



## The use of various biomaterials in computer-guided crestal sinus lift procedures. A report on two case studies with volume comparison

### ABSTRACT

When a sinus lift is necessary to rehabilitate the maxilla placing dental implants, the available techniques involve the use of biomaterials to fill the sinus cavity and reach an adequate bone volume for implant positioning. Among these techniques, the crestal approach is increasingly employed and in literature different maxillary sinus lift techniques using this kind of approach have been described. Moreover, thanks to computer-guided surgery, it is possible to perform minimally traumatic and invasive procedures for the filling of the maxillary sinus via a crestal approach. In this study, the Authors used the recently proposed transcresal hydraulic lift technique, using two different biomaterials in two different clinical cases. The aim of this study is to compare the volumetric measurement and the behaviour of the two different biomaterials. In the first case, the detachment and lifting was achieved using hyaluronic acid gel and micronized heterologous bone in an 80% collagen matrix whose granulometry was less than 300 microns (OsteoBiol® Putty, Tecnos®, Giaveno, Italy). While in the second case, a nano-crystallized hydroxyapatite in an aqueous solution (Nanogel, TEKNIMED, France) was used. Biomaterials like the ones here used, that have a pasty consistency and are smooth and free from lumps, are the most suitable to come into contact with the Schneiderian membrane. The surgical procedures were performed using computer-guided surgery and the filling volume obtained was measured with a comparative software program. In both cases, a  $\geq 6$  millimetres bone volume augmentation. Moreover, the distribution of biomaterials in the sinus was very regular, allowing the creation of a dome covering the implant and able to support the elevation of the membrane.

### CONCLUSIONS

Based on the results, it seems that this technique is a viable alternative to conventional ones, featuring a reduced percussive trauma and a low invasiveness. The Authors concluded that *“the two biomaterials used have the same pasty consistency, and seem to have the same clinical behaviour, however, the results must be monitored during the remodelling time. Further studies are necessary in order to investigate the higher or lower efficacy in comparison with statistically significant success and to check the filling volume of the sinus over time. Histologic studies will also be needed in order to confirm the quality of bone formed”*.

MA Lopez<sup>1</sup>  
S Lico<sup>1</sup>  
M Casale<sup>2</sup>  
Z Ormanier<sup>3</sup>  
F Carinci<sup>4</sup>

- 1 | Private practice, Rome, Italy
- 2 | Unit of Otolaryngology, University Campus Bio-Medico, Rome, Italy
- 3 | Department of Oral Rehabilitation, Tel-Aviv University, Tel-Aviv, Israel
- 4 | Department of Morphology, Surgery and Experimental Medicine, University of Ferrara, Ferrara, Italy

**ORIGINAL ARTICLE**  
Oral Implantology  
2016;Apr-Jun 9(2)

**Grafted with**  
BONE SUBSTITUTE  
**OsteoBiol® Putty**