

DIGITAL FLOW ON DIFFERENT IMPLANT CONNECTIONS



Alessio Marsili, MDT*

** Dental technician in charge of the fixed prosthesis department and CAD/CAM DIGILAB srl in Rome and has sixteen years of experience in the field. For more than ten years he has been involved with digital machining. Expert in CAD/CAM, 3D printing, guided surgery, fixed and moveable prostheses, he has attended various training courses and was a speaker at the ExpoDental congress in Rimini. Together with Dr. Constantinescu he is a guided surgery trainer at Digilab/Rossi/Salus/Alpha bio.*

Increasingly frequently, multi-brand and multi-connection cases arrive in Italian dental technology laboratories. The harmonisation of procedures adopted on implants of different brands and different positions from each other, justified by treatment plans developed with the progress of edentulous and implant failures makes the digital flows and the most similar procedures such as overcasting ever more complex. A typical example of this is the fifty-one year old patient who presented at the Cosma practice in Rome and rehabilitated thanks to the collaboration with dental technicians of the Digilab laboratory.

Clinician Dr. Carlo Cosma included, in the treatment programme proposed to the patient, the insertion of a new implant in a distal position from that already inserted by a previous clinician and monolithic zirconia crowns on both the fixtures. After the period of osseointegration of the new implant, a first healing abutment was placed, followed by a temporary composite on a temporary titanium abutment for soft tissue conditioning. After tissue conditioning, the intraoral impressions were taken using ScanBody IPD-ProCam AbutmentCompatibili.com, scanbody with different implant connections, Zimmer TSV 3.5mm, position 36, and Straumann BoneLevel 3.3mm, position 35, but with the same prosthetic options (Fig. 1). The choice for the prosthetic once more fell on two individual separate monolithic zirconia elements. The importing of the scans on 3Shape CAD software highlighted how the implant on 35 previously inserted in another medical practice had a prosthetically complex distalised position (Fig. 2, Fig. 3).



Fig. 1. Intraoral scans by means of ScanBody IPD-ProCam AbutmentCompatibili.com.



Fig. 2. Intraoral scansion images with Carestream Dental

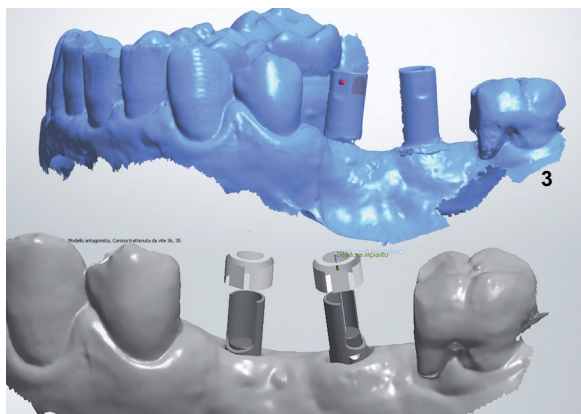


Fig. 3. The implant on 35 seems to have a distalized position.

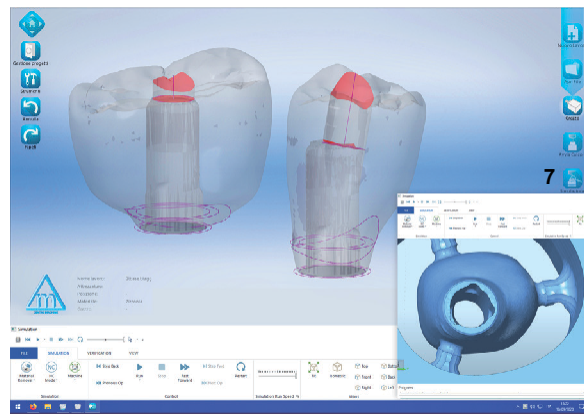


Fig. 7. Specific strategies for the grinding of monolithic zirconia on the interfaces to be glued.

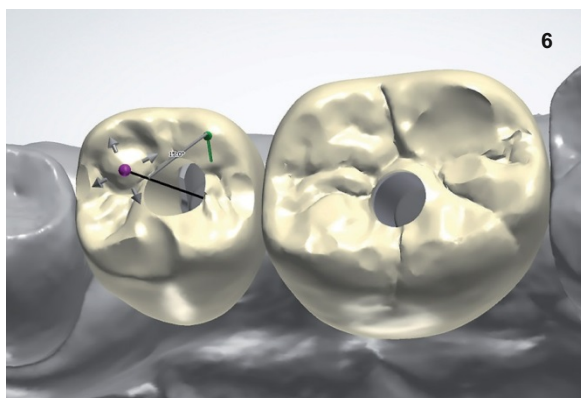
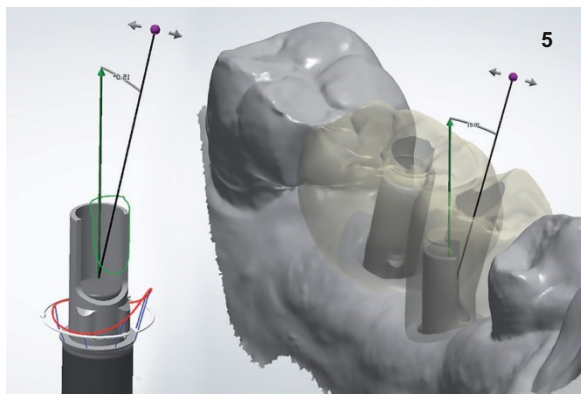
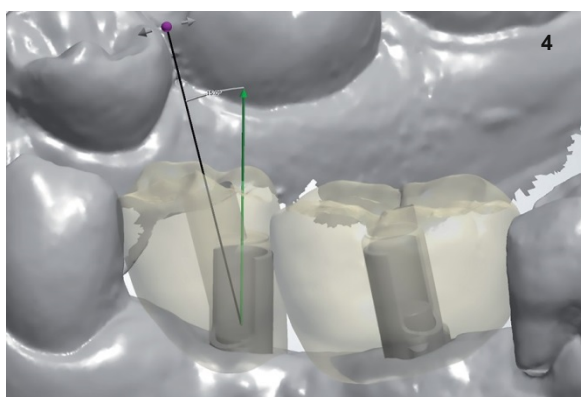


Fig. 4,5,6. The design required the use of IPD-ProCam bases to be glued in their customised low 5mm transmucous configuration, stems to be glued to support the 6.5 mm crowns and holes angled 15° and 5° screws, to bring them into a central position on the occlusal table of the teeth.

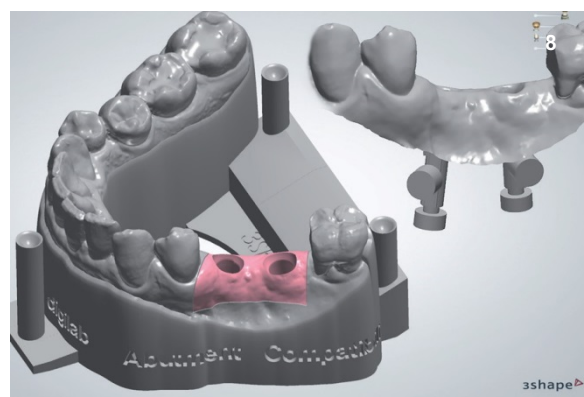


Fig. 8. Design of the print of the work model

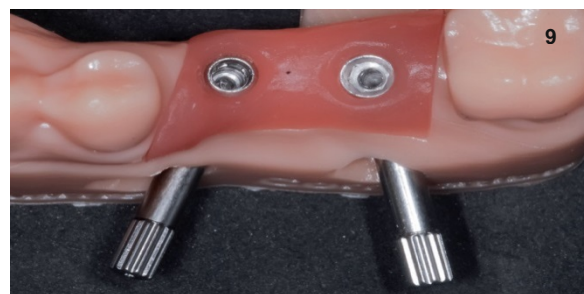


Fig. 9. The model envisaged removable gum and analogous IPD-ProCam with secure fixing by means of dedicated screws from below and from vestibular side.

The design choice therefore envisaged the use of IPD-ProCam gluing bases again of AbutmentCompatibili.com in their most customised 5 mm low transmucous configuration, stems to be glued to support the 6.5 mm crowns and 15° and 5° angled screw holes to bring them into a central position on the occlusal table of the teeth (Fig. 4, Fig. 5, Fig. 6). When the design had been completed the .stl files were exported onto MillBox cam (CIMSsystem) with specific dedicated for the milling of monolithic zirconia and interfaces to be glued (Fig. 7). The milling of the 14mm zirconia disk by Noritake, multilayer 750 A3 was the job of the G5 DentalMachine milling machine and specific D-Power (DentalMill.store). At the same time as the milling of the anatomies, the .stl file of the work model begins to print (Fig. 8). The model designed on suite



Fig. 10. The zirconia sintered crowns

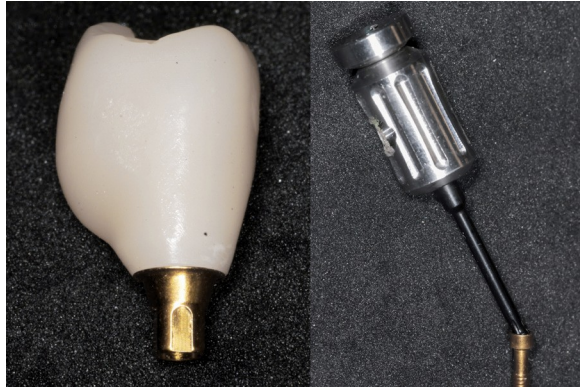


Fig. 13, 14, 15, 16. Laboratory gluing assured the correct fixing of the crowns on the titanium interface

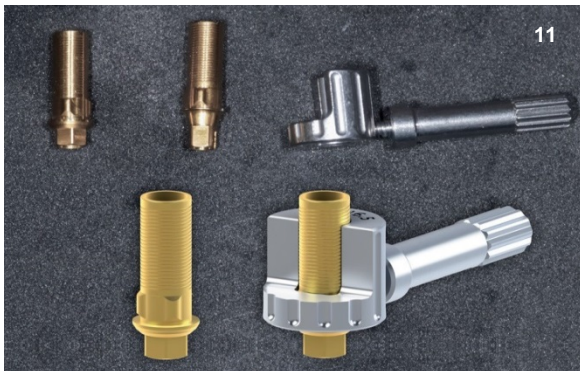


Fig. 11. 12. The IPD Procams gluing bases were reduced occlusally, from a height of 8mm to a height of 6.6mm, a lateral opening was made for the passage of the screw for inclined holes.



Fig. 17. Tightening of the screws with a torque of 25N/cm as per the recommended protocol.

The model designed on the 3Shape suite, envisaged removable gum and similar (IPD- ProCam AbutmentCompatibili.com) dedicated to the prototype model with a secure fixing by means of dedicated screws from below and from the vestibular side (Fig. 9). Once the printing of the model of the removable pink gum by the DWS printer and RD097 resin is finished for the model and GL4000 for the pink part, the characterisation and sintering of the two zirconia crowns was completed (Fig. 10). At the same time the IPD Procams bases to be glued are reduced occlusally, from a height of 8mm to a height of 6.6 mm and the

lateral opening for the screws for inclined holes is made; the whole procedure occurred with the use of dedicated cutting templates IPD/KA- IN-65 (Fig. 11, Fig. 12) . The bonding by means of Panavia V5 colour A3 cement in the laboratory assured the correct fixing of the crowns on the titanium interface (Fig. 13, Fig. 14; Fig. 15, Fig. 16) . The positioning by the clinician does not envisage adjustments, the specific driver associated with the torque ratchet (IPD/DI-00-90 AbutmentCompatibili.com) permitted the tightening of the screws with a torque of 25N/cm as per the recommended protocol (Fig. 17)