



**Posterior atrophic jaws rehabilitated with prostheses supported by 5 x 5 mm implants with a novel nanostructured calcium-incorporated titanium surface or by longer implants in augmented bone. Five-year results from a randomised controlled trial**

**ABSTRACT**

Short dental implants are currently used as an alternative to longer implants and they seem to be a simpler, cheaper and faster option inducing less morbidity when compared to longer implants placed in augmented bone. For the purpose of this study, 80 patients were enrolled in the trial: 40 with partially edentulous posterior atrophic mandibles and 40 with partially edentulous posterior atrophic maxillae. Patients were randomised according to a parallel-group design to receive one to three 5-mm implants or one to three at least 10-mm long implants in augmented bone at two centres. All implants had a diameter of 5 mm. Mandibles were vertically augmented with interpositional bovine bone blocks covered with resorbable barriers. Implants were placed after 4 months. Maxillary sinuses were augmented with particulate porcine bone via a lateral window covered with resorbable barriers and implants were placed simultaneously. The augmentation procedures consisted of interpositional blocks of collagenated cancellous bovine bone (OsteoBiol® Sp-Block, Tecnos®, Giaveno, Italy) in mandibles or the insertion, using a sterile syringe, of a sticky paste made of 600- to 1000-µm pre-hydrated collagenated cortico-cancellous bone granules of porcine origin (OsteoBiol® mp3®, Tecnos®) in a lateral window below the elevated maxillary sinus membrane. The same bone substitute was also used to fill the gaps between bone blocks and the surrounding patient's bone in mandibles. The grafted areas were covered with a collagen resorbable barrier (OsteoBiol® Evolution, Tecnos®, Fine 30 x 30 mm) from the equine pericardium. Patients were followed to 5 years post-loading and the outcome measures were: prosthesis and implant failures, any complication and peri-implant marginal bone level changes. This study tested the null hypothesis that there were no differences in the clinical outcomes between the two procedures against the alternative hypothesis of a difference. At the 5-year evaluation, there were no statistically significant differences in prostheses and implant failures. Significantly more complications occurred at mandibular grafted sites; in the maxilla, seven sinus- elevated patients versus two patients treated with short implants were affected by complications, with a no statistically significant difference. Longer implants showed a greater bone loss up to 5 years after loading than short implants both in maxillae and in mandibles.

**CONCLUSIONS**

Five years after loading, 5 × 5 mm implants achieved similar results to longer implants placed in augmented bone. As bone augmentation procedures are more technically demanding than placing short implants, normally they are associated with higher postoperative morbidity, complications, longer treatment periods and with an increased number of surgeries. Consequently, the Authors concluded that short implants might be a preferable choice to bone augmentation, especially in posterior mandibles since the treatment is faster, cheaper and associated with less morbidity. Anyway, 10-year post-loading data are necessary before making reliable recommendations.

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**LATERAL ACCESS SINUS LIFT & VERTICAL AUGMENTATION**

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