



## Extraction socket healing in humans after ridge preservation techniques: comparison between flapless and flapped procedures in a randomized clinical trial

### ABSTRACT

Socket preservation procedures performed after tooth extraction allow maintaining soft and hard tissues architecture adequate for implant placement. The aim of this study is to investigate the effect of two surgical procedures, named flap and flapless, on the horizontal and vertical socket remodelling and the keratinized gingiva width. All sockets are treated with a xenograft and a collagen membrane.

Sixty-four patients, requiring at least one single premolar or molar tooth extraction and an implant-supported restoration, are included and randomly allocated to either test (flapless, with secondary soft tissue healing) or control (flap elevation and primary soft tissue closure) groups. In the test group, extraction sockets are augmented with cortico-cancellous porcine bone (OsteoBiol<sup>®</sup> mp3<sup>®</sup> Tecnos<sup>®</sup>, Giaveno, Italy) and the graft is covered by a collagen membrane (OsteoBiol<sup>®</sup> Evolution). The collagen membrane is secured by sutures and left intentionally exposed to the oral cavity. Extraction sockets allocated to the control group receive a full-thickness mucoperiosteal flap procedure with two releasing incisions and augmentation with the same cortico-cancellous porcine bone covered by a collagen membrane; here the buccal flap is advanced coronally to guarantee soft tissue primary closure. After three months, the clinical outcomes of the two procedures are measured and analyzed using appropriate statistical tests. Comparing the two socket preservation techniques, statistically significant differences are registered for the output variables: changes in the width of keratinized gingiva, changes in the bucco-lingual width, and vertical bone changes at four sites, with P values of <0.001, <0.001, and 0.0105, respectively.

### CONCLUSIONS

The results of this study might support the hypothesis that the flapless technique better preserves the hard tissue dimensions than the primary closure; moreover, the flapless procedure gives an increase in keratinized gingiva as an additional benefit. On the other hand, the flapped technique seems to result in smaller vertical bone resorption on the buccal aspect than the flapless technique.

### ALVEOLAR REGENERATION

157

A Barone<sup>1,2</sup>  
P Toti<sup>1,2,3</sup>  
A Piattelli<sup>4</sup>  
G Iezzi<sup>4</sup>  
G Derchi<sup>1,2</sup>  
U Covani<sup>1,2</sup>

1 | Department of Surgery, Medical, Molecular, and Critical Area Pathology, University of Pisa, Pisa, Italy  
2 | Tuscan Stomatologic Institute, Versilia General Hospital, Lido di Camaiore, Italy  
3 | Private practice, Camaiore, Italy  
4 | Dental School, University of Chieti-Pescara, Chieti, Italy

**ORIGINAL ARTICLE**  
Journal of Periodontology  
2014 jan;85(1):14-23

**Grafted with**

BONE SUBSTITUTE  
**OsteoBiol<sup>®</sup> mp3<sup>®</sup>**

MEMBRANE

**OsteoBiol<sup>®</sup> Evolution**