

Guided Implant Placement Using Pre-existing Dental Implants for Complete Arch Implant FDPs

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Introduction:

Fabricating a CAD/CAM implant surgical guide for edentulous patients is challenging due to a lack of clear anatomical structures. These structures are used not only to superimpose DICOM and STL files, but also to provide adequate information to design and create a surgical guide for use during implant placement. This clinical report describes a technique utilizing existing implants to facilitate virtual implant treatment planning and provide accurate positioning of the surgical guide.

Case report:

A patient was initially planned for maxillary implant-supported FDPs with 6 implants. Currently, 4 implants were osseointegrated and are supporting a complete arch interim prosthesis. In order to maximize accuracy in placing two additional implants (#10, 11), the patient took a new CBCT with custom-made screw-retained radiographic guides retained by her pre-existing implants. The scanned image of her maxilla with the radiographic guides placed on the implants was superimposed to her CBCT using the radiographic guides as references. Then, the scanned image of her maxillary interim prosthesis was also superimposed to other images using her hard palate as a reference. Due to the limited bone height/width present in the grafted site of #10,11, it was decided that only one additional implant be placed. #10 implant was virtually planned and the surgical guide seating on the radiographic guide was 3d-printed. The implant was placed with no complications.



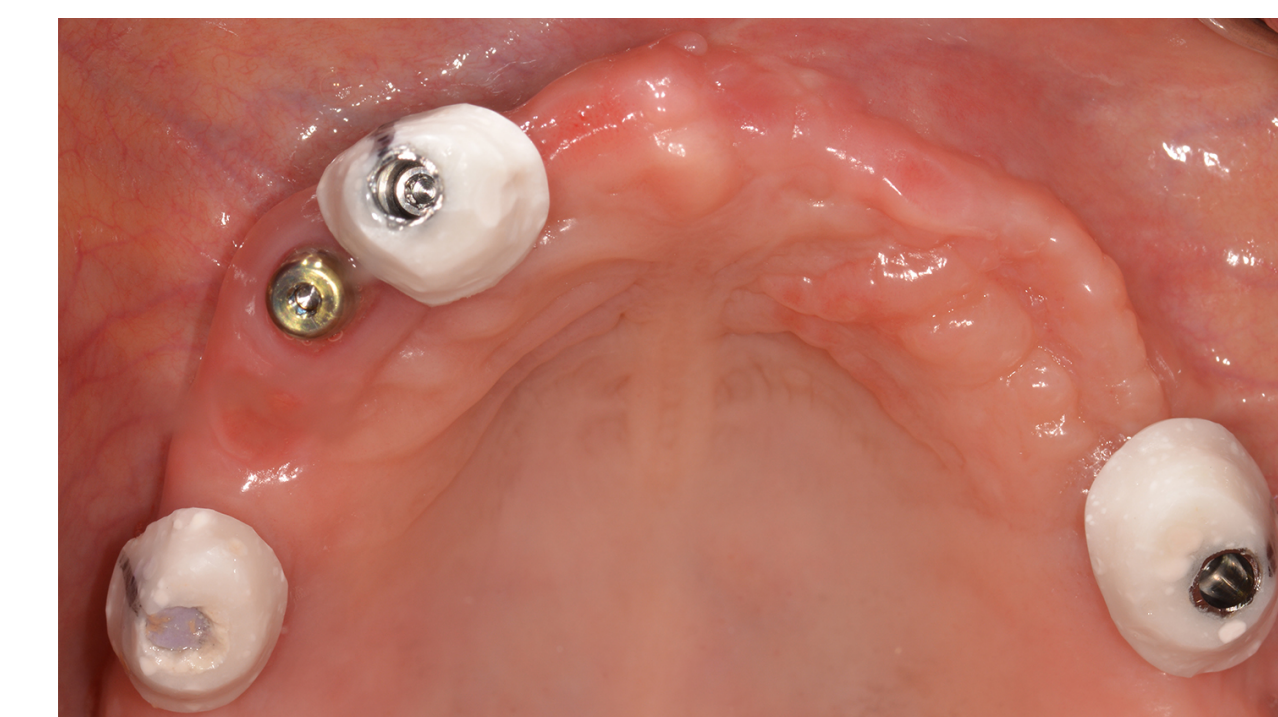
Cast of an implant level impression



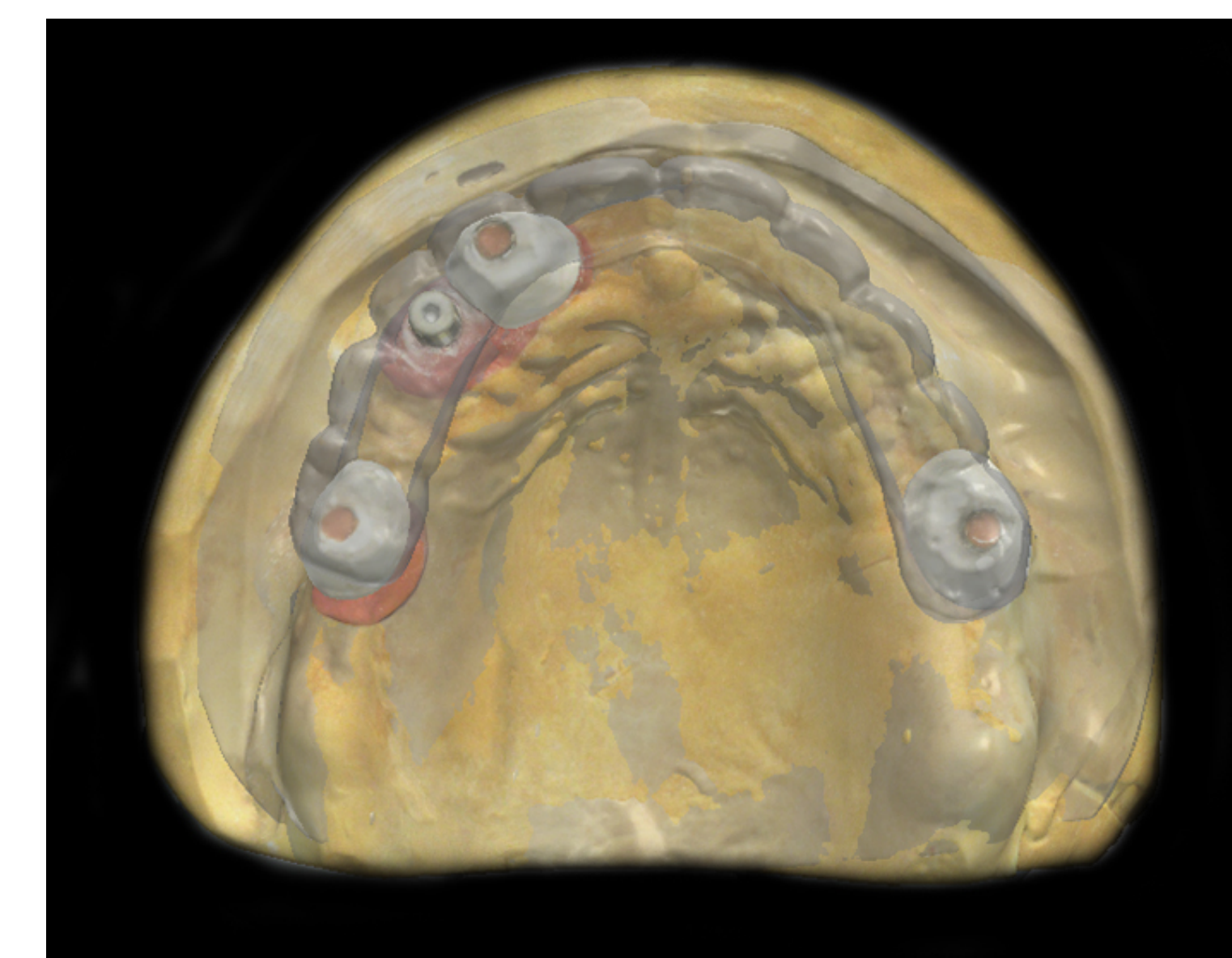
Cast with the provisional impression



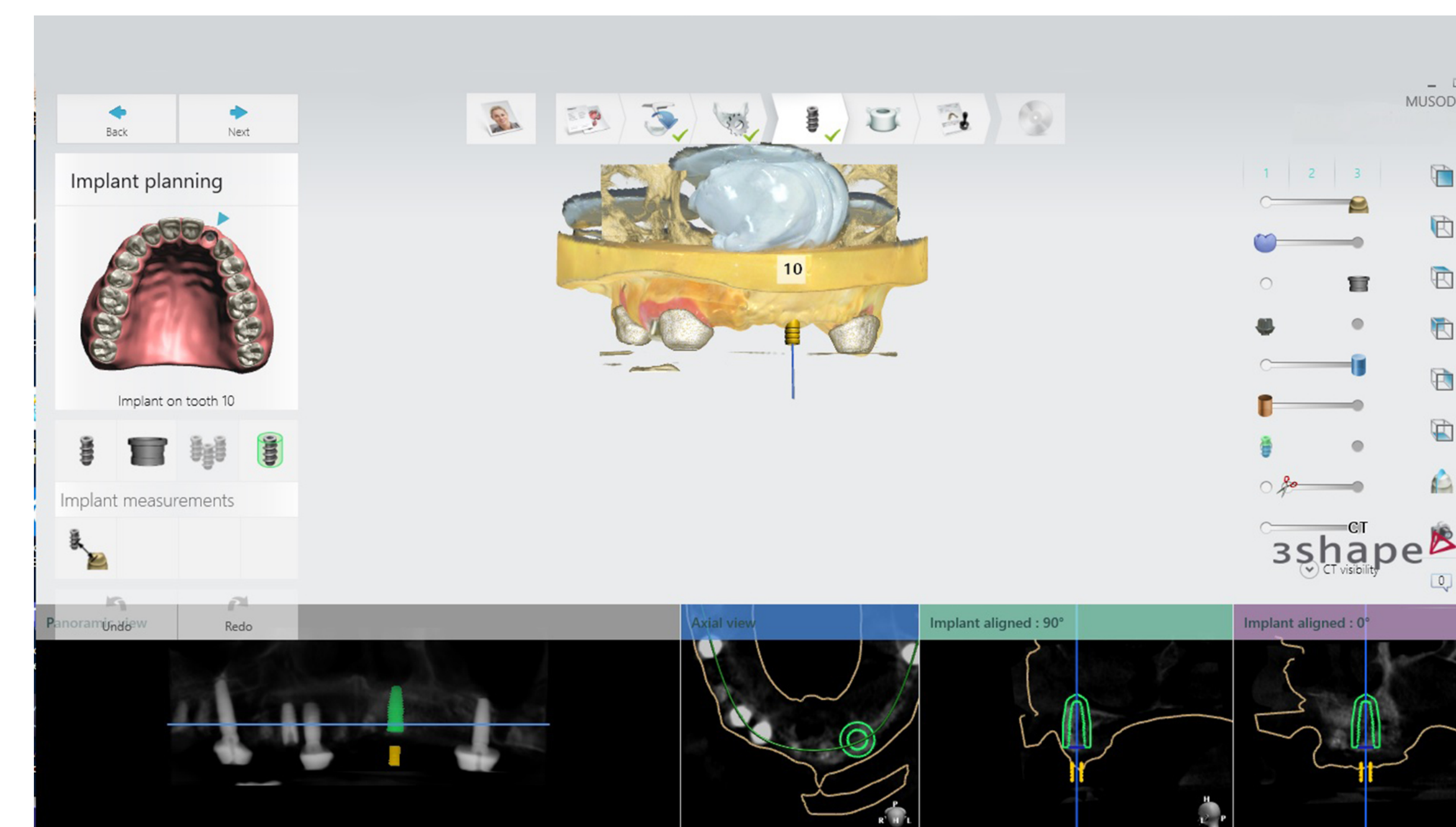
50/50 mix of barium sulphate and clear resin, prepared into cones with finish line and flat occlusal surface



Intra-oral view of radiographic guides prior to CBCT image.



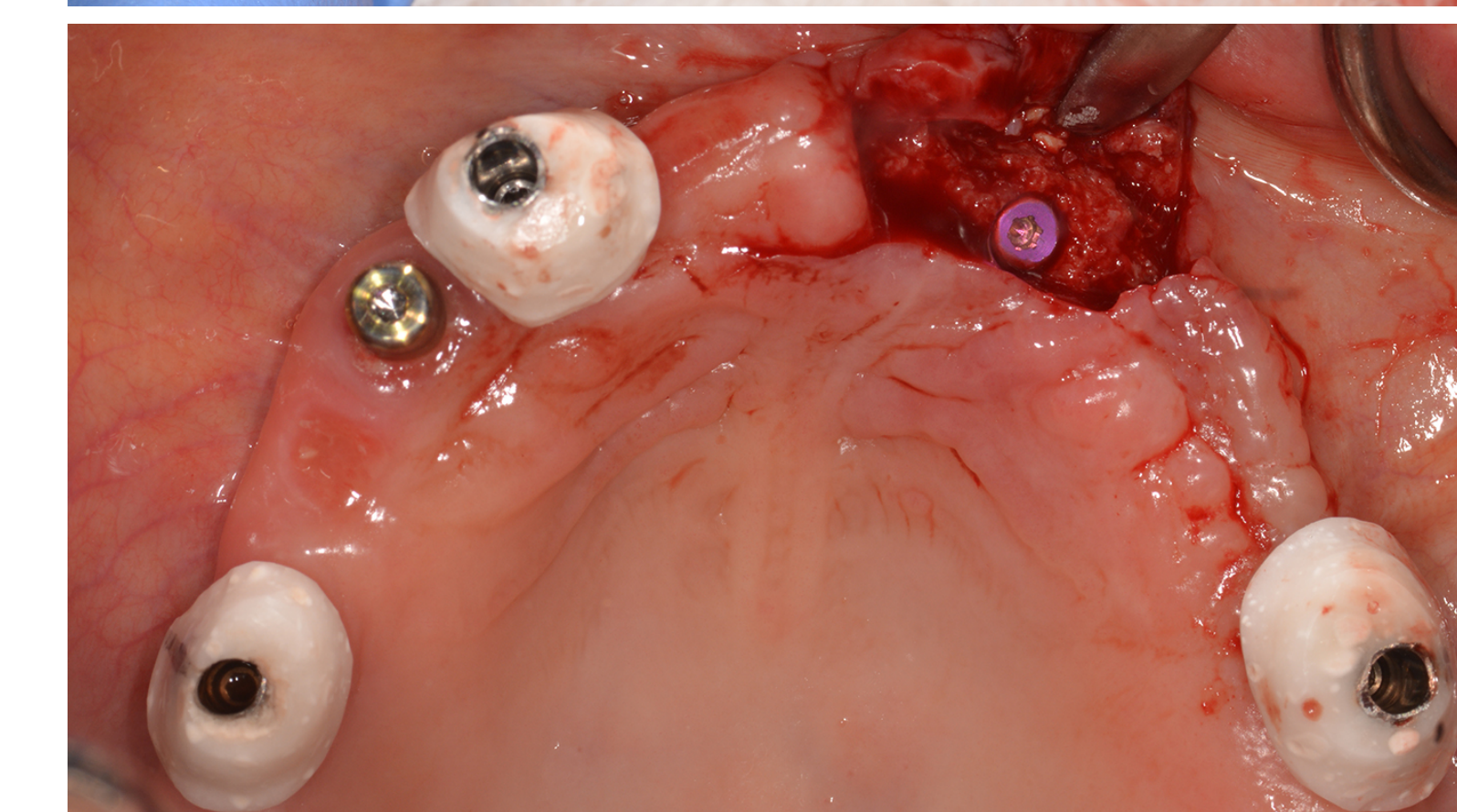
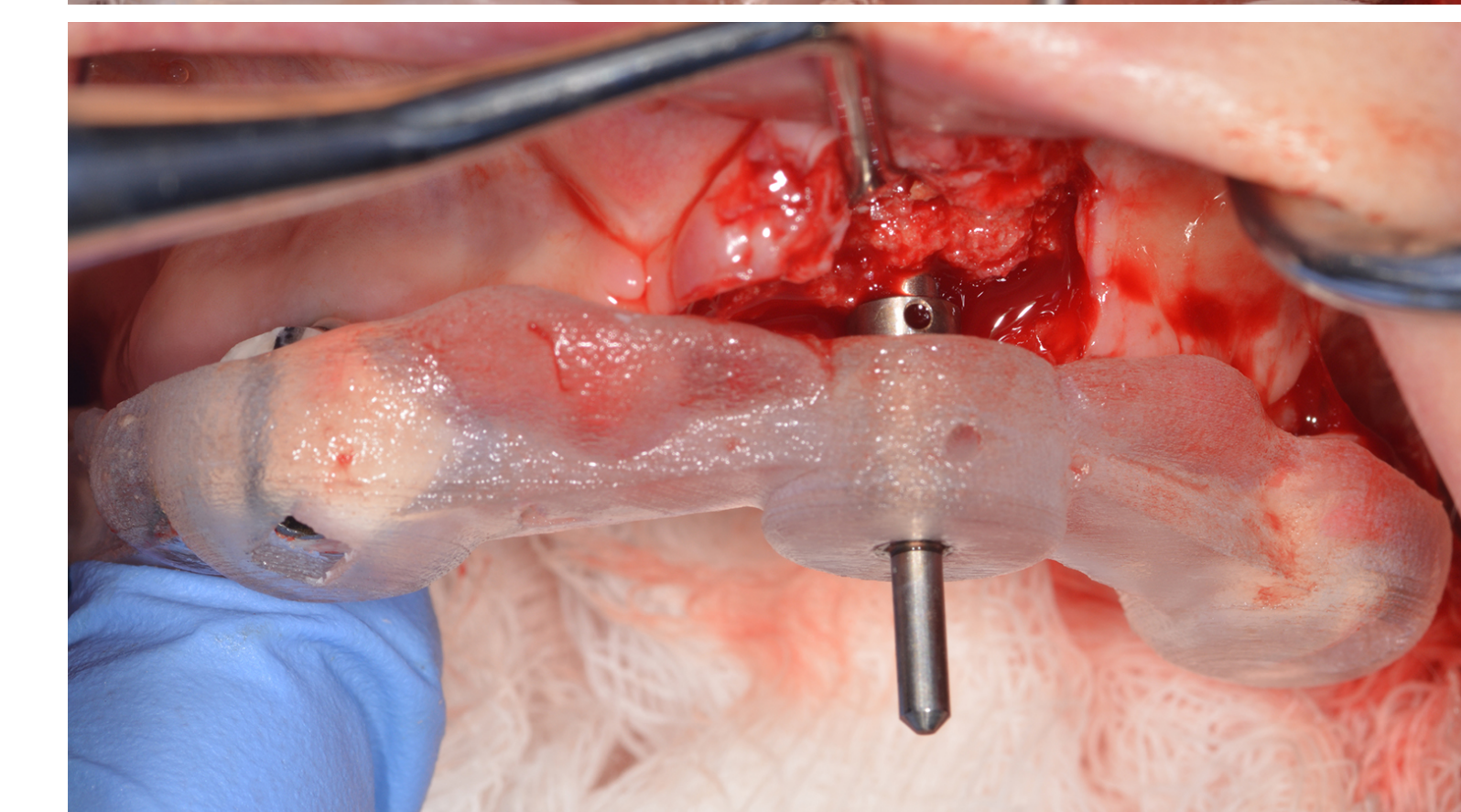
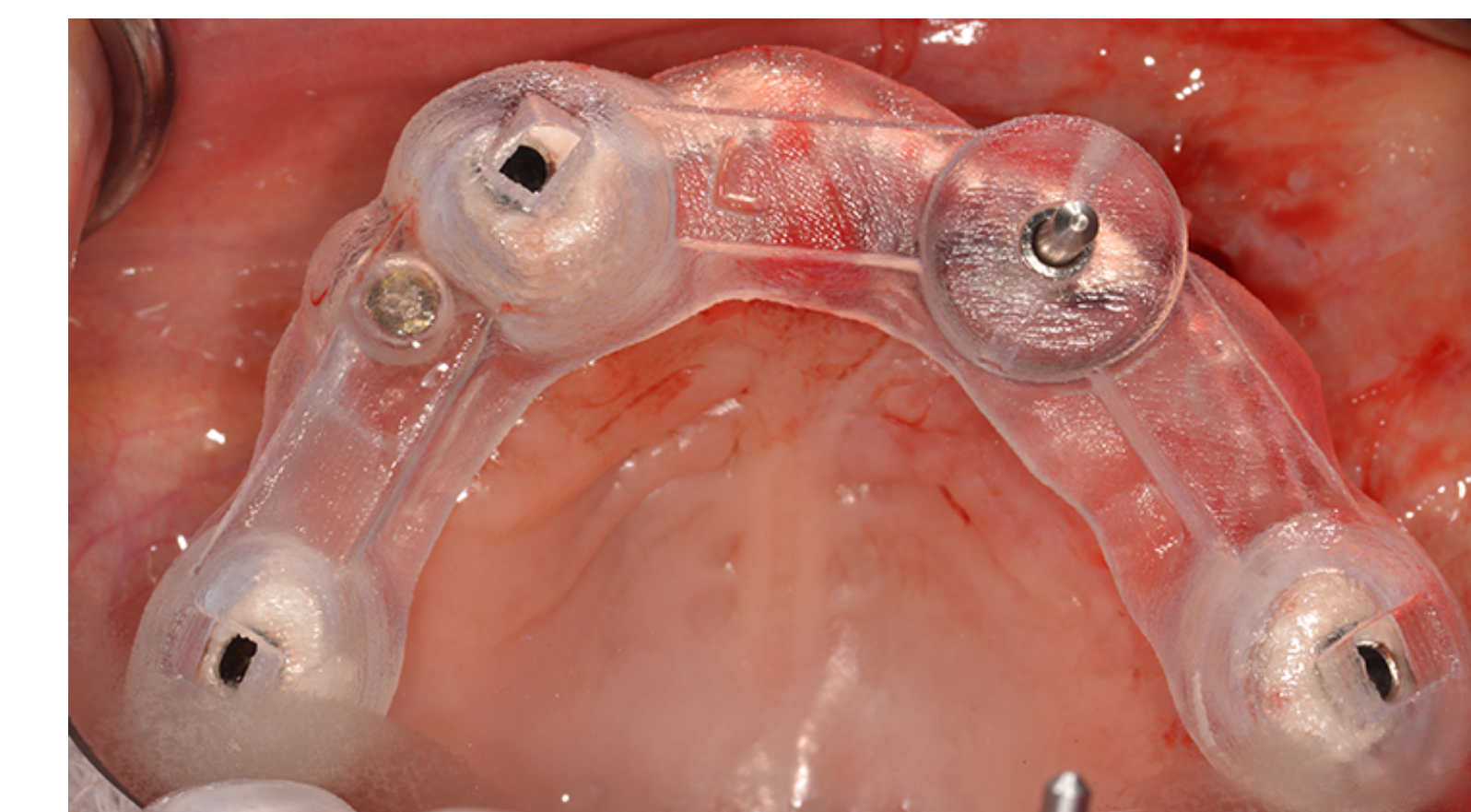
Superimposed Provisional cast with radiographic guide cast using the rugae & palate as reference.



Implant planning using 3shape



3D Printed partially guided surgical guide seating on the radiographic guides.



Nobel Parallel Conical Connection NP 3.75x11.5mm
Implant placed in previously grafted site of #10