



Sinus membrane elevation with heterologous cortical lamina: a randomized study of a new surgical technique for maxillary sinus floor augmentation without bone graft

LATERAL ACCESS SINUS LIFT

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ABSTRACT

In case of edentulism in atrophic posterior maxilla, different surgical techniques have been proposed in order to have a sufficient bone volume for implant supported rehabilitation. Together with the surgical techniques, the use of allografts, xenografts and alloplasts has been reported in the literature to help bone formation, thanks to their osteoinductive, osteoconductive and osteogenic properties. The aim of this randomized controlled clinical trial was to compare the efficacy of two different techniques for maxillary sinus augmentation using a lateral window approach: heterologous cortical lamina without any grafting material versus 100% collagenated granular collagenated porcine bone. Twenty-three patients, requiring maxillary sinus augmentation, were divided in two groups. In Group I, the sinus was filled with collagen porcine bone (OsteoBiol® Gen-Os®, Tecross®, Giaveno, Italy) and a collagen membrane (OsteoBiol® Evolution, Tecross®) was used to close the lateral window of the sinus. In Group II, the sinus was treated with heterologous cortical lamina only (OsteoBiol® Lamina, Tecross®) of 1 mm thickness, modelled and positioned in the sinus as a new sinus roof. Radiographically, in Group I bone grafts showed increased hyperdensity between immediate postoperative and after six months healing, with higher density than native bone. In the second surgical phase, the sinus wall was found to be totally healed in all cases. No gaps were present at the bone-porcine bone interface that was always in close contact with the graft particles. In the cortical lamina group, newly formed bone was present histologically, newly formed vessels and new bone trabeculae were seen throughout the large marrow spaces. The histological results showed new bone formation in both groups. There was a statistically significant difference in the surgical time required to complete the augmentation procedures: 18.3 ± 2.1 min for lamina treated sites versus 12.5 ± 3.1 min for porcine bone treated sites.

CONCLUSIONS

This study has reported good results of sinus membrane elevation, with or without bone graft. Even if sinus treated with bone lamina showed a greater volumetric contraction, the overall results led the Authors to conclude that *“the use of heterologous cortical lamina is a valid technique for the mechanical support of sinus membranes resulting in only bone tissue formation and not mixed with the graft. The graft material was biocompatible and not completely resorbed after six months, although the remains were integrated into the bone”*.

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BONE SUBSTITUTES
OsteoBiol® Gen-Os®
MEMBRANE
OsteoBiol® Evolution
OsteoBiol® Lamina