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Calvarial versus iliac crest for autologous bone graft material for a sinus lift procedure: a histomorphometric study.

Crespi R, Vinci R, Capparè P, Gherlone E, Romanos GE.

Department of Dentistry, Vita Salute University, San Raffaele Hospital, Milan, Italy. robcresp@libero.it

Abstract

PURPOSE: The aim of this study was to compare, through histomorphometric analysis, the use of donor autogenous bone graft from calvarial or iliac sources for maxillary sinus lift procedures.

MATERIALS AND METHODS: Sixteen patients requiring maxillary sinus augmentation were included in this study. One group of 10 patients was alternatively selected to receive autologous calvarial bone particles, and another group of 6 patients received autologous iliac bone particles. Five months after surgery, bone biopsy specimens were obtained at the time of implant procedure and analyzed through histomorphometry. To compare mean values between the calvarial and iliac crest groups, the Student t test was performed. The level for statistical significance was set at $P < .05$.

RESULTS: All patients completed the healing period following sinus augmentation procedure without complications. In the calvarial group, an average total bone volume (BV) of 73.4% +/- 13.1% was found. Nonvital bone constituted an average of 5.5% +/- 6.3% of the total tissue volume. The percentage of vital bone (VB) showed an average of 67.9% +/- 16.1%. In the iliac group, the average total bone volume was 46.6% +/- 17.4%, with an average of 12.6% +/- 7.7% of NVB and an average of 34.0% +/- 21.5% of VB. A significant difference was observed between calvarial and iliac bone grafts with respect to BV, VB, and NVB ($P < .05$).

CONCLUSION: From this present histomorphologic study, it might be concluded that grafted bone obtained from calvarial sources for sinus lift procedure presented a significantly higher degree of bone volume and vital bone volume in contrast to bone harvested from the iliac crest.

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