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The use of the lateral wall bone in sinus lifting for a 2-dimensional reconstruction: A Novel Surgical Technique

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Aim: The aim of this study was to evaluate the effect of using the lateral wall bone in sinus lifting two-dimensional reconstruction on bone augmentation.

The null hypothesis tested was that there was no change in bone volume after the described surgical technique.

Materials and Methods: Patients consecutively treated from October 2009 to July 2010 were included in this study. Preoperative radiographs, including panoramic radiograph and cone beam computed tomography (CBCT), showed insufficient bone volume for routine placement of implants in the posterior edentulous maxilla and bone deficiency in width in the premolar region; therefore, sinus bone grafting by the lateral approach and 2-dimensional reconstruction (2DR) was indicated. Nine patients (4 males and 5 females, mean age: 50 y/o) affected by class V or VI maxillary atrophy with less than 3 mm of residual horizontal ridge were selected; the 14 grafted sinus were followed over 20 months.

Results: Clinical evaluation: all the patients had uneventful healing and were successfully treated with dental implants in the sinus and augmented areas.

The data analysis in bone volume changes reported significant differences between

the mesial and distal locations before and after grafting ($p < 0.05$). While no significant difference was noted between distal and mesial side after grafting (8.19 ± 0.77 mm and 8.53 ± 0.77 mm respectively). Six months after the surgery, the biopsies showed a composite formed by MCBA particles and newly formed bone trabeculae.

Conclusion: Within the limitations of this clinical study and the small number of cases, the following conclusions can be drawn:

1. The repositioning use of the bony window of the lateral maxillary wall to reconstruct a 2 D bony defect is a reproducible and reliable technique.
2. In most cases, complete healing of the space between the repositioned window and the alveolar ridge was observed. Six months postoperative CBCT also confirmed a complete healing of the bony defects.
3. The increase of the volume of the defects was significant and allows us in a second phase to place our implants in a good position.
4. The use of the bony wall to protect the bone particulate creating a box shape prevented the membrane collapse and gave an architectural design for the augmented area.

Key Words: Sinus lift, 2-D reconstruction, allograft.

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