



Additively manufactured anterior deprogrammer to record centric relation: Applications and technique- A Case Report

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Introduction:

This Case Presentation outlines the complete digital workflow for fabricating a Anterior Deprogrammer (AD) and obtaining a Centric Relation (CR) record using an Intra Oral Scanner (IOS), a CAD software, and 3D printing. The presentation focuses on a patient with occlusal dysfunction (OD) undergoing a full mouth reconstruction.

Technical Steps:

An IOS was performed for both arches, and a bite registration was obtained in centric relation using a leaf gauge. This gauge was positioned between the anterior teeth, gradually opening the bite by adding leaves until there was no posterior contact. The leaf gauge served to record the initial centric relation position (CRP), which was crucial for digitally designing an AD at that specific vertical dimension.

Using a CAD software, the device was designed on the models, creating a single point of contact between the anterior teeth and the mandibular incisors. Once the design was finalized, it was 3D printed and delivered to the patient.

Outcomes/Follow up:

The AD that was designed and constructed successfully achieved a stable and consistent CR position for the patient's OD. This approach enabled a diagnostic digital wax-up within the intended vertical dimension, providing guidance for achieving the desired aesthetics and function through optimal clinical and laboratory procedures.

Conclusions:

This Case Presentation unveils a comprehensive digital pathway for an AD fabrication and CR recording. It proves instrumental in addressing OD, enabling an efficient and effective full mouth reconstruction.



Figure 1- view of patient with leaf gauges for Lateral intraoral scan at initial centric relation position (CRP)

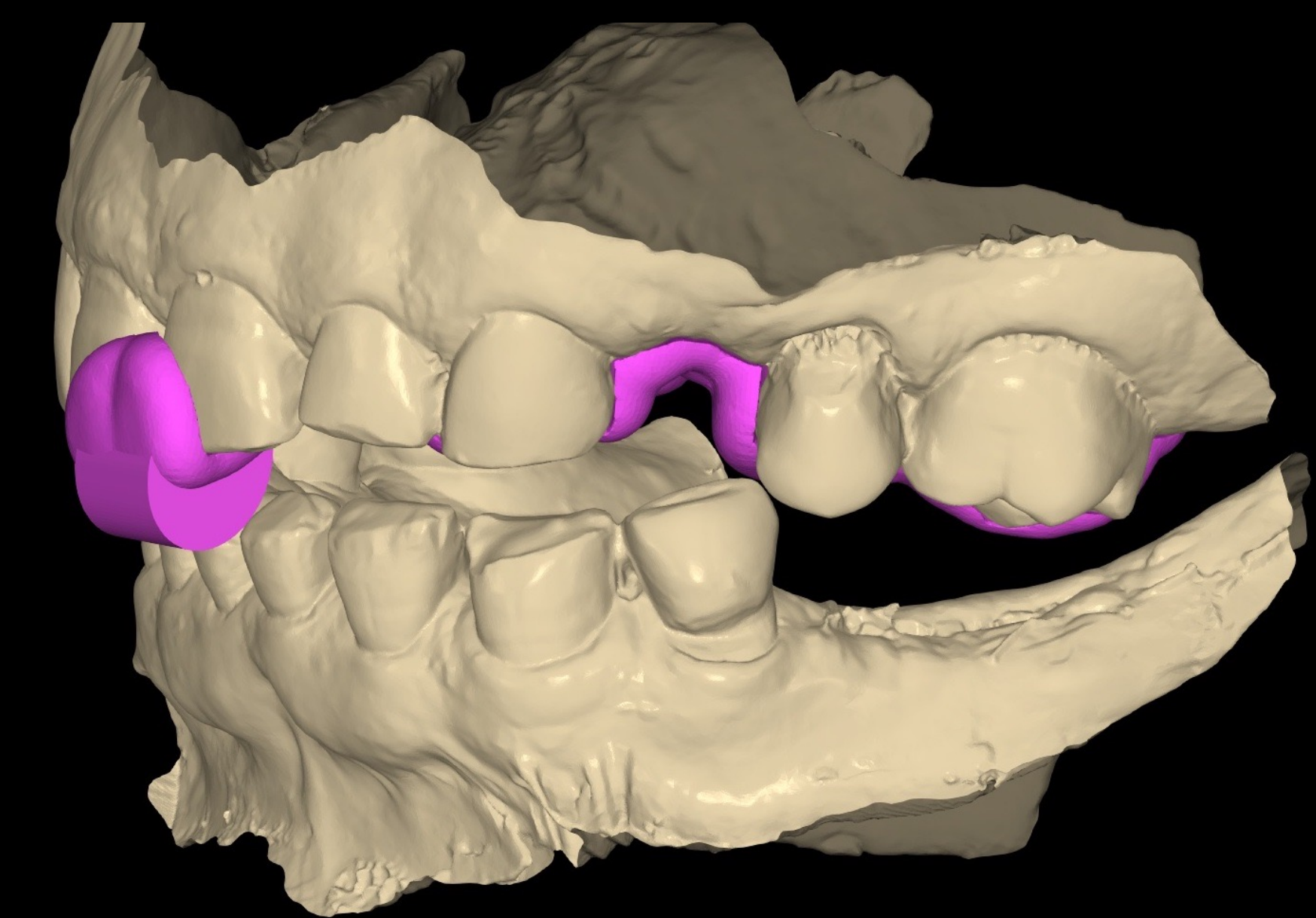


Figure 2- Digital models with anterior deprogrammer designed at the initial CRP



Figure 3- 3D printed anterior deprogrammer (AD)



Figure 5- Frontal view at maximum intercuspation



Figure 7- Frontal view with 3D printed AD



Figure 4- Occlusal view of the AD on the patient's maxilla



Figure 6- Lateral view at maximum intercuspation



Figure 8- Lateral view with the 3D printed AD

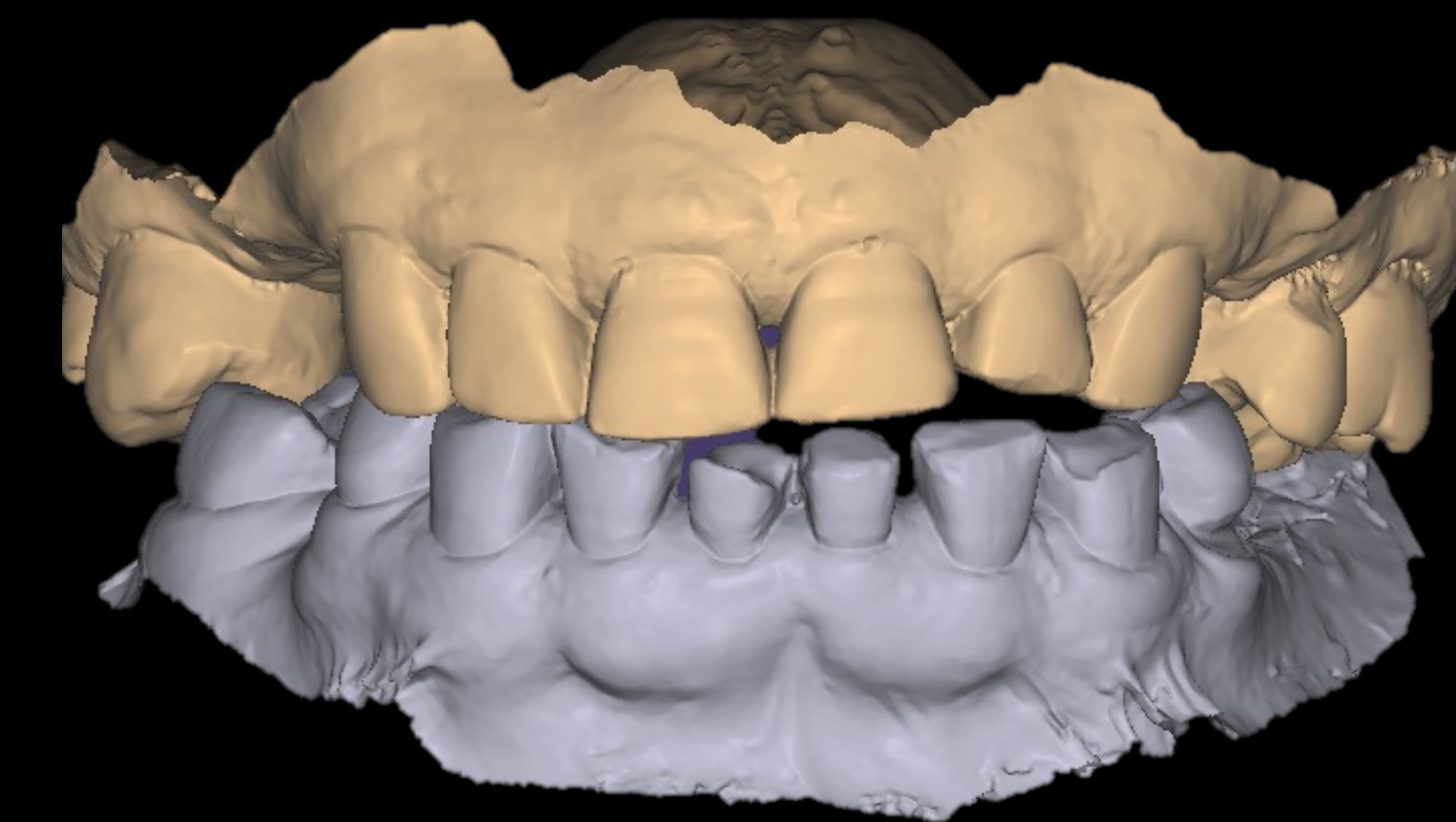


Figure 9- Maxillary and mandibular digital models in CR which was registered with the AD

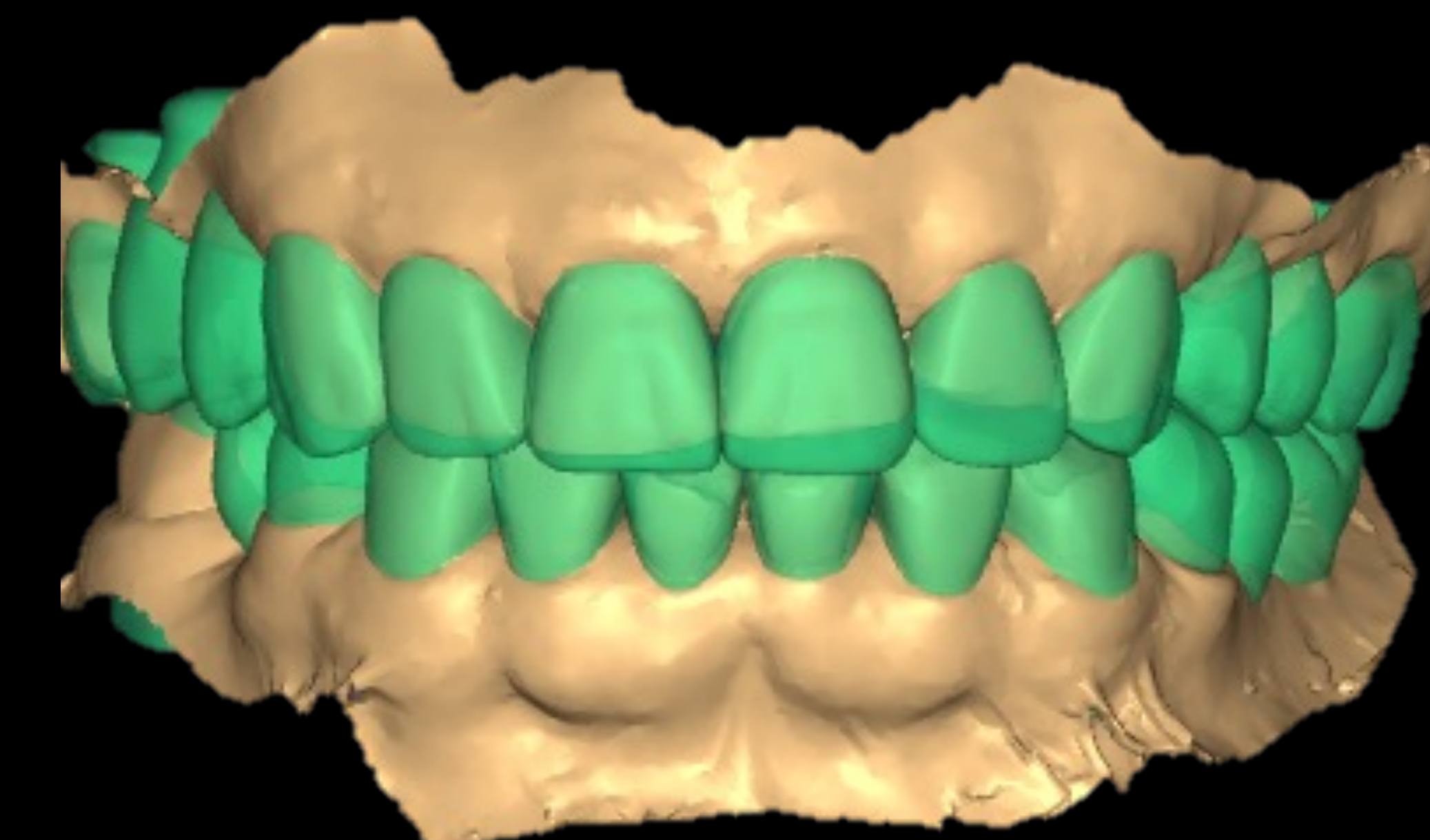


Figure 10- Diagnostic digital wax up designed with the vertical dimension of occlusion that was obtained in CR

References:

- Revilla-León, Marta & Zeitler, Jonathan & Kois, Dean & Kois, John. (2022). Utilizing an additively manufactured Kois deprogrammer to record centric relation: A simplified workflow and delivery technique. The Journal of Prosthetic Dentistry

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