

Implant Placement for Fixed Full Arch Prosthesis Using a Magnetic Stackable Guide: A Case Report

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Introduction

Alveolar ridge deficiency can significantly affect the quality of life of individuals using complete dentures. Resorption of the residual ridge results in an unstable foundation for complete dentures. This case report describes a digital and surgical workflow using magnetic stackable surgical guides to ensure increased stability and precision during guided bone reduction and implant placement for a fixed full-arch prosthesis.

Objective

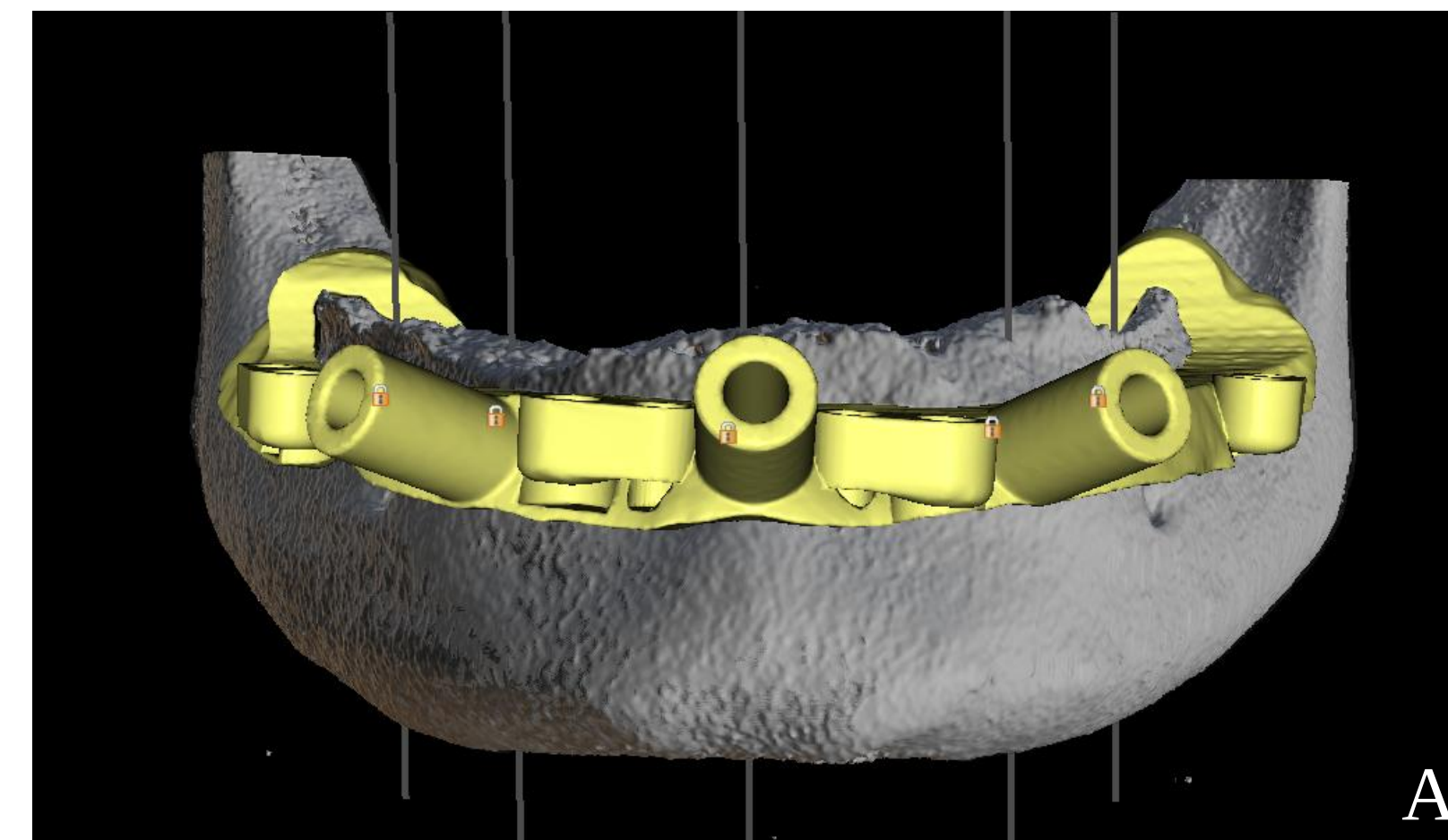
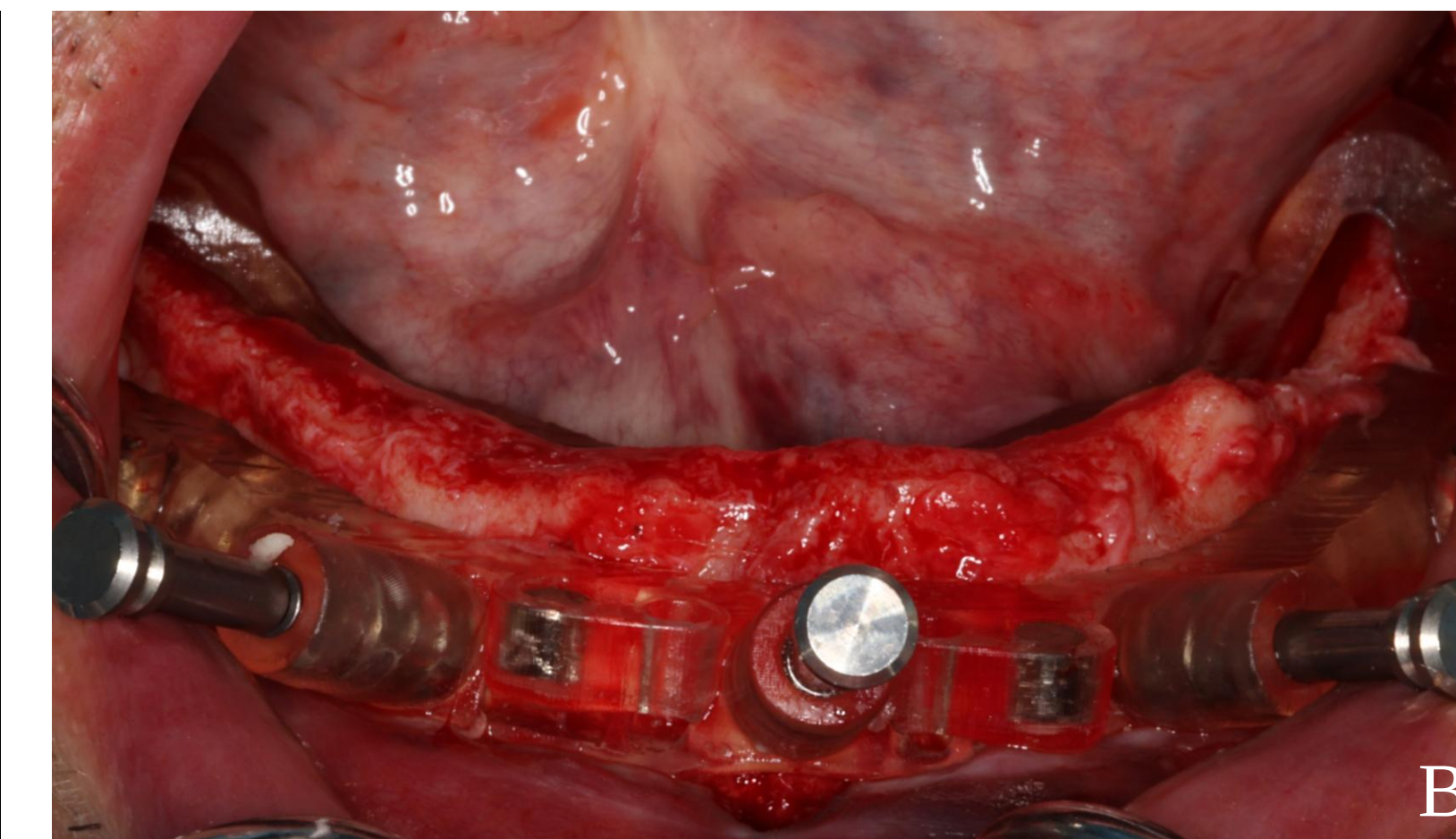
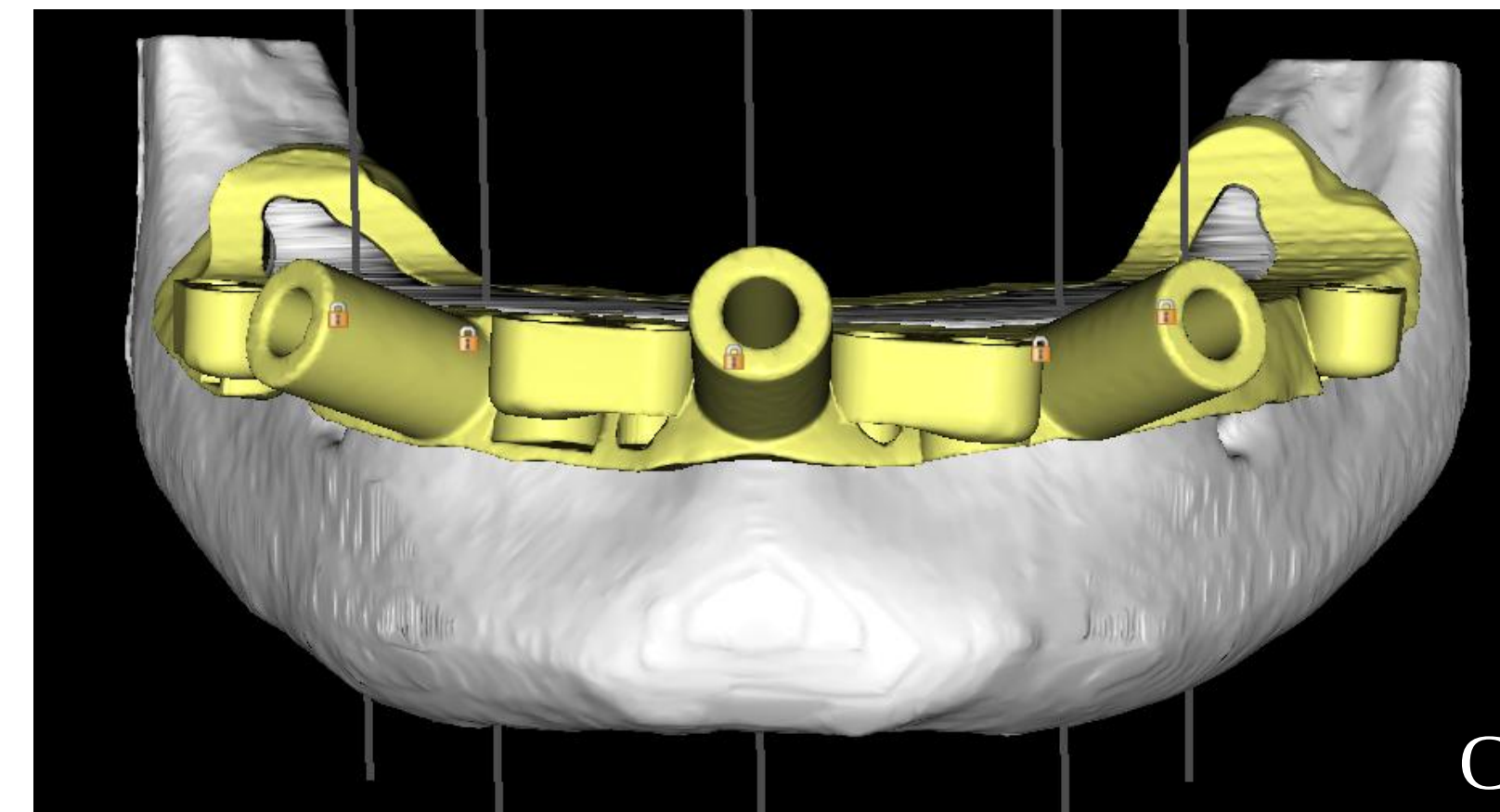
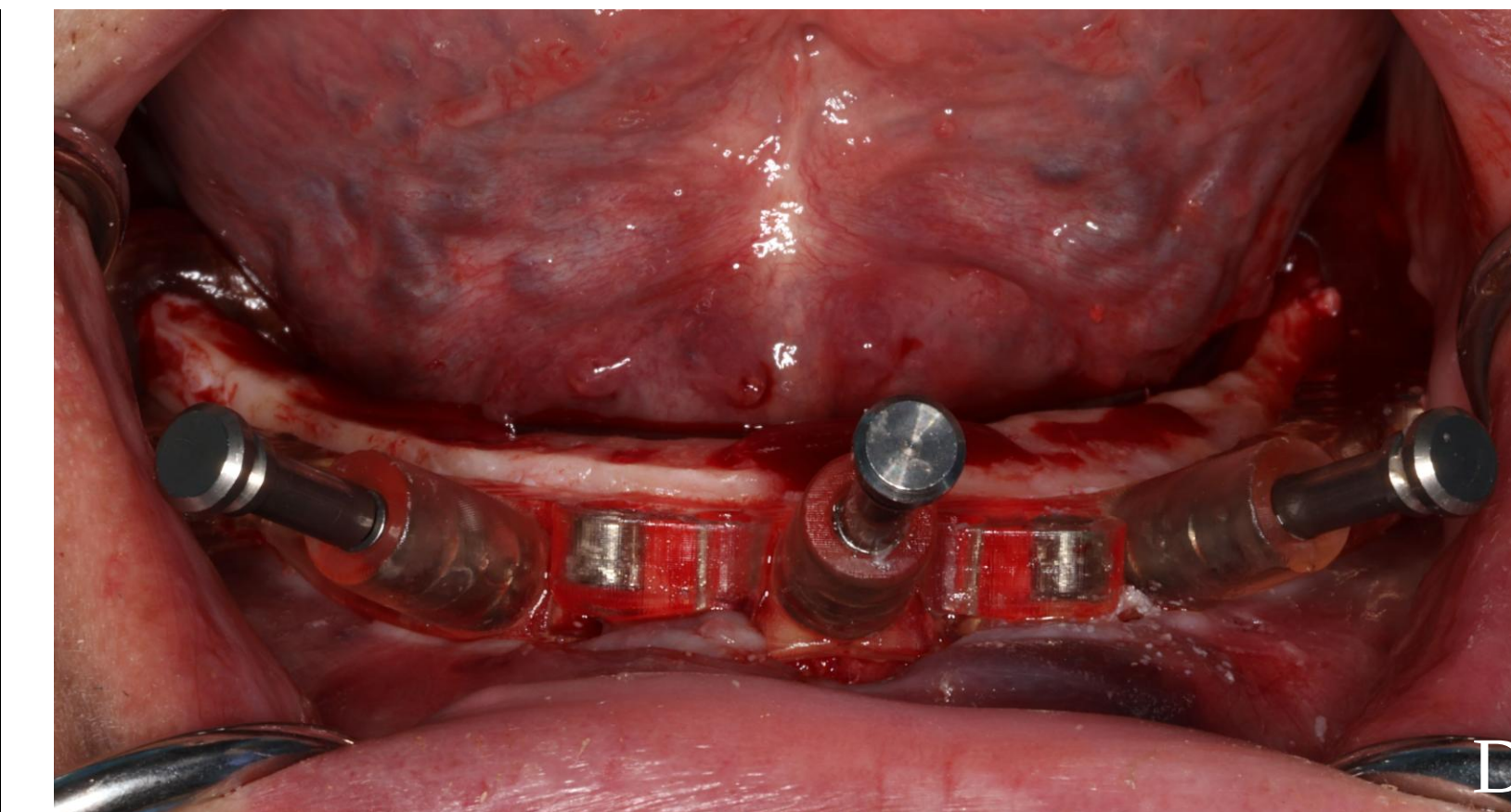
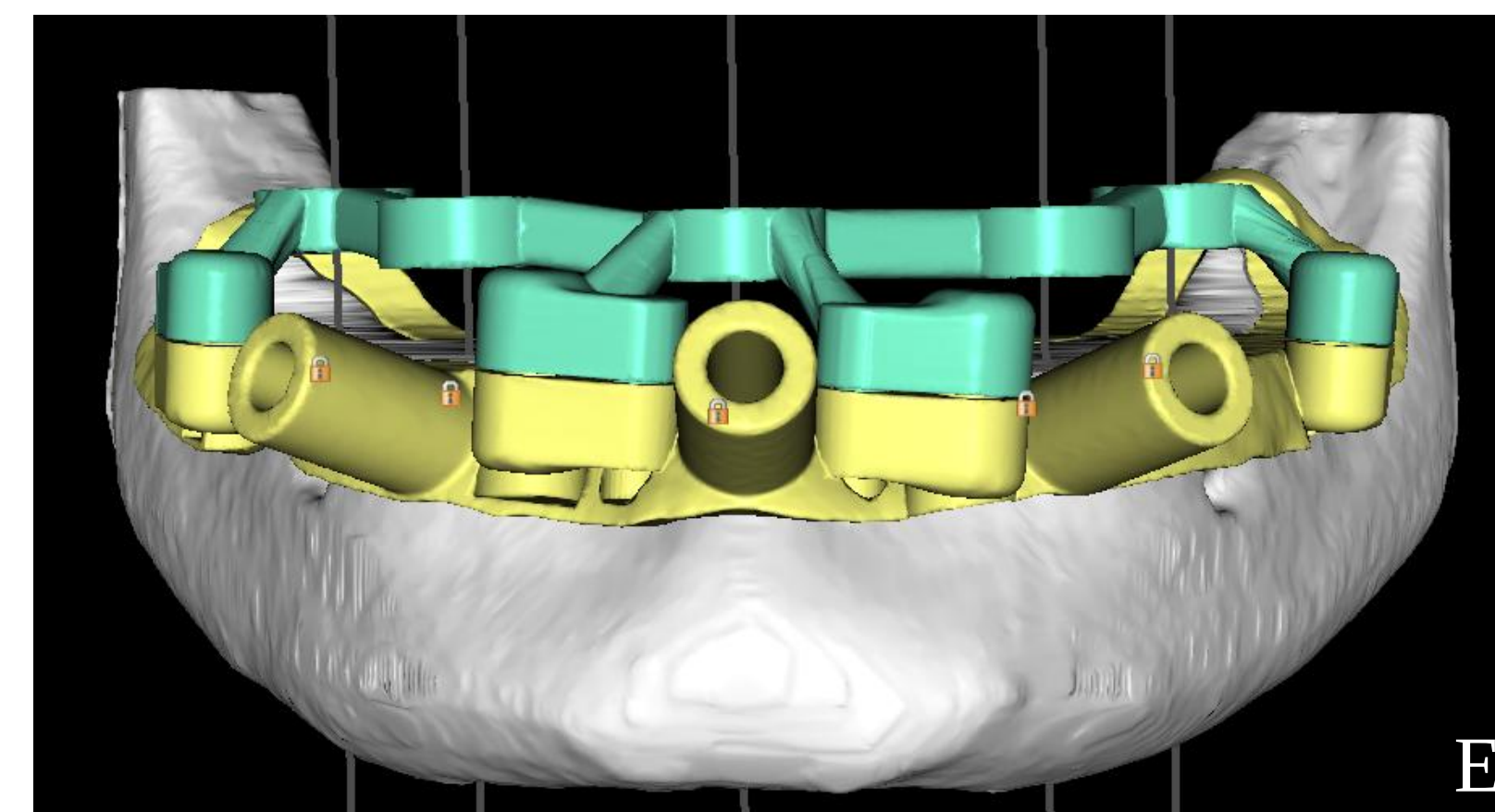
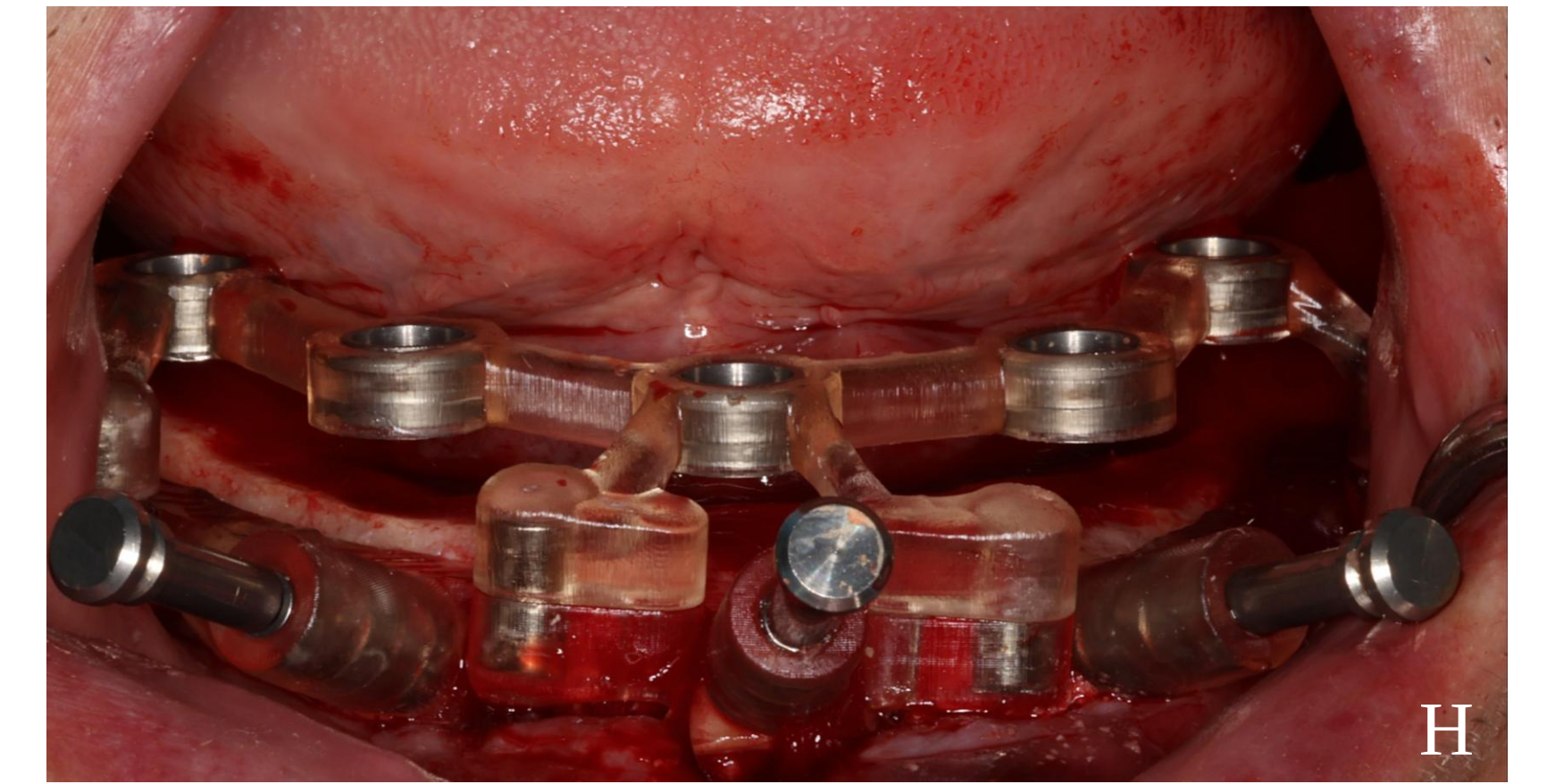
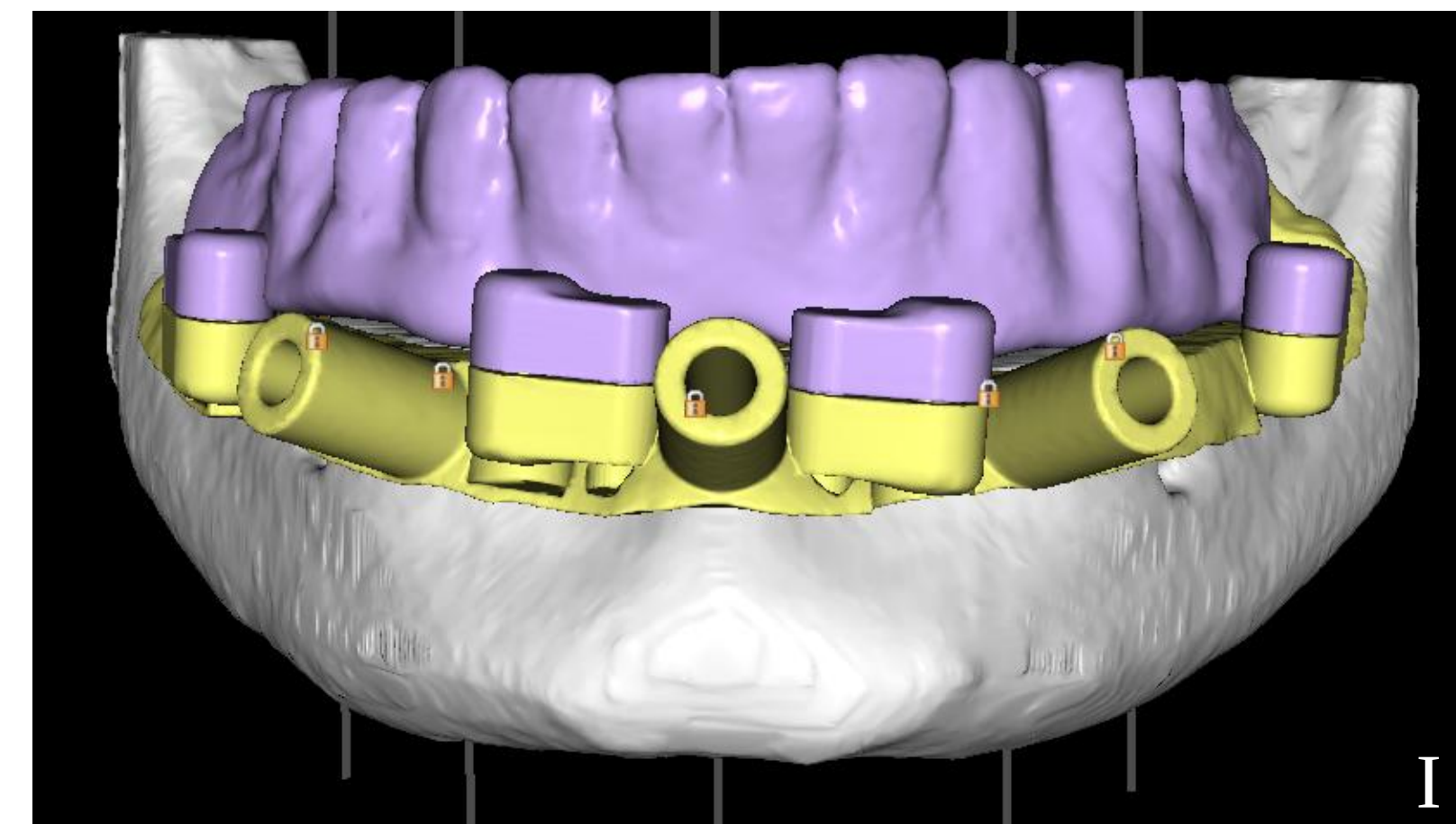
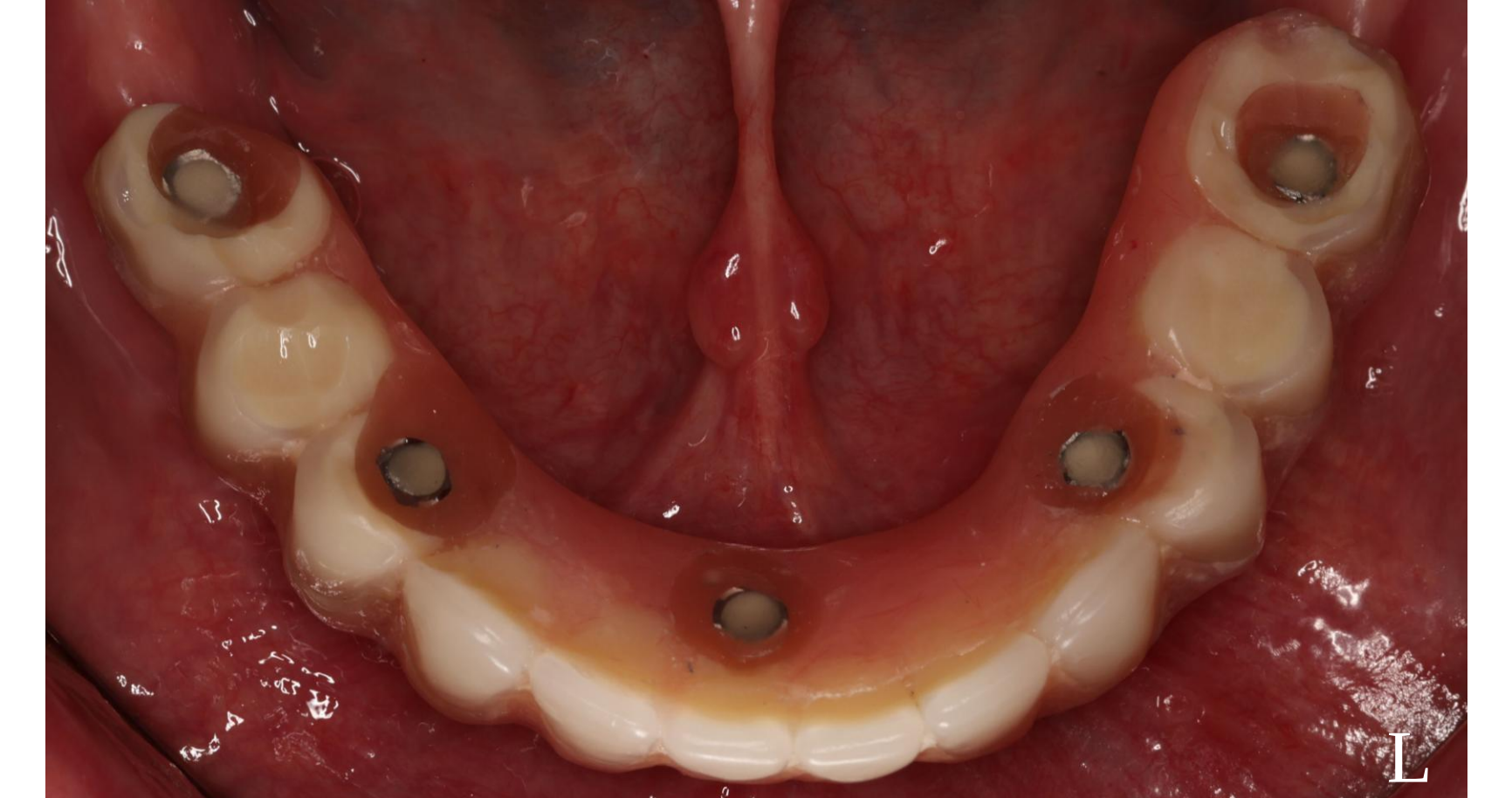
The purpose of this technique is to increase stability and precision of the surgical guide with magnets for the implant surgeon, reduce conversion time for the restorative dentist, and increase patient comfort and satisfaction.

Materials / Methods

A 45 year-old male presented with the chief complaint of “I am unhappy with my dentures and would like implants placed.” A dual CBCT scan revealed inadequate restorative space on the mandible requiring alveolar bone reduction prior to implant placement. The case was approached with a 3D-printed magnetic stackable guide for improved stability during the placement of 5 mandibular implants and a more streamlined workflow for prosthesis conversion using a stackable prosthesis. The guide complex was designed using a combination of Blue Sky Bio and Meshmixer.

Results

The base of the guide serves as the bone reduction template and remains in place for the entire surgery (fig. A-B). After flap reflection the base is seated and the bone is reduced to allow proper seating of the implant guide (fig. C-D). The guide for implant placement can be inserted or removed with ease to aid in visibility of the surgical field (fig. E-H). The stability and passivity of the guide is provided by neodymium magnets and the male and female components, respectively. The stackable conversion prosthesis affords the restorative dentist the effortless ability to record the implant positions at the exact vertical dimension the patient presented with (fig. I-L). The advantages of this approach include ease of mind to the surgeon that the guide remains in place throughout the procedure via the magnetic wells, versatility of the guide, decreased use of materials and time by the restorative dentist, a more accurate occlusal relationship of the conversion prosthesis, and increased patient comfort during conversion. What might be considered a disadvantage to this approach is the structural stability of the guide due to flexure from the 3D-printed resin during implant placement. To combat this flexure one could consider fabricating a metal alloy stackable surgical guide for more precision.



Conclusions

This case report highlights how the use of a magnetic stackable guide facilitated a step-by-step approach simplifying various aspects of the surgery while ensuring both efficiency and precision.

References

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