



A Technique to Plan Implants Based on Corrected Tooth Position in a Dual Scan CBCT

Namitha Shetty, BDS; Mamdouh O. Kachlan, DMD, MS, FACP; Aaron Segal, DDS, FACP, FAAMP; Louis DiPede, DMD, FACP

Introduction

Dual scan is a reliable protocol to plan the implant position based on the desired final tooth position in completely or partially edentulous arches. Inaccurate data due to incorrect waxup or a displaced guide during the CBCT capture would necessitate a second CBCT exposure with a corrected waxup. This case report presents a technique to correctly align a digital waxup that was confirmed clinically with the available CBCT to a prevent an additional radiographic exposure.

Software Limitation



FIG 1 - CBCT with radiographic markers. Radiographic guide was displaced during capture deeming it inaccurate.

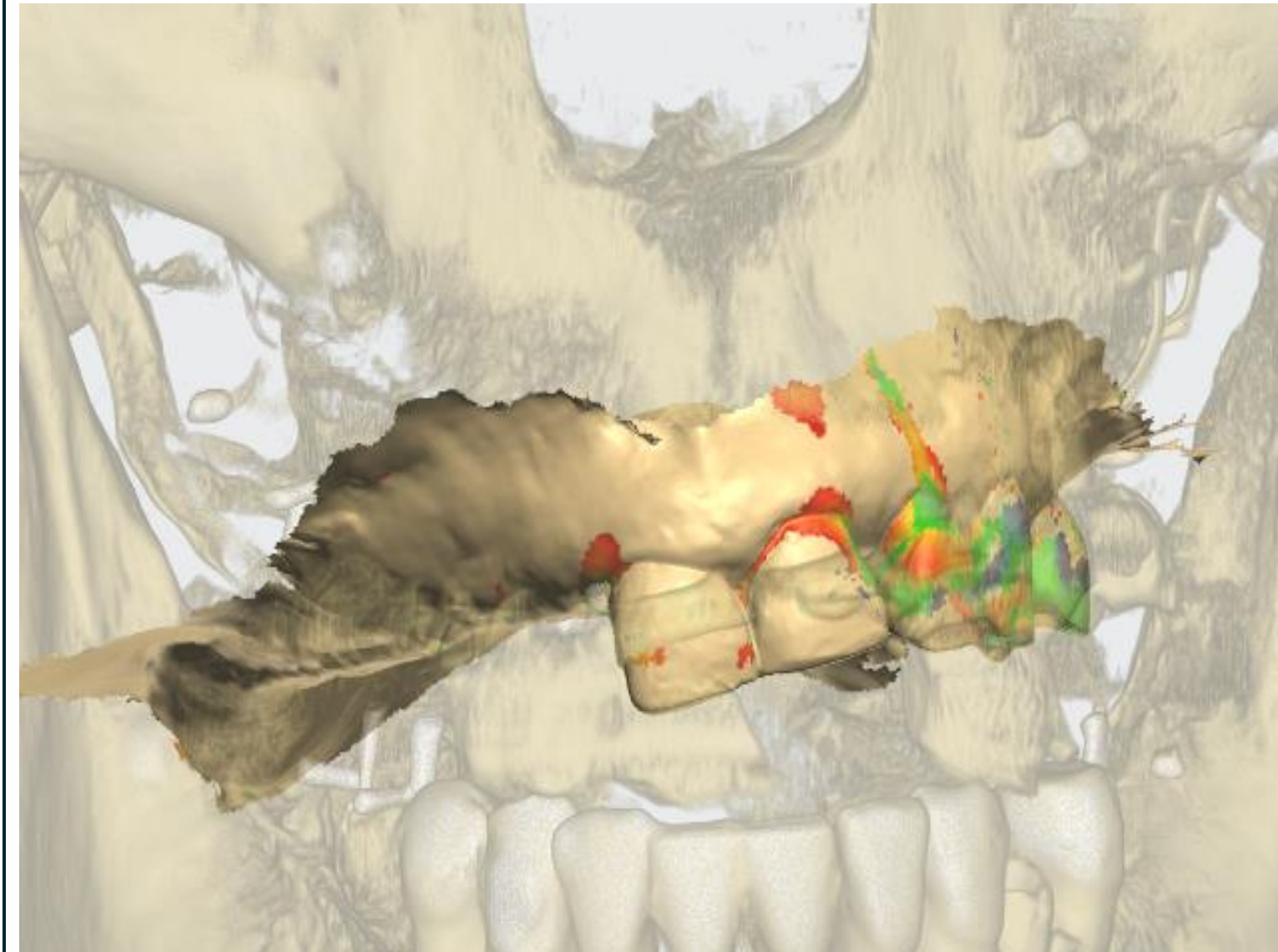


FIG 2 - Misalignment due to lack of sufficient points for automatic alignment in 3Shape Implant Studio

Solution

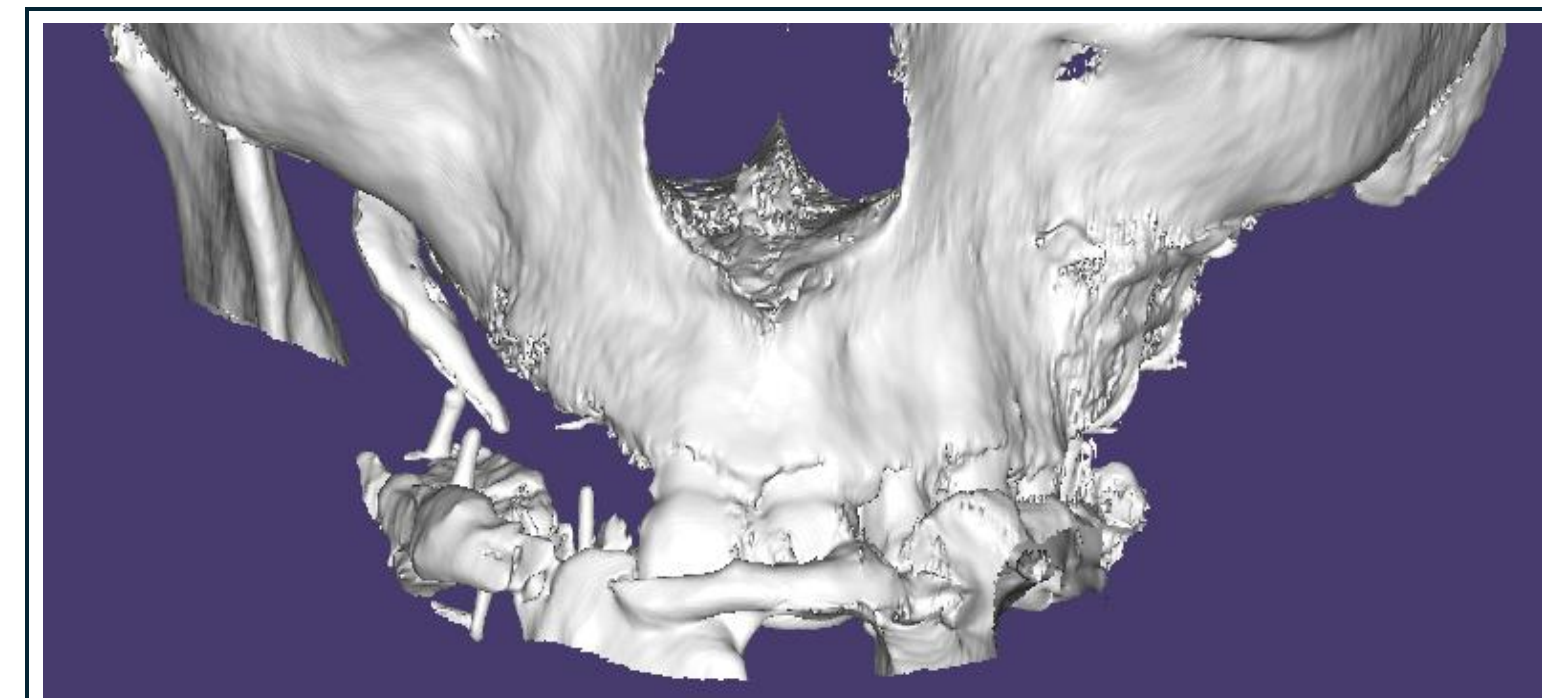


FIG 3- DICOM was converted into an STL format.

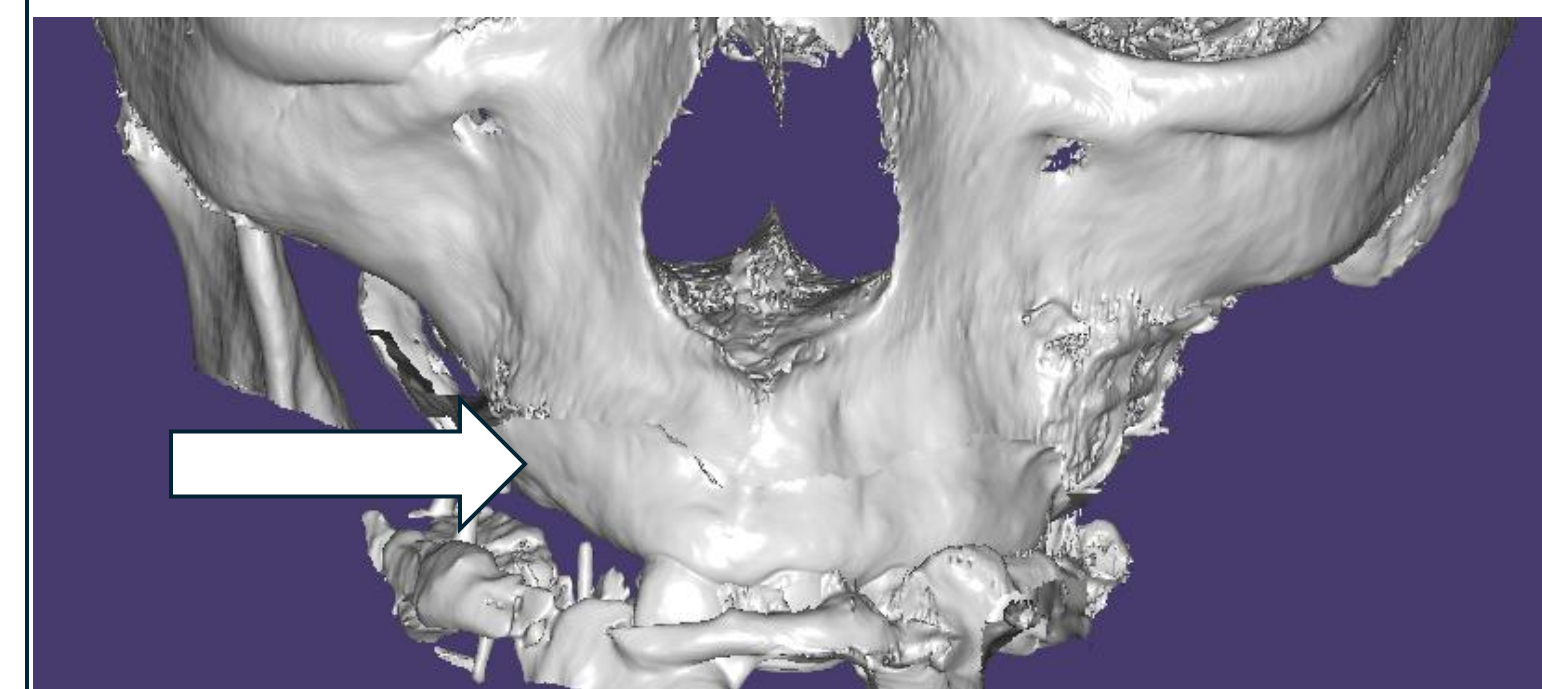


FIG 4- The PreOp STL was merged to the CBCT using 3 points on Exocad.

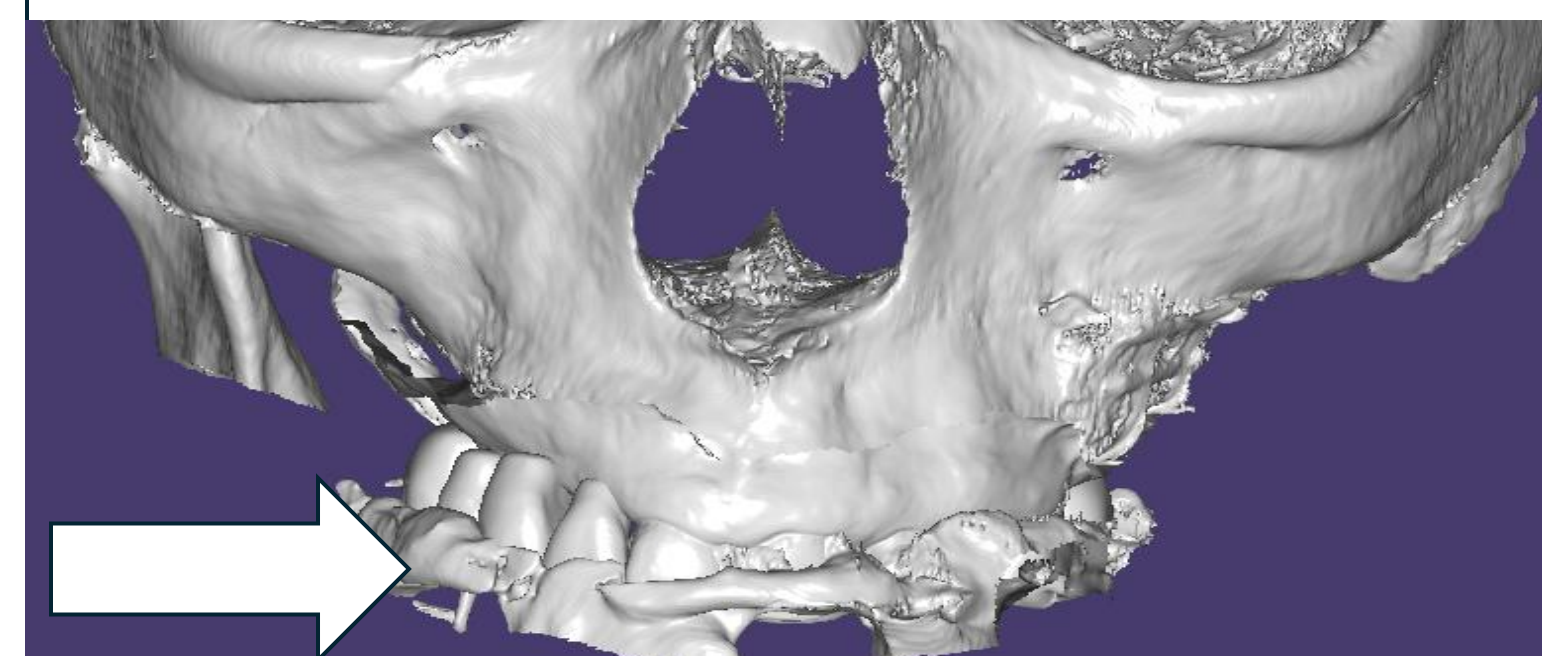


FIG 5- A virtual design was done, 3D-printed, and verified clinically. This merged virtual-design-CBCT file was exported.

Implant Planning & Surgical Guide Design

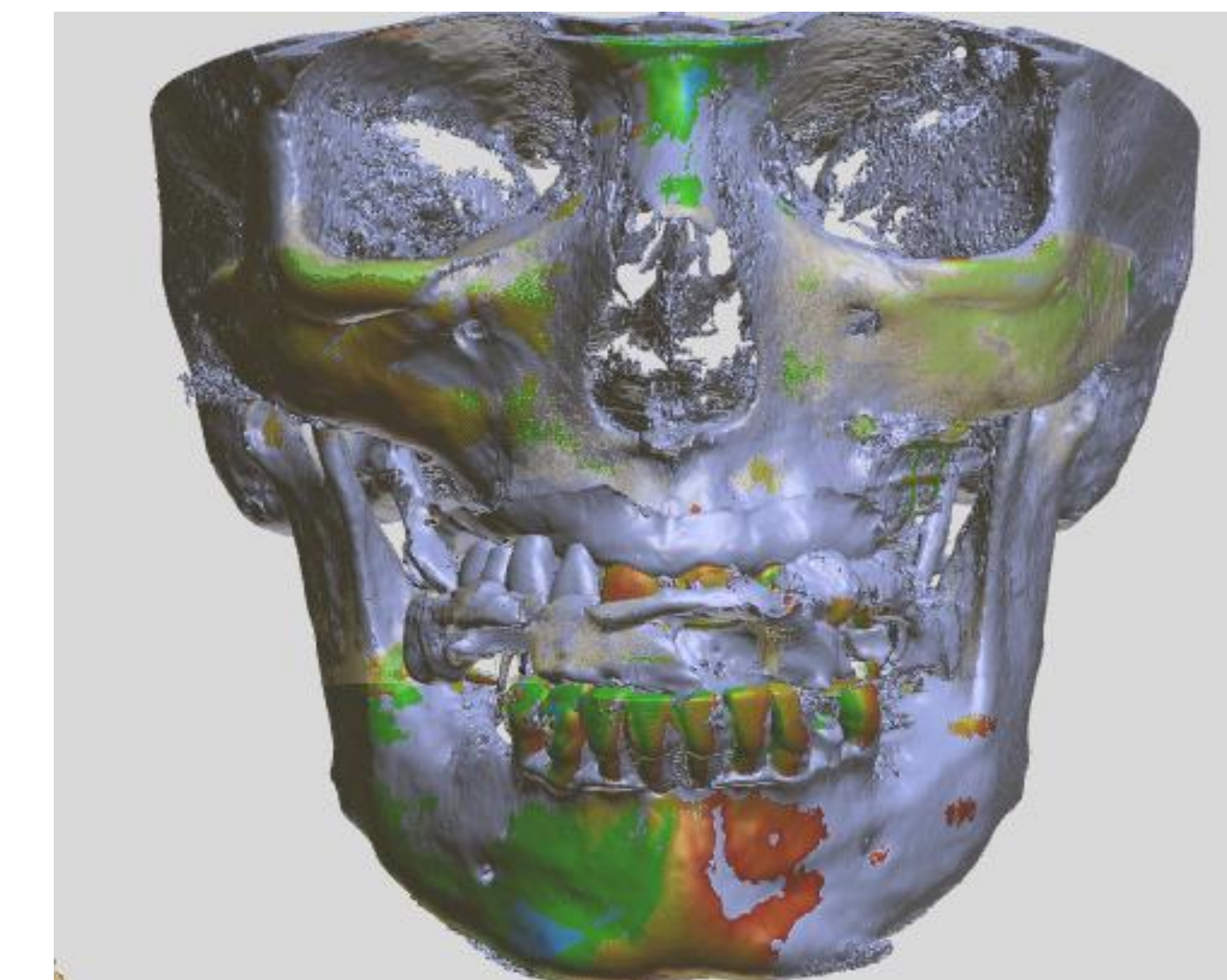


FIG 6- The merged virtual-design-CBCT file was then brought to 3Shape and automatically aligned to CBCT. The accuracy of the alignment was verified by viewing it in all three planes.

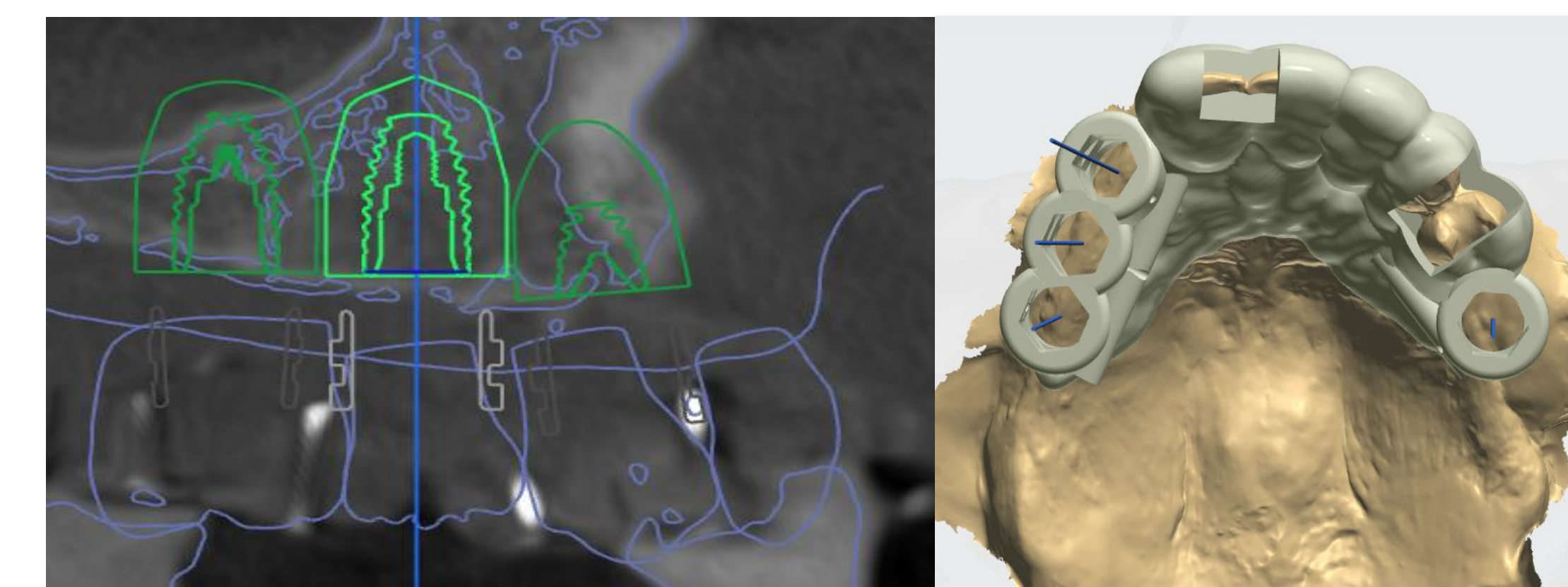


FIG 7- The implants were planned on 3Shape Implant Studio and a tooth-borne surgical guide was designed and fabricated.

Conclusion

This digital technique allows development of a Prosthetically-driven tooth-borne surgical guide in partially edentulous arches using 3Shape Implant Studio. Patient was not required to be exposed to additional radiation.