

Three-Punch Alveolar Ridge Reconstruction Technique: A Novel Flapless Approach in Eight Consecutive Cases

ALVEOLAR REGENERATION

234

ABSTRACT

Alveolar ridge reconstruction (ARR) is a novel flapless approach performed in a site with incomplete bone anatomy with the aim to limit physiologic bone volume loss following spontaneous post-extraction healing by means of collagenated xenograft sealed with three resorbable layers of hole-punched membrane. As in the literature there is a lack of evidence regarding the ARR procedure, the aim of the authors of this study was to evaluate from a clinical and histological point of view this minimally invasive flapless approach for the horizontal reconstruction of compromised extraction sockets without buccal and/or palatal bone walls. In the eight enrolled patients, the grafting procedure was performed by means of particles (0.25 to 1 mm in size) of 22% collagenated cortico-cancellous porcine bone (Osteobiol® Gen Os®, Tecnos®, Giaveno, Italy). The authors decided to use this material as it has exhibited very satisfactory outcomes. The porcine bone graft was then covered by a bioabsorbable collagen membrane in order to seal the socket. For the post-treatment histologic and morphometric evaluation, an alveolar ridge CBCT was taken, and a bone core biopsy sample was harvested. The evaluations evidenced an adequate horizontal bone regeneration in all post-extraction sockets, a good preservation of soft tissue architecture and adequate bone width (9.05 ± 1.29 mm) with a mean bone gain of 6.4 ± 1.34 mm. Moreover, it was clear the presence of $25.4 \pm 8.7\%$ of new bone and $31.8 \pm 8.3\%$ of graft particles inside the biopsy samples, with many graft particles surrounded and interconnected by new bone. No signs of graft material loss were observed in any socket during the healing period.

CONCLUSIONS

Even if randomized clinical trials with greater sample sizes are required to confirm the potentially advantageous properties of the three-punch ARR technique, the authors concluded that, based on these preliminary clinical and histologic results, this novel technique showed predictable outcomes in terms of horizontal bone regeneration, preventing inflammation and bone resorption.

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