



Utilizing a digital impression technique to capture soft tissue development of an edentulous ovate ponticsite



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INTRODUCTION

Tissue engineering of edentulous sites is critical to the final restoration emergence and to gain optimal soft tissue fill of the adjacent embrasures. According to Salama et al (1998), a well contoured ovate pontic can allow tissue to fill embrasure spaces between a tooth and a pontic or between two pontic sites. Improper transfer of these idealized tissue contours beneath a pontic to an analog cast or a digital impression can lead to an unsatisfactory Pink Esthetic Score with inadequate embrasure fill by soft tissue (Belser, 2009). According to Li et al (2019), soft tissue collapses once the restoration is removed and a direct impression of the edentulous site is made. Donovan et al (2004) described a technique for accurately capturing the intaglio tissue contours of an ovate provisional site and transferring it to a master cast.

Utilizing a digital workflow for CAD/CAM restorations is widely used but it does not allow for accurate replication of the gingival contours due to soft tissue collapse. Using a combination of analog and digital technologies, capturing an accurate impression of the pontic site soft tissues without the risk of alteration of its shape may be achievable. In this case study, both analog and digital techniques were hybridized to achieve the desired results.

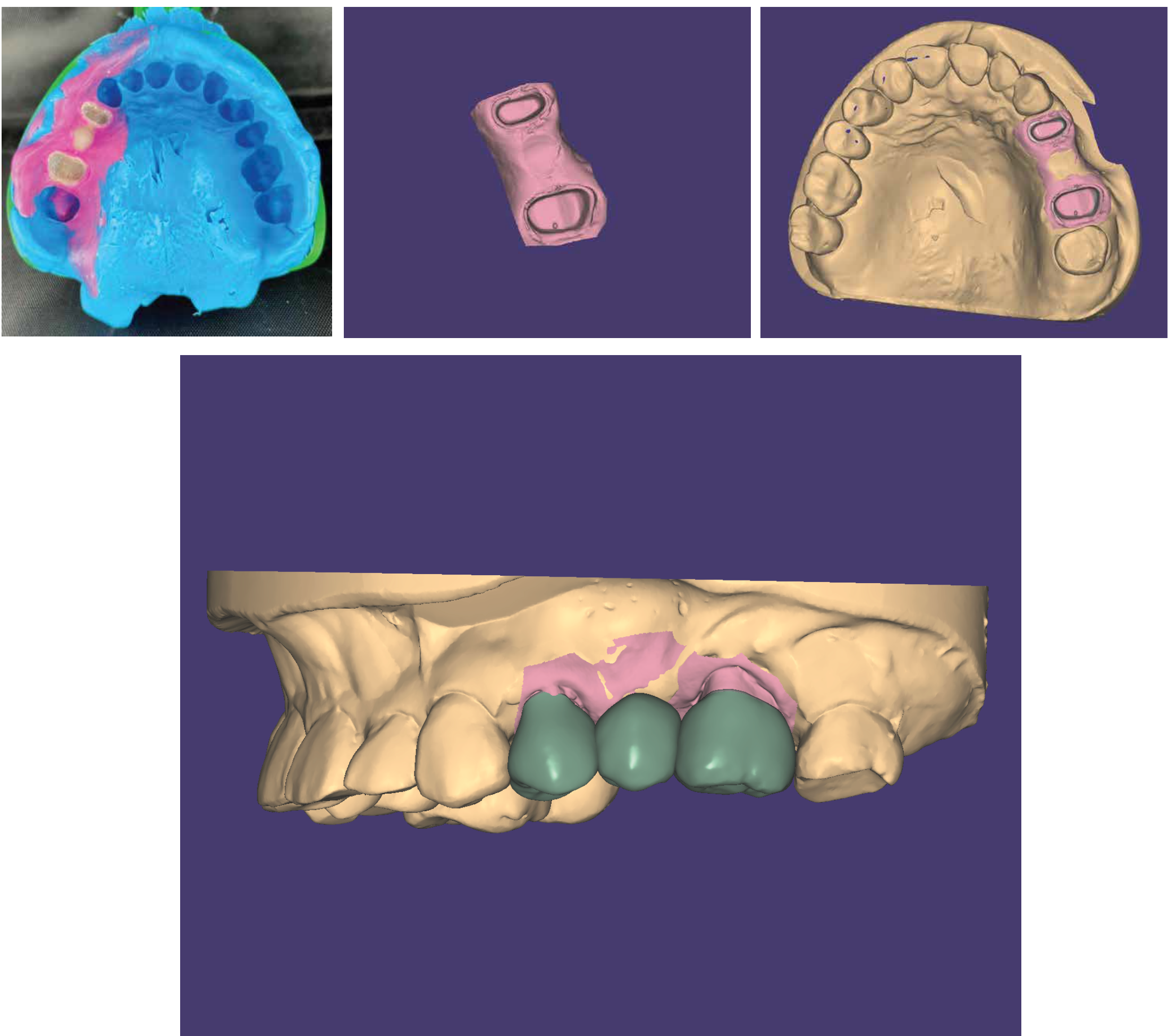


METHODS and MATERIALS

Teeth were prepared for a 3-unit zirconia ACR FPD, an impression was made, poured up, and the cast was scanned with a DOF scanner where STLs for the prepared teeth were obtained. BisGMA provisional was fabricated from a diagnostic wax-up and putty matrix. The soft tissue was contoured through addition of flowable composite resin onto the intaglio surface of the pontic.

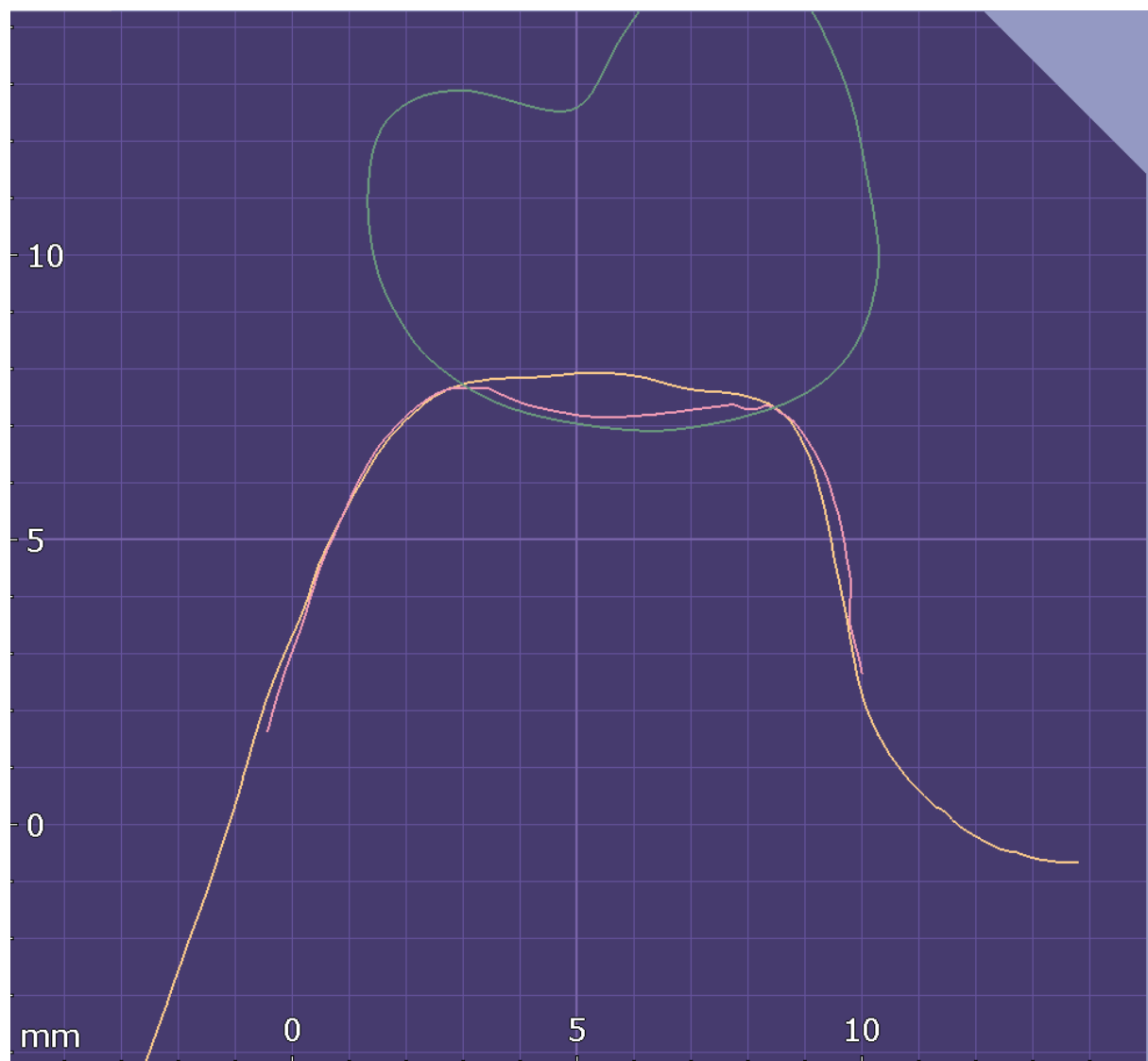
A pick-up impression was then made using elastomeric impression material with the properly contoured FPD provisional in place. The provisional was removed from the prepared teeth and re-inserted into the pick-up impression. This pick-up impression and provisional were then sprayed with optical spray and digitally scanned with a DOF scanner to create an STL file of the intaglio and cameo surfaces.

ExoCAD software was used to merge the obtained STL files to create a master cast with the STLs of the prepared teeth and the ideal soft tissue contours for an ovate pontic. A final restoration was designed to match these contours and was milled out of zirconia.



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RESULTS



CONCLUSION

This hybrid workflow utilizes an analog impression and digital scans in order to fabricate restorations with the proper emergence. The technique discussed here eliminates the potential error of recording collapsed soft tissue in an analog impression. By combining information from the pick-up impression and digital scans, the clinician has the necessary information to fabricate final restorations that will allow for proper soft tissue fill.

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