



# DIFFICULT IMPLANT PLACEMENT IN THE ESTHETIC ZONE: A DIGITAL SOLUTION

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## INTRODUCTION

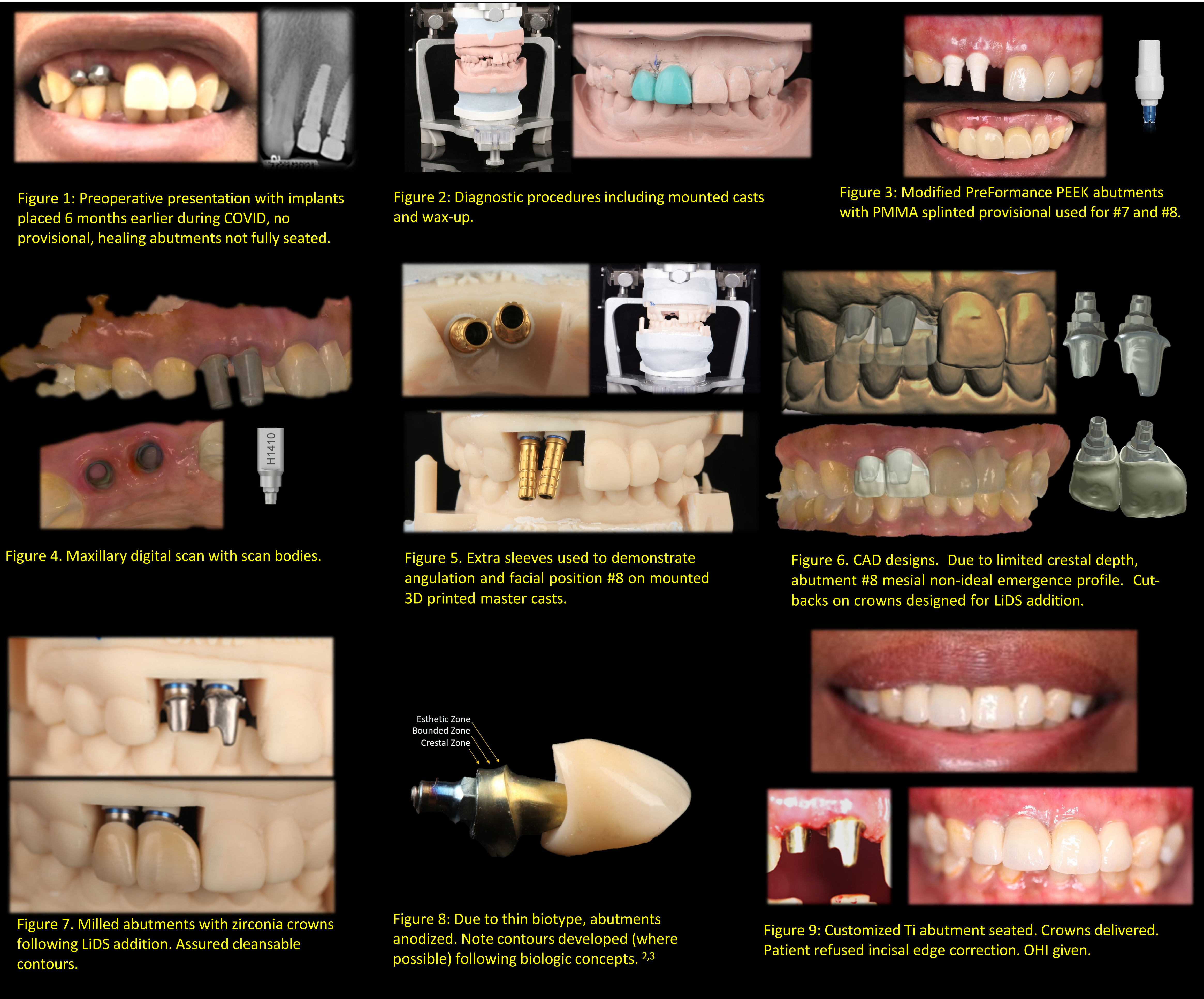
Unfavorable implant placement in the esthetic zone may occur because of inadequate treatment planning, anatomic limitations, surgical inexperience, or lack of prosthetic consideration. Achieving desired outcomes with compromised clinical limitations requires a stepwise approach for a successful plan to be implemented including informed consent and patient management. This clinical case demonstrates integration of digital technologies to resolve an esthetic challenge.

## PURPOSE

Management difficult implant placement through integration of digital impressions, online risk assessment tools, and computer aided design and fabrication to guide predictable outcomes for patient acceptance especially with high expectations.

## PATIENT PRESENTATION

1. A 56-year-old healthy female was referred to solve an apparent difficult implant placement. Two completely healed 4.1 Osseotite Biomet 3i Certain implants (ZimVie, Palm Beach Gardens, FL) were placed 6-months prior referral at locations #7 and #8.
2. Comprehensive examination revealed integrated implants with mild crestal loss (Figure 1), excessive distolabial placement implant #8, and both less than 2 mm soft tissue depth, with non-aligned and facial oriented screw paths. No provisional was utilized, and two healing abutments (BellaTek Encode; Biomet 3i) were present. Diagnostic impressions were made and a diagnostic wax-up completed (Figure 2).
3. The SAC assessment tool (ITI) was used to identify the degree of complexity and potential risk by systematic reviewing complicating factors which determined a “high esthetic risk” with a Normative SAC Classification of “Complex” treatment level especially due to high patient expectations, full-gingival display on high smile, and thin gingival biotype.
4. To resolve the edentulous space, PEEK abutments (Certain® PreFormance® Post 4.1D x 5.0P x 4.0H, Palm Beach Gardens, FL) were modified to establish epi-gingival finish line and adjust for



angulation, and then torqued to 20 N-cm. A PMMA direct provisional was luted with TempoCem ID (DMG, Ridgefield Park, NJ), Figure 3.

5. Not having an available workflow for the Encode abutments, Medentika scan bodies (H 1410, Medentika, Germany) were used with a Trios 3 intraoral scanner (3Shape, Copenhagen), Figure 4. The misposition and angulation #8 is shown in Figure 5. The 3Shape Complete Restorative Dental System was used for the CAD design, Figure 6. Lack of

depth resulted in a severe mesial emergence #8 and a flat emergence toward facial. Where running room allowed, the healthful contours were used to promote tissue volume.<sup>2,3</sup>

6. Ti abutments were milled and Zr crowns with facial cutback for pressed lithium disilicate addition (IPS e.Max Press; Ivoclar Vivadent AG) were fabricated (Figure 7). Due to thin biotype, the Ti abutments were anodized (Figure 8).
7. Custom abutments were placed to the manufacturer's recommended torque (35 N-cm), Figure 9. Sterilized Teflon pellets (Teflon Tape; DCI International) and composite resin (TPH Spectra; Dentsply Sirona) for the screw-access holes. The crowns were luted (Rely-X Ultimate; 3M dental products) avoiding extrusion of excess cement.
8. Re-evaluation revealed no complications, and the patient was satisfied with the treatment.

## DISCUSSION

The challenge of difficult implant placements require much planning to achieve a predictable outcome. Additional complications, such as high patient expectations and gingival display, further complicate a challenging treatment. Employing the digital impressions allowed for early assessment of mounted digital casts and measures of the scans providing insights to possible solutions. The online SAC tool (Straightforward, Advanced, and Complex) provides a systematic checklist assessment to base clinical decision making on evidence-based processes. Every aspect of the CAD workflow was based on the issues identified by the digital mounted casts, SAC, and patient management including informed consent.

## CONCLUSIONS

This clinical case used a digital workflow and assessment tools to obviate the clinical difficulties resulting in a precise predictable treatment.

## REFERENCES

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