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Immediate fixed rehabilitation of severe maxillary atrophies using trans-sinus tilted implants with or without sinus bone grafting: One-year results from a randomised controlled trial

KEY WORDS

full arch prosthesis, immediate loading, maxillary atrophy, tilted implants, trans-sinus implant

ABSTRACT

Background: To compare the clinical outcomes between tilted trans-sinus implants inserted without simultaneous bone grafting versus sinus elevation procedures with bone grafting to support immediately loaded prostheses for the rehabilitation of the atrophic maxilla.

Materials and methods: Thirty-two subjects were selected to receive an immediately loaded fixed restoration supported by four or six implants and randomised to receive at least one trans-sinus implant without simultaneous bone grafting (group 1, $n = 16$) or at least one trans-sinus implant with sinus elevation procedures and bone grafting (group 2, $n = 16$). Primary outcomes were prosthesis and implant failures. Secondary outcomes were complications and peri-implant marginal bone level changes.

Results: Forty-one trans-sinus implants (23 trans-sinus implants without simultaneous bone-grafting and 18 trans-sinus implants with sinus elevation procedures), 23 conventional tilted implants and 84 axial implants were inserted. No drop-outs occurred. At 1 year after loading no prosthesis was lost. One patient treated with sinus graft lost one implant (0.0% vs. 6.3%, difference 6.3%; 95% CI: -4.7 to 17.3 ; $P = 0.99$). There were no statistically significant differences in implant failures between the two groups. Complications occurred in eight patients in the group without bone grafting and in nine patients in the group with sinus elevation and bone augmentation. No statistically significant differences were found in complications (50.0% vs. 56.3%, difference 6.3%; 95% CI: -12.7 to 25.3 ; $P = 0.99$), and in peri-implant marginal bone level changes (difference 0.05 mm; 95% CI: -0.24 to 0.34 ; $P = 0.604$).

Conclusions: In this study, no statistically significant differences were observed between subjects treated with tilted trans-sinus implants without simultaneous bone-grafting or with sinus elevation procedures supporting cross-arch immediately loaded fixed prostheses in atrophic maxillae. Longer follow-ups are needed and alternative procedures such as short implants or crestal sinus elevation procedures should be compared since they could be less invasive.

Conflict of interest statement: *Tommaso Grandi and Rawad Samarani serve as consultants for JDentalCare. This study was completely self-financed and no funding was sought or obtained, not even in the form of free materials.*