Sandwich osteotomy for vertical and transversal augmentation of the posterior mandible: a review

Sandwich osteotomy untuk augmentasi vertikal dan transversal pada posterior mandibula: sebuah tinjauan

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ABSTRAK
Penggunaan implan endosseous secara langsung berhubungan dengan topografi dan kualitas sisa tulang pasien. Beberapa teknik telah dicoba untuk memperluas penerapan melalui perubahan desain dan teknik bedah implan untuk augmentasi tulang. Artikel ini menjelaskan sandwich osteotomy yang dikombinasikan dengan autograft interposisi untuk augmentasi vertikal dan transversal pada mandibula posterior yang atrofik sebelum penempatan implan endosseous. Disimpulkan bahwa sandwich osteotomy segmental mandibula dapat direkomendasikan untuk memenuhi persyaratan dimensi augmentasi tulang preimplant pada mandibula posterior yang atrofik.

Kata kunci: sandwich osteotomy, atrofi mandibula posterior, interpositional autograft, implan endosseous

ABSTRACT
The use of endosseous implants is directly related to the topography and quality of the patient’s residual bone. Several techniques have been tried to expand its application through implant design alterations and surgical techniques for bone augmentation. This article reviews the sandwich osteotomy combined with an interpositional autograft for vertical and transversal augmentation in the atrophic mandible prior to endosseous implant placement. In conclusion, segmental mandibular sandwich osteotomy can be recommended to fulfill the dimensional requirements of preimplant bone augmentation in atrophic posterior mandible.

Key words: sandwich osteotomy, posterior mandible atrophy, interpositional autograft, endosseous implant

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INTRODUCTION
The use of endosseous implants for successful restoration of patients with partial or total loss which has been well established is directly related to the topography and quality of the patient’s residual bone. Several techniques have been tried to expand its use through implant design alterations and surgical techniques for bone augmentation process. Vertical augmentation of the mandibular or maxillary alveolar ridge to increase bone volume for implant has shown variable and controversial outcomes in comparison with horizontal augmentation.

In edentulous patients, vertical resorption can progress to reach the basal bone. Horizontally, the resorption may progress to the extent that, even when there is enough bone height, the lack of bone width may render implant placement impossible. Posterior mandible may have thin alveolar bone after teeth lost, the facial cortical bone resorbs more than the lingual cortical, resulting in a 3 mm or less in width.

Placement of dental implants is difficult in alveolar ridges with severe horizontal and vertical bone resorption. To augment the severely atrophic ridge, grafting with bone blocks intraorally harvested has been recommended. Several techniques for bone augmentation, both vertically and horizontally, have been proposed. Different techniques have been used to achieve vertical augmentation, including onlay or inlay grafts, guided tissue regeneration, sinus floor grafting and transpositional or lateralization of the dental nerve. An alternative surgical procedure is the osteotomes technique.

This article reviews the sandwich osteotomy combined with an interpositional autograft for vertical and transversal augmentation in the atrophic mandible prior to endosseous implant placement.

Endosseous implant
Dental implants are prosthetic devices of alloplastic material implanted into the oral tissues beneath the mucosal and/or periosteal layer, and on/ or within the bone, to provide retention and support for a fixed or a removable prosthesis. An endosteal or endosseous dental implant is a dental implant placed