

A Novel technique to reconstruct tissue convexity around implants in esthetic zone

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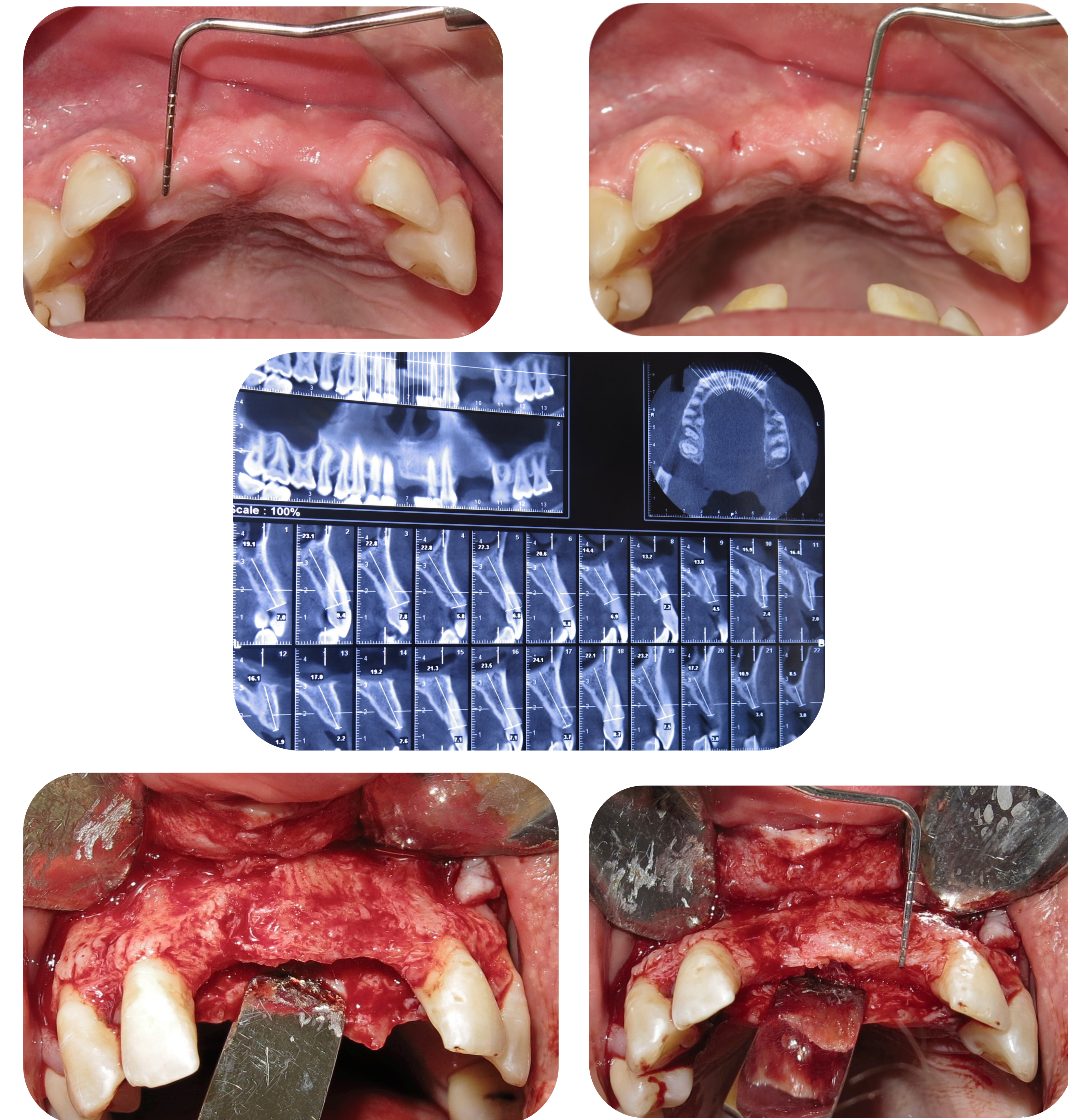
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INTRODUCTION

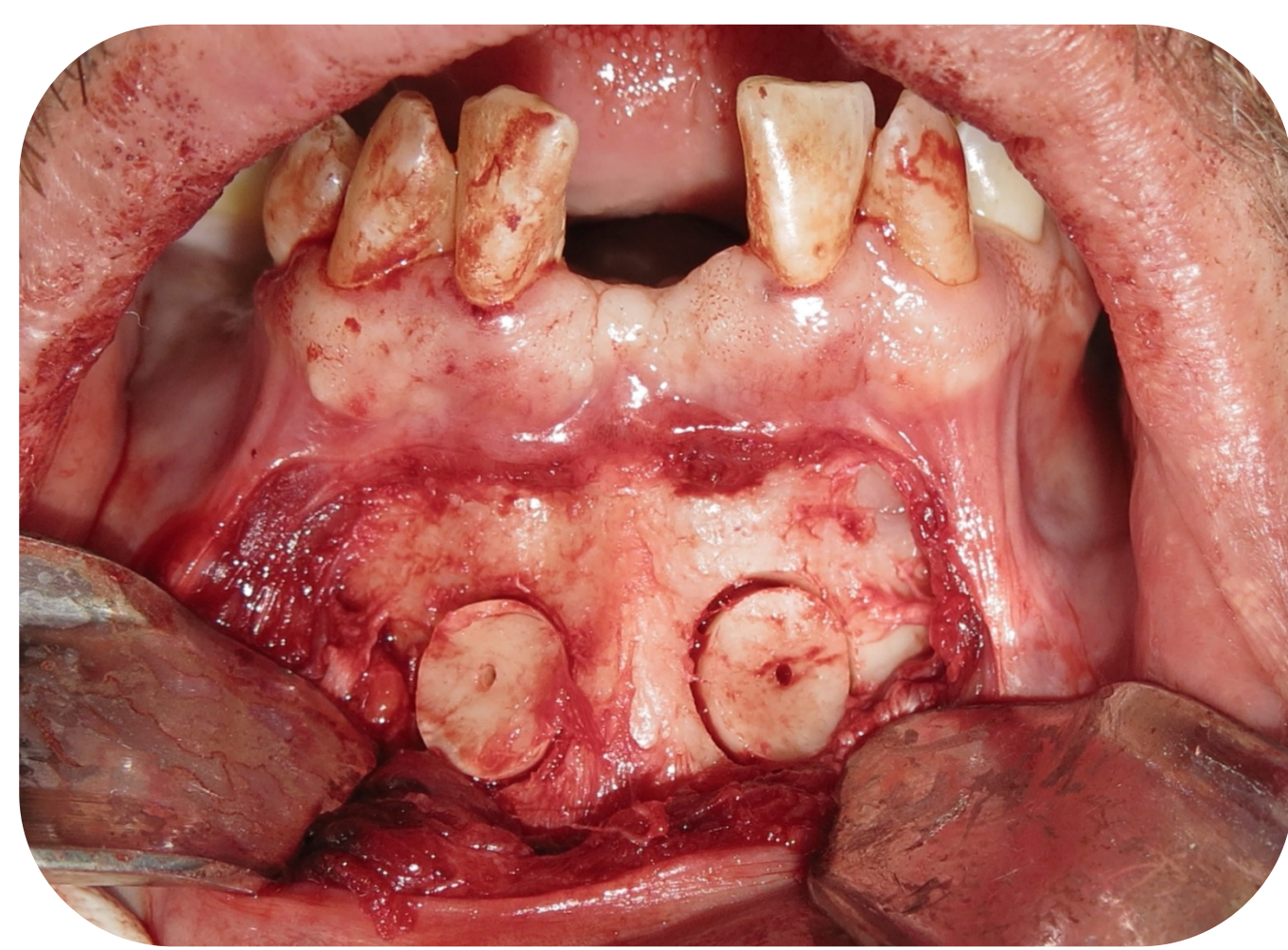
Among the various available materials for augmentation, only autogenous bone possesses osteoconductive, osteoinductive, and osteogenic properties.¹ It is still considered as the “gold standard” in alveolar ridge augmentation prior to oral implantation.² We present 3 cases with compromised buccal bone plate that were reconstructed using autogenous block bone and autogenous soft tissue graft.

METHODS

Case1: For reconstruction of facial hard tissue contour, Autogenous block bone was harvested from chin and protected by demineralized bovine bone mineral (DBBM). After 4 months implants were inserted in a prosthetically driven position. During second stage surgery, Accordion free gingival graft (FGG) was used to increase the width of keratinized mucosa (KM) and vestibular reconstruction.



Case1: preoperative clinical and radiographic view showing severe atrophic anterior ridge of maxilla



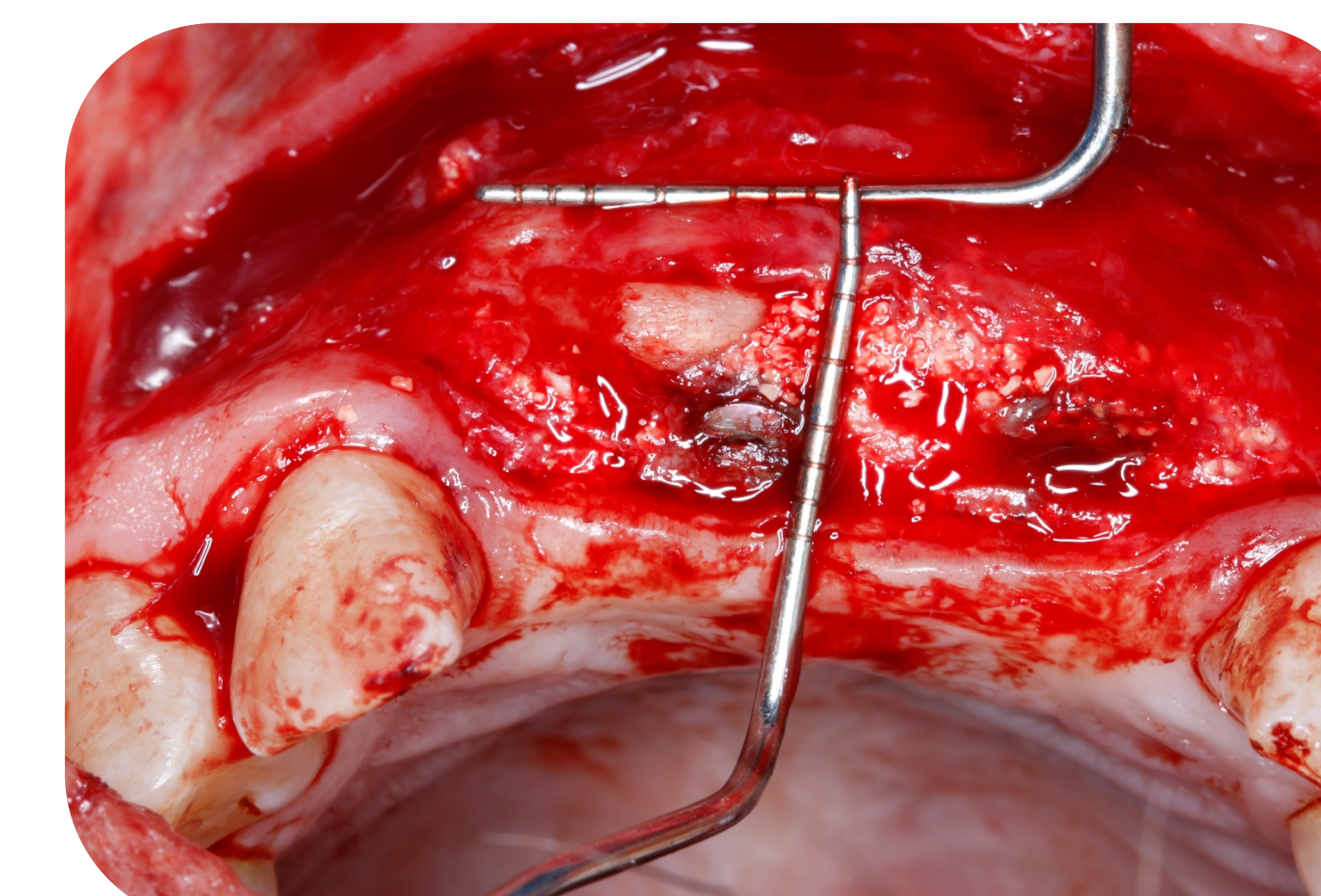
8-shaped autogenous bone blocks was harvested from chin using trephine



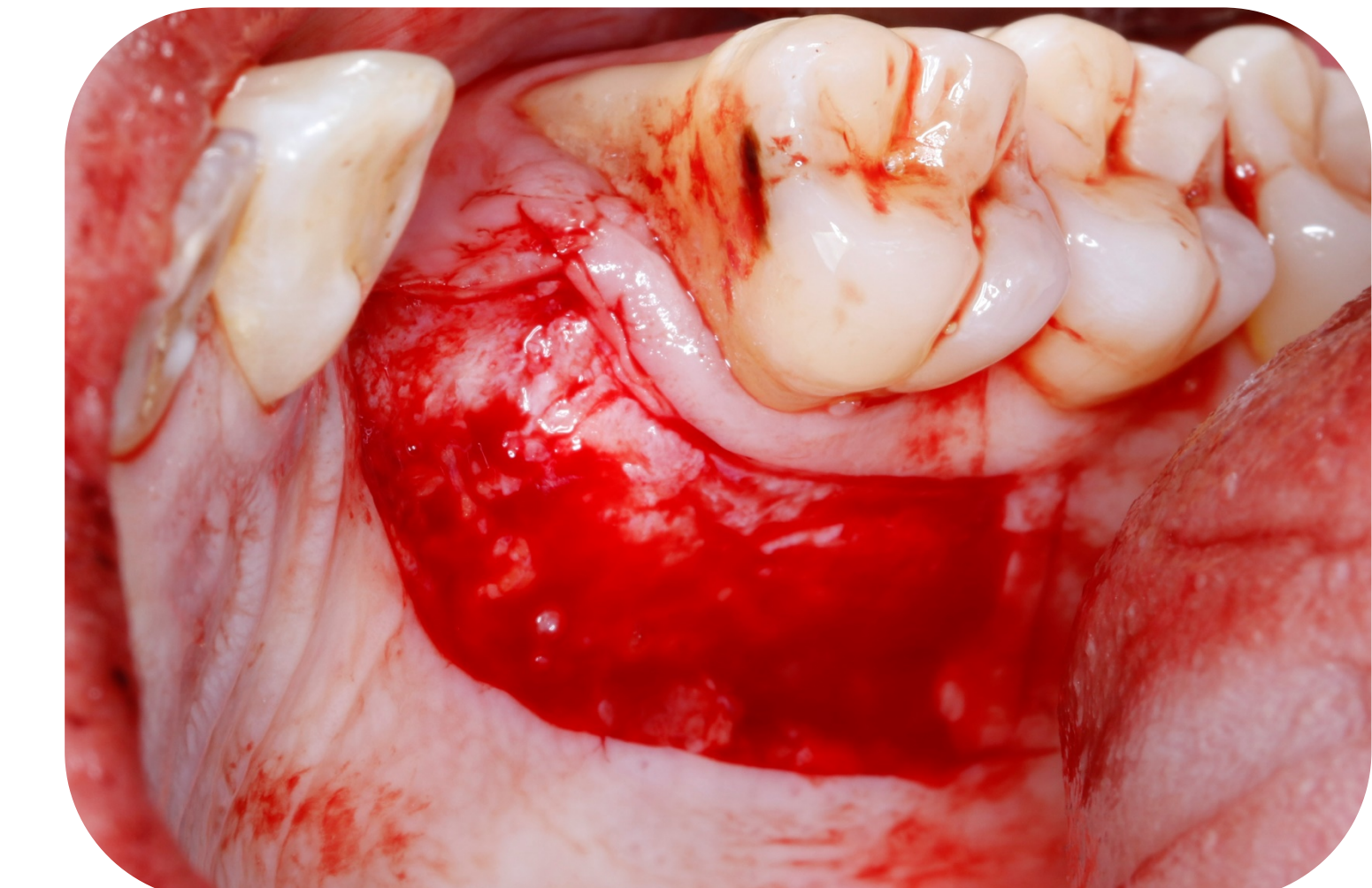
Surgical guide stent was fabricated



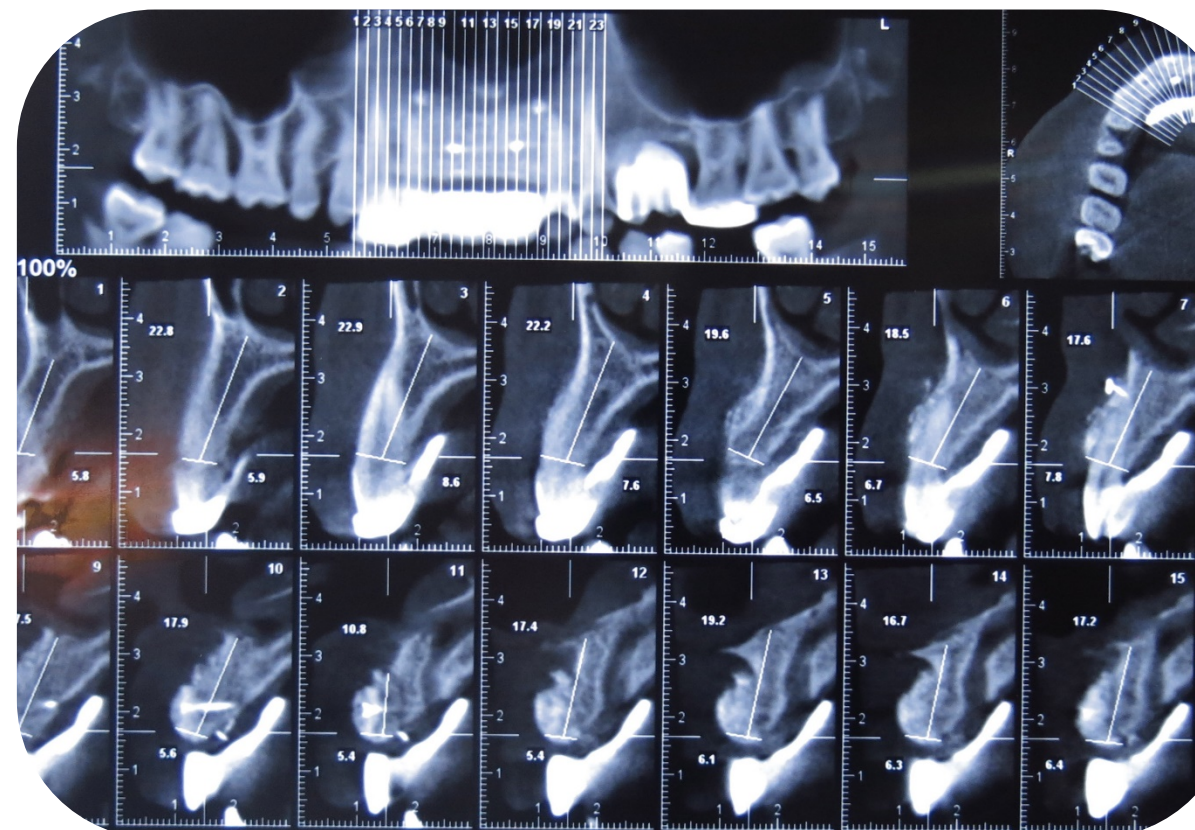
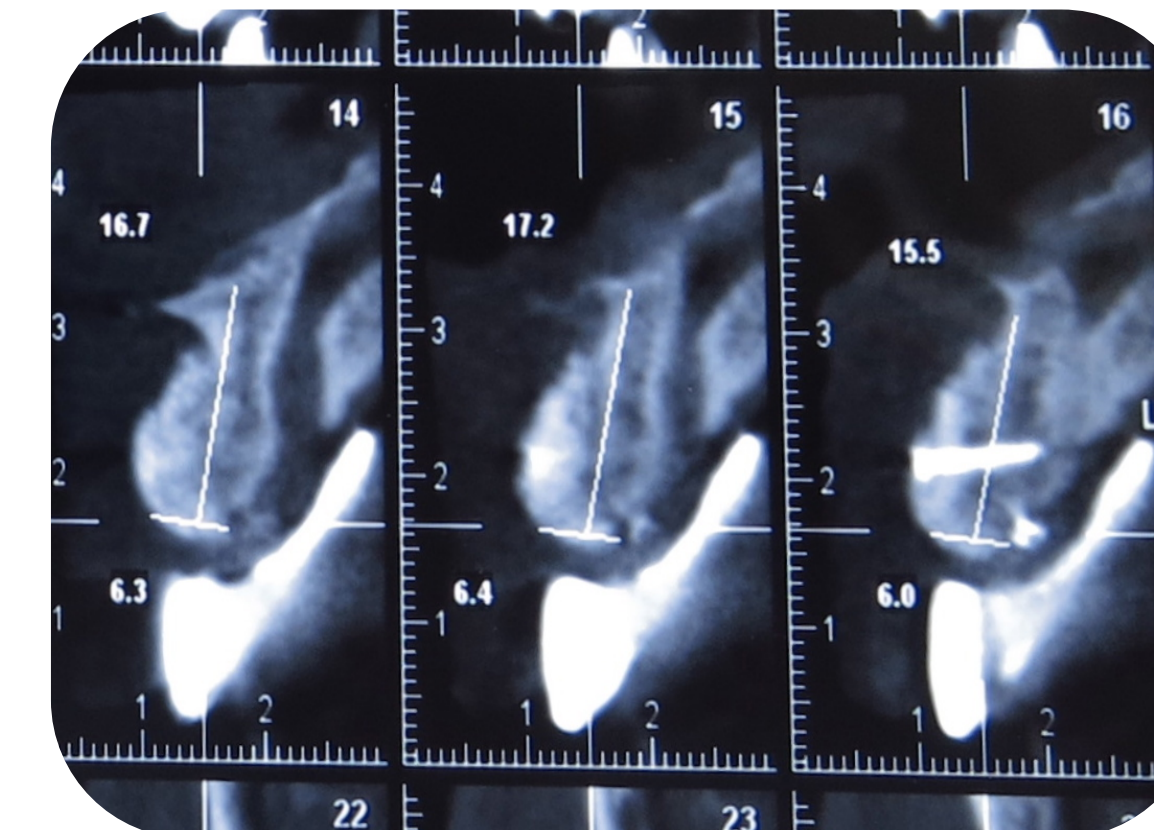
Mucogingival problem because of flap advancement during hard tissue augmentation



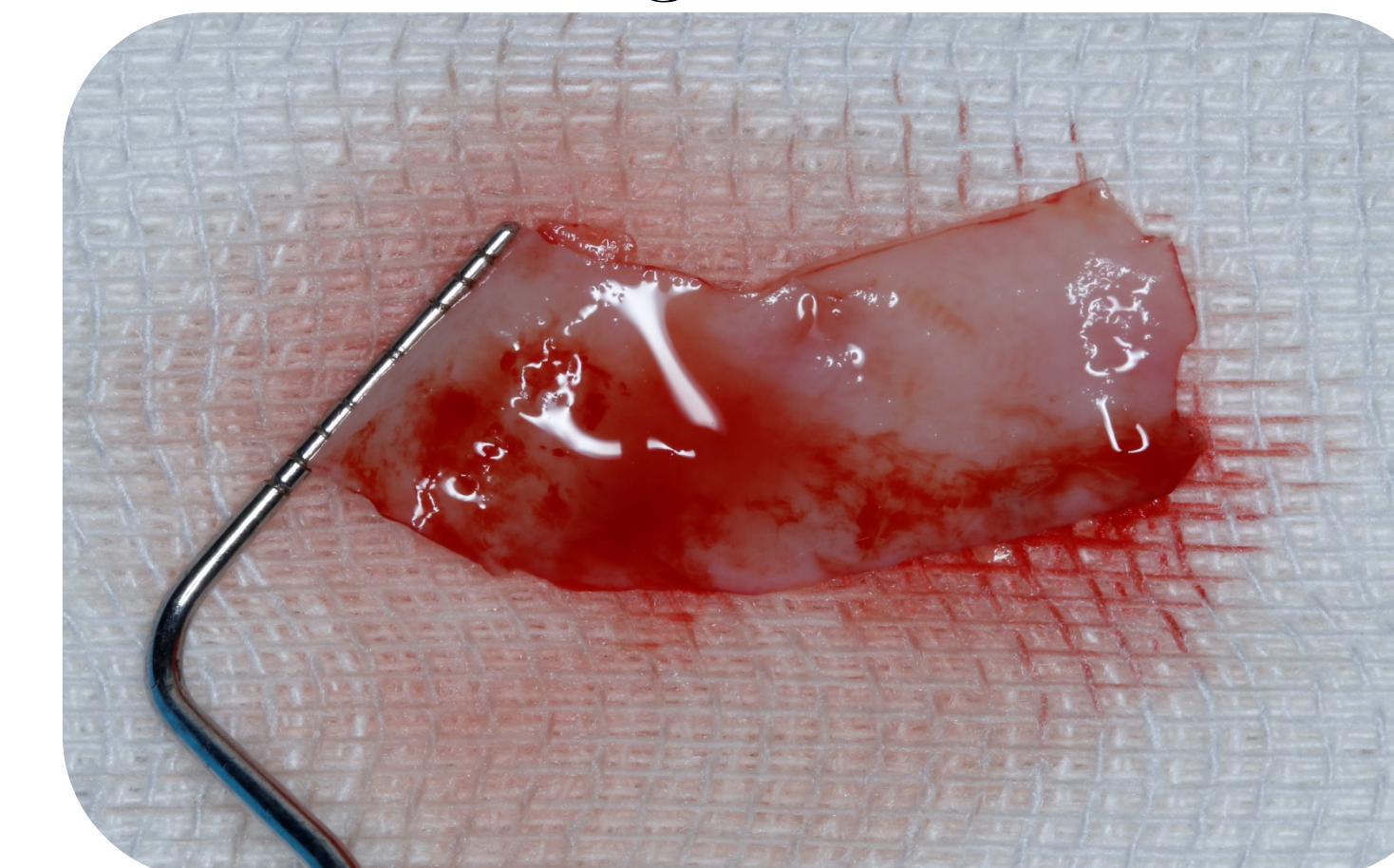
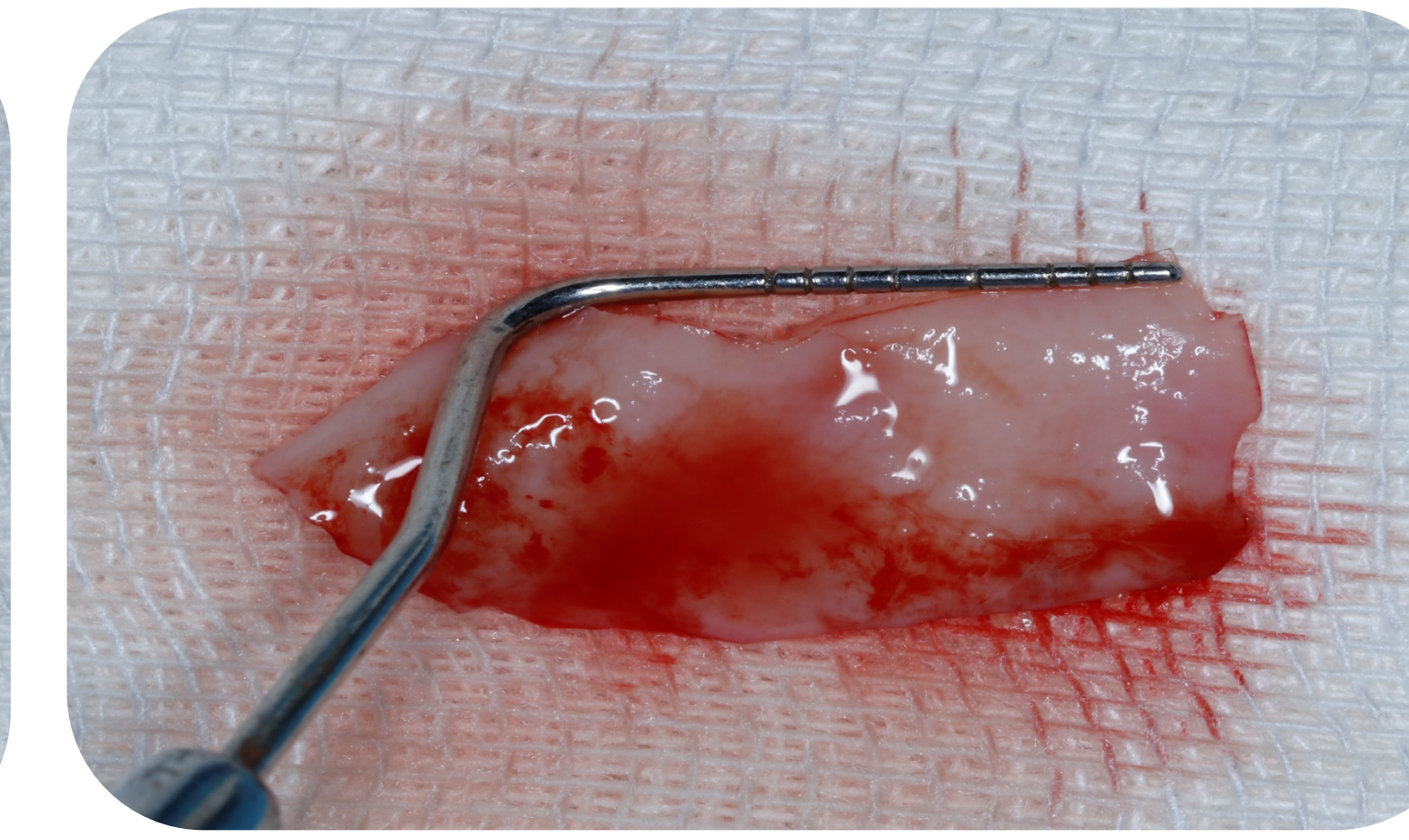
Bed preparation for soft tissue graft



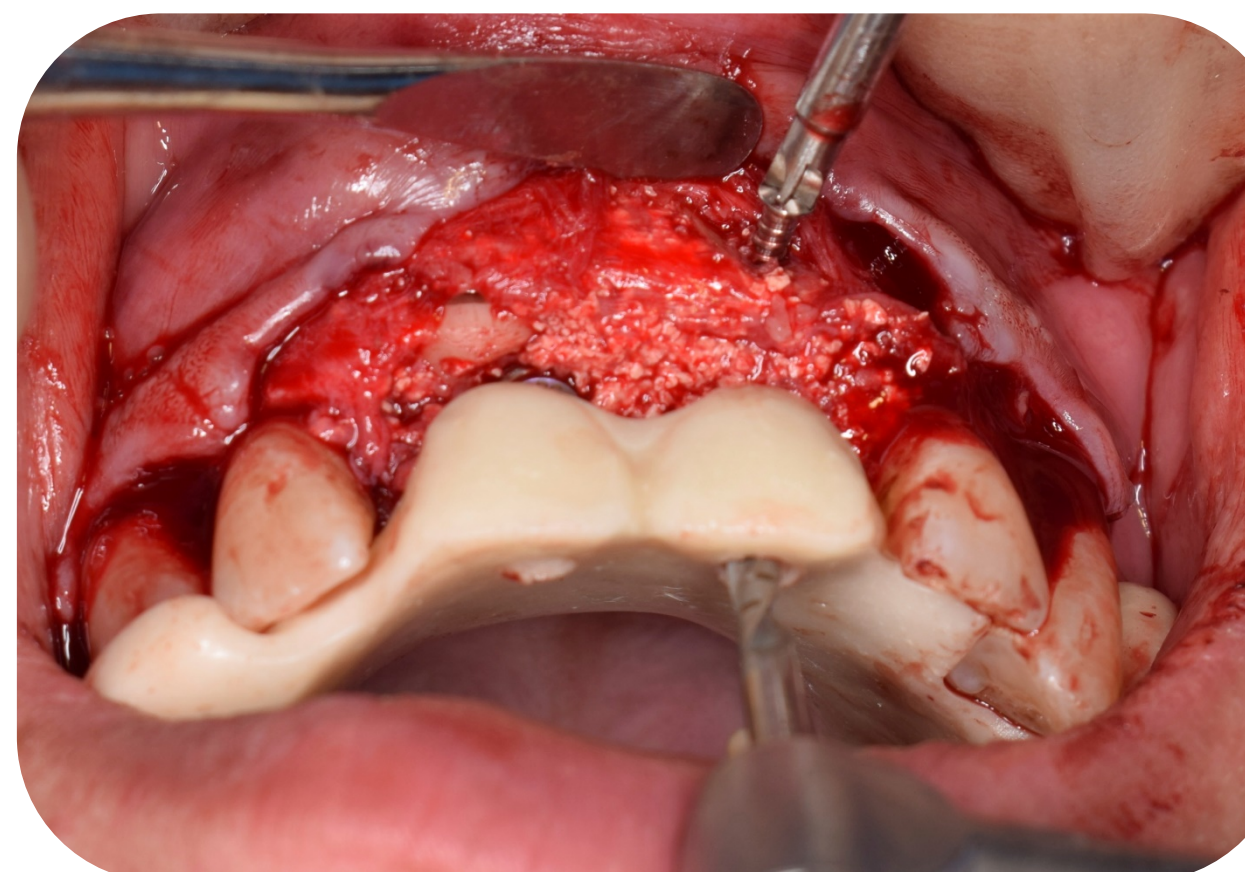
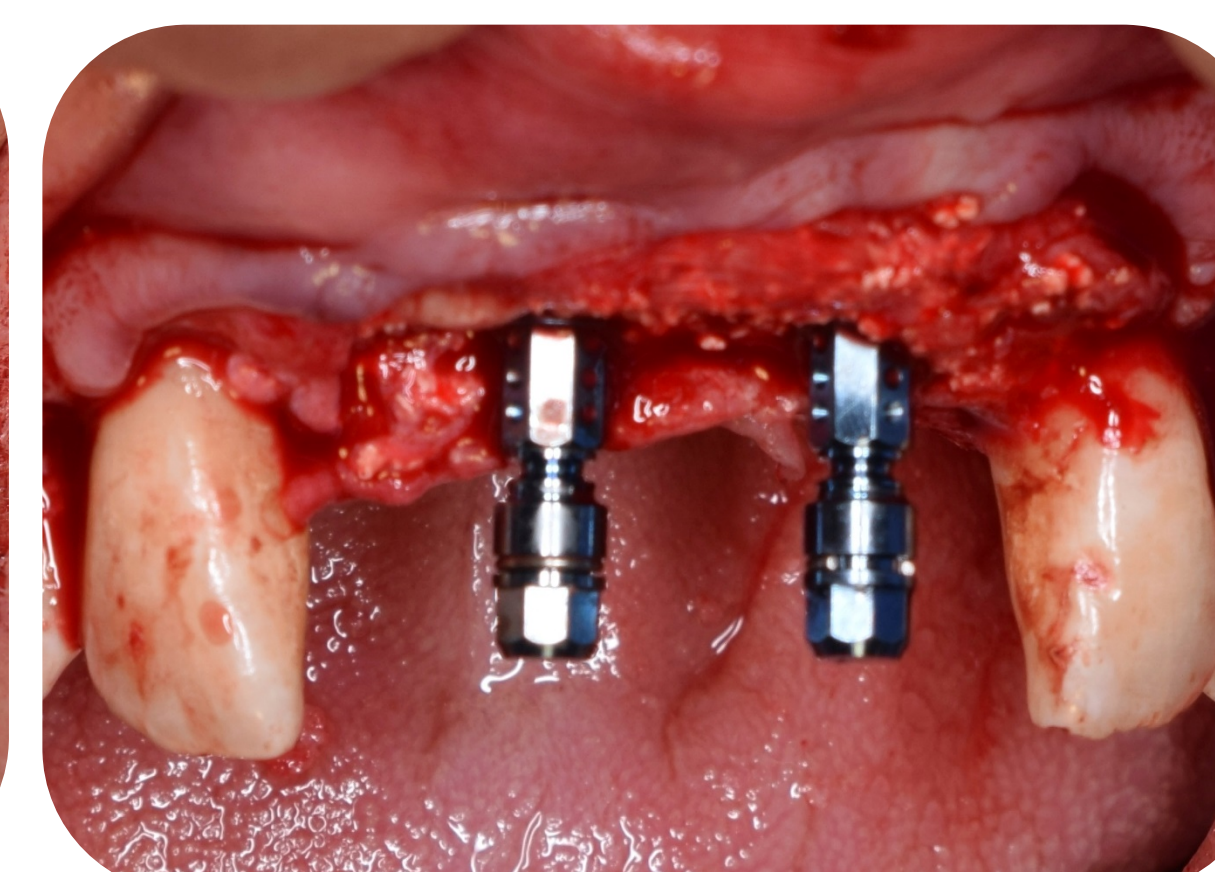
Free gingival graft harvesting from palate



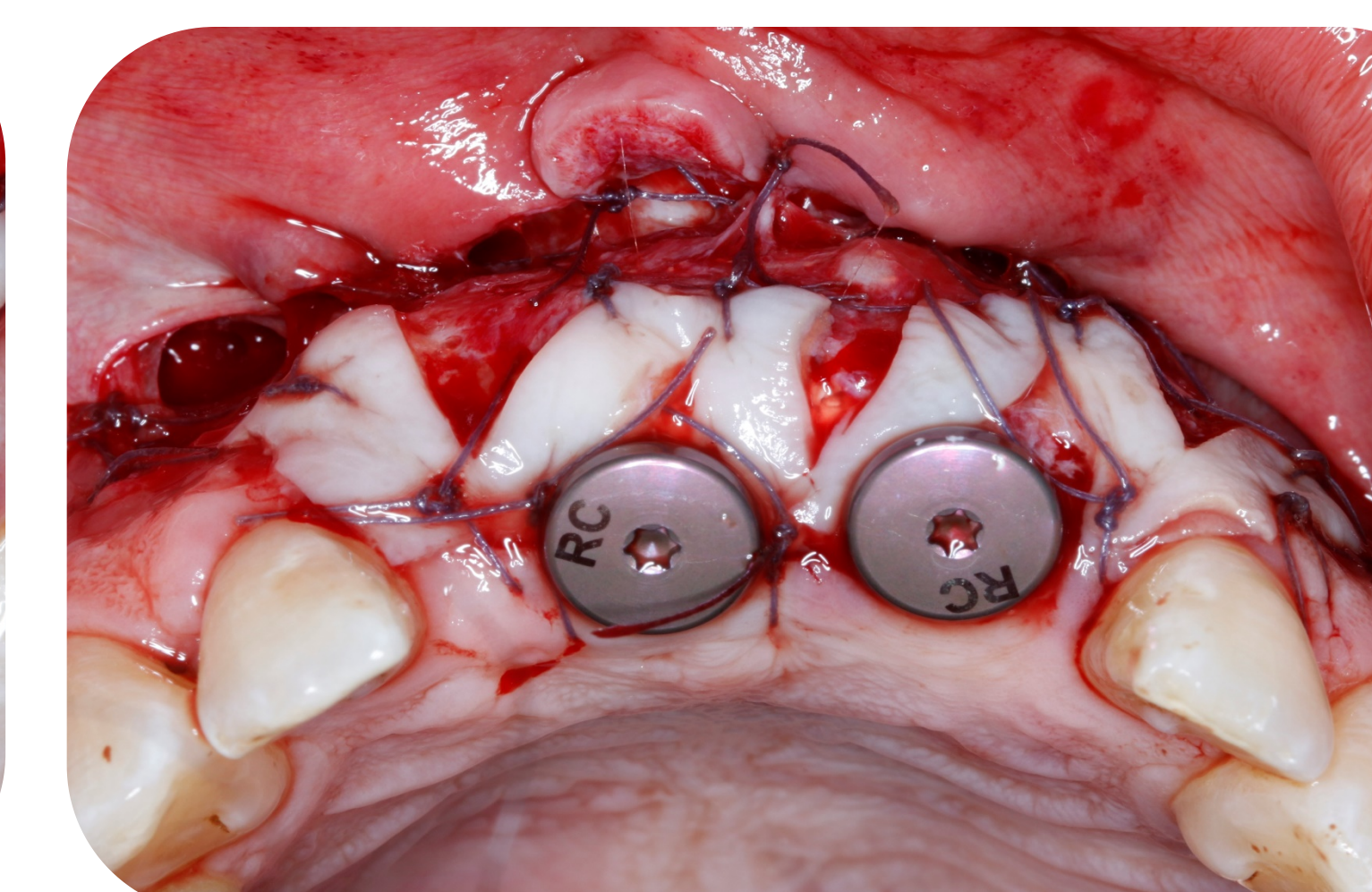
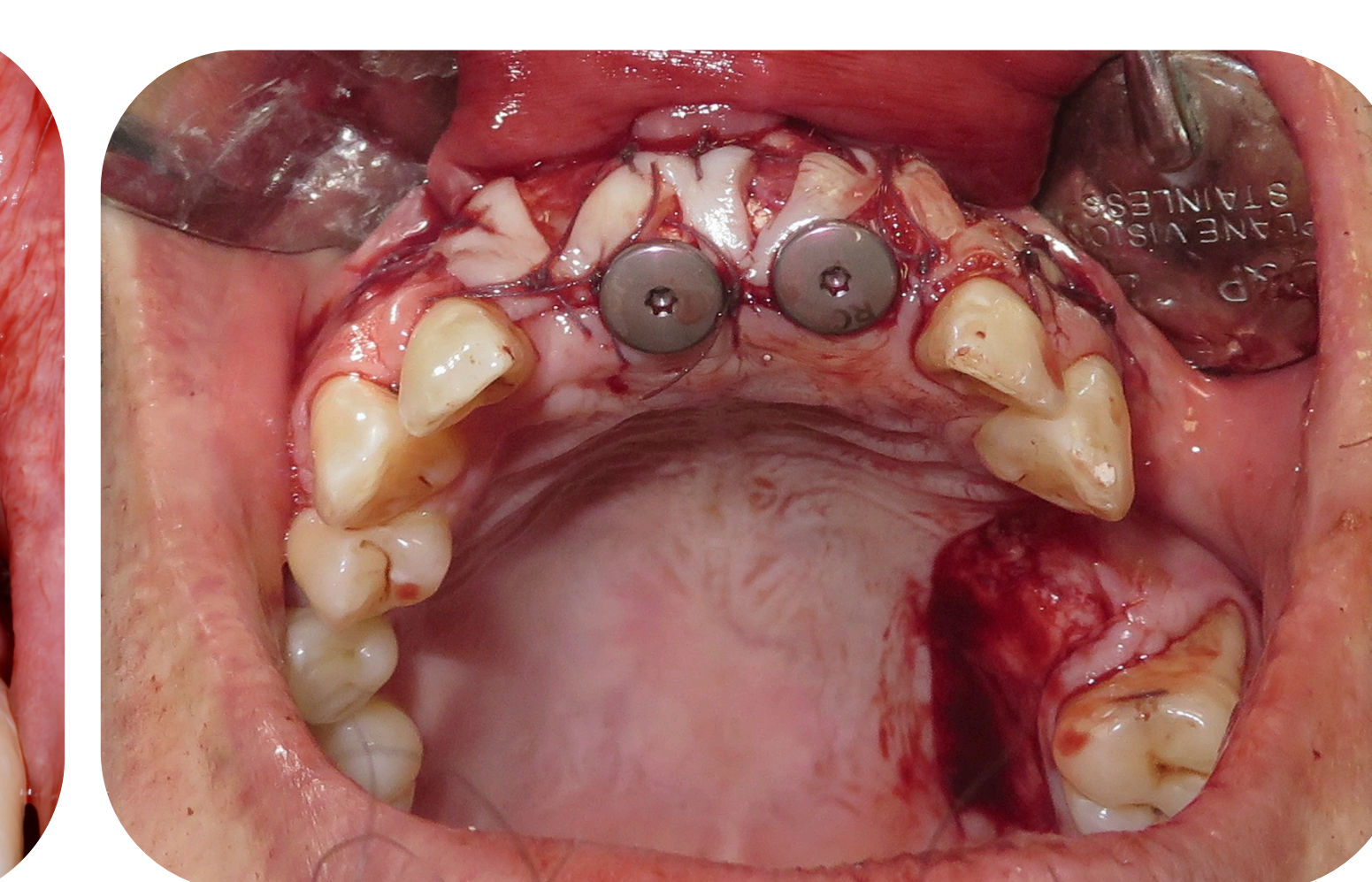
Stent was used for radiographic evaluation to locate optimal implant placement site.



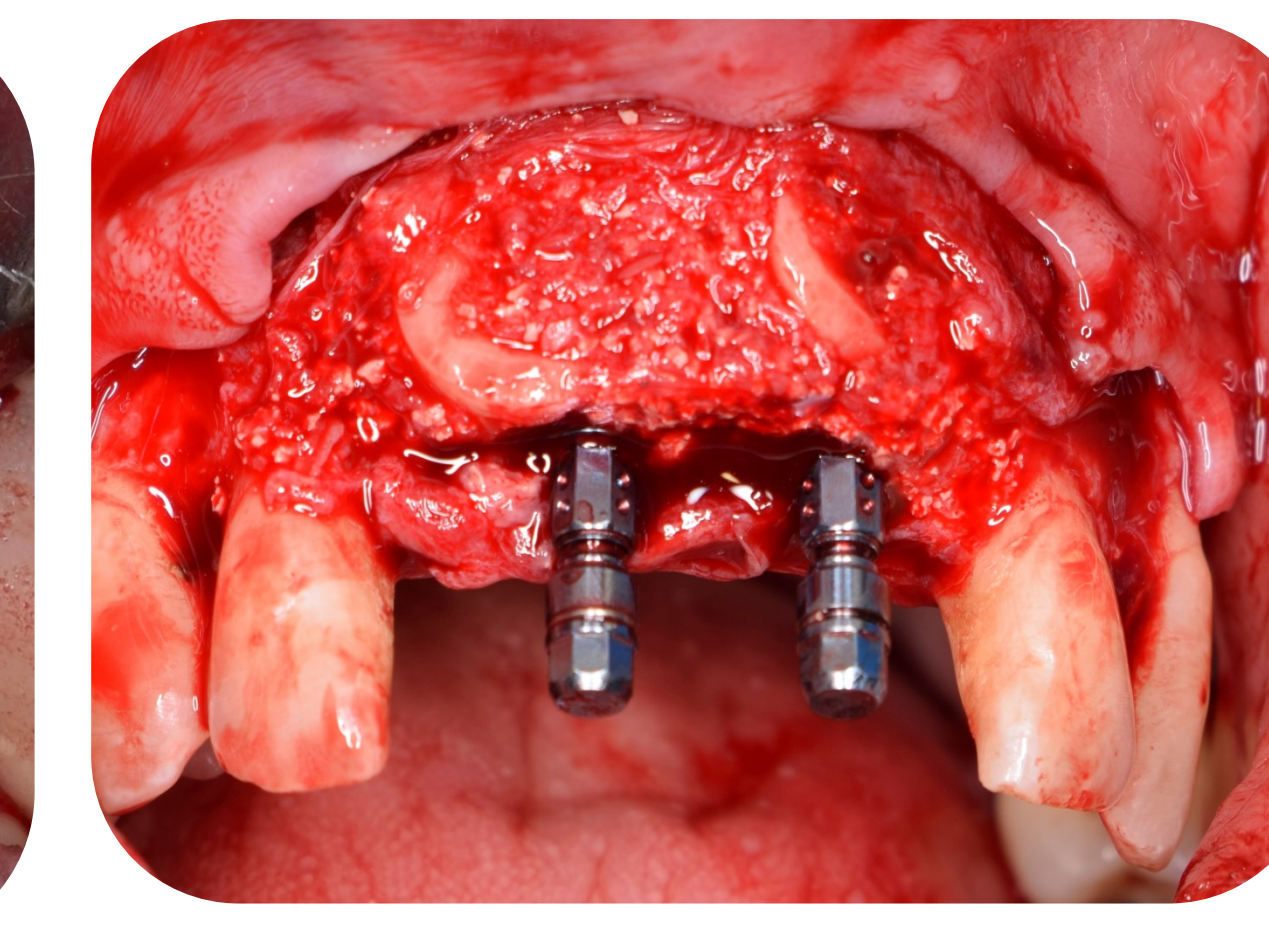
Accordion technique was used to increase the free gingival graft length



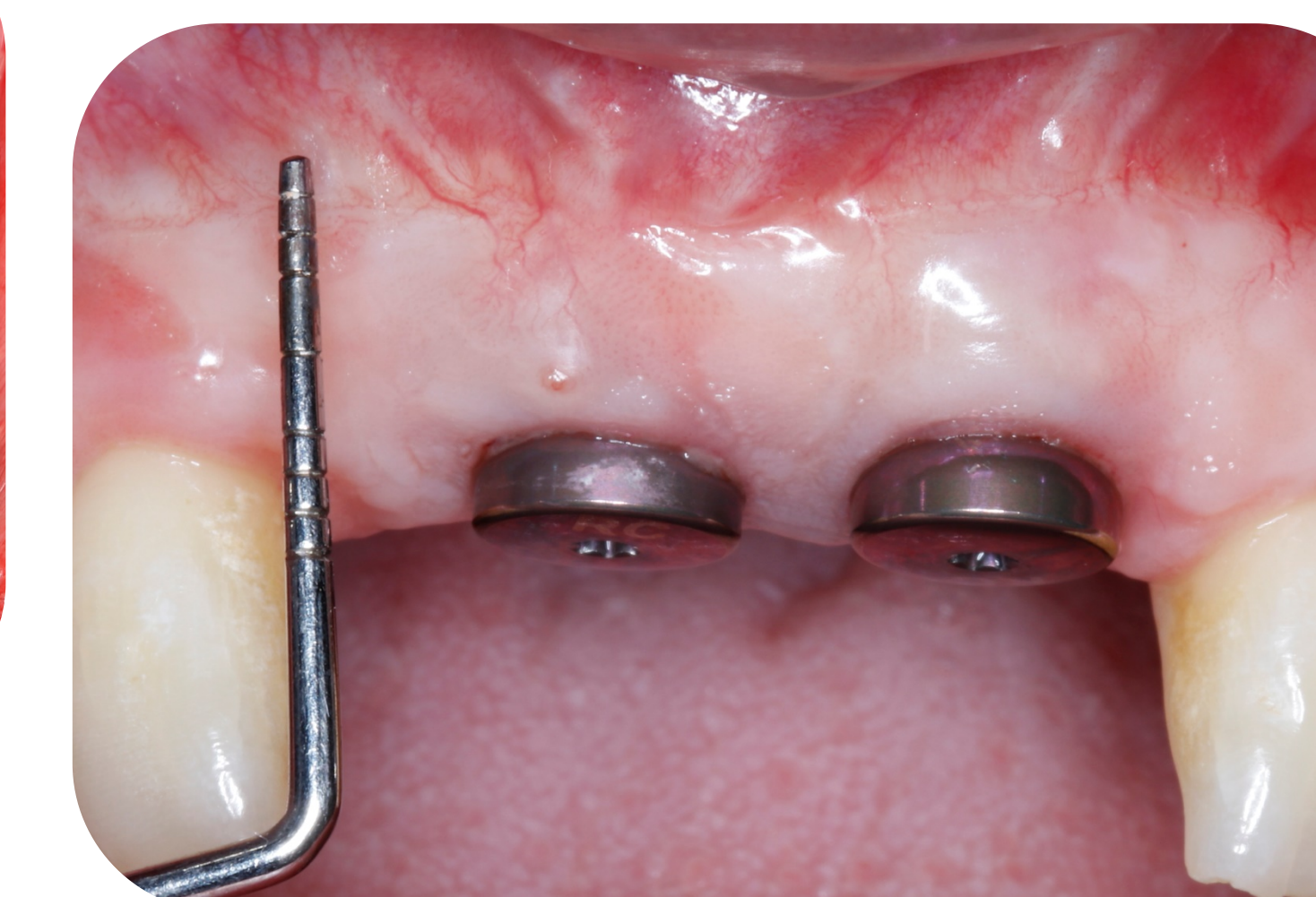
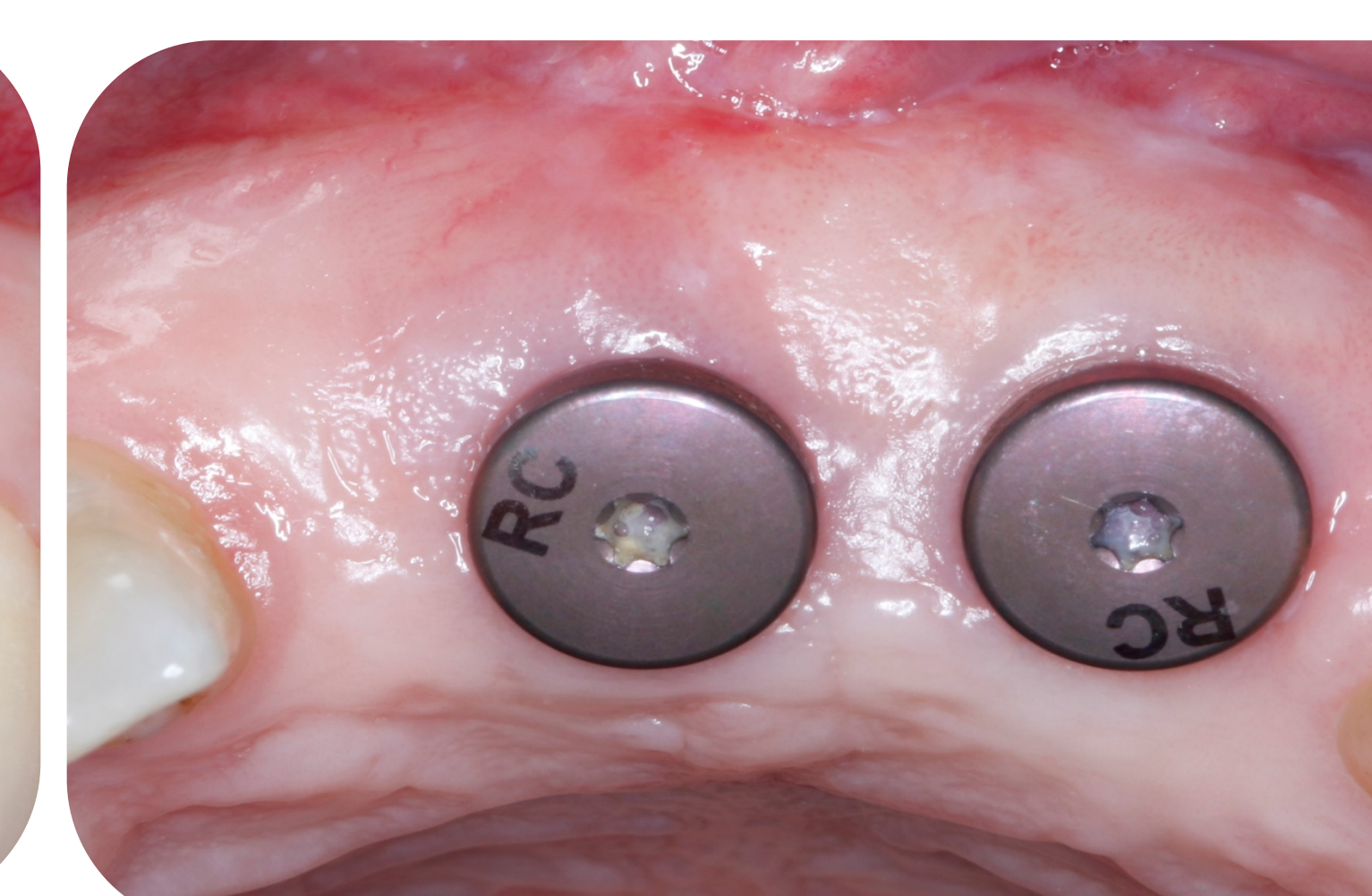
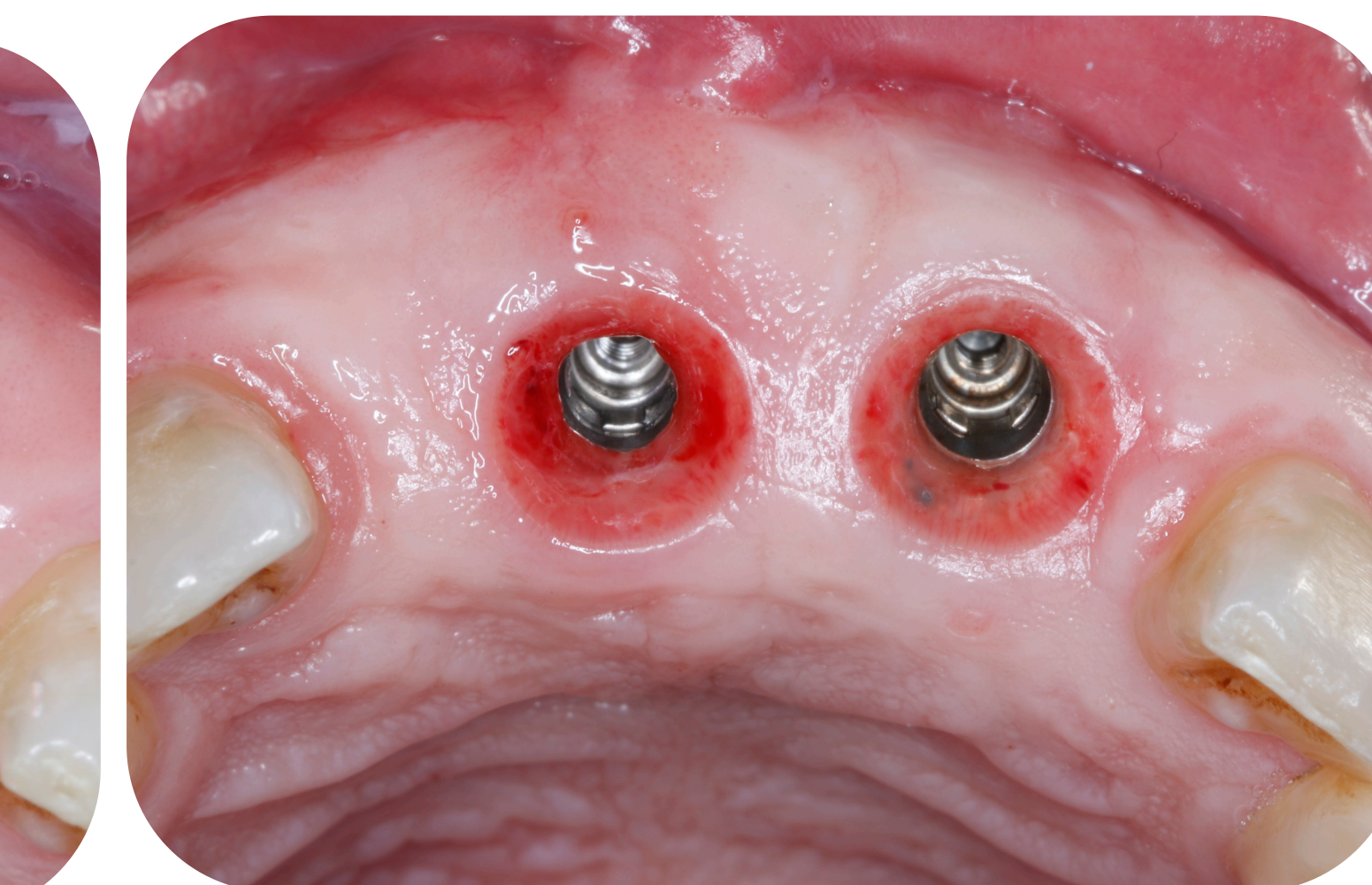
prosthetically driven implant placement



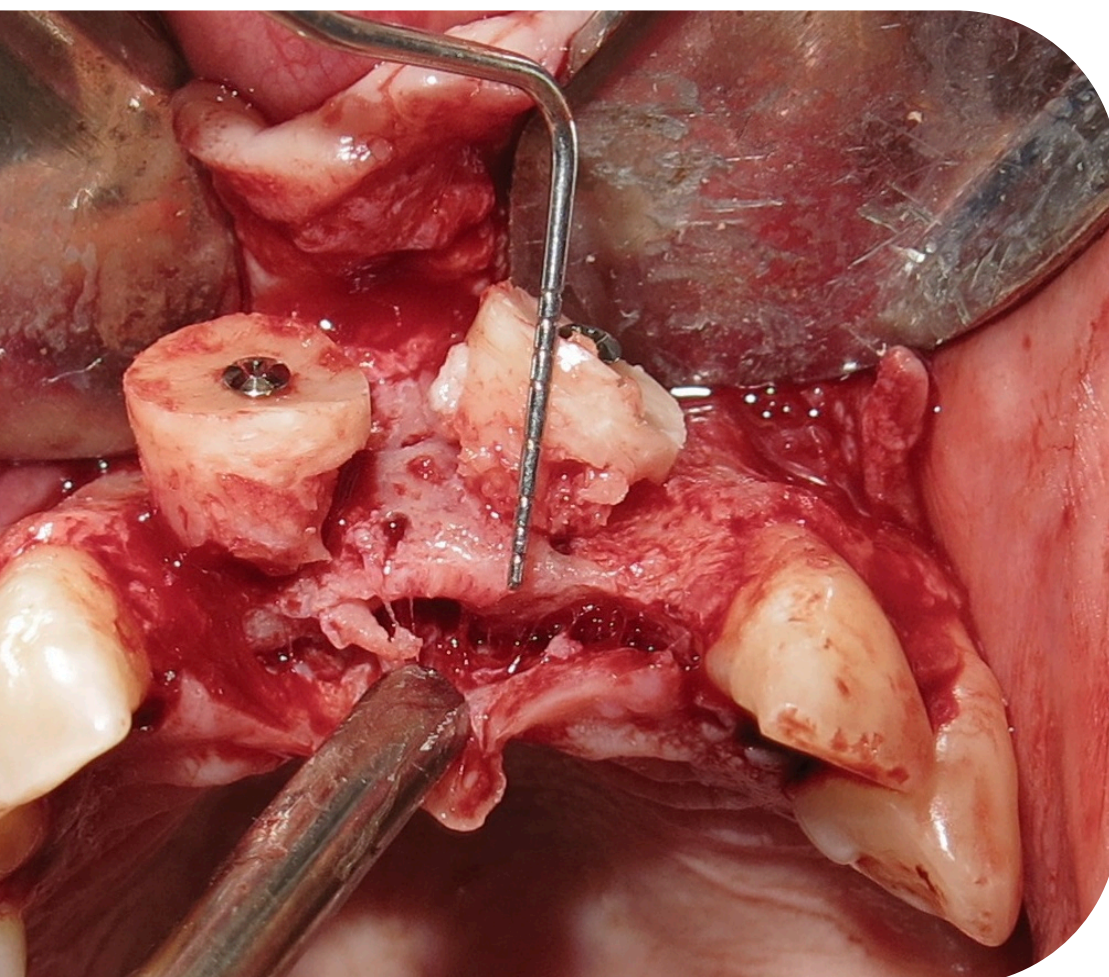
Soft tissue graft fixation with interrupted sutures



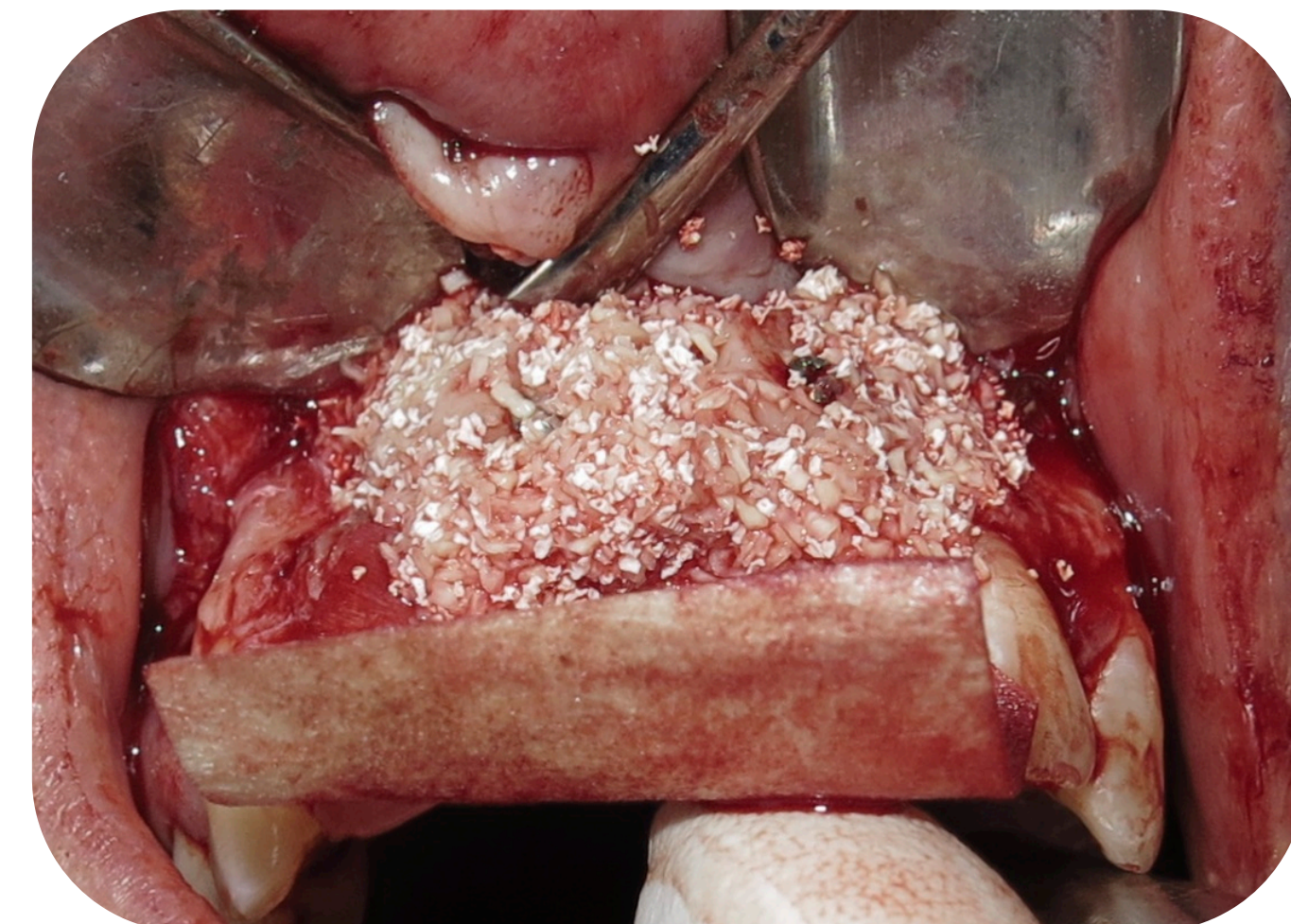
Some of augmented bone was scrapped with a bone scraper to obtain desirable bone contour.



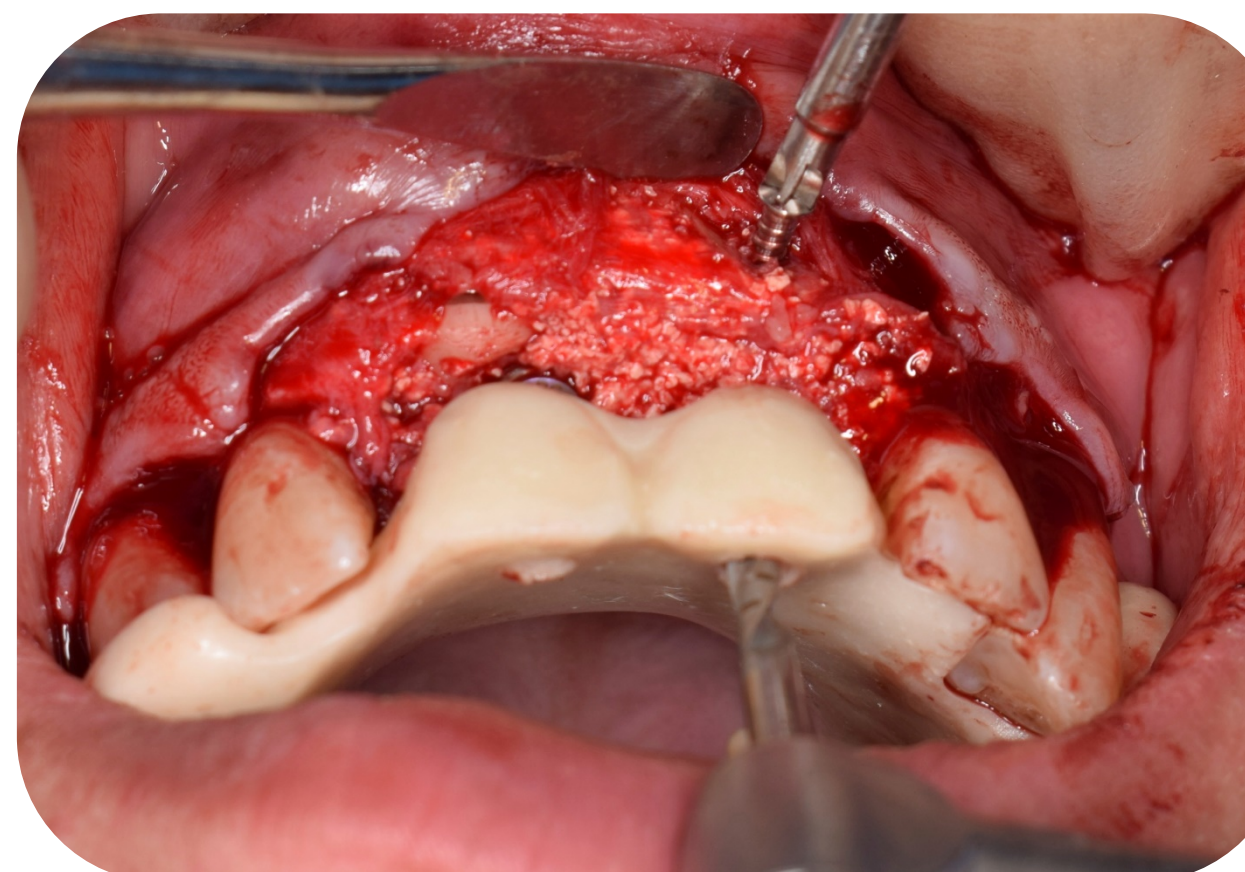
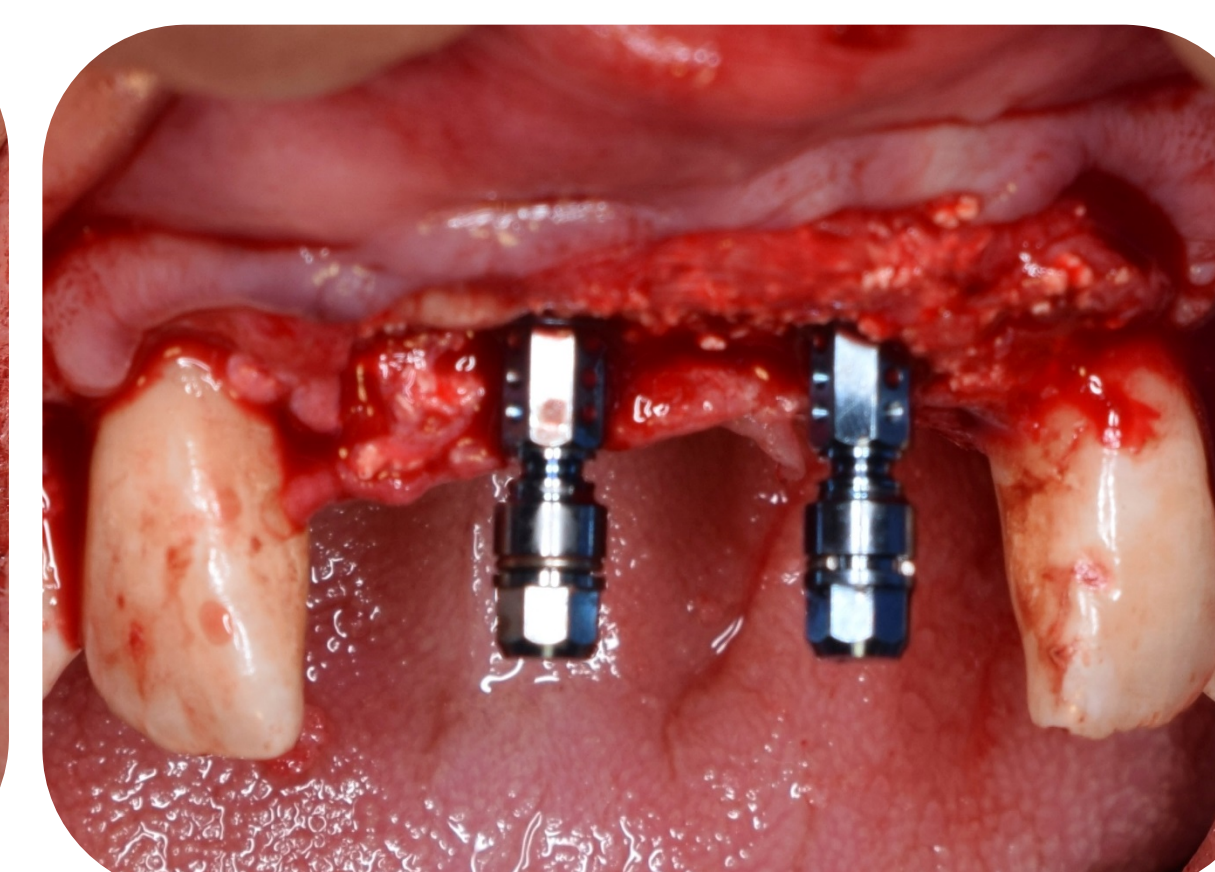
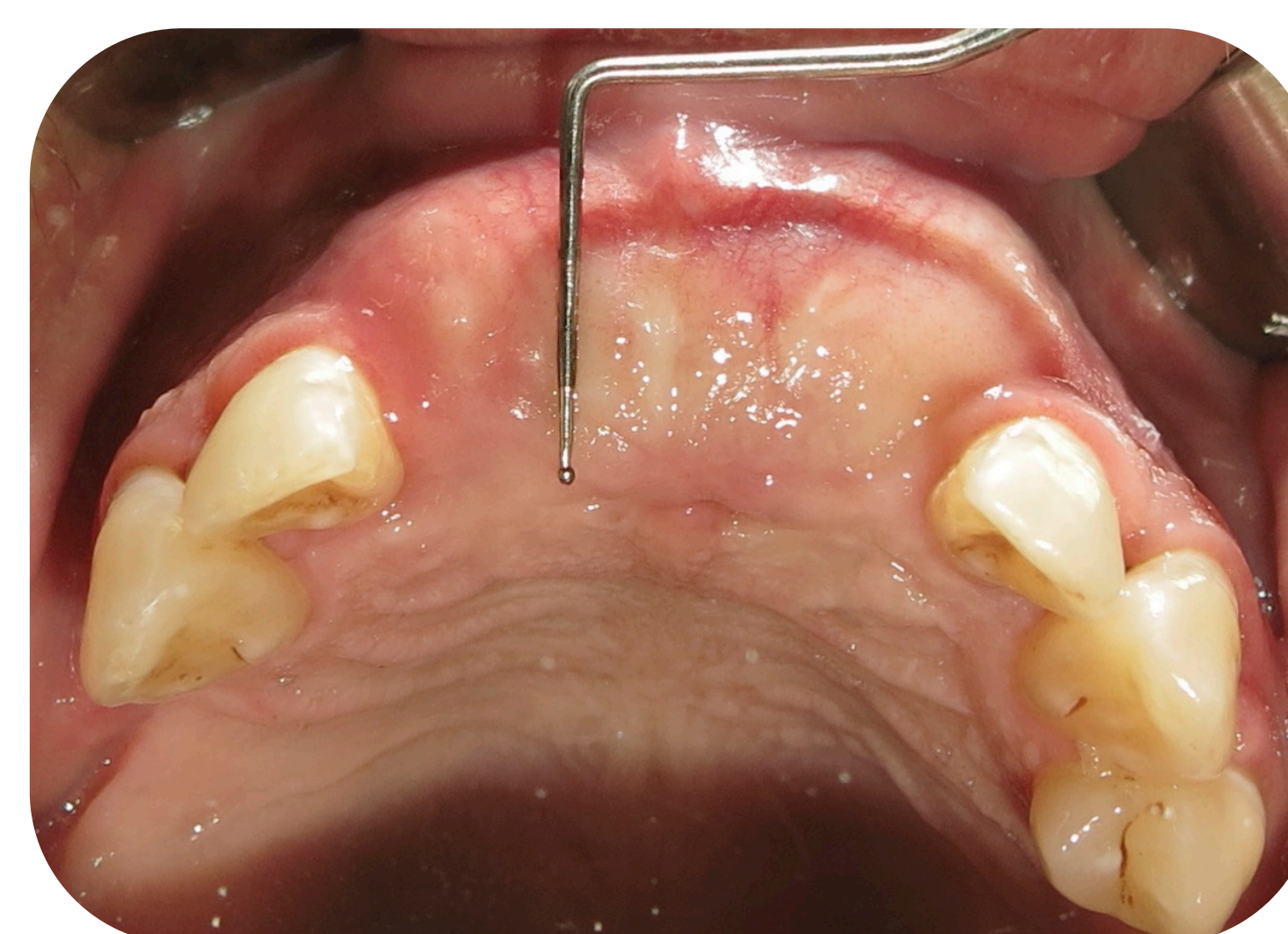
Clinical view after 2 months. A significant increase in attached keratinized mucosa with favorable color match was achieved.



Autogenous bone blocks was fixed and protected by DBBM



The use of double-layer collagen membrane



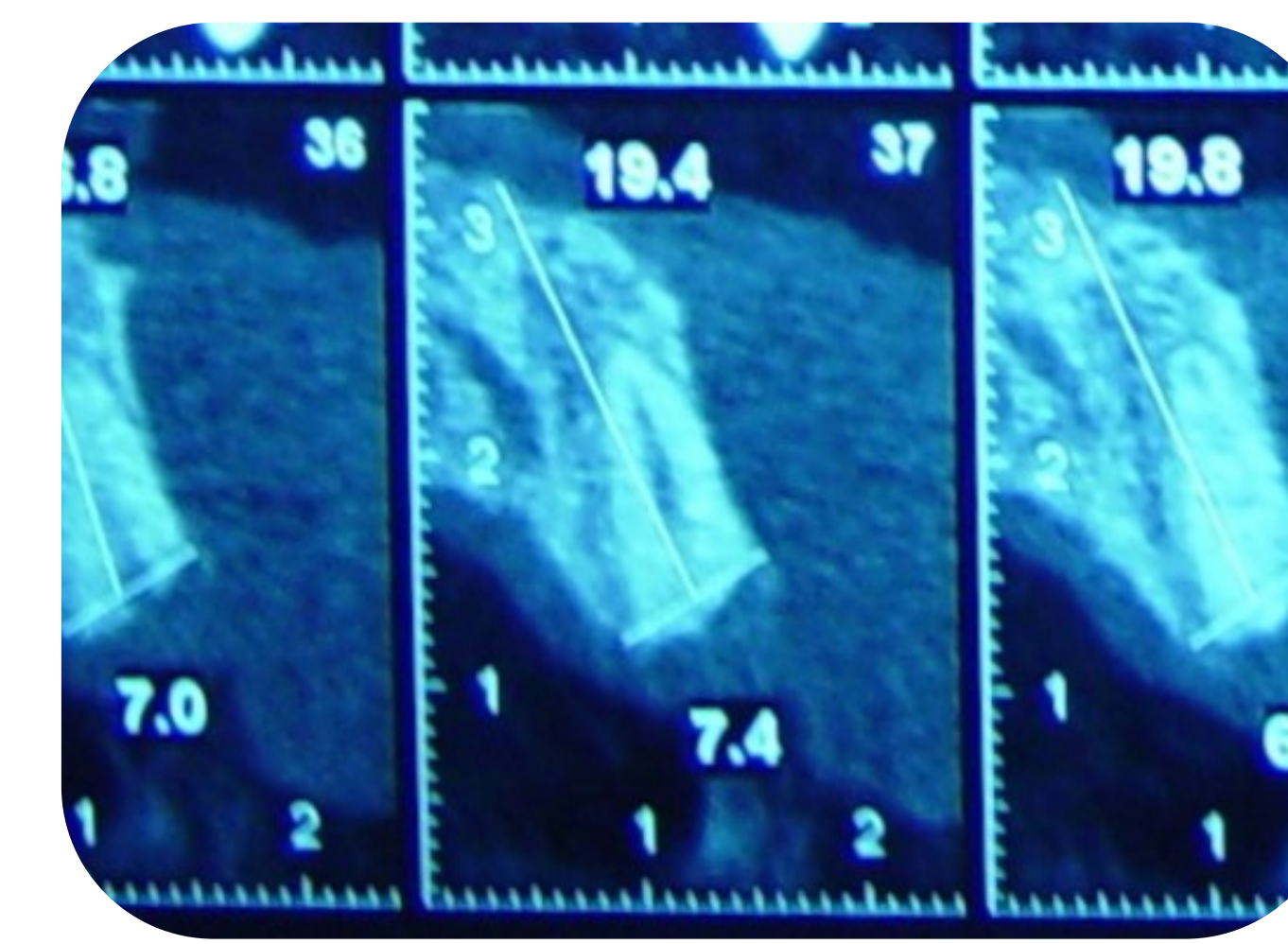
Clinical view after 4 months. Note to excellent contour and width of augmented ridge.

Methods continued...

Case2: Autogenous semilunar shape bone block was harvested from fresh extraction third molar socket. After preparation of a guide hole in incisor extraction socket, bone block was placed in the facial aspect of this socket. Simultaneously with implant insertion, the block was pushed to the residual bone plate and fixed without any screw. Then soft tissue was augmented using a free connective tissue graft (CTG).



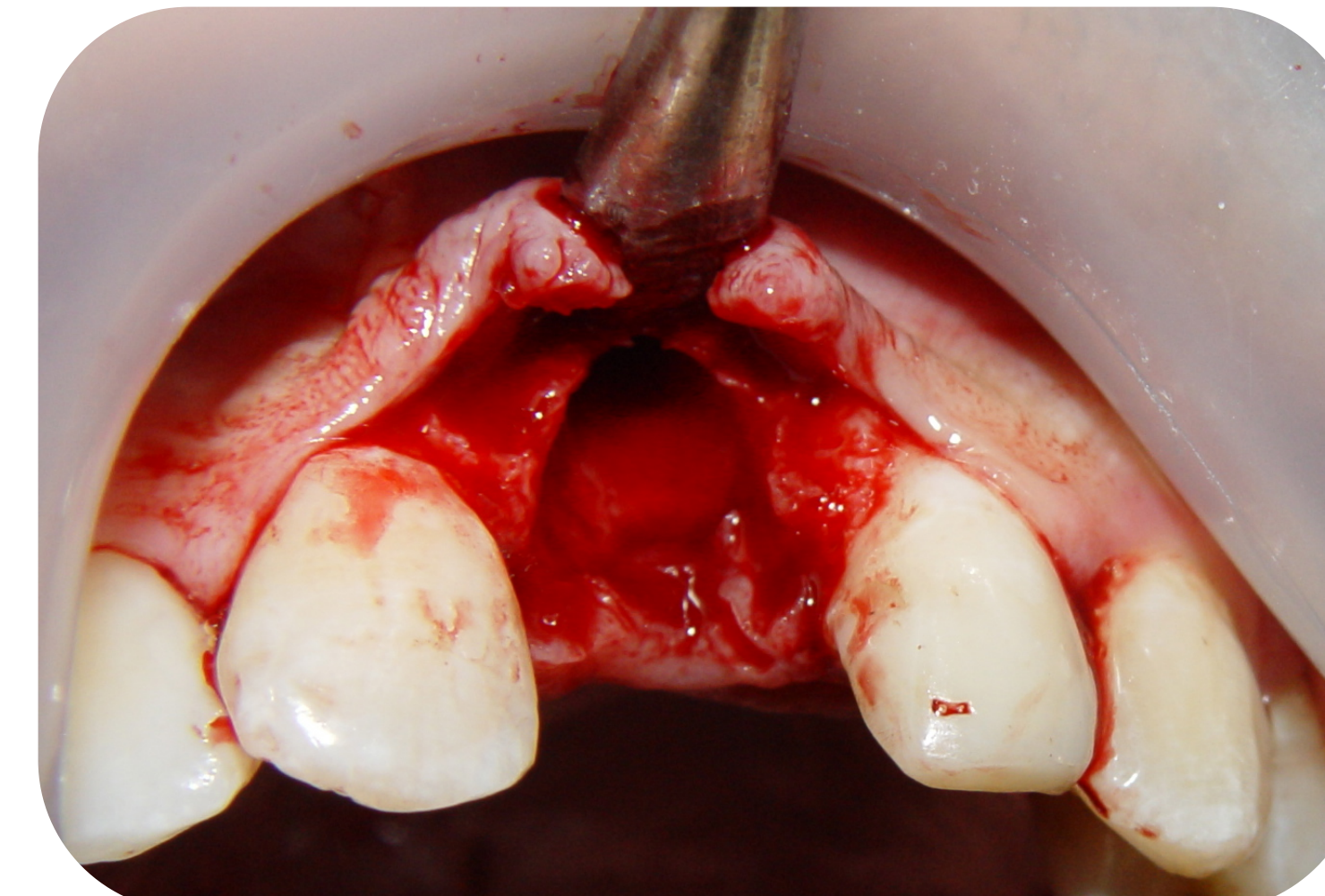
Case2: Hopeless maxillary left central incisor



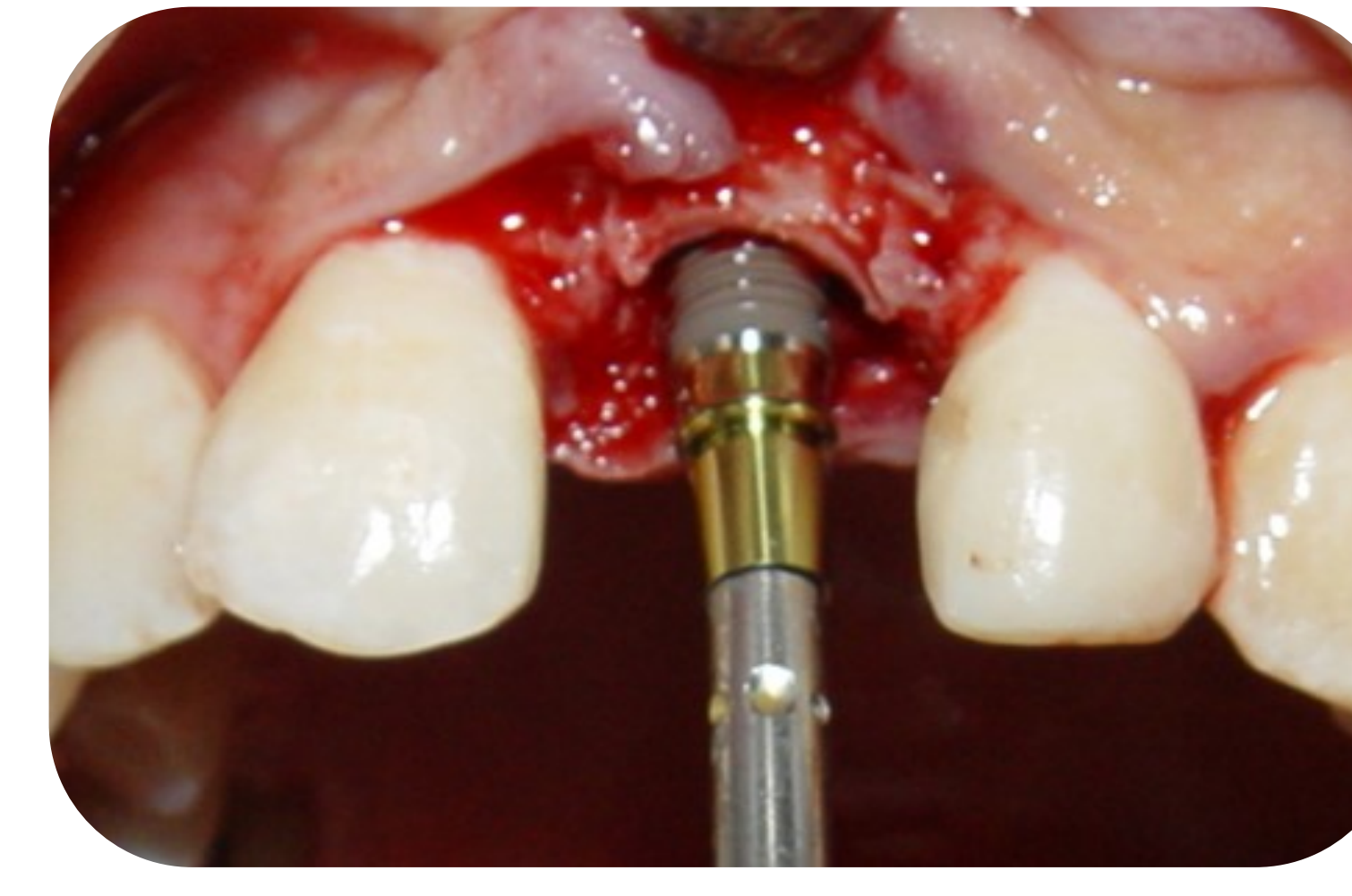
Baseline cross-sectional view



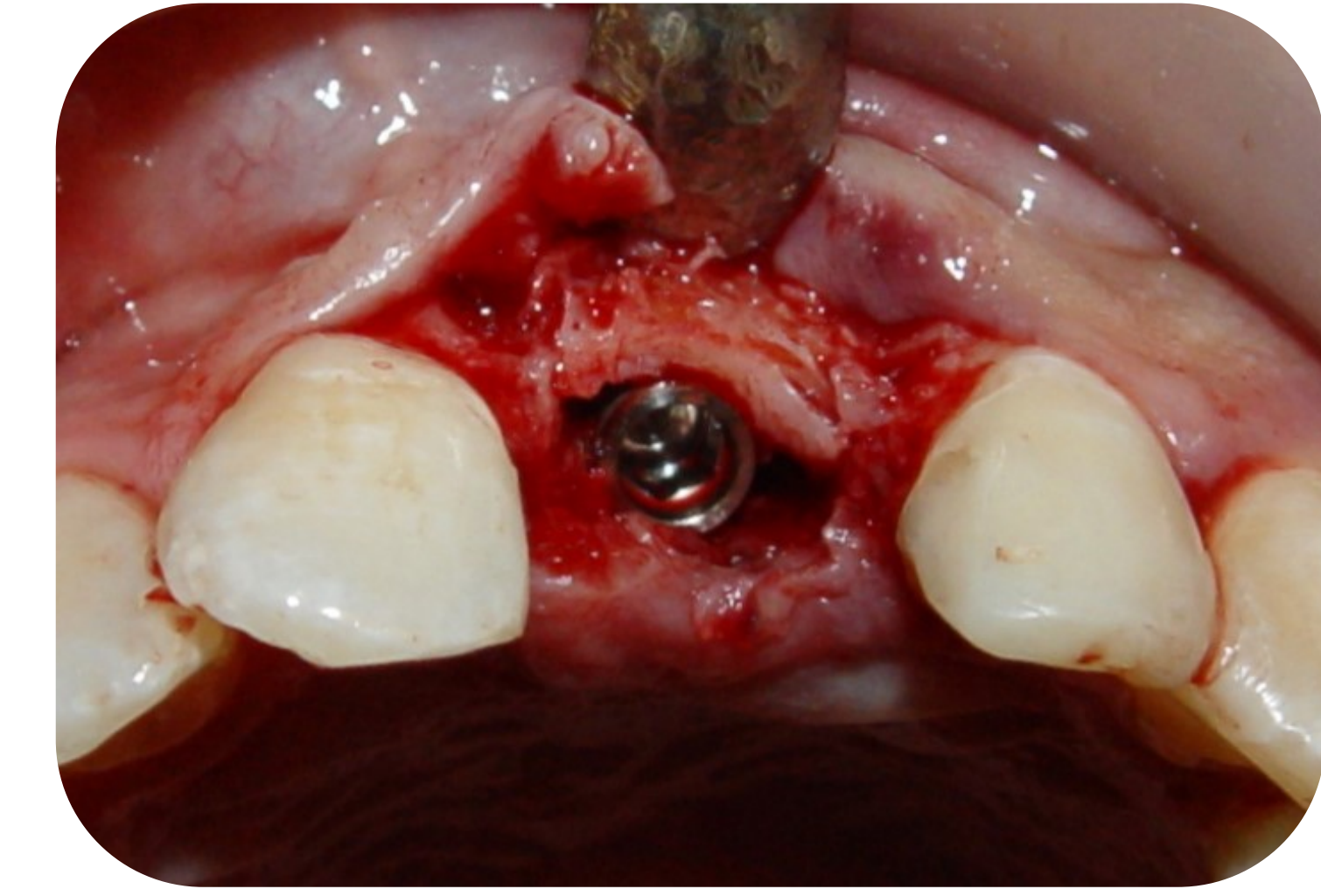
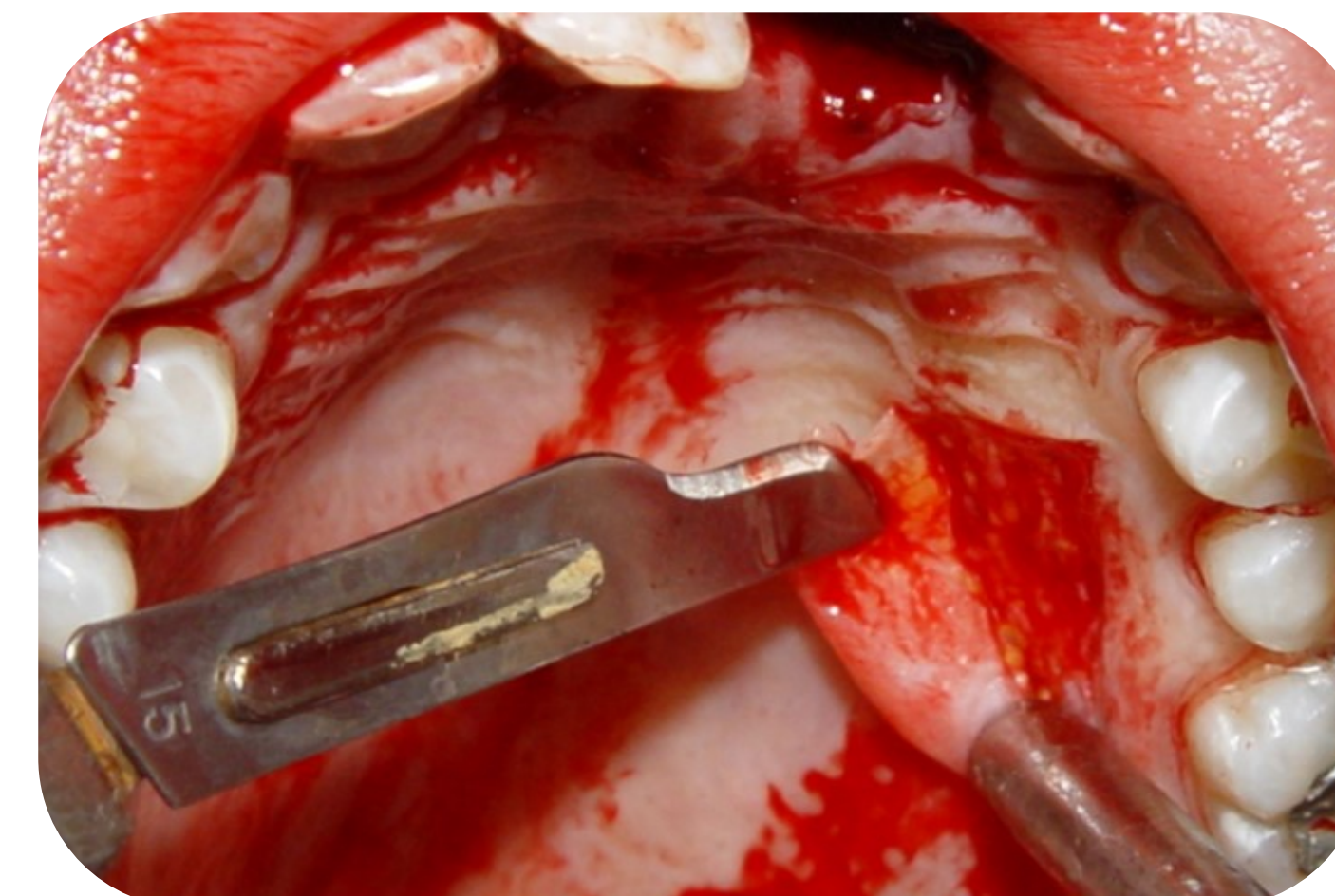
semilunar shaped bone block was harvested from fresh extraction third molar socket.



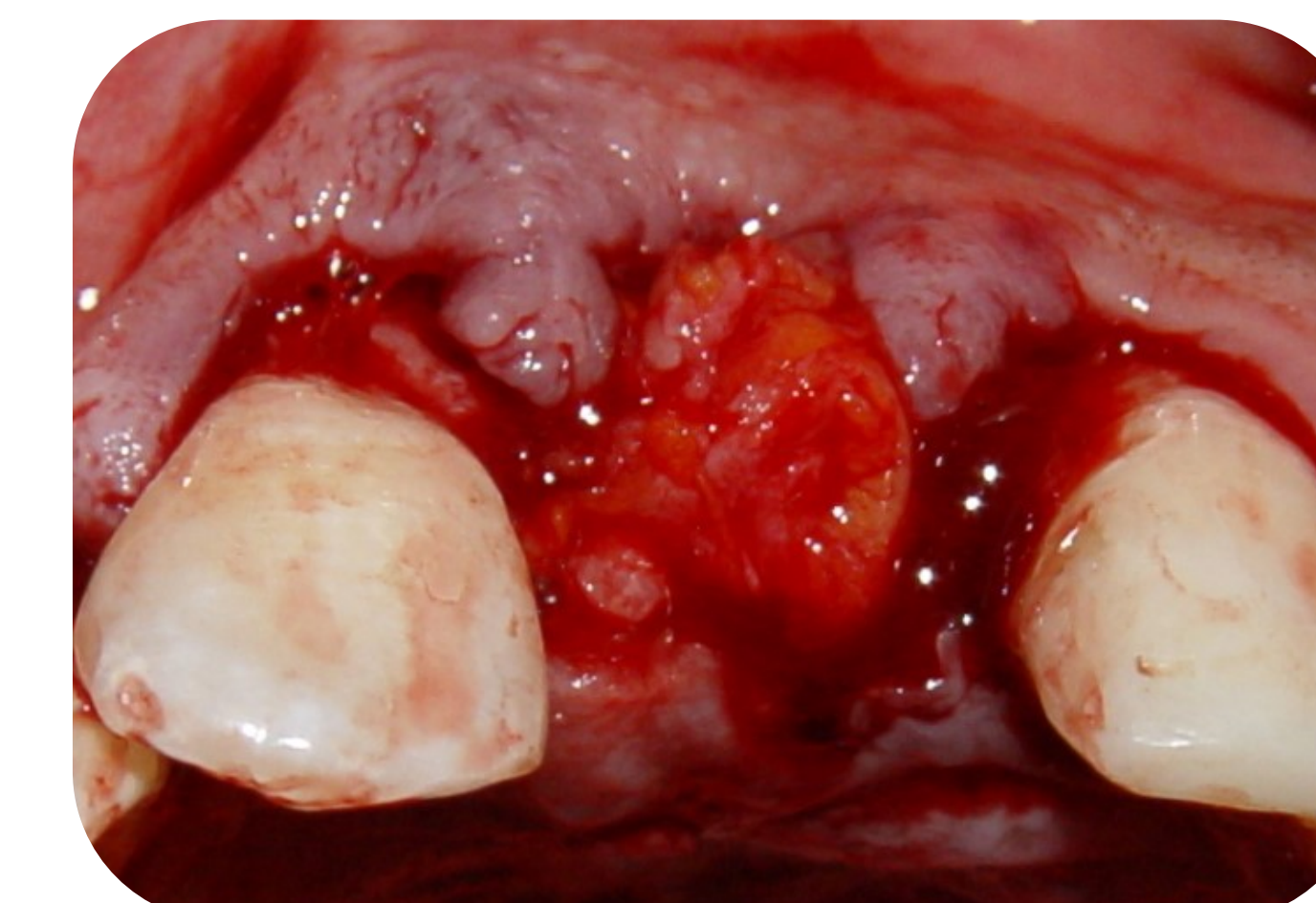
Mucoperiosteal flap was reflected. Bone block was placed in the facial aspect of socket.



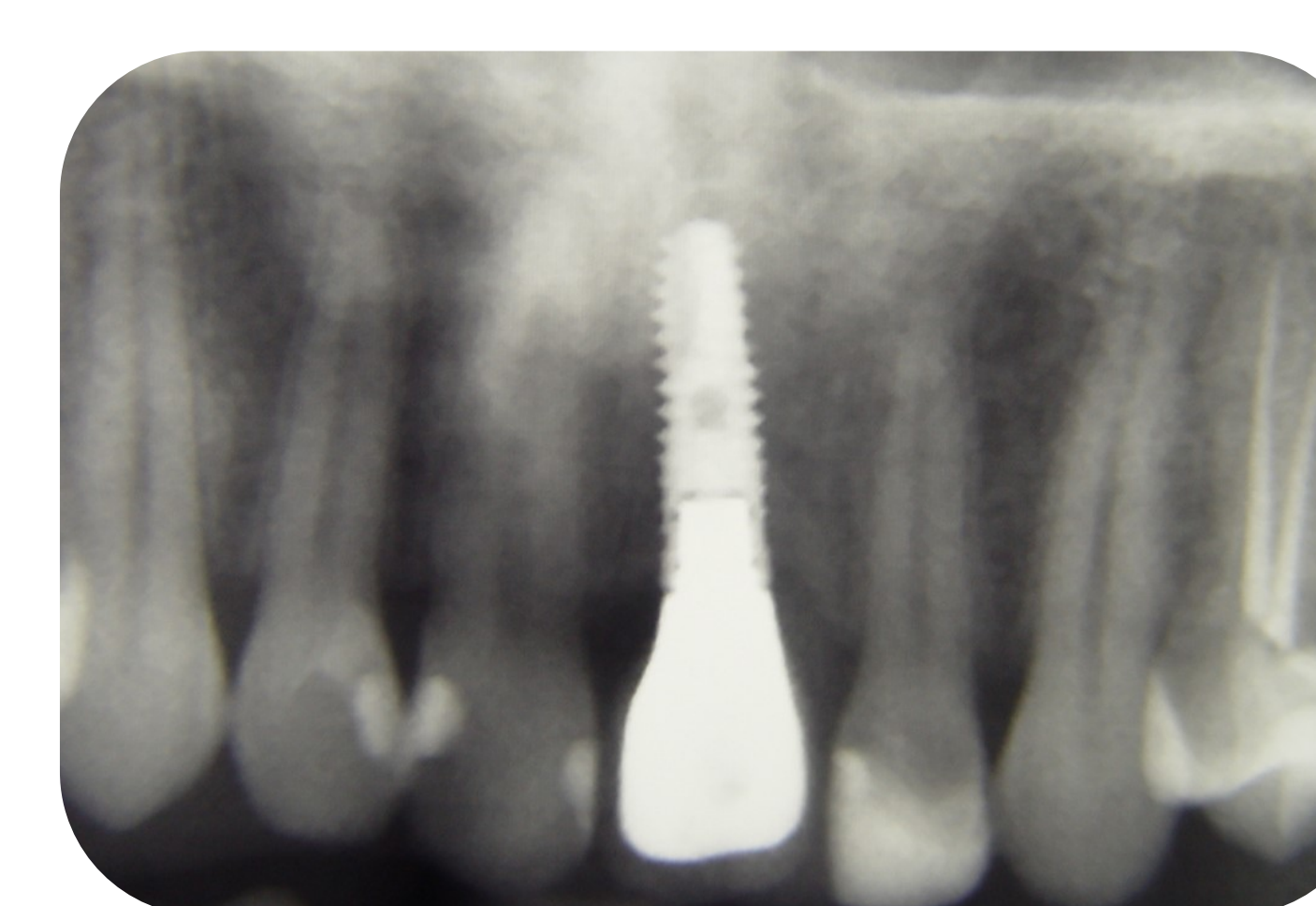
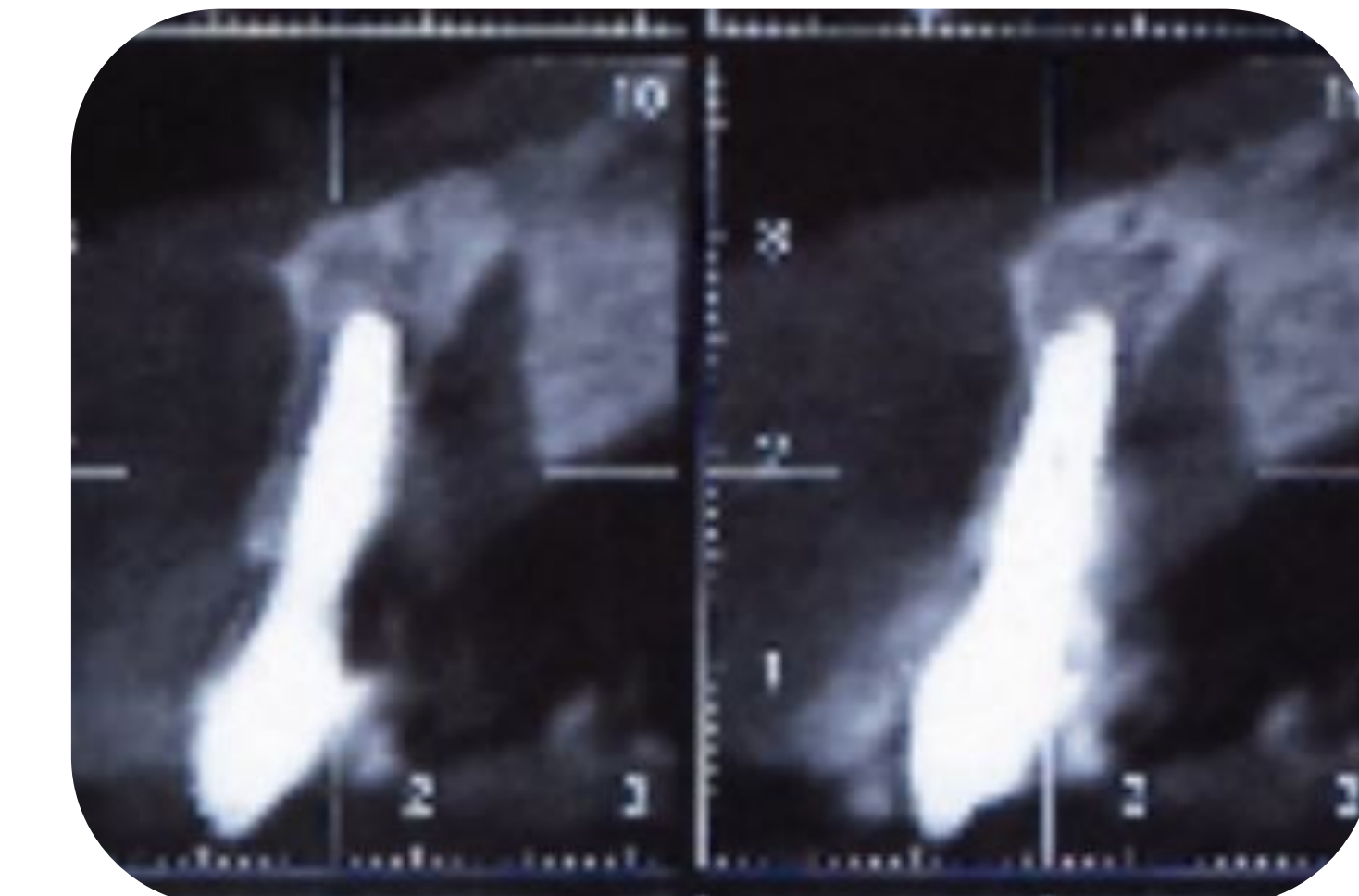
Simultaneously with implant insertion, the block was pushed to the residual bone plate and fixed without any screw.



Connective tissue graft harvesting



Soft tissue augmentation



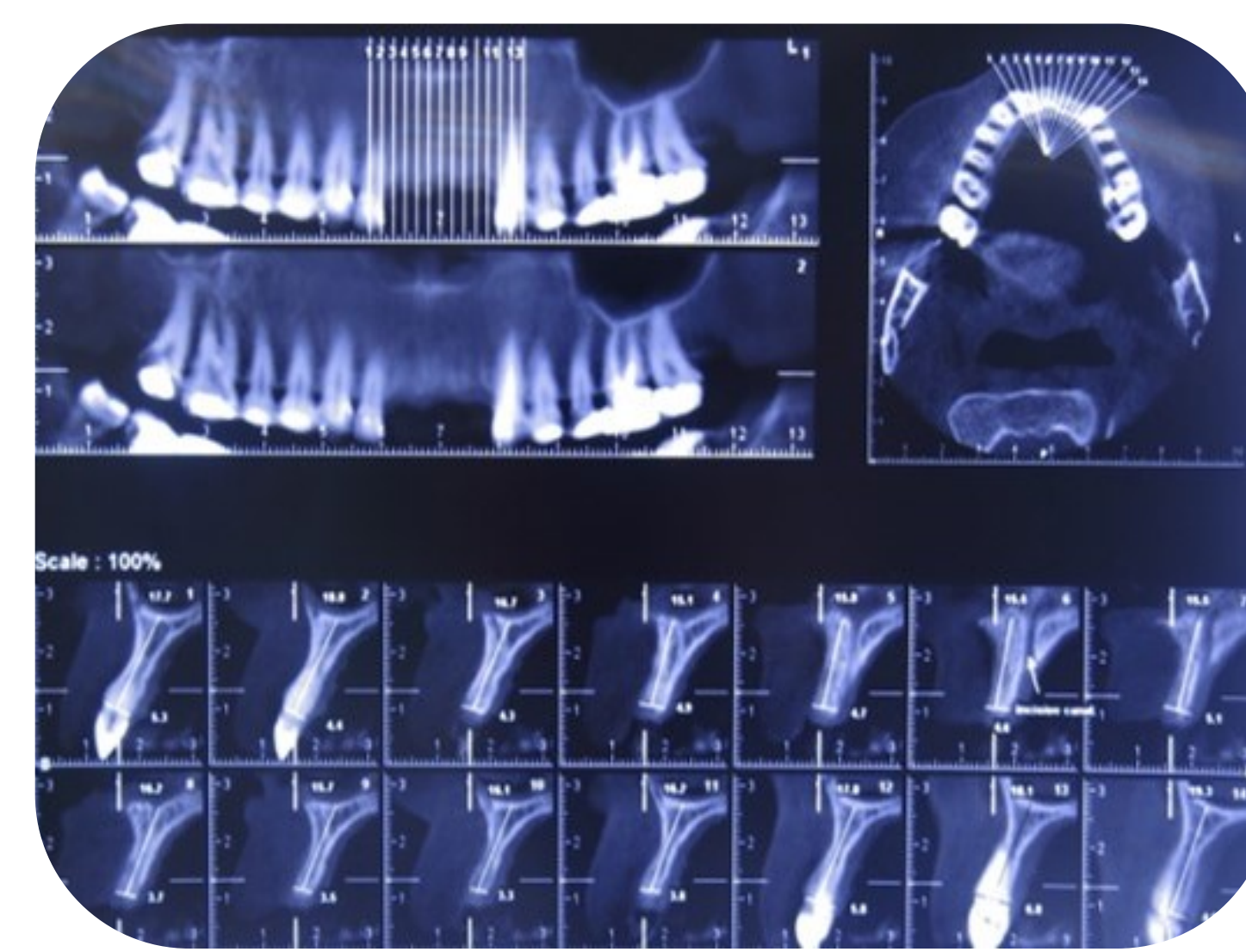
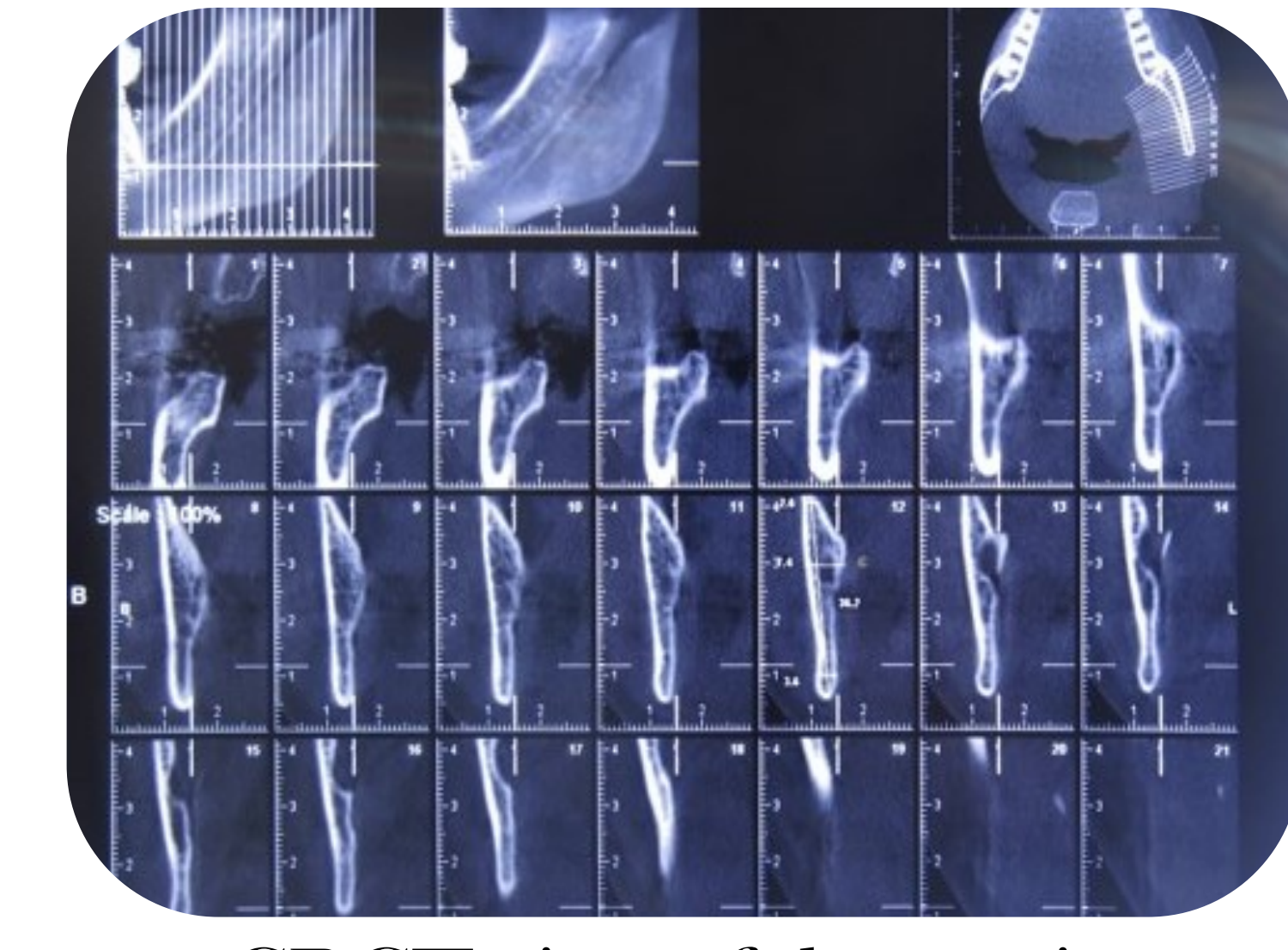
Clinical and radiographic views after 2 years. Note to excellent facial hard and soft tissue reconstruction.

Methods continued...

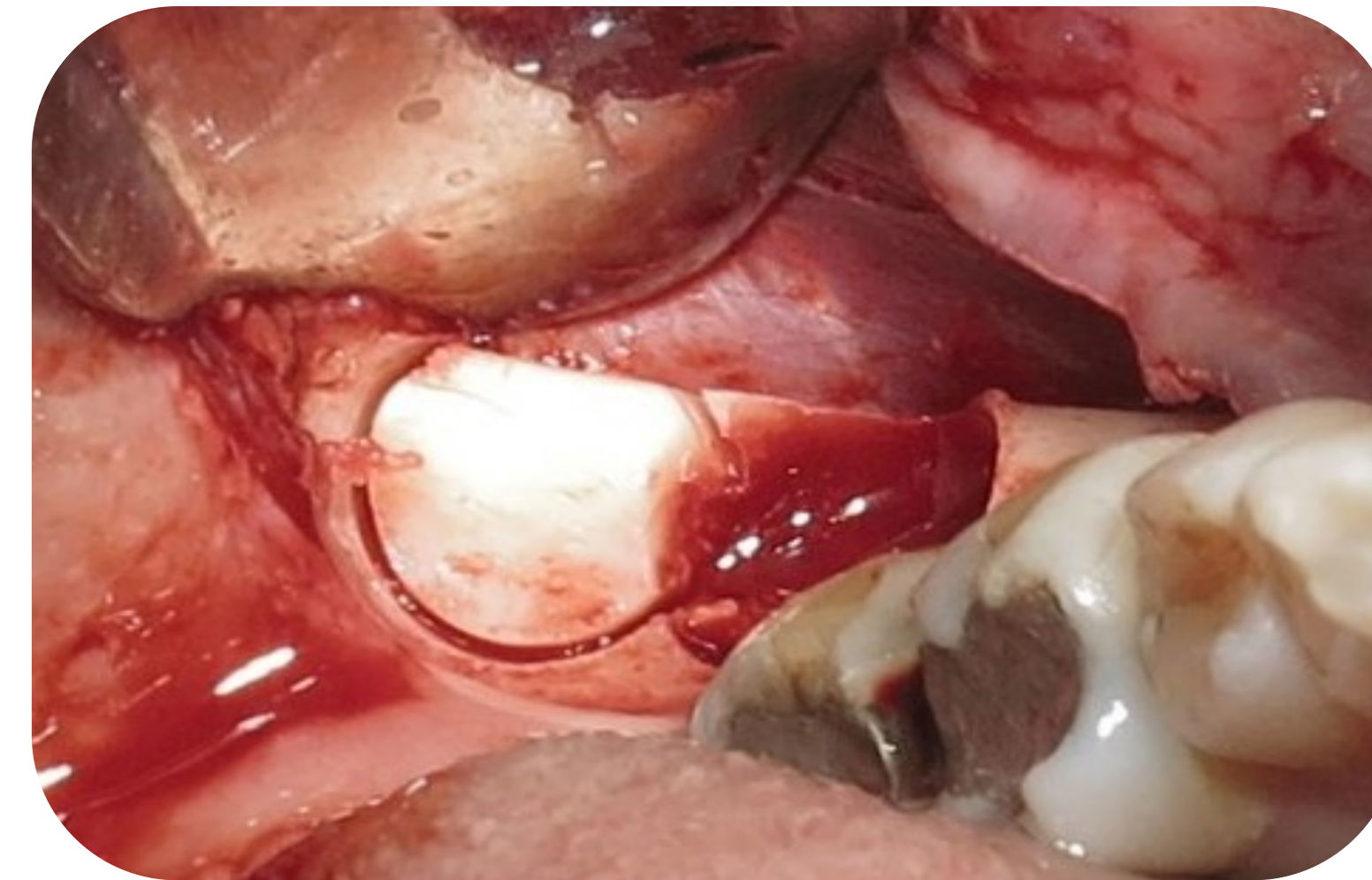
Case3: For hard tissue reconstruction, autogenous block bone was harvested from ramus and protected by DBBM. Implants were inserted after 4 months and then alloderm was used to prevent of flap advancement and formation of shallow vestibule.



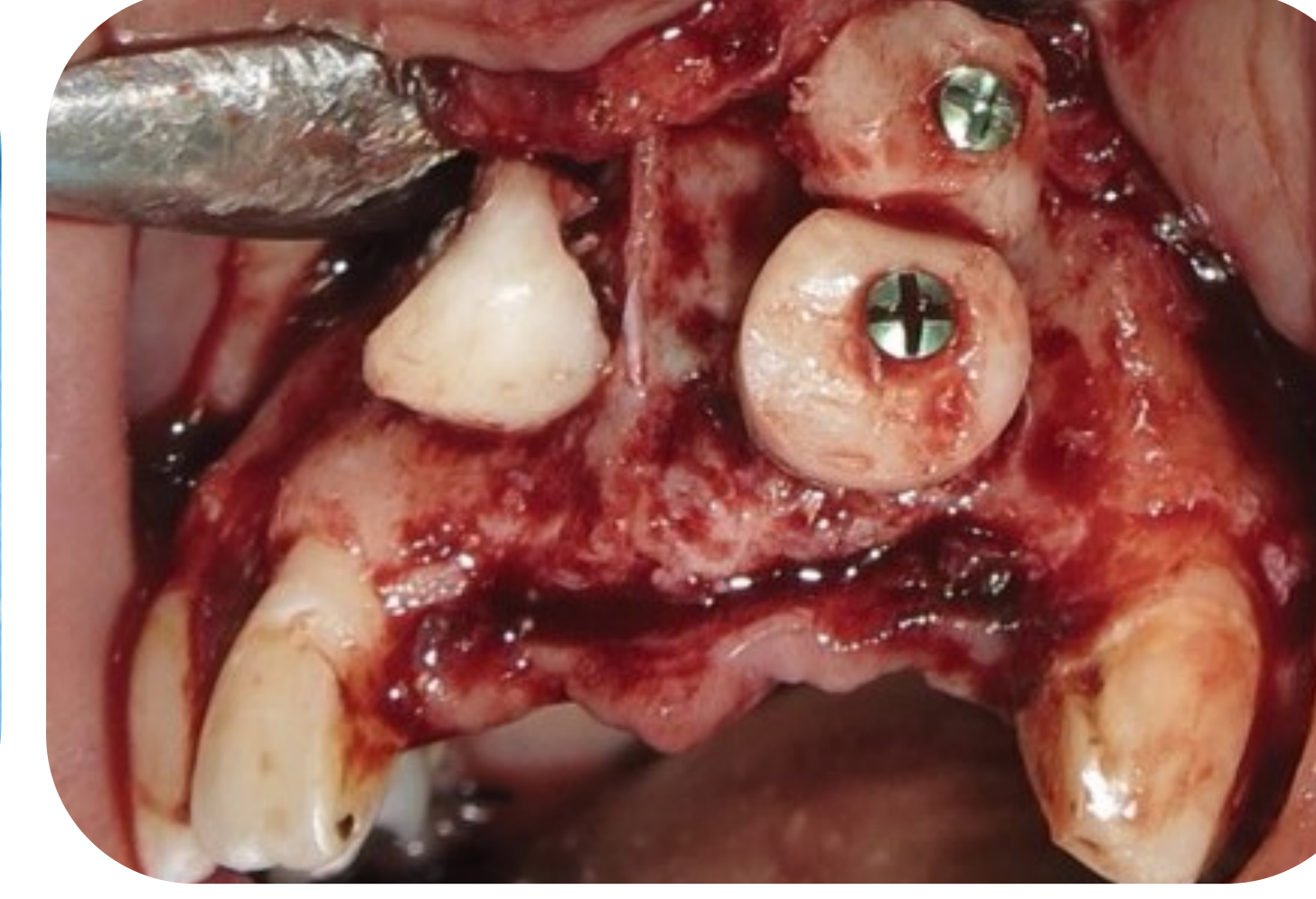
Case3: Preoperative clinical and radiographic view showing inadequate ridge width in anterior segment of maxilla



CBCT view of donor site (mandibular ramus)



8-shaped autogenous bone blocks was harvested from donor site using trephine



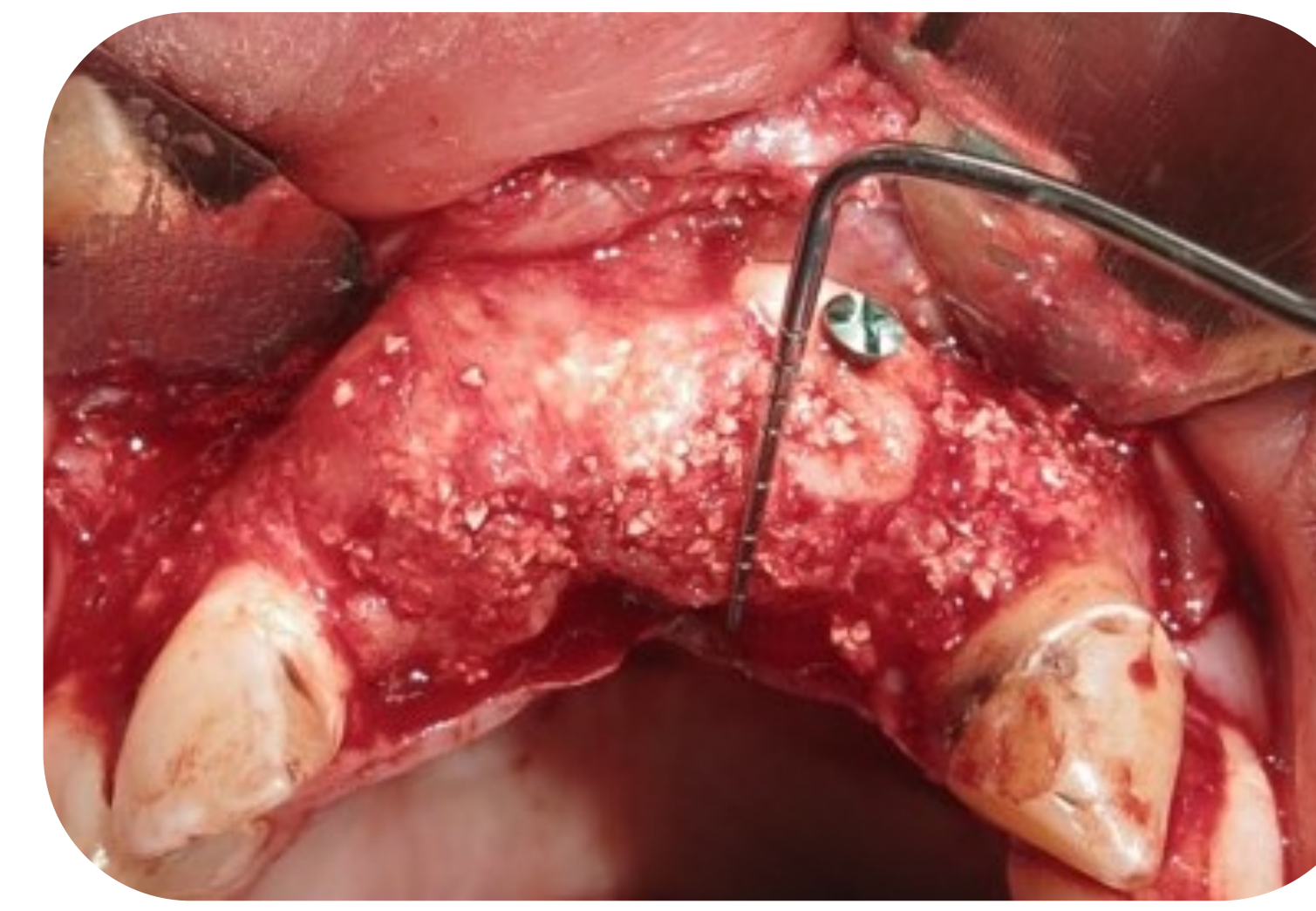
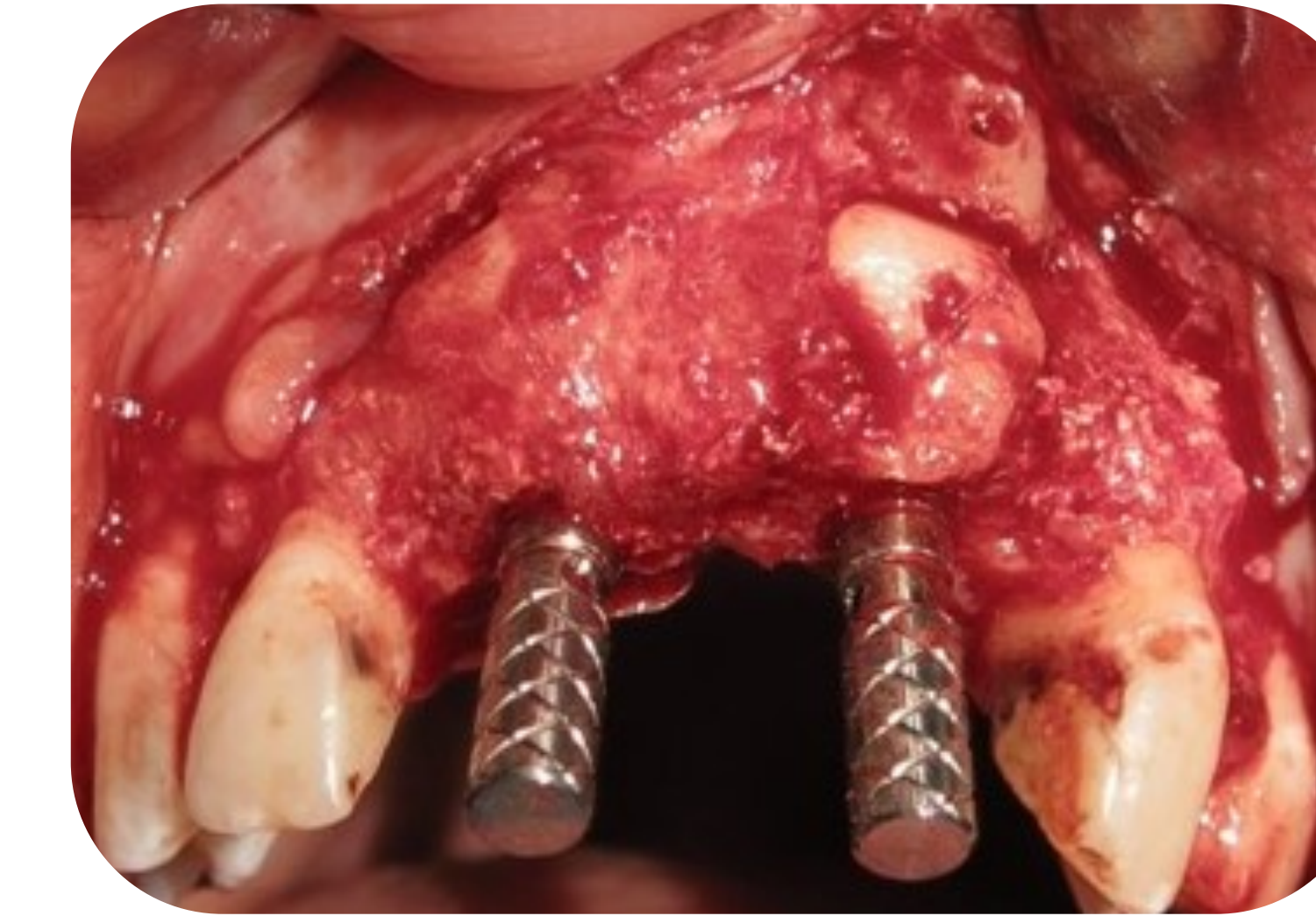
Autogenous bone blocks was fixed and protected by DBBM



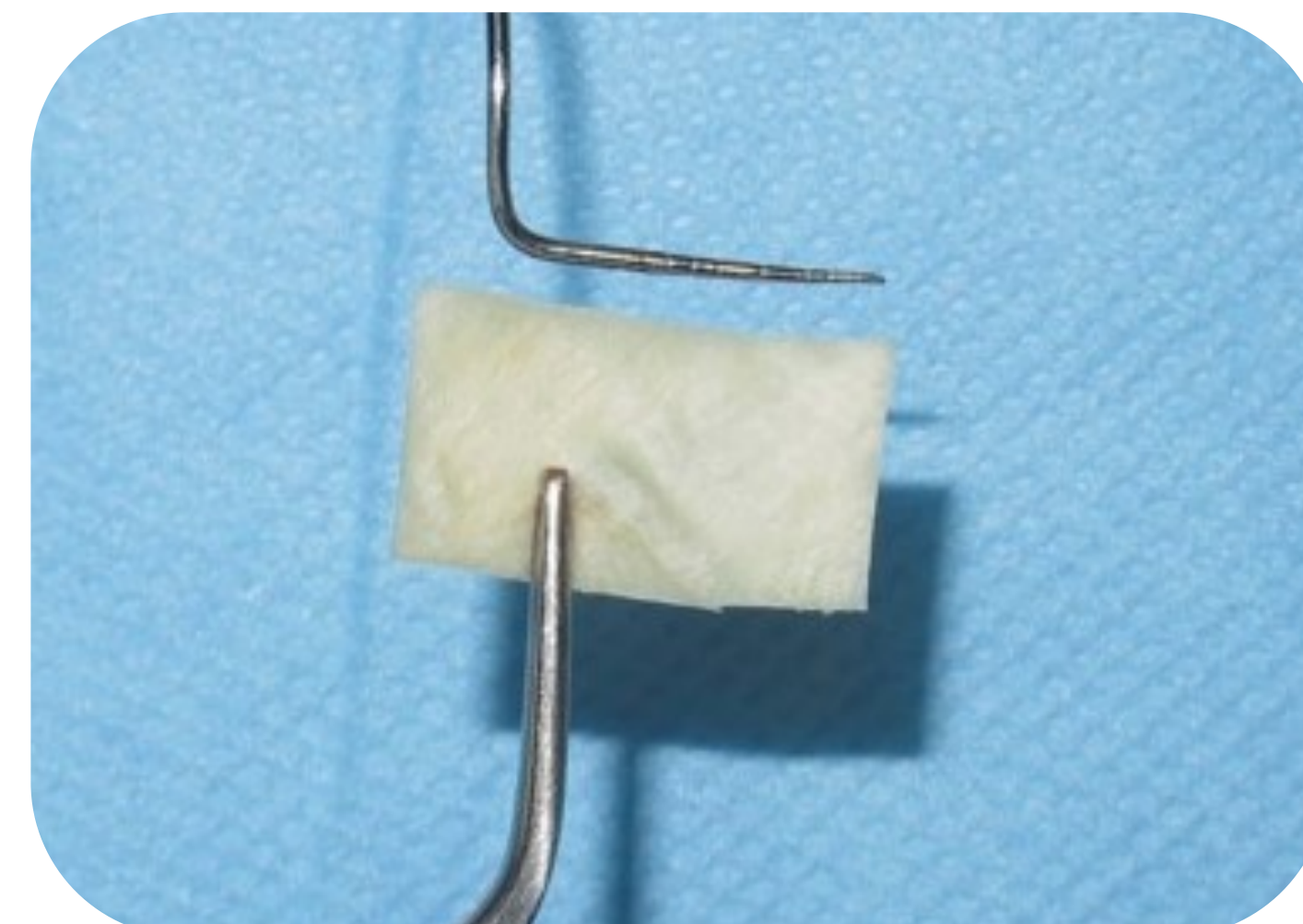
The use of double-layer collagen membrane



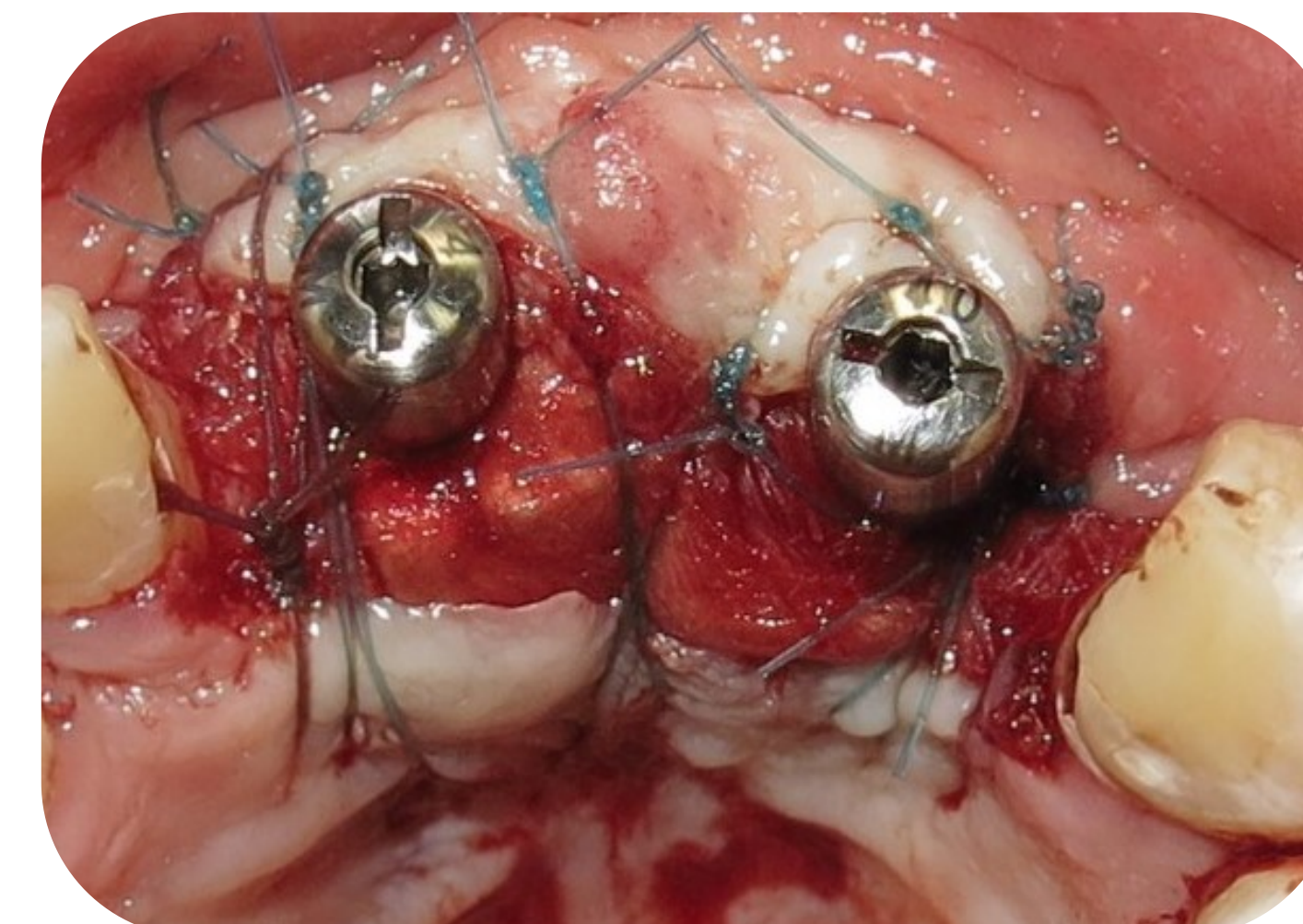
Clinical view after 4 months. Note to favorable contour and width of augmented ridge.



Implant placement



For prevention of flap advancement and formation of shallow vestibule, alloderm was used.



Final clinical view. Note to facial convexity reconstruction

RESULTS

Facial hard and soft tissue contours were reconstructed successfully. All implants were successfully osseointegrated with good stability and minimum bone loss. Increase in attached keratinized mucosa with favorable color match was achieved in all patients. Prosthetic rehabilitation was successful and all patients received type 1 fixed prosthesis.

Conclusion

Clinical results of autogenous grafts are reliable and predictable for hard and soft tissue contours reconstruction. Corticocancellous bone grafts from intraoral donor sites (ramus mandible and symphysis) provide sufficient bone volume to reconstruct ridge deficiencies without permanent harvesting morbidities. Autogenous soft tissue grafts (conventional or Accordion FG and CTG) are effective and successful treatments with optimal color match for KM enhancement and vestibular reconstruction around implants.

REFERENCES

- 1) Galindo-Moreno P, Avila G, Fernández-Barbero JE, Mesa F, O'Valle-Ravassa F, Wang HL. Clinical and histologic comparison of two different composite grafts for sinus augmentation: a pilot clinical trial. Clin Oral Implants Res. 2008 ;19(8):755-9.
- 2) Sakkas A, Wilde F, Heufelder M, Winter K, Schramm A. Autogenous bone grafts in oral implantology-is it still a "gold standard"? A consecutive review of 279 patients with 456 clinical procedures. Int J Implant Dent. 2017;3(1):23.