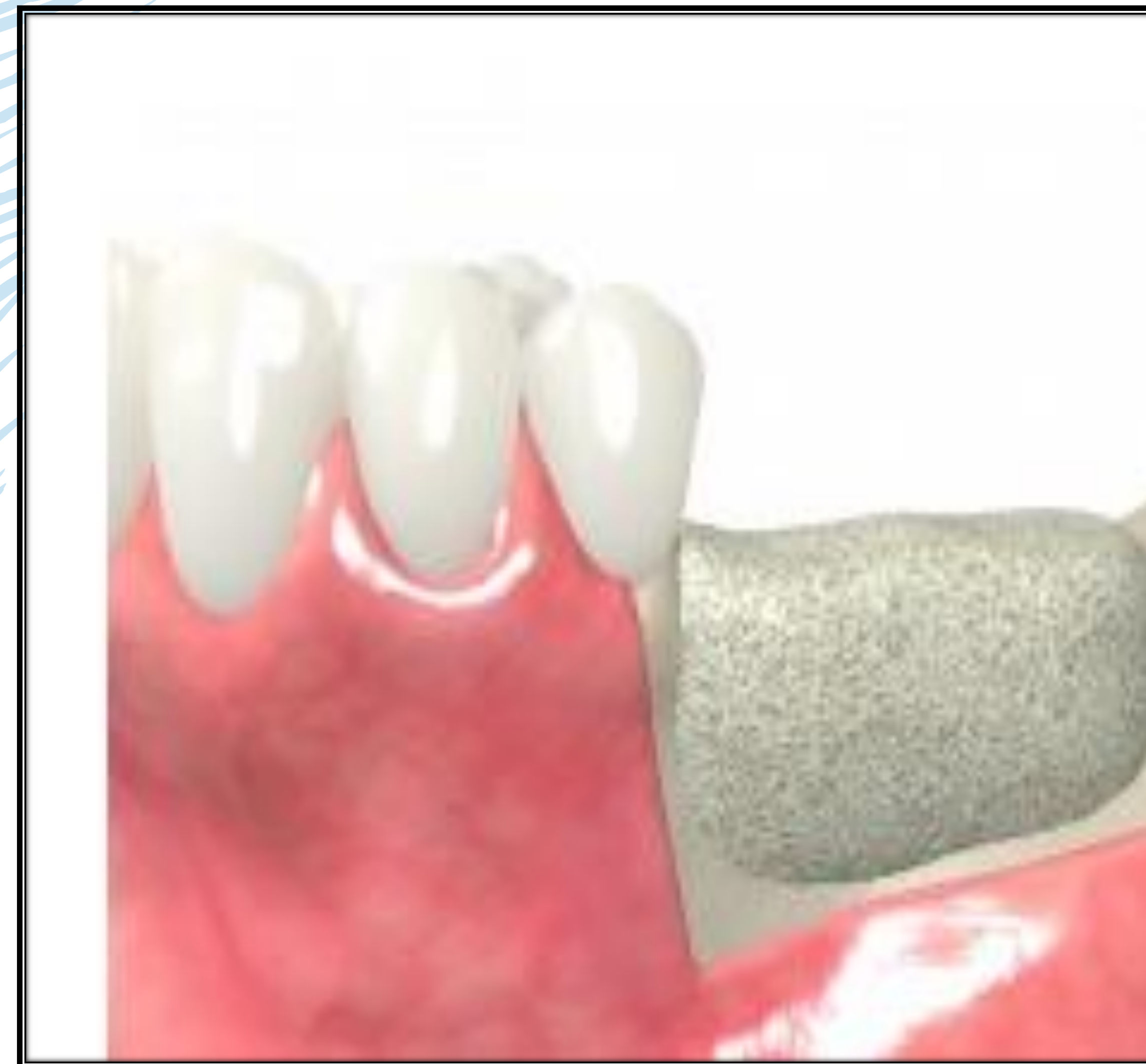


Ridge Augmentation using 3-dimensional Custom Bone Block

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Introduction:

Tooth loss for various reasons will lead to reduced height and width of the bone. Horizontal bony defects can be regenerated using different bone grafting techniques. However, regenerating vertical defects can be very challenging. Different techniques can be used in the presence of bony defects: guided bone regeneration, ridge splitting, distraction osteogenesis, maxillary sinus lifting, and autogenous block bone grafting. The clinician must select the ideal augmentation technique based on the defect shape and the planned implant site at the intended implant site. The customized allogenic bone block, which is individually designed and adjusted to the desired 3-dimensional bone contour, is an innovative new bone-guided regeneration. Based on CT/CBCT scans of the patient, the bone block is virtually designed. The final product is then milled from processed cancellous bone blocks.



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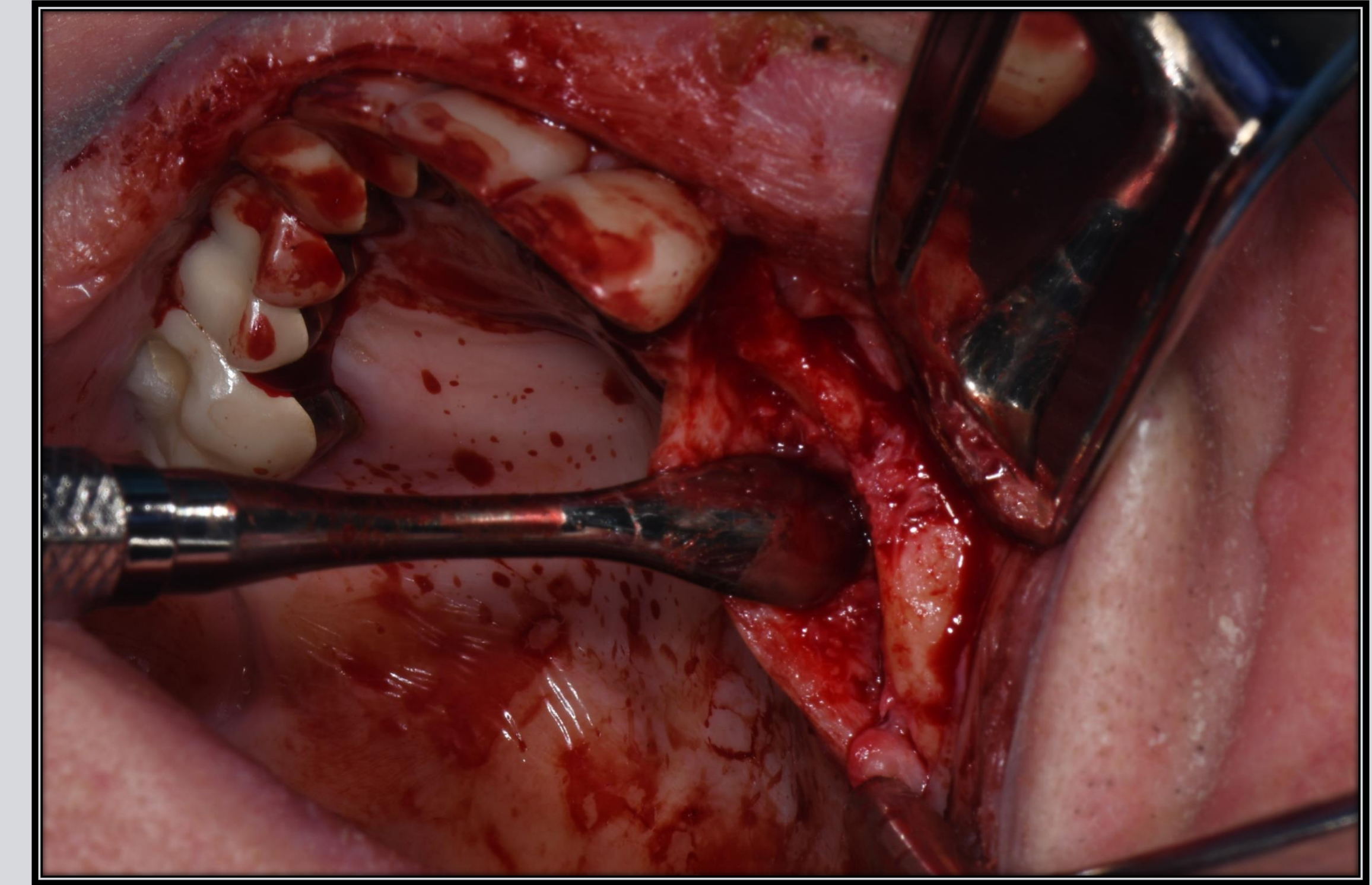
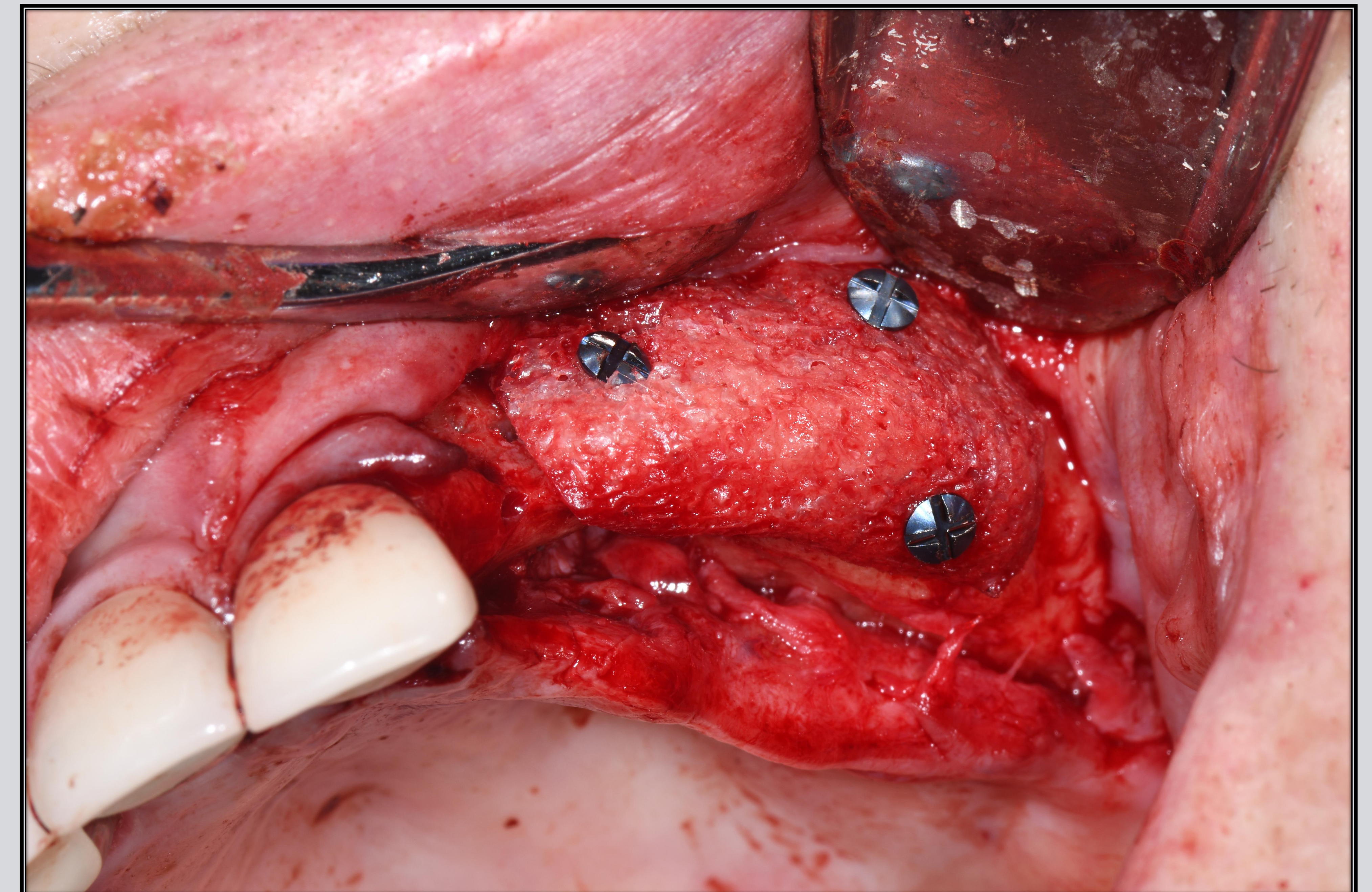
Treatment:

A sixty-seven-year-old female presents to SIU SDM IMP for a consult for implant consideration in the #10-14 area. The patient states she would like to fill the UL edentulous space. She has been edentulous for a long time; after that, the bridges became non-restorable and were extracted.

According to the information on CT/CBCT scans and using 3-D planning software 3-dimensional Custom Bone Block is designed and fabricated. Final implant treatment plan: 1. Implant placement on #s 10, 12, 13, and 14. 2. Fixed bridge splinting of the implants

Surgical Treatment:

The surgical treatment was performed under local anesthesia. Mid crestal flap from the distal of tooth # 10 to the distal of the area of tooth # 14. Double vertical releasing incisions were made. The Bone block was tried in and fit verified. Bone block fixed with three fixation screws in the area of #10 buccal, #12 buccal, and #13 occlusal. 0.5cc Allograft Putty Plus demineralized bone matrix and mineralized cancellous chips placed. Resorbable collagen membrane placed. CBCT was taken for seating verification. The flap was sutured, and primary closure was achieved. The patient was seen regularly for follow-up. A CBCT was taken five months after block fixation. The implant surgery was scheduled and was performed under local anesthesia. Mid crestal flap raised and fixation screws removed. The pilot drill was used for the initial osteotomy. Verification pin placed with floss in the site and verified with CBCT to confirm placement/direction and the anticipated length. Final osteotomy made. Implants placed with handpiece mount Primary stability achieved > 40 Ncm. CBCT was taken for seating verification. Cover screws were placed, and 3-0 sutures were Placed to achieve primary closure. Implant uncover was performed four months after implants placement, and healing abutments were placed.

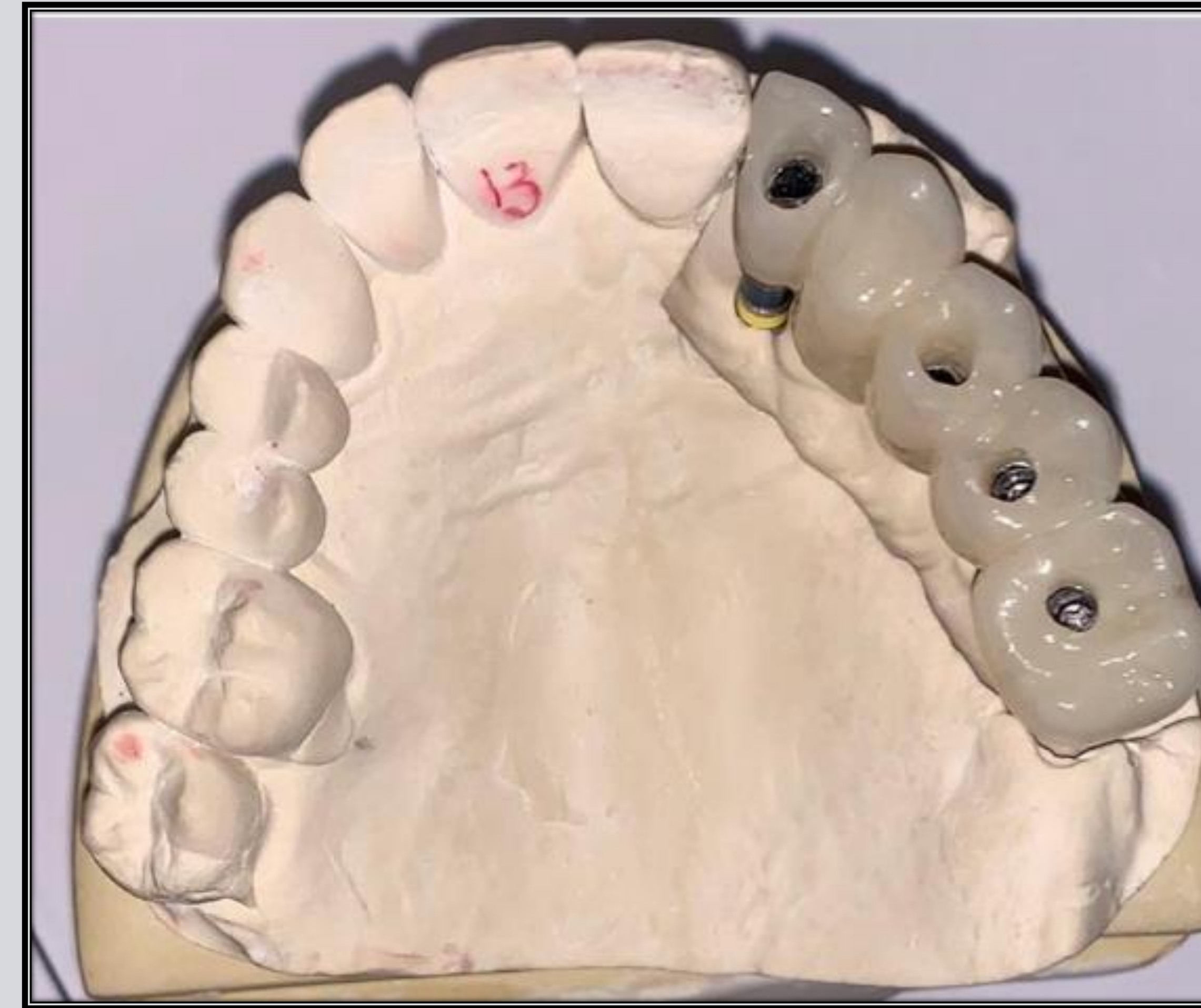


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Prosthetic treatment:

The patient came back for a follow-up and an Osseointegration check. No mobility or pain was detected when the healing abutment was removed and back. The impression was taken by using impression coping with fabricating a temporary bridge. A temporary bridge was delivered, and the patient was followed up for four months. The patient liked the esthetic and had no difficulties with the hygiene of the prosthesis. The final impression was taken four months after the temporary bridge delivery.



Conclusion:

The core of this case study presented here is that customized allogenic bone blocks can be used to repair both horizontal and vertical ridge defects. The unlimited availability and better fit of the customized bone block provide a significant advantage on the feasibility and time on the day of the surgery. Another advantage is avoidance of donor site morbidity and less discomfort from 2 surgical sites.

