

Guided Bone Regeneration for Treatment of Peri-implantitis: A Clinical Case

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BACKGROUND

Peri-implantitis is characterized as a pathological condition around the tissues surrounding dental implants resulting from an imbalance of bacterial load and host defense.¹ Case definitions of peri-implantitis include clinical signs of inflammation such as redness, edema, mucosal enlargement, bleeding on probing with or without suppuration in addition to increases in probing depths and radiographic bone loss.² Treatment geared toward augmentation is indicated in cases of peri-implantitis presenting intrabony defects.³

A 54 y/o female was seen due to concern of infection around implant no. 30 (Branemark Mk III TiUnit 5.0 x 13 mm). Clinical examination revealed tenderness to probing with bleeding on probing and suppuration. Soft tissue thickness around the dental implant was also less than 2 mm with probing depths ranging from 4 - 8 mm. Radiographic examination revealed progressive bone loss with bone approximating 50% of dental implant length on both mesial and distal aspects (Figure 1).

METHODS

Full thickness flaps were reflected on buccal and lingual from tooth no. 29 mesial to tooth no. 31 distal and a vertical incision was made on the mesial of tooth no. 29. Implant no. 30 was debrided with implant scalars. Dental implant surface was treated with 100 mg doxycycline mixed with sterile saline to form a paste and placed around all surfaces of the exposed threads for 1 minute. A composite graft of 50/50 cortical/cancellous mineralized particulate allograft hydrated with recombinant human platelet-derived growth factor-BB and mixed with synthetic beta-tricalcium phosphate particles. A non-resorbable high-density PTFE membrane was placed over dental implant and the site was sutured with interrupted and a continuous interlocking technique utilizing 4-0 USP PTFE non-absorbable surgical suture and without obtaining primary wound closure (Figure 2).

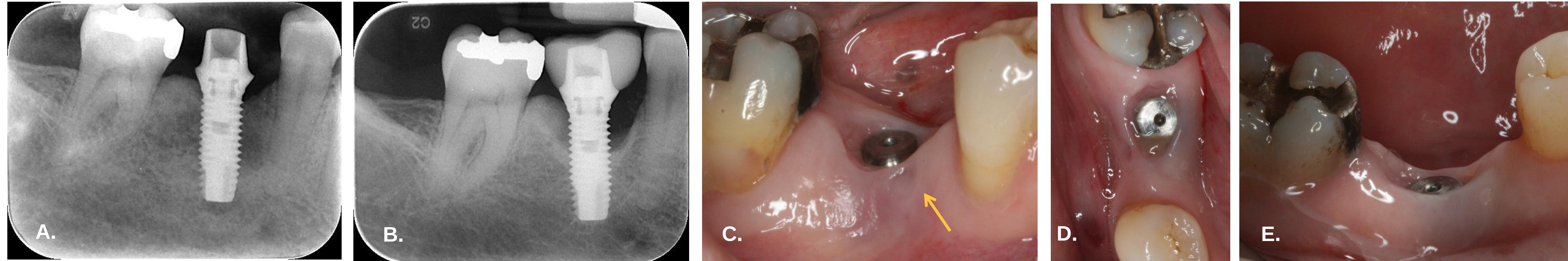


Figure 1. – Pre-surgical images. Radiographic progression of implant no. 30. A. At time of restoration in 2013. B. Eight years after restoration depicting peri-implantitis. C-E. Buccal, occlusal, and lingual views of implant after removal of implant crown. Note a 1 mm x 2 mm soft tissue fenestration on mesial buccal aspect of dental implant no. 30 with thin phenotype (arrow on figure 1c).

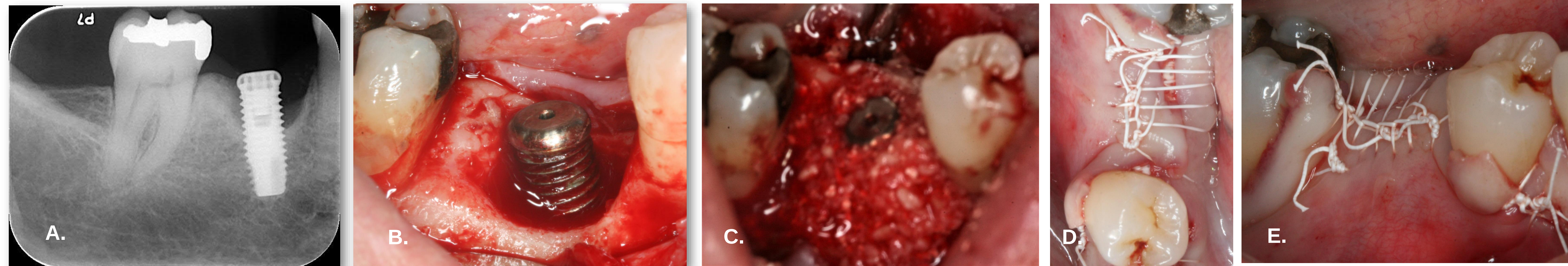


Figure 2. – Surgical images. A. Periapical radiograph of implant no. 30 after crown removal. B. Implant no. 30 after debridement with implant scalars and application of doxycycline paste. C. Bone composite graft was placed to the top of implant platform. D. Sutured with 4-0 USP PTFE sutures showing occlusal view of membrane. E. Buccal view depicting coronal advancement of flap.

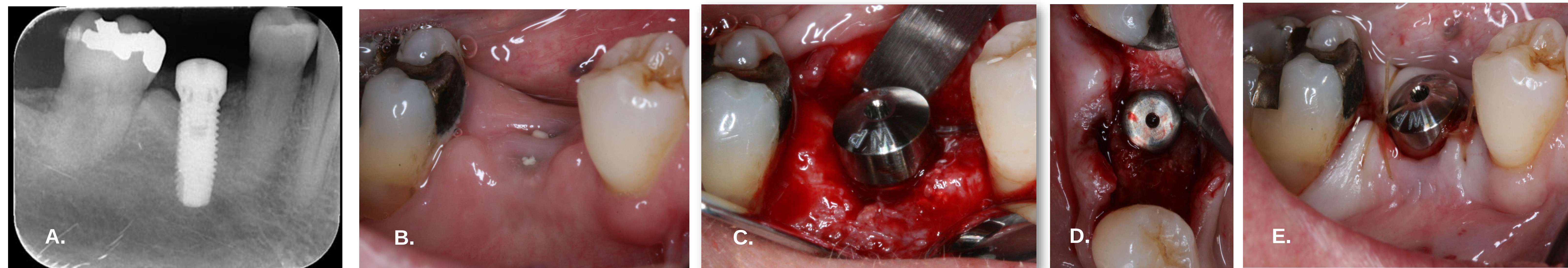


Figure 3. – Post-surgical images. A. Periapical radiograph of implant no. 30 six months after guided bone regeneration. B. Buccal view of implant. C. After flap reflection and installation of healing abutment. D. Occlusal view of flap with bone noted on mesial and distal aspects. E. Buccal view of flap which appears to show slight improvement in the recession on tooth no. 29 with phenotype modification compared to figure 1c.

RESULTS

After a healing of approximately 6 months, bone fill was clinically observed up to the level of the first thread on the mesial, distal, buccal and lingual aspects.

Radiographically, a periapical radiograph also revealed bone fill up to the first thread on both mesial and distal aspects. Additionally, soft tissue phenotype was modified from thin to thick with the disappearance of the soft tissue dehiscence initially noted on the mesial aspect of the dental implant (Figure 3).

CONCLUSIONS

The use of non-resorbable high-density PTFE membrane together with a composite bone graft mixture consisting of 50/50 cortical/cancellous mineralized particulate allograft hydrated with recombinant human platelet-derived growth factor-BB may be a treatment for peri-implantitis. In addition, this procedure may also result in phenotype modification. Future randomized controlled clinical trials are needed to substantiate these observations.

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