

INTRODUCTION

The purpose of this case report is to illustrate the step-by-step fabrication of a tooth and implant-supported surgical guide for implant placement utilizing the patient's teeth and existing implants.

CASE DESCRIPTION

A 76-year-old male patient presented to the prosthodontics clinics with terminal dentition and existing implants on the maxillary arch. The patient was classified as ASA class II, and the patient's Prosthodontic Diagnostic Index was identified as PDI class IV.

After the clinical and radiographic assessments, it was determined that an implant-supported fixed prosthesis would be indicated to restore the patient's dentition. Given that the patient had a 4-unit implant-supported FPD on the maxillary right side and three existing implants at site #9 and the maxillary left side, a tooth and implant-supported surgical guide could be fabricated to ensure the accuracy and stability of the surgical guide.

Fiducial registration markers were applied to the palate and two scan bodies were modified with gutta-percha, to later serve as additional fiducial registration markers in the CBCT in order to facilitate the merging of the intraoral scan and the CBCT scan. An intraoral scan was made and a CBCT was then taken with the modified scan bodies.

An implant planning software was used to virtually plan the position of the implants and design the tooth and implant/scan body-supported surgical guide. The surgical guide was then printed in surgical guide resin.



Fig 1. Pre-operative maxillary occlusal view



Fig 2. Application of fiducial registration markers and engagement of gutta-percha modified scan bodies in preparation for the CBCT and intraoral scan.



Fig 3. Gutta Percha modified scan bodies



Fig 4. Intraoral scan of the maxillary arch with the patient's interim prosthesis.

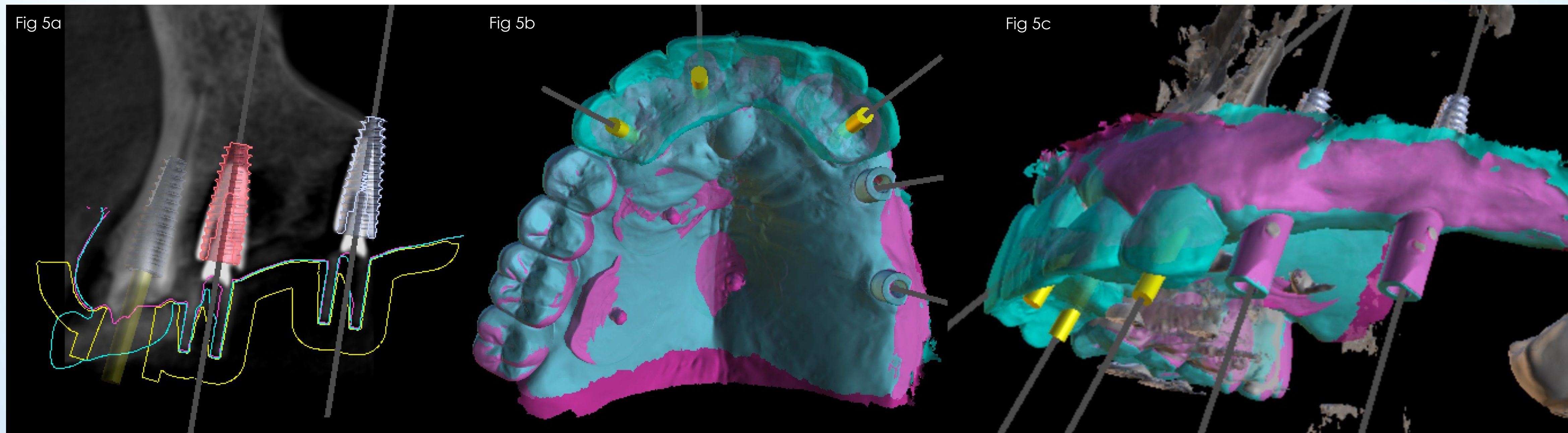


Fig 5a, 5b, 5c. An implant planning software was used to virtually plan the position of the implants and design the tooth and implant supported surgical guide.

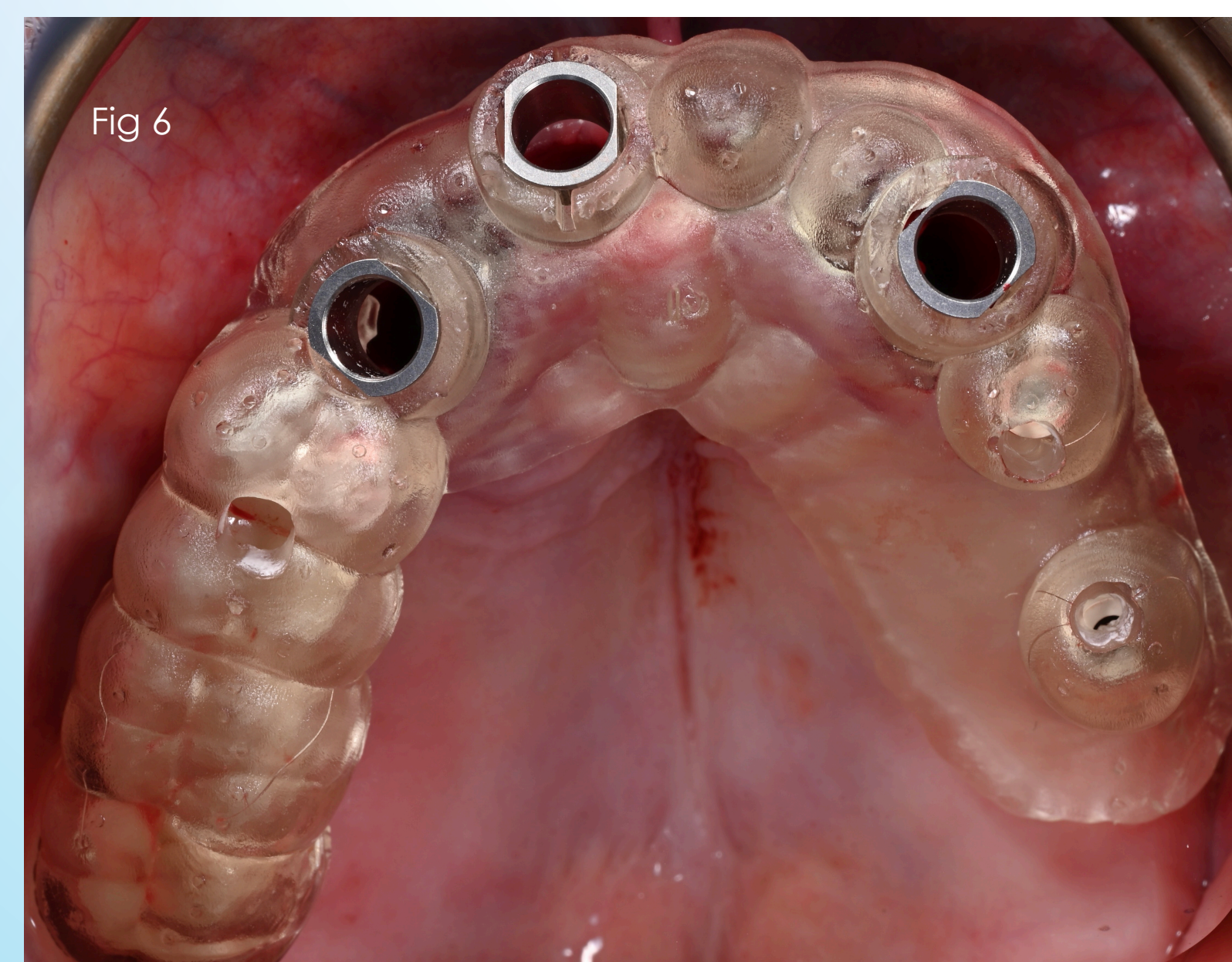


Fig 6



Fig 7

Fig 6, 7. The tooth and implant supported surgical guide was inserted, the seating of the guide was verified through the windows created on the implant FPD and scan bodies. The guide showed accuracy and stability intraorally.

DISCUSSION

There were no procedural difficulties with the technique, the use of the gutta-percha modified scan bodies facilitated the merging of the CBCT and intraoral scan and helped stabilize the surgical guide. The accuracy of seating of the surgical guide was verified through creating windows on the implant FPD and scan bodies.

CONCLUSIONS

Using a tooth and implant-supported surgical guide ensures the accuracy and stability of the surgical guide. The presented workflow provides a clinically successful outcome that can be used as an alternative to the conventional mucosa or fixation pin-supported surgical guides.

REFERENCES

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