



## Combination of bone graft and resorbable membrane for alveolar ridge preservation: a systematic review, meta-analysis, and trial sequential analysis

**ALVEOLAR REGENERATION**

### ABSTRACT

It is well known that, after tooth extraction, the alveolar ridge undergoes remodelling and resorption, with the undesired result of a reduction of the height and width of the residual ridge. Consequently, alveolar ridge preservation (ARP) techniques are advocated in order to counteract these events and a variety of grafting materials has been tested in the postextractive socket. The aim of this systematic review was to analyze evidence regarding potential benefits of ARP procedures performed with allogenic/xenogenic grafts in combination with a resorbable membrane coverage in comparison with spontaneous healing. Consequently, in this paper seven studies comparing the use of a bone substitute combined with a resorbable membrane in the test group and spontaneous healing of the extraction socket in the control group were included. Materials used in the included studies were the following: six studies reported use of xenogenic grafting materials consisting of cortico-cancellous porcine bone, collagenated cortico-cancellous porcine bone, and bovine bone mineral associated with a collagen membrane, whereas one study reported the use of FDBA combined with a collagen membrane. In all studies, the control group was characterized by spontaneous healing. Horizontal ridge width reduction (HRWR) and vertical ridge height reduction (VRHR) were investigated as primary outcomes and volume changes (VC) as a secondary outcome. Meta-analysis revealed that the combination therapy resulted in a lower rate of resorption for both HRWR (-2.19 mm, 95% confidence interval [CI]: -2.67 to -1.71 mm) and VRHR (-1.72 mm, 95% CI: -2.14 to -1.30 mm).

### CONCLUSIONS

According to the results of the meta-analysis, the evidence currently available in the literature is strong enough to conclude that filling postextraction sockets with a bone substitute covered by a resorbable membrane results in a lower rate of resorption, both in vertical and horizontal dimensions, compared with spontaneous healing. The Authors concluded that *“further studies should be directed to compare use of different bone substitutes and membranes and investigate potential and significant variability related to them, as well as to flap design”*.

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