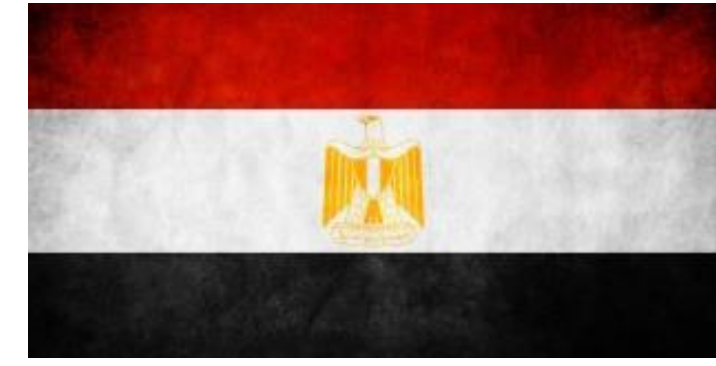




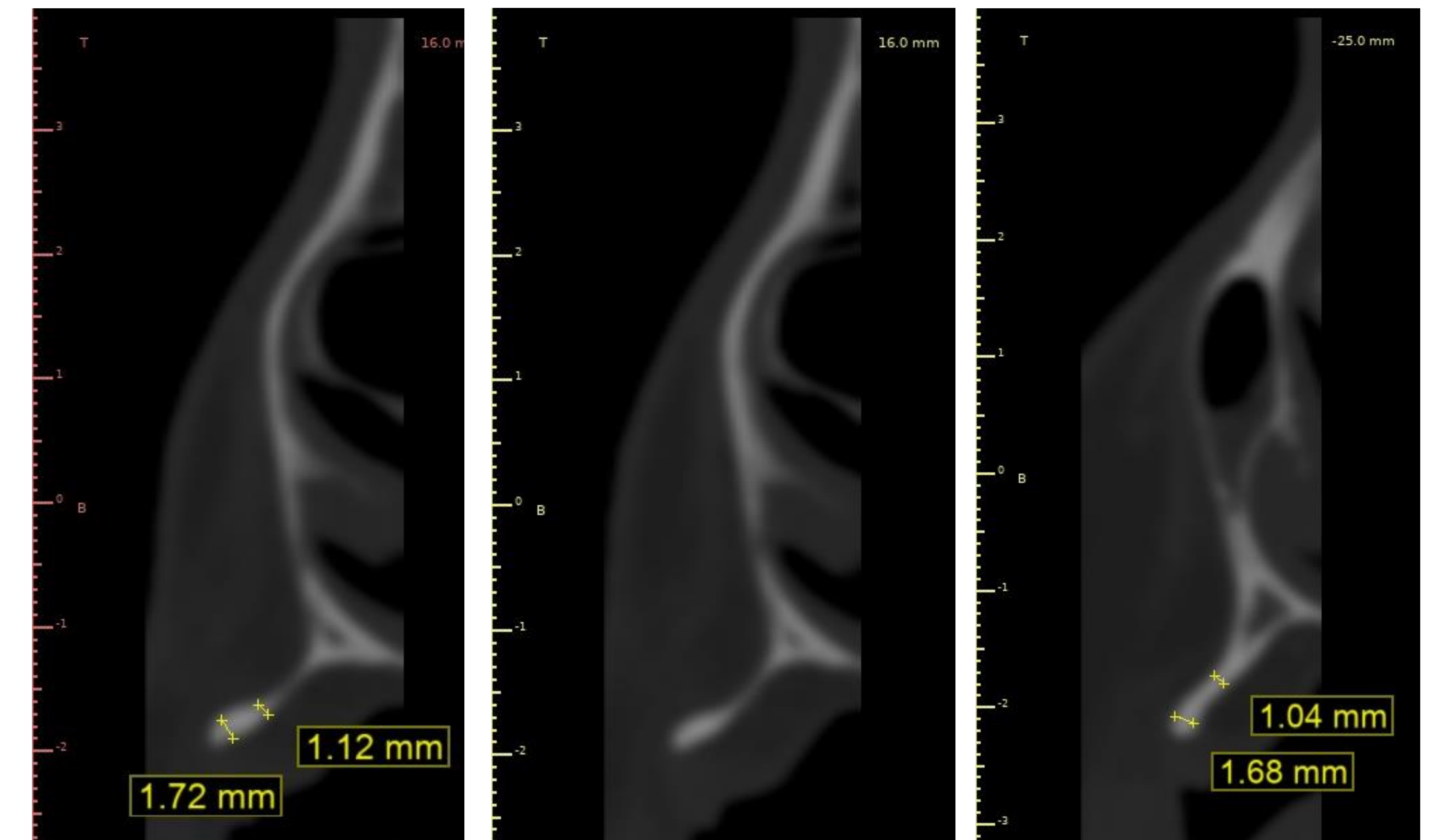
Reconstruction of Deficient Maxillary Ridges Using Calvarial Bone Blocks Versus Ramus Bone Blocks

Atef, Mohammed ; Shawky, Mohammed ; Khorshed, Mahmoud ; Shaheen, Mostafa ; Sholkamy, Hisham.

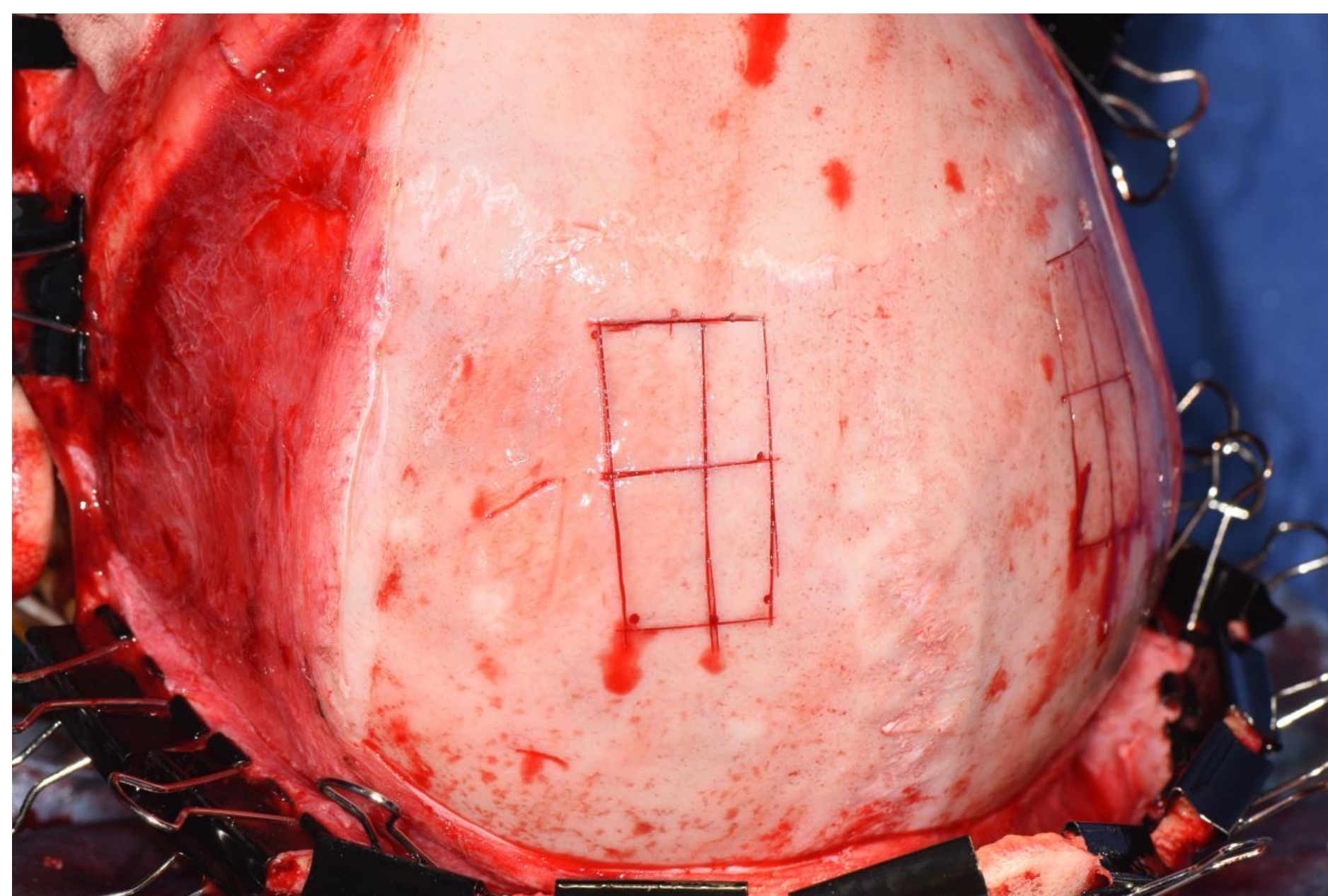


Introduction: Alveolar Ridge atrophy summons to contest clinicians ability to place dental implants in a favourable prosthetic position for integral maxillary rehabilitaion in completely edentulous patients. Hence, alveolar reformation could be acheived through intraoral and extraoral intramembranous harvest sites although challenging the clinicians expectations in the reconstructive augmentation procedure regarding the reconstruction volume, predictablity as well as safety and reproducibility.

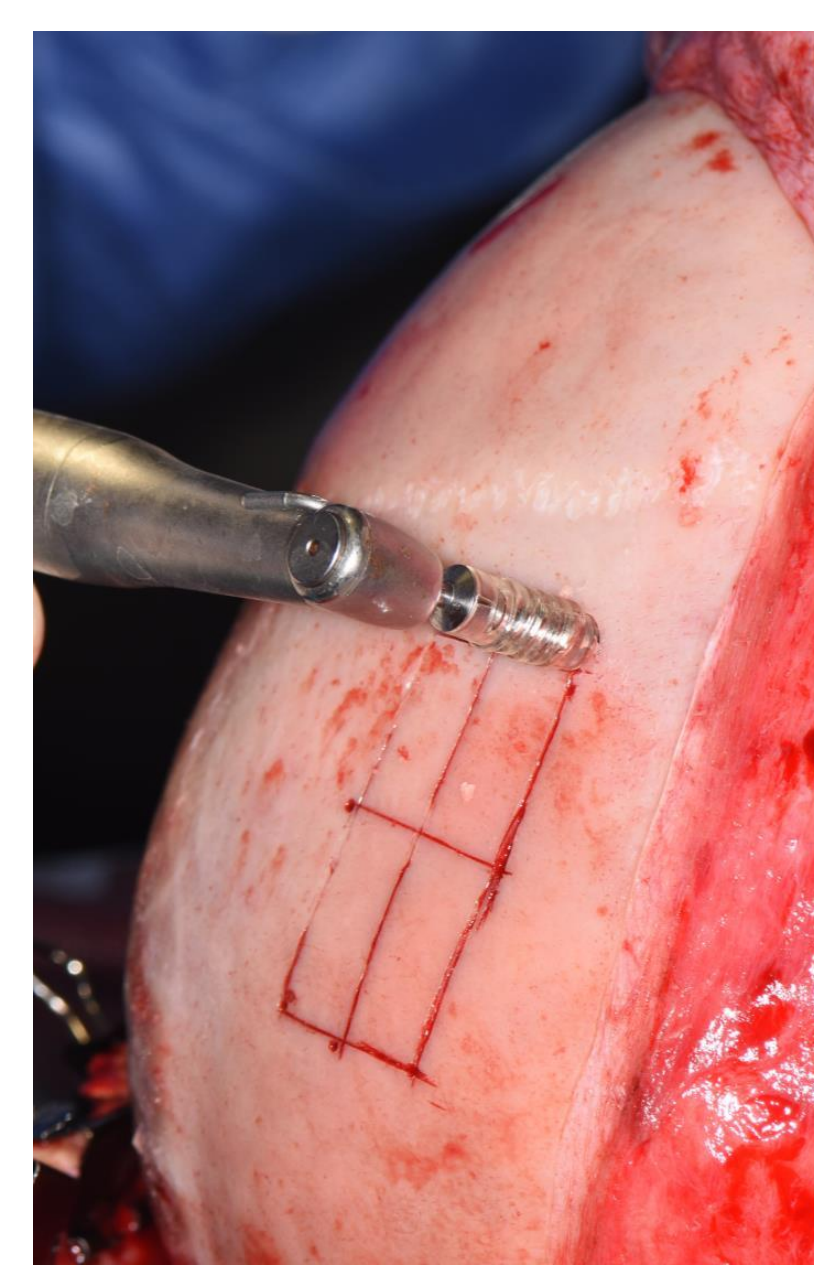
Methods: :20 patients suffering from severely atrophic completely edentulous maxillary ridges, were operated on ten males and ten females. Based on CT evaluation,the required bone volume for reconstruction has been harvested in the calvarial group from the outer table cortical bone blocks from the parietal bone, then particulate bone was collected with an auto-chip maker and mixed with xenograft at a ratio of 1:1.Bilateral sinus lifting was indicated in all cases. The bone blocks were fixed intraorally and the bone particulates filled the gaps and the volume created by sinus lifting, then the whole complex was covered with collagen membranes fixed with titanium tacks. While in the ramus group ,bilateral ramus blocks were harvested using a piezoelectric device,after which they were fixed intraorally and covered with collagen membranes. .Immediate and 6 months CT were requested for evaluation of the graft integration,respectively.



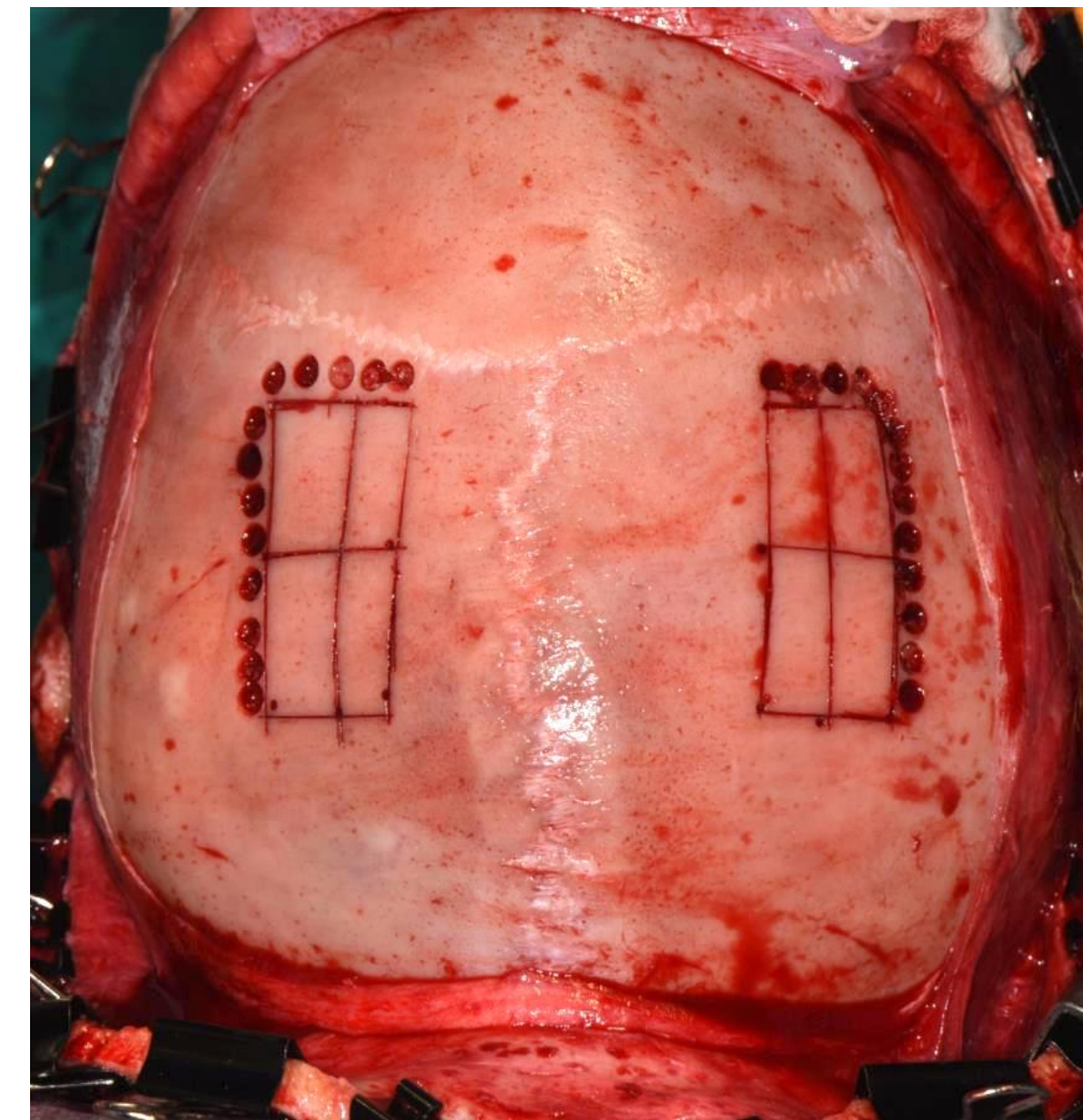
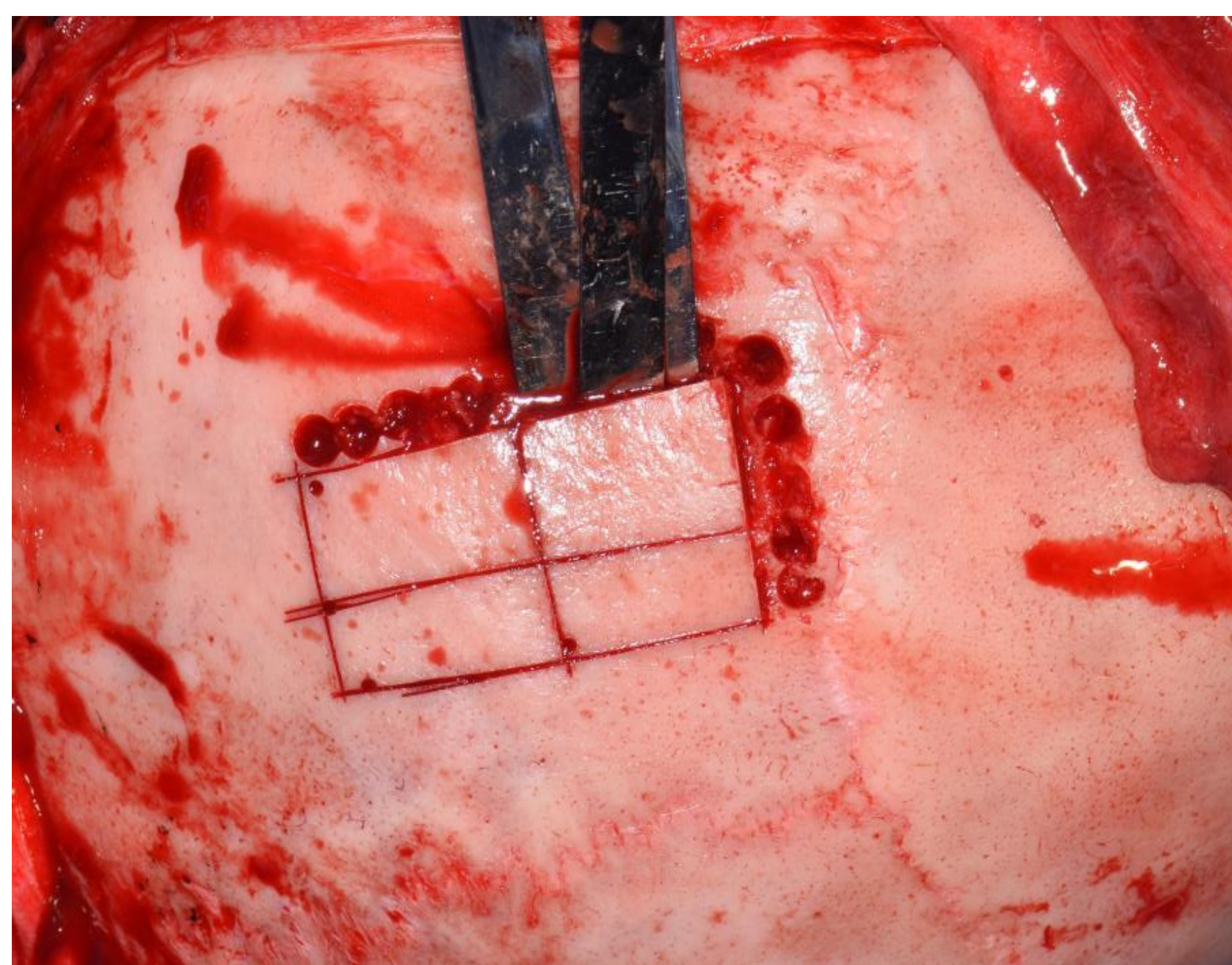
Preoperative CBCT cross section of severely atrophic maxillary ridges



Calvarial Osteotomy Cuts



**Harvesting Autogenous Particulates
using ACM Bur**



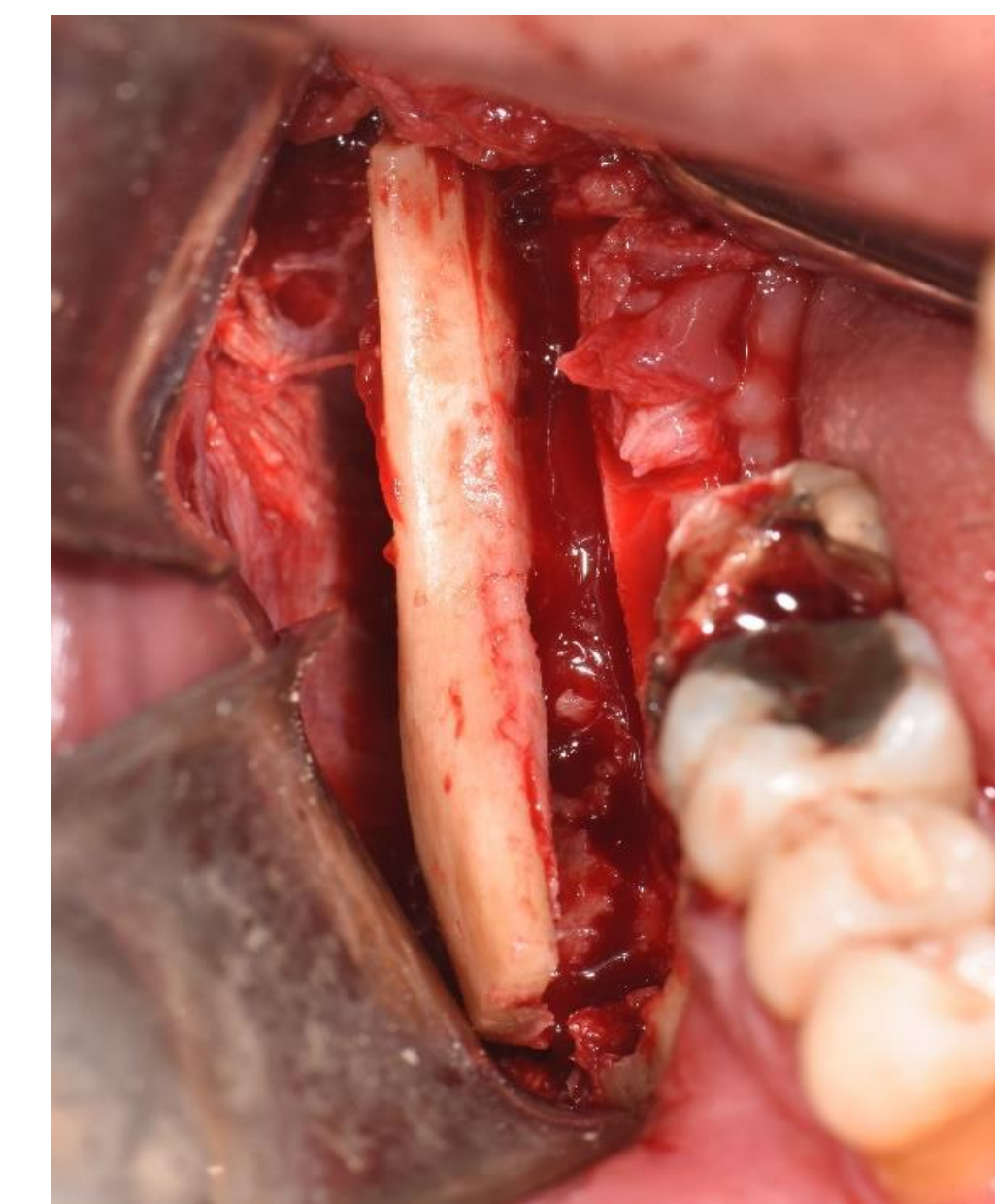
**Elevation of calvarial cortical
blocks**



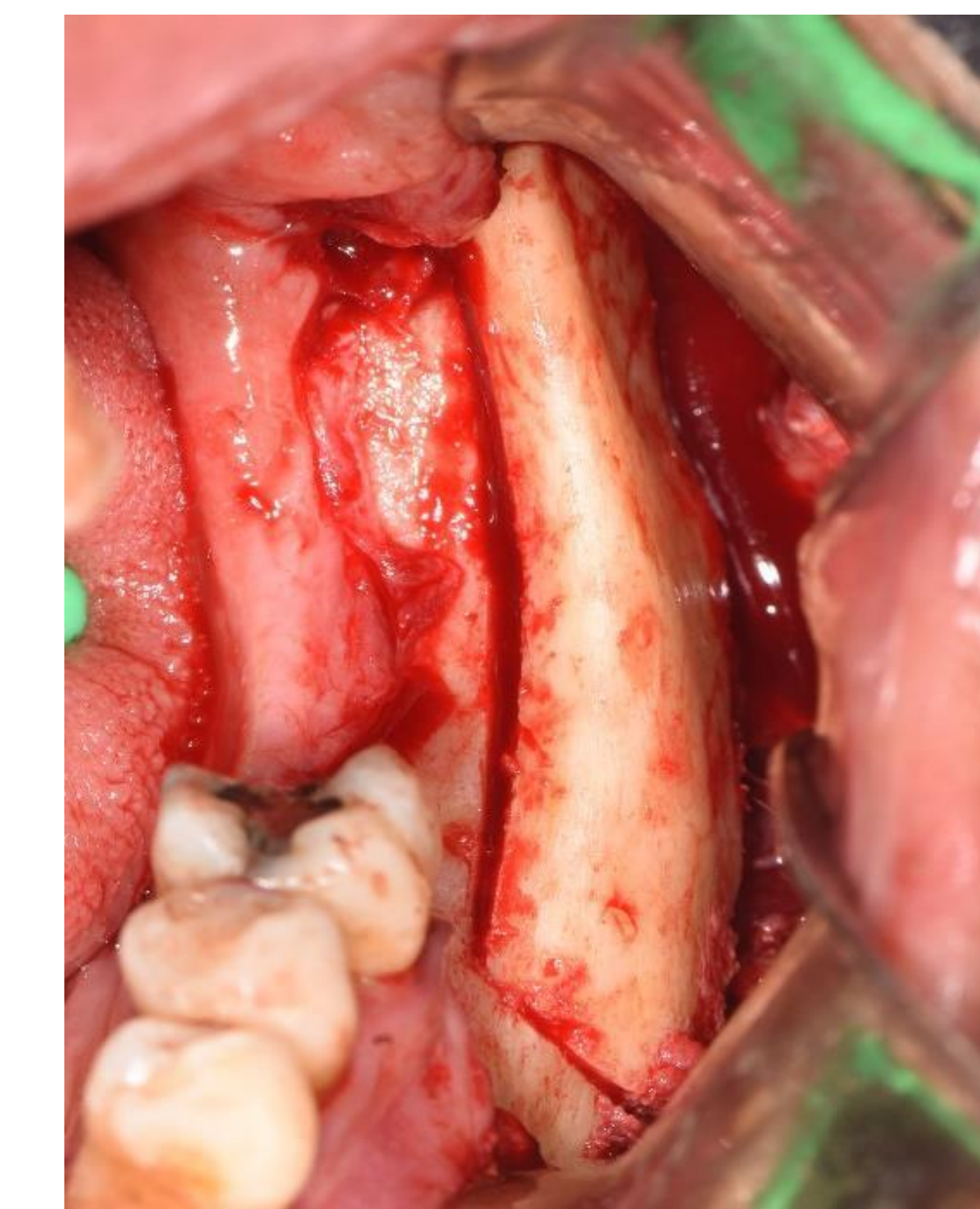
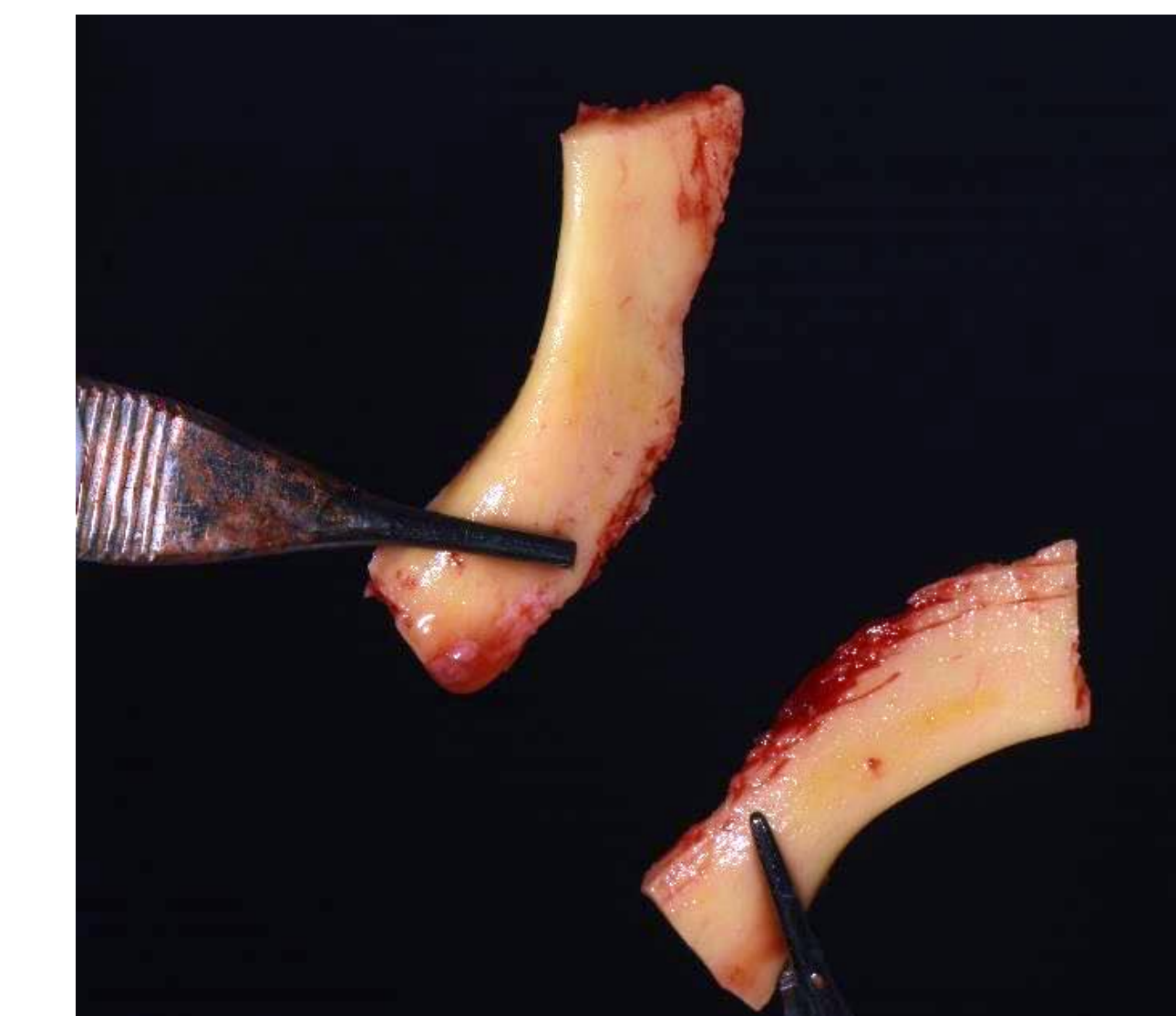
**Harvested calvarial cortical
blocks**



Auto: Xeno Particulate



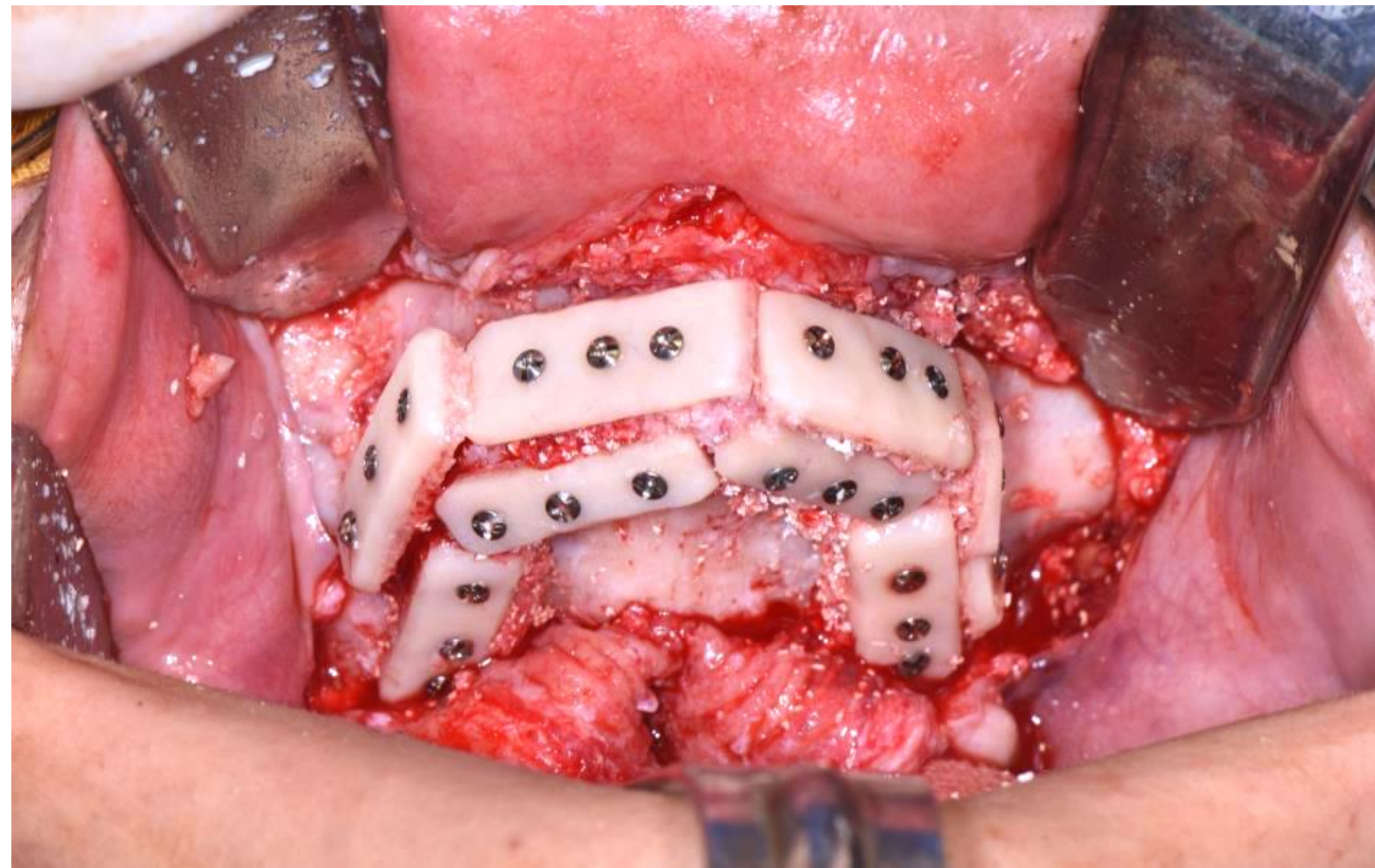
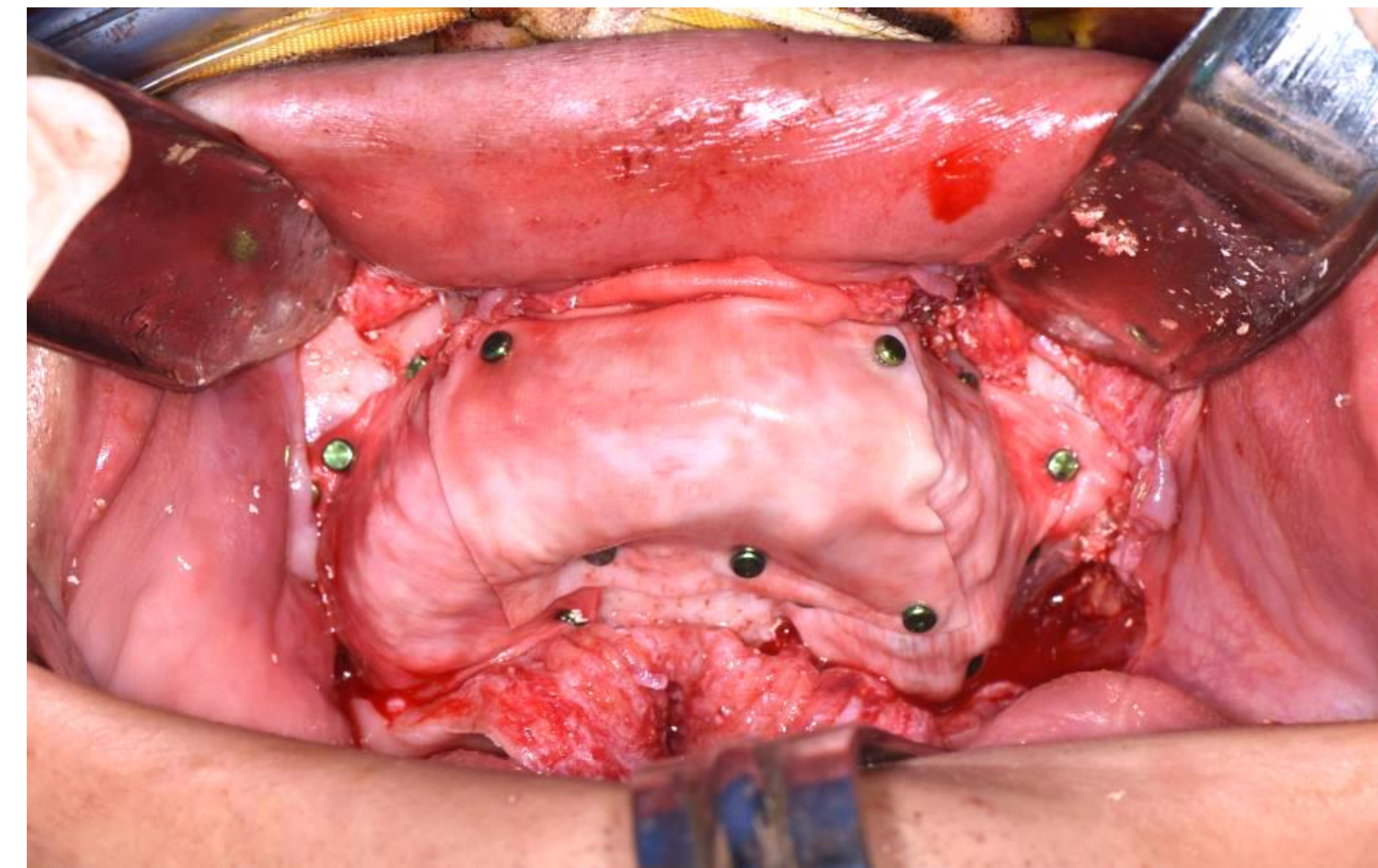
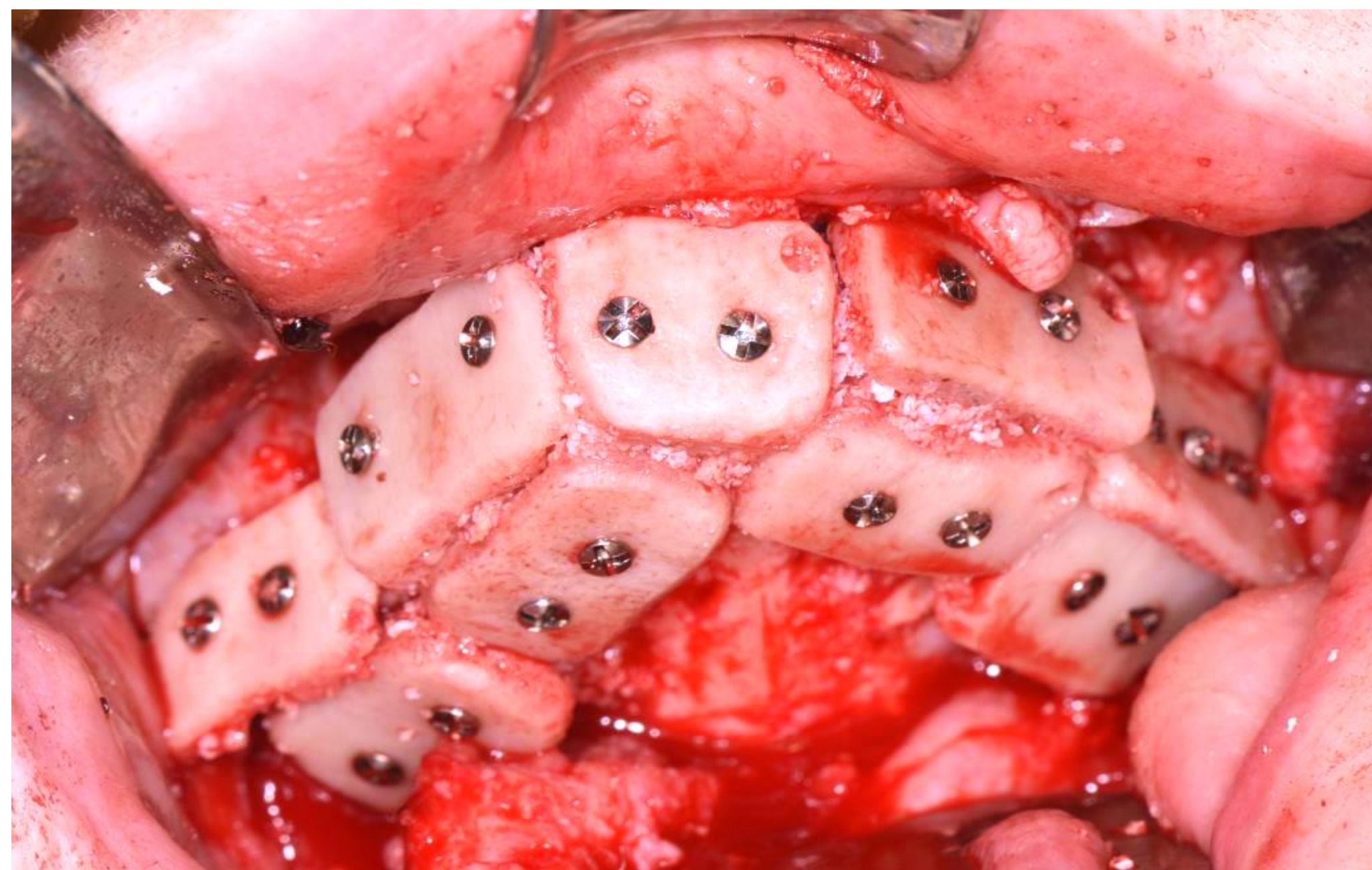
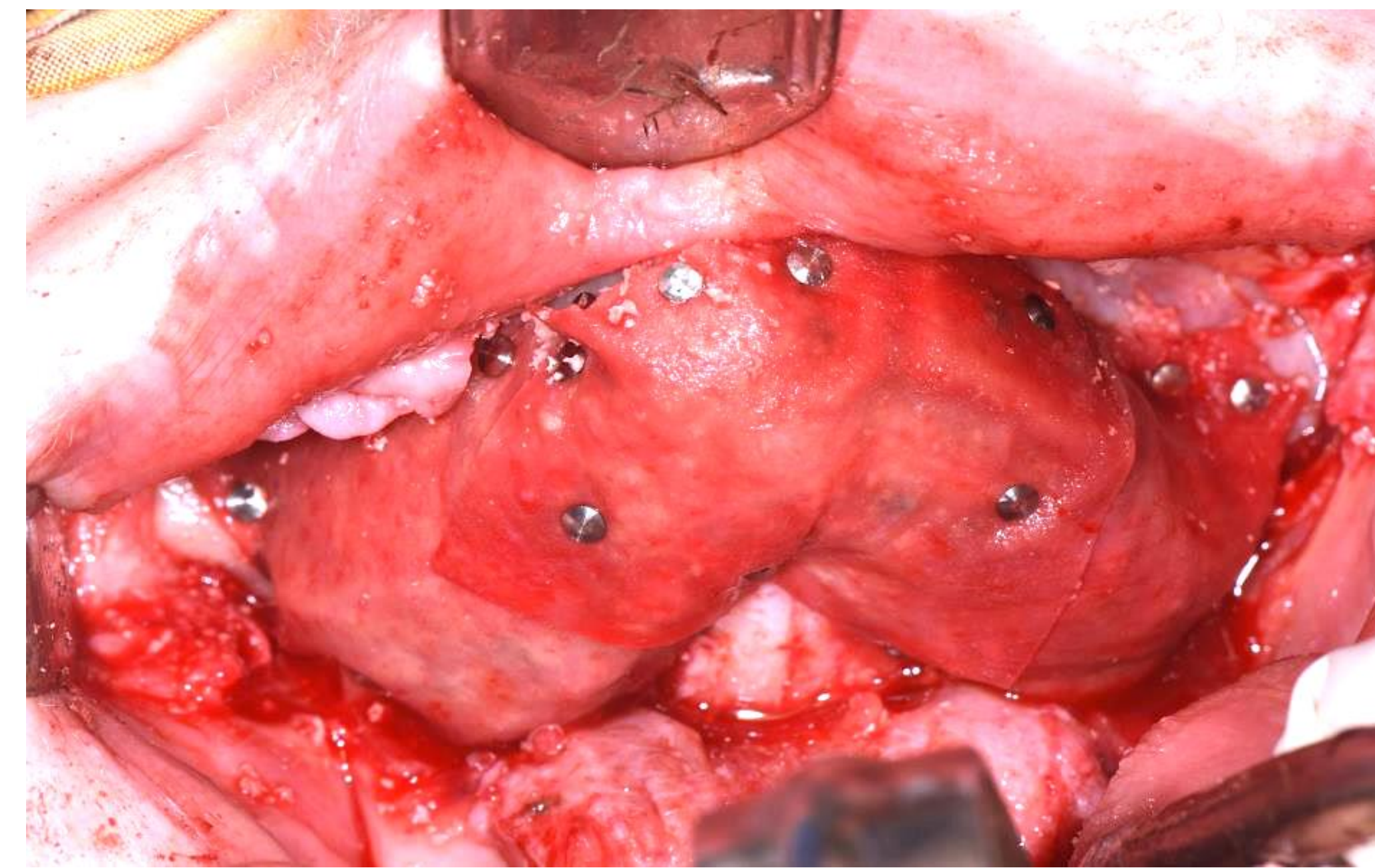
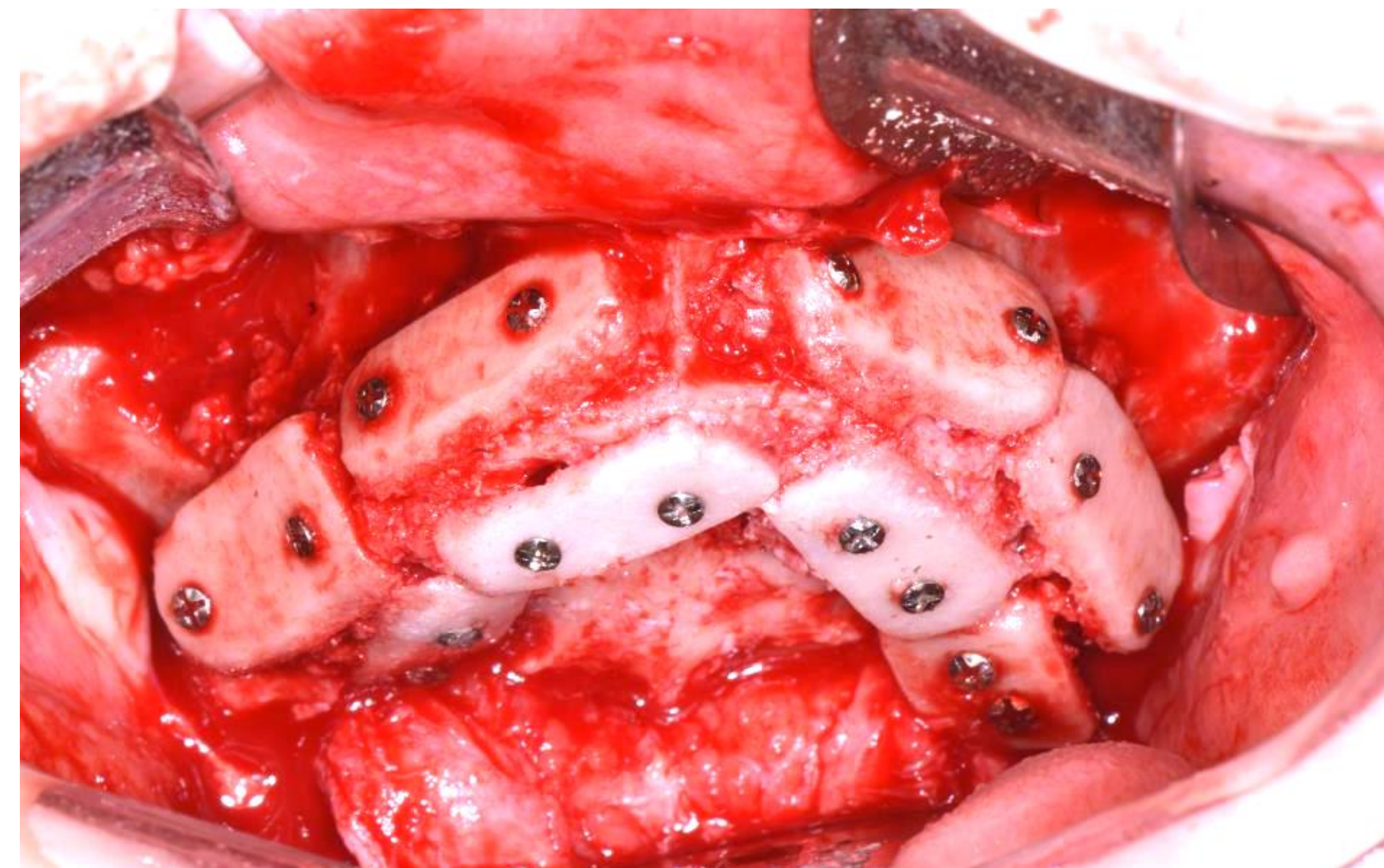
Osteotomy for harvesting ramus cortical blocks



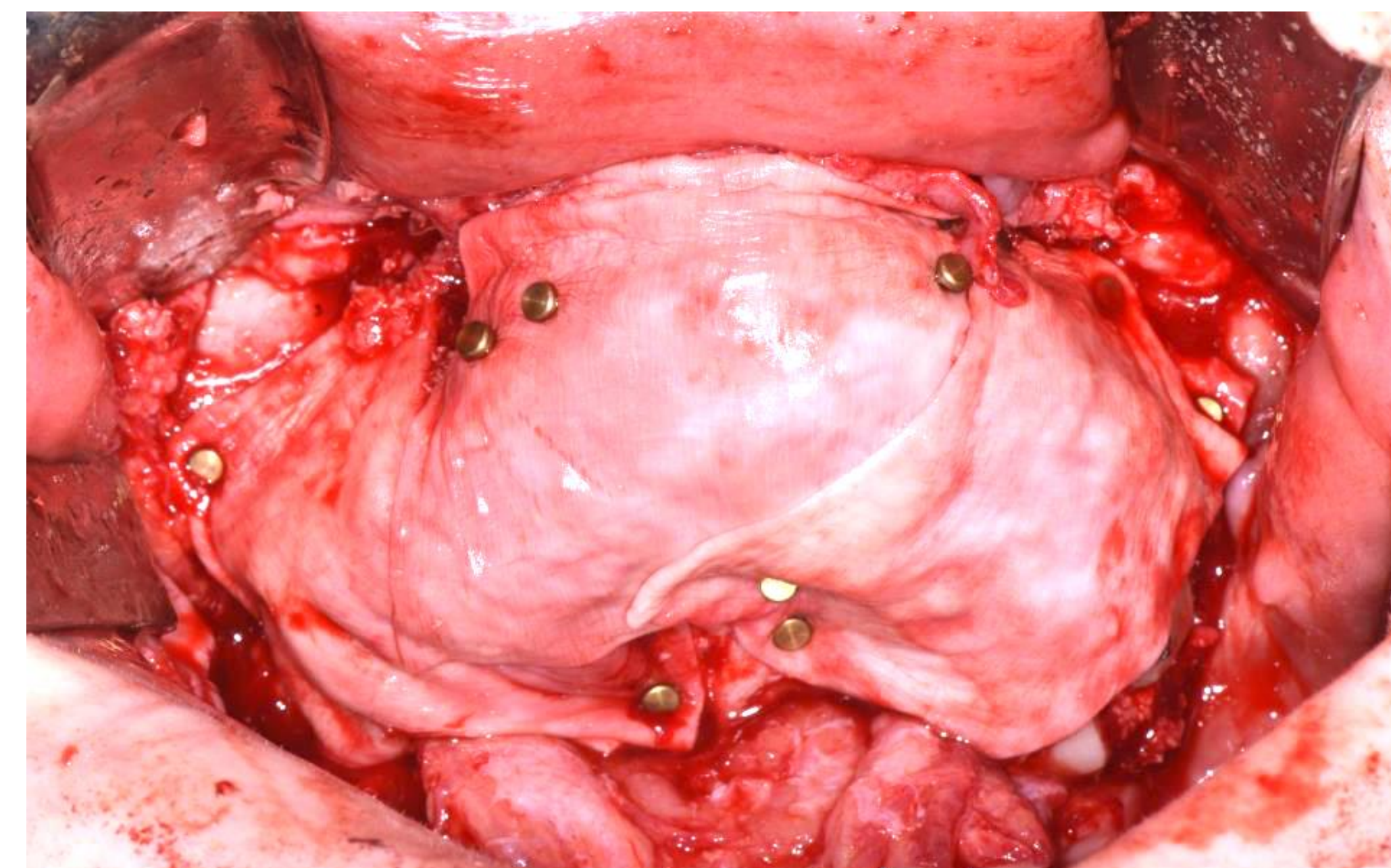
Harvested Ramus Blocks



CALVERIA GROUP

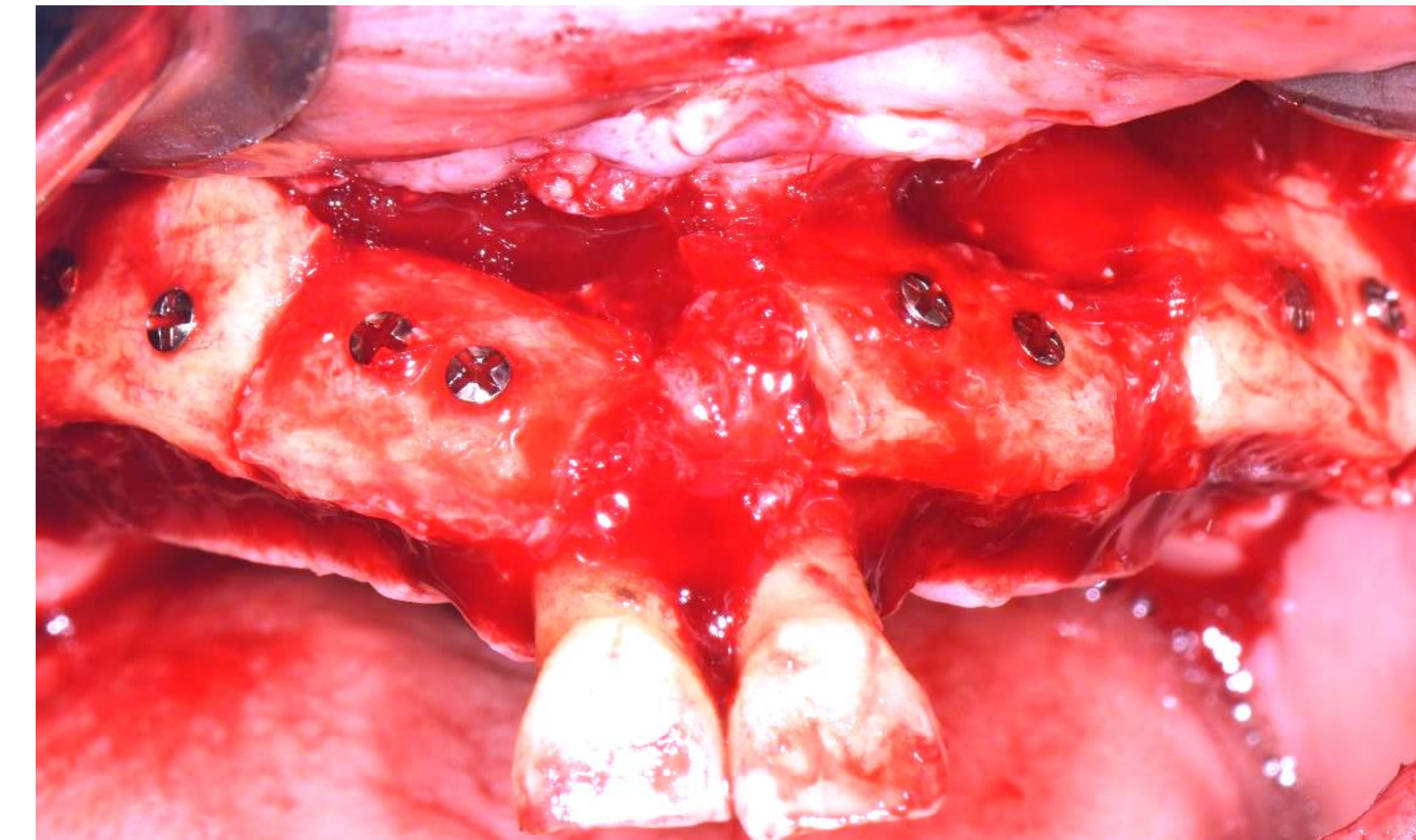
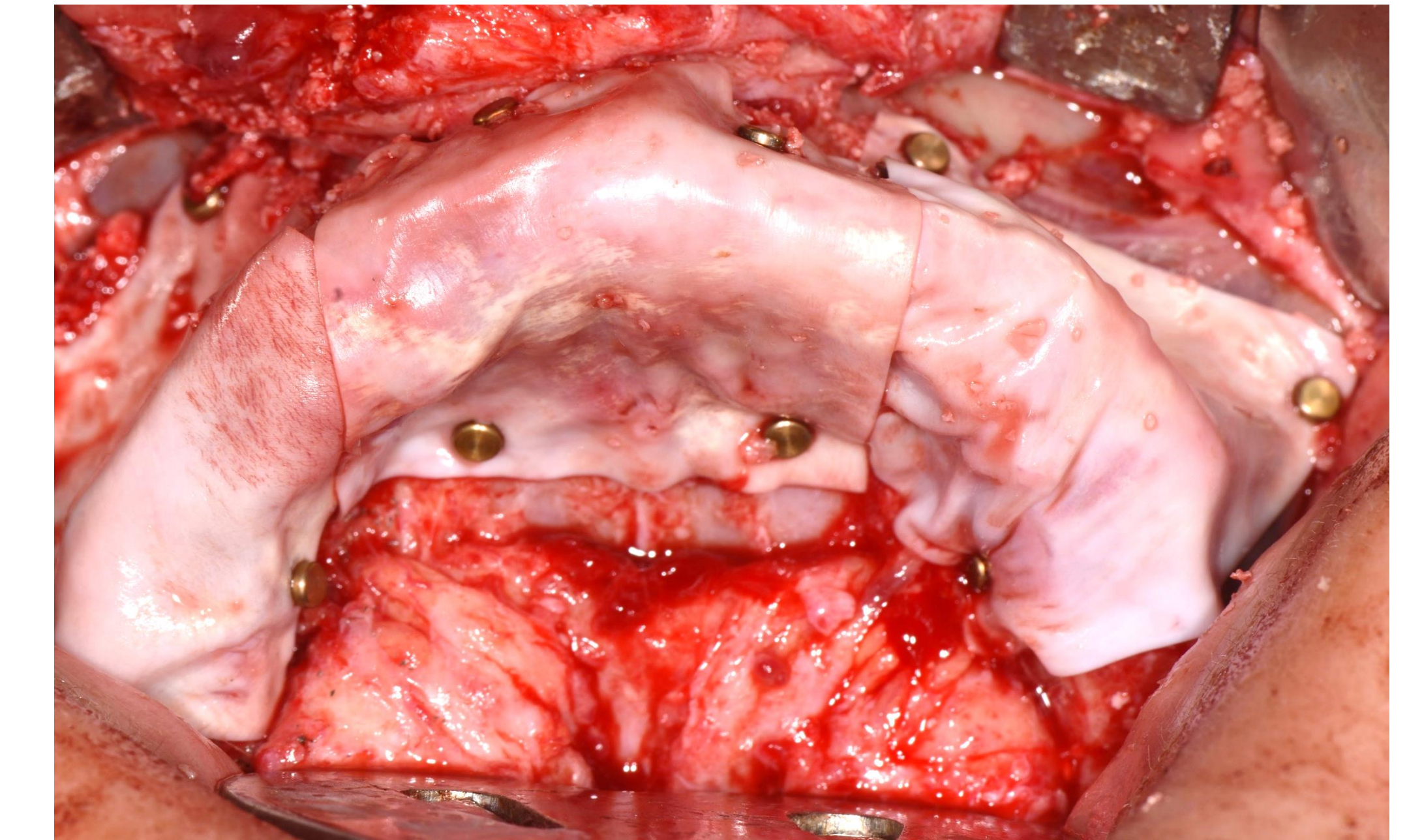
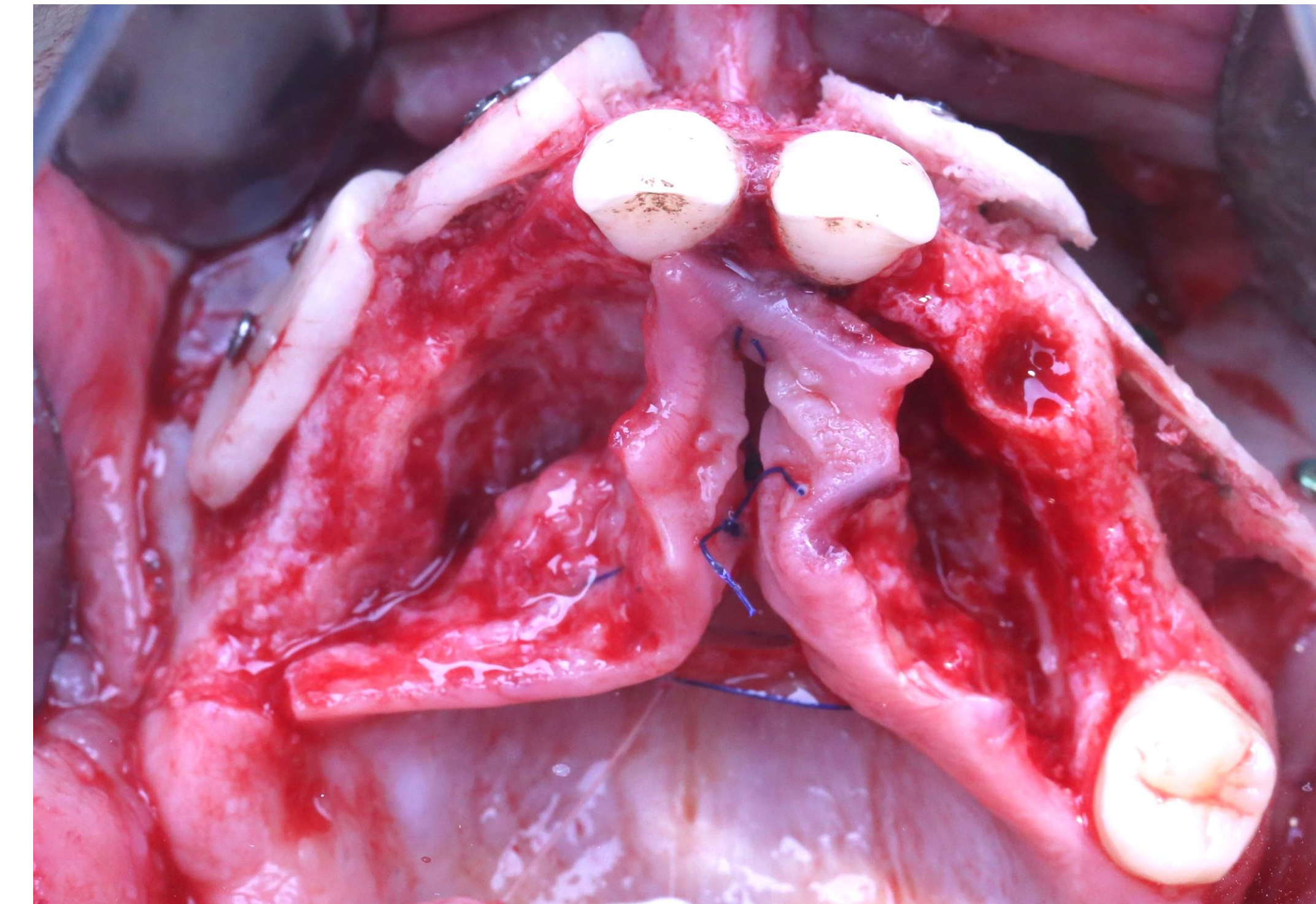
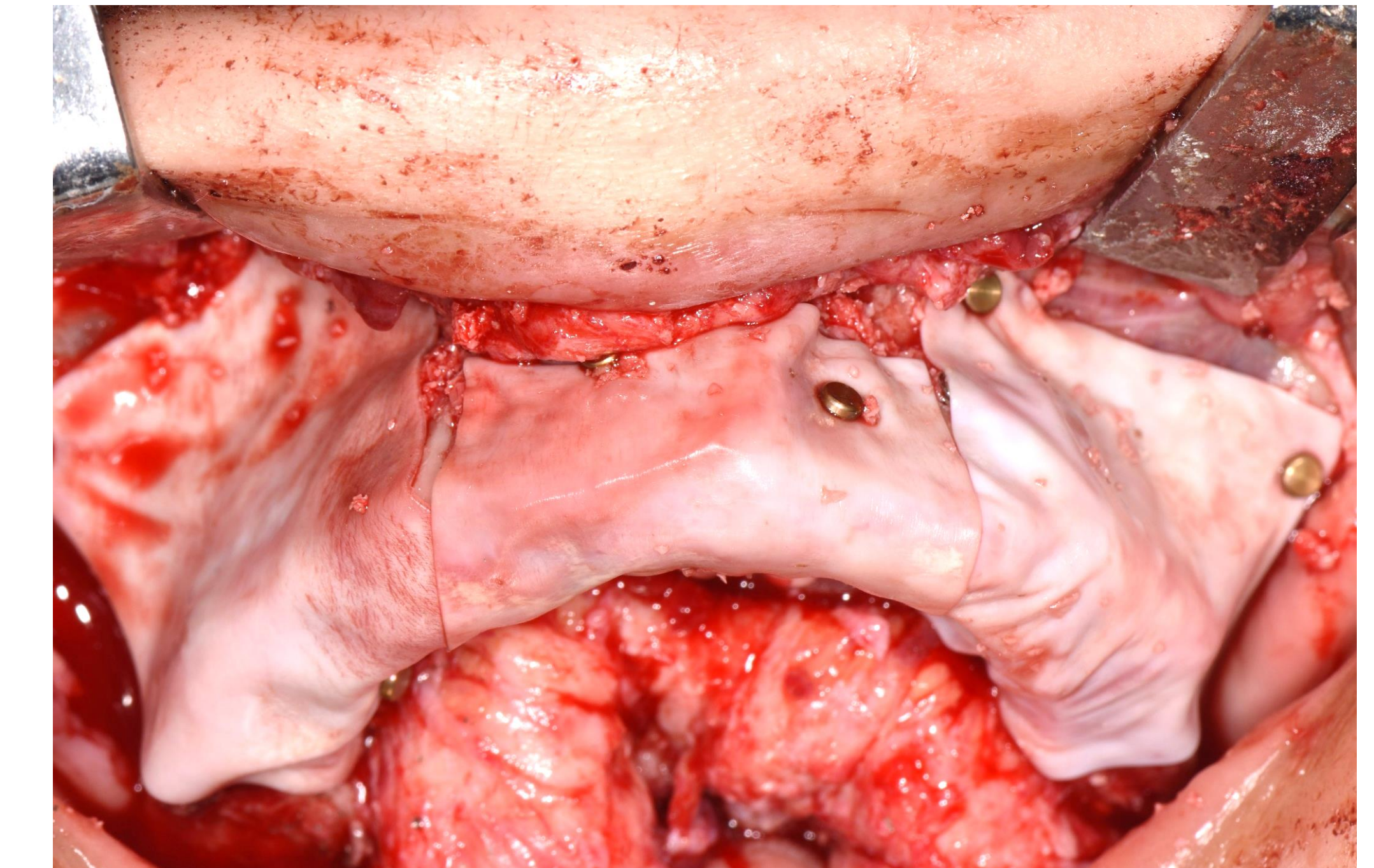
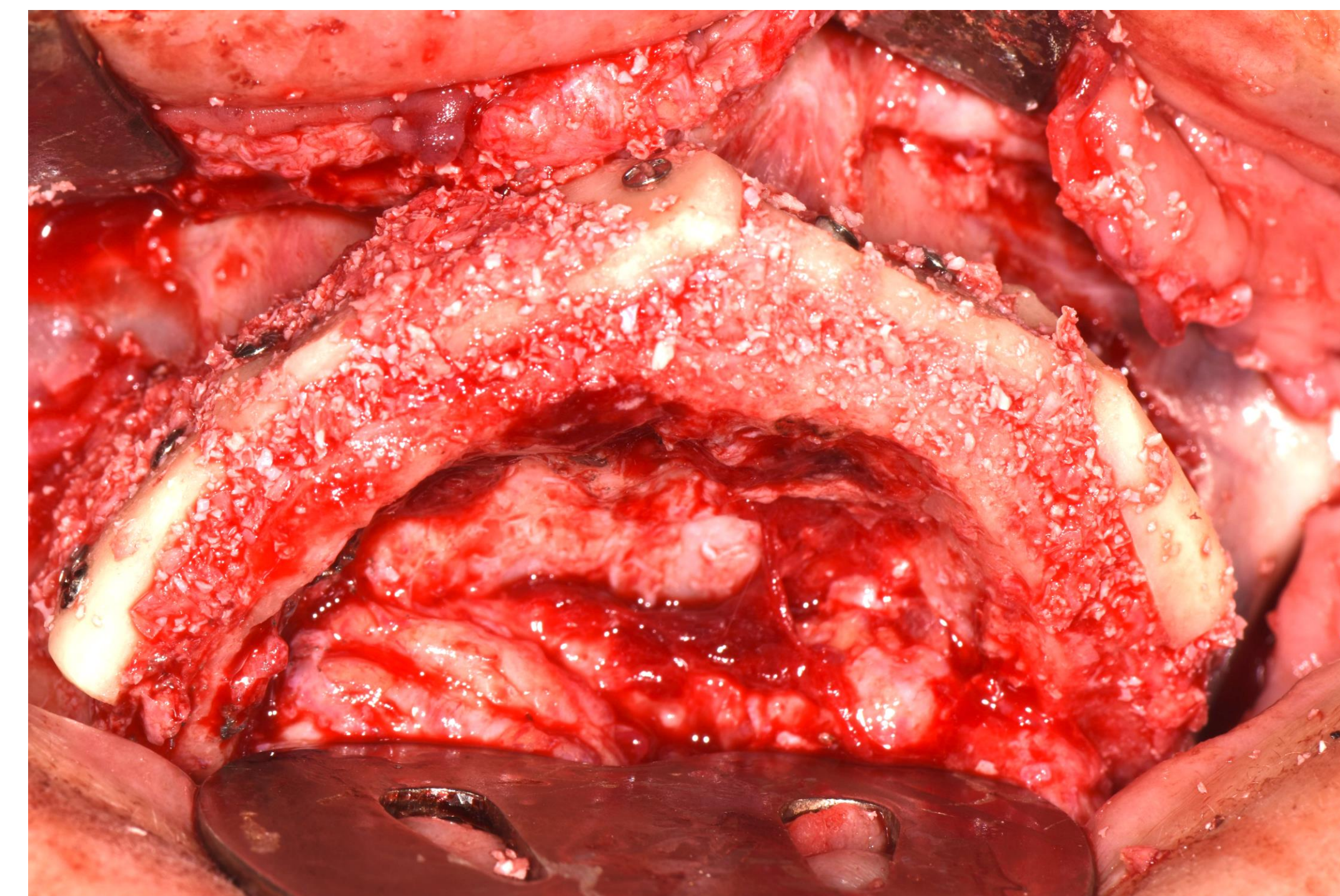


**Fixated Calvarial Cortical
Blocks**



**Collagen membrane coverage
for cortical blocks**

RAMUS GROUP

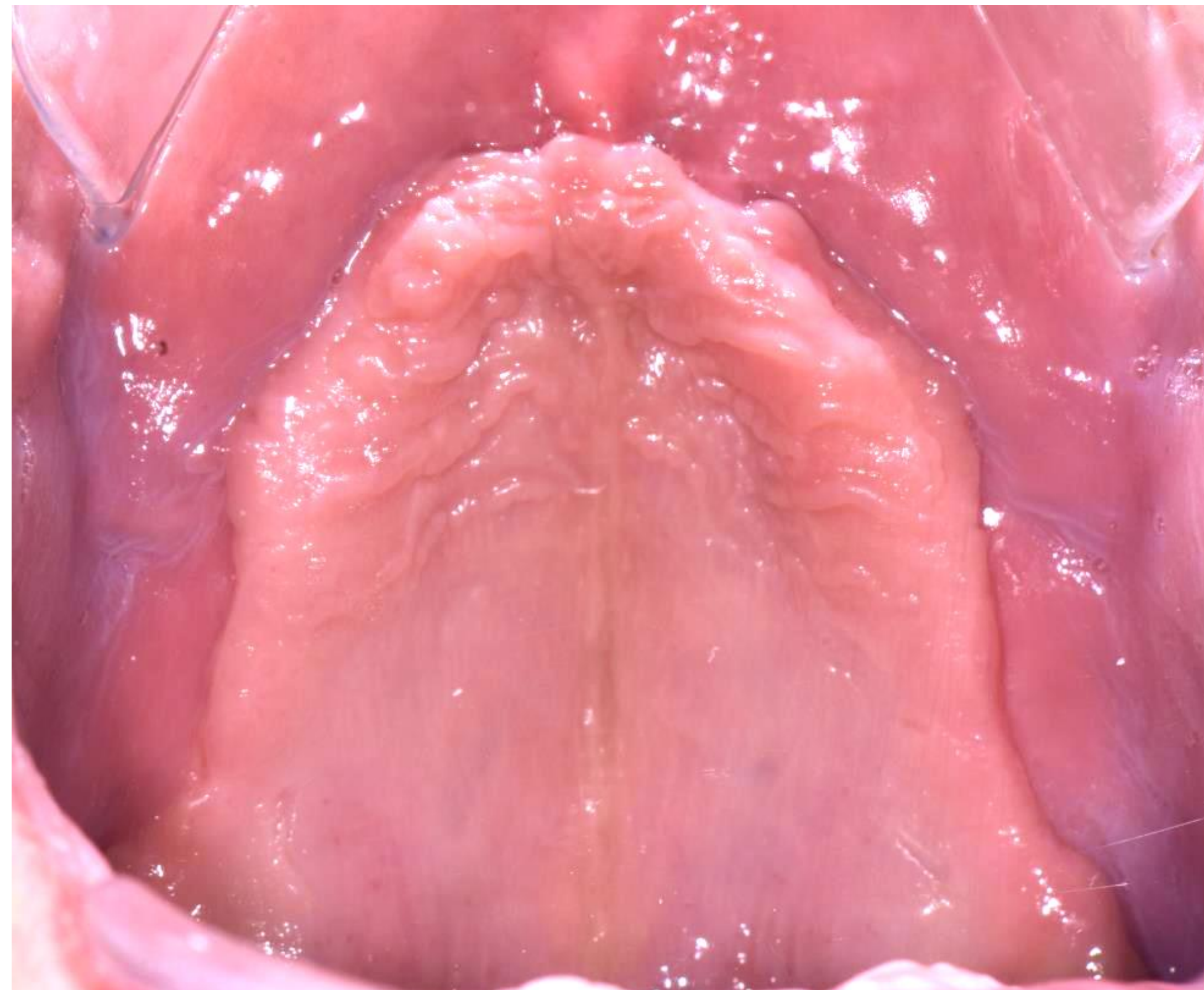


Fixated Ramus Cortical Blocks

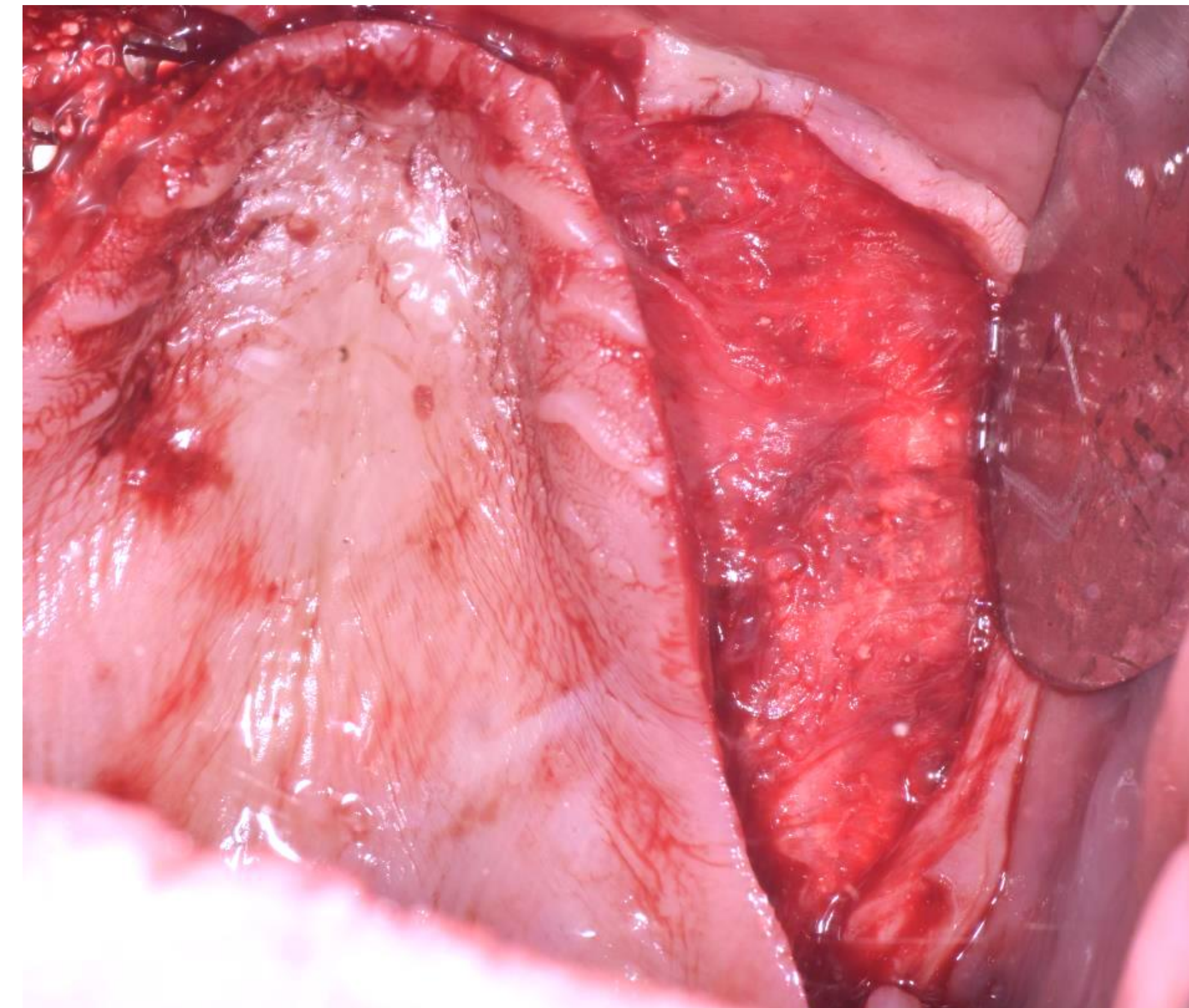


**Collagen membrane coverage
for cortical blocks**

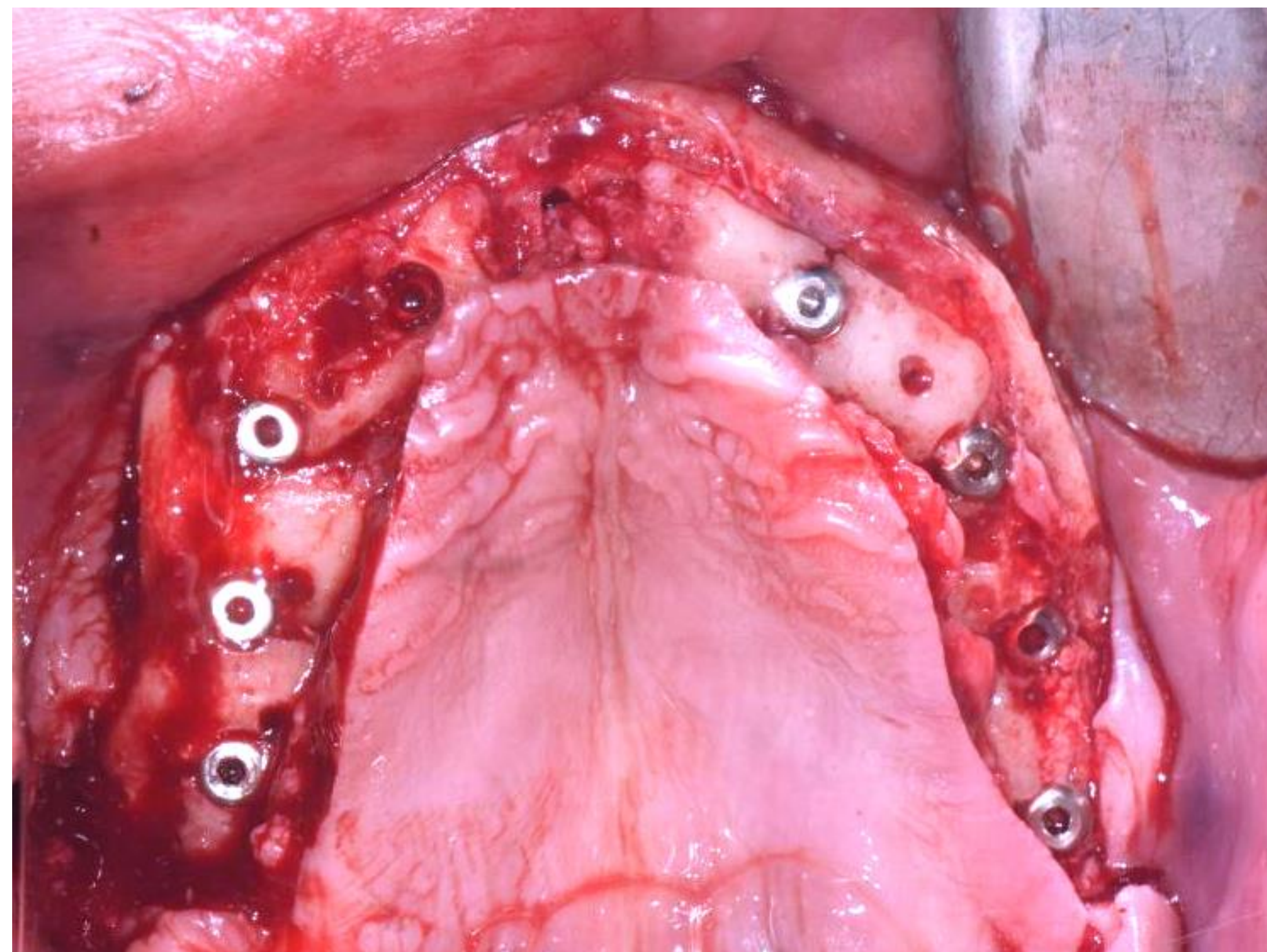
CALVERIA GROUP



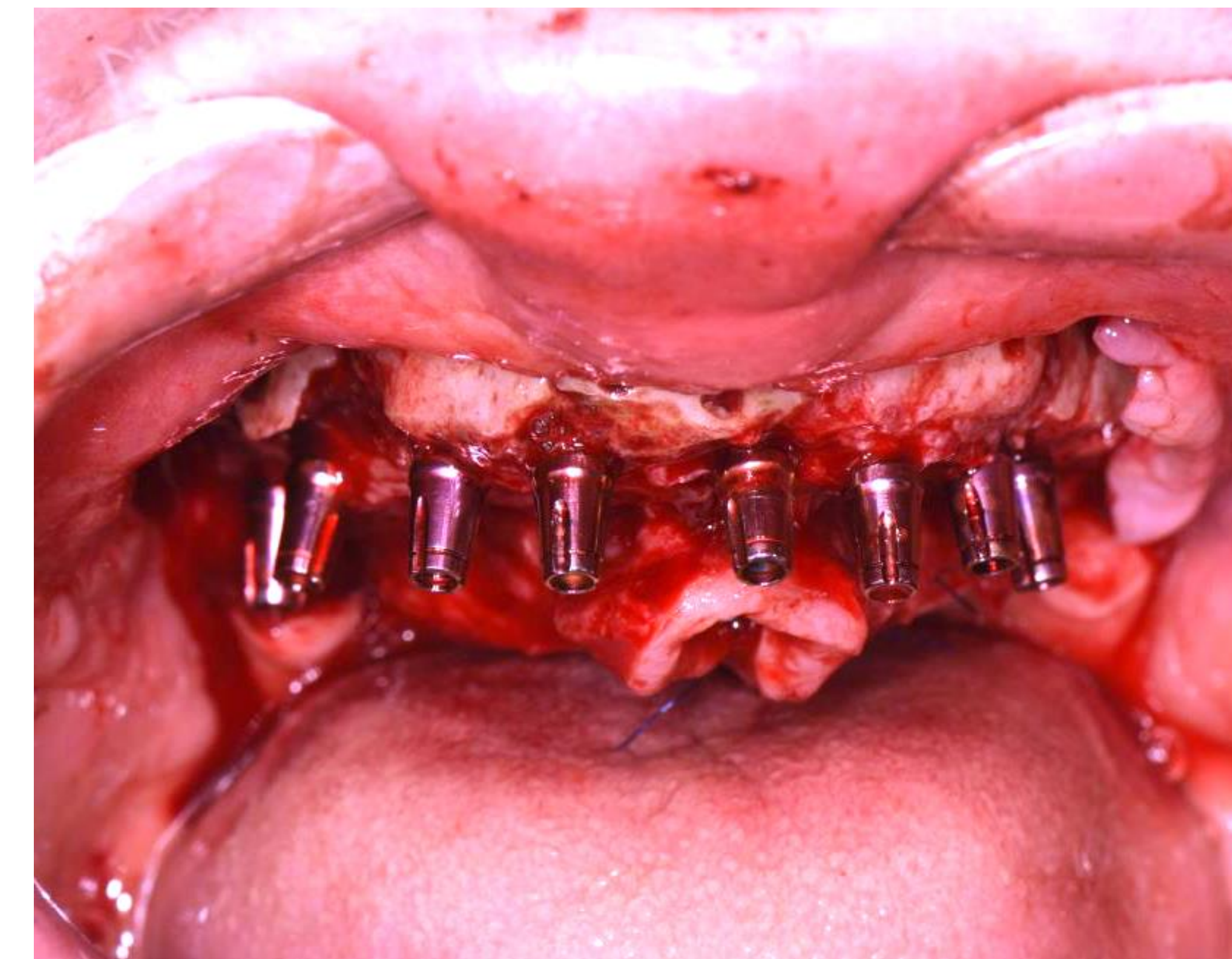
6month Postoperative Occlusal View before 2nd stage surgery



Flap Elevation

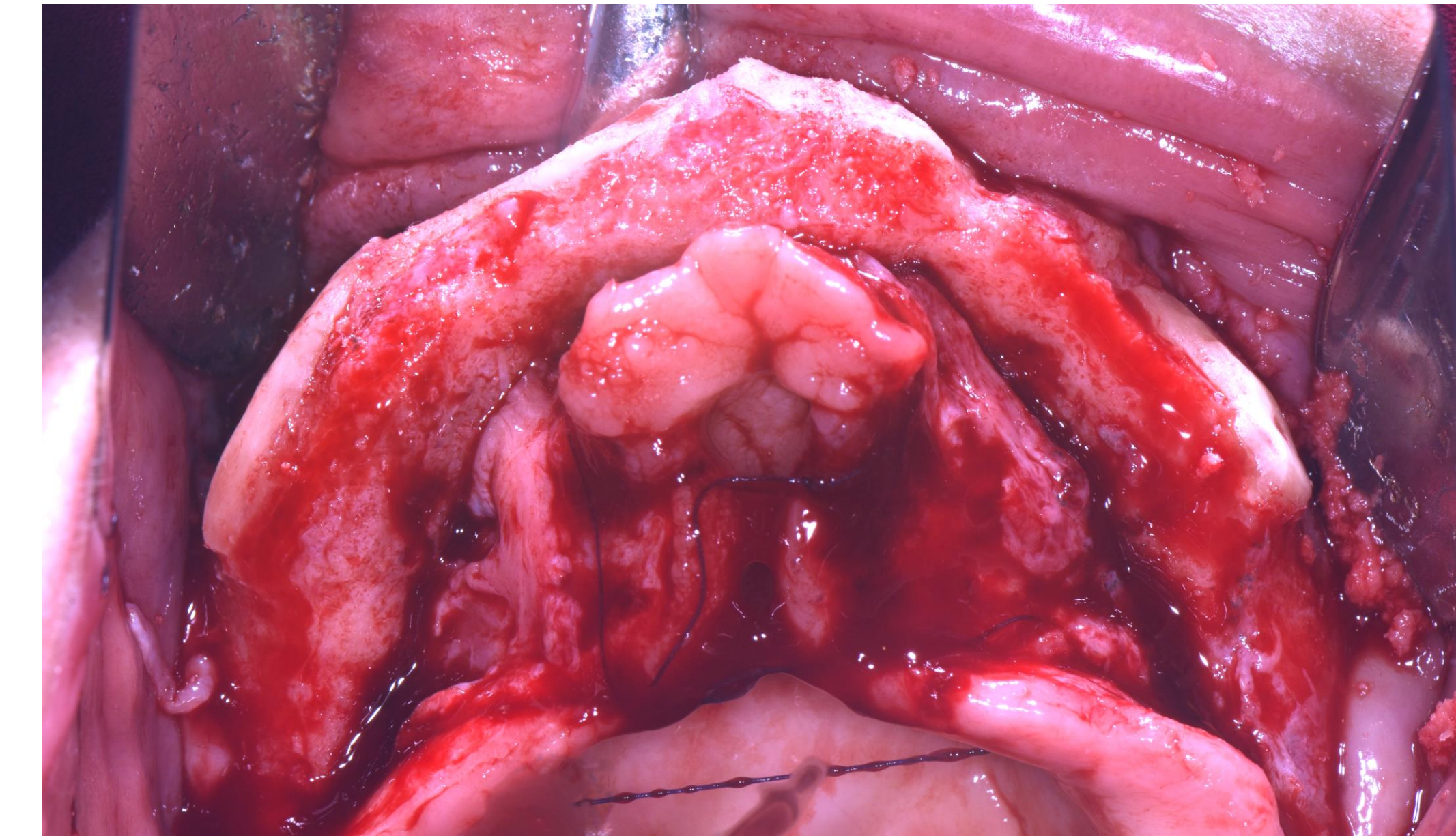


Occlusal View of cover screws

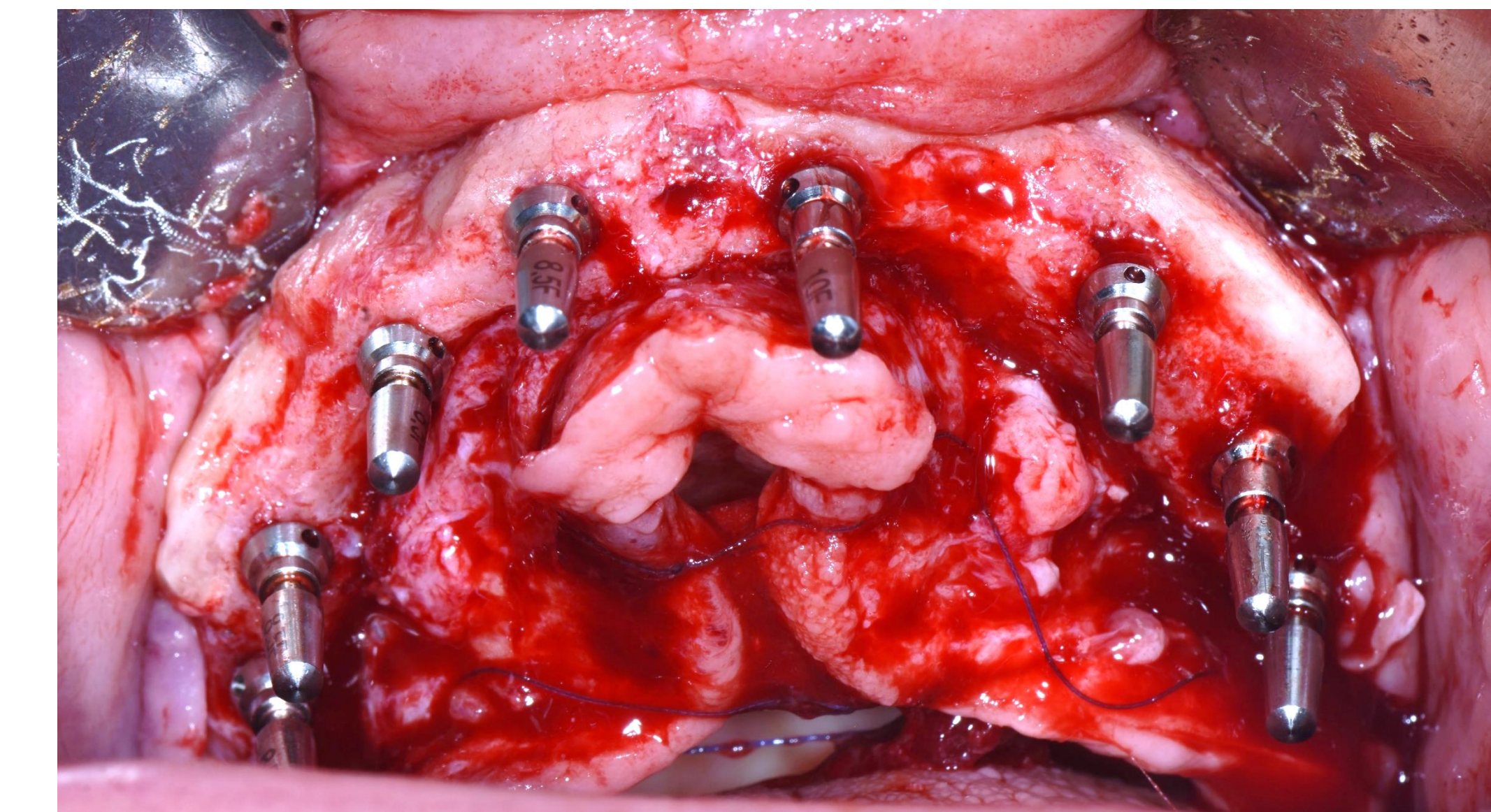


Frontal View of implants placed in reconstructed calvarial maxillary ridge

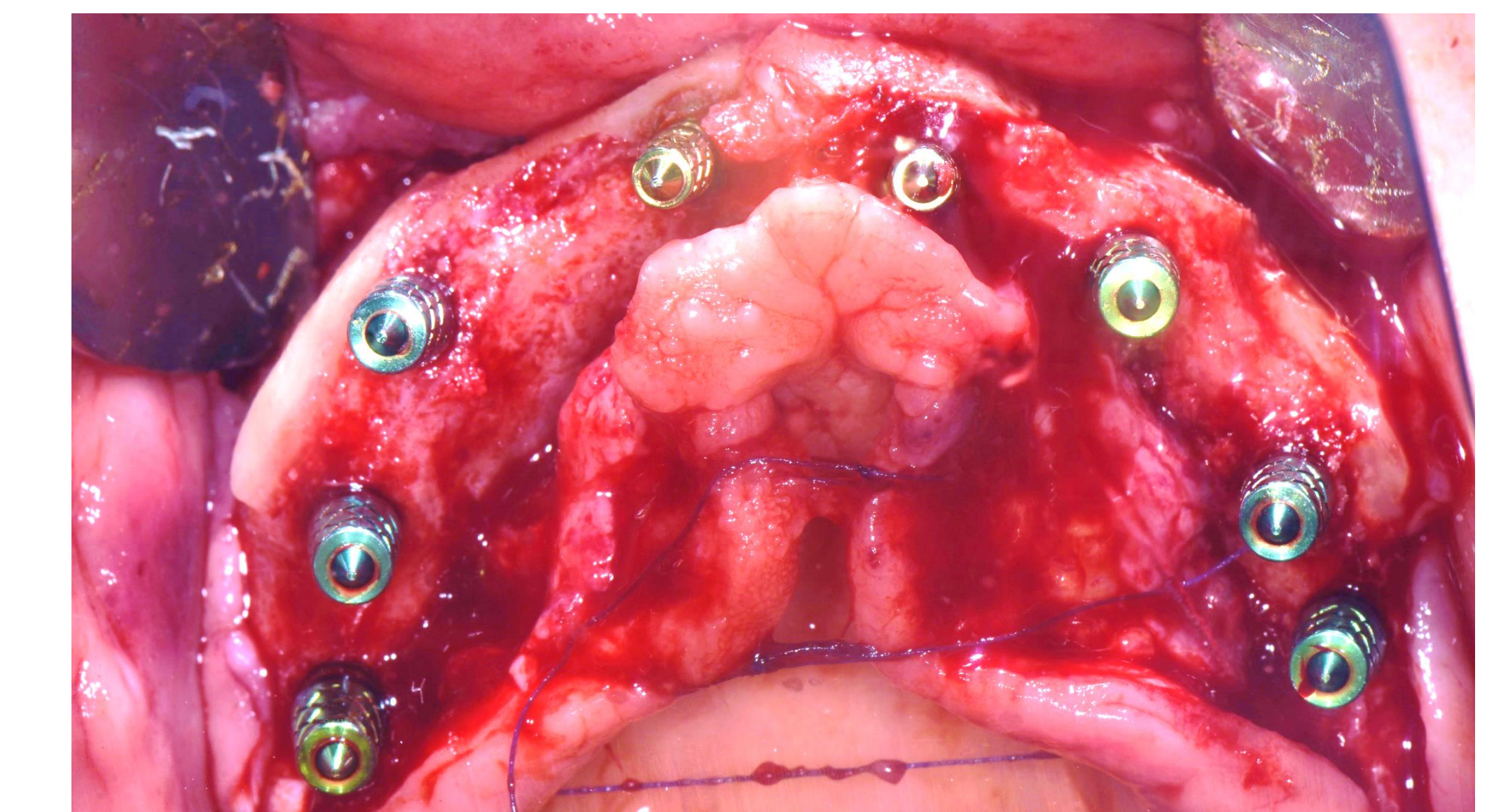
RAMUS GROUP



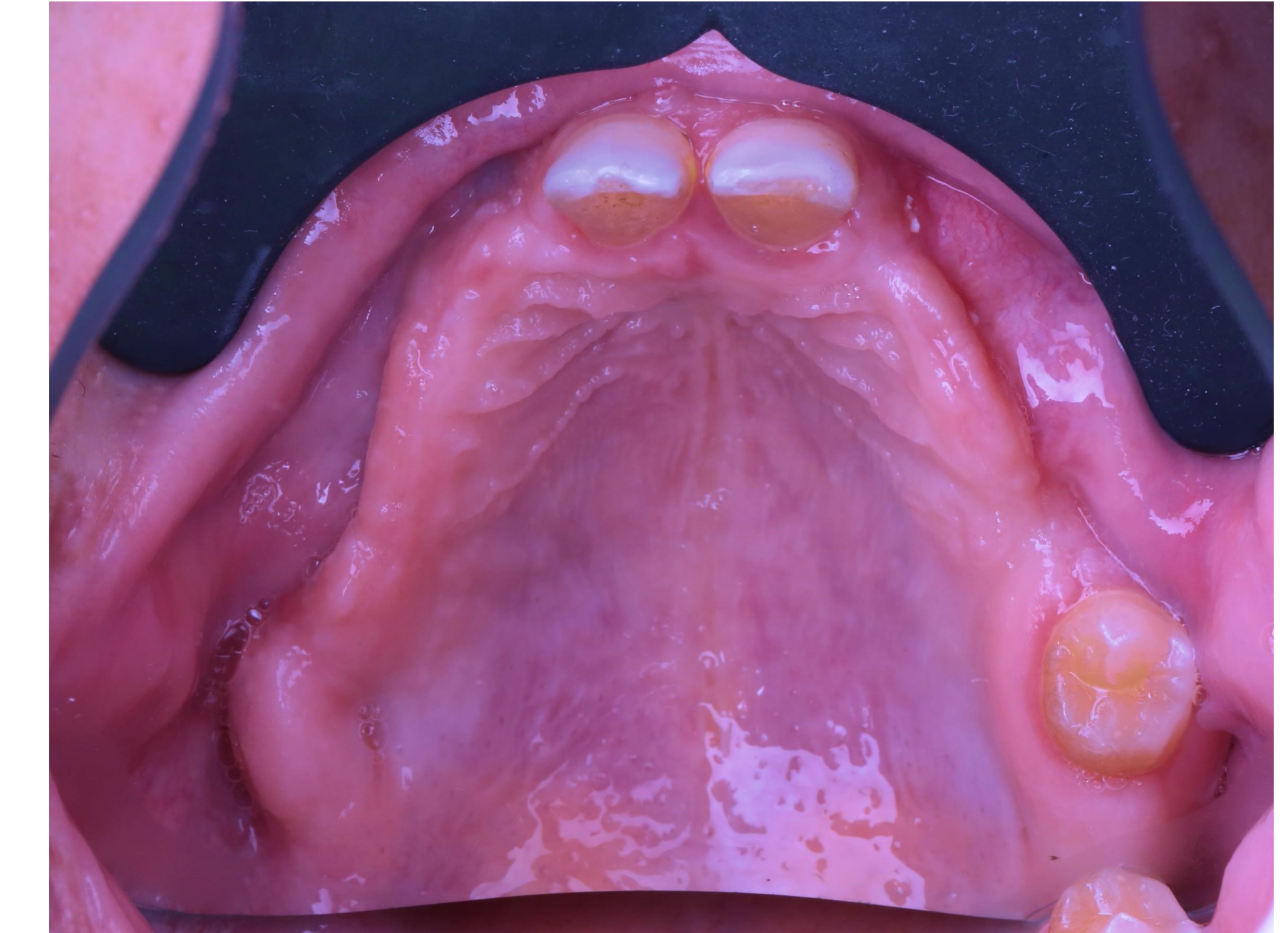
Occlusal View of Consolidated ramus cortical blocks



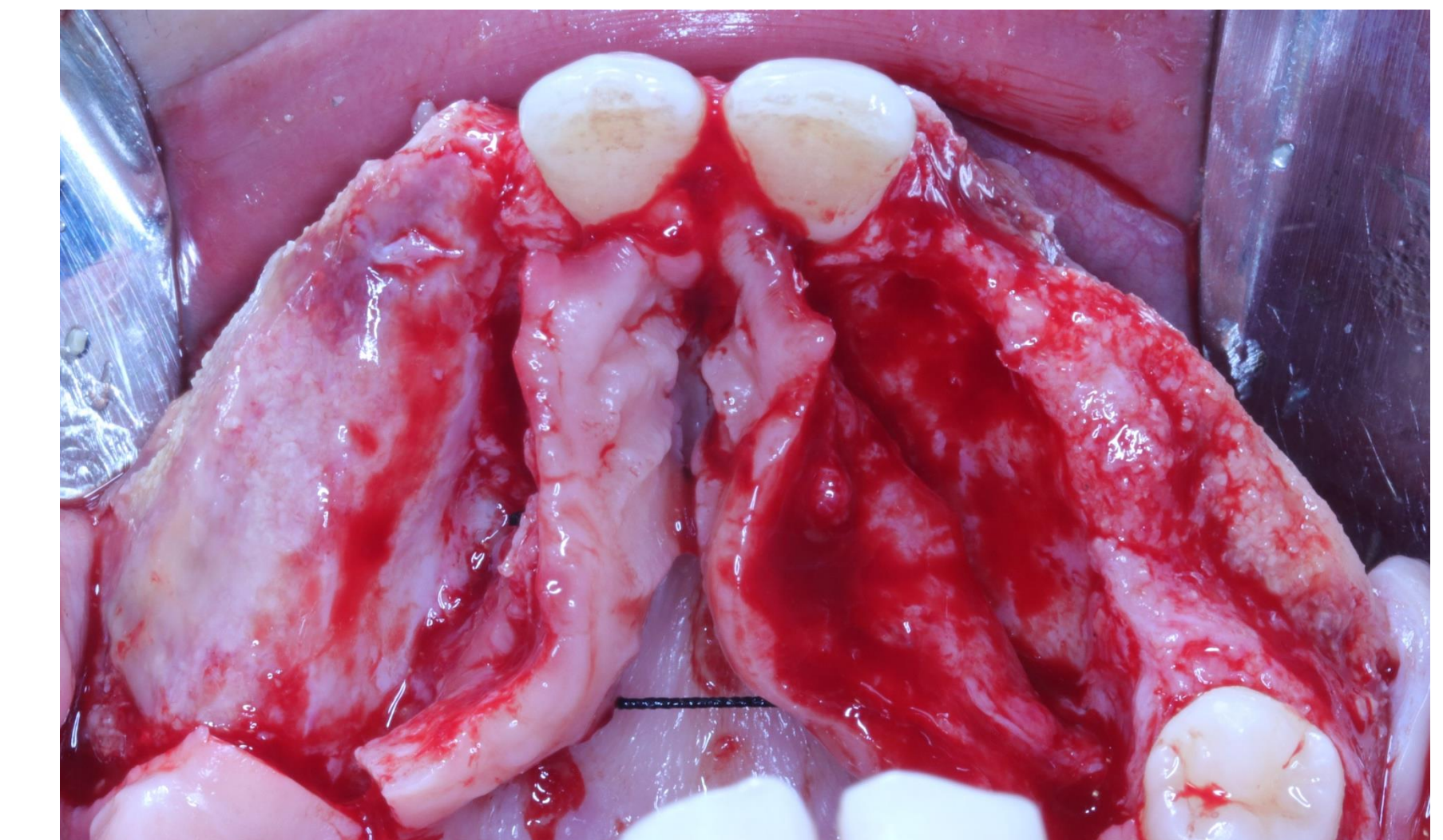
Frontal view for paralleling pins



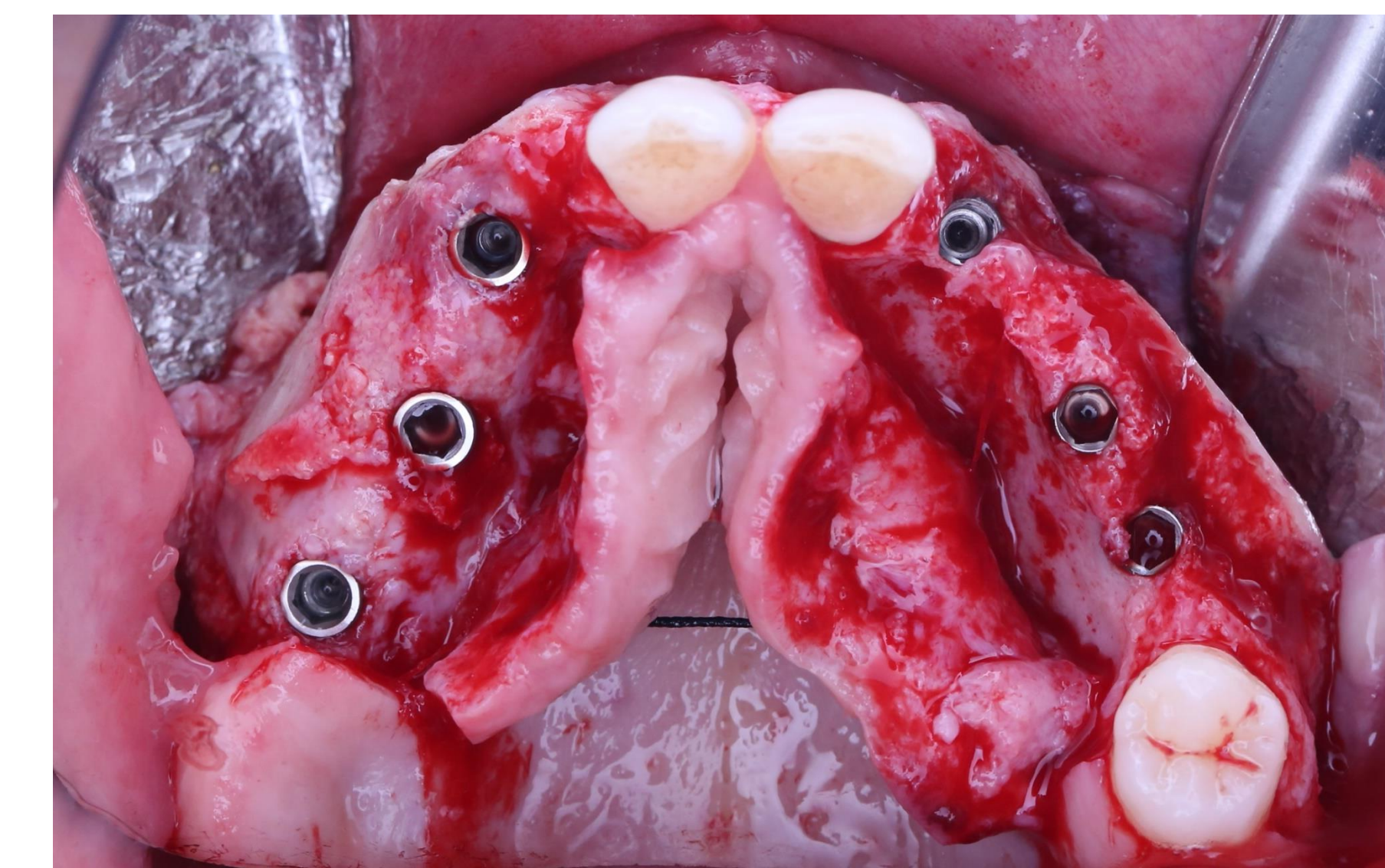
Occlusal view of placed implants and abutment direction pins



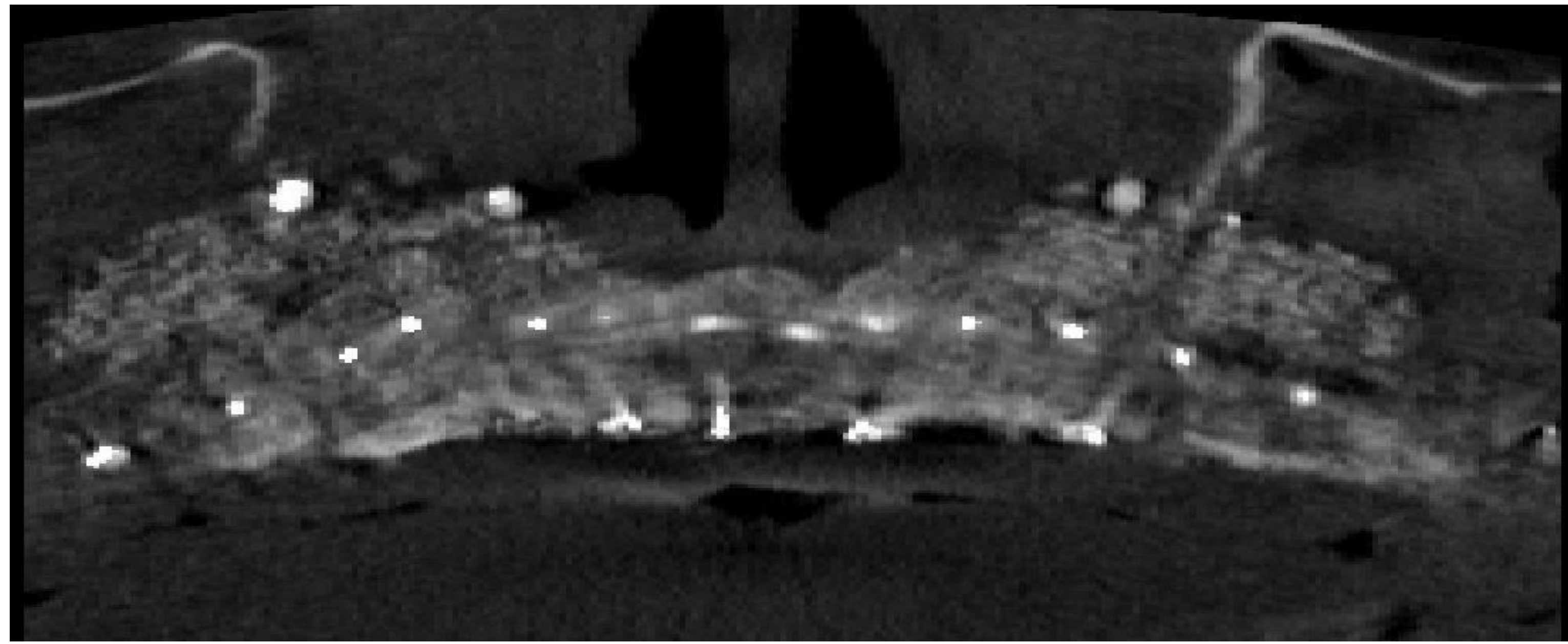
Preoperative Occlusal View before 2nd stage surgery



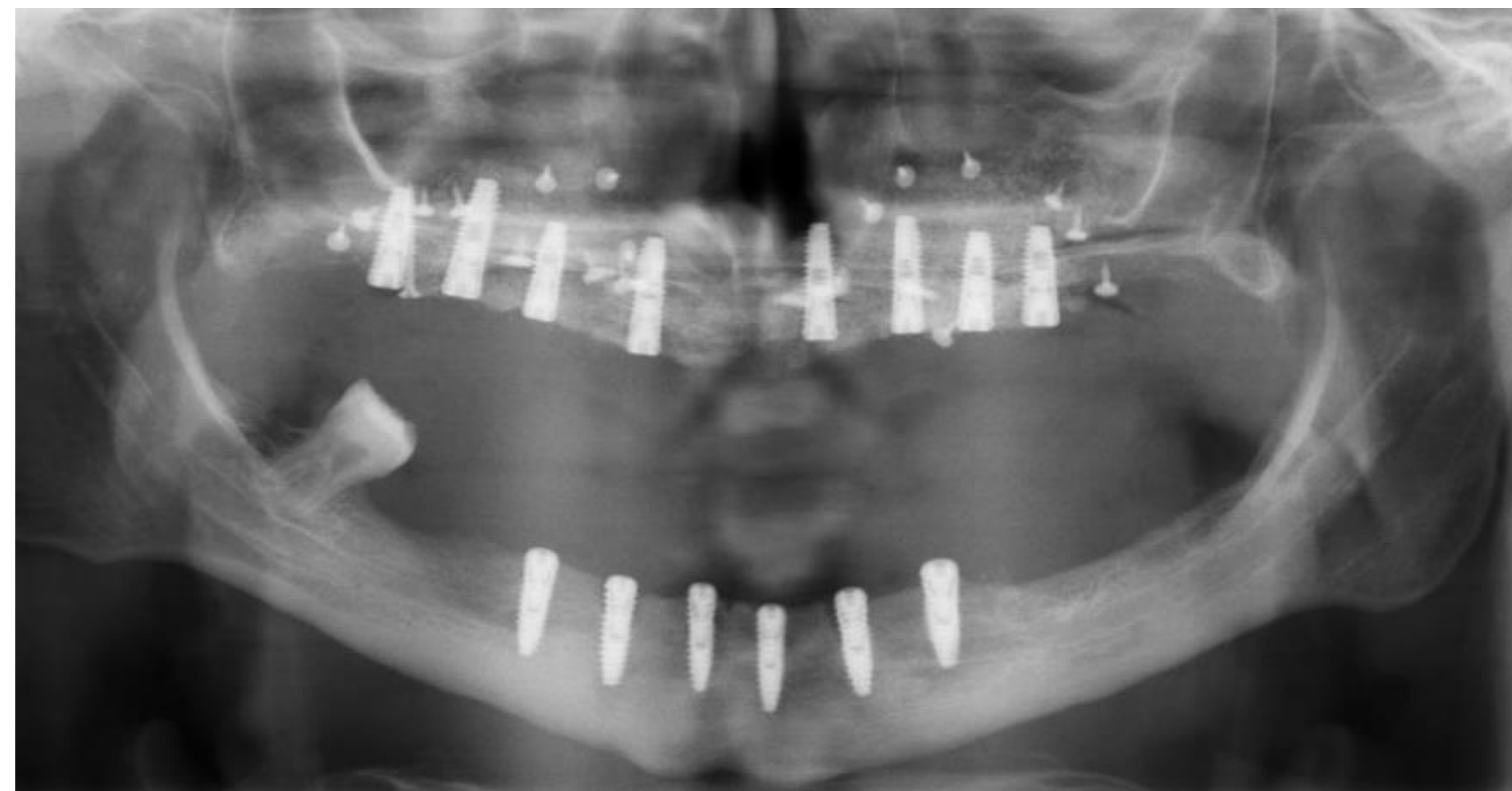
Occlusal View of Consolidated ramus cortical blocks



CALVERIA GROUP

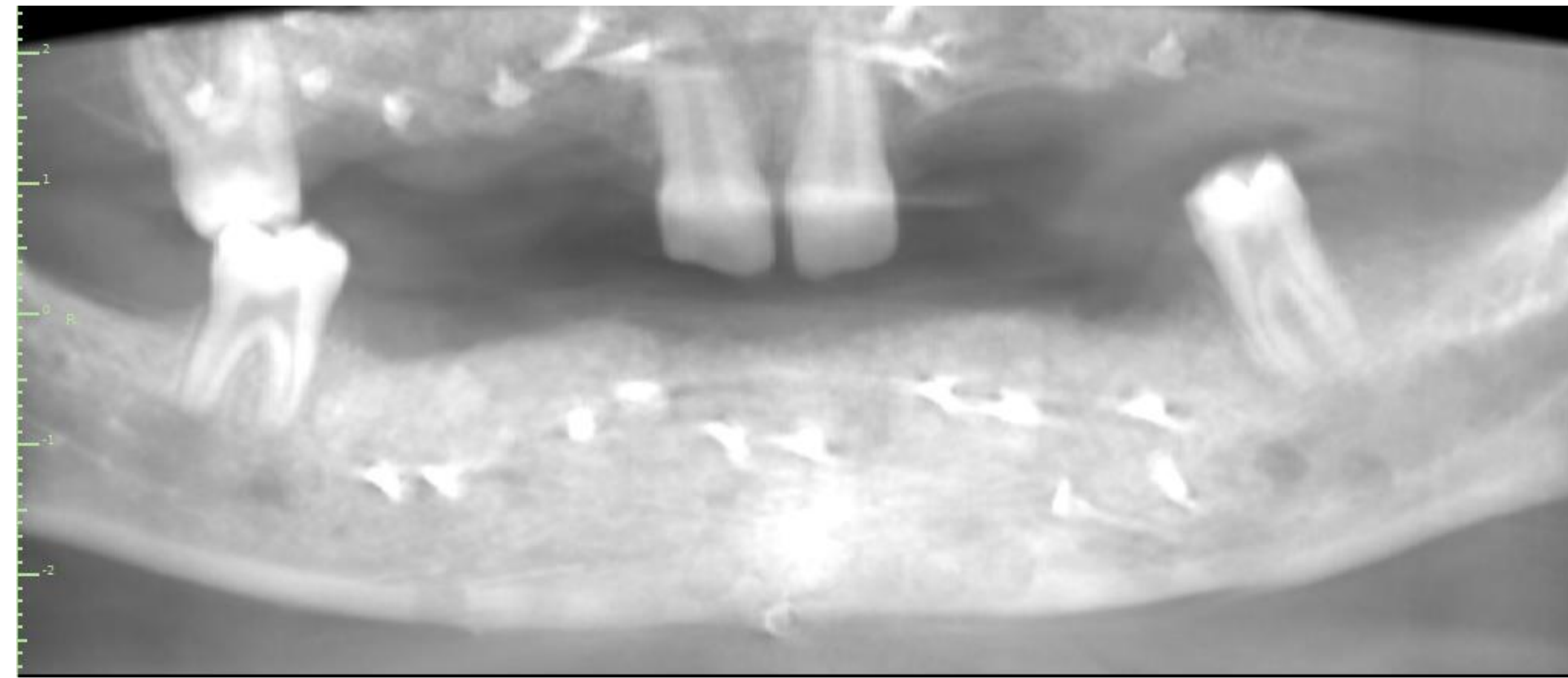


Post Op panoramic view of calvarial consolidated cortical blocks

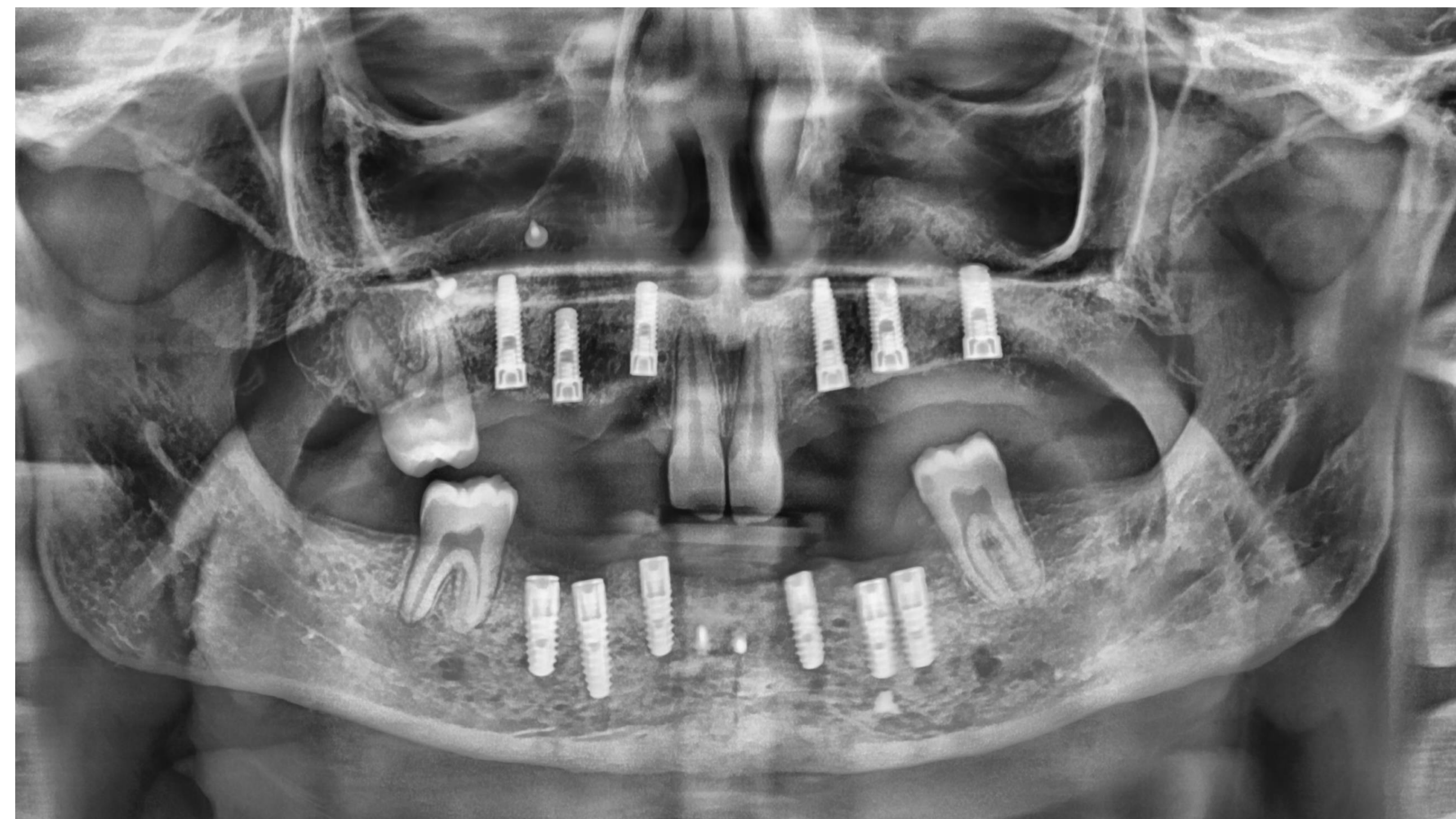


2 months Post Op panoramic view of implant placement in calvarial consolidated cortical blocks

RAMUS GROUP



Post Op panoramic view of ramus consolidated cortical blocks



2 months Post Op panoramic view of implant placement in ramus consolidated cortical blocks

Results: All cases showed uneventful healing postoperative with no complications regarding wound dehiscence, infection or neurosensory recovery except for two cases, one in each group experienced wound dehiscence. Six months postoperatively, all patients showed significant amount of bone gain, consolidated cortical windows in which the average buccolingual dimension of the alveolar ridges in the calvarial group six months postoperatively was 7 ± 1.6 mm. As well as bone gain was ranging from 5.2 ± 1.2 mm, while in the ramus group the average buccolingual dimension postoperatively was 6.5 ± 1.5 mm and in regards of bone gain 4.6 ± 1.4 mm.



Wound dehiscence in one of the calvarial reconstruction cases

Conclusion: Within the limits of this study, reconstructive augmentation of deficient alveolar maxillary ridges show promising results in terms of bone gain using intramembranous origin bone blocks harvest in which various sites could be used to obtain such amount of bone volume for rehabilitation.