

A Digital Approach to Hollow Obturator for Palatal Defects: A Clinical Report

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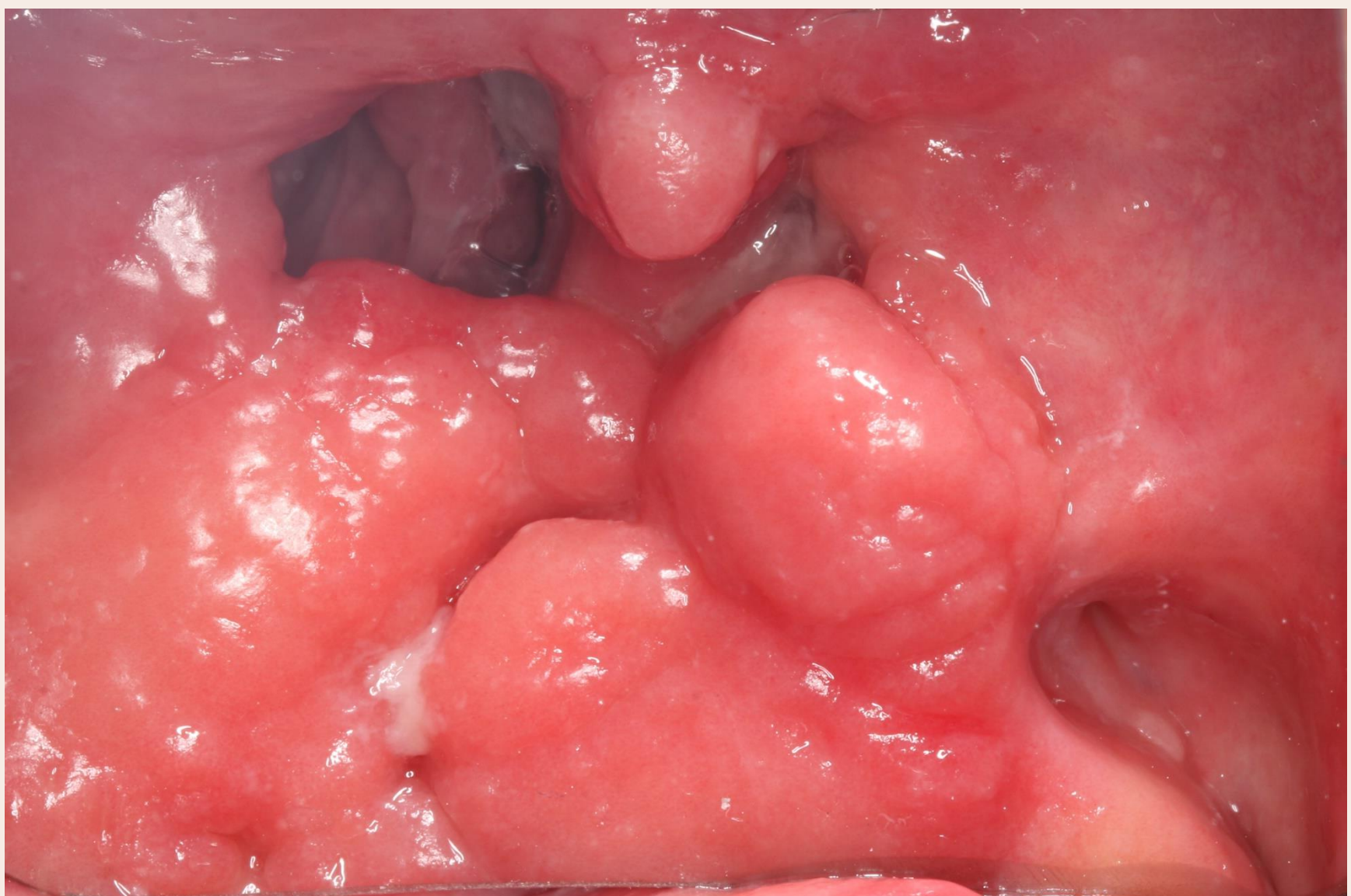
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Introduction

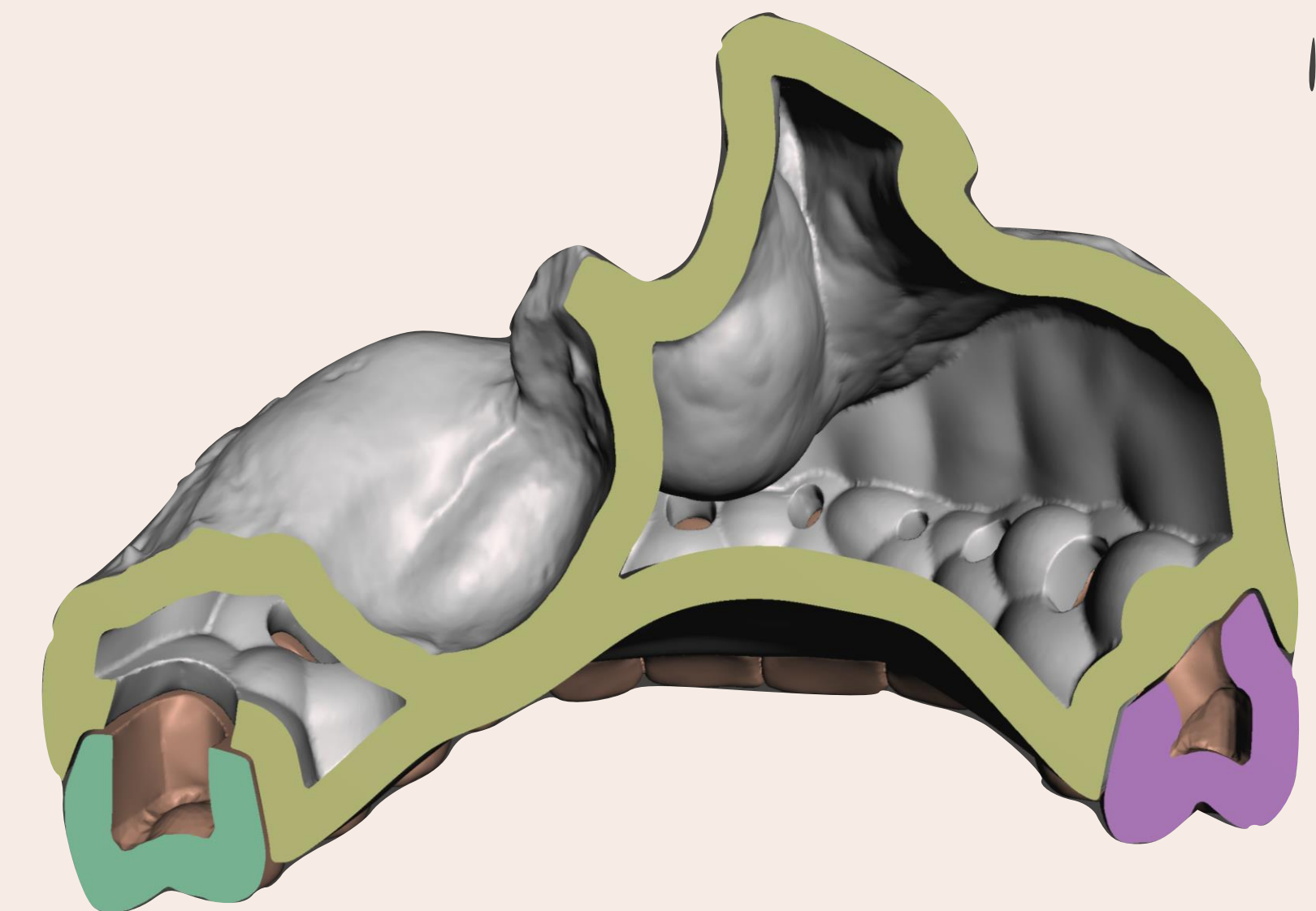
Maxillofacial prostheses, obturators are fabricated to close the defects in carcinoma or congenital cleft palate and lip patients. Various techniques have been used and documented in the past for hollowing out the obturator bulb to reduce the weight of the prosthesis. The purpose of this clinical report is to present the digital technique to hollow out the denture base and the teeth separately, followed by printing and bonding them together.

Patient Workflow

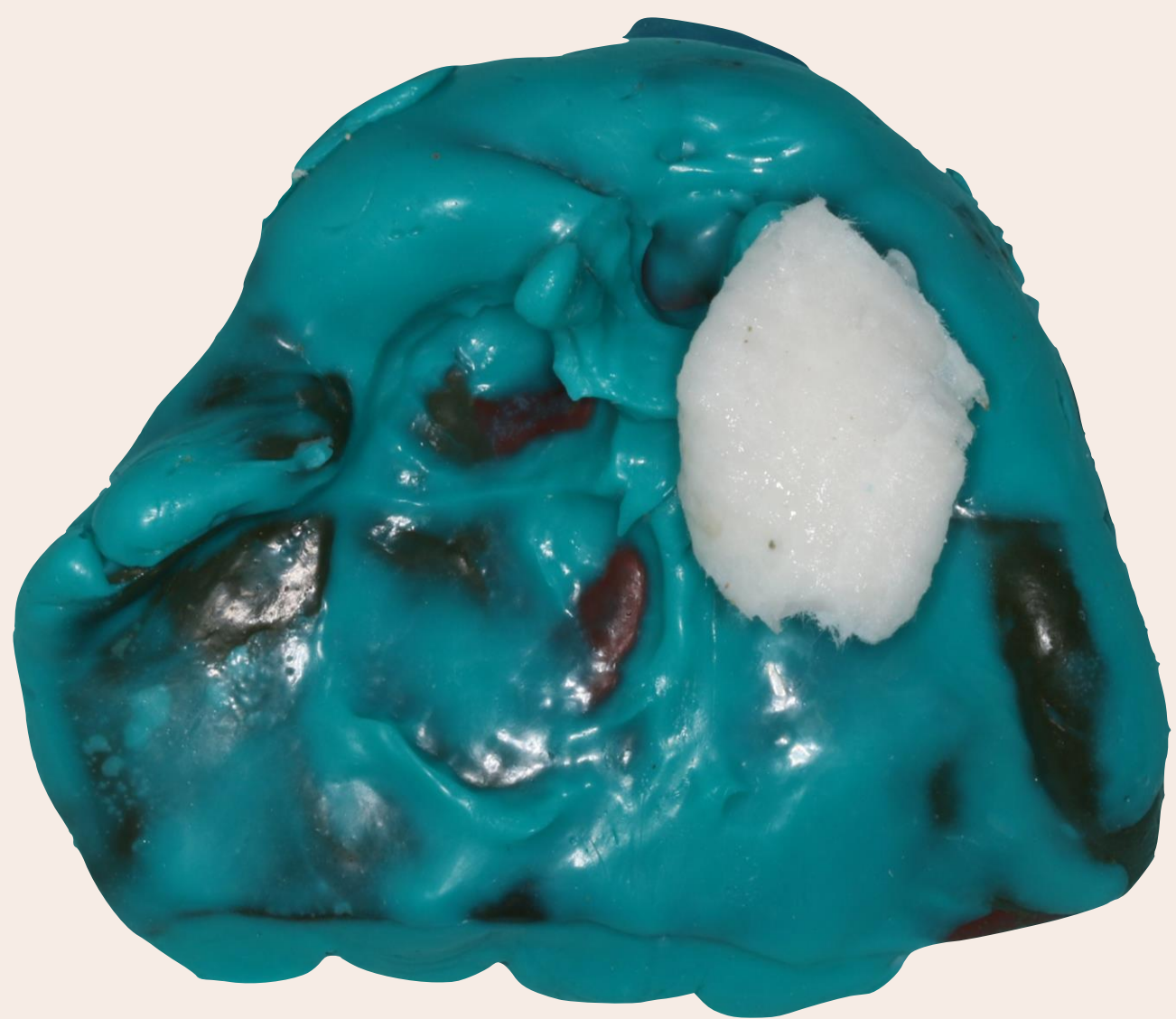
Maxilla with cleft defect



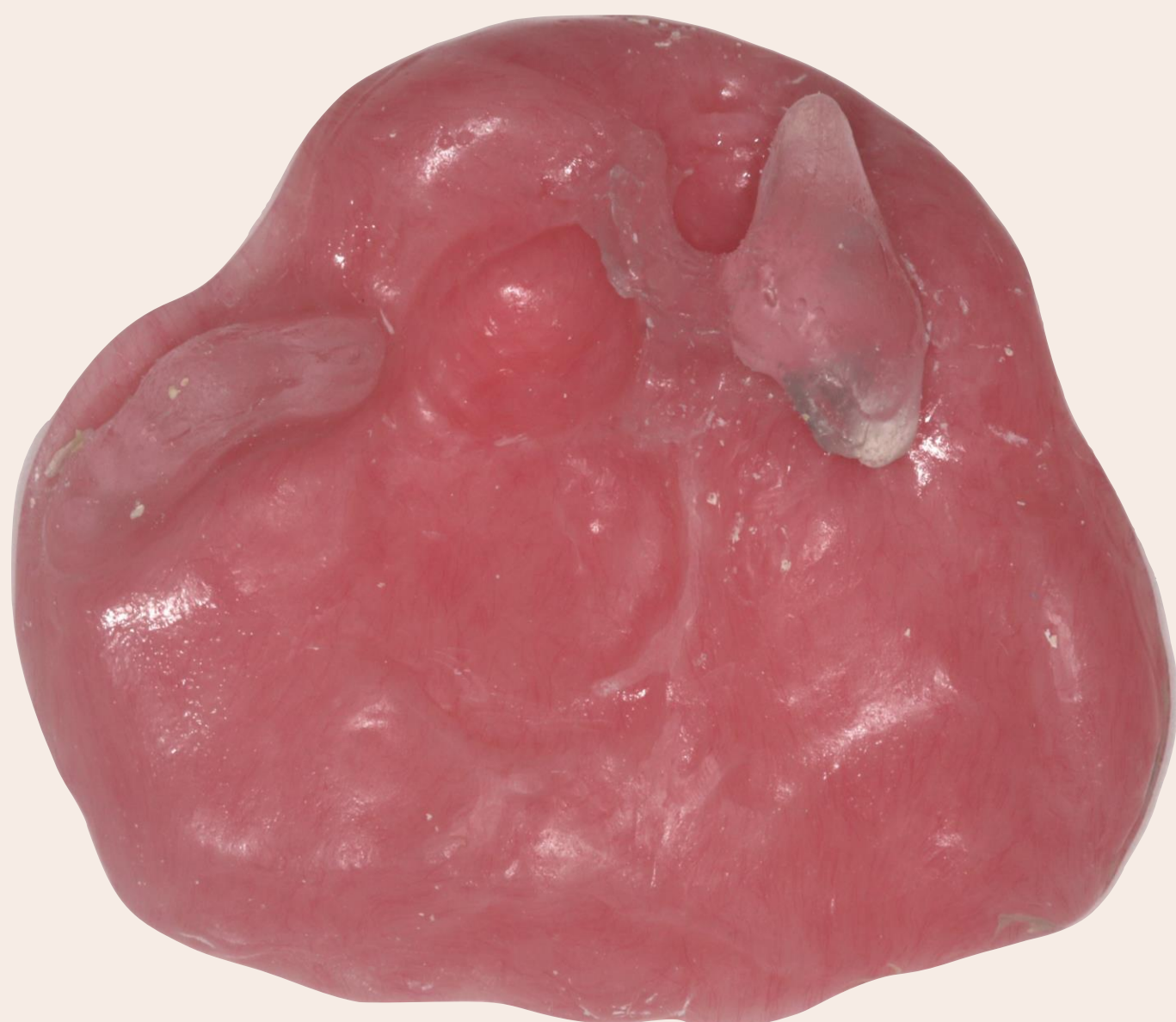
Hollowing technique



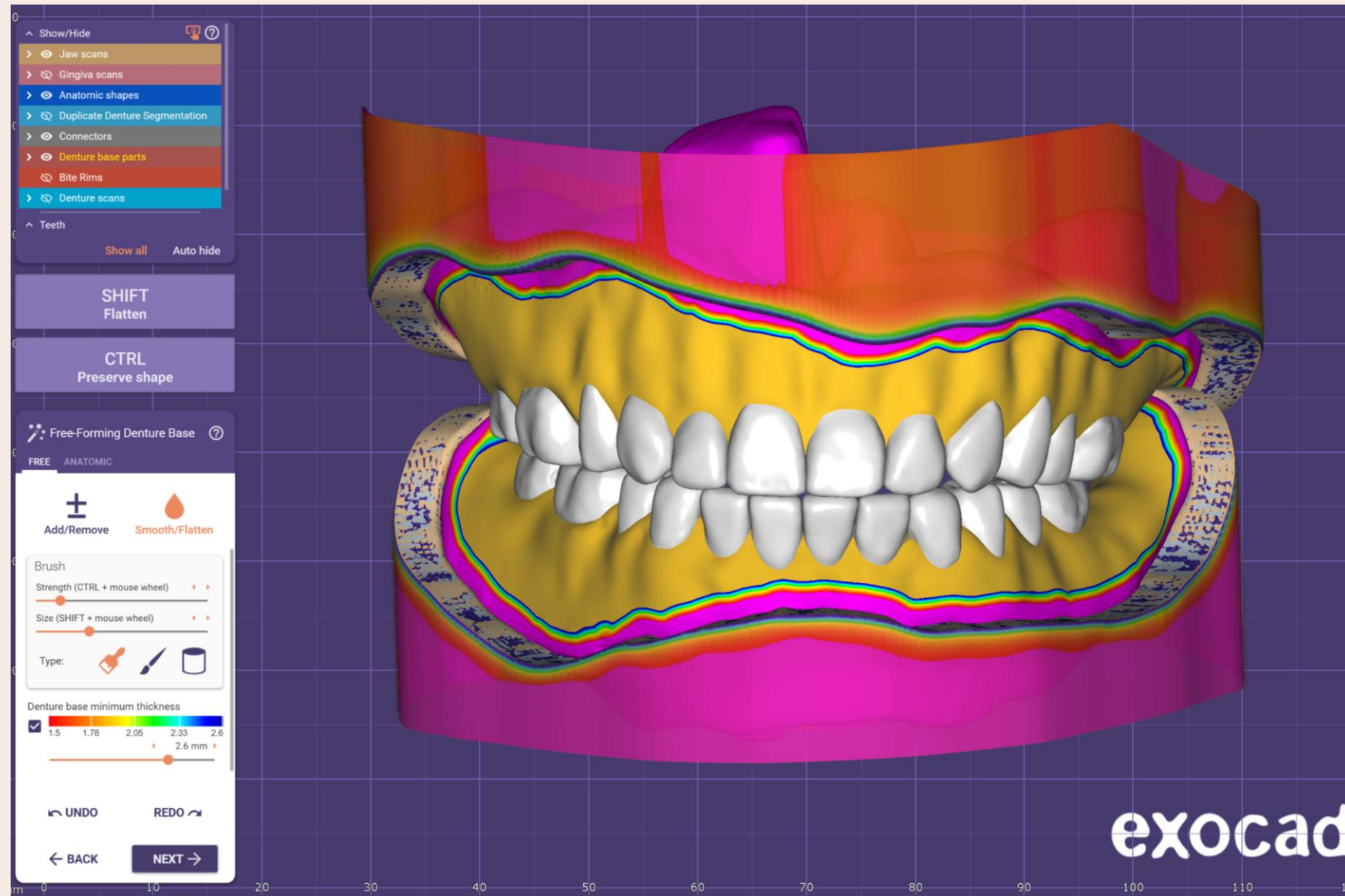
Final impression



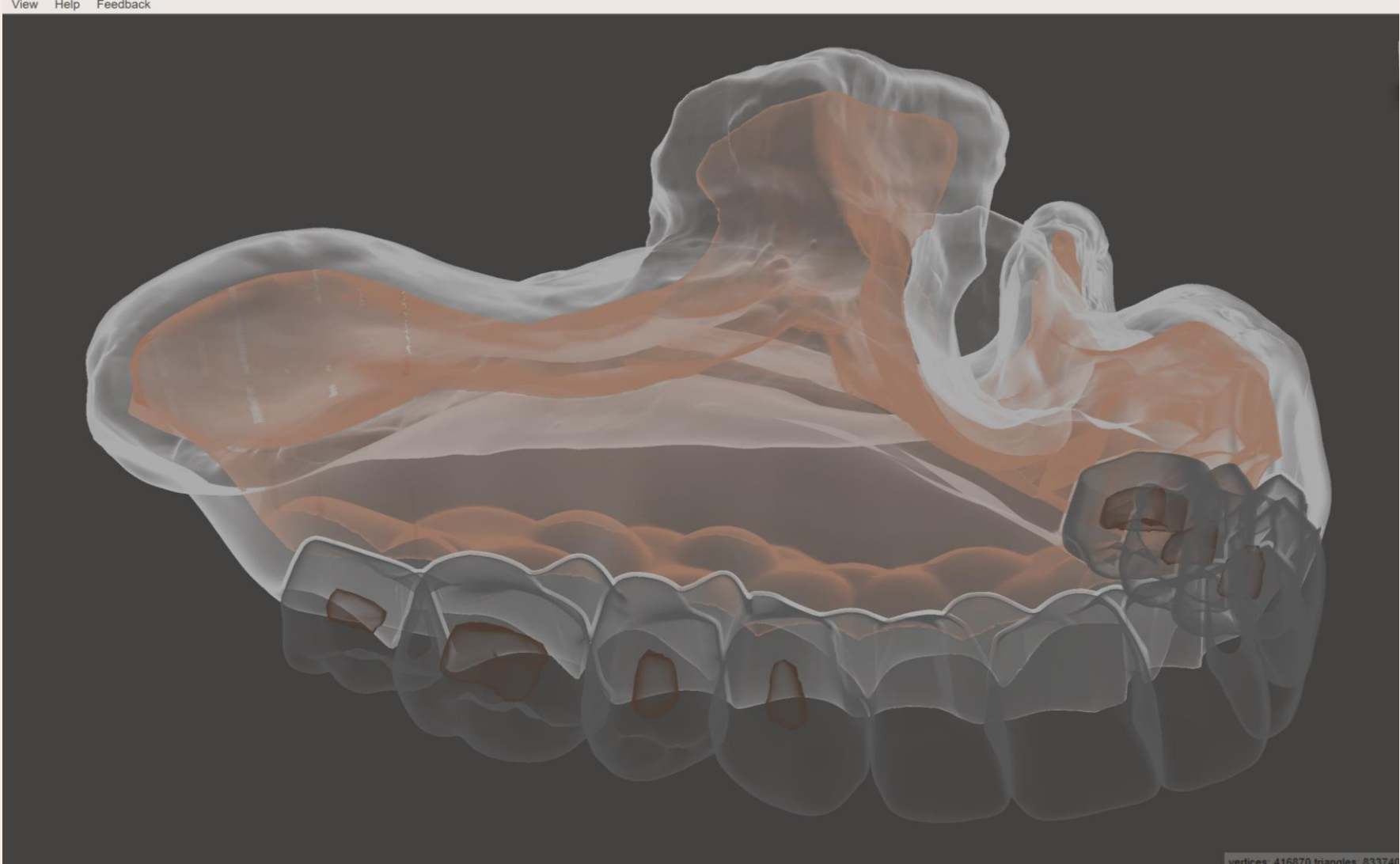
Processed denture base



Digitized trial denture



Solid Prosthesis



Hollowed Prosthesis



References

Alfaraj A, Su FY, Lin WS. CAD-CAM Hollow Obturator Prosthesis: A Technical Report. *J Prosthodont*. 2022;31(7):635-638. doi:10.1111/jopr.13513

Conclusion

This is a digital technique to make the maxillofacial prosthesis lighter in weight, combining conventional and digital approach. The obturator can be made lighter not only by hollowing out the bulb but also by hollowing out the dental arch using digital software. With the design of the venthole being sealed with the denture teeth placement, no extra repairing is required.

Methods

1. After the final impression, processed denture base was fabricated and relined with soft relining material to engage the defect followed by teeth try-in in wax.
2. The wax trial denture was scanned and designed (denture base and denture teeth) in Exocad (Exocad 3.2v Elefsina). The two were then hollowed with 2 mm acrylic thickness in Meshmixer software (Meshmixer, Autodesk, v11.0.544). Parts of the denture base hollowed were the dental arch, the bulb of the obturator, and the denture teeth.
3. To facilitate the 3D printing and post processing, ventholes were designed on the base of the corresponding denture teeth intaglio surface.
4. The hollowed dental arch and the base were printed separately and bonded together.
5. The final weight of the prosthesis was significantly reduced, in comparison to conventional solid printed prosthesis.