

CASE REPORT

Inferior alveolar nerve lateralization: A case report

İnferior alveolar sinir lateralizasyonu: Bir olgu sunumu

Running title: Inferior alveolar nerve lateralization

Dr. Erol Cansız

Istanbul University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Istanbul, Turkey

Dr. Berkem Atalay

Istanbul University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Istanbul, Turkey

Dr. Emine Akbaş

Istanbul University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Istanbul, Turkey

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Corresponding author:

Dr. Berkem ATALAY

Istanbul University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Istanbul, Turkey

34093 Çapa-Fatih İSTANBUL

e-mail: berkematalay@istanbul.edu.tr

SUMMARY

Augmentation of alveolar deficiencies are the challenging generally. Lots of surgical techniques such as, onlay autogenous bone grafting, alveolar distraction osteogenesis or alveolar vertical sandwich osteotomies were described to solve that problem. One of these techniques is the alveolar nerve reposition and the aim of this report is to describe the surgical technique of inferior alveolar nerve (IAN) lateralization combined by dental implantation.

Keywords: Alveolar bone atrophy, dental implants, inferior alveolar nerve lateralization.

ÖZET

Alveolar kemik eksikliğinin augmentasyon tedavisi çoğunlukla değişkendir. Onley otojen kemik greftleme, alveolar distraksiyon osteogenezisi ya da alveolar vertikal sandviç osteotomi gibi pek çok cerrahi teknik bu problemleri çözmek için tanımlanmışlardır. Bu tekniklerden biri alveolar sinir repozisyonudur ve bu vaka raporunun amacı dental implant tedavisi ile beraber uygulanan inferior alveolar sinir lateralizasyon cerrahi tekniğinin tanımlanmasıdır.

Anahtar kelimeler: Alveolar kemik atrofsi, dental implantlar, inferior alveolar sinir lateralizasyonu.

INTRODUCTION

Large bone defects or severe alveolar bone resorption are limiting factors for dental implantation. Also, the presence of anatomic structures such as IAN in the posterior mandible can indicate the need for complementary surgical techniques to allow dental implantation. Inferior alveolar nerve lateralization is indicated for the rehabilitation of atrophic mandibles with inadequate posterior vertical bone height above the mandibular canal. The intention of this article is to define inferior alveolar nerve lateralization followed by dental implant placement. The patient who had undergone inferior alveolar nerve lateralization was evaluated and examined during follow-up visits.

Technique

A horizontal alveolar crest incision is performed to allow visualization of the lateral and superior aspects of the posterior mandible. The incision has to pass through the retromolar pad to minimize the tension. A releasing incision must be performed diagonally to the vestibulum to allow the exposure of the entire lateral mandibular corpus and mental foramen. There is no need for an anterior releasing incision by this type of incision design (Figure 1).



Figure 1: A horizontal incision is performed to allow visualization of the lateral and superior aspect of the posterior mandible.

Piezo surgical instruments are useful for the protection of soft tissues like IAN during osteotomy. However, it must be noted that piezo surgical instruments can damage the soft tissues under pressure (Figure 2). Rectangular bony



Figure 2: Rectangular bony window.

windows are designed to attain the inferior alveolar canal, and the corticotomy is performed by using piezo surgery. After the osteotomy, the bone window is removed with sharp osteotomes, and dissection of the nerve is achieved by the combined use of piezo surgery and curettes (Figure 3). Then, the exposed IAN is retracted with a latex strip, and dental implants are inserted (Figure 4). The cancellous bone removed from around the inferior alveolar canal is placed between the dental implants and the IAN for thermal and mechanic isolation. Finally, the bone window is covered



Figure 3: Removing of bony window

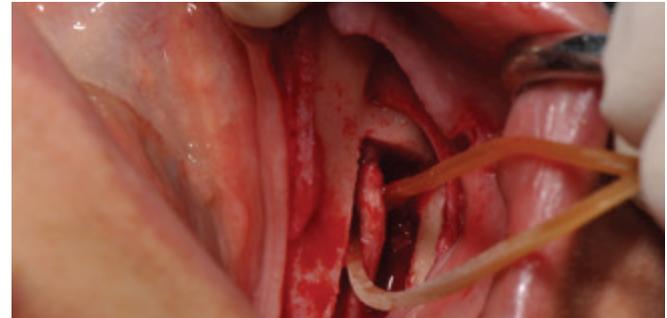


Figure 4: Retraction of exposed IAN.

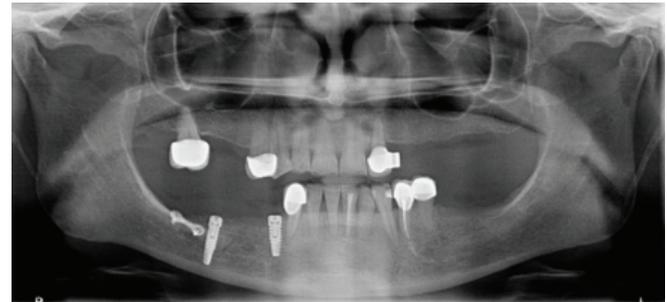


Figure 5: Panoramic radiography after dental implantation surgery.

by repositioning the bone that was removed by using a mini plate system (Figure 5). The wound is sutured with non-resorbable material, and a systemic corticosteroid is prescribed in addition to conventional postoperative medication. After three months of osseointegration and a bone healing period, second-stage surgery for dental implant exposition is performed, and the prosthodontic phase is started.

DISCUSSION

The reconstruction of atrophied posterior mandibular ridges with height deficiencies is possible through different ways. These are onlay bone grafting, interpositioning bone grafting, vertical alveolar osteodistraction, nerve lateralization or transposition and a combination of nerve repositioning and inlay bone grafting (1- 5).

The inferior alveolar nerve lateralization technique indicated for the rehabilitation of posterior mandibles with inadequate vertical bone height above the mandibular canal (6-8).

This method allows the bicortical installation of long implants, which increases the implants' primary stability essential for the osseointegration process (9).

The advantage of the presented technique is no need for long waiting periods or other surgical donor sites for bone augmentations. As opposed to other techniques, such as bone grafts, this procedure enables one surgical intervention that also includes implant placement. As a result, in cases of severe atrophy of the mandible, improved quality of life for a short period is expected (10).

As minimally invasive surgery has become a tendency among surgeons, the piezo surgery has been introduced in maxillofacial surgery with satisfactory results by reducing the risk of soft tissue injuries. The main risk involved in this technique is the possibility of a prolonged neurosensory dysfunction due to manipulation of the nerve (11-13). The prognosis of the IAN after conventional lateralization reported being proper healing (between 80%-100%) in the literature (14, 15). Initial healing observed after 3.8-5.7 weeks and complete recovery after six months to 1 year (14,16,17). These statements refer to a lateralization without complications.

CONCLUSIONS

Although, temporary inferior alveolar nerve paralysis incidence is not low due to inferior alveolar nerve lateralization, it can be alternative for the rehabilitation of edentulous posterior mandibular region compared with other techniques. On the other hand, the nerve injury incidence can be reduced by technical sensitivity and experience.

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