

Abstract

This clinical case report delves into the intricate workflows involved in fabricating implant-supported fixed dental prostheses (ISFDPs) using photogrammetry technology to determine the optimal method for fabrication of the patient’s maxillary ISFDP. The clinical procedure encompassed various steps: photogrammetry scanning with the MicronMapper (ClaroNav), SmartDenture conversion, intraoral GC pattern resin verification jig fabrication, and the generation of printed prototypes in OnX Tough, direct to multiunit (MUA) and designed on tibases.

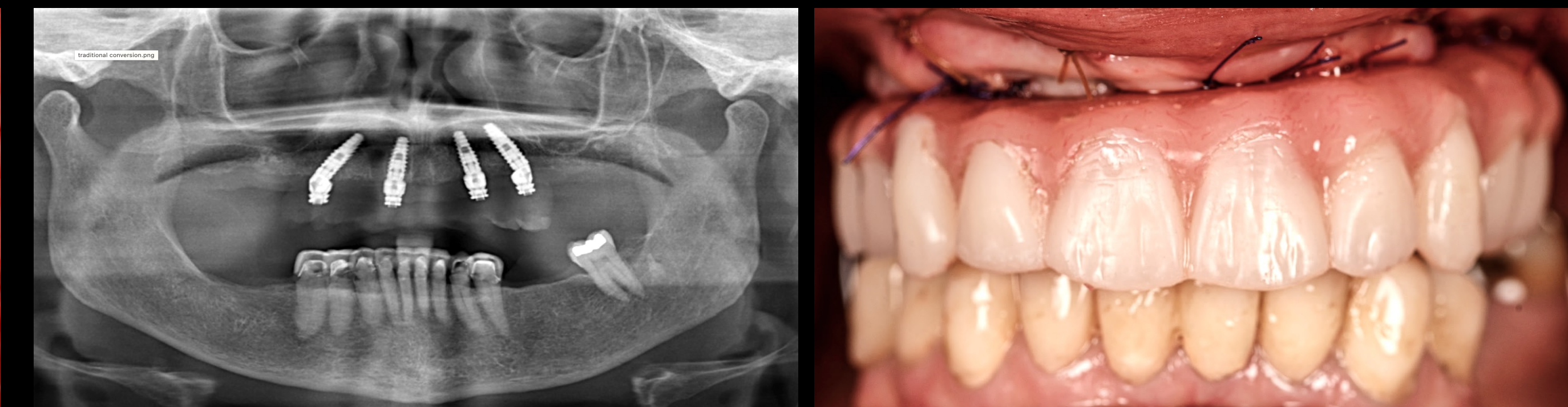
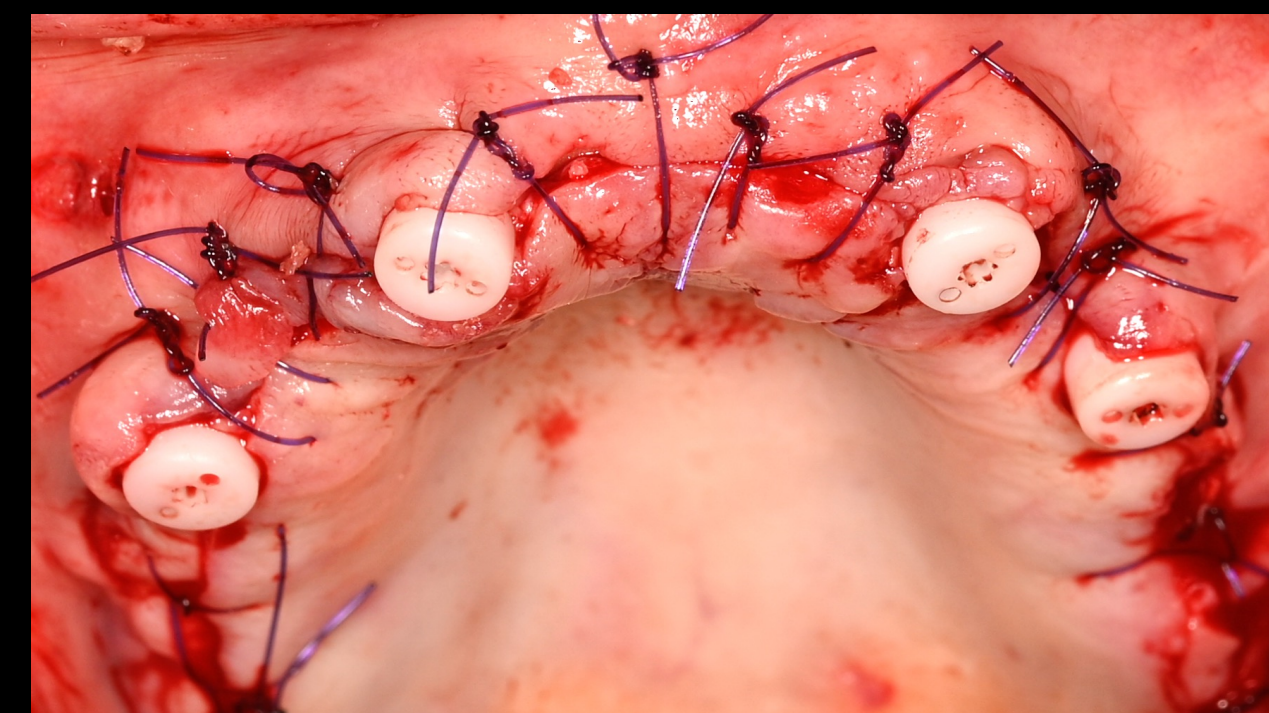
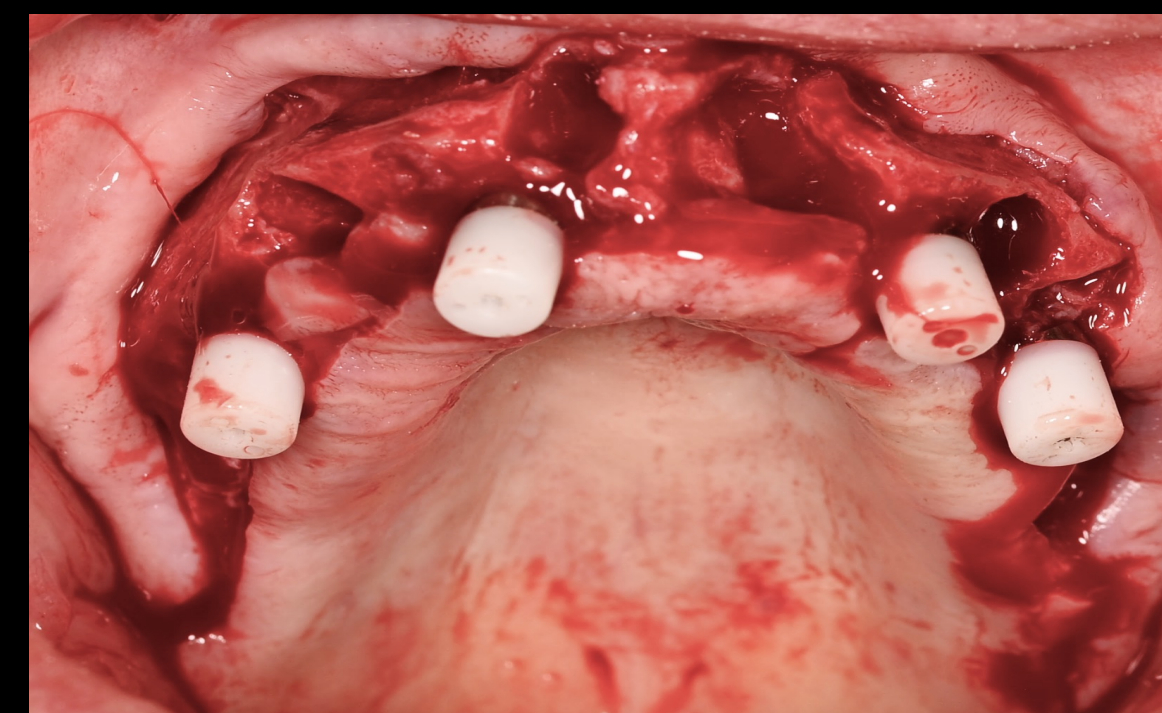
Photogrammetry, employing intraoral scan markers, enabled the precise capture of patient-specific digital MUA positions, essential for accurate prosthesis fabrication. The clinical report focuses on the different approaches. Using photogrammetry and radiographic analysis, several components were scanned at various steps of the workflows, including verified cast, verification jig and printed prototypes, to assess implant positions' validity both radiographically and by photogrammetry methods. Root Mean Square Error (RSME) analysis revealed deviations in the range of 30 μ to 103 μ when compared to the verified stone model.

This case report emphasizes the potential of photogrammetry in improving ISFDP fabrication, shedding light on its clinical applicability and time saving methods compared to the conventional workflows. In conclusion, this report explains the clinical workflows involved in utilizing photogrammetry for ISFDP fabrication, highlighting its promising role in advancing fabrication technology of implant dental prosthesis.

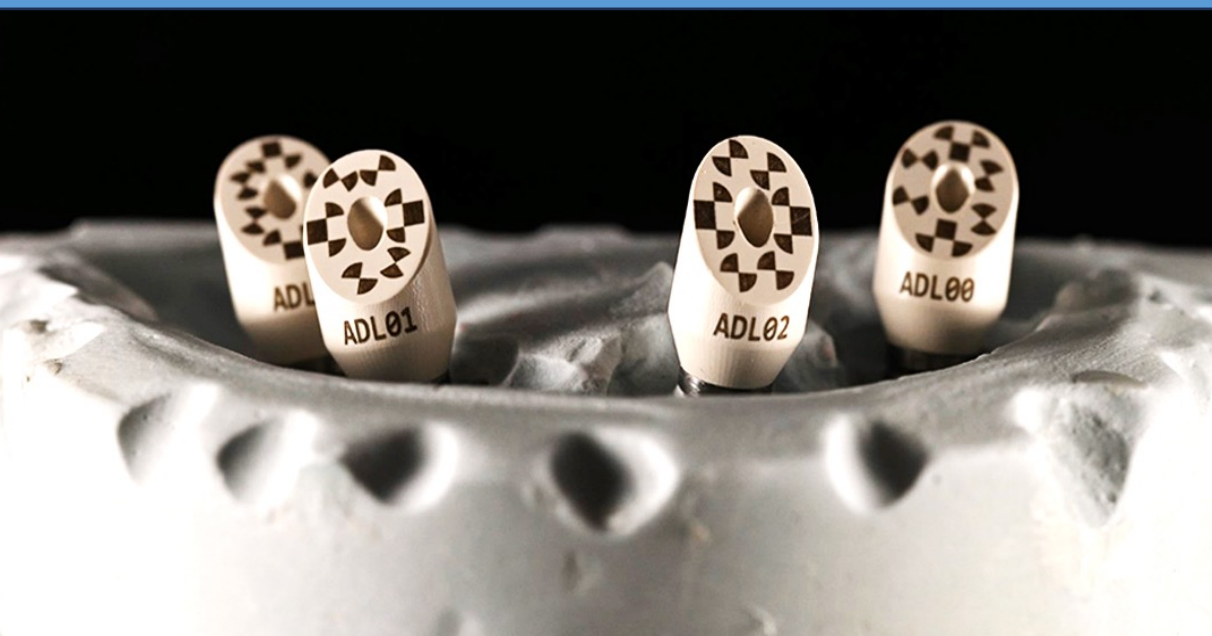
Pre-Operative



Treatment- Surgical Phase



Treatment- Restorative Phase



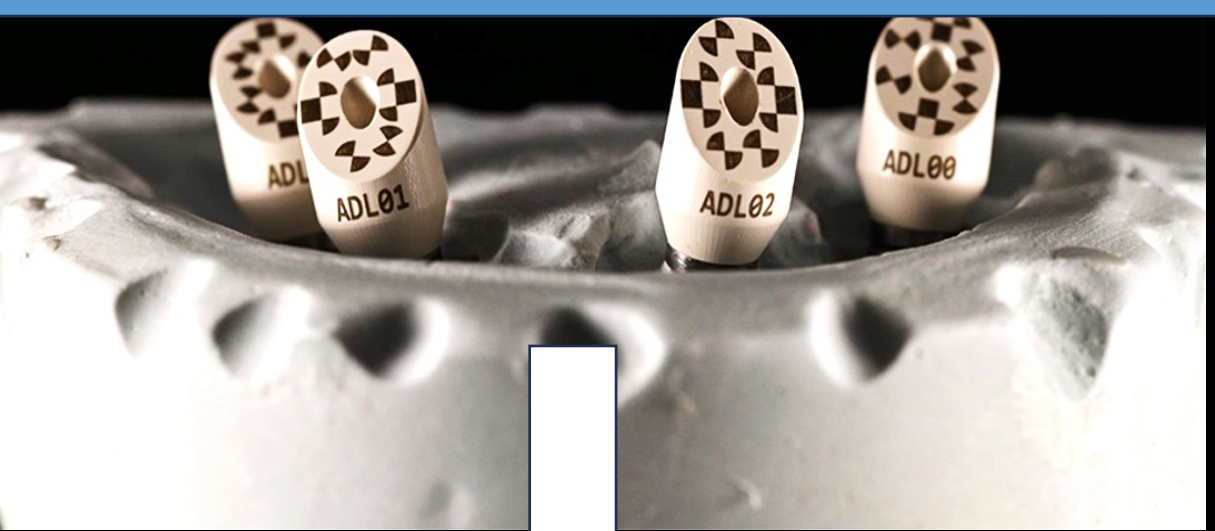
Delivery



Maxillary ISFDP Fabrication Methods & Deviation

Analog Workflow

Verified cast



Verified cast: Direct to MUA



Cast/Intraoral: Verification jig



Verified cast: Tibase prototype



Digital Workflow

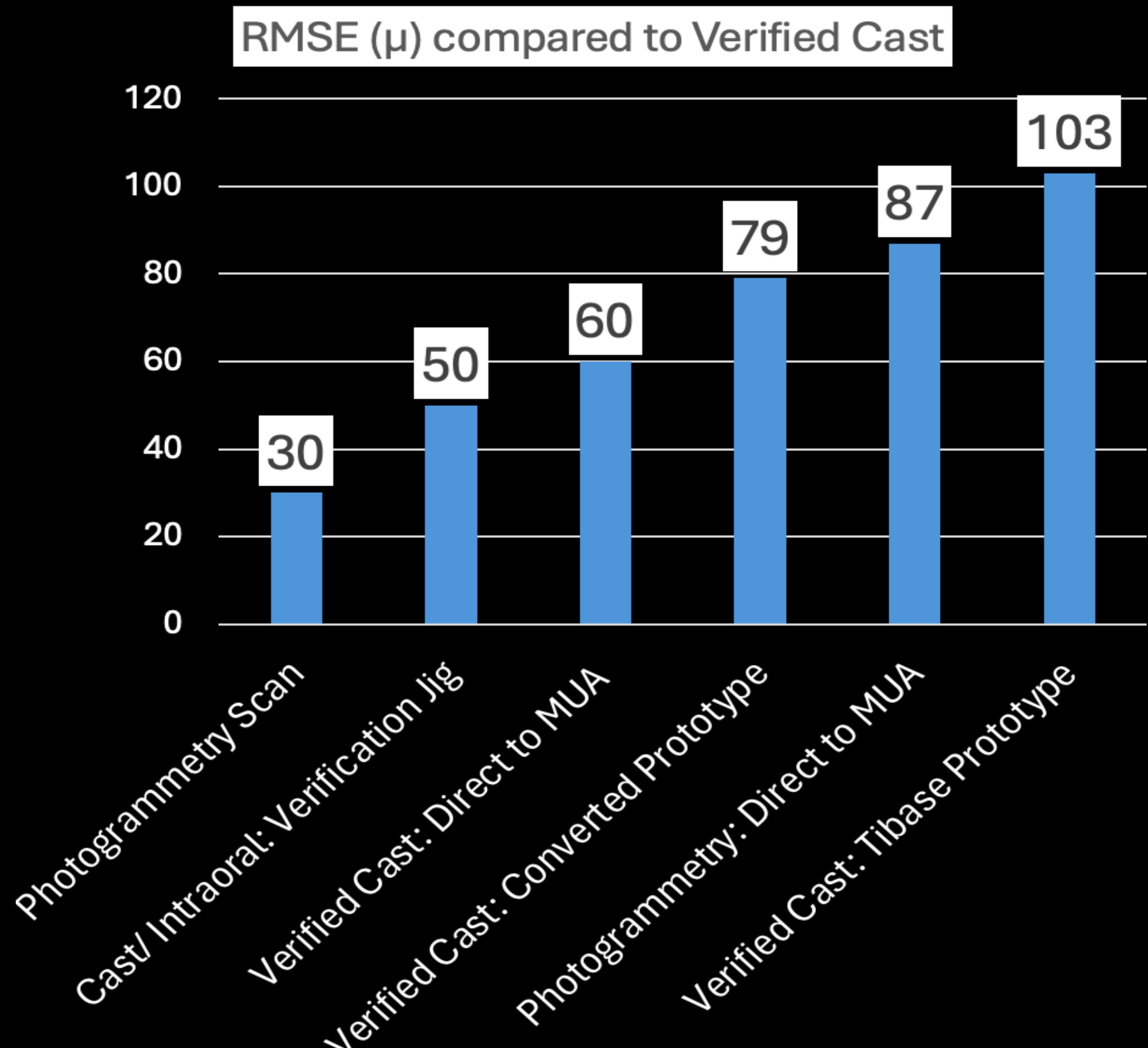
Photogrammetry scan



Photogrammetry: Direct to MUA



RMSE (μ) compared to Verified Cast



Method	RMSE (μ)
Photogrammetry Scan	30
Cast/ Intraoral: Verification Jig	50
Verified Cast: Direct to MUA	60
Verified Cast: Converted Prototype	79
Photogrammetry: Direct to MUA	87
Verified Cast: Tibase Prototype	103