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Posterior atrophic jaws rehabilitated with prostheses supported by 6 mm long × 4 mm wide implants or by longer implants in augmented bone. 3-year post-loading results from a randomised controlled trial

P Felice[1]
C Barausse[1]
V Pistilli[2]
M Piattelli[3]
DR Ippolito[1]
M Esposito[4]

1 | Department of Biomedical and Neuromotor Sciences, Unit of Periodontology and Implantology, University of Bologna, Bologna, Italy
2 | Private practice, Rome, Italy
3 | Department of Medical, Oral and Biotechnological Sciences University G. D'Annunzio, Chieti-Pescara, Italy
4 | Department of Biomaterials, The Sahlgrenska Academy at Göteborg University, Göteborg, Sweden

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ABSTRACT

The aim of this trial was to evaluate whether 6 mm long by 4 mm wide dental implants could be an alternative to implants at least 10 mm long placed in bone augmented with bone substitutes in posterior atrophic jaws. A total of 20 patients with bilateral atrophic mandibles and 20 patients with bilateral atrophic maxillae, were randomly allocated according to a split-mouth design to receive one to three 6 mm long and 4 mm wide implants, or implants at least 10 mm long in augmented bone. The augmentation procedure consisted in the insertion of an interpositional block of collagenated cancellous equine bone (OsteoBiol® *Sp-Block*, Tecnoss®, Giaveno, Italy) in mandibles or a mix of cancellous and cortical porcine-derived collagenated bone having a granulometry of 250 to 1000 μm (OsteoBiol® *Gen-Os*®, Tecnoss®) in maxillary sinuses. The grafted areas were covered with a collagen resorbable barrier (Fine 30 × 30 mm, OsteoBiol® *Evolution*, Tecnoss®) derived from equine pericardium. At mandibular grafted sides, implants were placed 3 months after augmentation, whereas implants were inserted in maxillae simultaneously to sinus lift procedures. Outcome measures were prosthesis and implant failures, any complication and radiographic peri-implant marginal bone level changes. At the 3-year post-loading follow-up two short maxillary implants affected by peri-implantitis failed together with their prosthesis vs three mandibular prostheses that could not be placed on implants at least 10 mm long due to graft failures. There were no statistically significant differences in implant and prosthesis failures. In total, 18 complications occurred in 13 patients at augmented sites vs four complications in three patients with 6 mm long implants. Significantly more complications occurred at grafted sites in mandibles, but not in maxillae. In mandibles, patients with 6 mm long implants lost an average of 1.25 mm of peri-implant bone at 3 years vs 1.54 mm in patients with implants of at least 10 mm long, with a statistically significant difference. In maxillas, patients with 6 mm-long implants lost an average of 1.28 mm of peri-implant bone at 3 years vs 1.50 mm in patients with implants of at least 10 mm long, with a statistically significant difference.

CONCLUSIONS

Three-year post-loading data indicate that 6 mm long implants achieved similar (in the maxilla) if not better (in the mandible) results than longer implants placed in augmented bone and, consequently, short implants might be a preferable choice to bone augmentation, especially in posterior mandibles. Anyway, in the Authors' opinion, "*5 to 10 years' post-loading data from larger trials are necessary before being able to produce reliable recommendations*".