

Implant Site Development Using Autogenous Cortical Plate Harvested From the External Oblique Ridge: A Case Report

Ethan Benjamin Barkin, DDS

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Introduction

Dimensional changes of the alveolar ridge post-extraction are well described in the literature. In the first year of healing, there is approximately 50% of alveolar ridge resorption in the horizontal dimension (1). This poses a challenge for the placement of dental implants in a desirable, prosthetically driven position. Several techniques have been proposed for the augmentation of the alveolar ridge including: guided bone regeneration, ridge split technique, and onlay grafts of autogenous or allogenic origin. The full and split block techniques have been proposed by Khoury, as an alternative to increasing ridge dimensions (2).

Materials & Methods

A 38-year-old Male presented to the periodontal clinic for the replacement of the missing maxillary right first premolar. Upon cone beam computed tomography (CBCT) evaluation, it was determined that a staged approach to horizontal ridge augmentation would be required whereby an initial site preparation would be completed prior to implant placement. Residual ridge width prior to site preparation was 4.2mm in the area 3mm apical to the crestal bone. An autogenous bone block was harvested from the posterior mandible, fixated to the recipient site (Pro-Fix[®] Osteogenics[®]), supplemented with freeze-dried bone allograft (Maxxeus[®]), and covered by a native collagen membrane (Bio-Gide[®] Geistlich[®]).

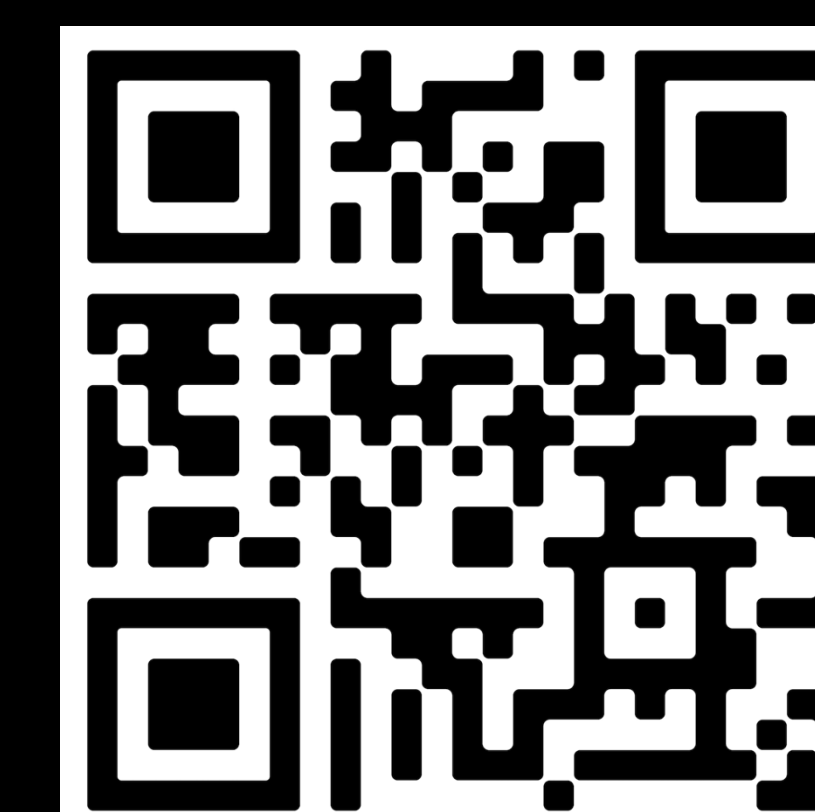
Clinical pictures



CBCT analysis



References



Results

After five months of healing, an updated CBCT was obtained for implant treatment planning purposes. The width of the grafted ridge increased up to 9.3 mm after the ridge augmentation procedure, meaning an increase of 5.1mm was obtained. The bone quantity at re-entry allowed for implant placement in a prosthetically driven position, with excellent primary stability (35ncm). A custom healing abutment was fabricated and delivered at the time of implant placement (Cervico[®] by VPI[®]).

Conclusion

According to a review of the literature by Benic (3), much of the research on the varying methods for horizontal ridge augmentation were developed years ago and, in that time, updates to materials and techniques have come about that necessitate a new body of research before a definitive answer as to which method is best can be made. Early publications showed a major drawback of the onlay block graft being the amount of resorption that could occur, some reviews stating up to 60% of original block volume (4). The cause of this resorption is due, in part, to the poor rate of revascularization of intact bone blocks. The proposed methodology of "biologic grafting" by Khoury allows for an increased rate of revascularization and a decreased amount of resorption (2). The bone block technique is a predictable method to increase the dimension of the alveolar ridge prior to implant placement.

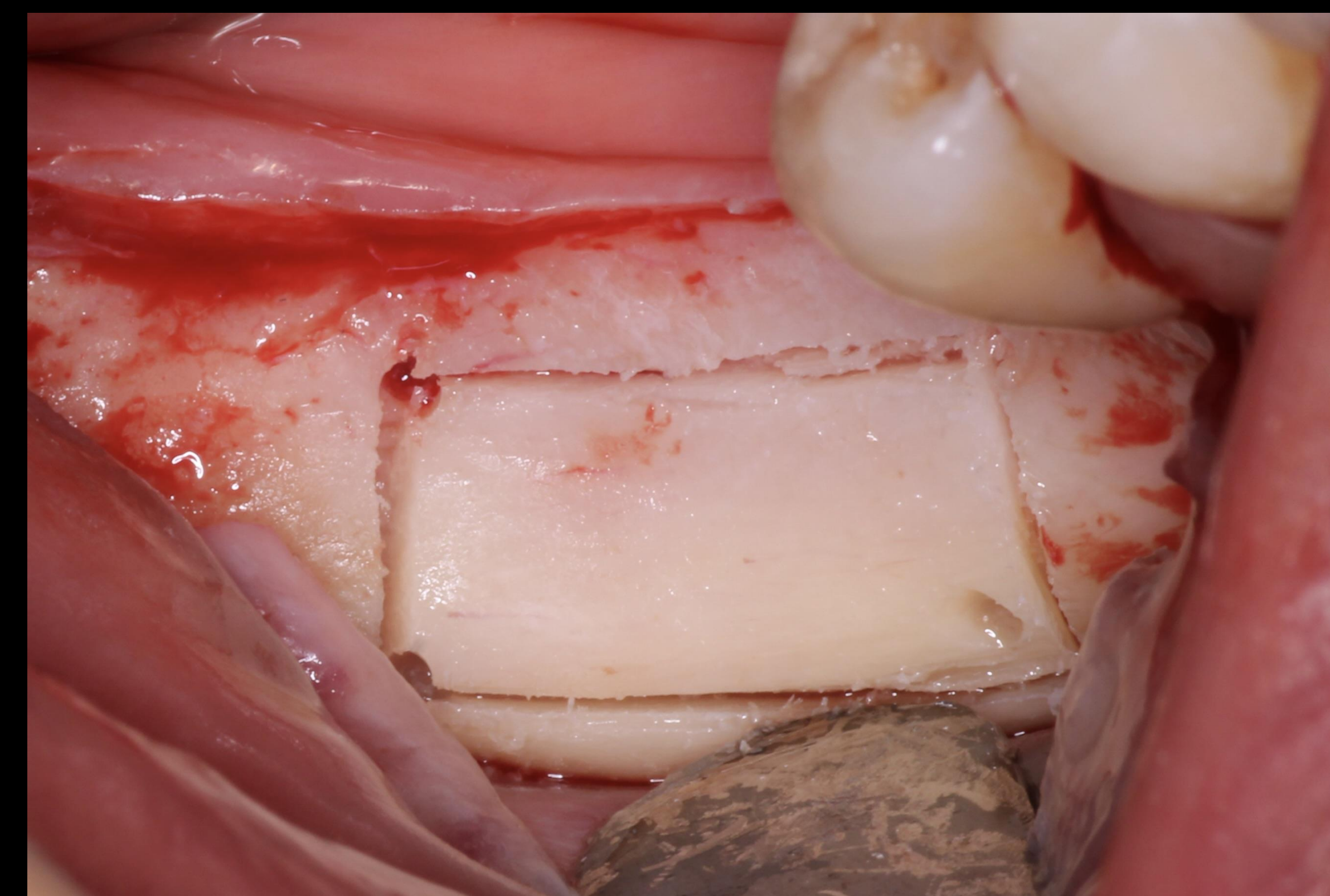
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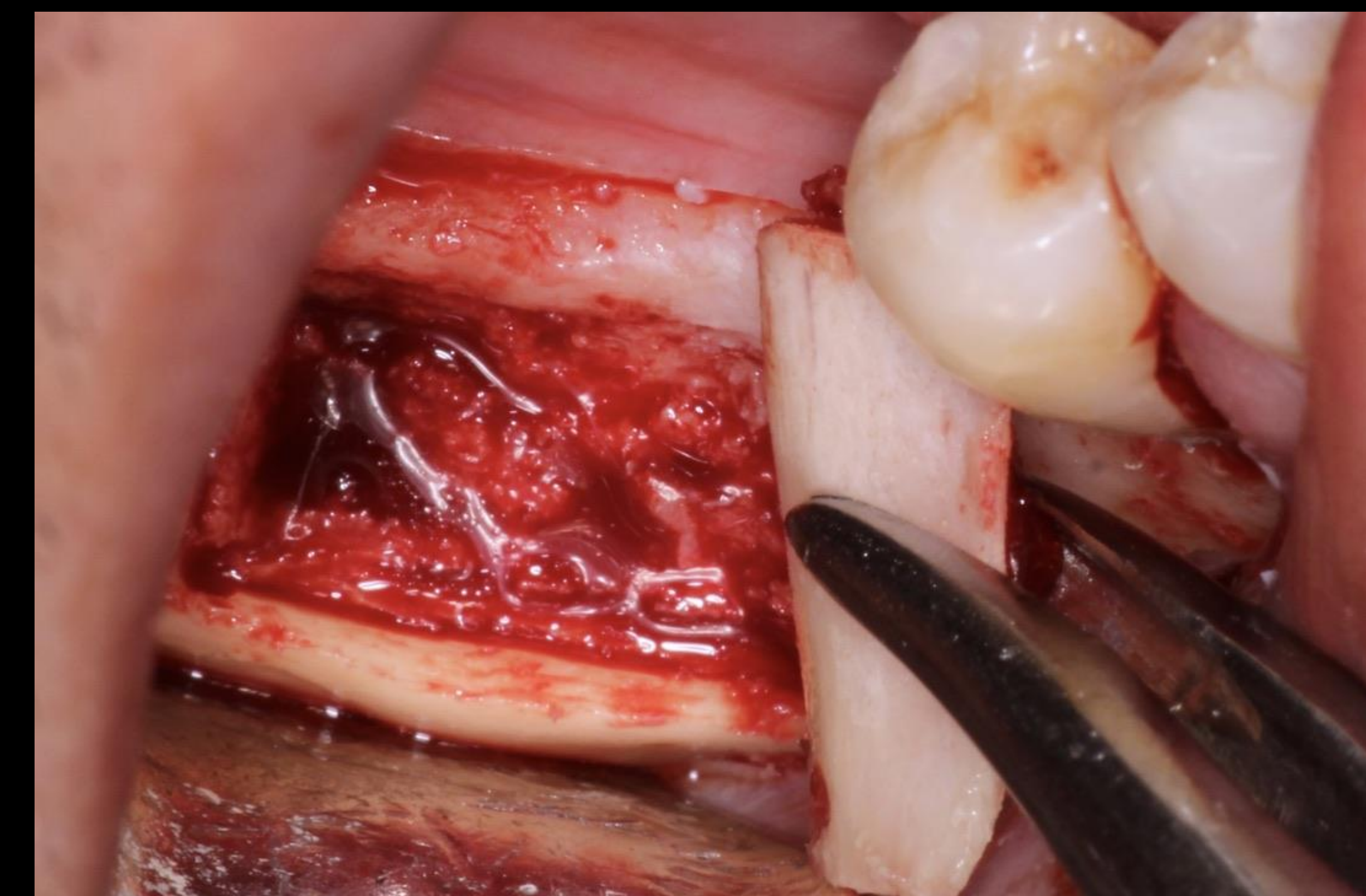
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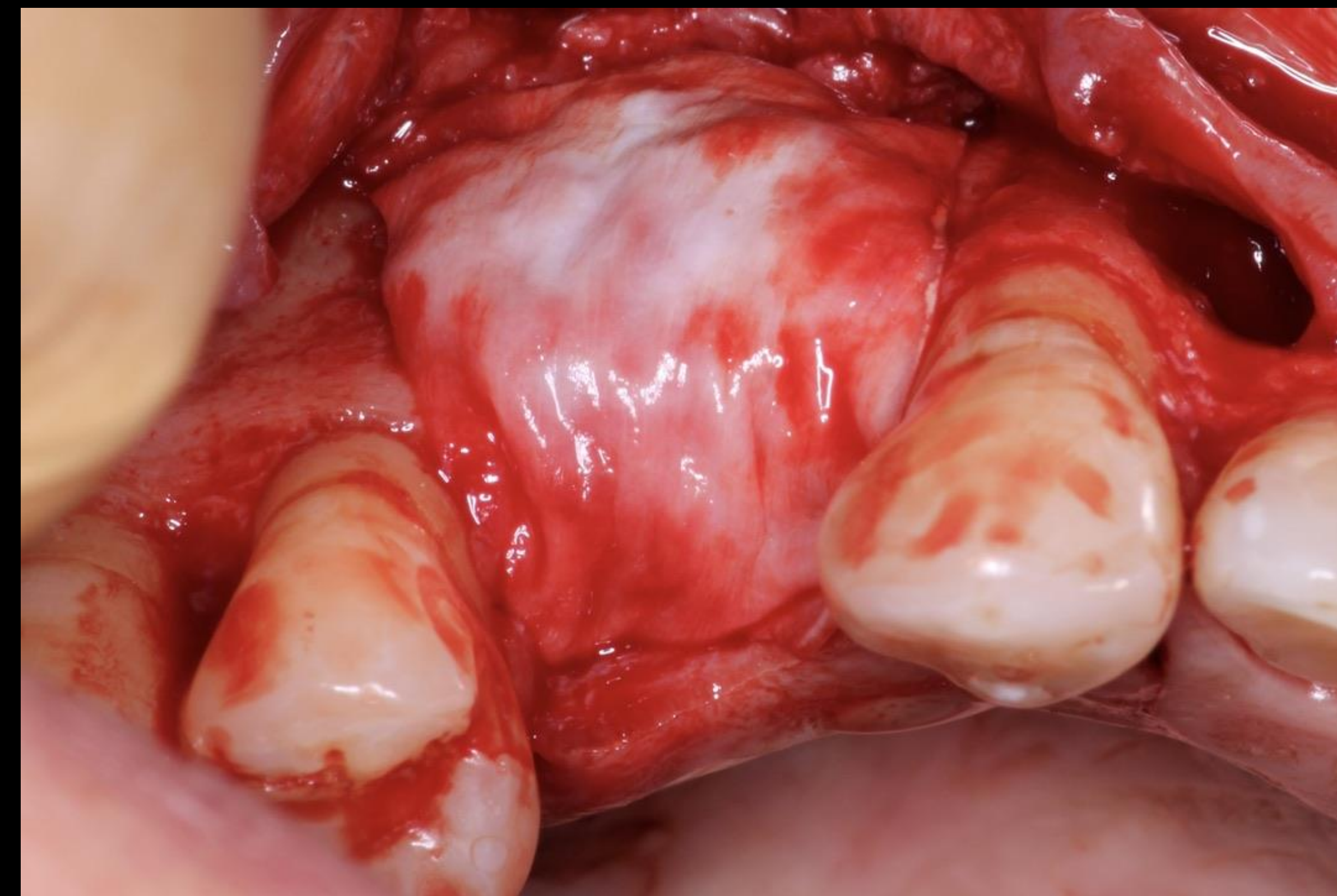
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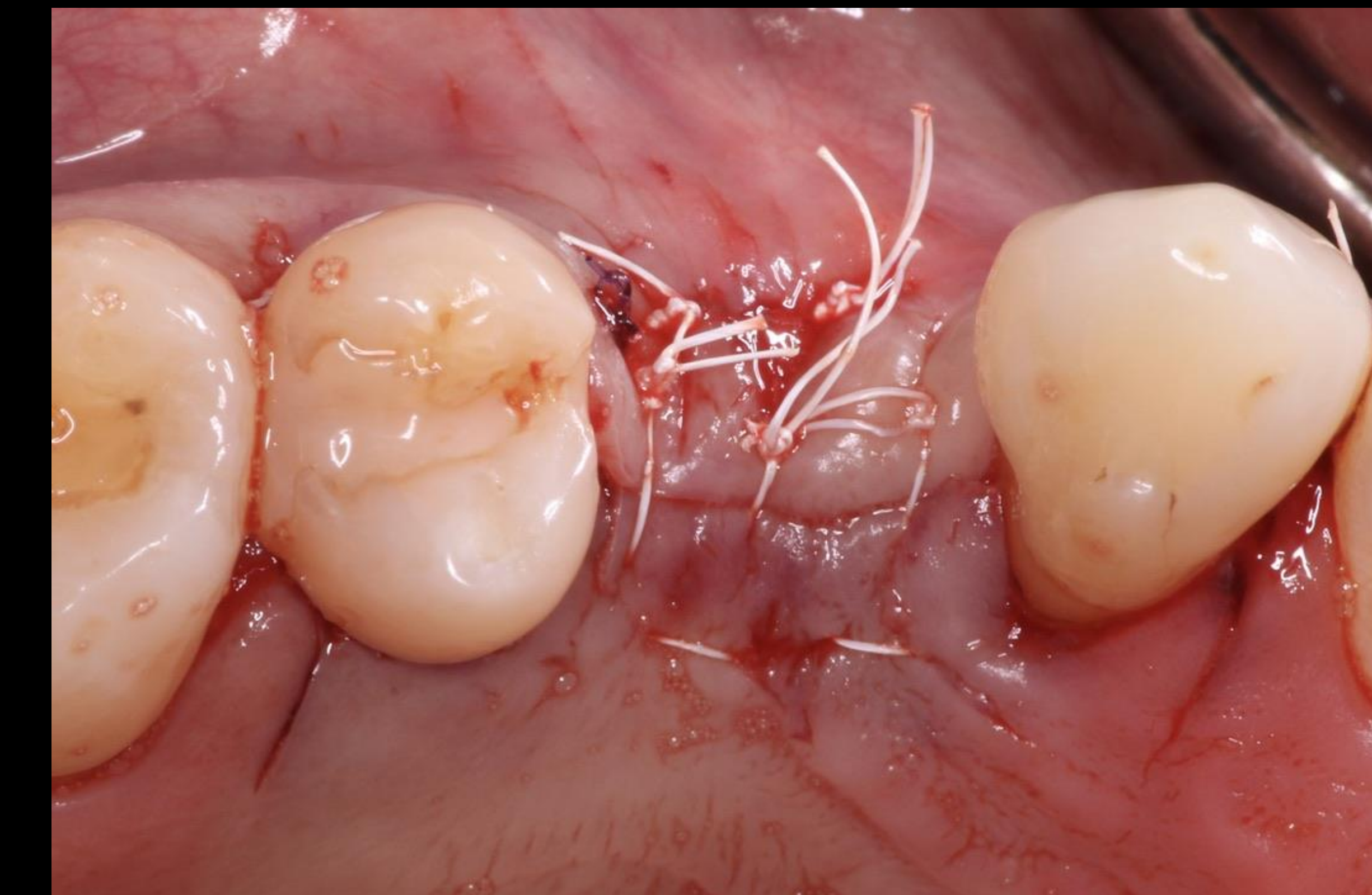
Harvest



Fixation



Closure



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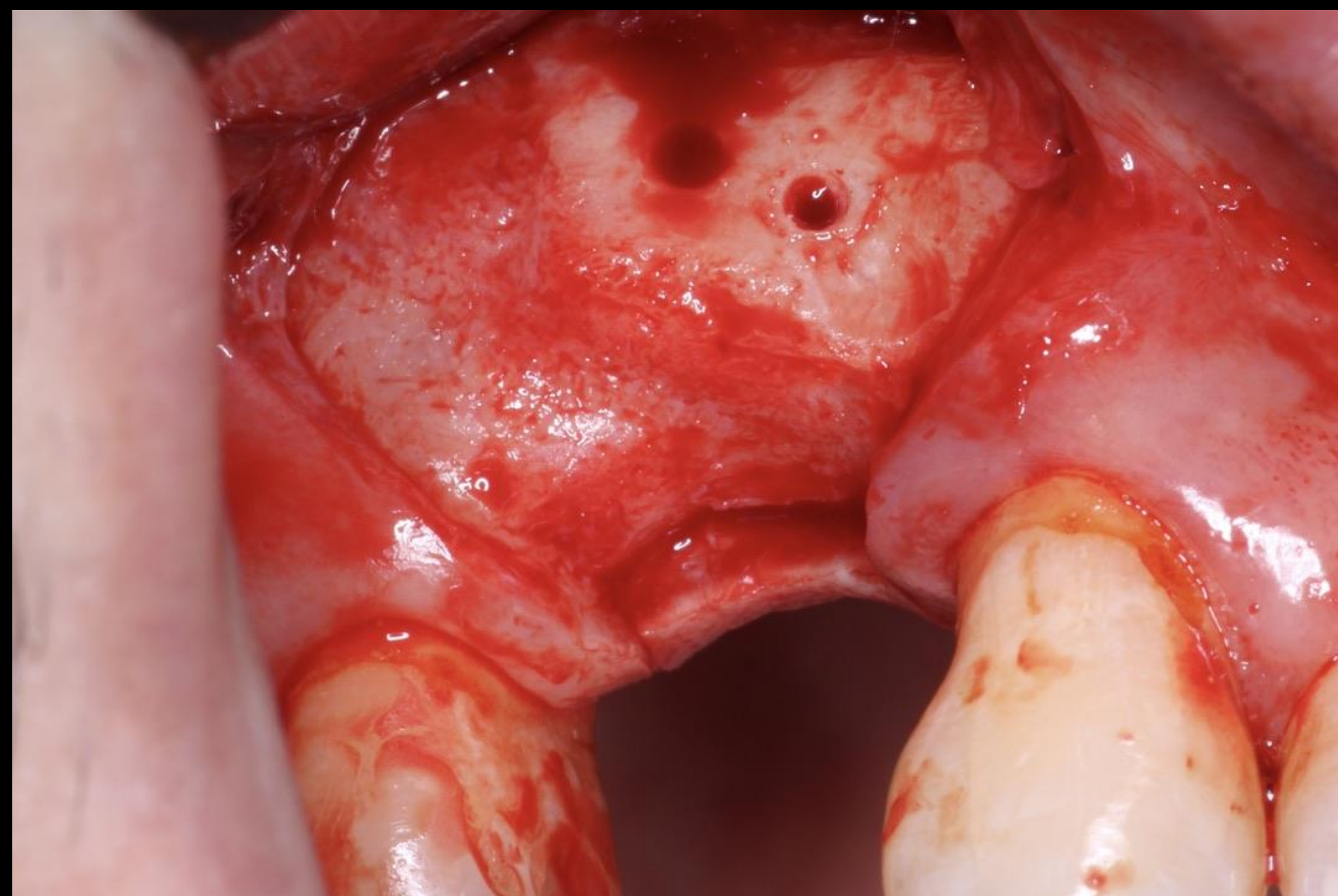
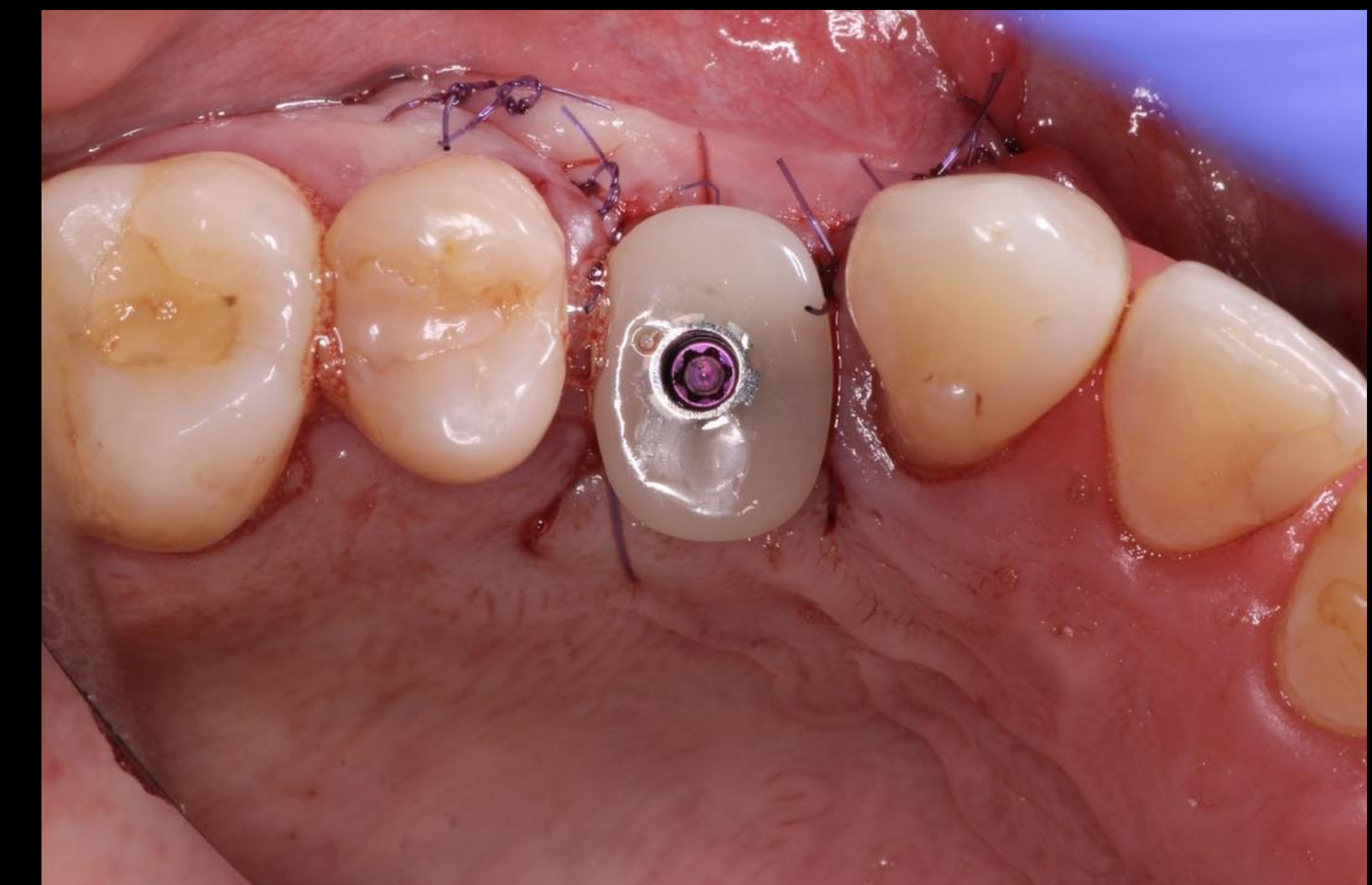
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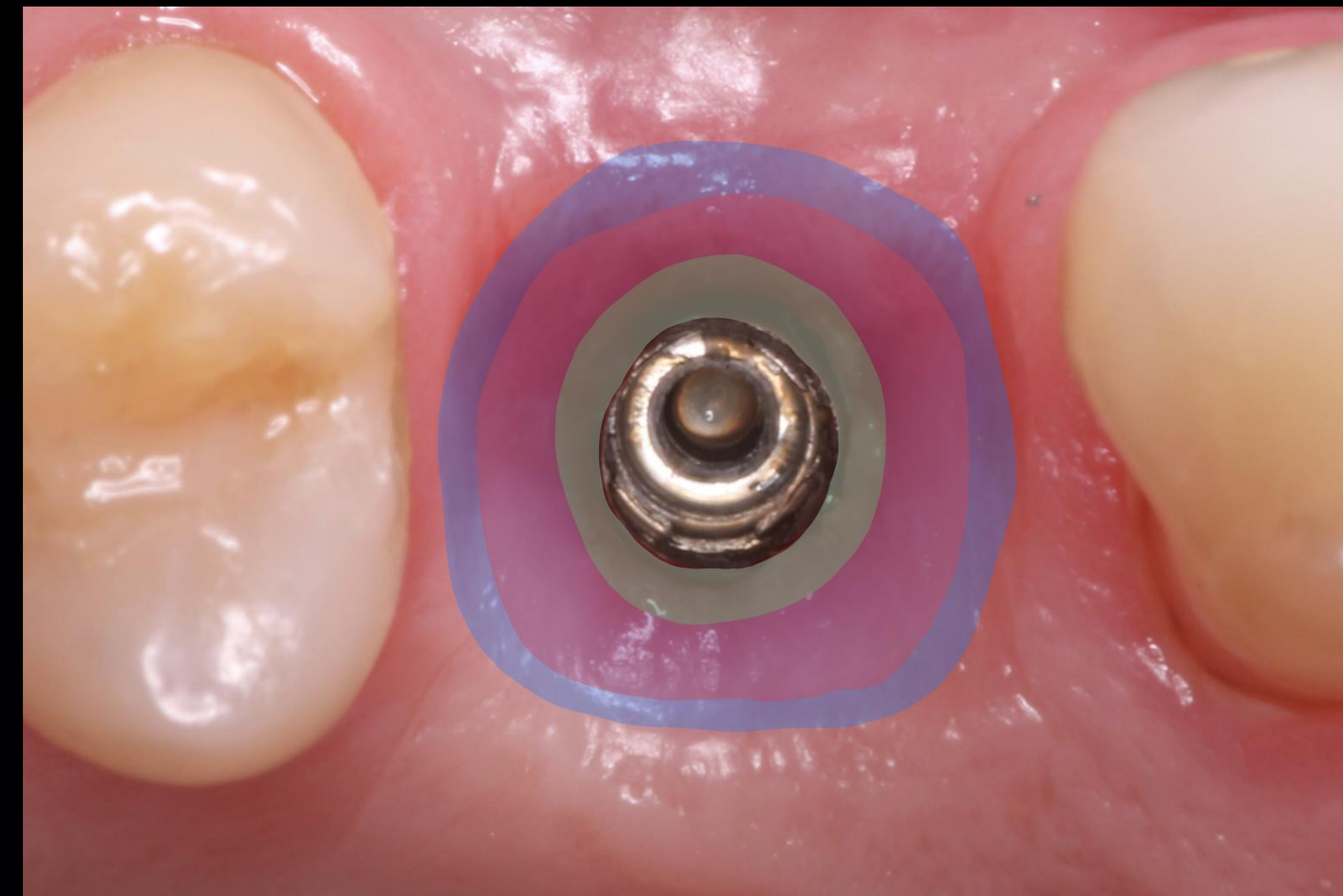
Post-Augmentation



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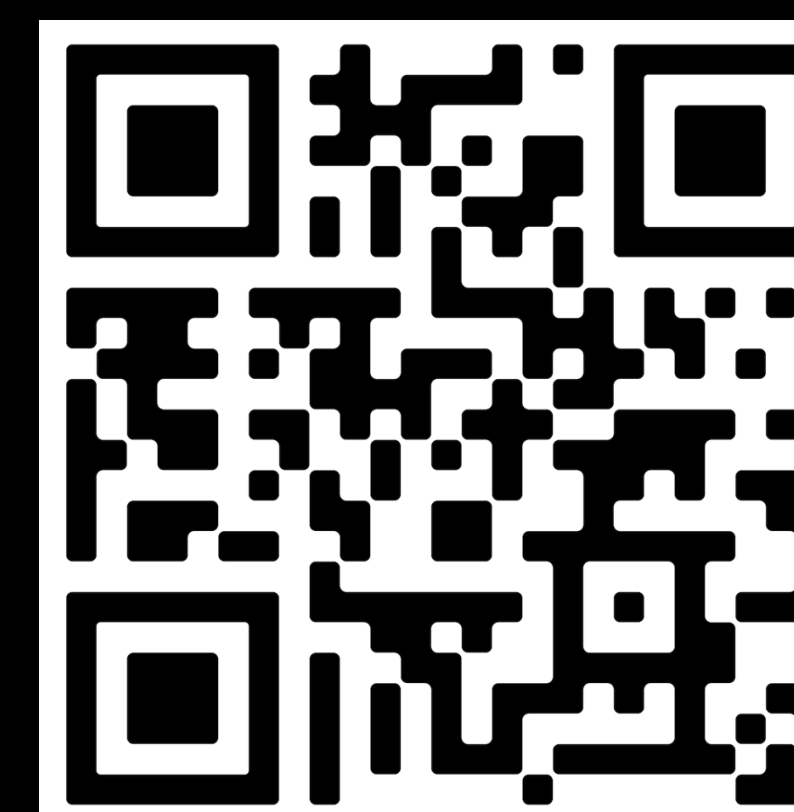
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