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Clinical and Histological Evaluation of Postextraction Platelet-rich Fibrin Socket Filling: A Prospective Randomized Controlled Study

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Abstract

Objectives:

The aims were to investigate whether the use of platelet-rich fibrin membranes (PRF) for socket filling could improve microarchitecture and intrinsic bone tissue quality of the alveolar bone after premolar extraction and to assess the influence of the surgical procedure before implant placement.

Material and Methods:

Twenty-three patients requiring premolar extraction followed by implant placement were randomized to three groups: (1) simple extraction and socket filling with PRF, (2) extraction with mucosal flap and socket filling with PRF, and (3) controls with simple extraction without socket filling. Implant placement was performed at week 8, and a bone biopsy was obtained for histomorphometric analysis.

Results:

Analysis by microcomputed tomography showed better bone healing with improvement of the microarchitecture ($P < 0.05$) in group 1. This treatment had also a significant effect ($P < 0.05$) on intrinsic bone tissue quality and preservation of the alveolar width. An invasive surgical procedure with a mucosal flap appeared to completely neutralize the advantages of the PRF.

Conclusions:

These results support the use of a minimally traumatic procedure for tooth extraction and socket filling with PRF to achieve preservation of hard tissue.

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