

Vertical splitting of the mandibular body as an alternative to inferior alveolar nerve lateralization

J. G. Rodriguez^{1,2}, R. M. Eldibany³

¹Implantology and Periodontology NYU, Dental University of Dominican Republic, Dominican Republic; ²Private Practice, Algeciras, Spain; ³Oral and Maxillofacial Surgery Department, Alexandria University, Alexandria, Egypt

J. G. Rodriguez, R. M. Eldibany: Vertical splitting of the mandibular body as an alternative to inferior alveolar nerve lateralization. Int. J. Oral Maxillofac. Surg. 2013; 42: 1060–1066. © 2013 International Association of Oral and Maxillofacial Surgeons. Published by Elsevier Ltd. All rights reserved.

Abstract. The aim of this study was to present and evaluate a modified technique to inferior alveolar nerve lateralization (IANL) that allows the placement of longer implants in the posterior mandibular region. One hundred and forty-three consecutive patients were enrolled in this study; these patients had between 1.8 and 8 mm residual crestal height above the mandibular canal. Vertical splitting of the mandibular body was performed using piezoelectric surgery followed by bone expansion and insertion of special conical implants of 10 and/or 12 mm in length. Two hundred and sixty-nine osteotomies were performed and 636 implants were inserted, with a survival rate of 99% at the end of 12 months. Immediately postoperative there was an alteration of sensation in the lip/chin area in 8.5% of cases; 4.1% regained full sensation within 10–14 days, 2.6% after 8 weeks, and 0.7% had persistent paresthesia that did not affect their daily activities. Progressively increasing pain and numbness was present in 1.1%; the implants were removed 6 months postoperatively. This is a relatively simple procedure that has no limitations in clinical situations with minimal bone height. It allows for greater implant stability, and the risk of neurological disturbance is minimal.

Key words: inferior alveolar nerve lateralization; ridge-splitting; threaded bone expanders; piezosurgery; dental implants; posterior mandible.

Accepted for publication 15 April 2013
Available online 12 June 2013

Dental rehabilitation of partially or totally edentulous patients with dental implants has become common practice in recent decades, with reliable long-term results.¹ However, clinical situations where low bone quantity and quality are present require therapy prior to implant placement.²

Several surgical techniques have been employed in an attempt to allow implant placement in regions of inadequate bone

height and thickness. These include bone grafting, distraction osteogenesis, ridge-splitting technique, inferior alveolar nerve transposition or lateralization (IANL), and placement of fixtures in a lingual position to the neurovascular bundle.^{3,4}

Bone grafting techniques are associated with major inconveniences as a result of the need to harvest the graft (generally from an extraoral location). This is a procedure that usually involves general

anaesthesia, hospital admission, and a prolonged duration of treatment.⁵ The two-stage approach also results in considerable resorption of the bone graft before implant insertion and difficulty in the management of soft tissues, which have a high risk of dehiscence and subsequent infection and necrosis of the graft.^{6–8}

Distraction osteogenesis is a technique described in the literature for alveolar ridge augmentation, thus gaining vertical

height in the posterior region of the mandible. However, a minimum height of approximately 8 mm of remaining bone above the mandibular canal is required.^{9,10}

The alternative treatment that has been suggested and researched is the lateralization of the IAN (IANL), which allows placement of longer implants, gives better initial stabilization, and reduces the treatment time.^{11–15} However, nerve repositioning is a complex procedure, with a high risk of complications. This has caused some clinicians to express concern about the routine use of these procedures. The major clinical difficulties associated with IANL are temporary or permanent dysfunction of the nerve and mandibular fractures associated with the placement of endosseous implants following IANL.^{16,17}

The ridge-splitting/expansion technique is aimed at the creation of a new implant bed by longitudinal osteotomy of the alveolar bone. The buccal cortex is repositioned laterally by green stick fracture. This technique is usually performed simultaneously with implant placement and significantly shortens the treatment time.^{18,19}

The aim of this study was to present and evaluate vertical ridge-splitting as an alternative technique to IANL for the rehabilitation of severely atrophic posterior mandibles.

Materials and methods

This study was designed prospectively and was started in 1998. One hundred and forty-three consecutive patients (97 females and 46 males) aged between 45 and 70 years (mean 53 years) were included in this study. The patients received a total of 636 implants in the posterior region and were recruited between June 1998 and September 2011. Any patient with unilateral or bilateral partial or total mandibular edentulism, with a residual bone height over the mandibular canal of between 1.8 mm and 8 mm (mean height 4.17 mm) was included in this study. Patients with immunologic diseases, uncontrolled diabetes mellitus, osteoporosis, or other contraindicating systemic conditions were excluded from participation. The position of the IAN and the mental foramen were assessed radiographically using orthopantomograms and computerized tomography (CT) scans, and the distance between the IAN and the crest of the alveolar ridge was measured at relevant points in order to perform the osteotomies (Figs. 1 and 2). All patients were informed about the risks and benefits of the procedure and they

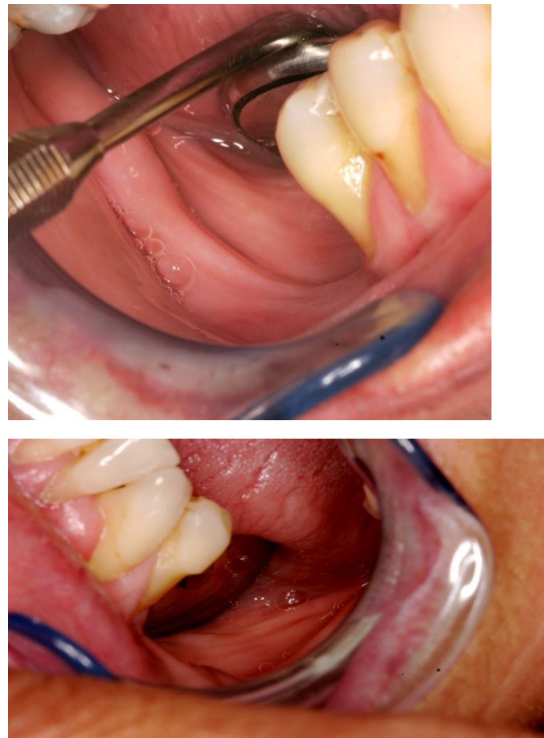


Fig. 1. A patient with a severely resorbed bilateral edentulous posterior mandible.

provided written informed consent for the treatment.

All patients received an injection containing 1 vial of methylprednisolone sodium succinate (Solu-Moderin[®] 125 mg; Pfizer, Spain) and 1 vial of lincomycin HCl

(Lincocin[®] 600 mg; Pfizer, Spain) 1 h preoperatively, and they were asked to rinse with 0.2% chlorhexidine gluconate antiseptic solution immediately prior to surgery. All patients were operated on under local anaesthesia: articaine HCl 4% and

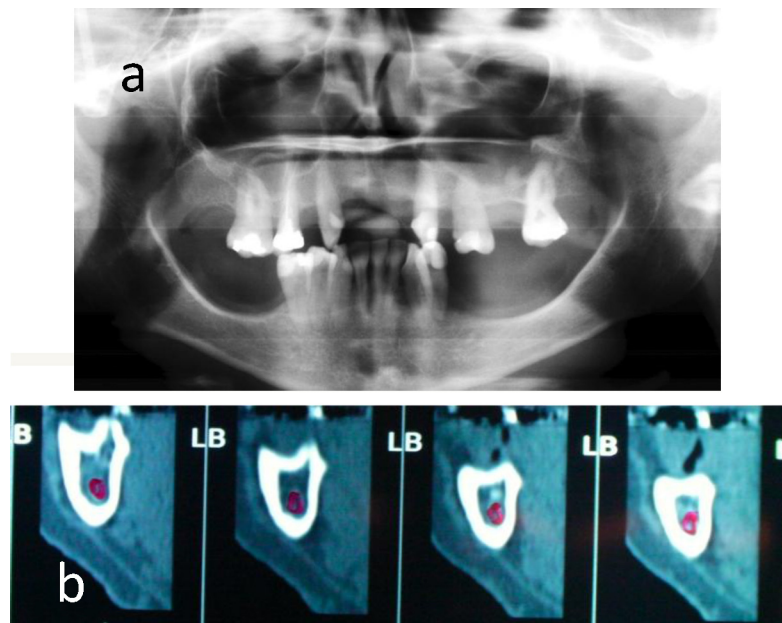


Fig. 2. (a) Preoperative orthopantomogram showing bilateral severely resorbed posterior ridge and the position of the mental foramen and IAN. (b) Preoperative sagittal CT scan showing the exact position of the IAN.

Download English Version:

<https://daneshyari.com/en/article/3132970>

Download Persian Version:

<https://daneshyari.com/article/3132970>

[Daneshyari.com](https://daneshyari.com)