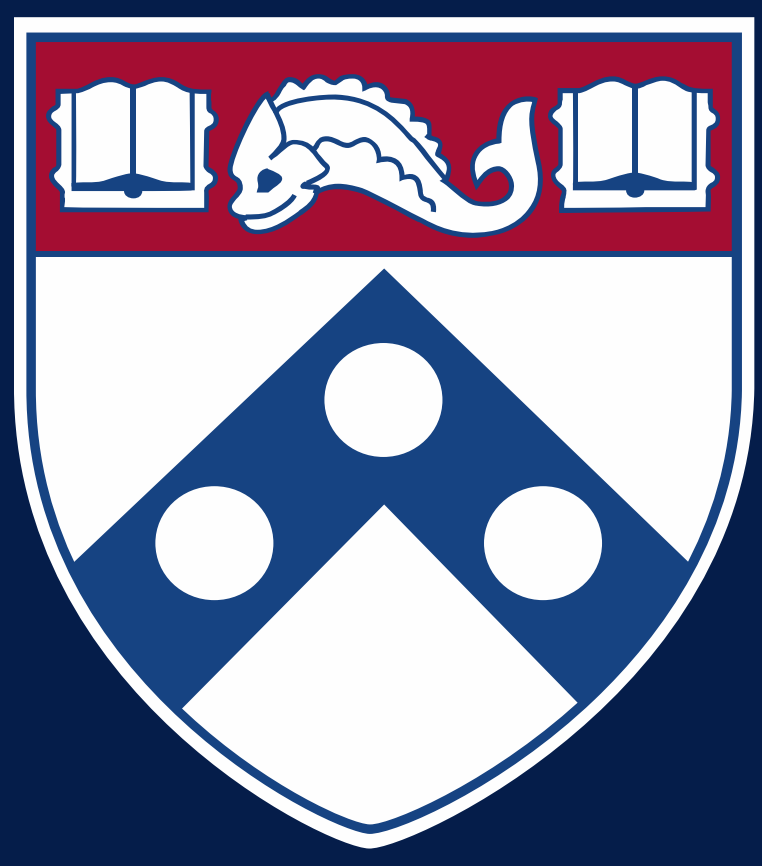




Guided Bone Regeneration (GBR) for Augmentation of the Anterior Mandibular Ridge

Alvin Zad, DMD, ML; Nasser Malek Mohammad, DDS; Meshari Ben Hassan, DMD

Department of Periodontics, University of Pennsylvania, School of Dental Medicine, Philadelphia PA



Introduction

The rehabilitation of patients with insufficient anterior mandibular ridges presents significant challenges, particularly when compounded by a history of periodontitis. Alveolar bone loss associated with periodontal disease often leads to a deficient ridge, complicating dental implant placement. This case report presents the clinical management of a patient with severe ridge deficiency in the mandibular anterior region (missing teeth #23, #24, #25, and #26), which required guided bone regeneration (GBR) for augmentation. The successful ridge augmentation allowed for implant placement in the anterior mandible, demonstrating the efficacy of GBR in complex clinical scenarios.

Methods

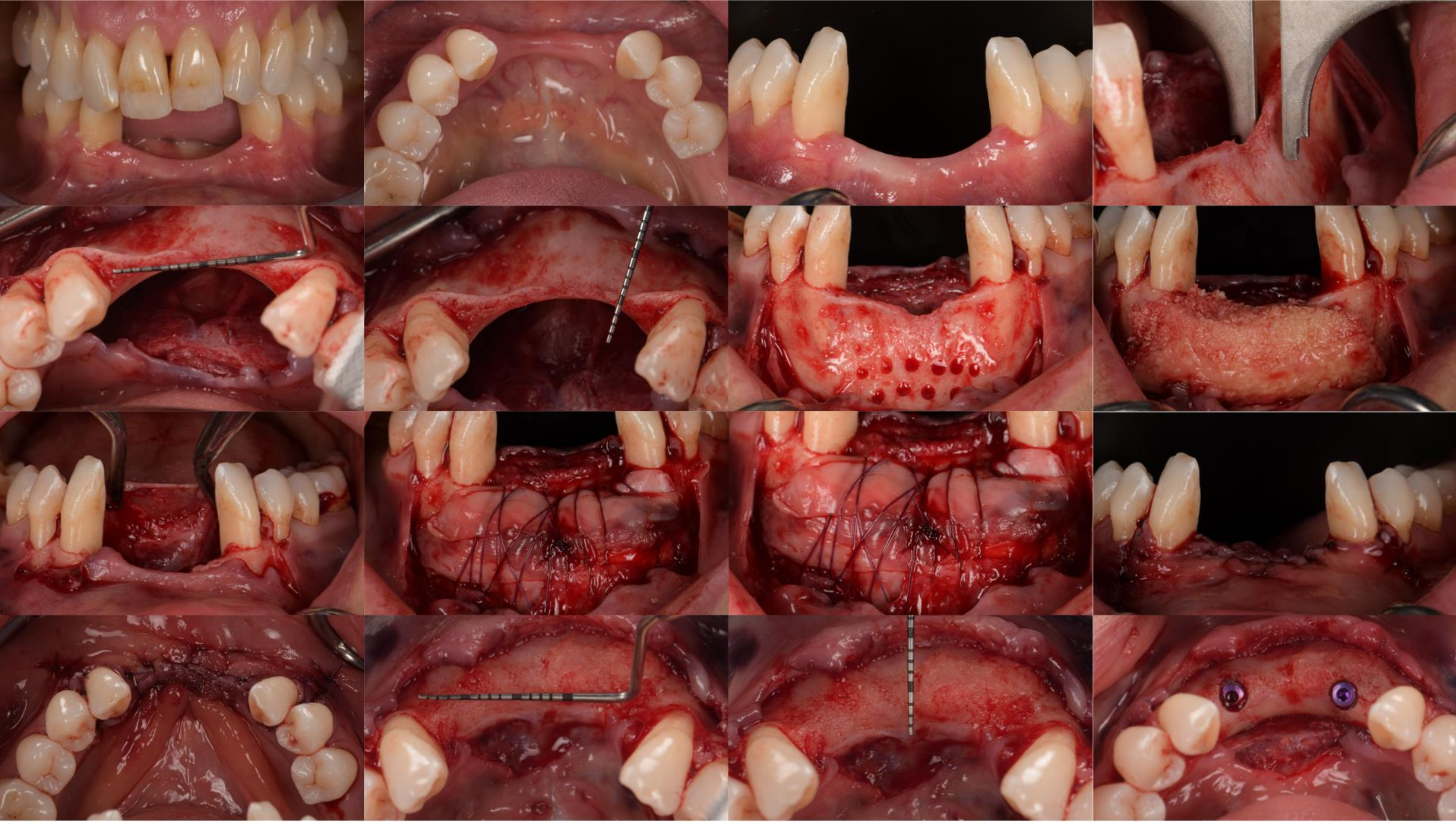
1. Preparation of the Site: Full-thickness mucoperiosteal flap was elevated in the anterior mandibular region to expose the deficient ridge.
2. GBR with PRP and Allograft: The GBR was performed using a mixture of PRP and allograft bone particles to form a sticky bone scaffold. The PRP was prepared by centrifuging the patient's blood, while the bone graft consisted of particulate allograft material. This combination was molded to the deficient ridge.
3. Closure: The flap was repositioned and sutured to achieve tension-free primary closure over the grafted site. Post-operative care included antibiotics and analgesics to prevent infection and promote healing.

Results

After six months of healing, the re-entry procedure revealed substantial bone regeneration in the mandibular anterior region, with a well-formed ridge that was adequate for implant placement. Dental implants were successfully placed at sites #23 and #26 without the need for additional grafting. Radiographic and clinical assessments confirmed the stability and integration of the implants within the augmented bone. The patient reported no complications during the healing phase, and follow-up visits demonstrated optimal tissue response.

Conclusion

Successful use of guided bone regeneration (GBR) in the augmentation of a severely deficient anterior mandibular ridge, enabling dental implant placement in a periodontitis-affected patient. GBR remains a valuable technique in implant dentistry, particularly in situations where periodontal disease has compromised the alveolar ridge. Long-term follow-up is necessary to assess the longevity of the implants and overall periodontal stability.



References

1. Fiorellini, Joseph P., et al. "Healed Edentulous Sites: Suitability for Dental Implant Placement, Need for Secondary Procedures, and Contemporary Implant Designs." *International Journal of Oral & Maxillofacial Implants*, vol. 35, no. 5, Sept. 2020, pp. 924–30. EBSCOhost, <https://doi-org.proxy.library.upenn.edu/10.11607/omi.8215>
2. Weber, H P et al. "Hard-tissue augmentation for the placement of anterior dental implants." *Compendium of continuing education in dentistry* (Jamesburg, N.J. : 1995) vol. 18,8 (1997): 779-84, 786-8, 790-1; quiz 792.
3. Fiorellini, J P et al. "Longitudinal studies of implant systems." *Periodontology* 2000 vol. 17 (1998): 125-31. doi:10.1111/j.1600-0757.1998.tb00130.x
4. Neiva, Bruna T et al. "Lasso Guided Bone Regeneration Technique for the Management of Implant Fenestration Defects." *Compendium of continuing education in dentistry* (Jamesburg, N.J. : 1995) vol. 43,7 (2022): 426-432.