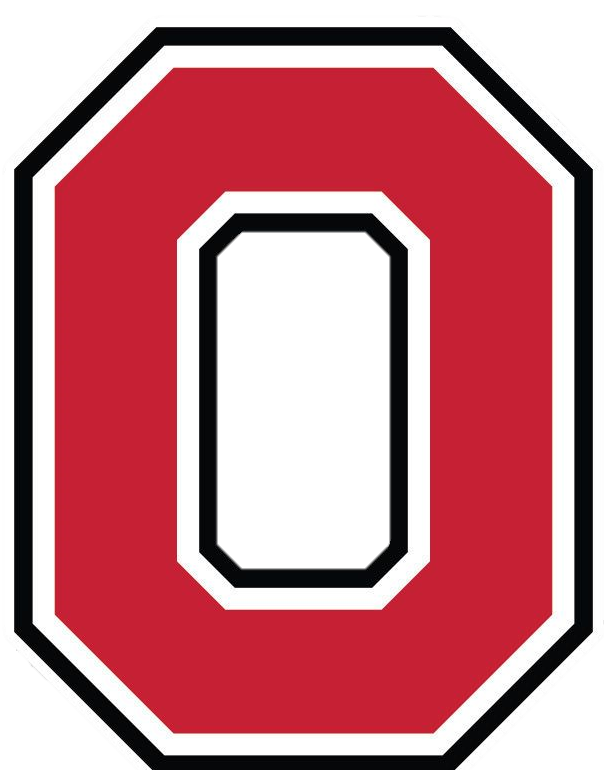




COMPLETELY DIGITAL WORKFLOW FOR FABRICATION OF OCCLUSAL APPLIANCES. CASE PRESENTATION



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INTRODUCTION

- Occlusal Appliances have become regularly used in the practice of prosthodontics.
- The traditional manufacturing methods for these devices have been vacuum thermoforming and sprinkling of acrylic resin.¹
- Nowadays, CAD-CAM technology permits the use of subtracting and additive manufacturing technology with the use of polymethylmethacrylate (PMMA) blanks and printed resin.¹

PURPOSE

- The purpose of this clinical report is to describe a digital workflow for the fabrication of occlusal appliances use in prosthodontic practice.

MATERIALS AND METHOD

CASE REPORT

- A 51 years-old male patient presented in the Advanced Prosthodontic Clinic at the Ohio State University for a comprehensive evaluation. (Fig. 1)
- A diagnostic intraoral scan was taken (TRIOS 3; 3Shape).
- Digital wax-up was made, printed (C&B MFH, NextDent), and tried intraorally.
- After delivering the final restorations, an intraoral scan was made (TRIOS 3; 3Shape). It used Splint Studio of 3Shape Dental System Software for the fabrication of the Occlusal Appliance.
- For the design, the first step was to indicate the occlusal plane and align the occlusal table.



Fig. 1

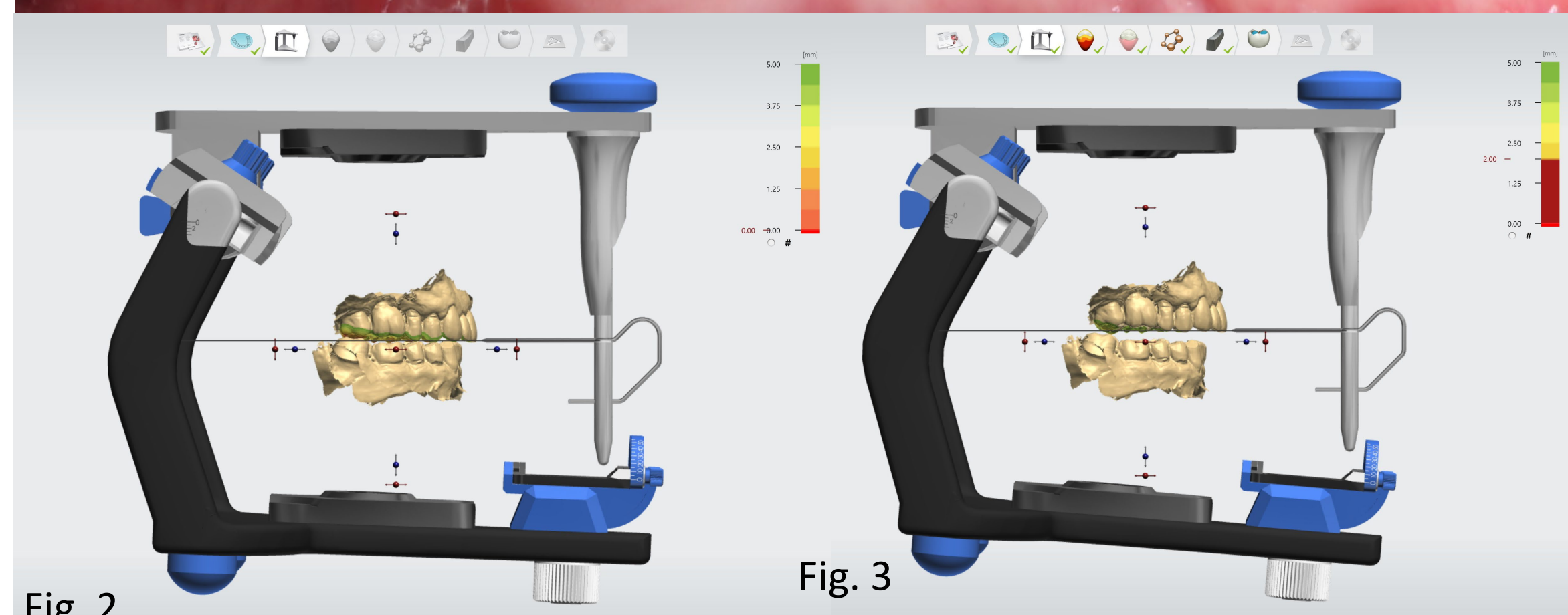


Fig. 2

Fig. 3



Fig. 4

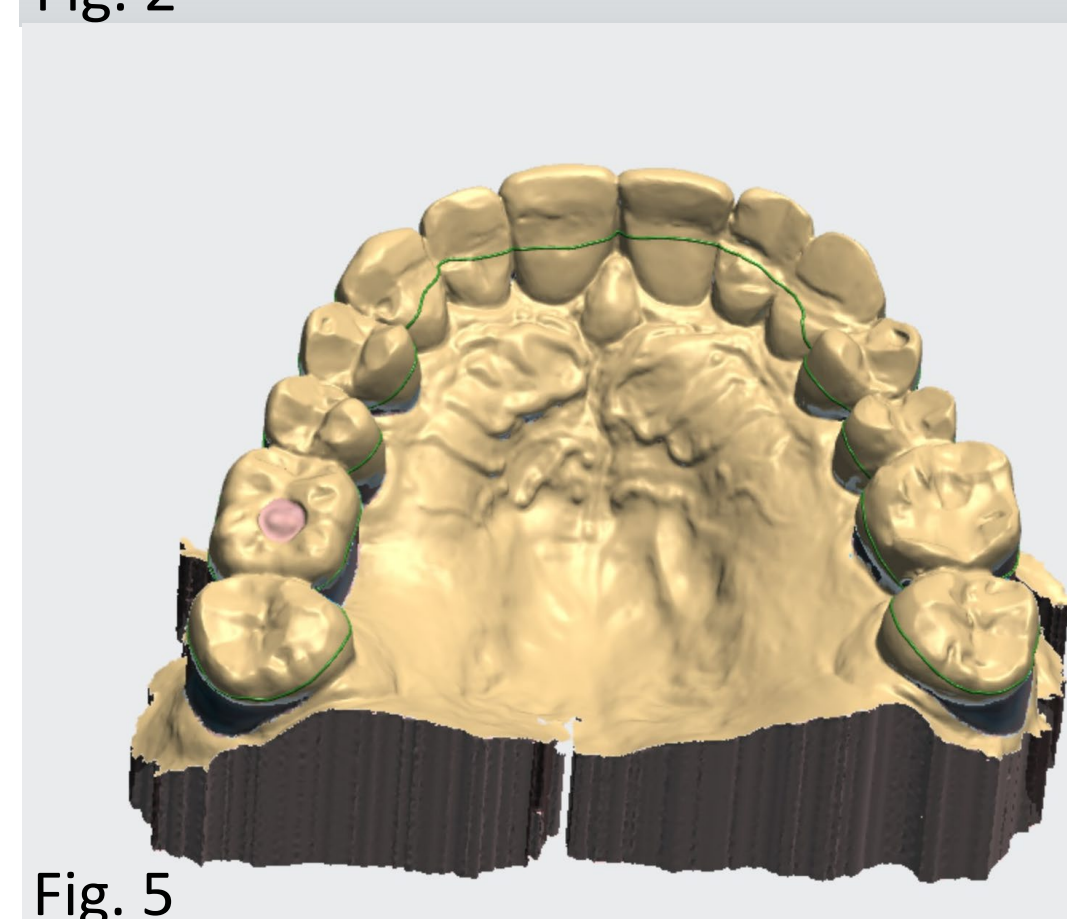


Fig. 5

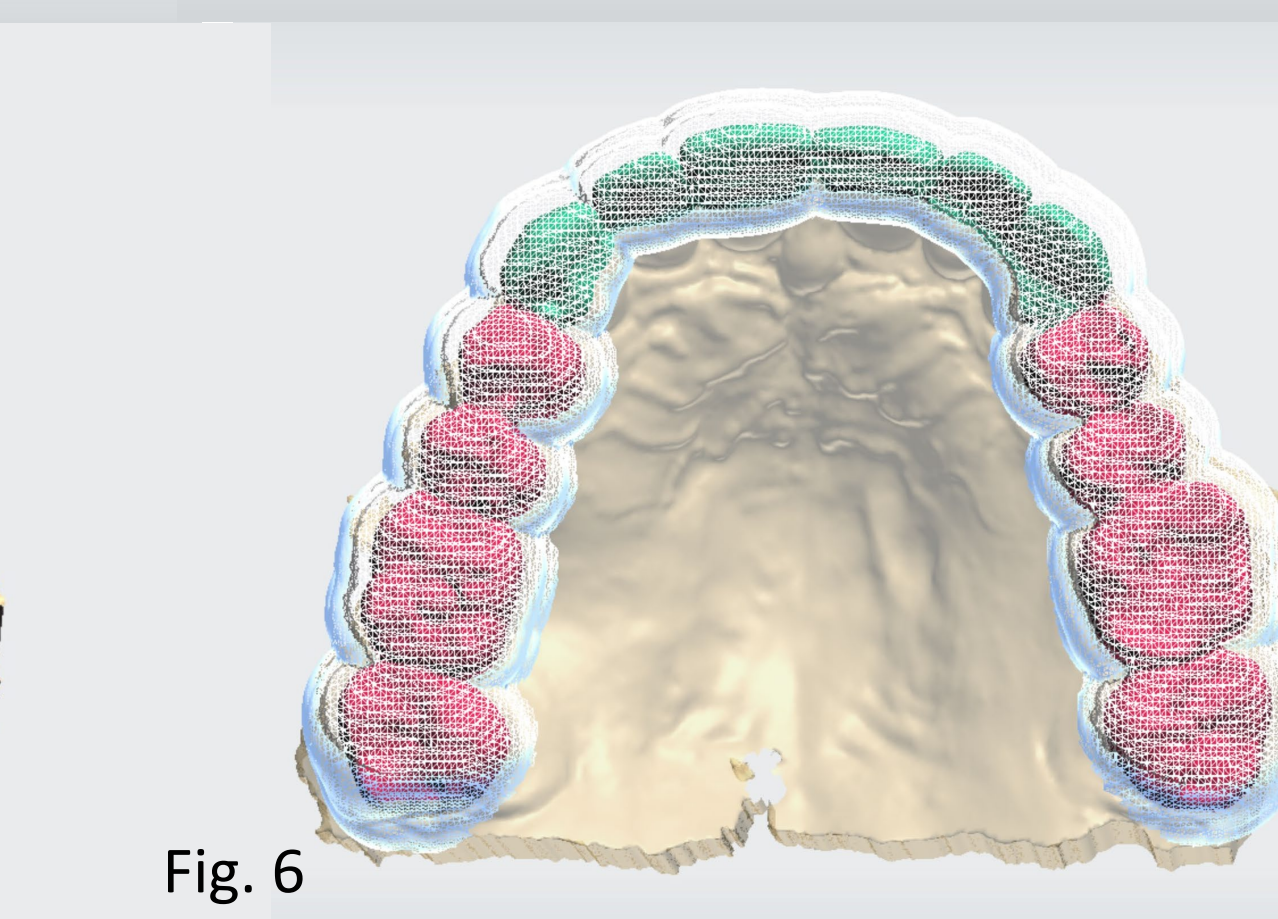


Fig. 6

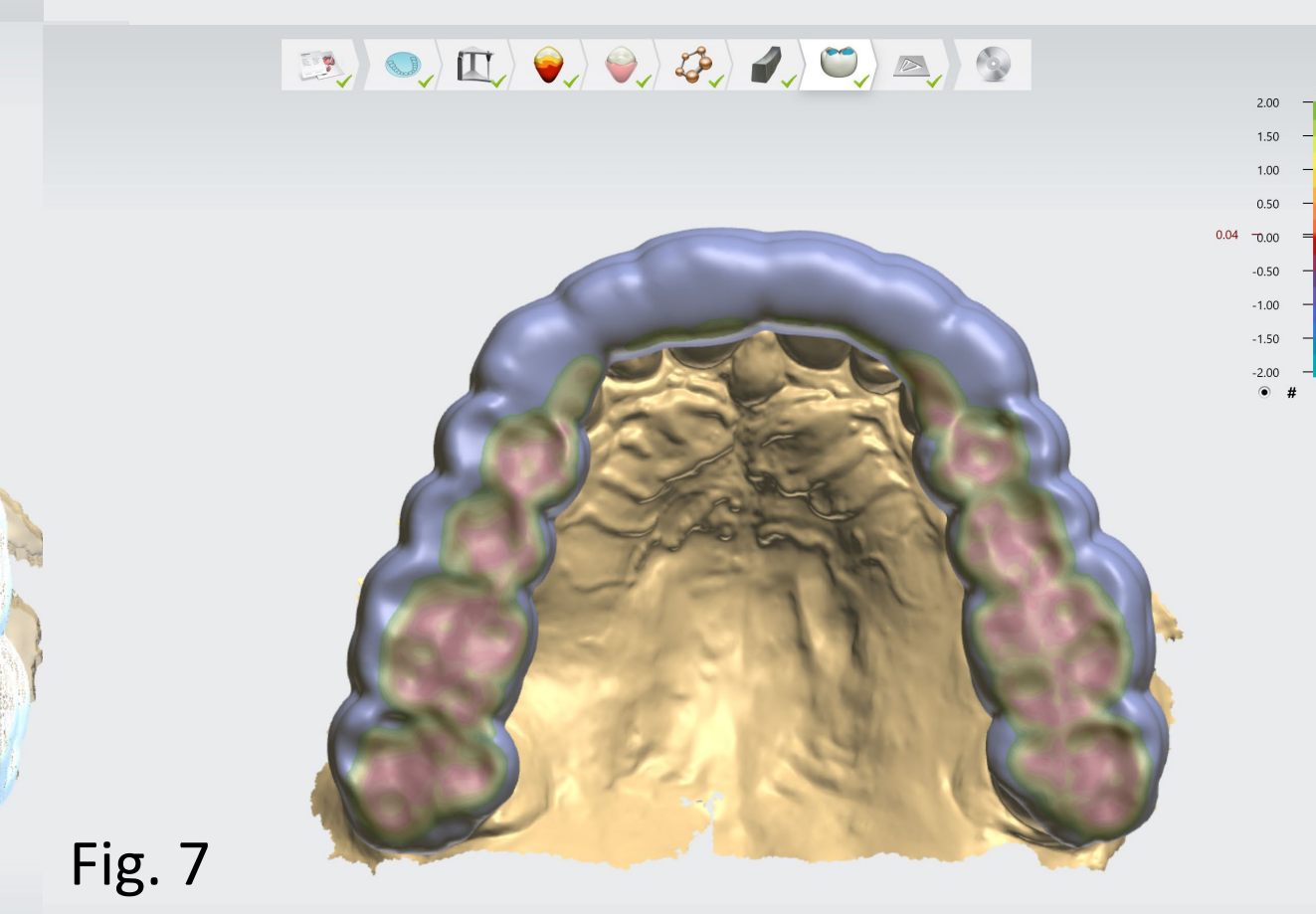


Fig. 7

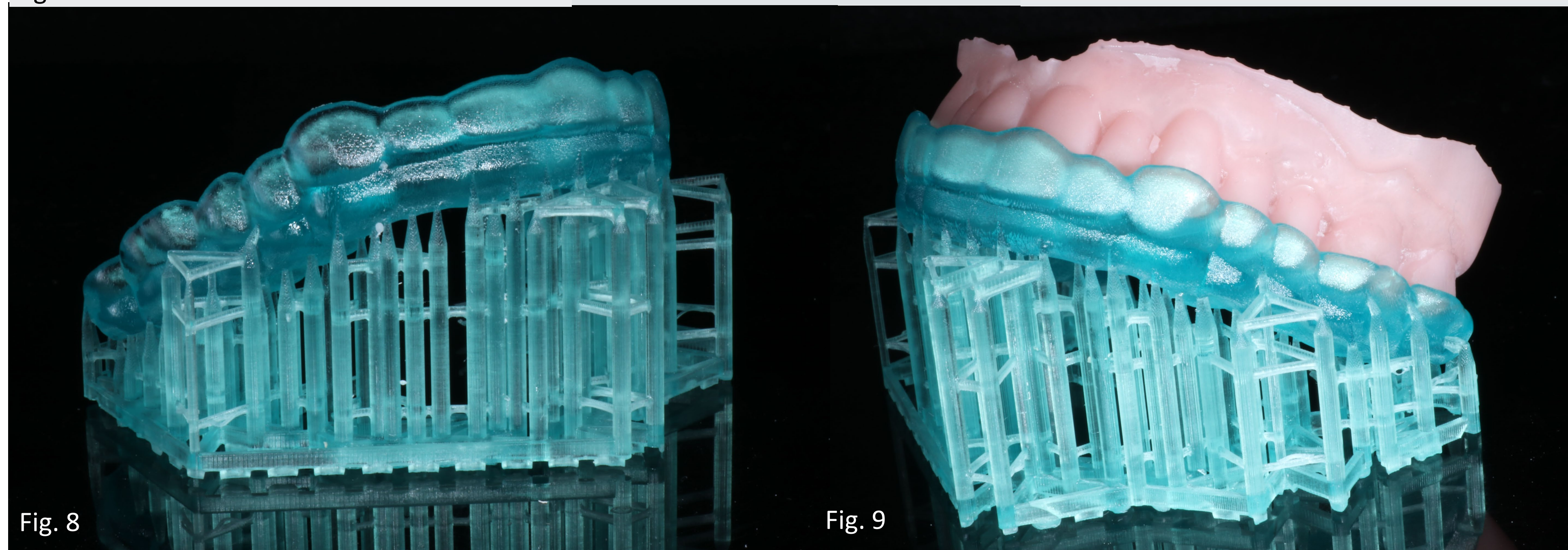


Fig. 8

Fig. 9

- Following the selection of the articulator of preference, the incisal pin was digitally opened by 2 mm to ensure the thickness of the appliance. (Fig 2 and 3)
- It was selected the path of insertion, blocked undercuts, and designed the outline of the occlusal appliance over the cast. (Fig. 4 and 5)
- It was determined the thickness and offset of the occlusal device from the teeth. (Fig 6)
- Occlusion was adjusted in a dynamic movement of the digital articulator replicating centric relationships and excursive movements. (Fig. 7)
- The occlusal appliance was printed (Ortho Rigid, NextDent) and delivered (Fig. 8 and 9)

DISCUSSION

- Limited studies are available regarding additive manufacturing. More research are required about the wear behavior and storage of 3D-printed occlusal splints.²

RESULTS

- Minimal adjustments to the occlusal appliance were made during the delivery.

CONCLUSION

- The digital workflow permits the fabrication of accurate occlusal appliances reducing chairside time. It can be easily duplicated in case of damage.

REFERENCES

