Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/mjafi

Case Report

Difficult airway 'made easy' with Vazirani-Akinosi (closed mouth) technique of mandibular nerve block

Bhargava V. Devarakonda^{a,*}, Yuvraj Issar^b, Rakhee Goyal^c,
Kiranmai Vadapalli^d

^a Graded Specialist (Anaesthesiology), HQ IMTRAT, C/O 99 APO, Bhutan

^b Graded Specialist (Oral & Maxillofacial Surgery), HQ IMTRAT, C/O 99 APO, Bhutan

^c Professor (Anaesthesiology & Critical Care), Army Hospital (Research & Referral), New Delhi, India

^d Assistant Professor (Physiology), Kamineni Institute of Medical Sciences, Narketpally, Telangana 508254, India

ARTICLE INFO

Article history:

Received 26 July 2017

Accepted 9 January 2018

Available online 21 March 2018

Keywords:

Mandibular nerve

Nerve block

Intubation

Intratracheal

Endotracheal

Introduction

The management of difficult airway is a basic skill acquired by the anaesthesiologists. However, difficult airways continue to challenge the proficiency of an anaesthesiologist throughout the career span. Various orthodox as well as innovative solutions are applied to the diverse array of airway problems encountered in everyday practice. The subset of patients requiring elective endotracheal intubation for scheduled repair of maxillofacial fractures, present a unique challenge due to reduced mouth opening. The reduced mouth opening in this group of patients is due to pain and stiffness during jaw movement. We present three cases of maxillofacial trauma

posted for open reduction and internal fixation (ORIF) under general anaesthesia where reduced mouth opening due to pain and stiffness was improved by application of mandibular nerve block using Vazirani-Akinosi (closed mouth) technique.

Case report

Three patients who suffered Fracture Mandible and underwent Open Reduction Internal fixation have been reported. Patient characteristics of three cases with fracture mandible with reduced mouth opening are summarised in Table 1. A detail of their airway assessment is shown in Table 2. Difficult airway was anticipated in all three cases. General anaesthesia with nasal endotracheal intubation with flexometallic tube was the anaesthetic technique necessary for the procedure. Necessary preparations were made for management of difficult airway as per standard institutional protocol. Informed written consent was obtained.

On the day of surgery, patient was shifted to operation theatre. Monitoring (ECG, NIBP, SpO₂) was applied. Patient was placed supine on operation table. After explaining procedure to the patient, cheek was retracted with a retractor. A 27G 35 mm long needle attached to Atkin syringe with Lignocaine (2%) with adrenaline (1:80,000) cartridge was introduced into the pterygomandibular space via the medial aspect of mandibular ramus, parallel to the occlusal plane at the height of the mucogingival junction of second and third molars under strict aseptic conditions (Figs. 1–3). After negative aspiration, 1.5 ml of Lignocaine (2%) with adrenaline (1:80,000) was

* Corresponding author.

E-mail address: bhargavadv@rediffmail.com (B.V. Devarakonda).

<https://doi.org/10.1016/j.mjafi.2018.01.003>

0377-1237/© 2018 Published by Elsevier B.V. on behalf of Director General, Armed Forces Medical Services.

Table 1 – Patient characteristics.

S. no.	Patient characteristics	Case 1	Case 2	Case 3
1	Age	17 years	20 years	22 years
2	Gender	Male	Male	Male
3	Diagnosis	Fracture mandible parasymphysis (Left) and angle of mandible (Right)	Fracture angle of mandible (Right) and parasymphysis (Left)	Fracture angle of Mandible (Right)
4	Mode of injury	Fall from height	Accidental fall	Sports injury
5	Operation	Open Reduction Internal fixation (ORIF)	ORIF	ORIF
6	ASA physical status	ASA 1	ASA 1	ASA 1

Table 2 – Airway parameters recorded in cases.

S. no.	Airway parameter	Case 1	Case 2	Case 3
1	Interincisor distance (IID) Pre VA Block	15 mm	16 mm	14 mm
2	Interincisor distance Post VA Block	24 mm	26 mm	23 mm
3	Upper Lip Bite test grade	2	3	2
4	Thyromental distance	7.1 cm	6.8 cm	6.8 cm
5	Mallamapati classification	Could not be evaluated due to reduced mouth opening		
6	Atlantooccipital extension	>35°	>35°	>35°
7	Improvement in IID in mm (%)	9 mm (60%)	10 mm (62.5%)	9 mm (64.2%)
8	Laryngoscopy grade at intubation (Cormack Lehane grade)	Grade 2	Grade 1	Grade 2

Fig. 1 – Technique of administering Vazirani-Akinosi block.

injected into the space. This procedure was repeated on the opposite side. The interincisor distance was measured again after two min. The distance between lower edge of upper incisor to the upper edge of the lower incisor was measured using a calibrated steel ruler and recorded as the interincisor distance.¹ In all these cases, the trismus due to fracture mandible showed initial improvement in mouth opening as a result of administration of mandibular nerve block by Vazirani Akinosi (closed mouth) technique (Table 2).

Subsequently, general anaesthesia was induced after intravenous (IV) Morphine (0.1 mg/kg) using IV Propofol (2 mg/kg). After confirming successful mask ventilation, IV Succinylcholine 100 mg was administered. Patient was ventilated with Bain's circuit using 100% oxygen for 60 s. Nasal endotracheal intubation was successfully performed on first attempt at laryngoscopy using MacIntosh size 3 blade. Laryngoscopic view was graded. Surgery was completed uneventfully in all three cases. Extubation and postoperative recovery was uneventful.

Fig. 2 – Needle insertion for application of Vazirani-Akinosi block shown on a skull model.

Discussion

The mandibular nerve block provides anaesthesia to sensory as well as motor innervation to the muscles of mastication. It helps in the release of trismus that is produced secondary to muscle spasm as may occur in cases of angle fracture of the mandible. Mandibular nerve block can be administered by various techniques namely Gow-Gates technique, Vazirani-Akinosi technique and Coronoid approach.² The Gow-Gates technique requires adequate mouth opening where local anaesthetic is administered just anterior to the neck of the condyle. This approach provides longer duration of anaesthesia than other techniques.³ The Vazirani-Akinosi technique is

Fig. 3 – Needle insertion for application of Vazirani-Akinosi block depicted in Mandible bone model.

a closed mouth technique where local anaesthetic is administered in the pterygomandibular space.³ It is an alternate way of blocking oral branches of mandibular nerve introduced by Akinosi in 1977,⁴ where only one penetration of the oral mucosa is made in this injection at a site which is relatively painless and which results in a more rapid onset of anaesthesia. This method is specifically useful when trismus or ankylosis is present. It is less traumatic and has lower complication rate along with faster onset of action. This was used to advantage in both cases to facilitate relatively easier intubation as a result of improved mouth opening. Mandibular nerve block by ultrasound guidance has been described as a better technique for mandibular block in terms of reliability and precision.⁴ Itching over upper lip and lower eye lid and haemorrhagic tap are the side effects reported with Vazirani-Akinosi technique.^{5,6} Recently, Ultrasound guided mandibular nerve block has been compared with Vazirani Akinosi closed mouth technique.⁵ It was found that the incidence of block

failure was higher in closed mouth technique, thereby ultrasound guided block being considered more reliable.

Conclusion

Vazirani-Akinosi technique of mandibular nerve block can be considered as an effective addition to the armamentarium of an anaesthesiologist managing cases of difficult airway involving reduced mouth opening secondary to fracture mandible.

Conflicts of interest

The authors have none to declare.

REFERENCES

1. Khare N, Patil SB, Kale SM, Sumeet J, Sonali I, Sumeet B. Normal mouth opening in an adult Indian population. *J Maxillofac Oral Surg.* 2012;11:309–313.
2. Lenka S, Jain N, Mohanty R, Singh DK, Gulati M. A clinical comparison of three techniques of mandibular local anaesthesia. *Adv Hum Biol.* 2014;4:13–19.
3. Haas DA. Alternative mandibular nerve block techniques: a review of the Gow-Gates and Akinosi-Vazirani closed-mouth mandibular nerve block techniques. *J Am Dent Assoc.* 2011;142 (suppl 3):8S–12S.
4. Akinosi JO. A new approach to the mandibular nerve block. *Br J Oral Surg.* 1977;15:83–87.
5. Jain G, Yadav G, Singh AP, Singh Y, Singh DK. Efficacy of ultrasound-guided mandibular block in predicting safer anesthetic induction. *Anesth Essays Res.* 2016;10:184–188.
6. Mishra S, Tripathy R, Sabhlok S, Panda PK, Patnaik S. Comparative analysis between direct conventional mandibular nerve block and Vazirani-Akinosi closed mouth mandibular nerve block technique. *Int J Adv Res Technol.* 2012;1:1–6.