



Introduction

Partial maxillectomy often results in oroantral communication, impairing speech, mastication, swallowing, and facial aesthetics. However, conventional obturators have limitations. This case report describes a hybrid digital-conventional approach for fabricating an immediate complete denture (ICD) with a hollow obturator for a patient with a maxillary Aramany Class II defect.

Case description

A 61-year-old woman with systemic lupus erythematosus, a kidney transplant, hypertension, and hyperlipidemia underwent left posterior partial maxillectomy in 2011 due to an odontogenic infection. She presented with an ill-fitting partial denture obturator. Teeth #4, 5-10, and #20-28 showed extensive caries and severe periodontal disease and were deemed non-restorable.

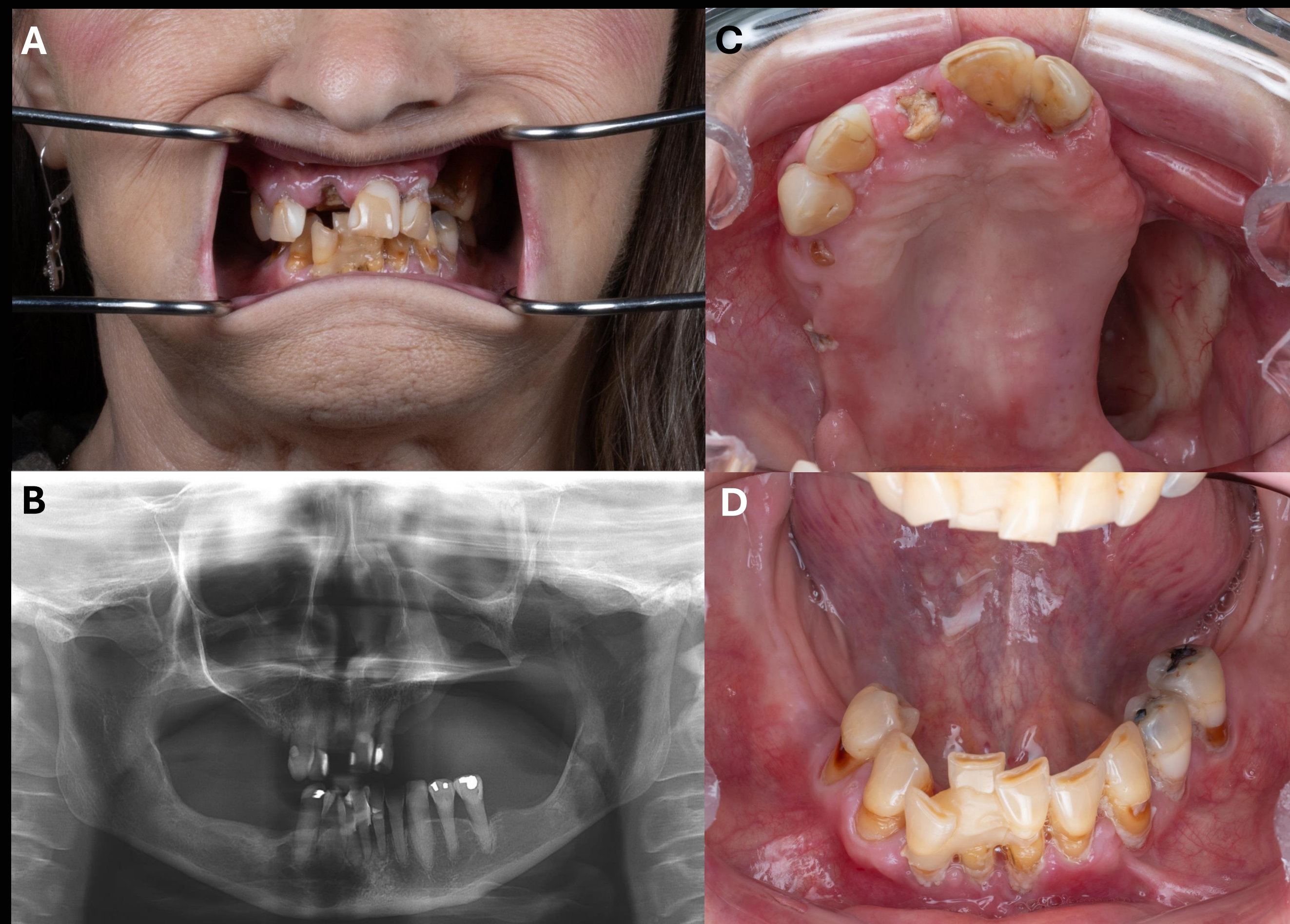


Fig 1. Initial photos; A: Frontal view, B: Panoramic x-ray, C: Maxillary occlusal view, D: Mandibular occlusal view

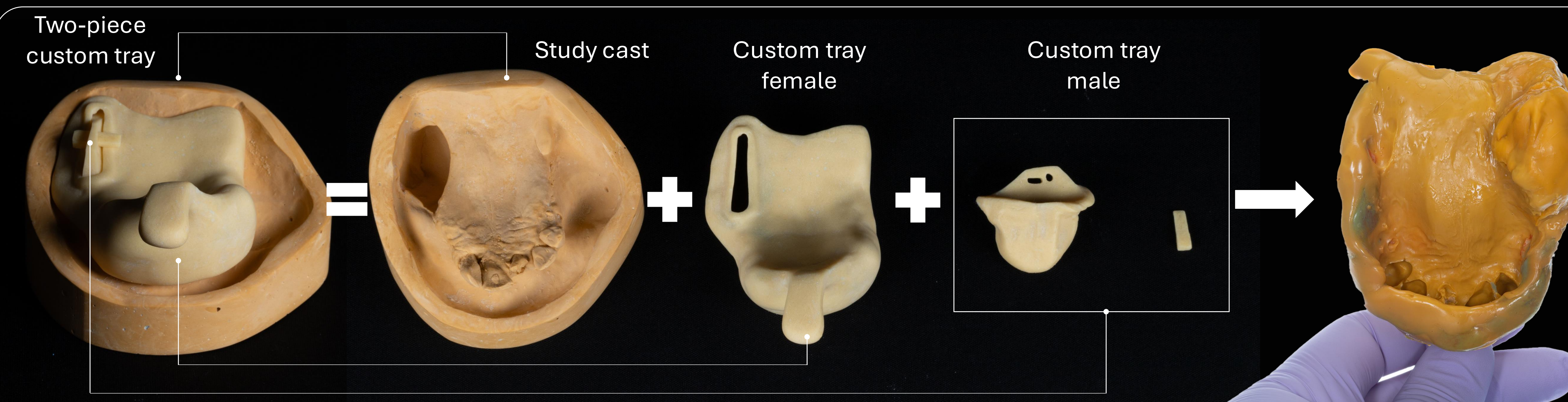


Fig 2. Diagram showcasing the final impression utilizing a **two-step impression** with a **two-piece custom tray**

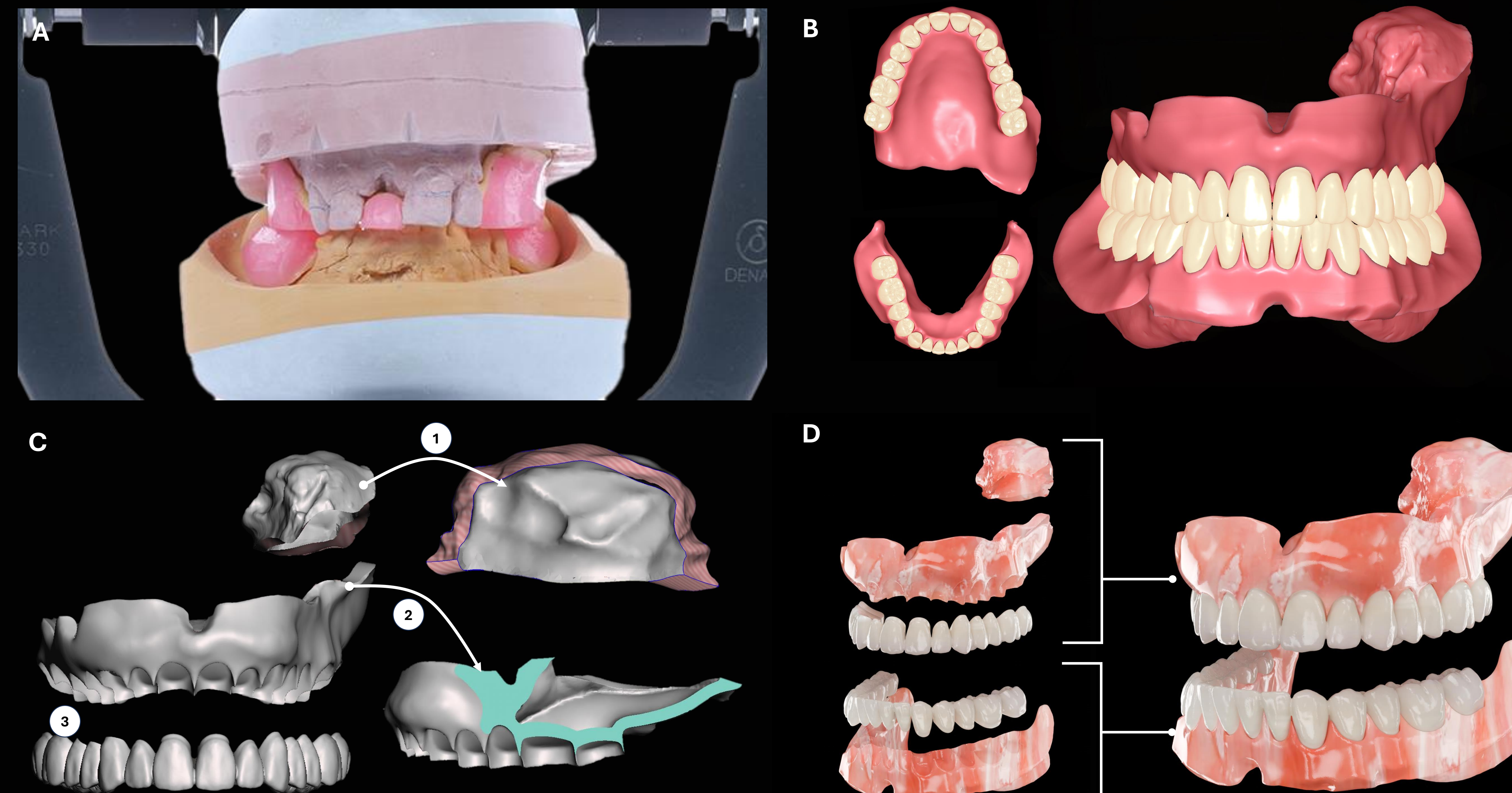
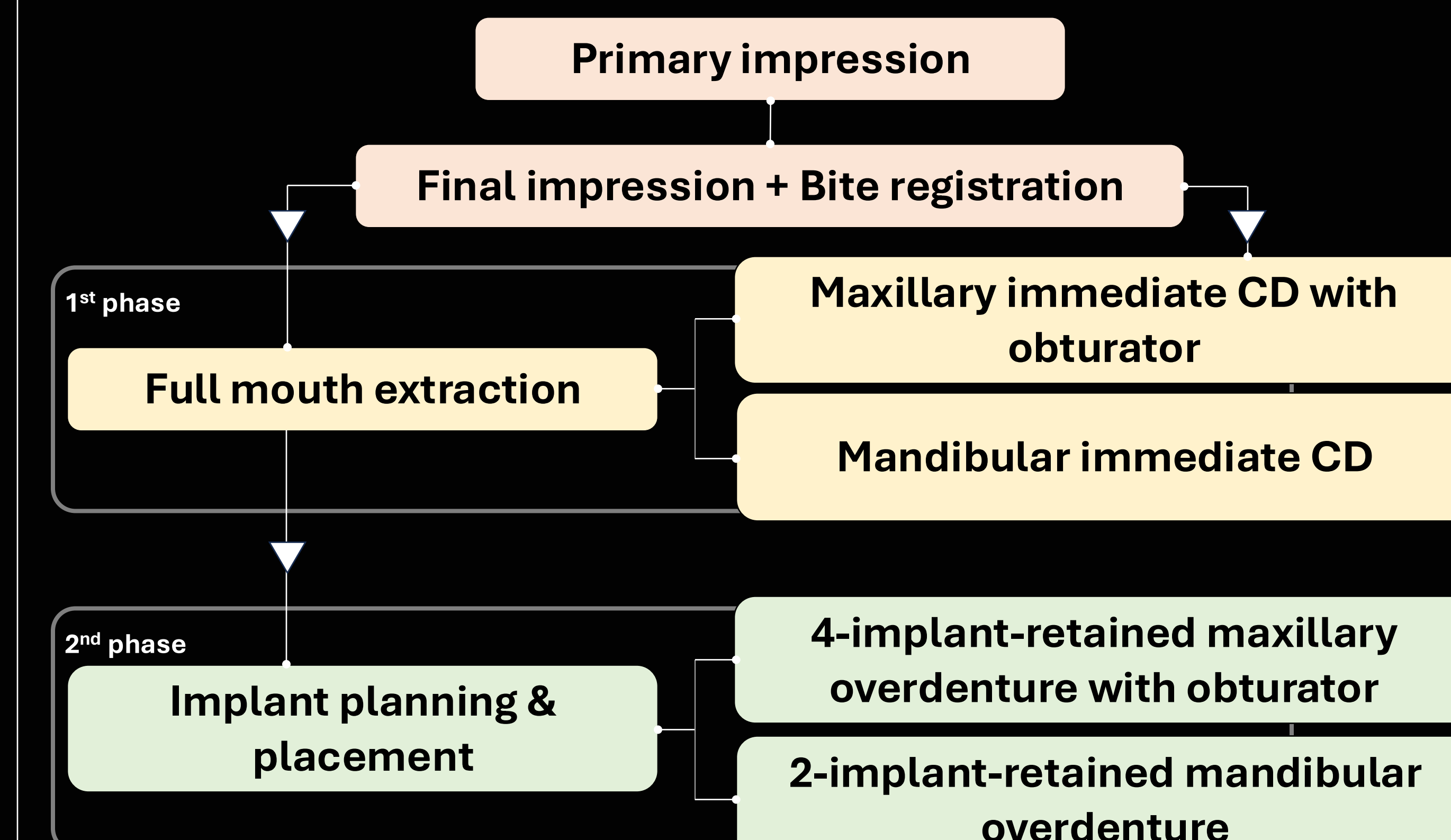


Fig 3. Designing steps; A: Occlusal rim obtained and mouthed to the articulator, B: Prototype design in ExoCad software, C: Hollow the obturator and the denture base in SolidWorks software, D: Coloring using Cinema4D software and assembly

Material & Methods



Discussion

Although conventional impressions were still necessary, the hybrid workflow allowed for accurate defect capture and improved prosthesis precision. To overcome the limitations of conventional obturators—particularly their weight. The prosthesis with the hollow obturator was 3D printed in three pieces and assembled with a 3D printed fusion material.

Conclusion

This case highlights the clinical benefits of integrating digital and conventional workflows in maxillofacial fabrication. The three-piece design improved comfort, function, and patient satisfaction during the interim rehabilitation phase.

References

Prawatvatchara, W., Limpuangthip, N., Techapiroonthong, S., & Thamrongananskul, N. (2025). Three-piece digital complete denture obturator with a heptagonal key assembly for a patient with a total maxillectomy: A dental technique. *The Journal of prosthetic dentistry*, 133(4), 1100–1103. <https://doi.org/10.1016/j.prosdent.2023.06.011>