KEY WORDS
Bone atrophy; Narrow-diameter implants; Bone resorption; Dental implants; Implant failure; Posterior mandible

Cohort study

NARROW-DIAMETER IMPLANTS SUPPORTING FIXED PROSTHESES IN THE POSTERIOR MANDIBLE: 5-YEAR REPORT ON A PROSPECTIVE SINGLE-COHORT STUDY

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PURPOSE. To assess the 5-year post-loading outcomes of narrow-diameter implants supporting fixed prostheses in the posterior mandible of patients with horizontal bone atrophy.

MATERIALS AND METHODS. A total of 42 partially edentulous patients who needed a fixed implant-supported prosthesis in a posterior mandible presenting a thin alveolar crest were enrolled in this study. One hundred and twenty-four narrow-diameter implants (2.75 and 3.25 mm) were placed and splinted with a fixed prosthesis. One implant was required to replace each missing tooth. Patients were followed-up for a period of 5 years. Outcomes considered were: implant failures, any complications, and marginal bone level changes.

RESULTS. Of the 42 patients, three dropouts were recorded (3/42, 7.1%). At the 5-year follow-up, five implants had failed in 4 patients: two 2.75 mm diameter implants and three 3.25 mm diameter implants. The implant survival rate was 90.5% at the patient level and 95.9% at the implant level. Peri-implant bone resorption was 0.47 mm (95% CI: 0.29; 0.65) one year after loading and 1.19 mm (95% CI: 0.81; 1.58) five years after loading. The marginal bone level changes were not significantly different between the two diameters used (P = 0.579). Of the 42 patients, eight (19.04%) experienced complications during the follow up.

CONCLUSIONS. Five years after loading, both narrow-diameter implants (2.75 to 3.25 mm) placed in posterior mandibles showed high survival and low complication rates, so can be considered a valid alternative to horizontal bone augmentation. However, longer follow-ups on a larger sample are needed.

CONFLICT OF INTEREST STATEMENT. Tommaso Grandi serves as a consultant for J Dental Care, Modena, Italy. However, this study was completely self-financed, and no funding was either sought or obtained, not even in the form of free material.

INTRODUCTION

Osseointegrated dental implants are the solution most widely used for the rehabilitation of masticatory and aesthetic function in partially or completely edentulous patients. The two main factors that influence implant insertion are the geometry and volume of alveolar bone, in particular atrophy of the alveolar crest with reduced bone width and height; this is often observed in patients after periodontitis, prolonged use of a removable denture, trauma and malformations[1].

In cases of reduced bone volumes, bone augmentation surgery is considered the best treatment solution to allow the placement of a dental implant[2]. However, despite the numerous

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