

Construction and refinement of 3D stents through interdisciplinary learning

Interdisciplinary communication and learning is key to applying digital innovations to clinical practice.

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Introduction

Digital technologies are allowing orthodontists to plan and deliver precision during treatment. Temporary anchorage devices (TADs) have been utilised in orthodontics to provide bone anchored support allowing for absolute anchorage.

Development of appliances usually requires placement of TADs followed by a 3D intraoral scan and appliance construction. We wished to streamline the patient experience creating an interdisciplinary workflow for the creation of TAD stents. TAD stents could allow for the precise location of TADs and the subsequent appliance fitting in one visit.

Development of a workflow requires interdisciplinary learning to allow Dental Technicians to understand the clinical aspects of placement and clinicians must understand the abilities of the digital technology and its applications.

Methodology

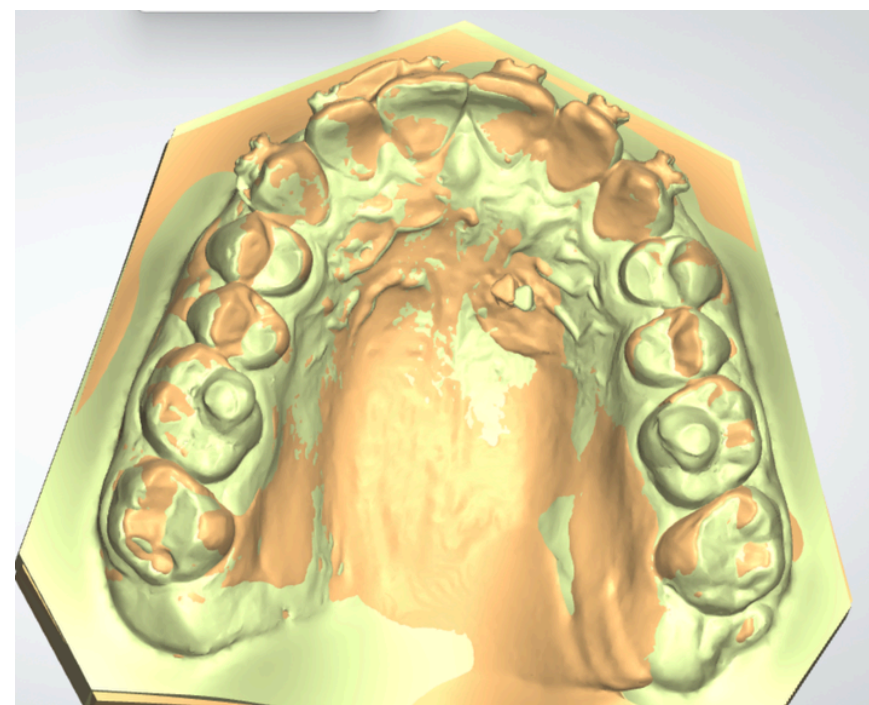
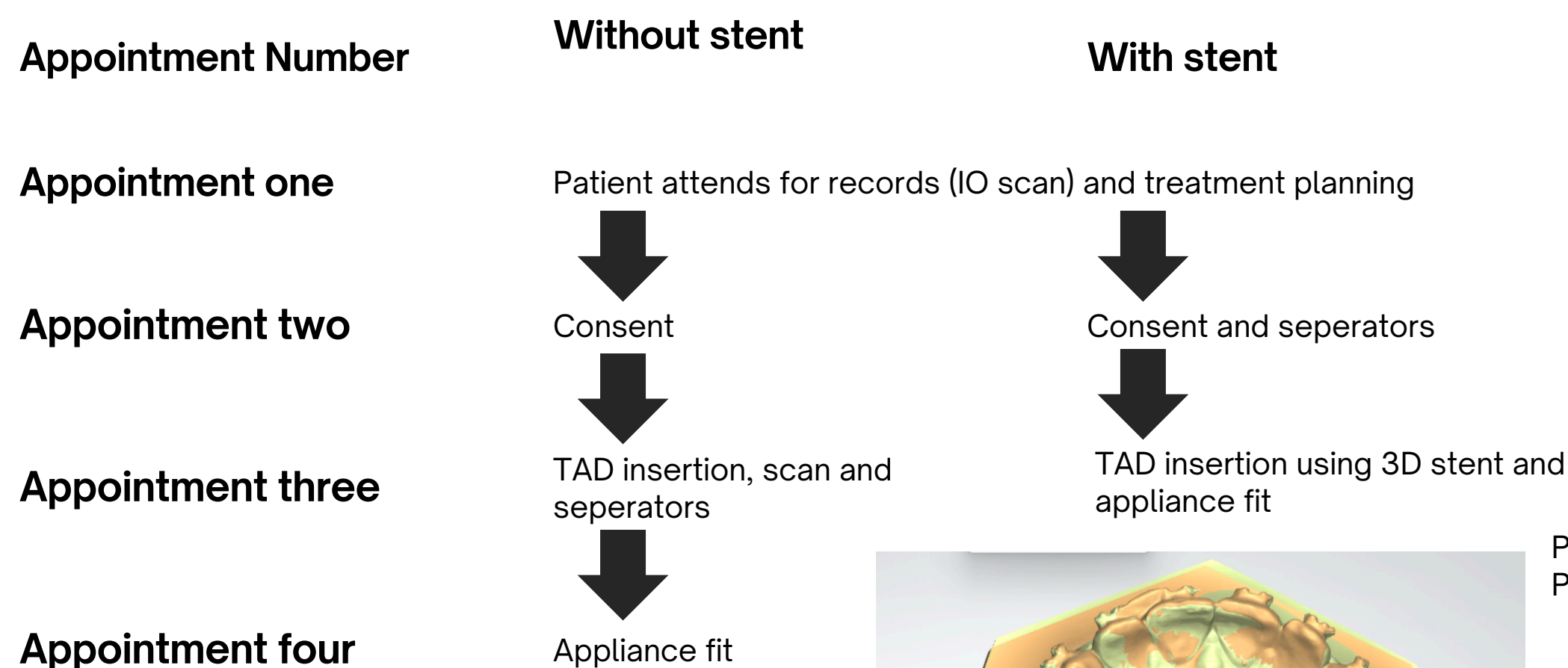
The clinician and dental technician team met with the software assistants to learn how to apply the software to our cases. The clinician identified suitable cases and met with the Dental Technician to plan and design the TAD placement and appliance.

After TAD placement, a 3D intraoral scan was taken to overlay on the 3D design estimate. This was analysed along with feedback on appliance fit and any alterations required

Results

A workflow has been created for the insertion of TADs and subsequent appliance fit. The precision of the TAD placement continues to increase as we refine the stent design and appliance construction.

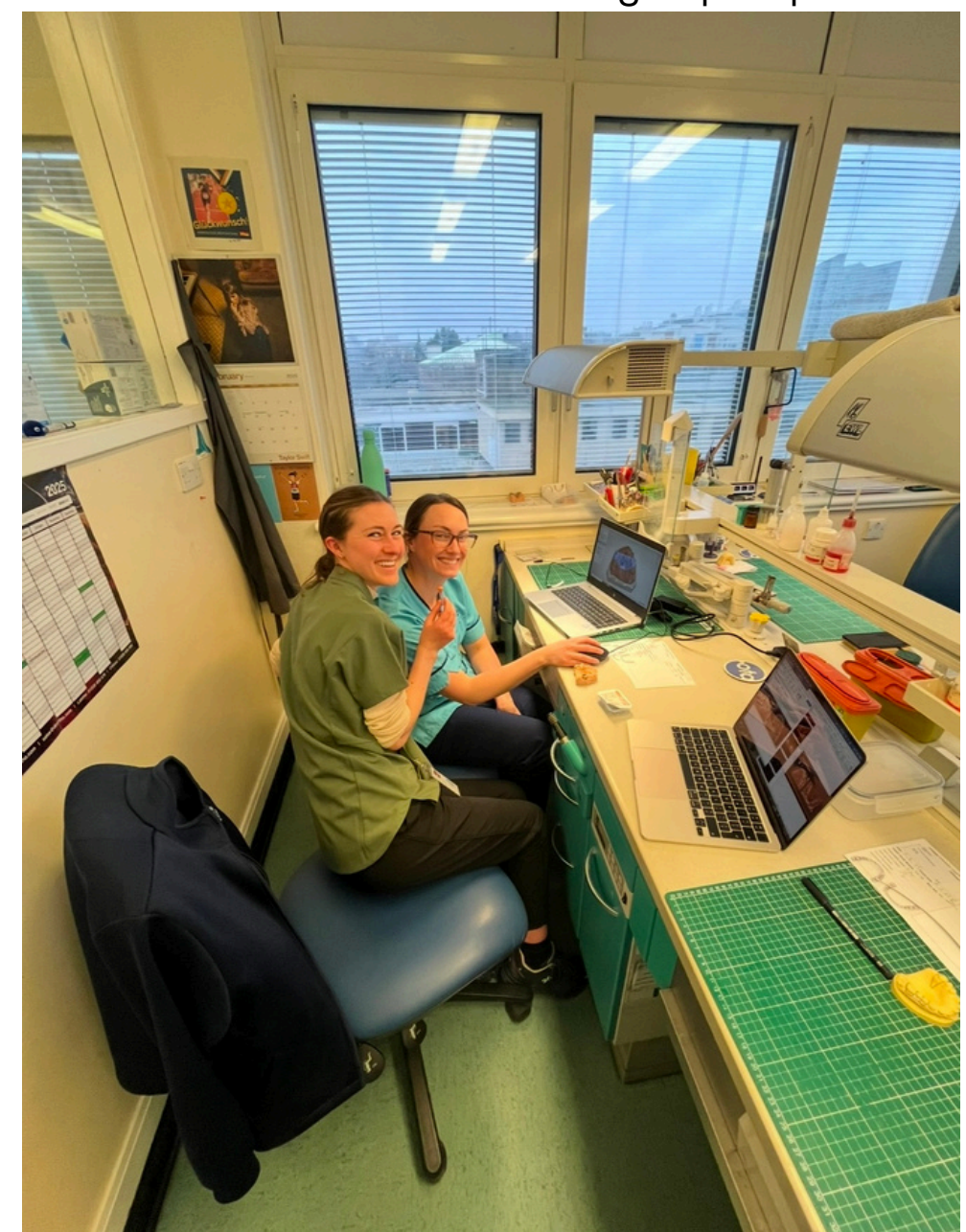
The creation of the workflow has improved patient appointment numbers and allowed for a close working relationship between the department and the lab.



Left photo: Appliance and TAD in situ
 Above photo: Overlaying prediction and placement showing error to allow for stent refinement



Photo above: Stent in use to place TAD
 Photo below: Collaboration meeting to plan placement



Conclusion

Key takeaways

- Interdisciplinary learning has allowed the multidisciplinary team to utilise both clinical and technical skill sets to create a workflow optimising patient outcomes.
- This innovation has only been possible by collaborative learning between clinicians and the Dental Technicians