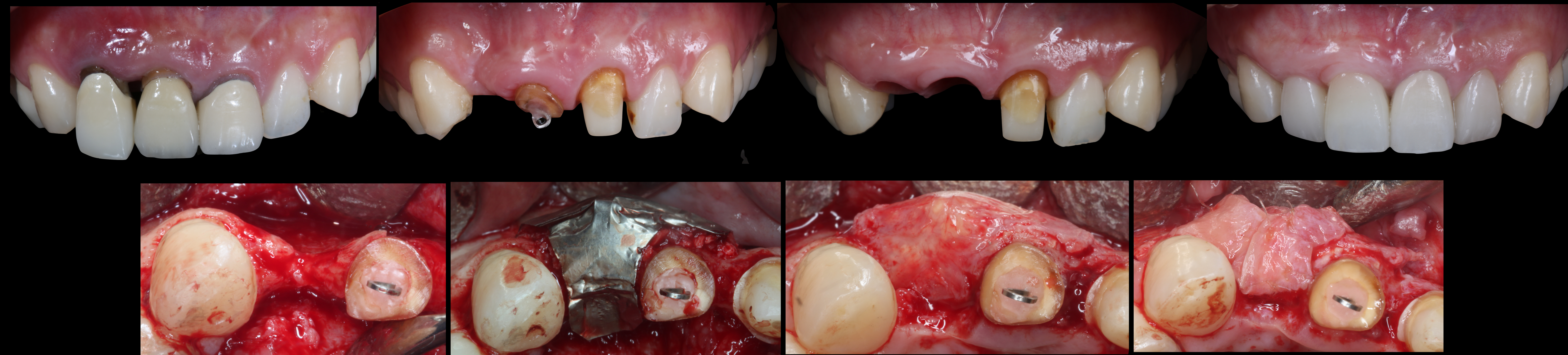


A Case of Severe Ridge Defect Treated with Vertical and Horizontal GBR and Partial Extraction Therapy — A 3 -Year Case Report —



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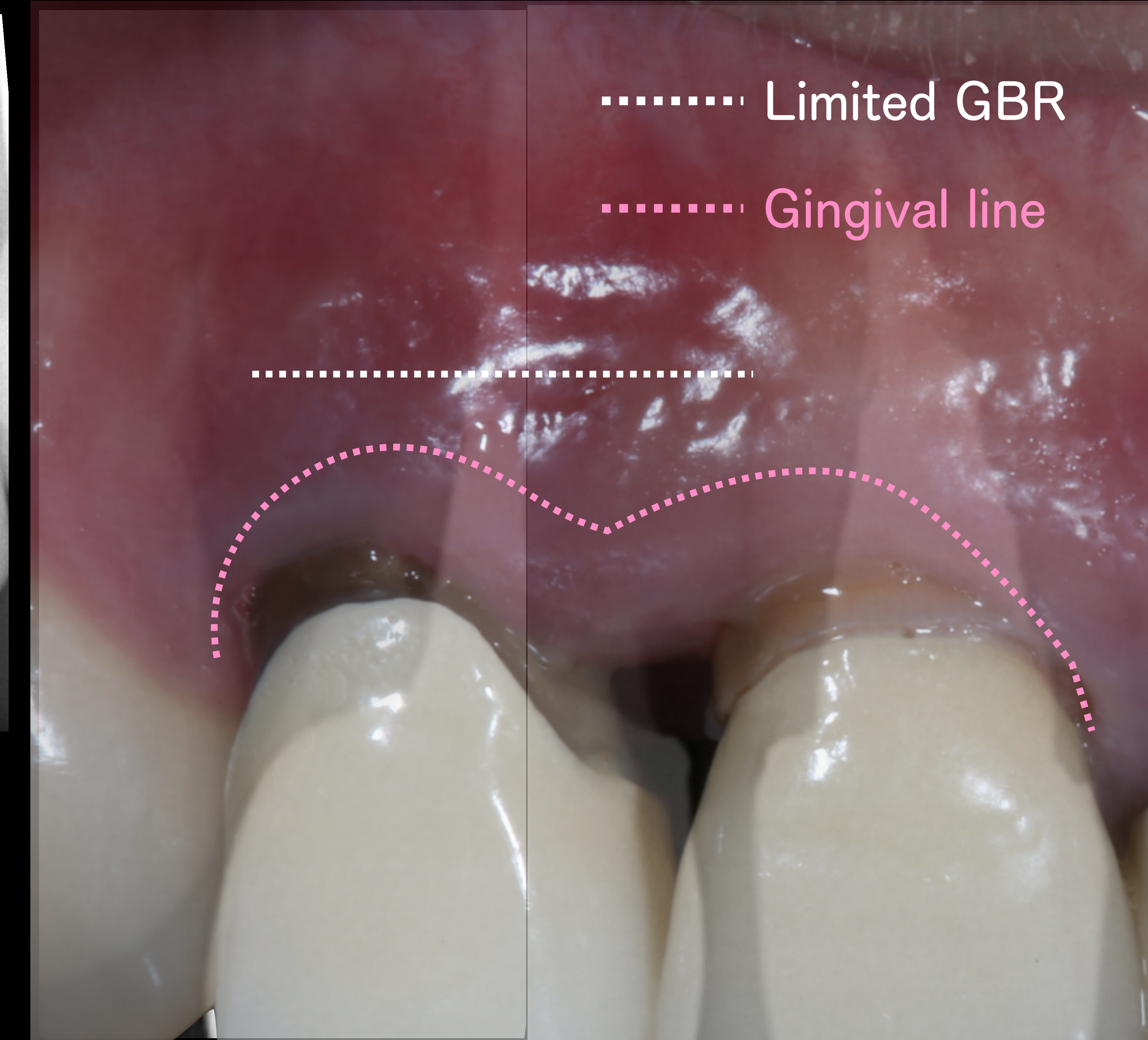
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1 | Introduction

Obtaining an esthetic gingival line is imperative for implant treatment in the anterior esthetic area, especially for average and high smile line with an excessive gingival display. In treating severe bone defects, reconstruction of the ideal gingival scallop and interdental papillae is always challenging and requires highly invasive surgery to the patients. In this case report, we introduce a less invasive and reliable approach to a severe bone defect using a combination of forced eruption, partial extraction therapy (PET), and alveolar ridge augmentation.



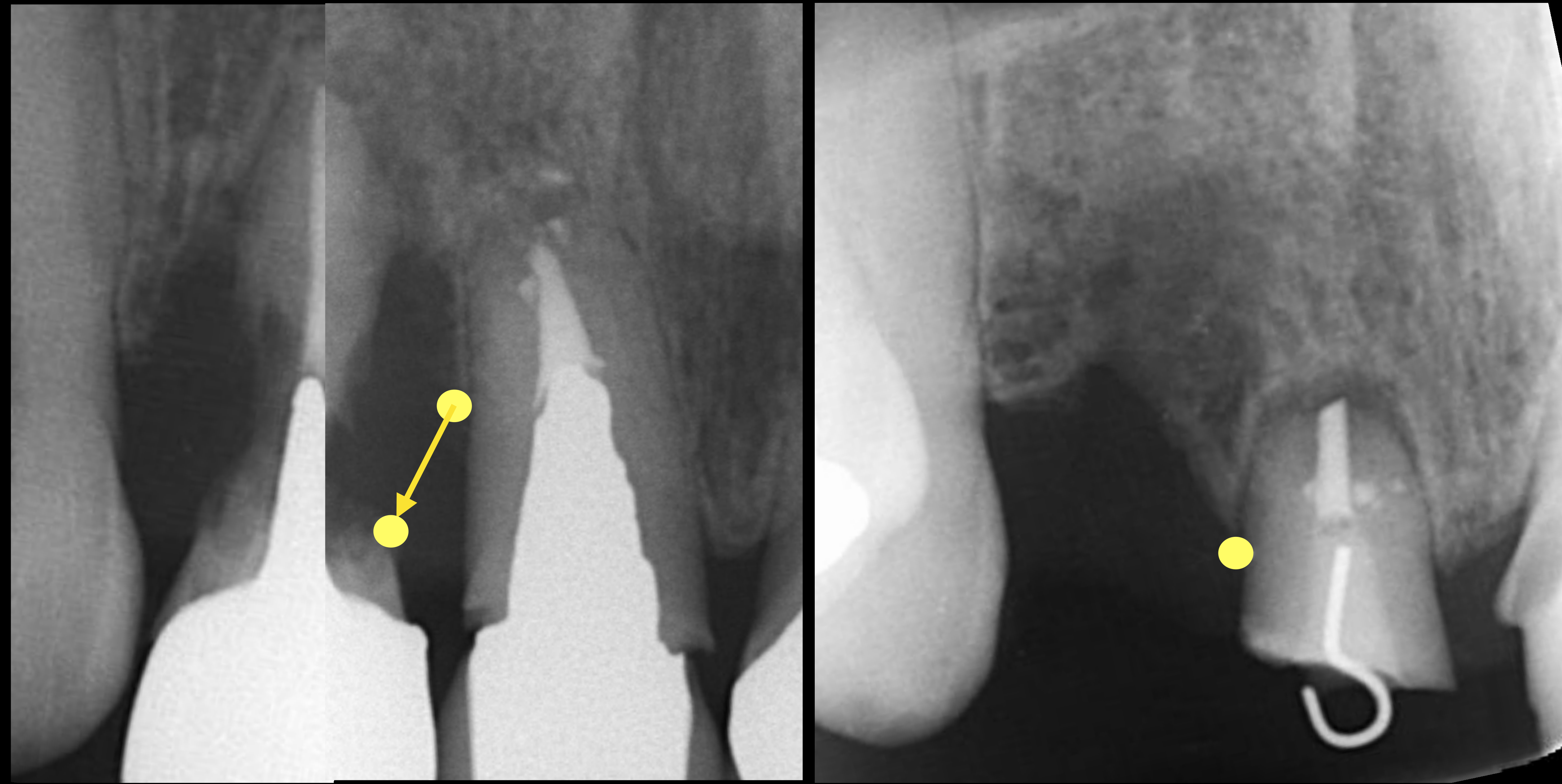
2 | Case

The patient is 40y/o, Female with no medical issues. It seemed to be impossible to obtain an ideal esthetic and gingival line in the present hard and soft tissue conditions with conventional GBR and soft tissue augmentation. Therefore, a forced eruption of #8 was performed to position the alveolar bone level coronally and distally according to the presence of attachment around the root. Then, horizontal and vertical alveolar ridge augmentation was performed on the severe bone defect utilizing a titanium-reinforced non-resorbable membrane and grafting material. Soft tissue augmentation with connective tissue graft was followed by bone healing.

In this case, to ensure reconstruction of the interdental papilla between teeth #7 and #8, PET was performed when #8 was extracted and immediate implant placement was proceeded subsequently. Finally, provisional restorations formed the gingival scallop and the position of the interdental papillae to achieve ideal final prosthetic restoration.

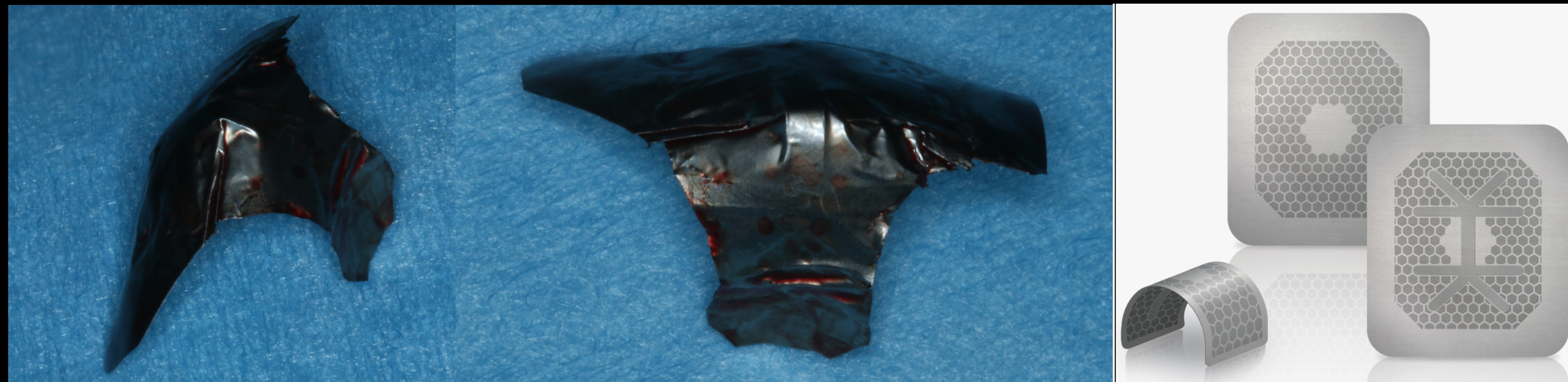
Limited of hard and soft tissue management
In this condition(without extrusion)

3-Dimensional Extrusion



Vertical and Mesio-Distal control :Toward the ideal interdental papilla

Titanium reinforced Honey-comb membrane

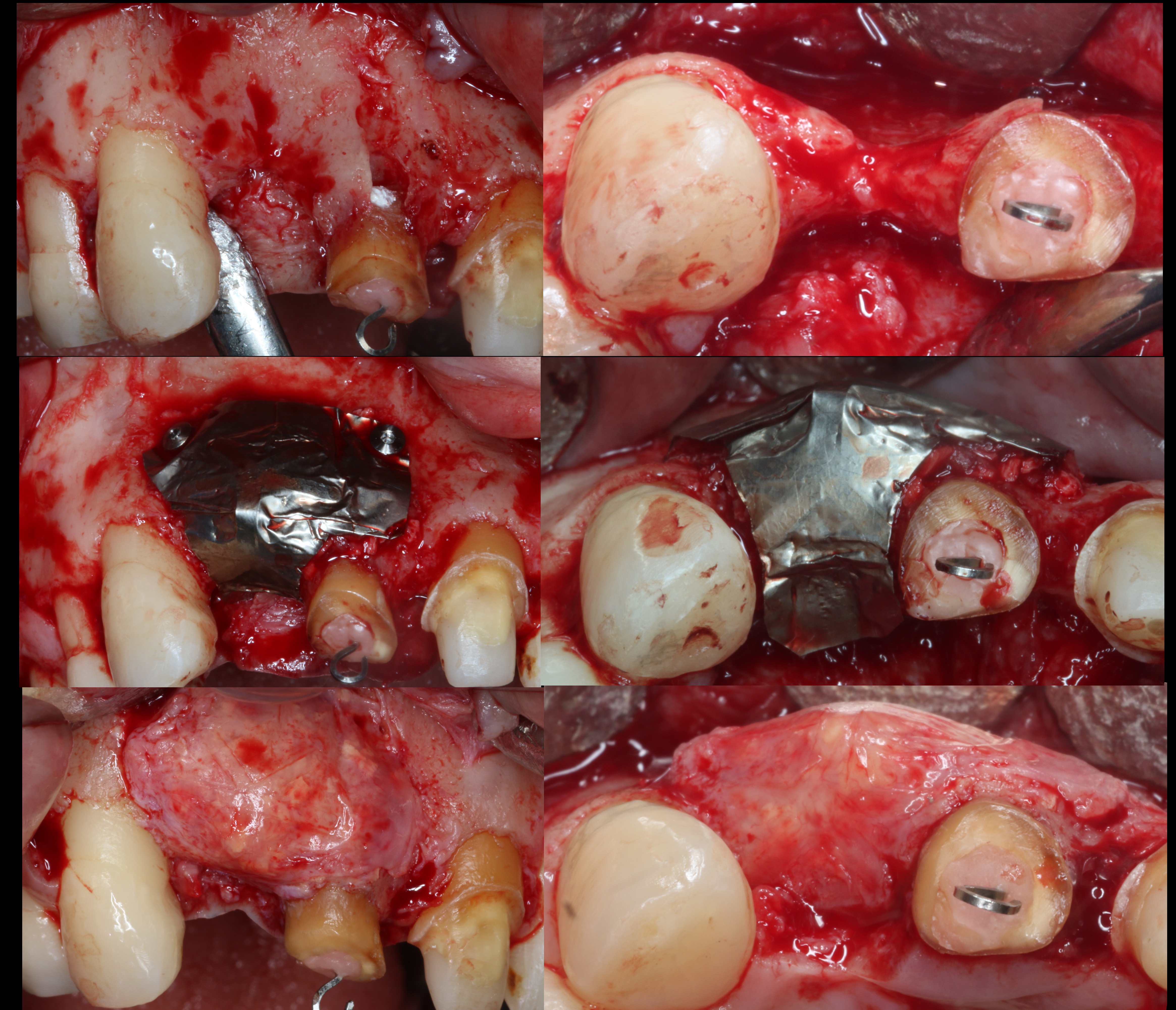


Thin , Flexible , Easy to remove, Good permeable to blood :20μm
Possible to 3D-bend and 3D- shape : Can be bent and shaped like origami

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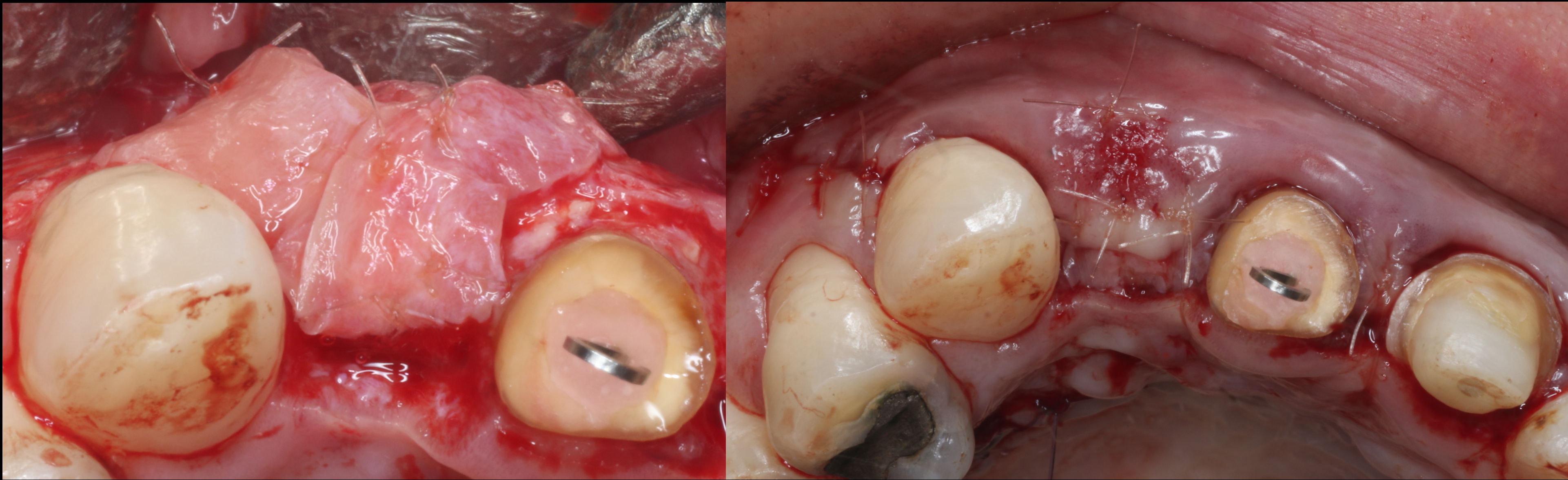


3-Dimensional GBR



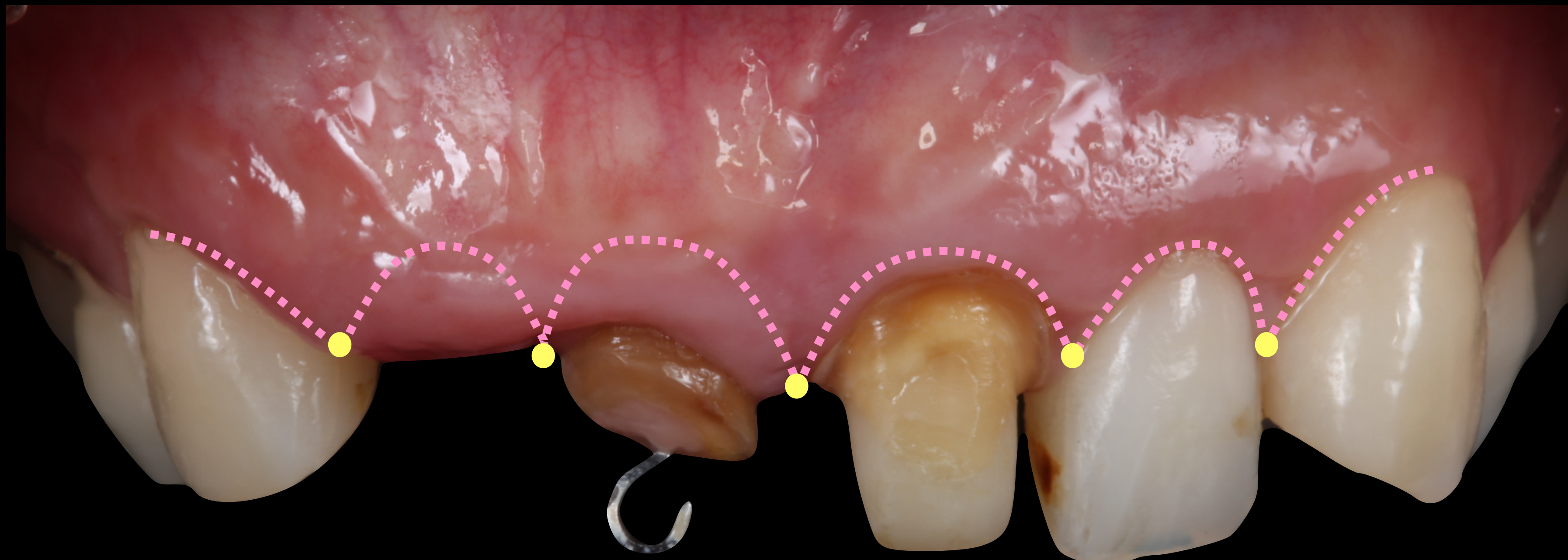
The reconstruction was performed by 3D-bending the membrane so that the predicted position of the interdental papilla would be at the maximum buccal ridge.

Connective Tissue Graft



To obtain the ideal gingival line and volume, the connective tissue graft was performed and further folded and positioned. Considering the position of the MGJ, the flap was not fully closed and positioned apically.

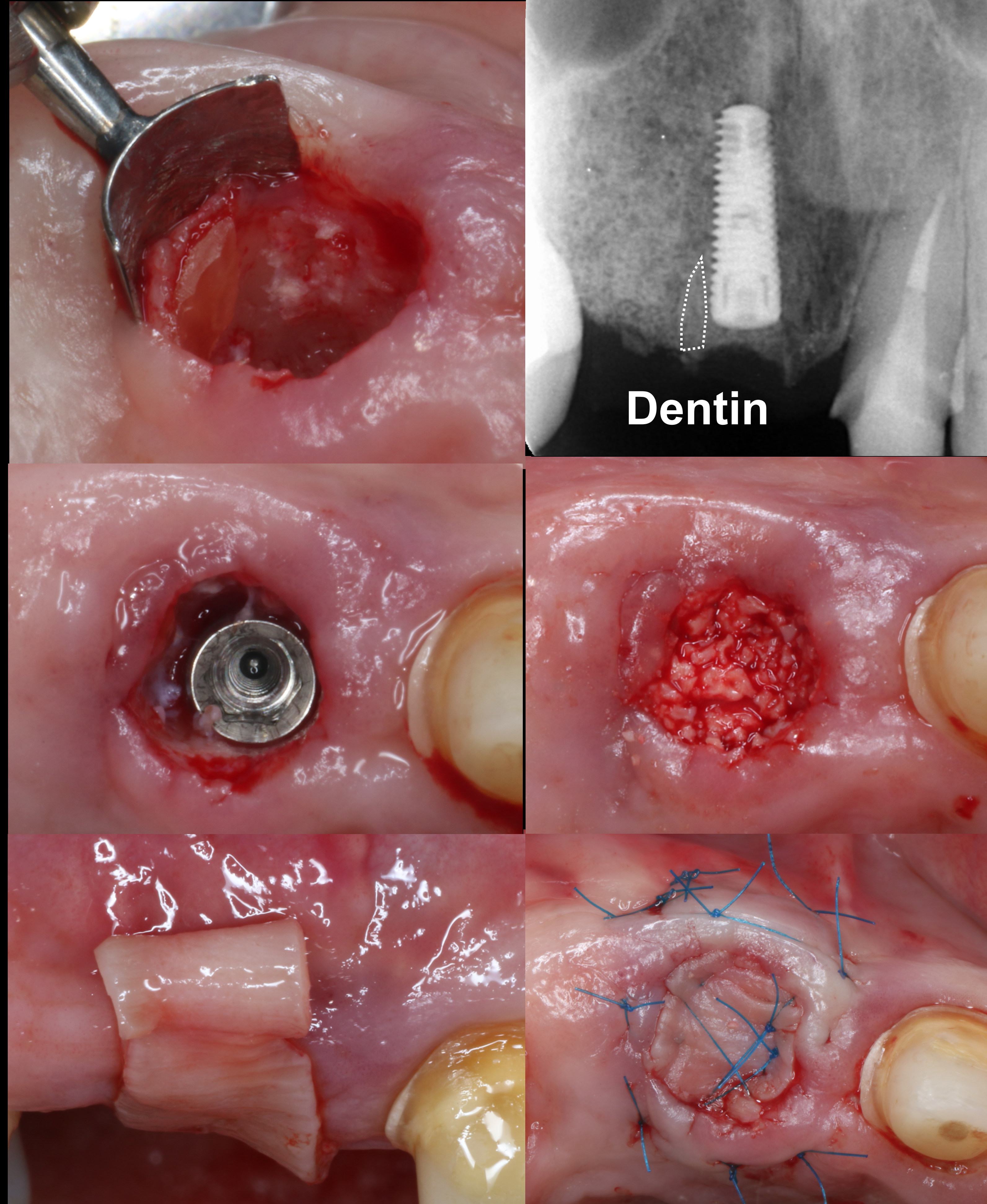
Checking PINK Esthetic



If not achieving an ideal gingival line, re-extrusion would be performed.

In this case, sufficient tissue had been obtained, so the decision was made to place implant.

PET and Implant placement



To ensure reconstruction of the interdental papilla between teeth #7 and #8, the distal root fragment of #8 in that area was preserved.

Tissue Remodeling



Limited Punch out



Pick up



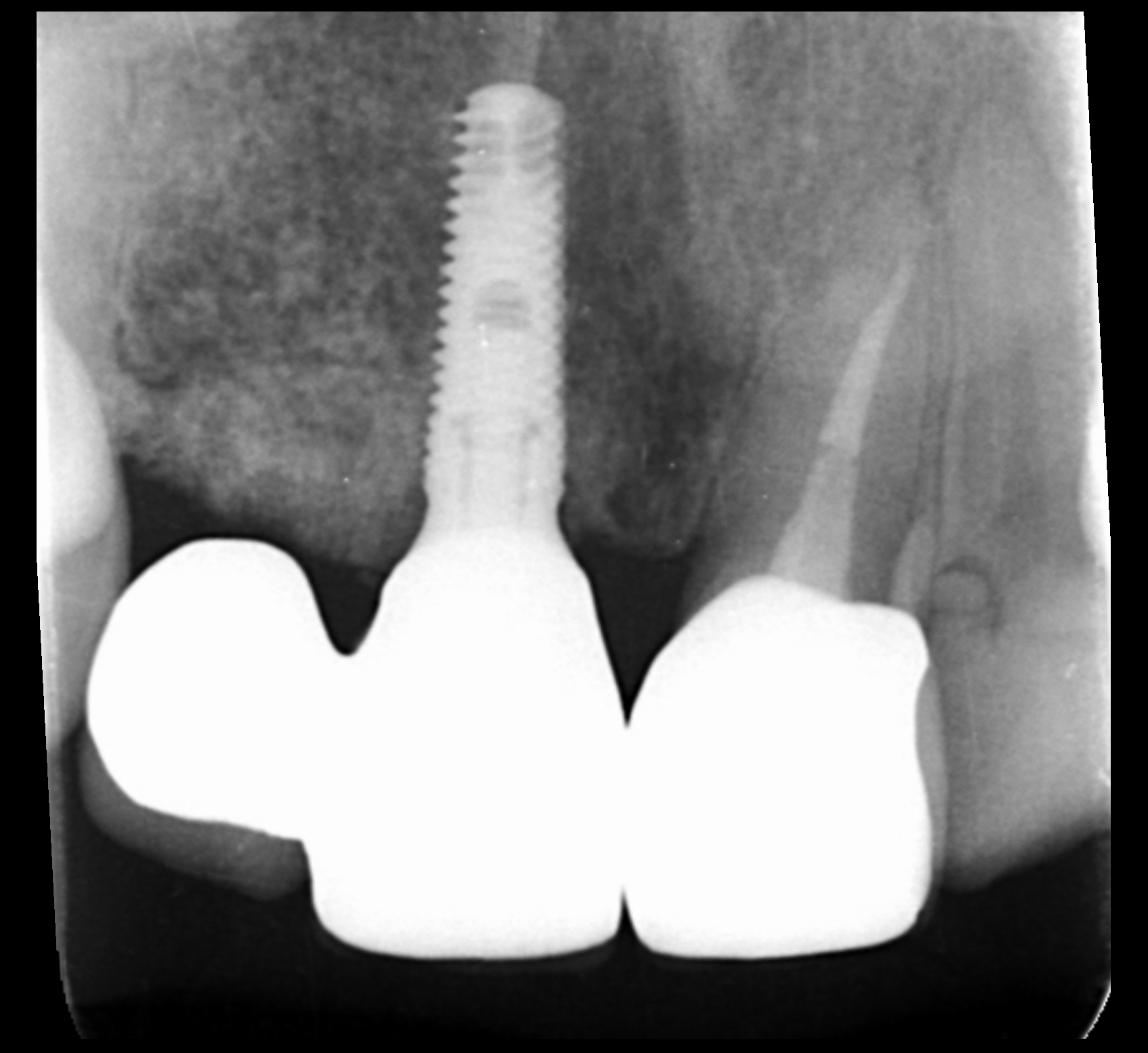
Tissue Remodeling



Ideal scallop form

3 | Result

The evaluation of the Pink Esthetic Score, a pre-treatment evaluation of 2 points, improved to 7 points at the 3-year postoperative evaluation. Orthodontic forced extrusion toward the ideal interdental papilla position was executed instead of traditional vertical GBR, leading to achieving 7.2mm the amount of vertical attachment movement. This means that 7.2 mm of vertical GBR could be avoided. Moreover, by shifting the attachment in the mesio-distal directions, it was possible to place the implant with the preservation of the root. PET allowed complete preservation of the tissue acquired through hard and soft tissue management. At 3 years postoperatively, no complications had been observed.



After extrusion



After GBR



After CTG



After Tissue Remodeling



Before



after



3 years

4 | Conclusion

A combination of forced eruption and PET enabled us to achieve esthetic results with both vertical and horizontal augmentation in a less invasive and reliable way. GBR with Honey-comb membrane allows precision three-dimensional reconstruction of esthetic area, and teeth with severe periodontal defect may not always be hopeless teeth and may not necessarily need to be extracted immediately. Using extrusion and root submergence technique can evolve into one of the most valuable esthetic tools.

