

Digitally Guided Full-arch Rehabilitation of an Edentulous Mandible: A Case Report

Finnaoui Oumaima; Hanine Yasmine; Chraibi Rime; Saad Ahmed; El Jamali Ibtissam; SONG Sun Myoung

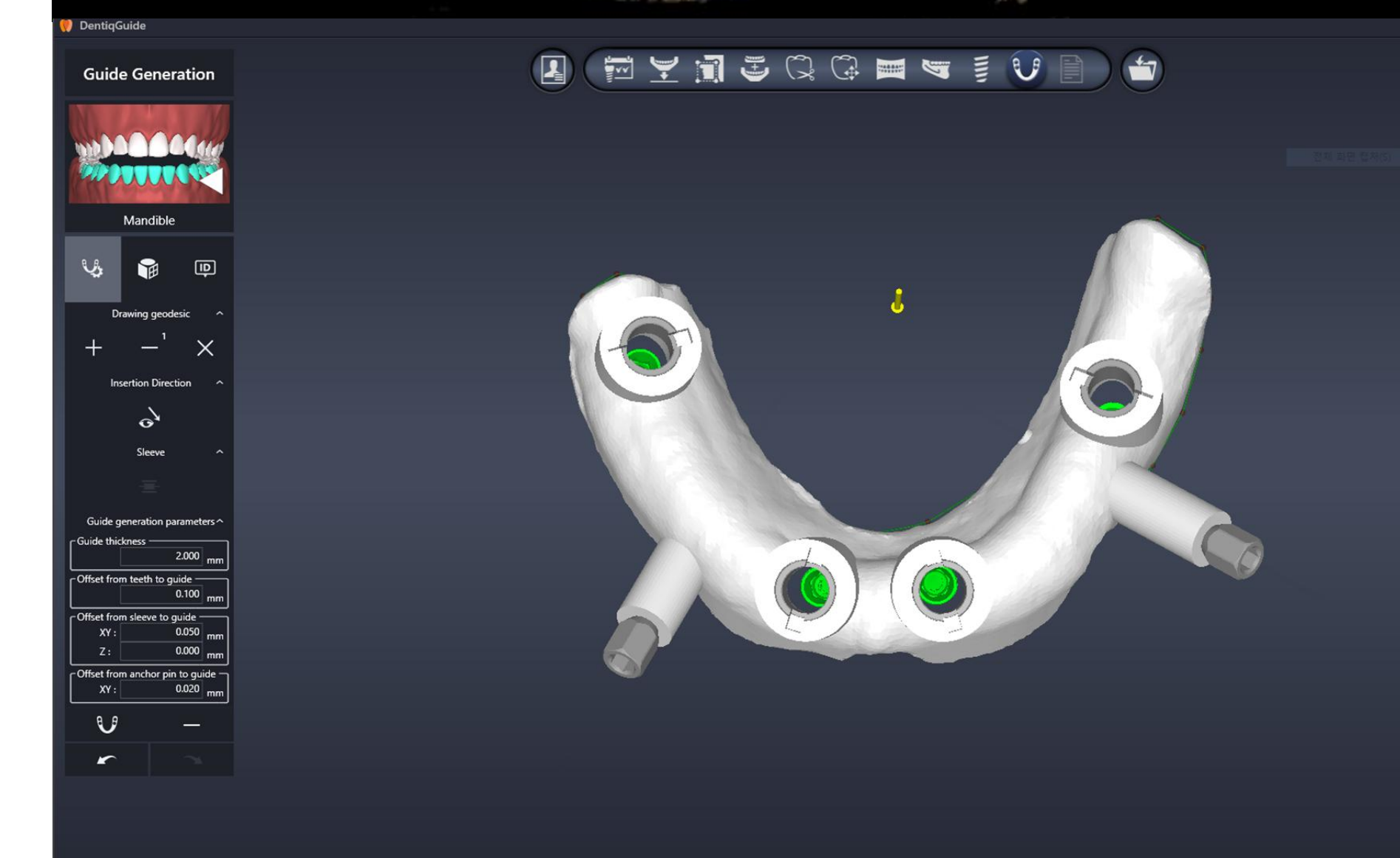
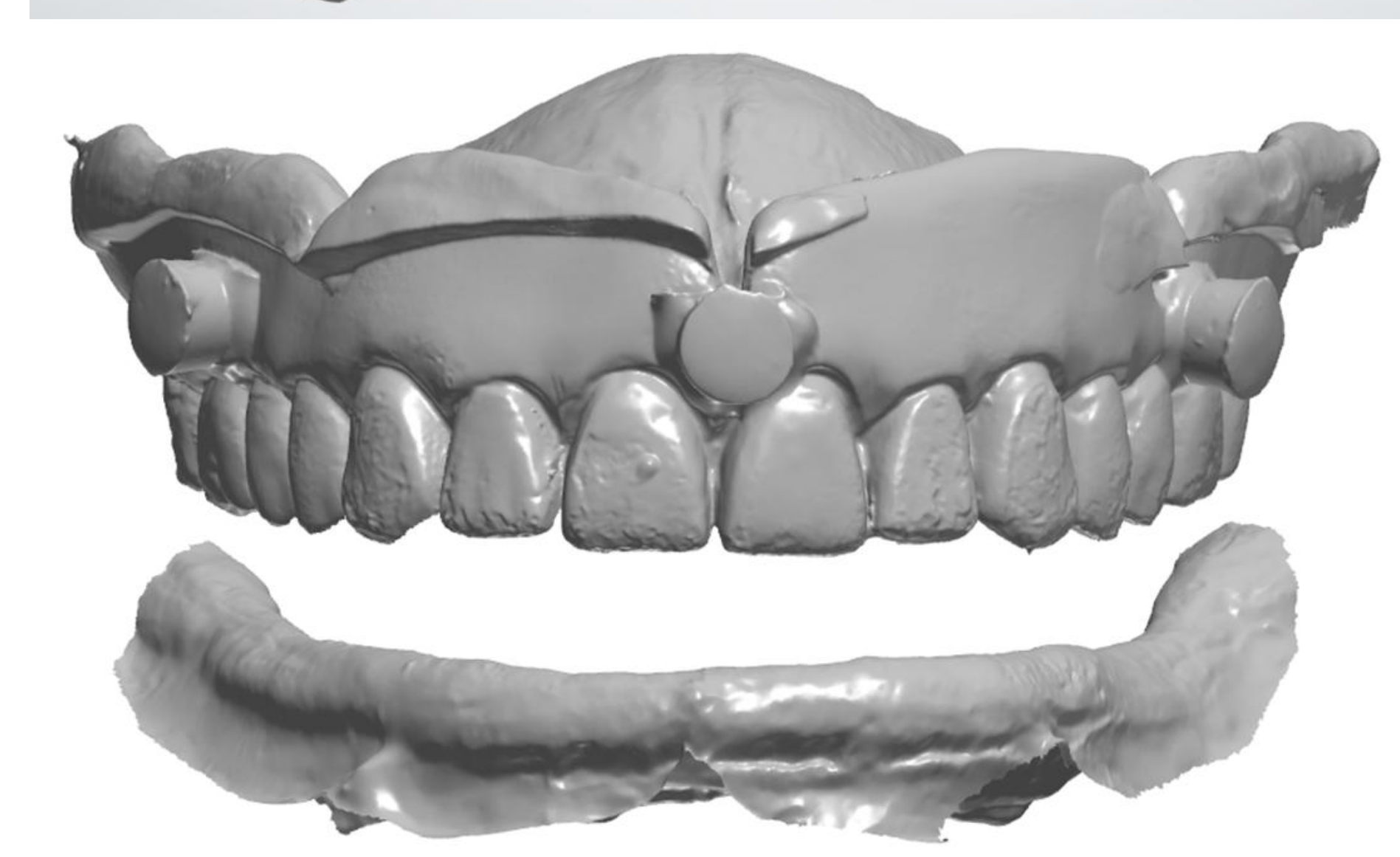
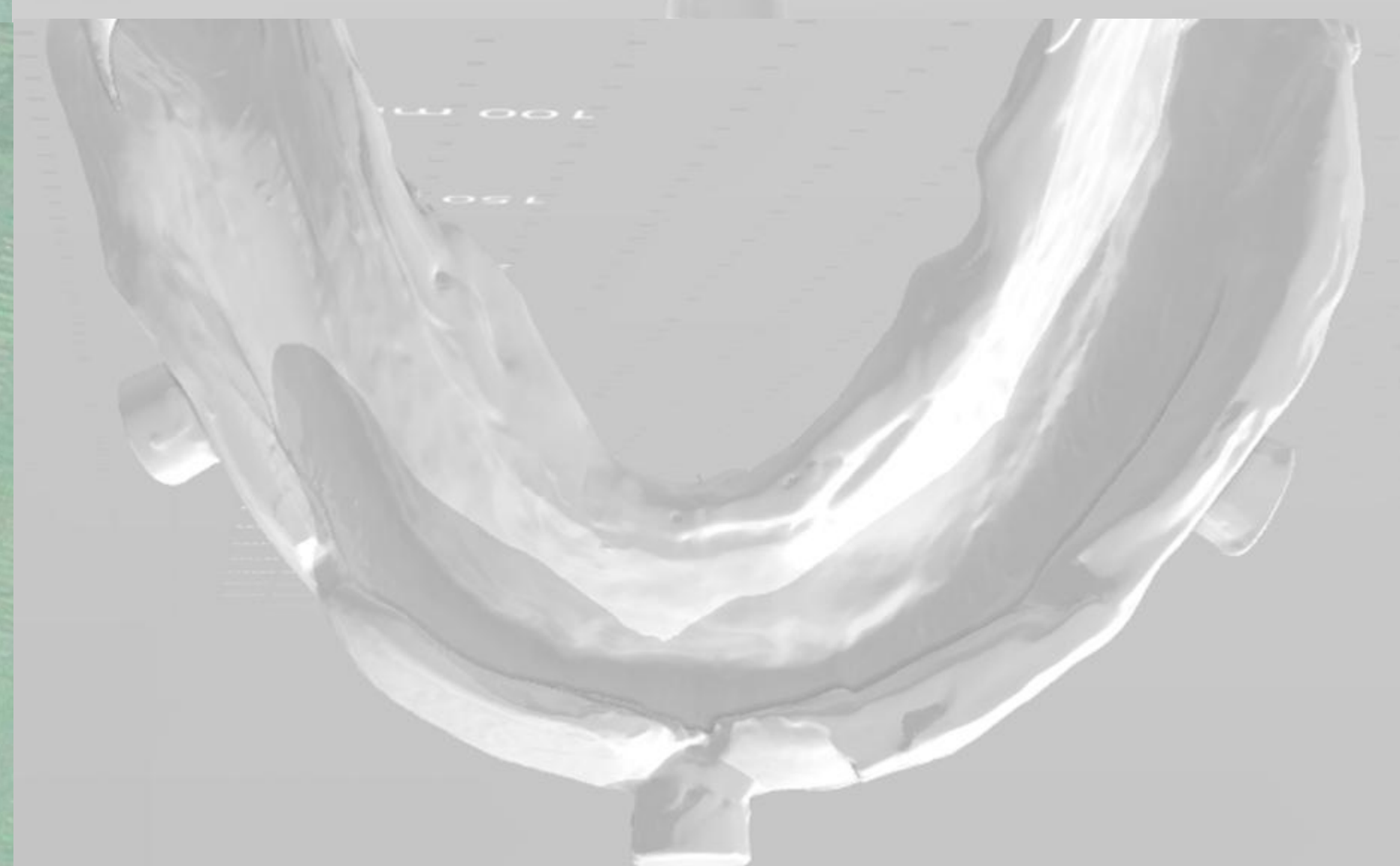
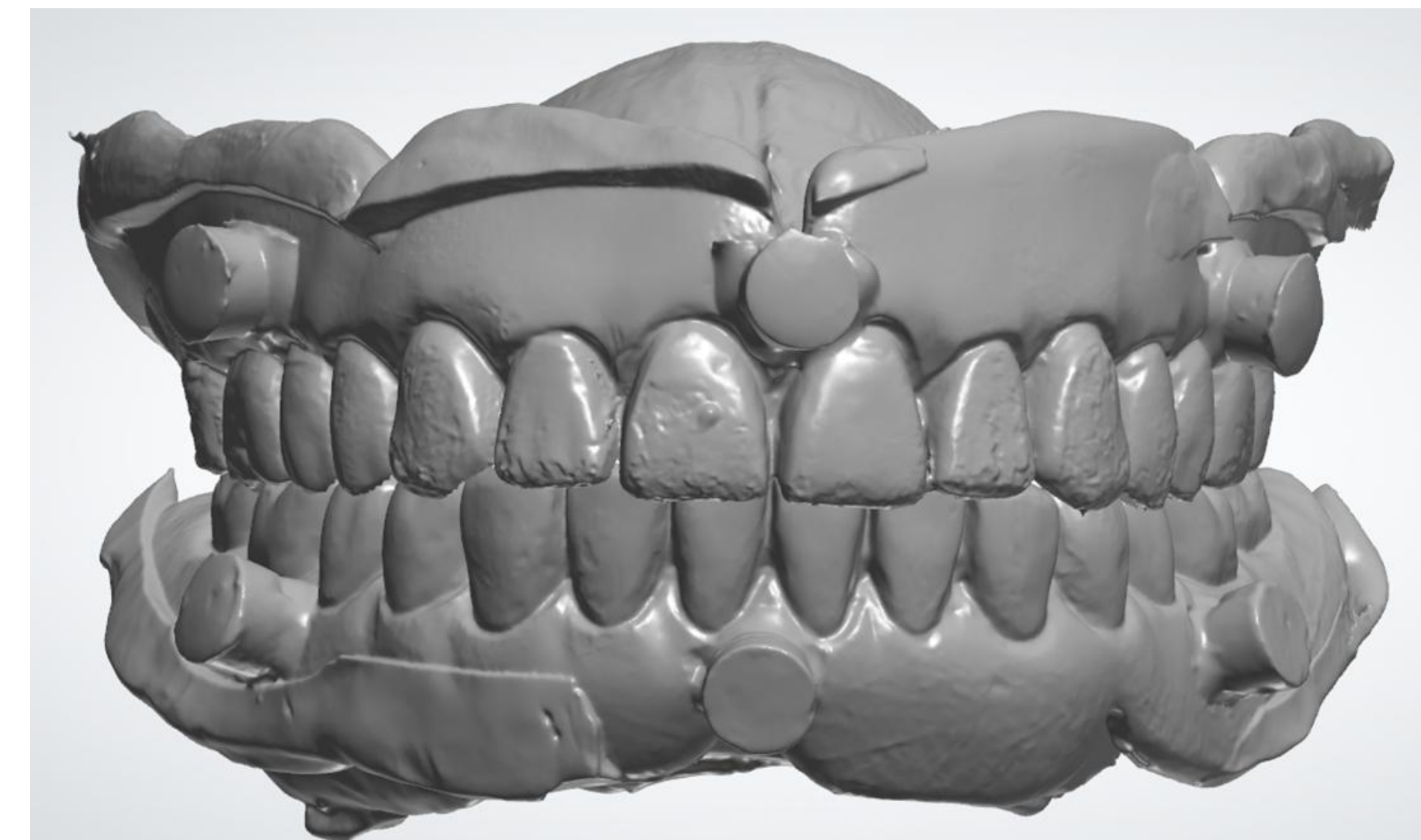
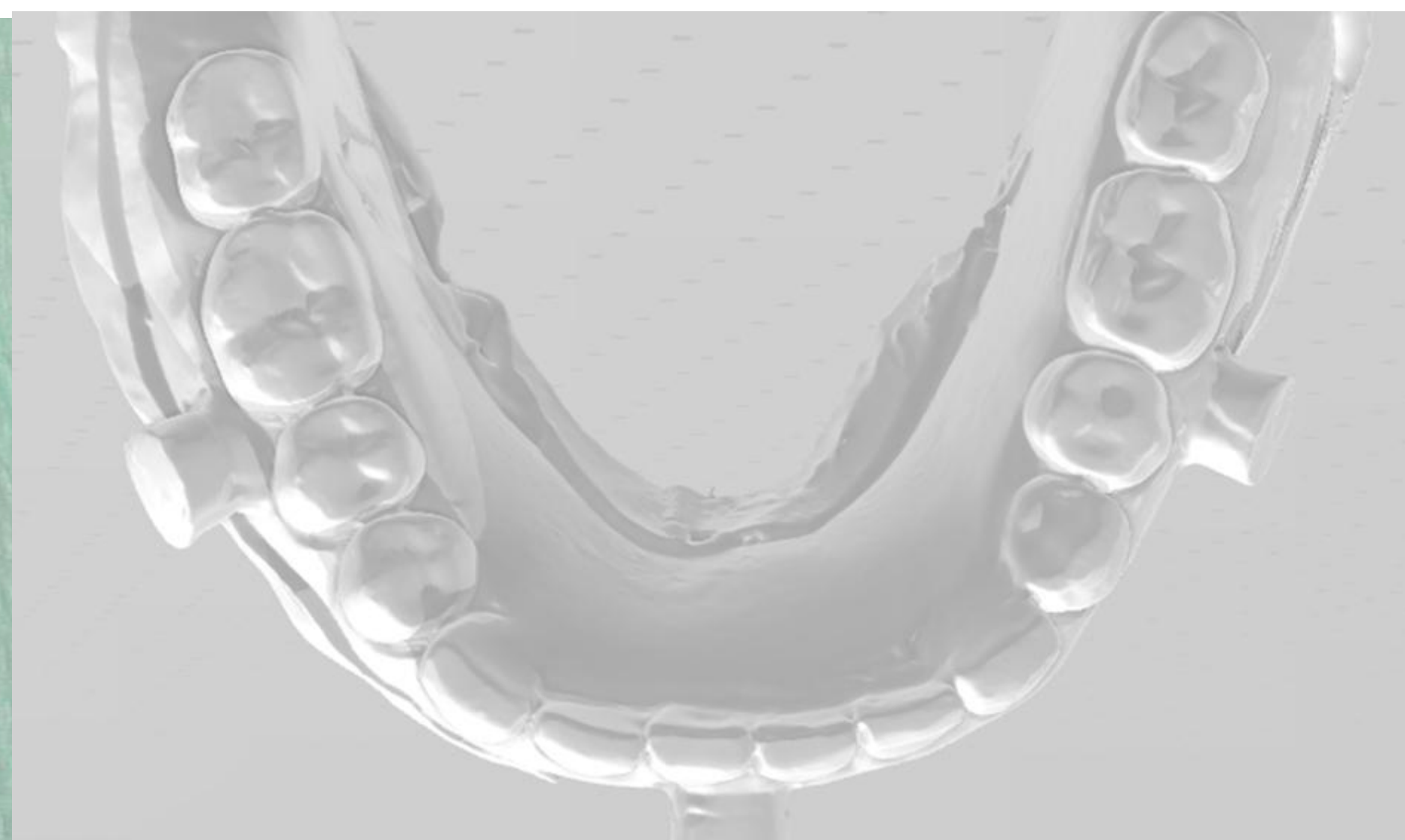
Introduction:

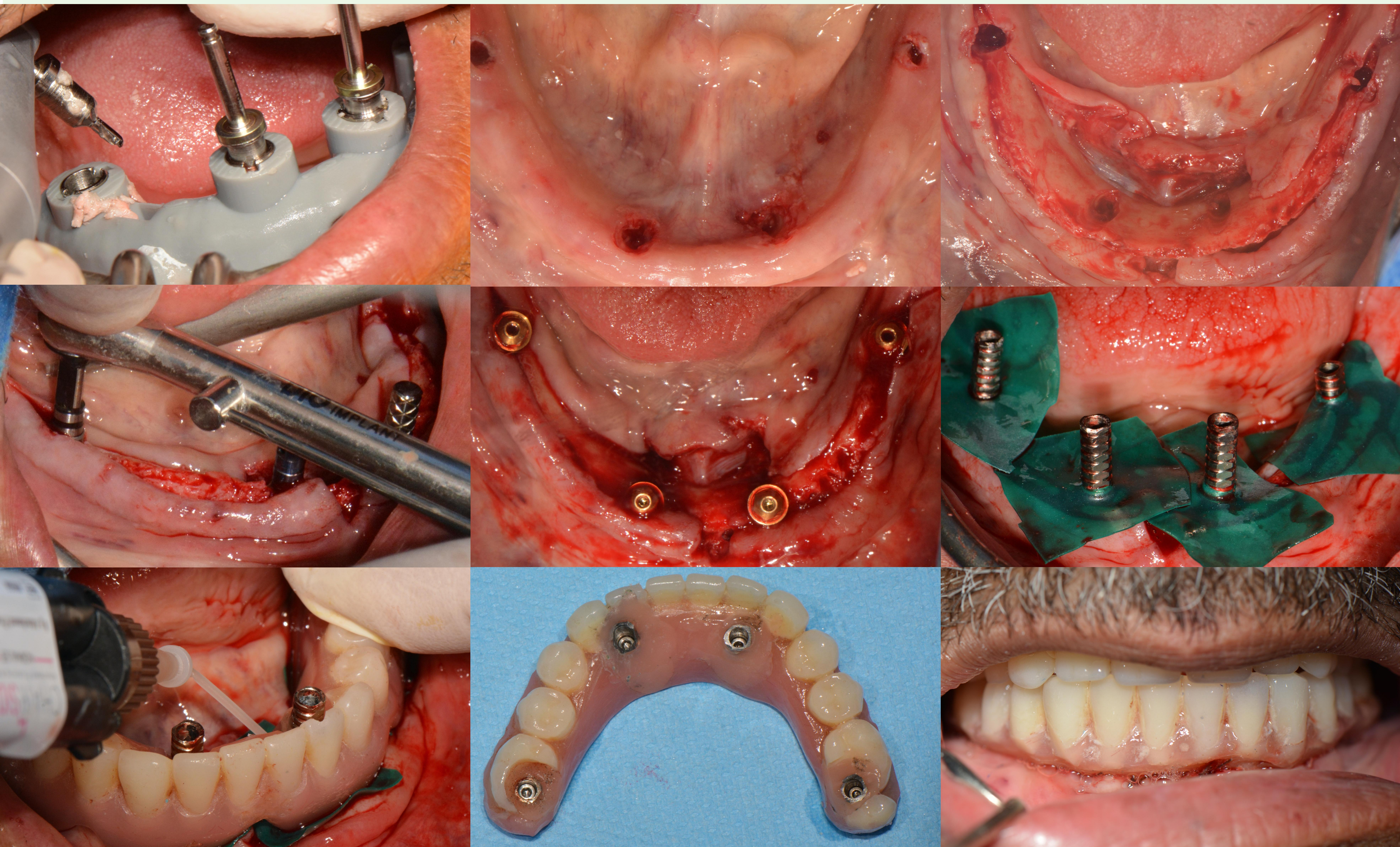
Full-arch rehabilitation of the edentulous mandible poses a challenge in achieving accurate implant positioning to enable immediate provisionalization.

A digital workflow using the patient's existing denture as a reference allows a prosthetically driven, minimally invasive, and highly precise approach.

Method:

- A 60-year-old patient with an edentulous mandible underwent implant-supported full-arch rehabilitation.
- The existing denture was relined with silicone impression material and scanned extraorally after attaching radiopaque markers;
- The bite was also recorded digitally.
- A CBCT scan was acquired with the denture in place.
- The DICOM data from the CBCT imported into implant planning software and merged with the STL files.
- Image fusion of the denture scan data and DICOM dataset was performed through semi-automatic 3D alignment to design a mucosa-supported surgical guide.





- Implant sites were prepared using the pilot surgical guide.
- Following full-thickness flap elevation to expose the underlying bone, final drilling was performed and the implants were placed in the planned positions.
- Multi-unit abutments and titanium cylinders were then connected.
- A provisional restoration was adapted and stabilized with resin, allowing immediate functional and aesthetic rehabilitation.

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Results:

The guided approach ensured accurate implant positioning, reduced surgical time, minimized complications, enhanced surgical predictability, and improved patient comfort and recovery.

Conclusion:

Using the patient's existing denture as a radiographic and surgical reference provides a **simple, accurate, and cost-effective workflow** for full-arch mandibular rehabilitation, enhancing precision and treatment predictability.

