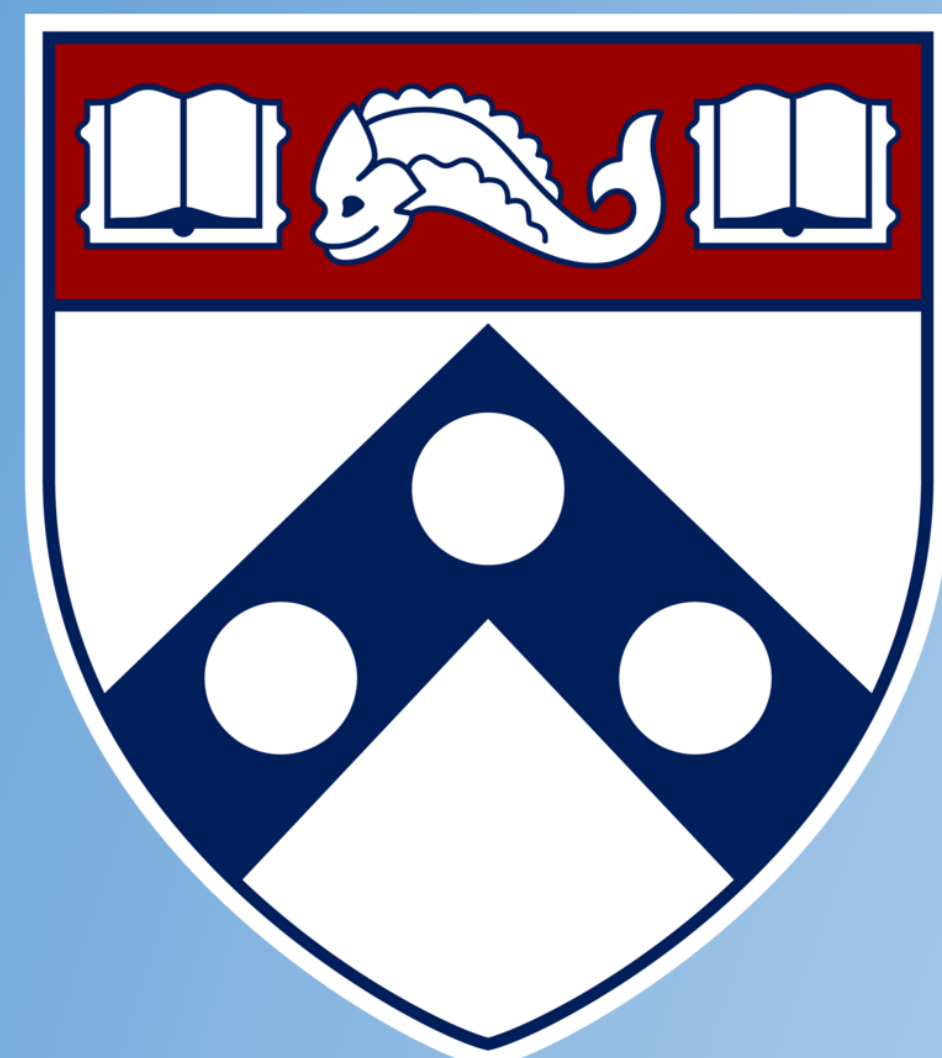




The Socket-Shield Technique on a Mandibular Molar Tooth: A Case Presentation

Caroline Littlejohn, Allison Rascon, Rodrigo Neiva
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Introduction: The Socket-Shield Technique

The socket-shield technique was first described by Hürzeler in 2010 as a method to preserve buccal bone in cases of anterior immediate implants. As described in this proof-of-principle report, the socket-shield procedure functions by retaining the buccal root fragment of an extracted tooth and placing an immediate implant lingual to this retained fragment. By preserving the buccal portion of the root, resorption of the buccal bone is minimized and esthetics can be preserved. The socket-shield technique was initially described for use in the anterior dentition, but there is now interest in the use of this method in molar sites as well. In Schwimer's 2019 proof-of-principle report, a protocol is introduced detailing the use of the socket-shield technique in molar teeth to maintain esthetics, retain depth of the vestibule, preserve keratinized tissue, and reduce food impaction.

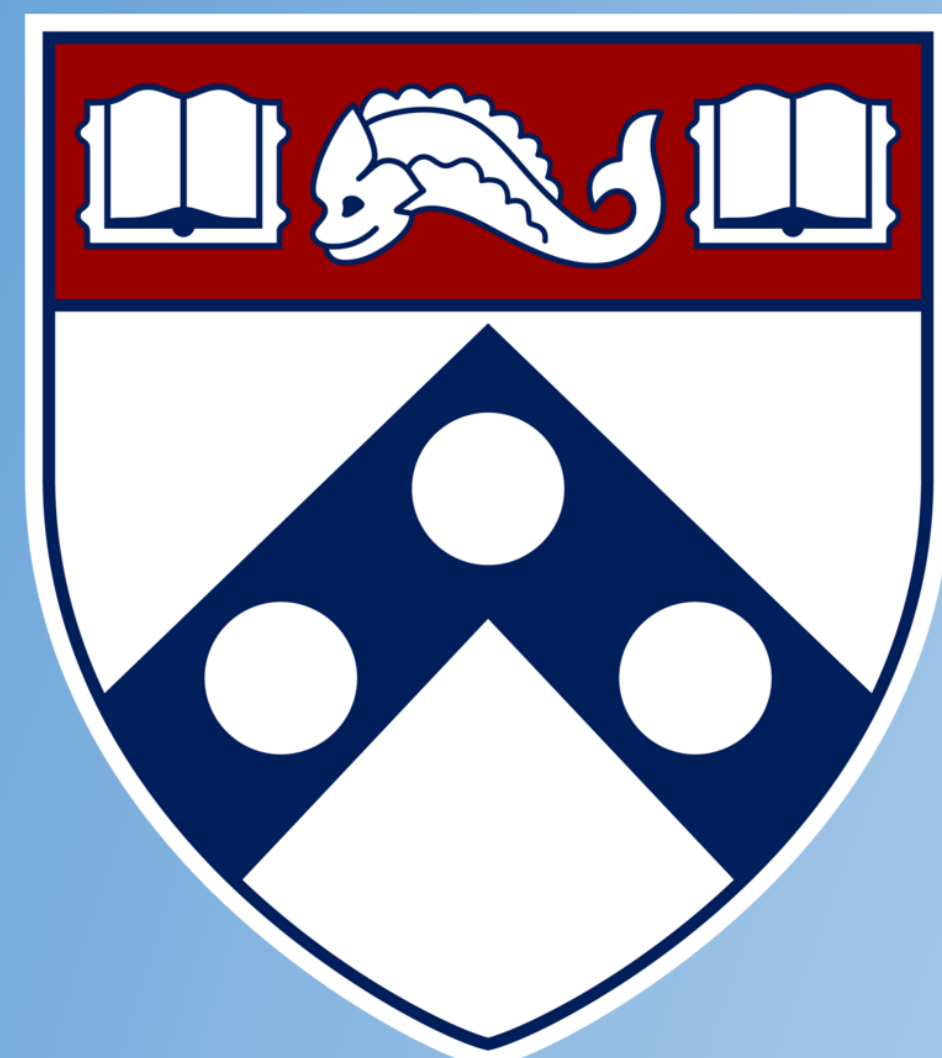


Figure 1. Pre-Op Photo, Occlusal View



Figure 2. Pre-Op Photo, Buccal View

This case report provides a clinical scenario of a modification to the socket-shield technique, in order to facilitate immediate implant placement at a molar site while preserving the existing osseous architecture.



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Methods:

In January of 2022, a 41 y/o female presented for extraction and immediate implant placement of #18. Osteotomy was completed with BTI, 2mm twist drill (Fig. 3), 2.2 tapered drill, 2.8 tapered drill (Fig. 4), 3.5 tapered drill, and 4.3 tapered drill (Fig. 5, 6). The distolingual and mesiolingual portions of #18 were sectioned and elevated with periotomes. They were then removed with root tip forceps (Fig. 8). The mesio-buccal and disto-buccal portions of the root were maintained to be utilized as the socket-shield. The coronal portion of #18 was reduced 1 mm below the crest of the buccal bone (Fig. 9). A 4.8 x 8mm Straumann BLT SLA implant was placed (Fig. 10), and a healing abutment was utilized (Fig. 11, 12). The distal root was retained to maintain the integrity of the buccal plate and was thoroughly decontaminated with hydrogen peroxide before closure.



Figure 3. 2mm Twist Drill



Figure 4. 2.8mm Tapered Drill

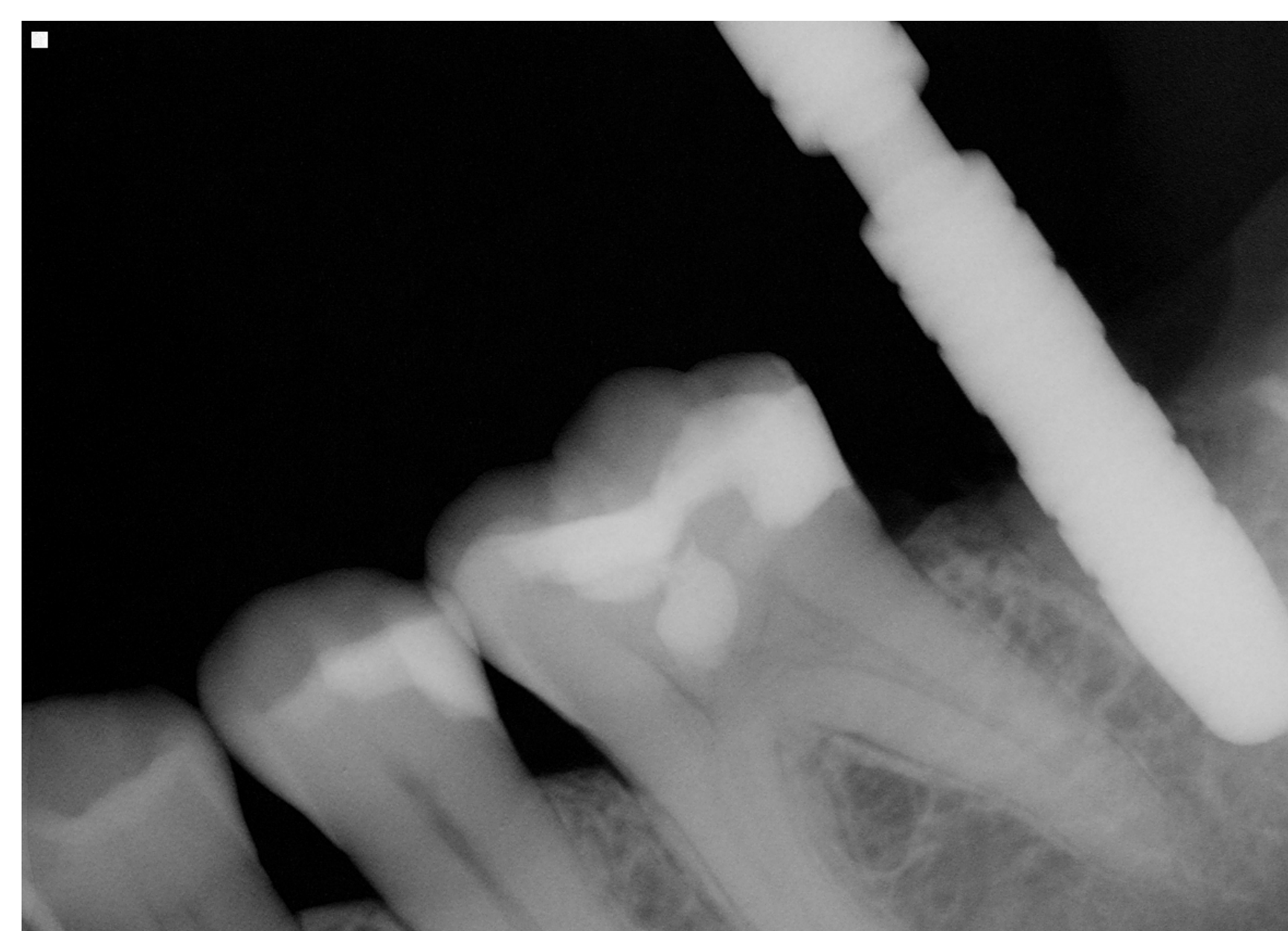


Figure 5. 4.3mm Tapered Drill

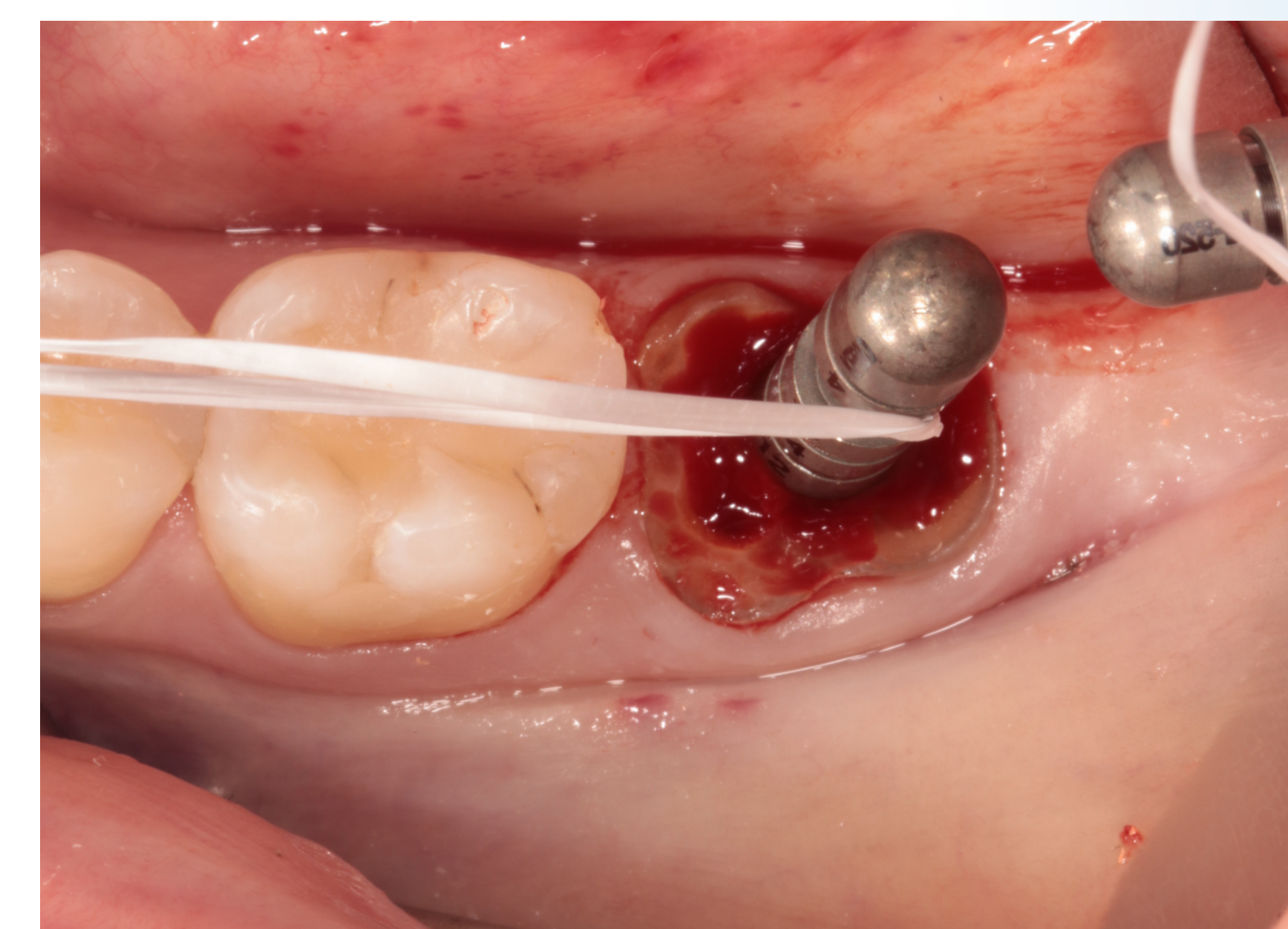


Figure 6. 4.3mm Tapered Drill



Figure 7. Osteotomy with Tooth Roots



Figure 8. MB and DB root portions



Figure 9. Coronal Portion Reduction

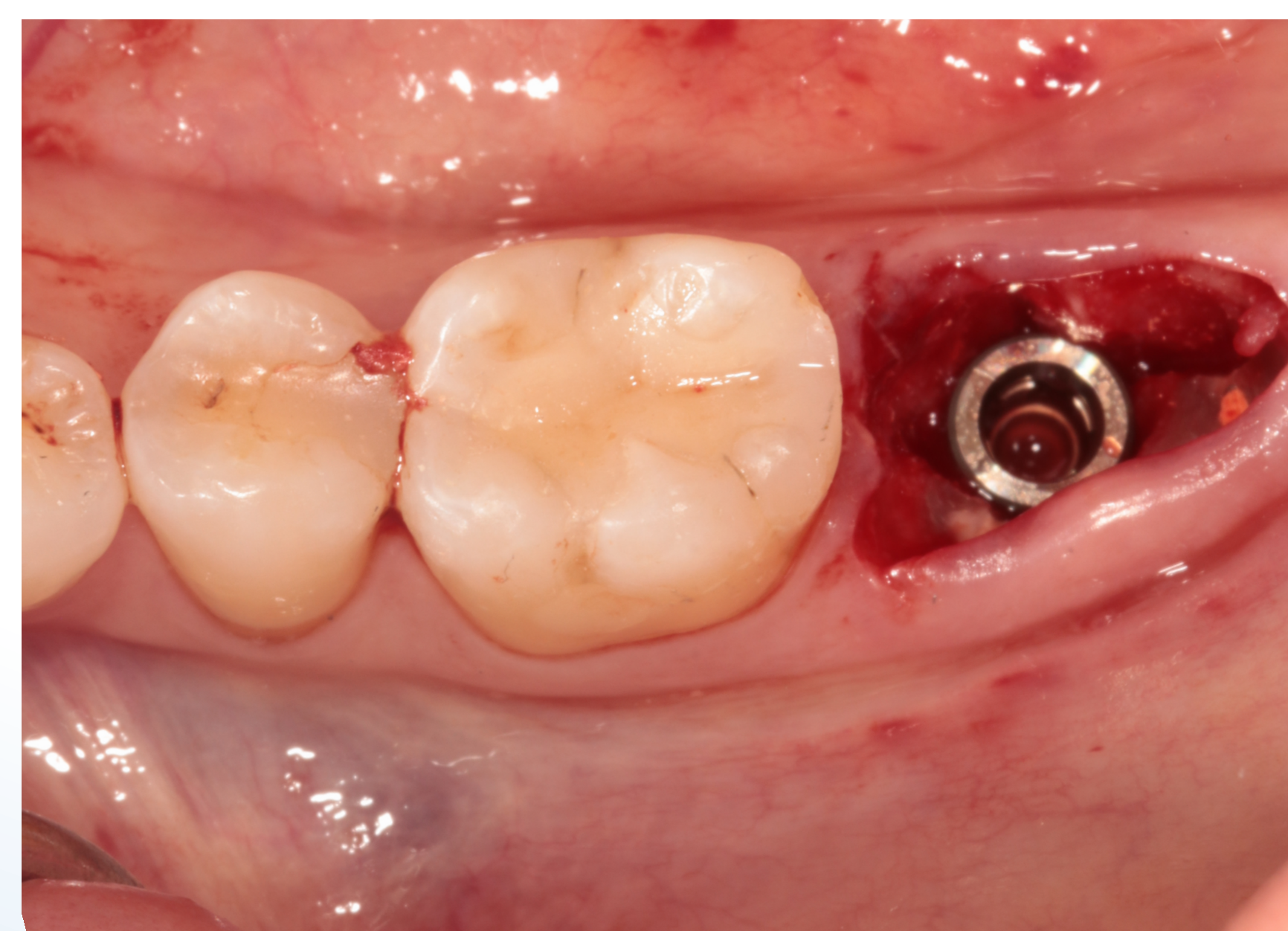
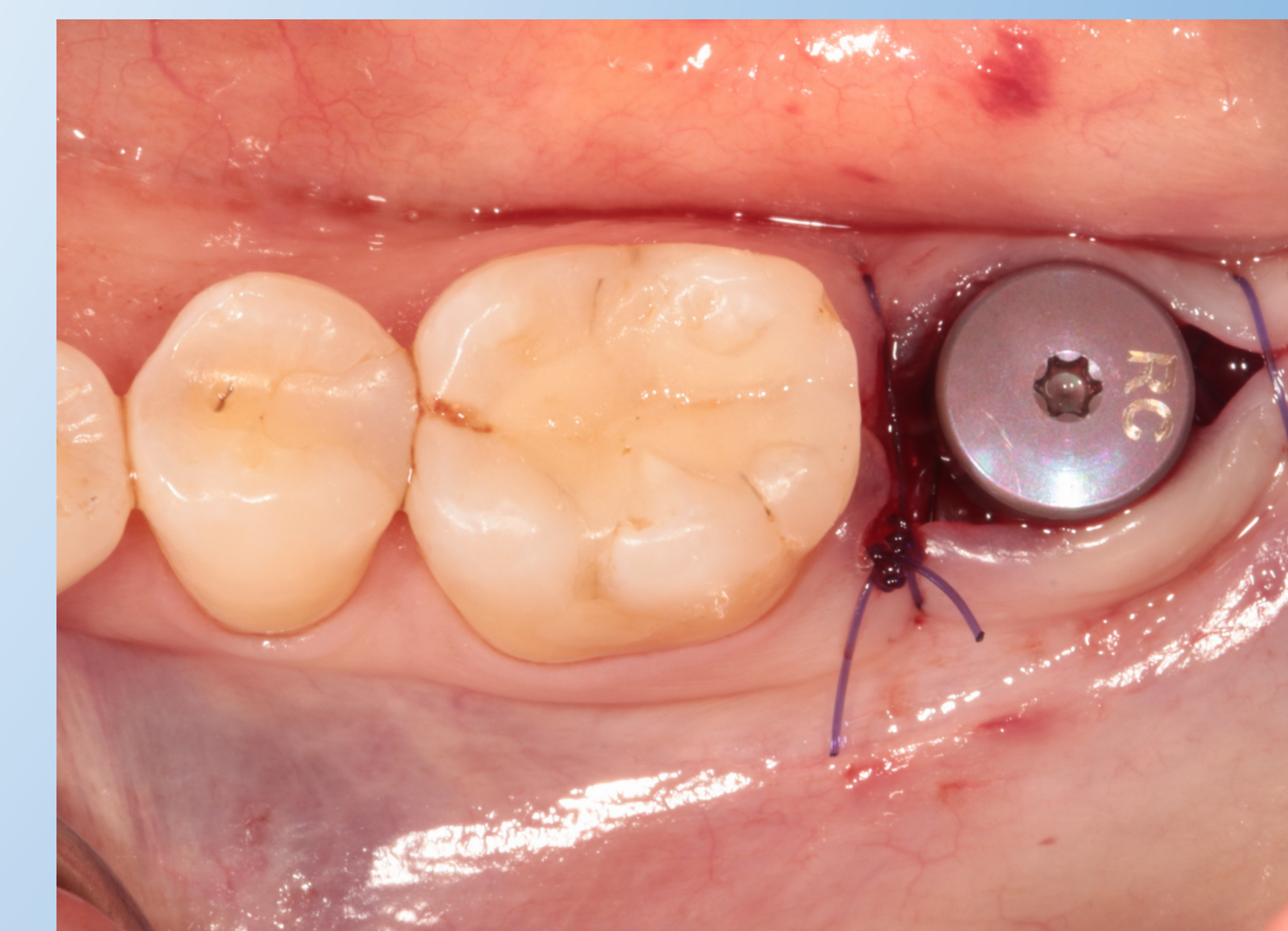
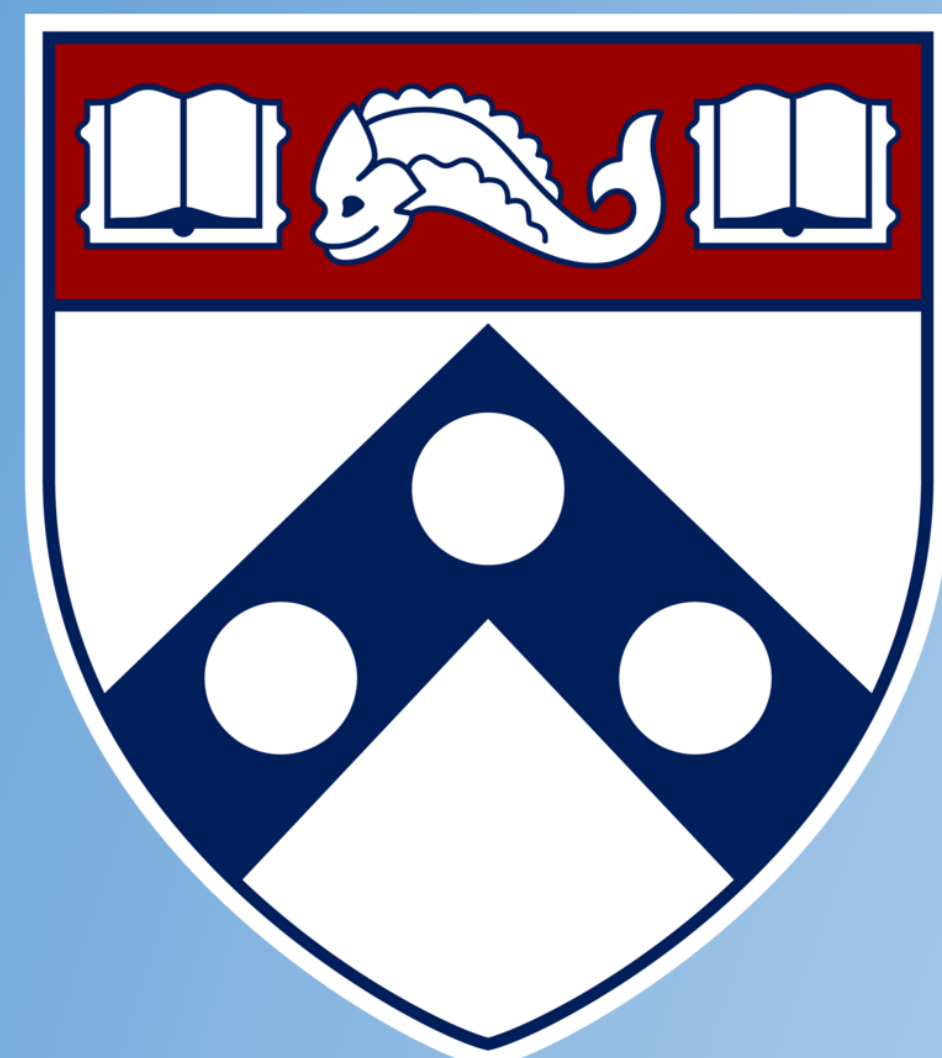


Figure 10. Implant Placed



Figure 11 and 12. Implant with Healing Abutment





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Results:

Patient returned for 2-week and 4-month follow-up appointments (Fig. 13, 14). The surgical site displayed uneventful healing. The healing abutment had become dislodged during the 4-month healing period, so a second stage surgery was performed (Fig. 15, 16, 17). At re-evaluation, it was determined that removing the distal root would not negatively affect the implant site and integrity of the buccal bone, so it was extracted (Fig. 18), and the healing abutment was replaced (Fig. 19).



Figure 13. 2-week Follow-Up

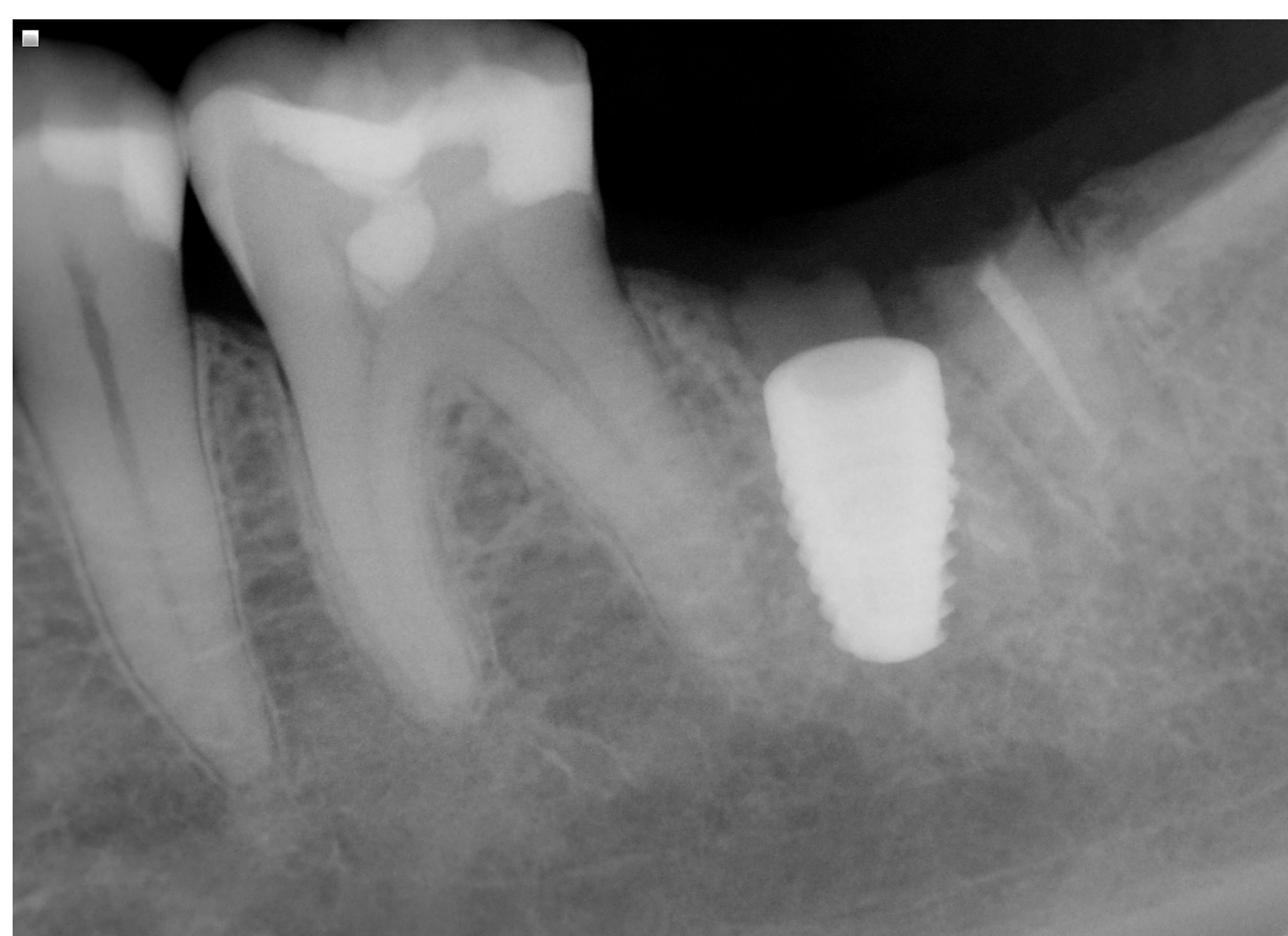


Figure 14. 4-Month Follow-Up

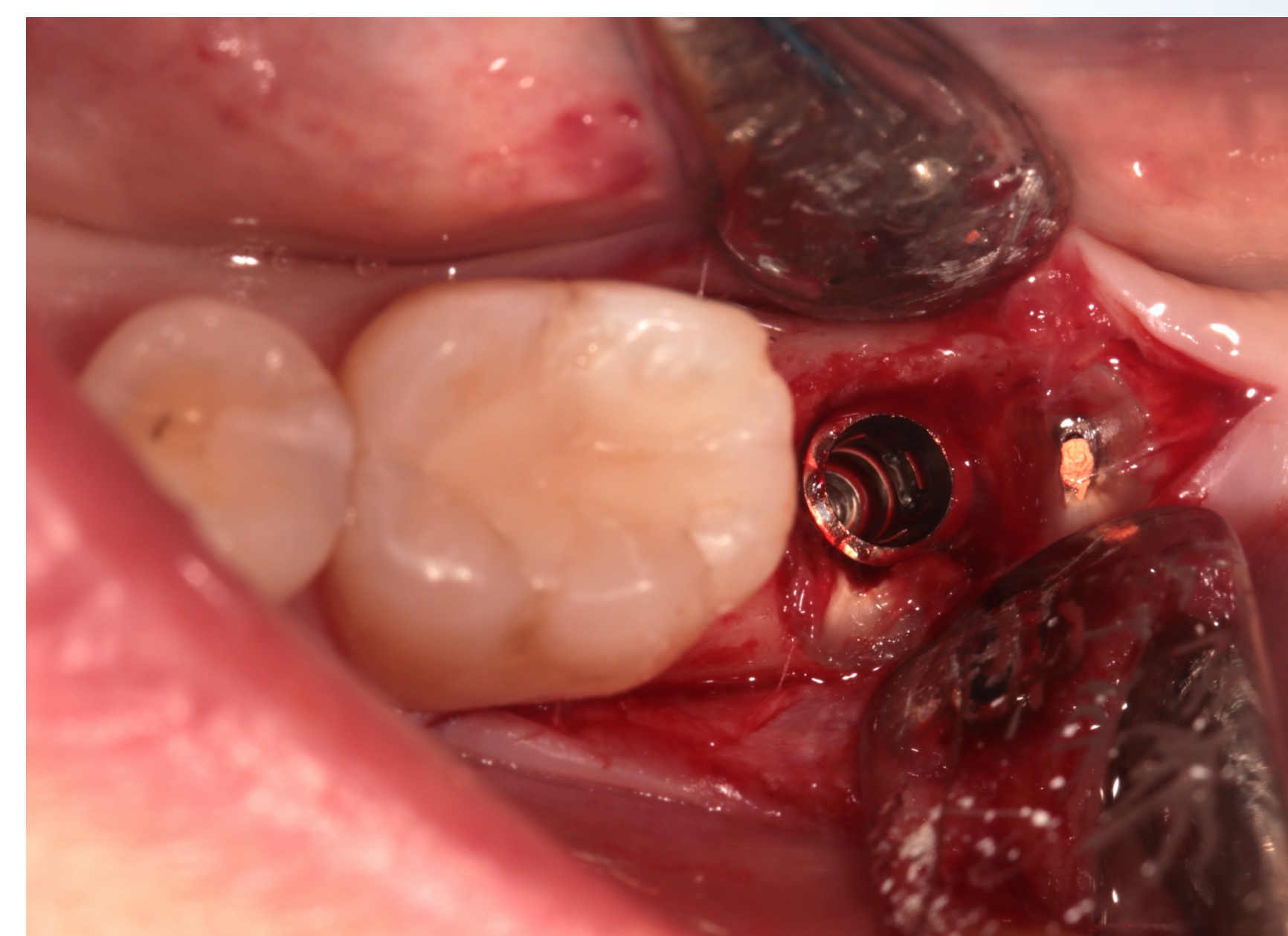


Figure 15. Second Stage Surgery

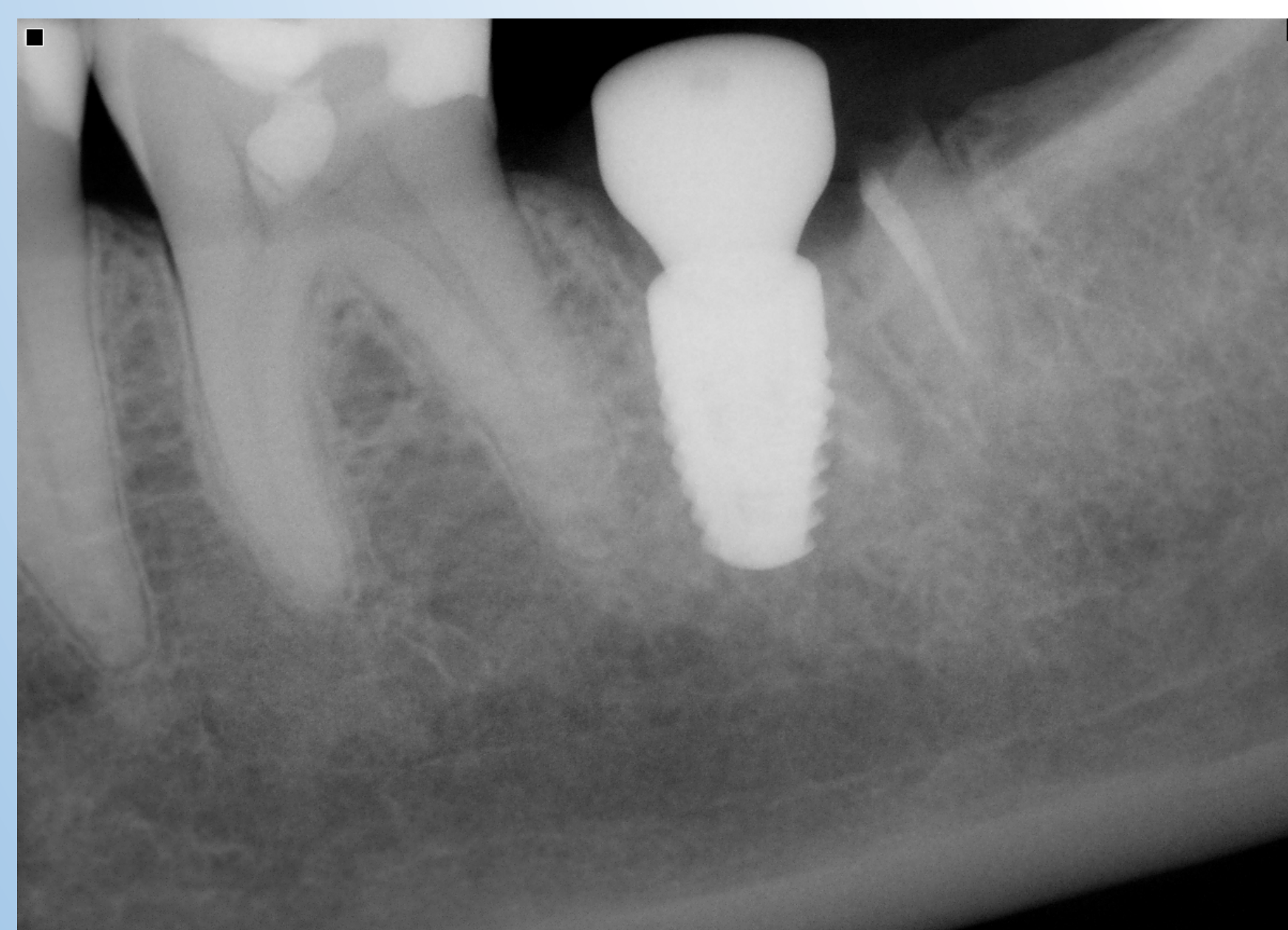


Figure 16. Second Stage Surgery

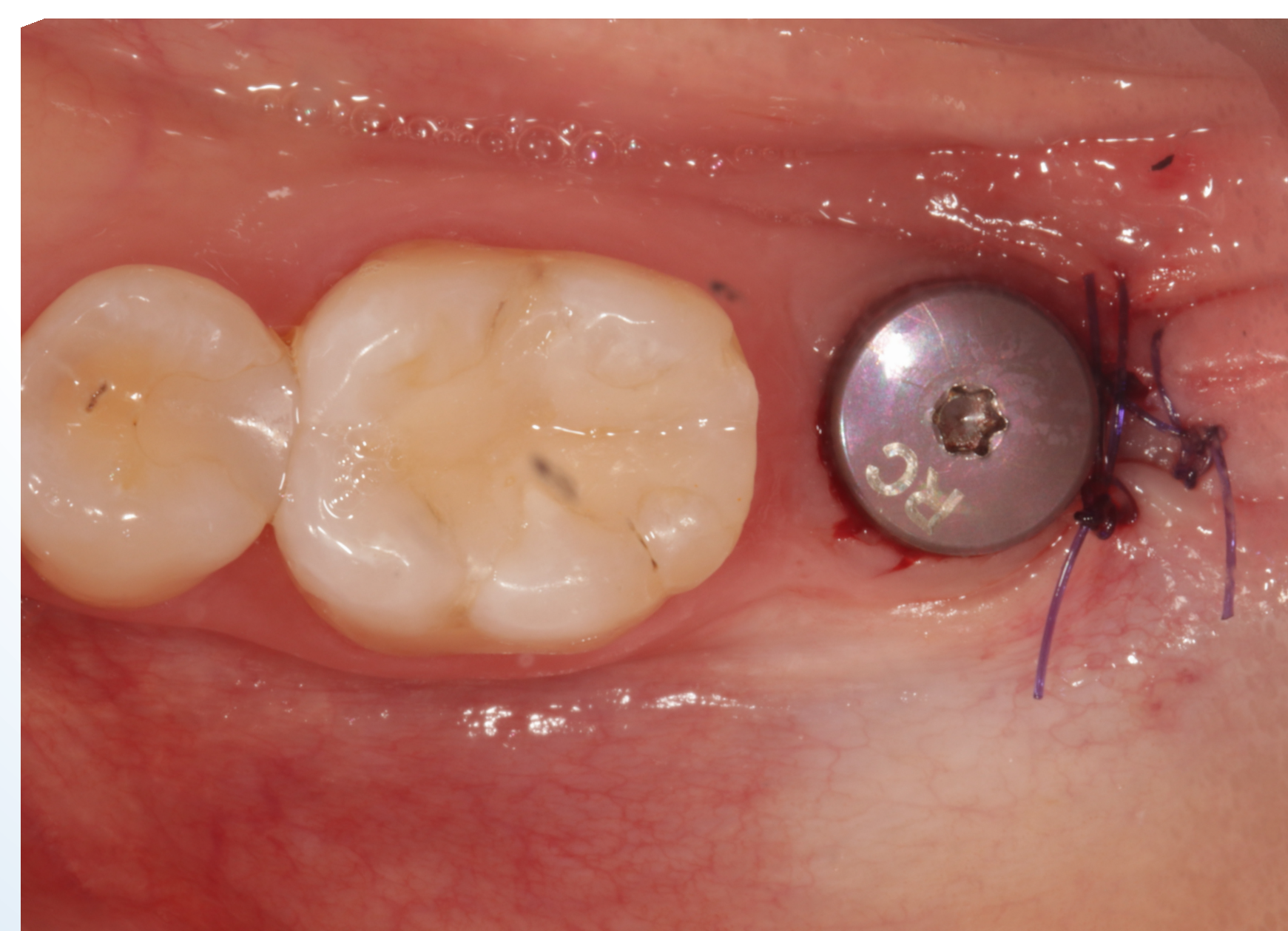


Figure 17. Healing Abutment after
Second Stage Surgery



Figure 18. Distal root removed

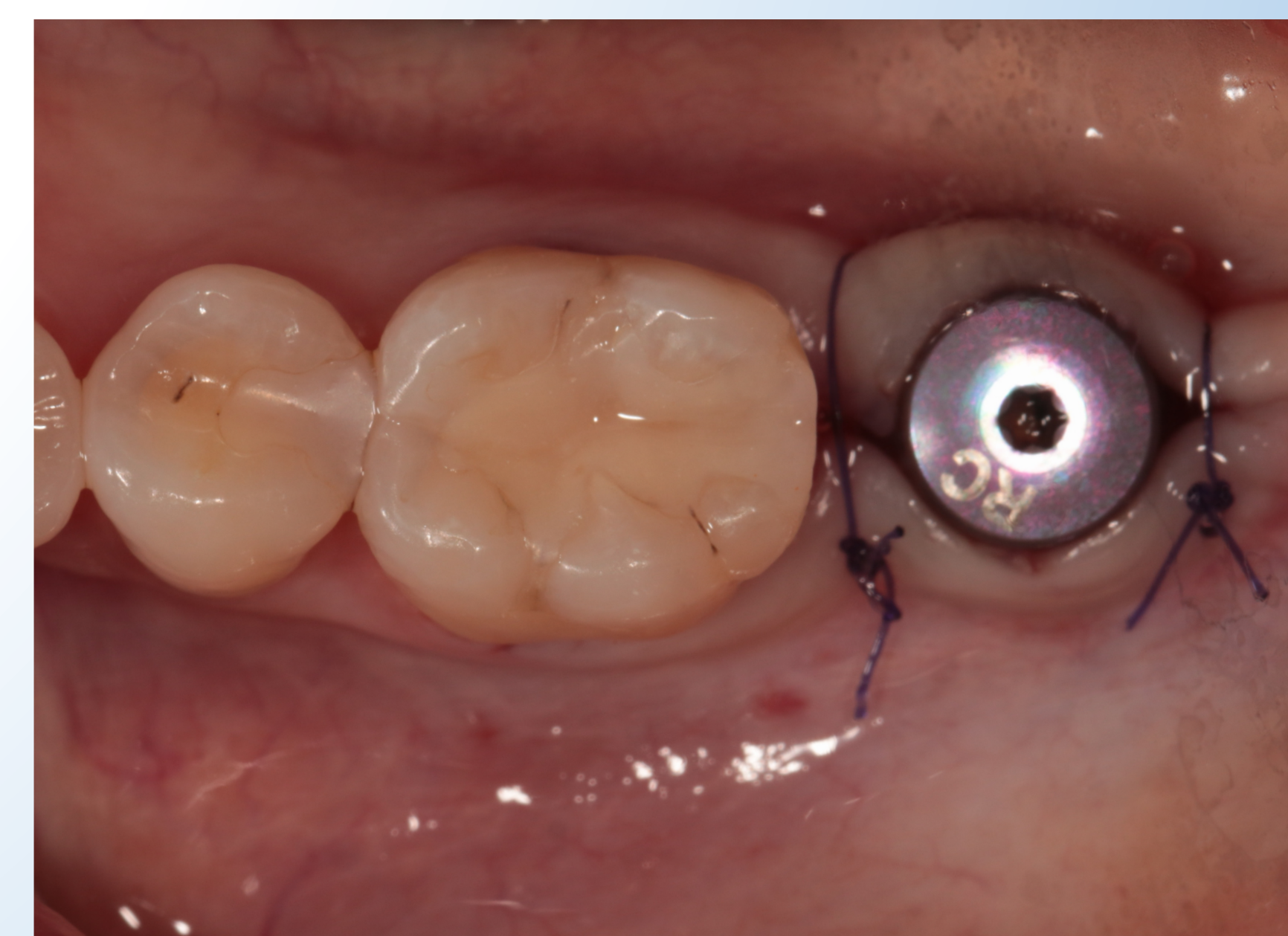
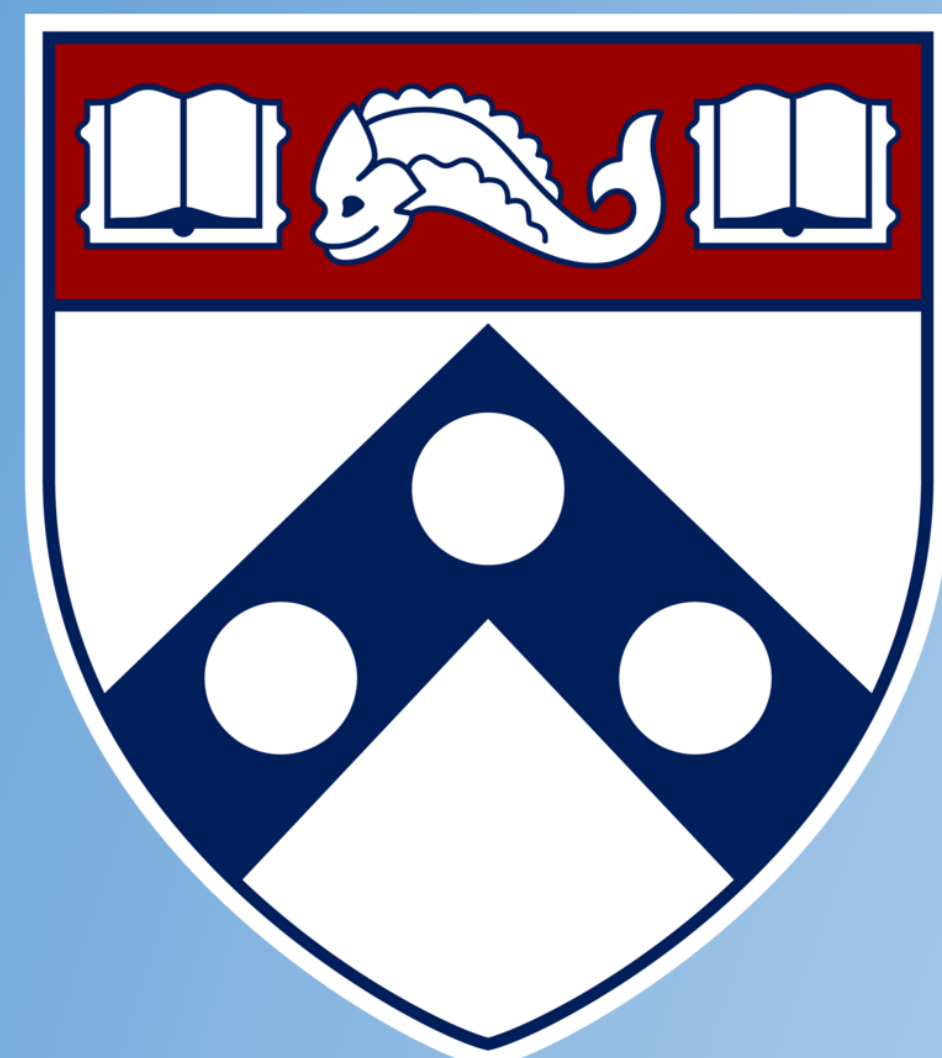


Figure 19. Healing abutment,
sutures placed



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Results (Continued):

Implant was restored (Fig. 20, 21). Bitewing radiograph taken December 2022 (11 months after immediate implant placement, 2 months after placement of screw-retained implant crown) (Fig. 22).



Figure 20. Restored Implant



Figure 21. Restored Implant

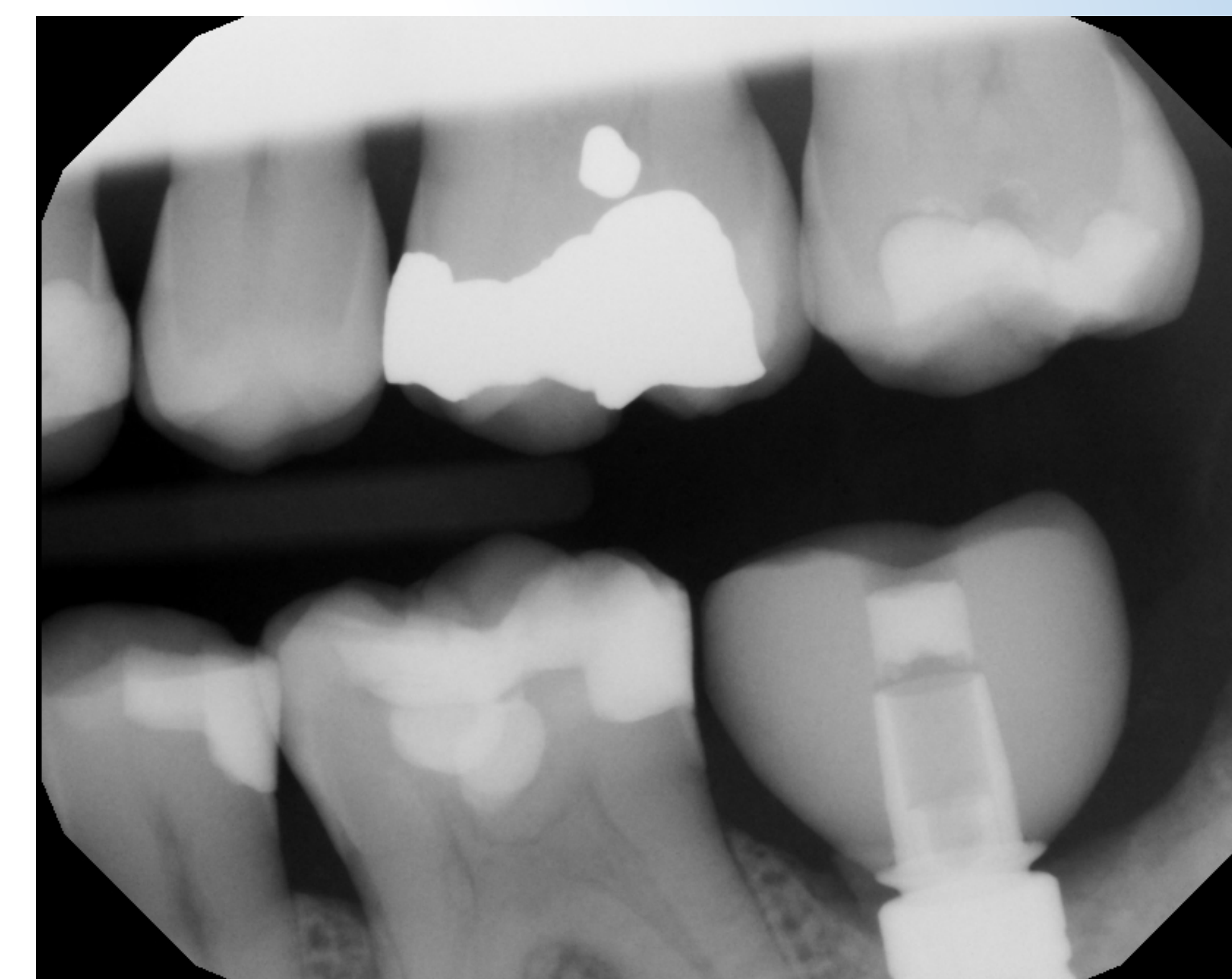


Figure 22. Restored Implant, 11 months after implant placement, 2 months after crown placement

Conclusions:

The purpose of this case presentation was to illustrate the benefits of the socket-shield technique in maintaining buccal bone in the molar region.

References:

- Hürzeler MB, Zuhr O, Schupbach P, Rebele SF, Emmanouilidis N, Fickl S. The socket-shield technique: a proof-of-principle report. J Clin Periodontol. 2010 Sep;37(9):855-62. doi: 10.1111/j.1600-051X.2010.01595.x.
- Schwimer CW, Gluckman H, Salama M, Nagy K, Du Toit J. The socket-shield technique at molar sites: A proof-of-principle technique report. J Prosthet Dent. 2019 Feb;121(2):229-233. doi: 10.1016/j.prosdent.2018.05.006. Epub 2018 Oct 26.