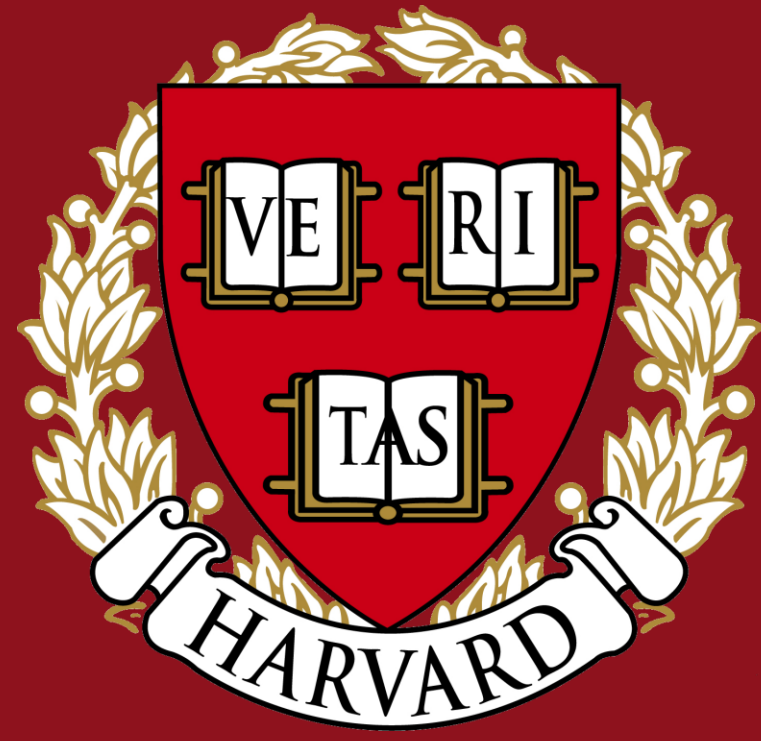
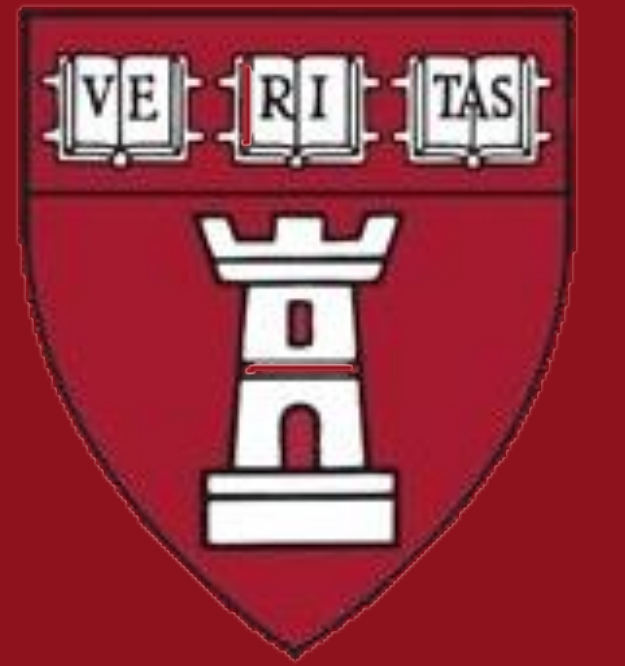




Radiographic markers for merging mandibular virtual data sets in partial edentulous patients with high-level of scattering.



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INTRODUCTION

Background

- Digital implant planning combines radiographic, prosthetic, and surgical data for precise planning. However, merging radiographic (DICOM) and 3D scan (STL) data is crucial. In partially edentulous mandible, matching scans usually relies on the remaining teeth, which appear in both datasets. Distorted CBCT from metallic or zirconia restorations complicate aligning scans and finding matching tooth surfaces.

Purpose

- The aim of this technique is to overcome difficulties in merging distorted CBCT data to allow for digital implant planning.

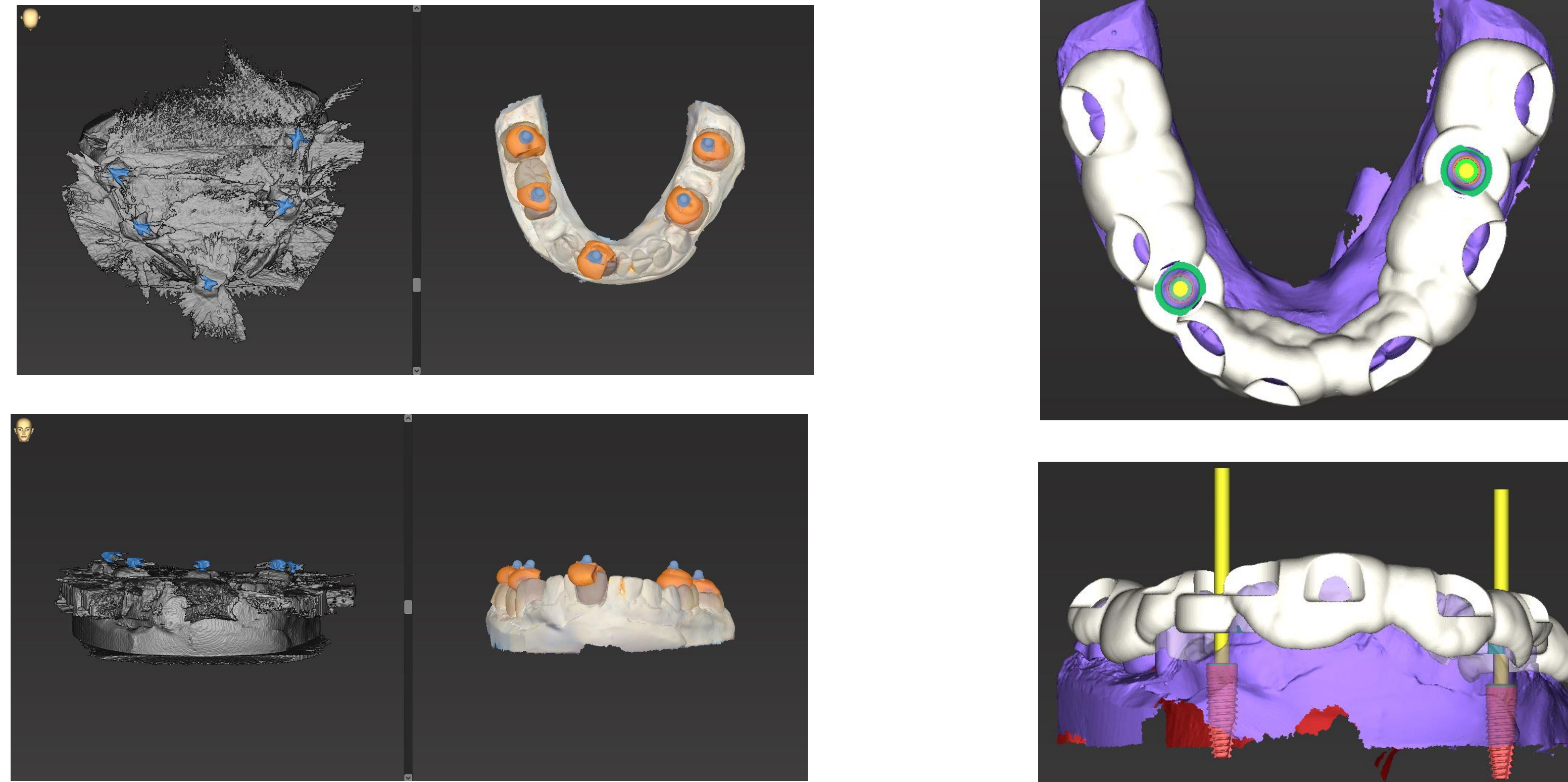
Materials and methods

- This review presents occlusal loading and its potential effects on the peri-implant complex
- Generally accepted guidelines for occlusion in implant dentistry

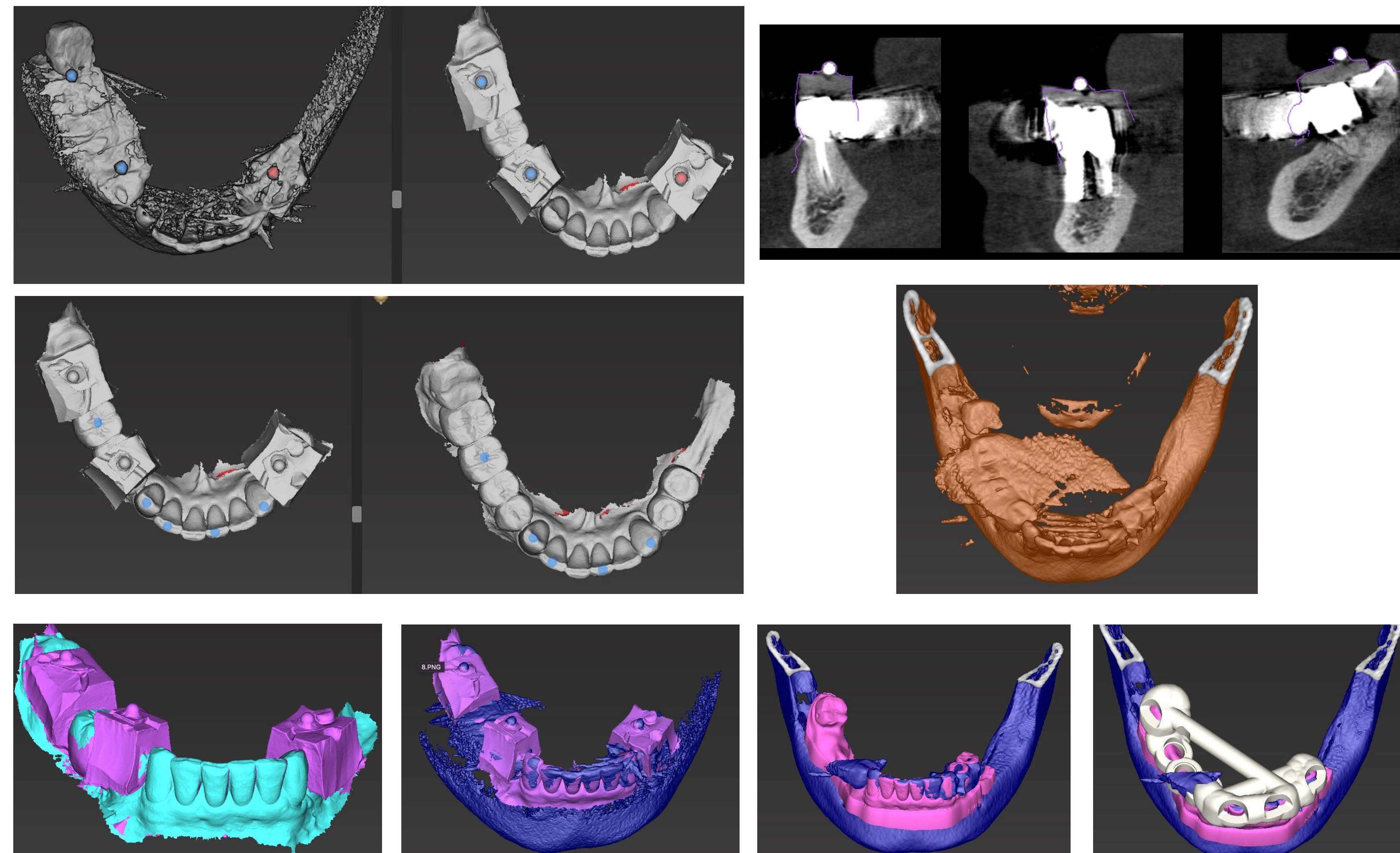
TECHNIQUE REPORT

1. Take a preliminary intraoral scan.
2. On the occlusal surface of the mandibular arch, select at least three teeth for landmarking, excluding the incisors to accommodate the CBCT bite block. The chosen teeth should ideally not be in a linear direction.
3. Take an impression with PVS putty, when set, remove and section the PVS to fit on the selected teeth.
4. Place radiopaque markers on the PVS surface and fixate with an adhesive.
5. Take a second intraoral scan of the mandibular arch, taking care not to touch the radiopaque markers.
6. Perform a CBCT scan of the mandibular arch without moving the PVS spots or radiopaque markers.
7. After the CBCT scan, remove the PVS spots and radiopaque markers.
8. Export the STL and DICOM datasets.
9. Import the STL and DICOM datasets to a planning software.
10. Superimpose the radiopaque markers STL and DICOM reconstruction using the radiopaque markers as reference.
11. The preliminary STL is then superimposed over the STL with radiopaque markers using the remaining teeth as reference. This allows for the surgical template to be designed to sit over the teeth without the PVS pieces.
12. The digital tooth arrangement was performed.
13. Implant planning was conducted, and a surgical template was designed & printed.

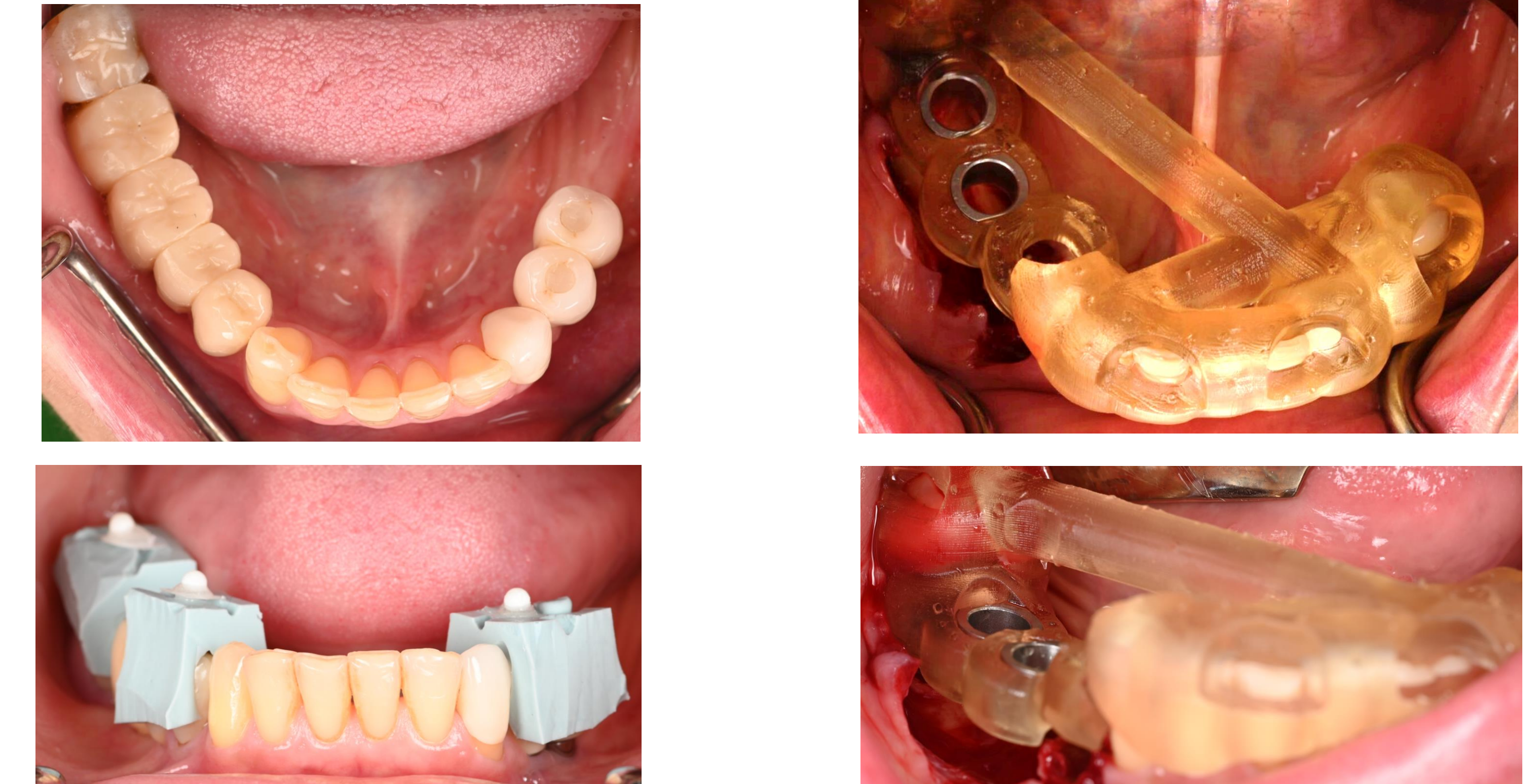
PILOT STUDY



DATA SUPERIMPOSITION



PATIENT PHOTOS



CONCLUSIONS

- The described technique appears to be a simple and feasible approach to superimpose CBCT and IOS datasets of the mandible in situations where scatter is present in partially edentulous patients.
- More studies are recommended to assess and validate the described protocol.

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