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THE MANDIBULAR NERVE BLOCK BY CLOSED MOUTH

METHOD : A Clinical evaluation

Abstract

One hundred patients were injected by “Akinosi mandibular block” technic, using an intra-oral landmark and closed mouth approached to the inferior dental, lingual and long buccal nerve at the same time. Only one penetration into the oral mucosa is made in this injection so it reduces patient anxiety, and is also useful when the mouth opening is limited.

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INTRODUCTION

Nowadays, the standard method of mandibular nerve block is the direct technic taught in dental school (Chulalongkorn University) since 1973. Anatomical landmarks of this technic are the coronoid notch, the pterygo-mandibular raphae, the pterygo-temporal groove and the pterygo temporal depression suggested by Harrigan, modified by Meksupa.¹ The injection is given when the mouth is wide open, the lower occlusal surface parallels to the horizontal plane. Immediately after the needle is withdrawn, the patient experience the altered sensation of the tongue and lip on injected side, and the surgical anesthesia is obtained after 3 minutes. This method has been found reliable both in adult and children. It has been used in our clinic for over 12 years, not a single significance complications for example; a broken needle has so far been recorded. The success rate is more than 95%, the anatomic variations in shape and size of the mandible seems to play no role in this technic.² Difficulties may be experienced when the limitation of mouth opening is present and it may increase the rate of failure.

The "Akinosi mandibular block technic"³ was firstly described in 1977 which is a closed mouth intra-oral approached, the local anesthetic solution is delivered into the upper part of the pterygo-mandibular space where it effects the inferior dental, lingual and long buccal nerves. In this technic, the patient's teeth are closed into occlusion then the cheek is retracted to expose the posterior teeth. The needle is advanced as close as possible to the medial surface of the ramus, after the negative aspiration, the anesthetic solution is deposited anterior to the head of condyle. This makes the possibility of achieving anesthesia of the three nerves innervating the mandible and nearby structures with only one injection.

MATERIALS AND METHODS

The equipments required for this injection are

1. standard aspirated syringe with a 27 gauge disposable long needle (about 3.5 cm long).
2. a cartridge of 1.8 c.c. standard anesthetic solution
3. topical anesthetic spray, it should be used to minimise the first pain.⁴



FIGURE 1 Needle parallels to maxillary occlusal plane.

The steps of injection are as follows:

1. The patient is seated in a semi-reclining position with the head, neck and shoulders well supported.
2. Apply the topical anesthesia over the oral mucosa at the level of mucogingival line of upper molar.⁴
3. The operator stands in front and to the right of the patient. The teeth are occluded, cheek is retracted.
4. The needle is positioned at the level of the upper molar gingival margin and with the barrel parallels to the maxillary occlusal plane. The syringe is then advanced through the soft tissue in between the medial aspect of the ramus and the maxillary tuberosity.
5. The length of the needle buried in the tissue is about 2.5-3 cm., and the amount of the anesthetic solution is 1.8 ml. The tip of the needle at this step lies in the pterygo-mandibular space and closed to the three main nerves (Figure 2).

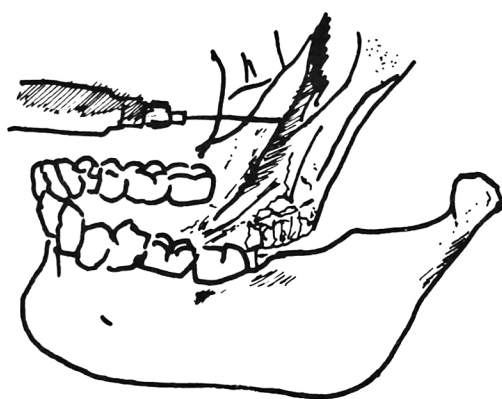


FIGURE 2 The tip of needle lies in the pterygomandibular space and closed to the three main nerves.

Table I Percent of patients respond to the Akinosi injection (N = 100)

The anesthetic obtain?	Number of patients (%)
Yes	88 (88%)
No	12 (12%)

After correctly given, the patient feel numbness over the tongue and lip. The anesthesia involve the lingual and inferior dental nerves. Of a total number of 100 injections, 88 patients give the positive answer, teeth have been removed painlessly. 12 patients give the negative answer to the first injection, so the standard method were used and

teeth were removed successfully.

The success rate of the Akinosi technic in this paper is 88%.

Of the total number of 100 patients, 50 cases needed supplemental long buccal nerve, so in this report the buccal nerve block has only 50% success rate.

Table II Response to anaesthetic block, 10 dental students were injected by the Akinosi method but no surgical procedure.

Total number of injections to dental students	10
Immediate onset (0-2 min)	None
Rapid onset (2-10 min.)	6
Long onset (11-30 min.)	3
No response	1

One hundred patients from the department who undergoing oral surgery impacted teeth removal and simple extraction were injected by Akinosi mandibular block technic as above. All injections were performed by the author and all surgical procedure were done by dental students.

Apart from these 100 patients, 10 dental students receiving a standard direct technic block before offer their services and were used in this investigation. They were injected by Akinosi mandibular block but no surgical procedure has been done. Nerves anesthesia were assessed by questioning these student in detail.

RESULTS

The results are summerized as follows :

DISCUSSION

Bennett⁵ has stated that the Akinosi technic, which rely on a minimum of bony landmarks and has variable depth of needle penetration due to variations in soft tissue, may be less successful than standard open mouth technic. In this investigation, success rate is 88%. This Akinosi technic has similarity to the Gow-Gates⁶ technic in that it makes use of proximal injection level, anesthetizes the inferior dental, lingual and long buccal nerves by a single injection. The report of the Gow-Gates mandibular block technic has shown that buccal nerve anesthesia occurs in 62-77% of cases,⁷ while in this study the long buccal nerves anesthesia occur in 50%. However it has a greater advantage over the Gow-Gates which uses extra-oral landmarks, it is easy to learn, simple to administer and uses the intra-oral approach in which the dentist is used to. The Akinosi injection did not always block the long buccal nerve, supplemental injections were required for 50 patients out of 100 in this study.

One of the purposes of this study is to compare the reaction of patients to the Akinosi block and the standard direct technic block. 10 Akinosi mandibular block injection were given to dental students who received standard direct technic block before. The students were requested to compare and comment on the method of injection. All 10 students preferred the standard direct technic block, they commented that there were little differences in the injection, three said there were pain during the Akinosi injection and they all agreed that the numbness started mostly immediately after the needle was withdrawn in the standard direct technic while none of the case start immediately, 6 had rapid onset and 3 had long onset.

Is the Akinosi injection suitable for teaching dental students?

No.

Over the past 12 year, we have taught dental student to do the mandibular nerve block by Harrigan's method, modified by Meksupa, the success rate is over 95% which satisfied us. With the Akinosi technic, I found it rather difficult to demonstrate and the landmark is variable so it is not a recommended method for teaching.

SUMMARY

This paper describes the Akinosi mandibular

block injection to bring it to attention of dental practitioner and encourage it wider use. Although this technic may not gain success rate as well as standard direct technic block, it had been proved especially valuable in patients with limited mouth opening. This has included patients with trismus from infection or trauma, sedated patients who are unable to maintain wide opening and fearful patients.

Acknowledgement

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บทวิชาการ

ประเมินผลการทำ Mandibular block โดยวิธีให้คนไข้หุบปาก

ผู้เขียนได้ทำการทดลองฉีดยา Mandibular block ในการถอนฟันล่างทั้งฟันธรรมดาและฟันคุด โดยใช้ “Akinosi mandibular block” ซึ่งการฉีดยาโดยวิธีนี้อาศัยกายวิภาคในช่องปากช่วยชี้แนะโดยให้คนไข้หุบปาก กัดฟันเบา ๆ แล้วฉีดไปบริเวณที่ใกล้เส้นประสาทอินฟีเรีย เดนต์อัล, ลิงกอลและลองบัคคอลลมากที่สุด โดยการแทงเข็มเพียงครั้งเดียว จะทำให้ประสาททั้งสามเส้นนี้ชาหมด จากการทดลองฉีดคนไข้ทั้งหมด 100 ราย ได้ผล 88% รายงานนี้ทำขึ้นเพื่อแนะนำวิธีการใหม่ ๆ ในการฉีดยาชาต่อทันตแพทย์ทั่วไป เพื่อจะได้นำมาฉีด ให้ได้ผลดี ในคนไข้ที่อ้าปากไม่ได้

ลาวัลย์ เมมสุทะ

อาจารย์ ภาควิชาสัตยศาสตร์

คณะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย