LATERALIZATION OF THE INFERIOR ALVEOLAR NERVE

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ABSTRACT

Nowadays, with the growth in life expectancy of Brazilians, the search for oral rehabilitation through dental implants has increased considerably. In this case, the posterior region of the identous mandible, there is a bone resorption causing the bead to reduce, making it really difficult to install implants in this area. On the posterior mandible area, there is a special kind of care on the execution of this technique because of the presence of the inferior alveolar nerve. An alternative for these implant placements is the lateralization of the inferior alveolar nerve. The purpose of the study is to describe the technique of lateralization of the inferior alveolar nerve (TLIAN) through a clinical case, and show its importance in surgical planning and prosthesis, reducing the incidence of sensorineural dysfunction.

KEYWORDS: Dental Implants, mandibular never, bone resorption.

1. INTRODUCTION

In accordance with Toledo Filho *et al.* (2005)[1] the lateralization of the inferior alveolar nerve is one of the options for prosthetic rehabilitation of patients with bone defects or alveolar reabsorption moderate to severe in the posterior mandible, and who have intolerance to removable prosthesis.

Garg *et al.* (1998)[2] reported that bone pathophysiology, rapid and progressive bone resorption can occur after tooth extraction and is accentuated by the use of removable prosthesis. General systemic factors and local factors are responsible for the amount and the pattern of bone resorption observed in the alveolar process. This situation would result in a moderate or severe atrophy of the mandible.

According to Silva *et al.* (1999)[3], due to loss of teeth, the alveolar ridge undergoes a continuous and irreversible process of bone resorption in the vertical portion. Thus, the resorption of the posterior portion of the jaw usually leads to a lowered edge and, consequently, the placement of implants in these regions becomes challenging.

The posterior mandible bone features a quality inferior compared to anterior and in such situations short implants are installed to preserve the mandibular canal, however the initial implant stability is unicortical[4].

The lateralization of the IAN is a current technique, which has proved a good alternative treatment in cases of vertical atrophy[5]. This technique of lateralization of the inferior alveolar nerve (TIAN), have been developed to optimize the successful installation of mandibular implants[6].

Stellingsma *et al.* (2004)[7] described that there are some forms of treatment for atrophic posterior mandibular short implants among them, tilted implants and advanced surgeries such as distraction osteogenesis, interpositional graft and lateralization of the inferior alveolar.

According to Garcia Junior *et al.* (2006)[8], the technique of lateralization of IAN consists of exposing the nerve and gentle pull the same out of the mandibular canal laterally diverting its path and allowing implant placement and there is no interference with the incisive nerve. This technique has a low morbidity, if well executed, and provides stable results, enabling the fixation of implants in two cortical increasing resistance to occlusal forces and ensuring a good proportion between the implant and the prosthesis.

Research indicates that the smaller the length of the implant, the higher the failure rate, and the larger the diameter of the implant, the greater the bone loss marginally[9,10]. Implantation of 5 mm diameter and 6 mm in length has an area of bone contact of the implant similar to a 3.75 mm diameter by 10 mm length[11].

Griffin *et al.* (2004)[12] report that implants with less than 10 mm in length are associated with higher failure

rates and to maximize results, short implants should be joined together[13].

To Hori *et al.* (2001)[14], surgery lateralization buccal alveolar neurovascular bundle allows less often the placement of long bicortical implant and providing a good locking is essential for the osseointegration process, with the possibility, in many circumstances, the primary load stability early prosthetic or ready.

Grounded by the literature, the IAN lateralization is considered a high-risk surgery since this technique can cause numbness, paresthesia or complete loss of sensation in the region. In this case, it is essential that the professional who performs this maneuver have the field of operative technique in addition to anatomical knowledge of the area to be operated, as well as the mandibular canal and the physiology of the neurovascular bundle[15].

Some authors to be more precise in locating the mandibular canal various imaging methods, including conventional radiography in two dimensions, and periapical orthopantomographic can be used in addition to the CT[16,17,18].

Kan *et al.* (1997)[19] exposed several authors emphasized that in addition to surgery should be carefully indicated there full clarification and agreement of the patient, the type of procedure with its possible and almost inevitable sequelae, such as jaw fractures, temporary paresthesias and even irreversible.

Based on the above, the objective of this study is to describe by means of a clinical case, the technique of lateralization of the inferior alveolar nerve (TLIAN) and its importance in surgical planning and prosthesis, reducing the incidence of neurosensory disorders.

2. CASE REPORT

ROM Patient, female, 38 years old, shows no pathological condition. It was observed in panoramic radiography bone resorption in mandibular posterior region and the position of the inferior alveolar nerve (Figure 1).

On clinical examination was possible to observe the absence of teeth 44, 45,46,47,48 (Figure 2).

Preoperative Medication: antibiotic prophylaxis Starts 1 hour before the procedure with 2 mg of Amoxicillin, coupled with an ampoule of injectable Dispropan®. Anesthesia: regional block of IAN, Lingual Nerve and Oral Nerve and infiltrating the right side.

Trapezoidal incision biangular low or Peter Novak was performed. Then the mucoperiostal detachment with the peeler of Molt, exposing the lateral border of the mandibular body and the mental foramen the right side (Figures 3 and 4).

Figure 1. Panoramic radiography as a diagnostic test.

Figure 2. View of the initial region where the surgery will be performed.

Figure 3. View of the operated after the trapezoidal incision biangular lower region.

The osteotomy was made with a carbide drill to drill and nº6 for 702 straight piece, making the removal of cortical bone to get to the Inferior Alveolar Nerve. Then the detachment of this nerve was performed and used a drain Per Rose to fend Inferior Alveolar Nerve allowing the installation of dental implants (Figure 5 and 6).

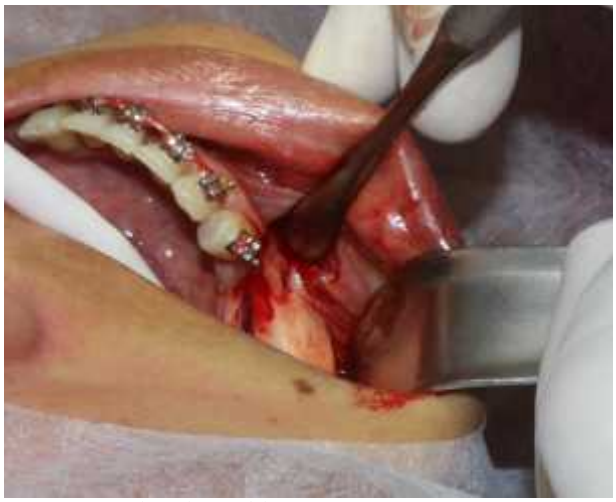

Figure 4. Location of mental foramen.

Figure 5. Osteotomy to remove the cortical window.

Figure 6. Inferior Alveolar Nerve Exposure.

A drilling for installation of dental implants and the type Neodent® EX External Hexagon 11mm x 3.75 mm was made soon after the installation the cortical bone was repositioned and sutures the scalloped type.

Postoperative medication: amoxicillin 500 mg (8/8 h, for 7 days), Ibuprofen 600 mg (6/6 h, for 3 days), Lisador® (35 drops, 6/6 h, for 3 days), Citoneurim® (5g single tablet daily, for 20 days) . After surgery, the patient reported paresthesia for two weeks.

Figure 7. Drilling for placement of implants.

Figure 8. implants already installed.

3. DISCUSSÃO

Ferrigno *et al.* (2005)[20] showed that the IAN transposition technique, when used in severely atrophied posterior mandible, allows the installation of appropriate length and good primary implant stability.

Several authors reported that for the technique and the lateralization of the inferior alveolar nerve transposition distance between the mandibular canal and

the alveolar ridge should be less than 10-11 mm[17,18,20,21,22,23].

Figure 9. Repositioning cortical bone.

Figure 10. Sutured tissue.

The literature shows no reports of contraindications for transposition and lateralization of the inferior alveolar nerve, provided there are no problems of systemic order[10,18,21,47,49]. However, the jaw may present an advanced process of resorption of the alveolar ridge, surgery for transposition and lateralization of the inferior alveolar nerve is contraindicated [48,50].

In the case presented the patient was in a state of unstable general health with no restrictions for the surgical procedure according to the literature [10,18,22,2324,25].

According to Garcia Junior *et al.* (2006)[8], studies showed that rates neurosensitivas recoveries are close to 100%. The principles of surgical technique, makes the lateralization of the inferior alveolar neurovascular structure a secure, viable and approval procedure by patients.

However, Rosenquist (1994)[24] reported that recovery of the neurosensitive disorders varies according to age, and is more time consuming in the elderly when surgical damage the traction of the inferior alveolar nerve. When the traction of the nerve is less than 5% function is restored from 4 to 6 months, when traction is greater perineural disruption may occur with prolonged paresthesia, or even the final paresthesia.

This study corroborates the literature studied, because the patient reported paresthesia in the inferior alveolar region of the right side after surgery and after two weeks there was a neurosensitive recovery.

According to Toledo-Filho *et al.* (2005)[1], the procedure can be time consuming, since it requires intense concentration, surgical team with experience and, especially, the selection of patients and elucidated aware about the risks and benefits of the technique.

4. CONCLUSION

For the literature review and presentation of clinical and surgical case, it can be concluded that:

The Inferior Alveolar Nerve Lateralization is an option for prosthetic rehabilitation in patients with alveolar resorption in the posterior edentulous mandible.

In TLIAN the use of long implants may be allowed.

The LIAN is a thorough technique, it can cause temporary sensory loss after the procedure

This same technique, when it is not possible to install short implants in posterior regions, patients who opt for treatment with dental implants need not extract the teeth prior to performing the technique of Branemark protocol.

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