

Alveolar Ridge Preservation in Post-extraction Sockets Using Concentrated Growth Factors: A Split-Mouth, Randomized, Controlled Clinical Trial

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Abstract : Background: One of the most critical competencies in advanced dentistry is alveolar ridge preservation after exodontia. The aim of this clinical trial was to assess the impact of autologous concentrated growth factor (CGF) as a socket-filling material and its ridge preservation properties following the lower third molar extraction. Materials and Methods: A total of 60 sides of 30 participants who had completely symmetrical bilateral impacted lower third molars were enrolled. The short-term outcome variables were wound healing, swelling and pain, clinically assessed at different time intervals (1st, 3rd & 7th days). While the long-term outcome variables were bone height & width, bone density and socket surface area in the coronal section. Cone beam computed tomography images were obtained immediately after surgery and three months after surgery as a temporal measure. Randomization was achieved by opaque, sealed envelopes. Follow-up data were compared to baseline using Paired & Unpaired t-tests. Results: The wound healing index was significantly better in the test sides ($P = 0.001$). Regarding the facial swelling, the test sides had significantly fewer values than the control sides, particularly on the 1st (1.01 ± 0.57 vs 1.55 ± 0.56) and 3rd days (1.42 ± 0.8 vs 2.63 ± 1.2) postoperatively. Nonetheless, the swelling disappeared within the 7th day on both sides. The pain scores of the visual analog scale were not a statistically significant difference between both sides on the 1st day; meanwhile, the pain scores were significantly lower on the test sides compared with the control sides, especially on the 3rd ($P = 0.001$) and 7th days ($P < 0.001$) postoperatively. Regarding long-term outcomes, CGF sites had higher values in height and width when compared to Control sites (Buccal wall 32.9 ± 3.5 vs 29.4 ± 4.3 mm, Lingual wall 25.4 ± 3.5 vs 23.1 ± 4 mm, and Alveolar bone width 21.07 ± 1.55 vs 19.53 ± 1.90 mm) respectively. Bone density showed significantly higher values in CGF sites than in control sites (Coronal half 200 ± 127.3 vs -84.1 ± 121.3 , Apical half 406.5 ± 103 vs 64.2 ± 158.6) respectively. There was a significant difference between both sites in reducing periodontal pockets. Conclusion: CGF application following surgical extraction provides an easy, low-cost, and efficient option for alveolar ridge preservation. Thus, dentists may encourage using CGF during dental extractions, particularly when alveolar ridge preservation is required.

Keywords : platelet, extraction, impacted teeth, alveolar ridge, regeneration, CGF

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