



## CORRESPONDENCE

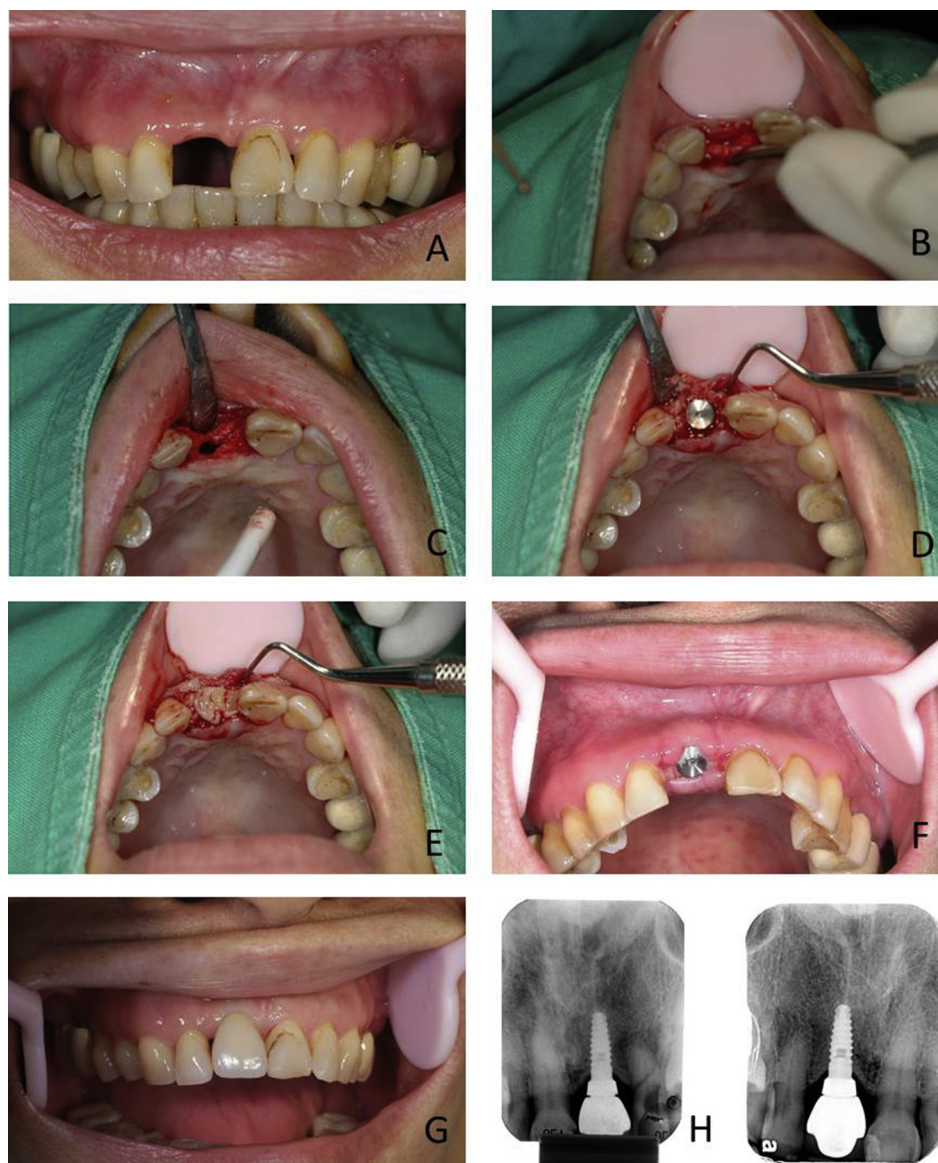
# Anterior maxillary ridge splitting with simultaneous implant placement using platelet-rich fibrin as the sole grafting material

The limitation in the alveolar ridge width is a major problem for successful dental implant placement. Ridge splitting is an effective way to correct horizontal deformity of the alveolar ridge, especially in the maxilla, due to the resilience and softness of the bone. Choukroun's platelet-rich fibrin (PRF) is a relatively new biotechnology for the stimulation and acceleration of tissue healing and bone regeneration.<sup>1</sup> This study reports a patient receiving ridge splitting with simultaneous implant placement and augmentation with PRF as the sole grafting material in the right maxillary central incisor (#11).

A 46-year-old female patient was referred to place an implant in #11 edentulous area (Figure 1A). The preoperative width of the alveolar ridge measured by cone-beam computed tomography was 3.4 mm. Under local anesthesia, a horizontal incision was made slightly palatal to the crest and full-thickness mucoperiosteal flap was raised labially to allow visibility during the procedure. The initial osteotomy was made on the midcrestal bone in the mesiodistal dimension with a 1.0 mm drill (Figure 1B). The narrow ridge was split longitudinally by a ridge-expanding chisel tapped lightly with a mallet. The D-shaped osteotome was used to enlarge and deepen the center of the alveolar ridge. After the cortical plate had been separated, a pilot drill 2.0 mm in diameter was used to prepare the osteotomy for the final length of implant to be placed (Figure 1C). A 3.5 mm diameter, 10 mm length implant (TBR, Toulouse, France) was immediately installed within the bony envelope, with the shoulders 2 mm apical to the

crestal margin (Figure 1D). PRF clots and membranes were prepared according to the Choukroun's procedure.<sup>1</sup> PRF was packed into the widened space between the split cortical plates (Figure 1E). The flap was sutured tension free with PRF membranes. Sutures were removed 7 days postoperatively (Figure 1F). After a healing period of 6 months, the implant was exposed for crown fabrication. The patient was regularly followed up, and intraoral pictures revealed healthy gingival architecture and no gingival recession observed after 6 years (Figure 1G). For radiographic evaluation, compared to initial implant placement (Figure 1H), no significant marginal bone resorption was seen around the implant (Figure 1I).

Choukroun's PRF derived from an autogenous preparation of concentrated platelets without any manipulation, could act as a vector for growth factors to stimulate cell proliferation, and be beneficial for tissue regeneration.<sup>1,2</sup> Recently, clinical applications of PRF without graft have been successfully applied in socket preservation,<sup>3</sup> periodontal regeneration surgery,<sup>4</sup> and gingival recession augmentation<sup>5</sup> for increasing hard and soft tissue regeneration. To the best of our knowledge, this is the first report about the placement of an implant in a compromised alveolar ridge with PRF augmentation. After 6-year follow up, the implant functioned well with no sign of gingival recession and alveolar bone loss. PRF may offer an effective alternative method for anterior maxillary ridge splitting with simultaneous implant placement.



**Figure 1** The clinical photographs of the anterior maxillary sextant. (A) Initial photograph of #11. (B) Crest view reveals a knife edge bone in the crestal region. (C) Crest view reveals the narrow ridge longitudinally split by the chisel and enlarged by osteotome. (D) An implant is installed with a cover screw inserted 2 mm apical to the crestal margin. (E) Clinical application of PRF as the sole grafting material is packed into the widened space between the split cortical plates and covers the implant. (F) Clinical photograph of PRF augmentation after 1 week. (G) Clinical view after 6 years of loading, healthy gingival architecture without gingival recession is observed. (H) The periapical radiograph after initial implant placement. (I) The periapical radiograph after 6 years, no further alveolar bone loss is observed.

### Conflicts of interest

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

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