faces Rating Scale assessment of pain provides a gross, but validated and meaningful, measure of anesthetic efficacy. The use of a Faces Rating Scale scoring system was expected to reveal any gross difference existing between the two treatments. Electric pulp tester is not used because most of the patients requiring dental extraction already have necrosis of pulp.

The result of our study seems to suggest that the experience of operator does not have any effect on anesthetic efficacy and onset of anesthesia with inferior alveolar nerve blocks.

REFERENCES:

1. De Boer AG, Lanschot JJ, Stalmeier PF, Sandick JW, Hulscher JB, Haes JC et al. Is a single–item visual analogue scale as valid, reliable, and responsive as multi–item scales in measuring quality of life? Qual Life Res. 2004; 13: 311 – 320.
2. Fadaizadeh L, Emami H M. and Samii K Comparison of Visual Analogue Scale and Faces Rating Scale in measuring acute postoperative pain. Arch Iranian Med 2009;12(1): 73 – 7.
3. Fernandez C, Reader A, Beck M and Nusstein J. A perspective, randomized, double blind comparison of bupivacaine and lidocaine for inferior alveolar nerve block. J Endod. 2005;31(7): 499-503.
4. Keetley A and Moles D R. A clinical audit into the success rate of inferior alveolar nerve block analgesia in general dental practice. Prim Dent Care. 2001 Oct;8(4):139-42.
5. Malamed SF. Local Anesthetics: Dentistry's Most Important Drugs, Clinical Update CDA.Journal. 2006.34.(12);971-976.
6. Malamed SF. Is the mandibular nerve block passé? JADA 2011;142(9): 3S-7S.
7. Meechan JG. How to overcome failed local anaesthesia. British Dental Journal 1999 Jan;186(1);15-20
8. Meechan JG. Infiltration anaesthesia in the mandible. Dent Clin N Am 2010;54:621-629.
9. Nusstein J, Reader A, Drum M. The Challenges of Successful Mandibular Anaesthesia. Inside Dentistry 2008;4(5)
10. Potocnik I and Barovik F. Failure of inferior alveolar nerve block in endodontics. Endod Dent Traumatol. 1999;15: 247-251.
11. Rebolledo AS, Molina E, Ayetes L and Escode CG. Comparative study of anaesthetic efficacy of 4% articaine versus 2% lidocaine in inferior alveolar block during surgical extraction of impacted lower third molars. Med Oral Pat Oral Cir Bucal 2007;12:139-44.
12. Tortamano IP, Siviero M, Costa CG, Buscariolo IA and Armonia PL. A comparison of the anaesthetic efficacy of articaine and lidocaine in patients with irreversible pulpitis. J Endod 2009;35(2):165-8.