

Original Research Article

# Comparison between Conventional Inferior Alveolar Nerve Block with Vazirani-Akinosi Technique and Gow-Gates Technique of the Mandibular Nerve Block

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## ABSTRACT

**Aim & objective:** Different techniques have been developed over the year for achieving mandibular anesthesia. Continuous endeavour has been done to find out the most efficient and best anesthesia for mandible. Each technique has its own advantage and disadvantage. Our aim is to compare between different techniques and to find out if Vazirani-Akinosi and Gow-Gates technique can be considered as an alternative to Conventional Inferior Alveolar Nerve Block.

**Materials and Methods:** 50 Adults patients between age group 15-65 were randomly selected for each technique. Total number of patient is 150. 2.7 ml of 2% Xylocaine was used for all patients Chi-square, Anova and Bonferroni test was used for statistical analysis.

**Results:** Gow-Gates & Vazirani-Akinosi can be considered as alternative to conventional inferior alveolar nerve block.

**Key words:** Local anaesthesia, Inferior Alveolar nerve block (IANB), Vazirani-Akinosi technique, Gow-Gates technique

## INTRODUCTION

Painless surgical procedures should not only the aim of a surgeon but it is the demand of patients most often. Therefore achieving maximum anesthesia within minimum time and with minimum discomfort should be the aim of a surgeon. The same is the case in case of oral surgeon. In case of maxillofacial region, mandible is difficult to anaesthetize compared to maxilla as because mandible is a compact bone while maxilla is porous bone, the outer layer of cortical bone of mandible is thick and non-porous. Different methods are available for mandibular anesthesia which include the 1) Traditional Inferior Alveolar Nerve Block (IANB) 2) Vazirani-Akinosi closed mouth technique (V-A) 3) Gow Gates technique (G-G). Each technique has

its own advantage and disadvantage. Some studies report no significant difference among these 3 anesthetic methods in terms of success rate, onset time a positive aspiration rate. On the other hand there are other studies whose results indicate the Gow-Gates and Vazirani Akinosi techniques enjoy certain advantages over the traditional inferior Alveolar Nerve block, though the later is often considered to be the default technique that should be selected. This contradictory research results create hesitation among many dentists. Therefore there is urgent need to evaluate the comparative anesthetic effectiveness and safety of these 3 techniques. The present research can hopefully serve as a useful guide to practicing surgeons. Briefly the study aimed to compare between different

techniques and to find out if Vazirani Akinosi and Gow Gates technique can be considered as an alternative to Conventional Inferior Alveolar Nerve Block.

## MATERIALS AND METHODS

The study group consist of total 150 patients (75 Male and 75 Female) who need dento alveolar surgery including 3<sup>rd</sup> molar extraction, Total 150 patients were divided into 3 groups - A,B and C group. Randomly each group consists of 50 patients each (25 Male and 25 Female). The age group of the Patients is 15-65 years. All patients were in good health conditions and were not taking any medications that would affect the perception of pain. The degree of mouth opening was normal.

**The exclusion criteria include:** 1.patients below 15 years and above 55 years, 2.Patients allergic to LA, 3. Patients having localized infection at injection site, 4.Patients reluctant to sign consent form.

**Inclusion Criteria** (Parameter for comparison) includes:

Onset of anesthesia 2) Duration of anesthesia 3) Success rate 4) Positive aspiration/ Negative aspiration 5) Pain and Swelling at injection site. 6) Complication after anesthesia.

The protocol and consent form were approved by the committee of ethics FAAMCH, Barpeta.

As told already the study group which consent of total 150 patients was divided into 3 groups – Group A, Group B, Group C. For Group A LA was

administrated by conventional inferior Alveolar Nerve block (IANB), [1] For Group B, LA was administered by Vazirani Akinosi technique [2,3] and For Group C, LA was administered by Gow-Gates [4] technique. For conventional technique, the Patients were asked to open mouth. The injection site was soft tissue covering the medial surface of ramus at the lateral side of pterygomandibular raphe and the external oblique rides. The syringe was positioned between the premolars at the opposite side of mouth. For Vazirani Akinosi technique the patient was positioned supine and asked to close into maximum interception. The site of injection was at the medical surface of the ramus at the height of mucogingival of maxillary second molar. A thin site the needle was inserted into the pterygo-mandibular spaces and after aspiration the anesthesia solution was deposited. For Gow - Gates [2,5] technique extra oral landmarks used injection and the target site is neck of the condyle.

Local anesthesia used for this study 2% 1.80000 Lignocaine. 2 ml Syringe was used to deliver LA. 25 gauge needle was used.

### Statistical Analysis:

**Table 1**

Technique	Mean Onset Time of Anesthesia			p-value
	N	Mean	Std. Deviation	
Inferior Alveolar Technique	50	2.8160	.37699	0.000*
Vazirani Akinosis Technique	50	3.0292	.27337	
Gow Gates Technique	50	3.1190	.24241	
Total	150	2.9881	.32695	

Test applied: One-way ANOVA. \*Indicates statistical significance

### Post Hoc-Analysis

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.
Inferior Alveolar Technique	Vazirani Akinosis Technique	-.21320*	.06062	.002
	Gow Gates Technique	-.30300*	.06062	.000
Vazirani Akinosis Technique	Inferior Alveolar Technique	.21320*	.06062	.002
	Gow Gates Technique	-.08980	.06062	.422
Gow Gates Technique	Inferior Alveolar Technique	.30300*	.06062	.000
	Vazirani Akinosis Technique	.08980	.06062	.422

Test applied: Bonferroni test

**Table 2**

Technique	Mean Number of Injections			p-value
	N	Mean	Std. Deviation	
Inferior Alveolar Technique	50	1.10	.303	0.037*
Vazirani Akinosis Technique	50	1.26	.443	
Gow Gates Technique	50	1.10	.303	
Total	150	1.15	.362	

Test applied: One-way ANOVA. \*Indicates statistical significance

Post Hoc-Analysis

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.
Inferior Alveolar Technique	Vazirani Akinosi Technique	-.160	.071	.078
	Gow Gates Technique	.000	.071	1.000
Vazirani Akinosi Technique	Inferior Alveolar Technique	.160	.071	.078
	Gow Gates Technique	.160	.071	.078
Gow Gates Technique	Inferior Alveolar Technique	.000	.071	1.000
	Vazirani Akinosi Technique	-.160	.071	.078

Test applied: Bonferroni test

Table 3

Technique	Aspiration		Total	p-value
	Negative	Positive		
Inferior Alveolar Technique	43	7	50	0.019*
	86.0%	14.0%	100.0%	
Vazirani Akinosi Technique	47	3	50	
	94.0%	6.0%	100.0%	
Gow Gates Technique	50	0	50	
	100.0%	.0%	100.0%	
Total	140	10	150	
	93.3%	6.7%	100.0%	

Test applied: Chi-square test. \*Indicates statistical significance

Table 4

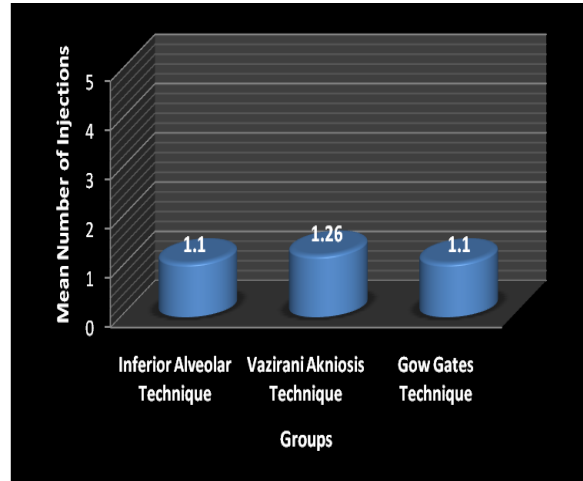
Technique	Hematoma		Total	p-value
	Absent	Present		
Inferior Alveolar Technique	48	2	50	0.132 (NS)
	96.0%	4.0%	100.0%	
Vazirani Akinosi Technique	50	0	50	
	100.0%	.0%	100.0%	
Gow Gates Technique	50	0	50	
	100.0%	.0%	100.0%	
Total	148	2	150	
	98.7%	1.3%	100.0%	

Test applied: Chi-square test. \*Indicates statistical significance

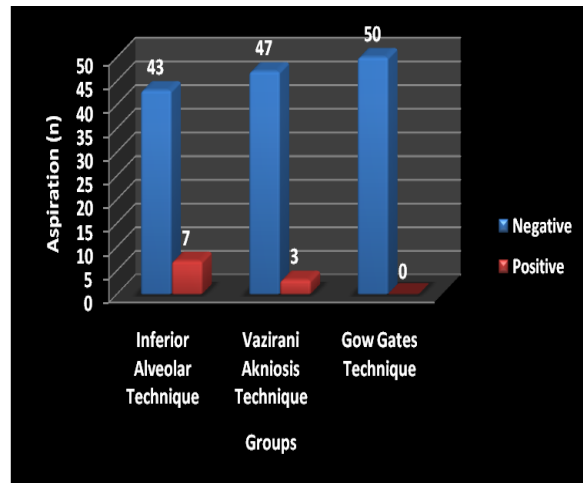
Table 5

Technique	Trismus		Total	p-value
	Absent	Present		
Inferior Alveolar Technique	49	1	50	0.365 (NS)
	98.0%	2.0%	100.0%	
Vazirani Akinosi Technique	50	0	50	
	100.0%	.0%	100.0%	
Gow Gates Technique	50	0	50	
	100.0%	.0%	100.0%	
Total	149	1	150	
	99.3%	.7%	100.0%	

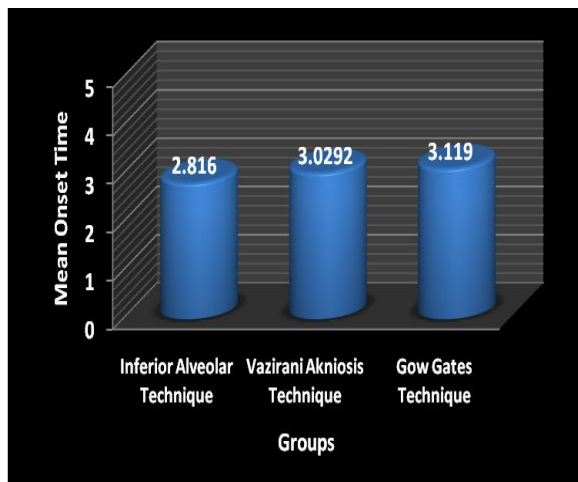
Test applied: Chi-square test. \*Indicates statistical significance



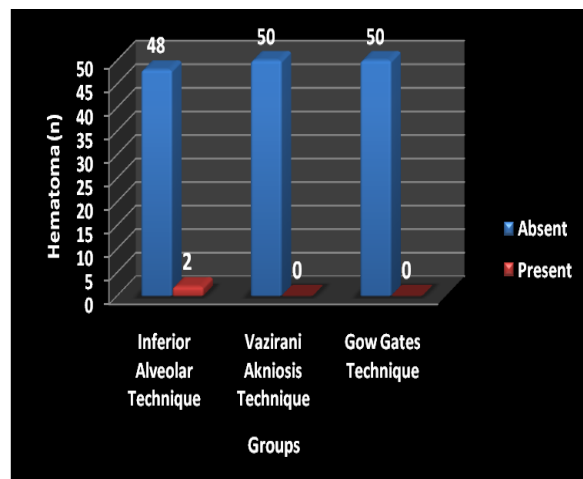
Graph 2



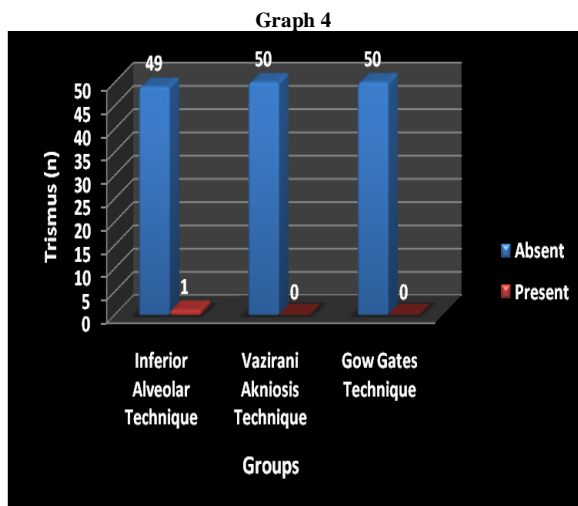
Graph 3



Graph 1



Graph 4



**Graph 5**

## RESULTS

The results of our present study shows that 1) The mean time to anesthesia for the IANB was 2.82 min and for Vazirani Akinosi technique it was 3.02 min and for Gow - Gates technique it was 3.11 min and therefore regarding onset of anesthesia conventional IANB has faster onset than Vazirani Akinosi and Gow Gates technique. Which is statistically significant (Table1) 2) Regarding second parameter success rate of IANB and Gow-gates technique is more compared to Vazirani Akinosi is technique Which is statistically significant (Table2) 3) Regarding duration of anesthesia all three have similar duration of anesthesia. 4) Regarding Positive/ Negative aspiration IANB shows more negative aspiration compared to Vazirani Akinosi or technique which is probably due to proximity to neurovascular bundle in case of IANB 7 patient out of 50 shows positive aspiration for Vazirani Akinosi 3 patient out of 50 shows positive aspiration. Regarding Gow-gates positive aspiration was nil. Statistically analysis is shown in (Table3) 5) Regarding Pain and swelling at injection site. Pain and swelling at injection site was less for Gow - Gates technique compared Vazirani Akinosi and conventional method.6) Regarding complication after anesthesia: For IANB 2 patients out of 50 shows hematoma formation. While hematoma formation was nil for Vazirani Akinosi and Gow-Gates technique. 1 case of

trismus of was obtained in IANB Vazirani Akinosi and Gow Gates technique (which is shown in Table 4 & 5).

## DISCUSSION

Pain less treatment not only important part of any dental treatment but also demand for most of the patients. Dentists usually use the inferior alveolar Nerve block (IANB). Although this is an efficient as well as a safe technique to anesthesia mandible but it has some disadvantage also for example the high incidence of positive aspiration is in IANB compared to V-A technique [5] or Gow-Gates technique due to proximity of injection site to neurovascular bundle. Also the chance of failure of IANB is due to variability of mandibular anatomy. On the other hand Gow-Gates technique and Vazirani Akinosi technique are more efficient than the IANB according to some study. [6] Therefore there is always endeavour to find the best technique for mandibular anesthesia with minimums discomfort and maximum success. In our current study, we have found that satisfactory anaesthesia can be achieved by all the three technique with IANB having slightly higher success rate and on set of anesthesia compared to other two techniques (Table 1 & 2 for statistical analysis). Again some study have shown higher success rate of Gow gates and Vazirani Akinosi. [7-9] But our study result was similar to studies done by Todorovic L et al [10] and Hung PC et al. [11] Also form present study we can say that post operative complication like hematoma and trismus or swelling is less in V-A or G-G technique compared to IANB Which is statistically significant (Table 3 ,4 & 5). Our study result was similar to studies done by Akinosi<sup>1</sup> and Yucel E& Hutchinson [12] Also less LA is required in V-A or G-G technique compared to IANB. In our study the onset time of IANB is higher than V A or GG technique which is statistically significant. Our study findings is similar to the study done by

Todorovic L et al, <sup>[10]</sup> Hutchinson, <sup>[12]</sup> and Martinez <sup>[13]</sup>

## CONCLUSION

From this present study we can conclude that with proper knowledge of anatomy and proper technique Gow Gates technique & Vazirani-Akinosi technique can be considered in clinical practice instead of conventional IANB with regard to similar success rate and onset of anaesthesia with IANB, constancy of landmarks, decreased positive aspiration, decreased post operative complication, advantage of one injection to anaesthetize a greater area supplied by mandibular nerve.

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