



## Short (6-mm) dental implants versus sinus floor elevation and placement of longer (≥10-mm) dental implants: randomized controlled trial with a 3-year follow-up

### ABSTRACT

Edentulous posterior maxilla is often characterized by reduced bone volume, especially due to severe post-extraction alveolar crest resorption, and this anatomic limitation can jeopardize osseointegration and therefore the possibility to have a functional and aesthetic implant-supported restoration. In order to obtain a sufficient bone height for implant insertion, a reconstructive bone surgery is often needed and maxillary sinus floor elevation has become the more reliable and commonly used procedure. As the use of short implant (6-mm) can be an alternative to sinus floor elevation, the aim of this 3-year follow-up randomized clinical trial was to investigate this alternative to sinus floor elevation (SFE) and placement of longer (≥10-mm) implants in the posterior maxilla. Thirty-three patients were included in the study and randomly assigned either to receive one to four short (6-mm) implants (test group) or to undergo augmentation procedures and simultaneous placement of one to four standard-length (≥10-mm) implants (control group). In both groups, tapered implants (AnyRidge, MegaGen, Gyeongbuk, South Korea) were placed. In the control group, the augmentation procedures consisted in the insertion of collagenated porcine particulate bone graft (OsteoBiol® Gen-Os®, Tecnos®, Giaveno, Italy) in a lateral window below the lifted membrane, with simultaneous implant placement. The primary outcomes of the study were implant survival, stability, marginal bone loss, and complications associated with the two treatment options; secondary outcomes included treatment time and cost and patient satisfaction. At 3 years, implant survival rates were 100% and 95.0% for test group and control group, respectively, with a difference that was not statistically significant. The mean ISQ values of both groups did not differ at placement (68.2 vs. 67.8, P = 0.1), at delivery of the final restoration (69.5 vs. 69.4, P = 0.9), and after 1 year (71.0 vs. 71.5, P = 0.1). At the 3 years follow-up, the mean ISQ in the control group was significantly higher than that of the test group (72.4 vs. 71.6, P = 0.004). Mean MBL was significantly higher in the control group both at 1 year (0.14 mm vs. 0.21 mm, P = 0.006) and at 3 years (0.20 mm vs. 0.27 mm, P = 0.01). Surgical time and cost were significantly higher in the control group than in the test one and patient satisfaction was high in both groups.

### CONCLUSIONS

In the present randomized clinical trial, both short (6-mm) implants and long (≥10-mm) implants in combination with sinus floor elevation provided good results up to 3 years after loading; however, with 6-mm short implants, the treatment was faster and less expensive. Anyway, in order to confirm these results, long-term randomized controlled trials on larger samples of patients are needed.

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