

## Pilot Study of the Inferior Alveolar Nerve Block Anesthesia Via the Retromolar Triangle in Patients of 40 to 60 Years Old

Estudio Piloto de la Anestesia al Nervio Alveolar Inferior Vía Trígono Retromolar en Pacientes de 40 a 60 Años

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**ABSTRACT:** The main mandibular anesthesia techniques used are directed to the mandibular lingula and Gow-Gates, especially the former presents considerable surgical risks, including intravascular puncture, which is presented in 15–20% of the cases. In this study, we applied this anesthetic technique to the inferior alveolar nerve via the retromolar triangle in 20 patients who were 40–60 years old to evaluate its effectiveness, determine the latency time, and ascertain whether the anesthesia administered is sufficient to carry out the surgery and endodontics. The technique proved to be effective in 75% of the cases, measured and controlled with pre-vitalometer test at 5, 10, and 15 minutes. Because this technique is simple, minimally invasive, and involves low risk, it is recommended as an alternative to conventional mandibular anesthetic techniques in patients with blood dyscrasias and patients who are suspected to submit to arterial hypertension but require anesthesia with vasoconstrictor.

**KEY WORDS:** inferior alveolar nerve, retromolar triangle, mandibular anesthesia.

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### INTRODUCTION

The inferior alveolar nerve block is required for most dental procedures performed in the mandible (Bremer, 1952; Malamed, 1980; Jorgensen & Hayden, 1982; Evers & Haegerstam, 1983), for which we have described techniques of wide clinical utility as the one directed to the mandibular lingula. Several authors have reported a clinical effectiveness of more than 95%; still this procedure presents complications related to the risk of vascular puncture or injury of anatomical elements of pterygomandibular space (Alantar *et al.*, 1991; Budenz & Osterman, 1995; Madan *et al.* 2002; Harn & Durham, 2003).

Another procedure described is the Gow-Gates technique, which goes to the neck of the mandibular head from the oral cavity, with the patient in maximum oral opening position, blocking most of the side branches and terminals of the mandibular nerve; the main difficulties are the depth of access and the need for a big opening mouth (Malamed, 1981; Cruz *et al.*, 1994; Budenz & Osterman; Johnson *et al.*, 2007).

A common risk factor in the mandibular conventional anesthetic technique is the possibility of a puncture or vascular injury, which should be considered when performing procedures on patients with blood dyscrasias or arterial hypertension (Manani *et al.*, 1989; Watson & Gow-Gates, 1992; Cruz *et al.*; Jacobs *et al.*, 2003).

Suazo *et al.* (2000) described an anesthetic technique directed to the inferior alveolar nerve via the retromolar triangle in young adult patients, indicating that this is a simple procedure with a low risk of injury or vascular puncture, due to the anatomical characteristics of the area. The characteristic of cribose retromolar triangle area, which allows the anesthetic diffusion to the mandibular canal and appearance of the puncture site has been described previously by various authors (Kodera & Hashimoto, 1995; Bilecenoglu & Tuncer, 2006; Suazo *et al.*, 2007).

Considering the statistics of hypertension in adult

patients in Chile (MINSAL, 1979; Lama & Oliva, 2001; MINSAL, 2006) and the risk to which patients are exposed when they receive mandibular anesthesia with vasoconstrictor, the purpose of this study is to analyze the effectiveness of the anesthetic technique directed to inferior alveolar nerve via the retromolar triangle in patients between 40 and 60 years old.

## SUBJECTS AND METHOD

The study was conducted at the Centre of Dental Clinic of the Universidad de Talca-Chile, involving 20 patients (18 females and 2 males) who are between 42 and 59 years old (mean: 47.25; SD: 5.66) and have at least two posterior teeth (premolars and/or molars) with pulp vitality requiring anesthesia for a procedure such as surgery or dental pulp treatment.

Patients were informed of the nature of the study and agreed to take part voluntarily, giving their written consent. We excluded from this study patients with acute pulp pathology or presence of the included lower third molar or semi-included in the side to anesthetize. As a control, all patients underwent a previous vitalometer test in a tooth on the side to anesthetize, then the anesthetic procedure was performed according to the technique described by Suazo *et al.* (2000).

To determine the effectiveness of the technique and latency time, the vitalometer test was conducted at 5, 10, and 15 minutes from the completion of the injection of the anesthetic solution, using the same

tooth that was tested in the vitalometer test control. If the tooth is not tested anetesiada, then the vitalometria is positive. On the contrary, it will be negative if it has been interrupted by a nerve conduction product from the application of the anesthetic.

The clinical effectiveness of this anesthetic technique was verified during the dental procedure; patients who reported pain were backfilled with anesthesia using the conventional technique, as seen in this case without clinical effectiveness.

The results were analyzed using Excel 2003 and descriptive statistics were obtained from the sample.

## RESULTS

All patients responded positively to the previous vitalometer test.

In the vitalometer test conducted at 5 minutes, 14 patients were positive and 6 were negative; at 10 minutes, the response was positive in 10 cases and the remaining 10 were negative; at 15 minutes, 5 cases were positive and 15 cases were negative. These results are shown in Fig. 1.

Of the 15 patients with negative responses to the vitalometer test after 15 minutes, 2 of them expressed pain when being subjected to dental procedure, and were supplemented with anesthesia using the conventional technique.

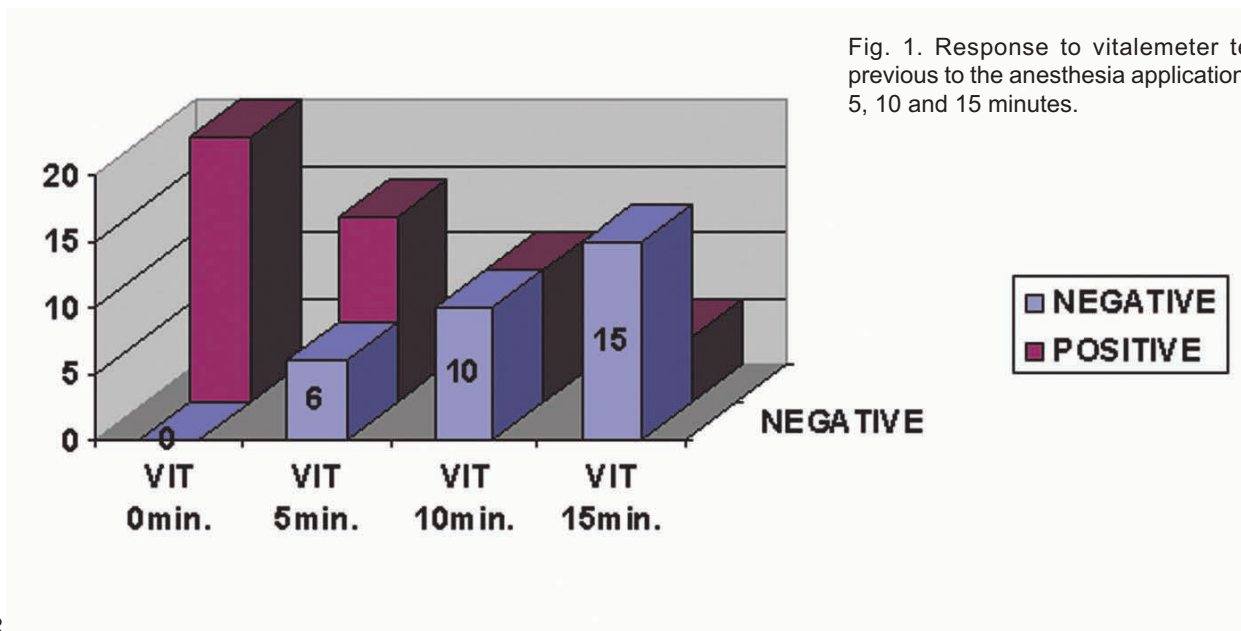


Fig. 1. Response to vitalometer test previous to the anesthesia application at 5, 10 and 15 minutes.

## DISCUSSION

The infiltrative anesthetic technique directed to the retromolar triangle in patients between 40 and 60 years of age was effective with the vitalometer test in 75% of the cases, which is slightly higher than the results reported by Suazo *et al.* (2000) in young people.

In this study, the values of effectiveness depending on the vitalometer test were higher than those of clinical effectiveness. This could be owing to the additional innervation of the teeth analyzed by vitalometer test. The inferior alveolar nerve conduction being blocked in the mandibular canal may receive supplemental nervous innervation coming from the mylohyoid nerve. For Cooley *et al.* (1984), using latex gloves, the lack of contact with the patient during the vitalometer test or a drop in the voltage of the device (less than 4.0 volts) can induce false negatives.

Although 65% of clinical success in the anesthetic technique directed to the retromolar triangle is poor compared with the success rate reported for the technique to the mandibular lingula, it is a good alternative to perform simple surgical procedures

(surgery and endodontics) in patients with blood dyscrasias or hypertension, thereby decreasing the need for an intravascular injection and risk of occurrence of a vascular injury, making the procedure safer.

The latency time to vitalometer test had the highest percentage of cases at 5 minutes (42.85%), which improves the results reported by Suazo *et al.* (2000), which received the greatest percentage of cases (58.6%) at 10 minutes. We can explain this on the grounds that with age, bone density decreases, suggesting that the cribose area of the mandible would be more permeable in these subjects, causing more rapid dissemination of anesthetic into the mandibular canal.

While the highest percentage of cases had a latency time of 5 minutes, the cases that presented latency time of 10 and 15 minutes (28.57 and 33.33% respectively) are not negligible; thus it is advisable not to consider that the technique has failed until at least 15 minutes after the anesthetic infiltration.

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**SANDOVAL, M. C.; SUAZO, G. I.; CANTÍN, L. M. & LÓPEZ, F. B.** Estudio piloto de la anestesia al nervio alveolar inferior vía trígono retromolar en pacientes de 40 a 60 años. *Int. J. Odontostomat.*, 2(1):17-20, 2008.

**RESUMEN:** Las principales técnicas anestésicas mandibulares usadas son la dirigida a la língula mandibular y la Gow-Gates, especialmente la primera, la cual presenta un importante porcentaje de riesgos operatorios, destacándose la punción intravascular, la cual se presenta en un 15- 20% de los casos. En este estudio se aplicó esta técnica anestésica al nervio alveolar inferior vía trígono retromolar en 20 pacientes de 40 a 60 años de edad con el fin de evaluar su efectividad, determinar los tiempos de latencia y averiguar si la anestesia conseguida es suficiente para realizar trabajos de operatoria y endodoncia. La técnica resultó ser efectiva en el 75% de los casos, medida con vitalometría previa y controlada a los 5, 10 y 15 minutos. Esta técnica se recomienda como una alternativa a las técnicas anestésicas convencionales mandibulares en pacientes con discrasias y en pacientes que se sospeche que presenten hipertensión arterial y se requiera usar anestésico con vasoconstrictor; debido a que es una técnica sencilla, poco invasiva y de bajo riesgo.

**PALABRAS CLAVE:** Nervio alveolar inferior, trígono retromolar, anestesia mandibular.

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