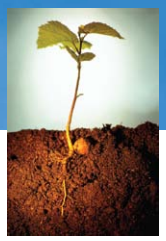

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Influence of the use of autogenous bone particles to close the access window after maxillary sinus floor augmentation: an experimental study in rabbits

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ABSTRACT

Since the introduction of maxillary sinus floor elevation technique, different surgical approaches and biomaterials have been suggested. Though data have been reported on autogenous bone used alone or mixed with bone substitutes, no data have been reported on the use of autogenous bone only in the antrostomy and in the subjacent region. Consequently, this study aimed to investigate the influence on healing of the autogenous bone particle placement in the antrostomy and in the subjacent region after maxillary sinus elevation. For the experiment, sixteen New Zealand rabbits were used, divided into two groups of eight animals, and were undergone to bilateral maxillary sinus floor augmentation with 4 × 4 mm antrostomy dimension. The sinus mucosa was elevated, and the space obtained was filled with a collagenated cortico-cancellous porcine bone (OsteoBiol® *Gen-Os*®, Tecnoss®, Giaveno, Italy).

The test sites received autogenous bone, harvested from the tibia, in the antrostomy and in the subjacent region, while the control sites were left untreated. Collagen membranes (OsteoBiol® *Evolution*, Tecnoss®) were placed to cover the antrostomies both at the treated and untreated sites.

Animals were euthanized after 1 and 8 weeks of healing and histomorphometric evaluations were done, applying the Wilcoxon test for statistical analysis (5% statistical significance). After 1 week of healing, the new bone proportion in the antrostomy was 7.7±11.2% and 6.1±6.4% in the treated and untreated sites, respectively. In the close-to-window region, hardly any new bone was assessed. In the elevated region, 2.7–2.8% of total new bone was found in both sites. After 8 weeks of healing, 35.5±20.9% of new bone in the treated sites, and 28.6±24.1% in the untreated sites was observed ($p = 0.499$). In the close-to-window region, the respective proportions were 25.8±16.1% and 17.6±16.3% ($p = 0.018$). In the elevated region, the total new bone reached fractions of 27.9±12.9% and 23.6±15.2% in the treated and untreated sites, respectively ($p = 0.128$).

CONCLUSIONS

Even if only the close-to window region showed a statistical significance within treated sites at 8 weeks of healing, from the results of this study it can be concluded that the placement of autogenous bone in the antrostomy and the subjacent region after maxillary sinus elevation provided slightly better new bone formation compared with sites grafted with xenograft only. In their conclusions, the Authors added that "*despite the limitations of the present study and due to its preclinical nature, results should be extrapolated to humans with caution*".

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