

COMPARISON OF ANESTHETIC EFFICACY OF INFERIOR ALVEOLAR NERVE BLOCK AND VAZIRANI-AKINOSI TECHNIQUES IN PATIENTS WITH IRREVERSIBLE PULPITIS

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ABSTRACT

Successful anesthesia is the bedrock for pain control in dentistry. It not only reduces the stress of the dentist but also raises patient comfort, affiliation and faith in the operator. Inferior alveolar nerve block is commonly used to anesthetize mandibular posterior teeth. However, anesthetizing teeth with irreversible pulpitis is still challenging for a dentist. The aim of the study was to compare two anesthetic techniques, i.e., Inferior alveolar nerve block to Vazirani-Akinosi technique in patients presenting with irreversible pulpitis. A retrospective randomized controlled trial was conducted at department of operative dentistry, Khyber College of Dentistry, Peshawar, from March 2018 to August 2018. A total of 80 patients having irreversible pulpitis in posterior mandibular teeth were selected. They were divided randomly (lottery method) in to two groups of 40 patients each. Each group of subjects received 2% lidocaine of 1.8mL with epinephrine 1: 100,000 (Medicainer Inj, Huon Co.,Ltd, Korea) using anesthetic cartridges with aspirating syringe. Group A subjects received inferior alveolar nerve block while Group B subjects received Vazirani-Akinosi nerve block. Each patient had rated his or her pre-operative and intra-operative pain on a visual analog scale (VAS). Data was analyzed using SPSS-22. Efficacy between both the groups were compared. Efficacy was observed in 30 patients (75%) of Group-A and 38 patients (95%) of Group-B.

In conclusion, the success rate of Vazirani-Akinosi technique and inferior alveolar nerve block differs considerably. Vazirani-Akinosi technique may be consider as a suitable alternative to the Inferior alveolar nerve block technique in anesthetizing patients with irreversible pulpitis having anesthetic success of (95%) as compared to Inferior alveolar nerve block (75%).

Key words: Irreversible pulpitis, Inferior alveolar nerve block, Vazirani-Akinosi nerve block, Local anesthesia, Pterygomandibular space

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INTRODUCTION

Successful anesthesia is very important for pain control in dentistry.¹The most commonly used tech-

nique for anesthetizing mandibular posterior teeth for endodontic treatment is inferior alveolar nerve block.¹Mandibular foramen where the inferior alveolar nerve enters, is the point of target. High failure rates (30%–81%) in mandibular posterior teeth with irreversible pulpitis were reported.^{1,2}This may be due to the variable anatomical location of mandibular foramen and also other branches of the mandibular nerve are not anesthetized.³

Vazirani-Akinosi technique is a closed mouth technique for anesthetizing inferior alveolar nerve in which local anesthesia is deposited in pterygomandibular space targeting where inferior alveolar, mylohyoid and lingual nerves start to run downward.⁴Thus, all of these nerves are anesthetized.⁴The patient is placed supine and the operator palpates the coronoid process. After reflection of soft tissues of cheek and upper ves-

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tibule the syringe is inserted parallel to the occlusal plane, with the landmarks for needle insertion being the horizontal line with the mucogingival junction of maxillary second molar and moves in a posterior and slightly lateral direction. Once the needle is inserted 25mm, administer one full cartridge after a negative aspiration.⁴ Indications includes limited mouth opening cases e.g. trismus, oral sub mucous fibrosis and tetanus. However anesthetic efficacy of Vazirani-Akinosi technique as a primary injection technique for patients with irreversible pulpitis needs to be evaluated. The main disadvantages of this technique are difficult to determine the depth of insertion due to no bony contact and may be potentially traumatic if needle is too close to periosteum.⁴

Few studies have been conducted to compare the anesthetic efficacy of inferior alveolar nerve block and Vazirani-Akinosi technique, these have conflicting results in patients with irreversible pulpitis.^{5, 6, 7} The rationale of the present study was to compare the two local anesthesia block techniques in anesthetizing patients with irreversible pulpitis to find a superior technique to anesthetize inferior alveolar nerve.

METHODOLOGY

The present study was conducted at department of Operative Dentistry, Khyber College of Dentistry, Peshawar, from March 2018 to August 2018. It was a randomized controlled trial. A total of 80 patients of both genders that met the inclusion criteria were selected from the outpatient department. Patients falling within 18 to 60 years of age, requiring root canal treatment in posterior mandibular teeth having irreversible pulpitis, absence of periapical radiolucency on radiographs, not medically compromised nor taking any medications (NSAIDs, opioids, sedatives, alcohols) were included in study. Patient with a previous history of allergy to local anesthetics, pregnant patients, patients showing no response to EPT, were excluded from study.

They were divided randomly (lottery method) in to two groups of 40 patients each. Group A received Inferior alveolar nerve block while Group B received Vazirani-Akinosi nerve block. All the subjects were briefed with the objectives and protocols of the study. After taking history and investigations (periapical radiographs and pulp vitality tests) patients were allotted to one of the two groups by random allocation (lottery method). Visual analog scale was explained to each patient before starting the treatment. Patients rated their pain on a visual analog scale (VAS). No pain corresponded to 0 cm, mild pain to 1cm to 4 cm, moderate pain to >4 cm and <7 cm, and severe pain to >7 cm. Each group of subjects received 2% lidocaine of 1.8mL with epinephrine 1: 100,000 (Medicainer Inj, Huon Co.,Ltd, Korea) using standard anesthetic cartridges with aspirating syringe.

After administration of local anesthesia by either technique to all patients, waited for approximately 15 minutes for induction of anesthesia. It was confirmed

by attaining lip numbness, no pain on interdental probing, and no response to maximum reading (60) on electric pulp tester (EPT). The data was recorded in the proforma.

After isolation, access cavity was made in a tooth and patient was asked to rate pain on visual analog scale. Anesthesia was considered successful when there was no pain or mild pain. Upon moderate to severe pain, the technique was considered unsuccessful. In that case a supplemental injection was given for completion of root canal treatment.

Data collected was entered using SPSS version 22 software. The mean±SD was calculated and presented for age and gender of the patient. Frequency and percentage were calculated for gender and efficacy. Efficacy between both the groups were compared using chi square test. P value of ≤ 0.05 was set.

RESULTS

Out of total 80 patients, 40 each were assigned to Group A and Group B. The number of males in Group A and B were 28(70%) and 27(67.5%) respectively, while the females in Group A and B were 12(30%) and 13(32.5%) respectively. The mean age of Group A was 37.48±13.16 years, while Group B had 41.35±13.38 years. Patients of Group A and Group B were compared for efficacy in a cross tabulation, the results showed a much better results for Group B, details shown in Table 1. P value for group A and B was found to be highly significant P=0.012

Table 2 shows group distribution on the basis of efficacy between different age groups and gender which clearly shows a higher percentage of group B anesthesia results in all categories.

DISCUSSION

In the present study, teeth with irreversible pulpitis were successfully anesthetized in (95%) of cases in Vazirani-Akinosi technique as compared to Inferior alveolar nerve block (75%). This is in accordance with study of prabhu,⁷ in which the success rate of the Vazirani-Akinosi technique was higher (82%) than the Inferior alveolar nerve block (61%). However, study conducted by Donkor have showed a higher anesthetic efficacy of inferior alveolar nerve block (97%) as compared to Vazirani-Akinosi technique (79%)⁸, the results of that study were in contrast to the present study.

In another study Ravi, et al compared the anesthetic efficacy of Vazirani-Akinosi technique to Inferior alveolar nerve block and found no significant difference, anesthetic efficacy of (92.86%) for inferior alveolar nerve block and (95.71%) for Vazirani-Akinosi technique.⁹ Goldberg et al, also showed no significant difference between Inferior alveolar nerve block and Vazirani-Akinosi techniques in terms of anesthetic efficacy.⁶

Aggarwal et al studied anesthetic efficacy of

TABLE 1: EFFICACY OF GROUP A AND B

Efficacy	Group-A (Inferior alveolar nerve block)	Group-B (Vazirani-Akinosi nerve block)	P value
Yes	30(75.0%)	38(95.0%)	0.012
No	10(25.0%)	2(05.0%)	

TABLE 2: GROUP DISTRIBUTION ON THE BASIS OF EFFICACY IN DIFFERENT AGE GROUPS AND GENDER

Age (Year)	Group	Efficacy	
		Yes n (%)	No n (%)
18-40	Group-A	21(80.77)	5(19.23)
	Group-B	21(100)	0(0)
41-60	Group-A	9(64.29)	5(35.71)
	Group-B	17(89.47)	2(10.53)
Gender			
	Male		
Male	Group A	21(75)	7(25)
	Group B	26(96.30)	1(3.7)
Female	Group A	9(75)	3(25)
	Group-B	12(92.3)	1(7.7)

Vazirani-Akinosi and Inferior alveolar nerve block techniques in cases of irreversible pulpitis. In that study both techniques were failed to provide profound anesthesia, and found anesthetic success of 41% in case of Vazirani-Akinosi technique and 36% in case of Inferior alveolar nerve block.⁵

The higher success rate of Vazirani-Akinosi technique may be due to injection at a higher level into the pterygomandibular space prevents errors related to the variable location of mandibular foramen and also because inferior alveolar nerve, its branches, lingual and mylohyoid nerve gets anesthetized.⁷

CONCLUSION

The success rate of Vazirani-Akinosi technique and inferior alveolar nerve block differs considerably. Vazirani-Akinosi technique may be considered as a suitable alternative to the Inferior alveolar nerve block in anesthetizing patients with irreversible pulpitis.

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| 2 Inam ULLAH Jan: | Wrote article, proof reading and review of final draft. |
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| 4 Rizwan ULLAH Afridi: | Helped in Data analysis. |
| 5 Muhammad Zain: | Data collection. |
| 6 Sulman Haider: | Data analysis and write up references. |