Complete digital workflow for full-arch maxillary implant rehabilitation

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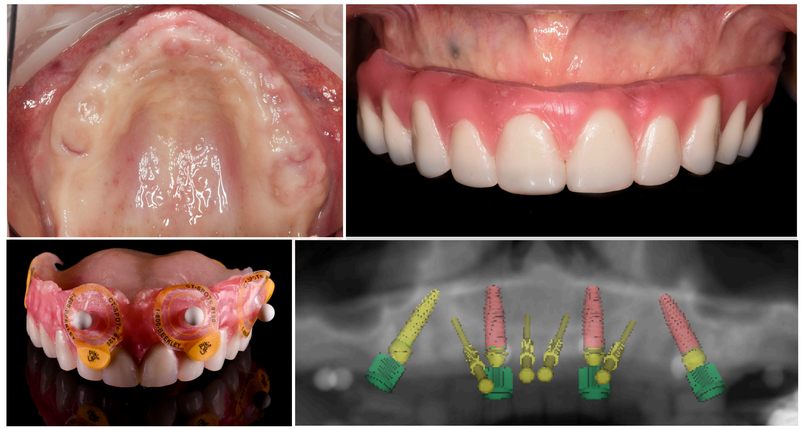
Aim

To illustrate step-by-step a protocol for **complete digital workflow** for full-arch implant rehabilitation.

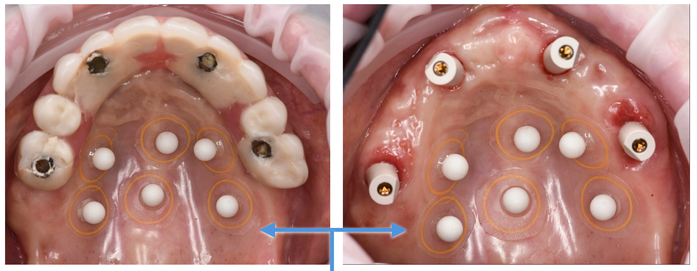


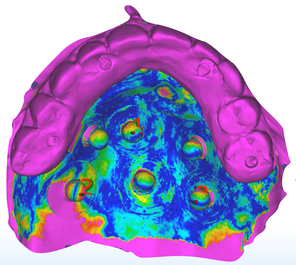
Case introduction

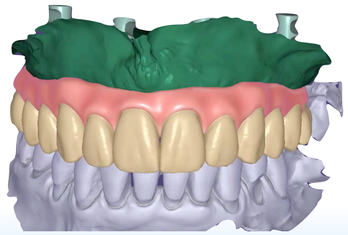
A 71-year old patient with an interim maxillary CD presented for implant consultation at the Tufts PG Prosthodontic clinic. After diagnostic work-up, different options were discussed with the patient and she elected to proceed with **maxillary fixed implant rehabilitation**. New interim maxillary CD was made to satisfy esthetics, phonetics and OVD and subsequently used as a radiographic template. **Dual CBCT** scan was taken and the DICOM files were imported into digital planning software.

Guided surgery was digitally planned and a mucosa-supported template was 3D printed. **Immediate loading** was performed with a full arch interim prosthesis after the guided implant placement, by picking up intraorally the temporary abutments (**conversion technique**).

After 2 months of uneventful healing, a double intraoral scan with the interim prosthesis was taken, as well as a scan with the scan bodies. Both STLs were superimposed using adhesive markers in the palate as reference using the **Double Digital Scanning (DDS) technique**.[1]







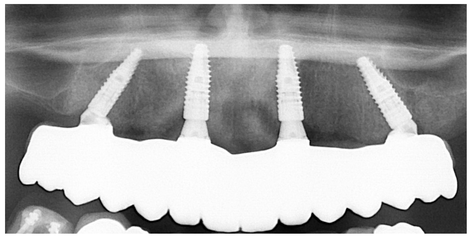
The merged master file was used as a reference to manufacture a **PMMA prototype** after minor modifications were digitally performed with CAD software.

The PMMA was used as reference for the fabrication of a full-arch implant-supported zirconia prosthesis. At the PMMA prototype try-in, esthetics, phonetics, and occlusion were verified and at the next visit, the **definitive copy-milled zirconia prosthesis** was delivered.

Clinically and radiographically acceptable fit was noted demonstrating the clinically satisfactory accuracy of the intraoral digital impression, as well as the digital workflow followed for the design and manufacture of the definitive prosthesis.

Results

The patient was satisfied with the esthetic and functional outcome and was enrolled on a 6-month recall program.



Conclusion

Complete digital workflow was made feasible with an innovative DDS technique that facilitated the accurate superimposition of STL files from digital impressions for the fabrication of the prosthesis prototypes in a cast-free approach.

1. Papaspyridakos P, Chen YW, Gonzalez-Gusmao I, Att W. Complete digital workflow in prosthesis prototype fabrication for complete-arch implant rehabilitation: A technique. J Prosthet Dent. 2019 Sep;122(3):189-192.