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One-Year Outcomes of Neoss Bimodal Implants. A Prospective Clinical, Radiographic, and RFA Study

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ABSTRACT

Background: The Neoss implant system has been available since 2004. Few studies documenting the clinical performance of this implant are available.

Purpose: To study the stability and clinical/radiographic outcomes of Neoss implants 1 year of loading when using a two-stage protocol.

Materials and Methods: Ninety (90) consecutive patients scheduled for implant treatment using a two-stage procedure were enrolled in a prospective follow-up study. A total of 218 implants (Neoss System, Bimodal surface, Neoss Ltd, Harrogate, UK) in diameters of 3.5, 4.0, and 4.5 mm and in lengths from 7 to 15 mm were placed to support 29 single tooth replacements, 53 partial bridges, 5 full bridges, and 10 overdentures in both jaws. Abutment connection was made after a healing period of 3–4 months. The patients were followed during 1 year of loading with clinical, radiographic, and resonance frequency analysis (Osstell Mentor™, Osstell AB, Gothenburg, Sweden) examinations. Prostheses were removed at the annual check-up for individual testing of implant stability.

Results: Three implant failures were experienced, giving a survival rate of 98.6% after 1 year. A mean bone loss of 0.6 mm (SD 0.8) was observed after 1 year. There was a significant inverse correlation between implant diameter and marginal bone loss ($p < .003$). The mean implant stability quotient levels were 73.7 (SD 7.6), 74.4 (SD 6.4), and 76.7 (SD 5.2) at placement, abutment connection, and first annual check-up, respectively. The stability had increased significantly from placement to 1 year ($p < .001$) and from abutment to 1 year ($p < .0001$). Implant stability was higher in the mandible than in the maxilla at all time points. There was a significant correlation between bone quality and stability at placement ($p < .0001$) and abutment connection ($p < .001$) but not after 1 year.

Conclusions: The use of Neoss implants for prosthetic rehabilitation of consecutive edentate patients with different needs resulted in predictable clinical and radiographic outcomes after 1 year of loading. Implant stability measurements revealed a favorable bone tissue reaction to the implants.

KEY WORDS: clinical follow-up, ental implants, radiography, resonance frequency analysis, two-stage technique