Clinical Outcomes of an Osteotome Technique and Simultaneous Placement of Neoss Implants in the Posterior Maxilla

Stefano Volpe, MD, DDS;* Massimiliano Lanza, DDS;† Damiano Verrocchi, DDS;†‡
Lars Sennerby, DDS, PhD§¶

ABSTRACT

Background: Insufficient bone volume often hamper placement of dental implants in the posterior maxilla.

Purpose: The aim of the present clinical study was to evaluate retrospectively the clinical outcome of implant placement in the resorbed posterior maxilla using an osteotome technique without adding any grafting material.

Materials and Methods: Twenty patients with 5 to 9 mm of residual alveolar bone height in the posterior maxilla received twenty-nine implants (Neoss Ltd., Harrogate, UK) using an osteotomy technique without bone grafts. Intraoral radiographs were taken before and after implant placement, at the time of loading and after 11 to 32 months of loading (mean 16.4 months), to evaluate bone formation below the sinus membrane and marginal bone loss. Implant stability measurements (Osstell™, Gothenburg, Sweden) were performed after implant installation and at abutment connection 5 months later. All implants were installed with the prosthetic platform level with the bone crest.

Results: No implant was lost giving a survival rate of 100% after a mean follow-up time of 16.4 months. The average vertical bone height was 7.2 ± 1.5 mm at placement and 10.0 ± 1.0 mm after 11 to 32 months. The average increase of 2.8 ± 1.1 mm was statistically significant. There was a statistically significant improvement in implant stability from 70.7 ± 9.2 implant stability quotient (ISQ) at placement to 76.7 ± 5.7 ISQ at abutment connection, 5 months later. The mean marginal bone loss amounted to 0.7 ± 0.3 mm after 11 to 32 months of loading.

Conclusion: It is concluded that the osteotome technique evaluated resulted in predictable intrasinus bone formation, firm implant stability, and good clinical outcomes as no implants were lost and minimal marginal bone loss was observed.

KEY WORDS: clinical study, dental implants, maxillary sinus floor augmentation, radiography, resonance frequency analysis

INTRODUCTION

Insufficient bone volumes often hamper placement of dental implants in the posterior maxilla and bone augmentation may be needed. In 1996,[1] a consensus conference on maxillary sinus grafting procedures proposed different treatment strategies depending on the amount of available bone: (i) in case of residual bone height (RBH) of classes C (4–6 mm) and D (1–3 mm), a lateral sinus lift approach with grafting material and immediate or delayed implant placement was recommended[2] (ii) for class B sites (RBH 7–9 mm), a *trans*-crestal approach using osteotomes was proposed, and (iii) in cases of class A (≥10 mm), no sinus procedure was regarded as necessary.

With the osteotome sinus floor elevation (OSFE) technique, a crestal approach is used to fracture and lift the sinus floor, where bone graft material and an implant can be inserted. During the osseointegration healing period (usually 6 months), bone will be formed

*Private practice, The Feltre/Fiera Implant Research Group, Feltre and Fiera Di Primiero, Rome, Italy; †private practice, The Feltre/Fiera Implant Research Group, Feltre and Fiera Di Primiero, San Dona di Piave, Italy; ‡private practice, The Feltre/Fiera Implant Research Group, Feltre and Fiera Di Primiero, Fiera Di Primiero, Italy; §private practice, The Feltre/Fiera Implant Research Group, Feltre and Fiera Di Primiero, Feltre, Italy and ¶Dept Biomaterials, Institute for Clinical Sciences, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

Reprint requests: Dr. Stefano Volpe, Piazza del Fante n.10, 00195 Rome, Italy; e-mail: stefanovolpe@tiscali.it

DOI 10.1111/j.1708-8208.2011.00378.x