



CORRESPONDENCE

Alveolar ridge preservation following tooth extraction using platelet-rich fibrin as the sole grafting material



Ridge preservation procedure following tooth extraction is widely accepted because it can achieve optimal residual ridge resulting in greater bone dimension and better esthetics. Platelet-rich fibrin (PRF) was introduced by Choukroun et al¹ as a simple preparation technique, in which blood is collected without an anticoagulant or thrombin and immediately centrifuged only one time. The rich source of autogenous growth factors from PRF is considered to promote both soft tissue and bone regeneration.

In this study, we reported a patient who received PRF as the sole grafting material for preserving the alveolar ridge dimension after tooth extraction for further dental implant placed in an ideal anatomic position. A 27-year-old healthy male asked for implant restoration over the left upper posterior edentulous area. Cone beam computed tomography revealed a fenestration defect over the buccal plate of the left upper second premolar (#25) (Figure 1A). The ridge preservation procedure was suggested to be performed after #25 removal and before implant placement. Under local anesthesia, after incision and flap reflection, buccal plate fenestration was noted (Figure 1B). After #25 extraction, the tooth socket was grafted with PRF as the sole grafting material for ridge preservation (Figure 1C) according to our previous report.² The postoperative healing was uneventful. After 6 months, the extraction site was surgically re-entered for implant placement. The socket was completely filled by a hard material, which exhibited the consistency of bone on probing (Figure 1D).

In this case report, cone beam computed tomography was performed every 2 months for regular radiographic follow-up. Bone density around the center of the tooth extraction socket was measured by EZImplant software (Vatech Co., Ltd, Gyeonggi-do, Korea). The bone density was approximately 58.1 Hounsfield units (HU), 115.2 HU, 410.5 HU, and 634.1 HU at the time of #25 extraction (Figure 1E) and 2 months (Figure 1F), 4 months (Figure 1G), and 6 months (Figure 1H) after the extraction, respectively. After 6 months of healing, the ridge volume was preserved well and the density was approximately type D3 bone density (Figure 1H).

To the best of our knowledge, we first reported a series of alveolar ridge preservation following tooth extraction using PRF as the sole grafting material. The bone healing process was evaluated by cone beam computed tomography. Previously, PRF was found to stimulate oral cell proliferation *in vitro*³ and to be clinically successful for enhancing soft and hard tissue healing in gingival tissue graft,⁴ tooth extraction socket,² and maxillary ridge splitting.⁵ The ideal time for implant placement is dependent on the time required for partial or complete tissue healing, and the adequacy of tooth socket dimensions. In this study, the use of PRF as the sole grafting material demonstrated relatively good soft and hard tissue healing, leading to a better healed recipient site for the implant. The presented technique may lead to significant clinical outcomes for alveolar ridge preservation following tooth extraction.

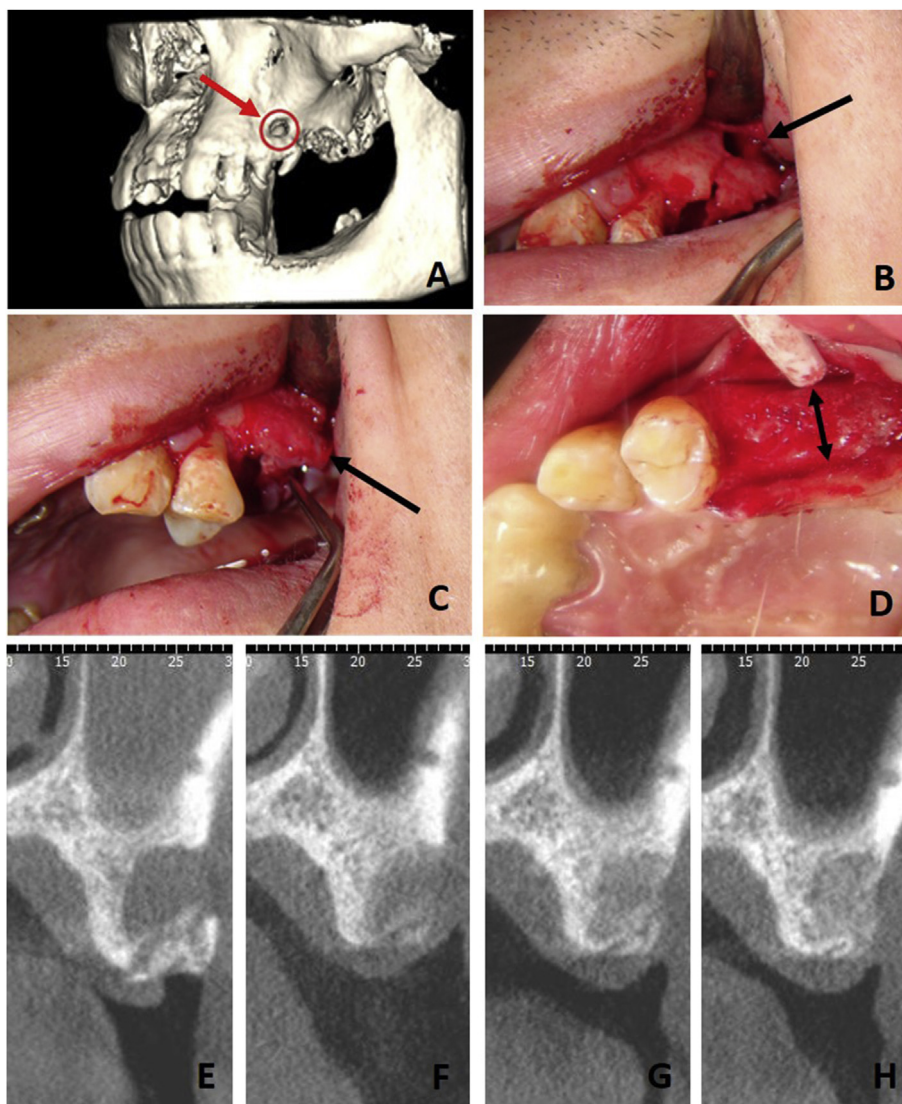


Figure 1 (A) Three-dimensional image of CBCT revealing a fenestration alveolar bone defect at the #25 region. (B) Clinical photograph showing a fenestration alveolar bone defect at the #25 region. (C) Clinical photograph for platelet-rich fibrin application over #25 alveolar bone defect. (D) After 6 months, the socket was completely filled with a hard material, which on probing exhibited the consistency of bone. The CBCT images demonstrated the changes of bone density (E) immediately after #25 extraction and (F) 2 months, (G) 4 months, and (H) 6 months after platelet-rich fibrin application. CBCT = cone beam computed tomography.

Conflicts of interest

The authors have no conflicts of interest relevant to this article.

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