

## Molecular, cellular and pharmaceutical aspects of filling biomaterials during the management of extraction sockets

### ABSTRACT

After a tooth extraction, both hard and soft tissues undergo dimensional changes and the aim of grafting and/or guided bone regeneration procedures is to counteract these changes by using different biomaterials and surgical techniques. In this article, the Authors reviewed the clinical, histological, volumetric and molecular results reported in different studies, so to evaluate which are the best surgical techniques and biomaterials for ridge preservation procedures.

Among the biomaterials tested for bone augmentation procedures, the one made of cortico-cancellous granules of porcine bone showed to be very similar to human mineral bone. Its natural micro-porous consistency is supposed to facilitate new bone tissue formation in defect sites and accelerate the regeneration process. Moreover, the studies evaluated in this review reported that this biomaterial is gradually resorbable and able to preserve the original graft shape and volume (osteoconductive property). Other important observations about porcine bone are related to the integration of collagenated porcine bone graft with the new bone and its capability to support the new bone formation when used in extraction sockets. Among the advantages of porcine bone, osteoconductivity and absence of adverse reaction and inflammatory response were mentioned. The histomorphometrical analysis of the reviewed studies showed that the percentage of new bone tissue was 22.5% of the total bone.

### CONCLUSIONS

In their review, the Authors pointed out that cortico-cancellous porcine bone satisfied the characteristics of osteoconductivity and volume maintenance during the healing period, allowing new bone formation and reabsorption of the xenograft, without any signs of inflammatory cells.

### ALVEOLAR REGENERATION

107

F Alfonsi<sup>1</sup>  
V Borgia<sup>2</sup>  
G Iezzi<sup>3</sup>  
A Piattelli<sup>3</sup>  
U Covani<sup>2</sup>  
P Tonelli<sup>1</sup>  
A Barone<sup>2</sup>

1 | Department of Public Health, Section of Dentistry, University of Florence, Florence, Italy  
2 | Unit of Oral Surgery and Implantology, School of Dental Medicine, Department of Surgery, University of Geneva, Switzerland  
3 | Department of Medical, Oral and Biotechnological Sciences, Dental School, University G. D'Annunzio of Chieti-Pescara, Chieti, Italy

**ORIGINAL ARTICLE**  
Current Pharmaceutical Biotechnology  
2017;18(1):64-75

### Grafted with

BONE SUBSTITUTE  
**OsteoBiol® Gen-Os®**  
**OsteoBiol® mp3®**  
**OsteoBiol® Apatos**

MEMBRANE  
**OsteoBiol® Evolution**

BARRIER - BONE SUBSTITUTE  
**OsteoBiol® Lamina**