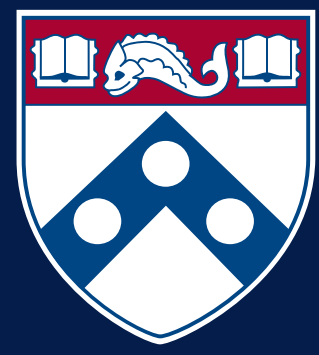




Application of a xenograft collagen matrix and platelet-rich fibrin for soft tissue augmentation around dental implants

Allison Rascon, DDS¹; Jonathan Korostoff DMD, PhD²; Joseph Fiorellini, DMD, DMSc³

¹Advanced Graduate Dental Education Student, Division of Periodontics, University of Pennsylvania, School of Dental Medicine, Philadelphia PA.



Background

It is becoming increasingly accepted that the presence of attached gingiva adjacent to implant-supported restorations facilitates oral hygiene and maintenance of peri-implant soft tissue health. Over the long-term, this might serve to minimize the extent of crestal bone resorption. Thus, numerous surgical procedures have been described for augmenting deficient peri-implant soft tissues. As opposed to free grafts, pedicle flaps having their own blood supply leading to enhanced predictability of the surgical outcomes. In this case report we describe the use of lateral pedicle grafts in conjunction with a soft tissue xenograft to successfully augment the zone of attached keratinized tissue adjacent to dental implants.

Materials and Methods

A 37-year-old female presented for second stage surgery at sites #18 and 19 in preparation for implant restorations. Limited keratinized tissue was noted around the edentulous ridge in the lower left quadrant. On the edentulous ridge, sufficient keratinized tissue was noted, so use of the autogenous tissue was suggested in the form of pedicle grafts. A mid-crestal incision was made, as well as vertical incisions along the line angles of the premolar and edentulous ridge posteriorly to reflect a partial thickness flap. The tissue on the ridge was bisected and either end was secured to the flap via tacking sutures and periosteal-stabilizing sutures. The patient was instructed not to brush the area and advised to rinse with chlorhexidine.

Following initial healing, minimal facial keratinized tissue and a high muscle attachment was evident between the implant sites. In order to thicken and augment the zone of keratinized tissue, a porcine collagen matrix was employed.

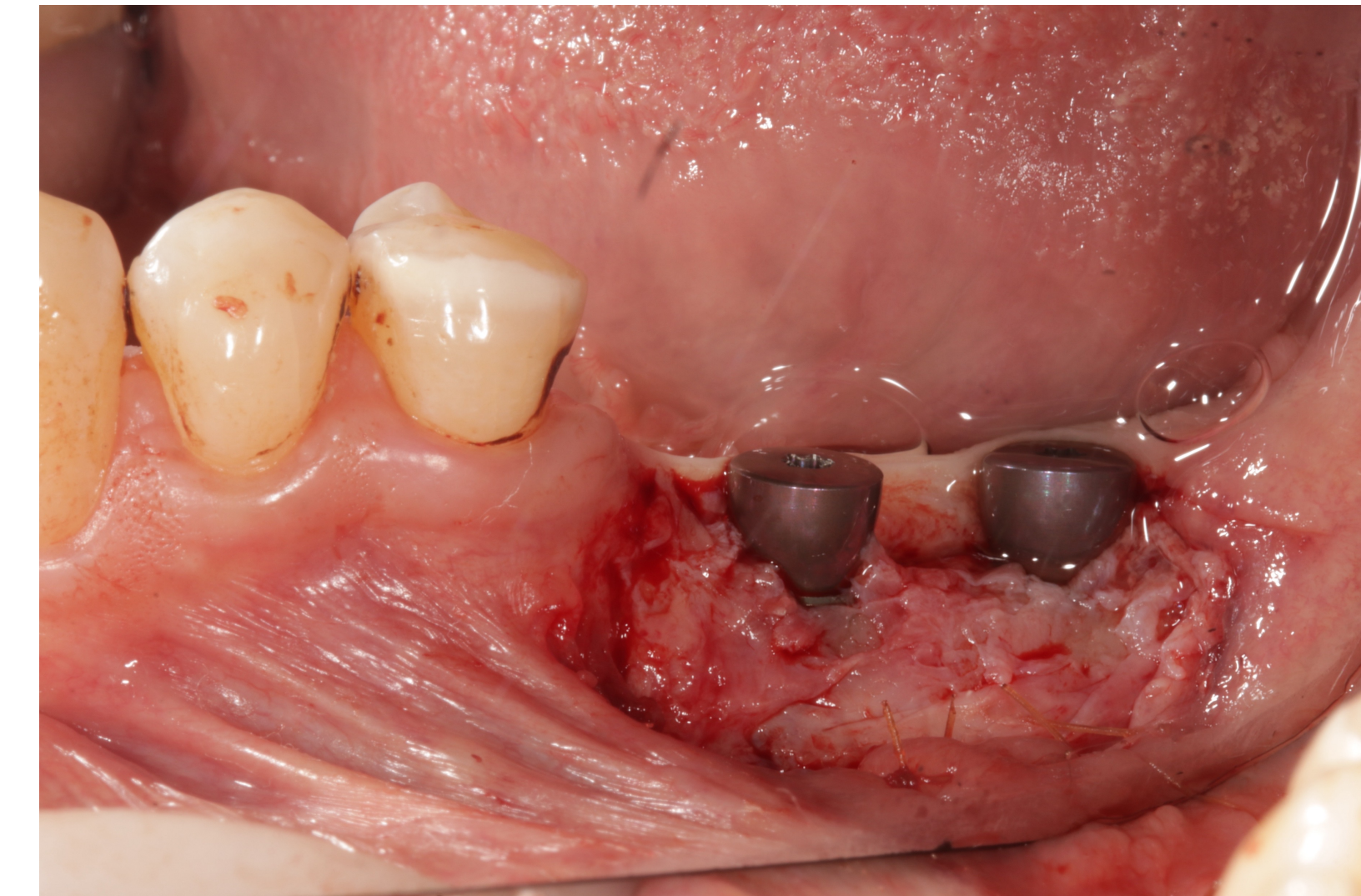
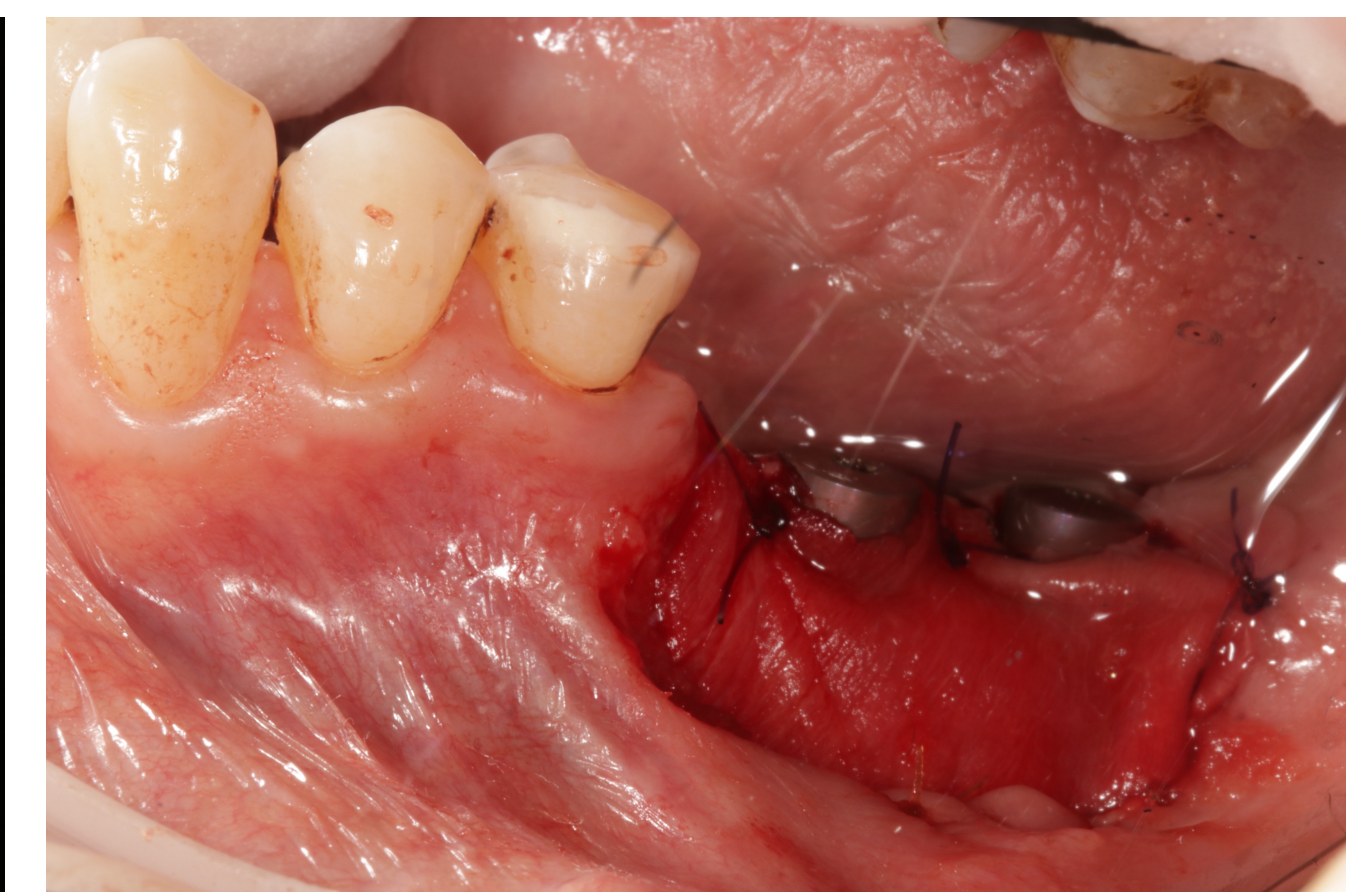
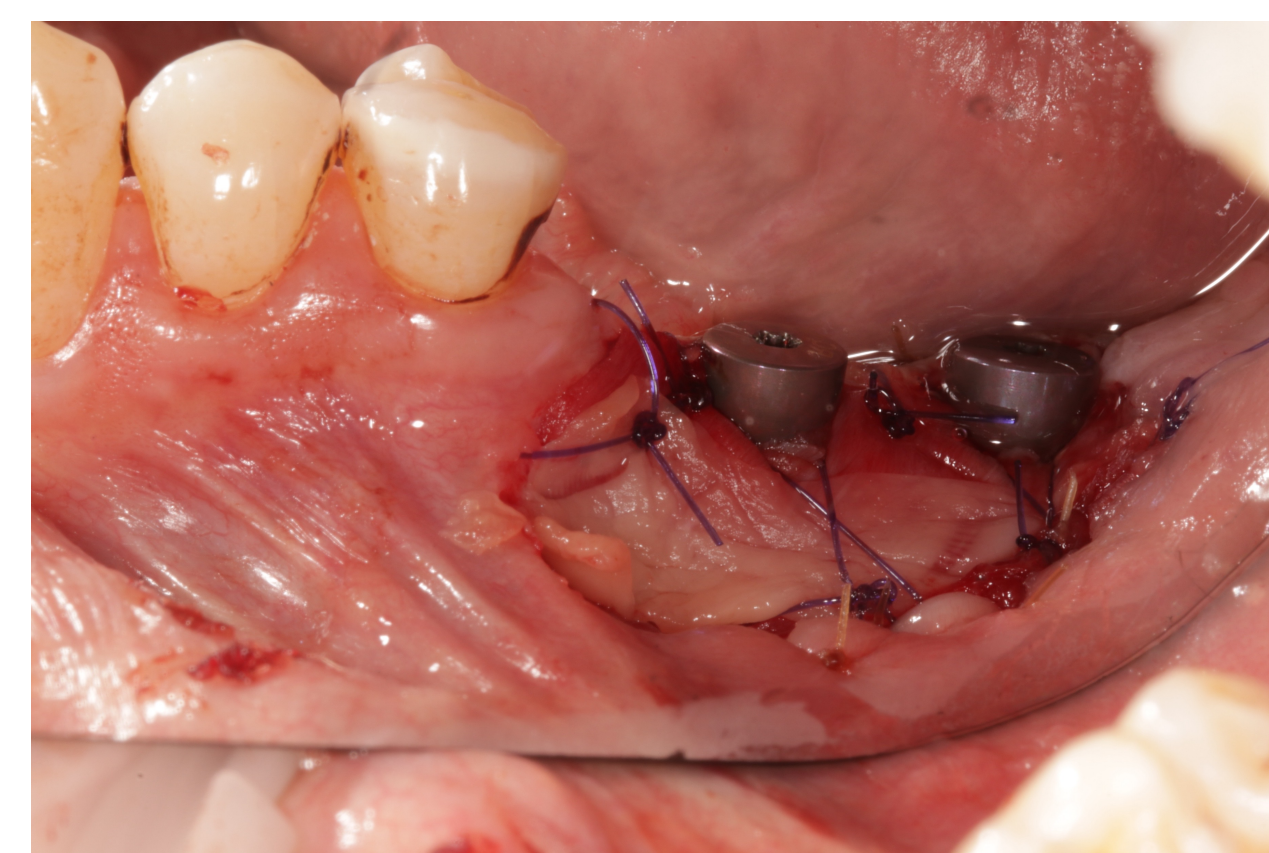
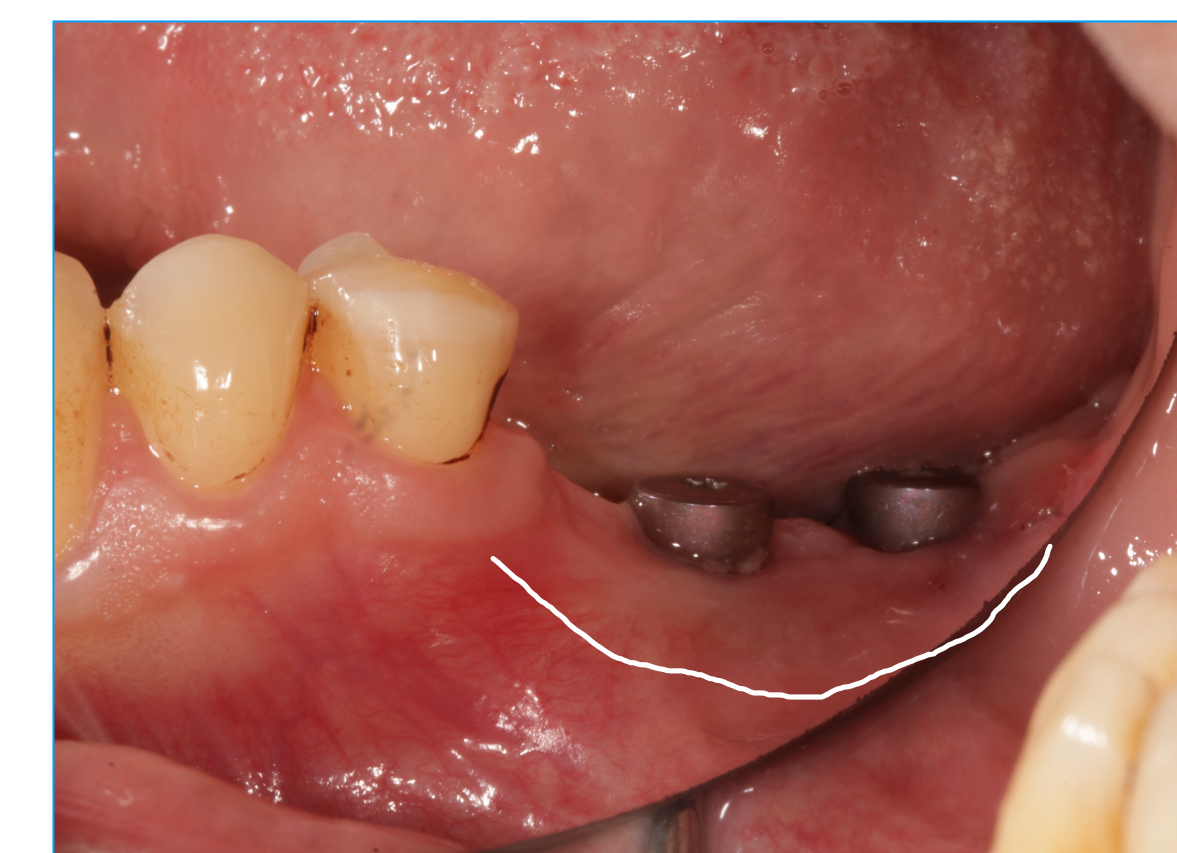
The rationale for using this material was to minimize the morbidity associated with the procedure by avoiding the need for a secondary surgical site. To facilitate healing of the grafted site, the xenograft was covered with a platelet-rich fibrin (PRF) membrane that served to attract connective tissue fibroblasts. Both the xenograft and PRF membrane were secured in place via periosteal stabilizing sutures.

Results

At six months, healing was nearly complete, with minimal post-operative discomfort reported by patient.

Conclusion

The present case report demonstrated the use of a bilateral pedicle graft in combination with porcine collagen matrix was a successful surgical treatment for soft tissue augmentation, with increased tissue thickness and root coverage observed.



References

- ¹Dhir, Sangeeta. "Significance and Clinical Relevance of Biologic Width to Implant Dentistry." *Journal of Interdisciplinary Dentistry*, vol. 2, no. 2, 2012, p. 84., <https://doi.org/10.4103/2229-5194.100599>.
- ²Berglundh, T., and J. Lindhe. "Dimension of the Periimplant Mucosa." *Journal of Clinical Periodontology*, vol. 23, no. 10, 1996, pp. 971–973., <https://doi.org/10.1111/j.1600-051x.1996.tb00520.x>.
- ³Cochran, David L., et al. "Biologic Width around Titanium Implants. A Histometric Analysis of the Implanto-Gingival Junction around Unloaded and Loaded Nonsubmerged Implants in the Canine Mandible." *Journal of Periodontology*, vol. 68, no. 2, 1997, pp. 186–197., <https://doi.org/10.1902/jop.1997.68.2.186>.
- ⁴Esposito, M., et al. "Radiological Evaluation of Marginal Bone Loss at Tooth Surfaces Facing Single Branemark Implants." *Clinical Oral Implants Research*, vol. 4, no. 3, 1993, pp. 151–157., <https://doi.org/10.1034/j.1600-0501.1993.040306.x>.
- ⁵Vela X;Méndez V;Rodríguez X;Segalá M;Tarnow DP; "Crestal Bone Changes on Platform-Switched Implants and Adjacent Teeth When the Tooth-Implant Distance Is Less than 1.5 Mm." *The International Journal of Periodontics & Restorative Dentistry*, U.S. National Library of Medicine, <https://pubmed.ncbi.nlm.nih.gov/29999449/>.