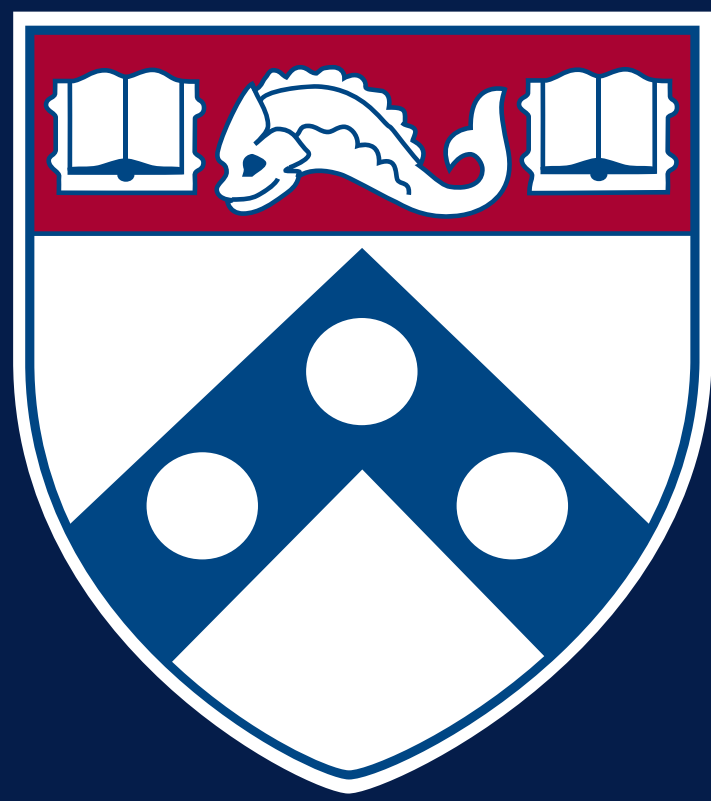




Alveolar ridge preservation for implant site development using a sugar cross-linked collagen-hydroxyapatite matrix

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Background

Alveolar ridge preservation has become increasingly significant as an adjunct to implant site preparation. Several materials have been utilized to aid in future implant placement when an immediate implant is contraindicated. Materials range from platelet-rich fibrin clots to allograft, xenograft, and synthetic material tucked into the extraction socket and covered by a membrane or dressing. A sugar cross-linked collagen-hydroxyapatite matrix was used to maintain ridge configuration as a socket site preservation material. It provides a proper cellular proliferation, vascularization, and bone maturation environment and create an environment for implant placement in the future.

CASE REPORT A

A 33-year-old female was referred to the Periodontics Department for extraction of non-restorable carious tooth #5 and implant placement. Medical history was unremarkable. Atraumatic tooth extraction was performed, and the two root sockets were grafted with 0.5cc sugar cross-linked collagen-hydroxyapatite matrix. Closure with resorbable sutures was achieved, and tissue adhesive was utilized over the graft material. A follow-up CBCT at 6 months showed minimal radiolucency where the extraction socket was grafted. An appropriate size implant for re-entry was planned. Implant osteotomy drilled according to manufacturer instructions and implant inserted with torque 45Ncm. A healing abutment was placed, and soft tissue was adapted around it. Four-month follow-up reveals implant stability and is ready for restoration.

CASE REPORT B

A 26-year-old female was referred to the Periodontics Department for an extraction of non-restorable carious tooth #19 and implant placement. Present and past medical histories were unremarkable. On dental exam, the tooth had a gingival abscess, and the periapical x-ray showed periapical radiolucency that extended to the furcation area. Following atraumatic tooth extraction, the socket was grafted with 5x10x10mm, and a collagen membrane was used to cover the socket and secure it with tension-free sutures. A four-month CBCT scan revealed radiolucency. An appropriate-size implant and a cover screw were placed. At three months, a follow-up periapical X-ray was taken, which showed complete implant osseointegration. Second stage surgery was completed with a healing abutment placed.

Conclusion

A sugar cross-linked collagen-hydroxyapatite matrix is a reasonable option for alveolar ridge preservation prior to implant placement. Not only does it maintain bone volume, given enough healing, it achieves new vital bone. This leads to better primary stability when first placing an implant, and maintenance of bone around the implant for long term stability.



Figure 1a: Pre-operative view

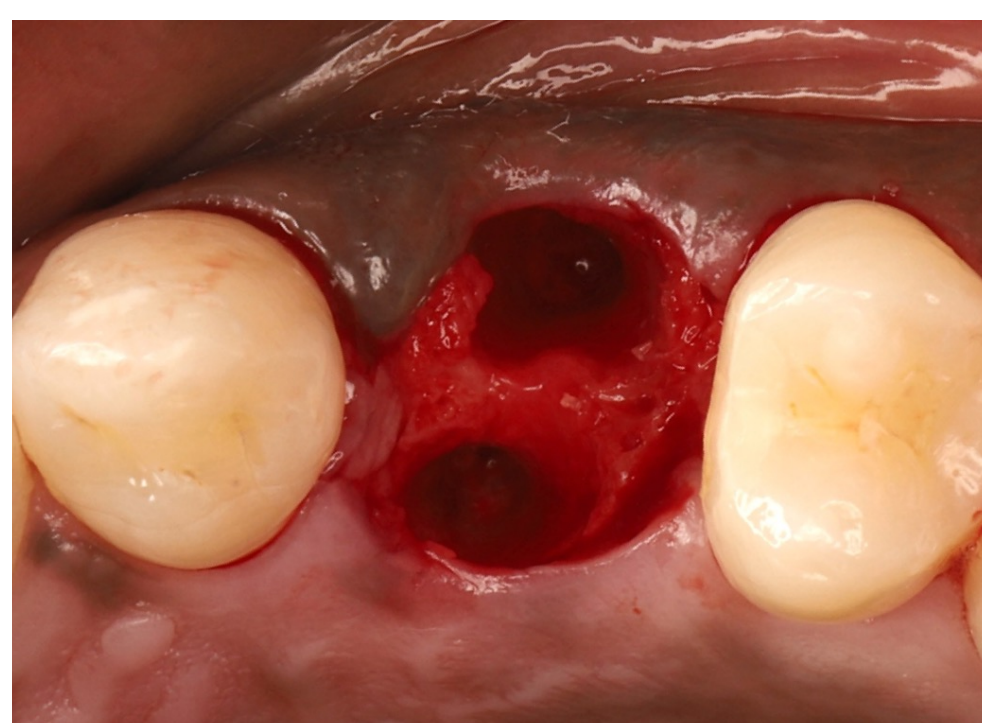


Figure 2a: Extraction



Figure 3a: sugar cross-linked collagen-hydroxyapatite matrix

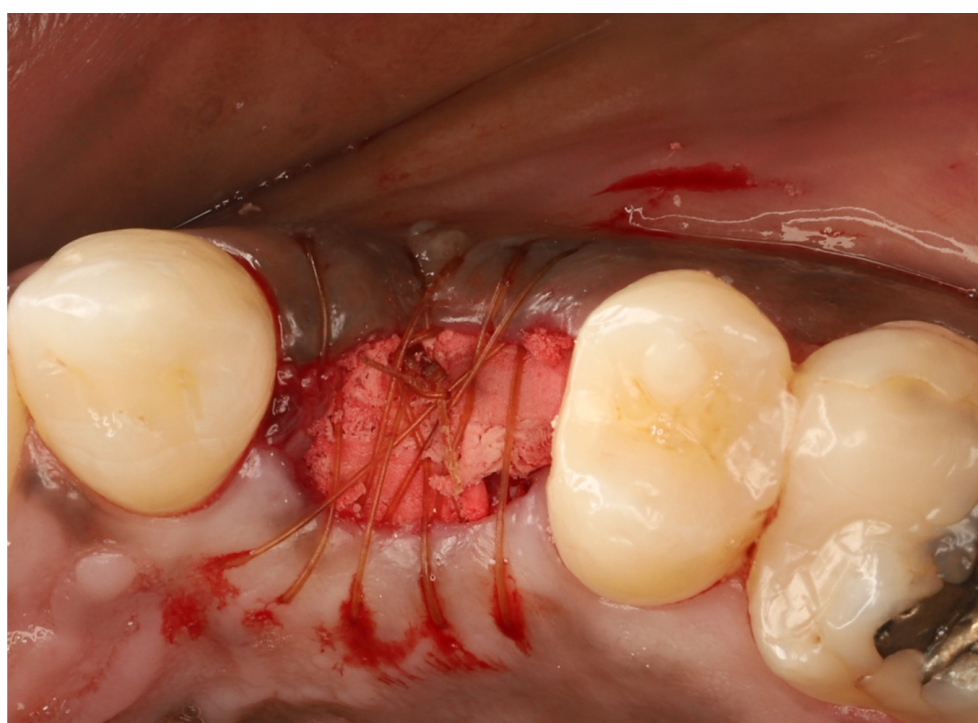


Figure 4a: Closure



Figure 5a: 12 week follow up

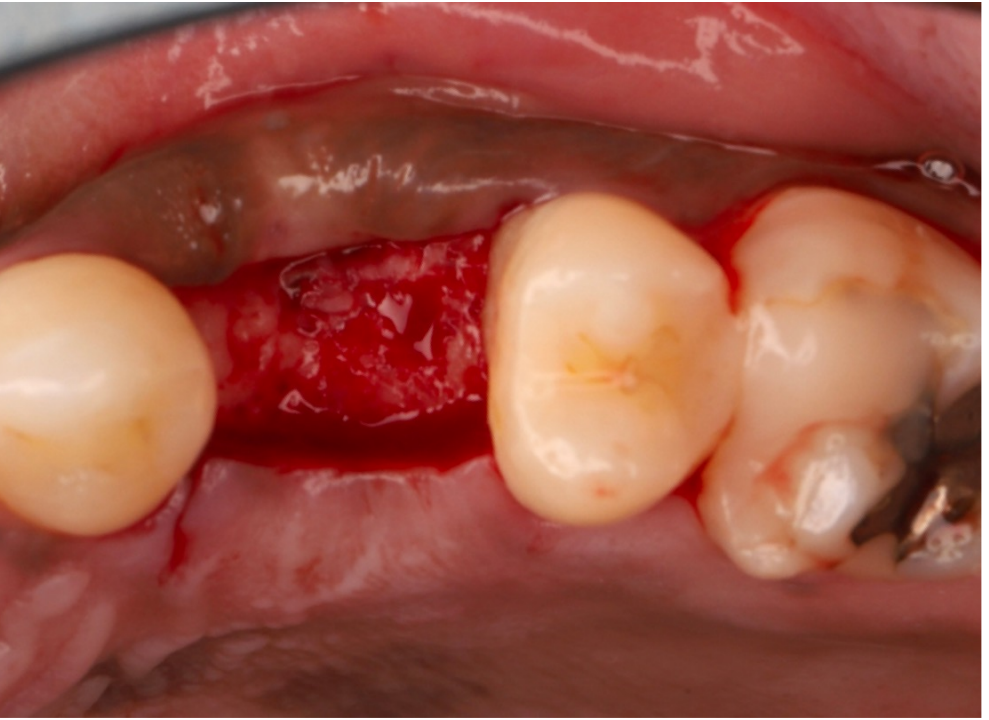


Figure 6a : Re-entry

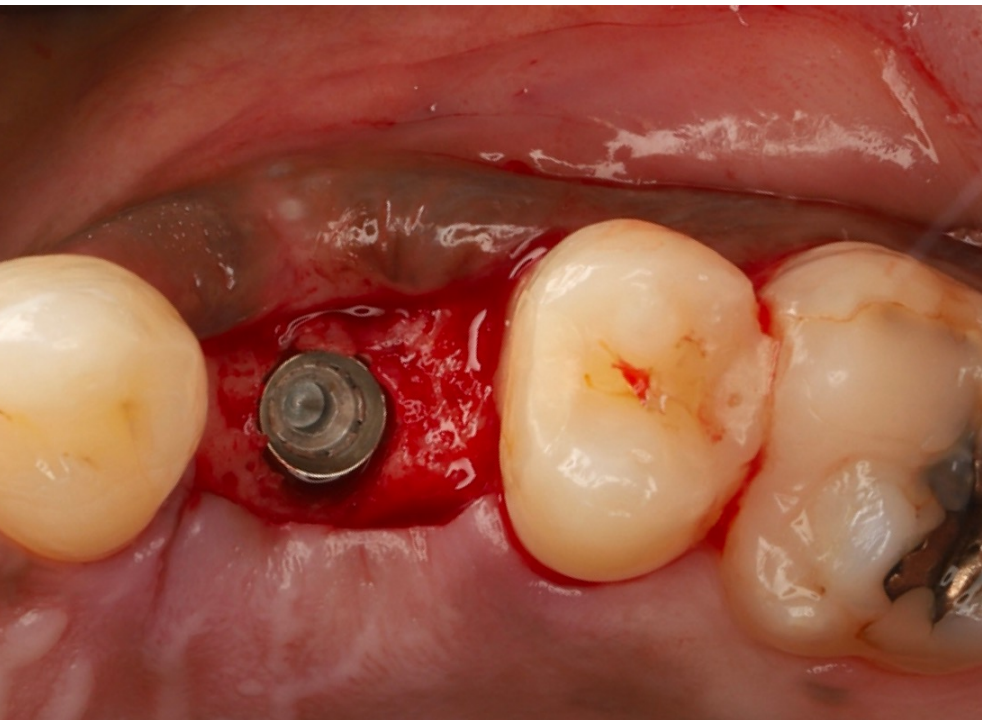


Figure 7a: Implant placement

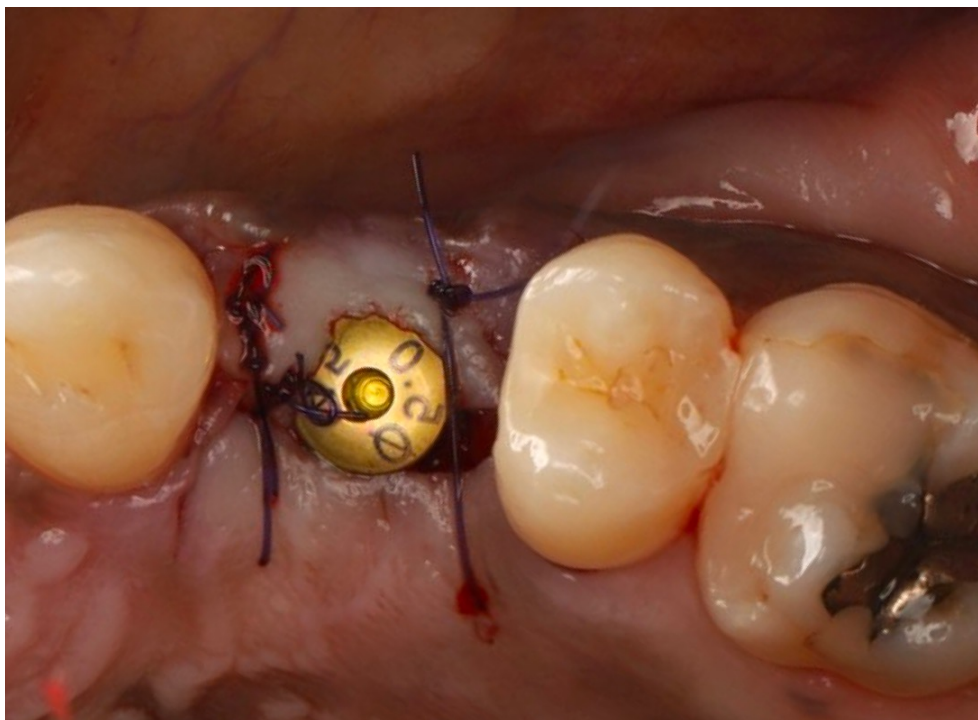


Figure 8a: Closure.

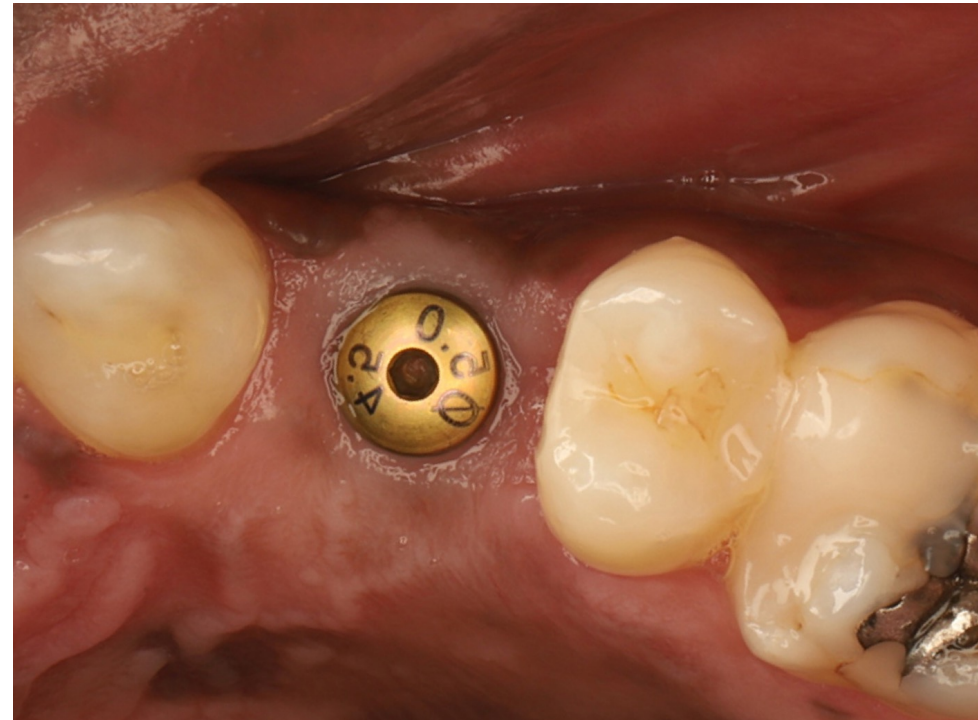


Figure 9a: 4 month follow up

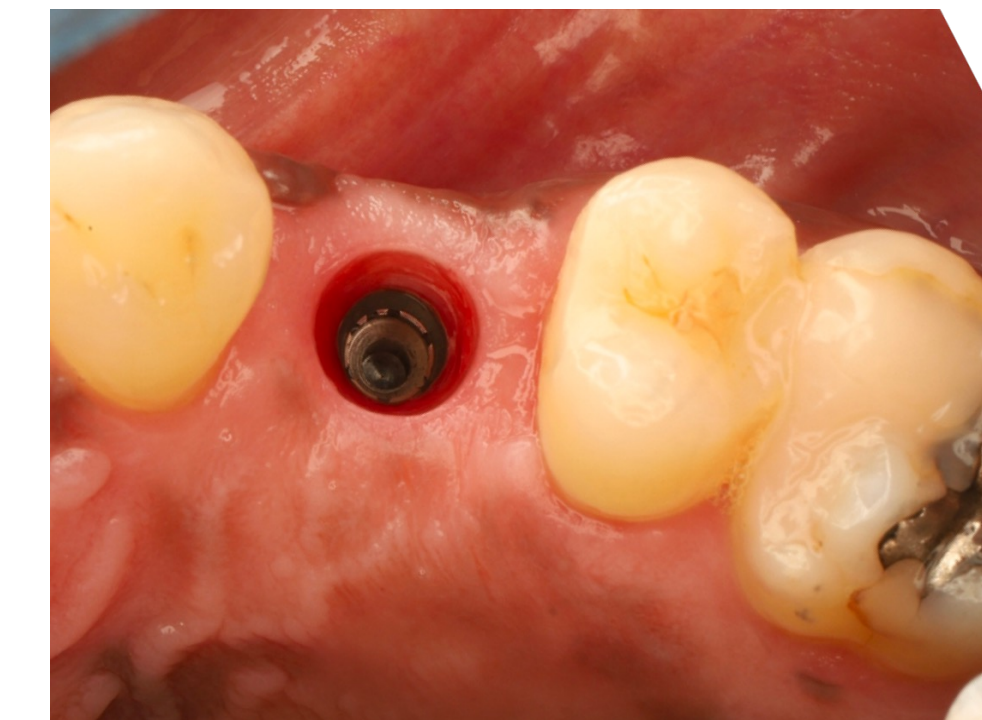


Figure 10a: 4 month follow up

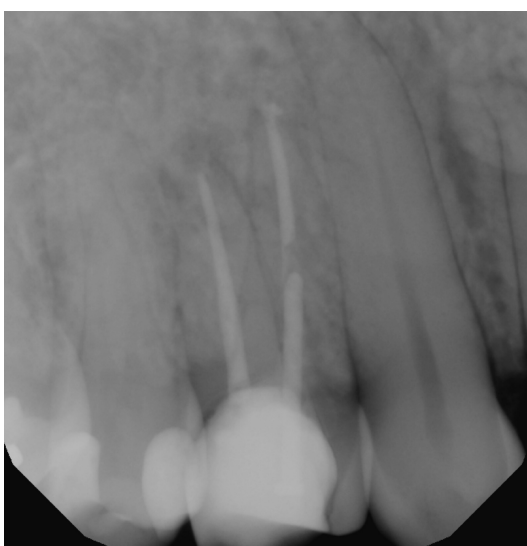


Figure 11a: Pre-operative PA

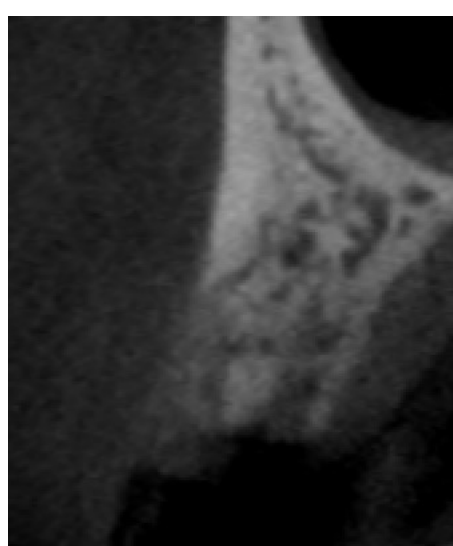


Figure 12a: 6-months CBCT

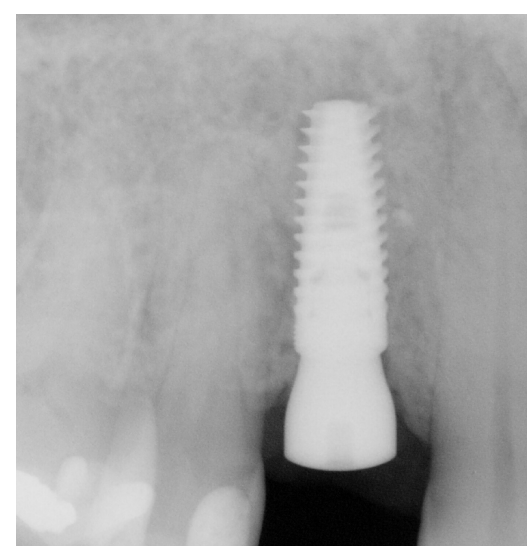


Figure 13a: implant placement PA



Figure 14a: 4 month follow-up



Figure 15a: Graft material



Figure 1b: Re-entry.

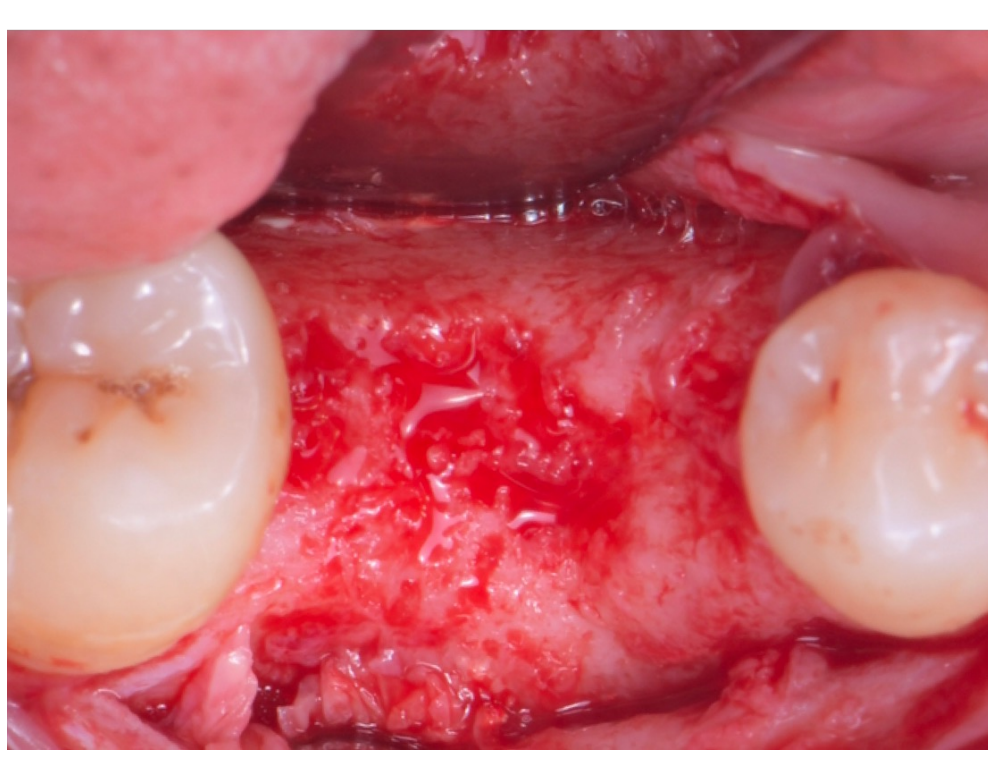


Figure 2b: flap reflection

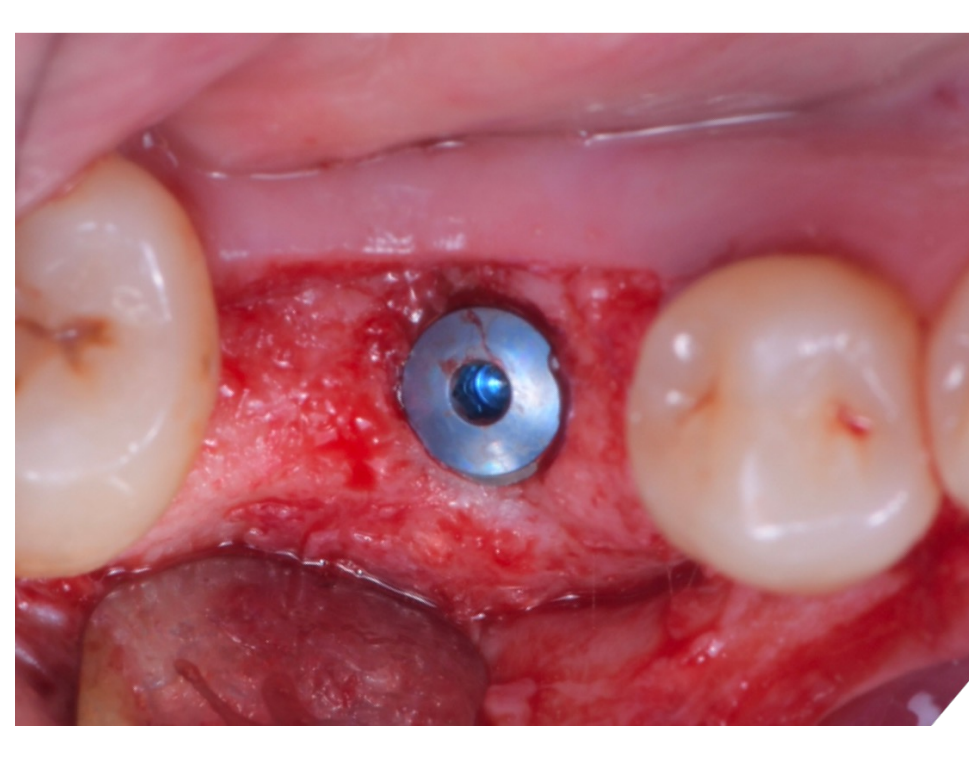


Figure 3b: implant placement.

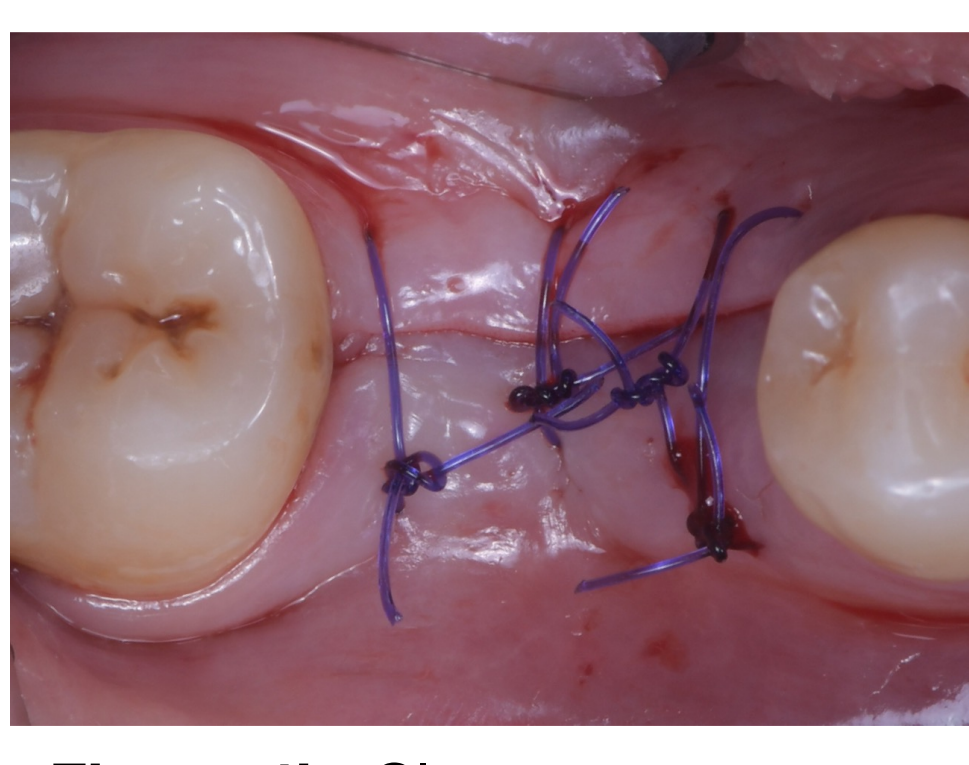


Figure 4b: Closure.

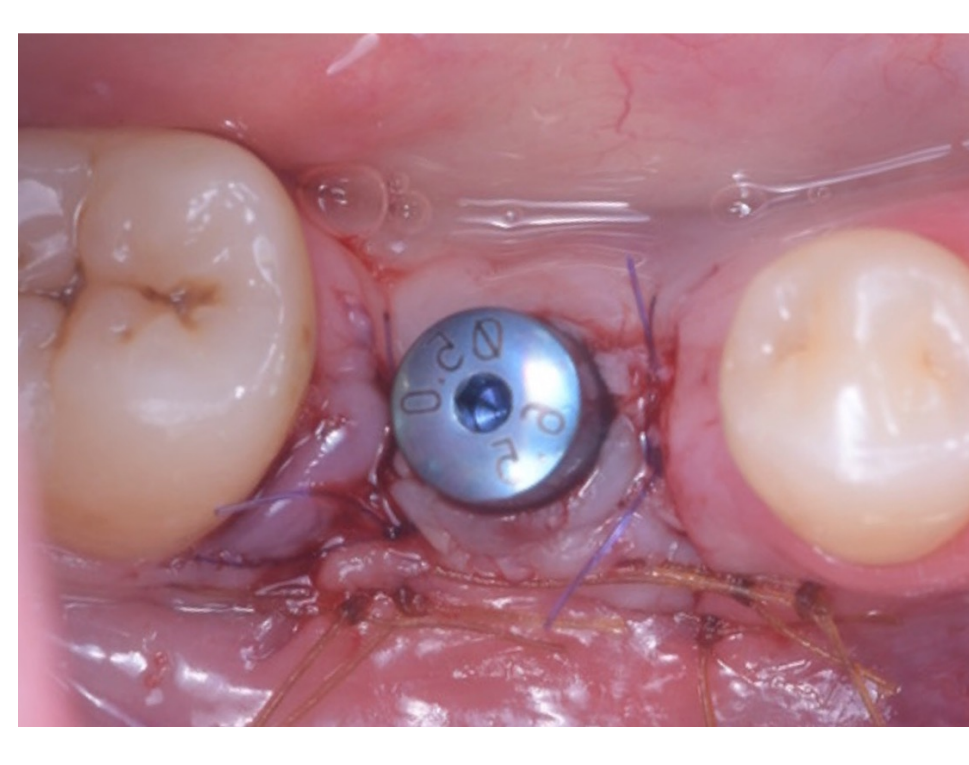


Figure 5b: second stage

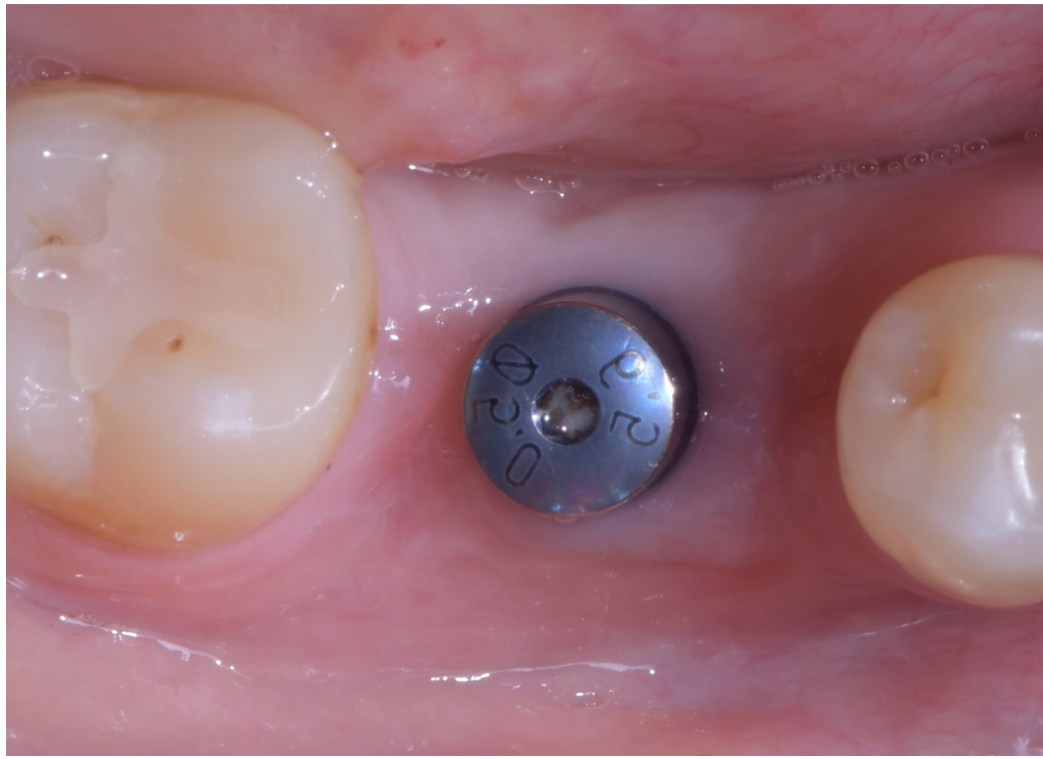


Figure 6b: 2 months follow -up



Figure 7b: Pre-operative PA

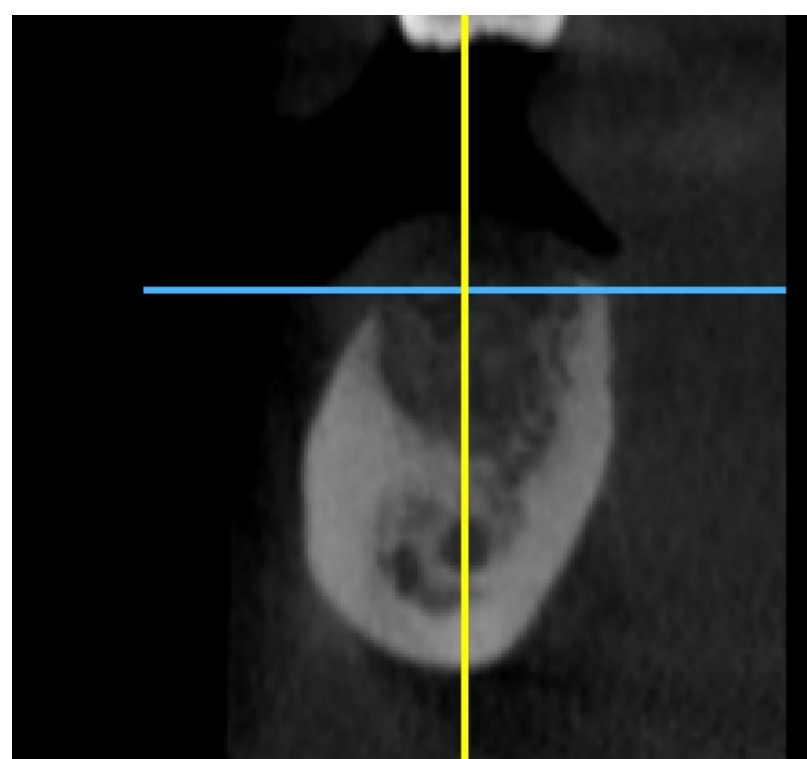


Figure 8b: 4-months CBCT



Figure 9b: implant placement PA

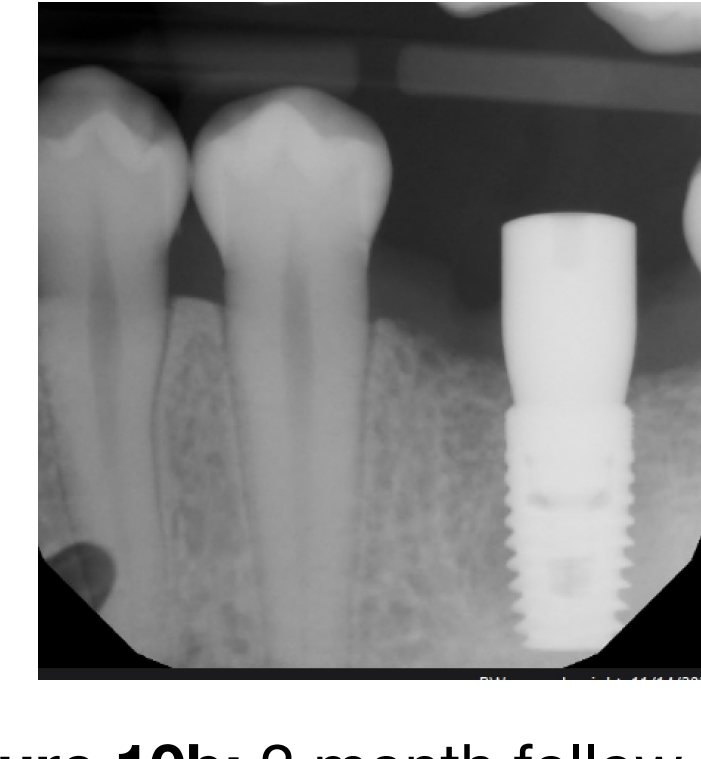


Figure 10b: 2 month follow-up

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