

Copy Paste Approach: the digital critical interface

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Purpose: A key aspect of the prosthetic workflow on natural teeth is the appropriate management of soft tissues around provisional restorations and the predictable transfer of such information. Today technologies allow a complete digitalization of our patients improving our capacity to plan, present and perform complex rehabilitation thanks to digital scanners, CAD softwares, 3D printers and metal free restorations. The aim of this research is to present a reliable and repeatable protocol to copy paste the emergence profile in fixed prosthodontics on natural abutments by means of a full digital workflow.

Material and methods: the so-called "Copy-Paste Approach" is hereby presented through a case presentation. The workflow includes different steps: 1) Acquisition of initial clinical data through digital photography, scans and x-rays to formulate a diagnosis; 2) Smile simulation to emotionally engage the patient and propose the treatment plan; 3) Teeth preparation with featheredge finishing lines 4) PMMA milled provisional relined and refined; 5) Digital scans of the provisional restoration in position, opposing arch, bite registration and abutments, with the double cord technique; 6) Provisional restoration chairside scan 7) Framework try-in 8) Final restoration with occlusal monolithic zirconia and stratified with ceramic in the vestibular aspects.

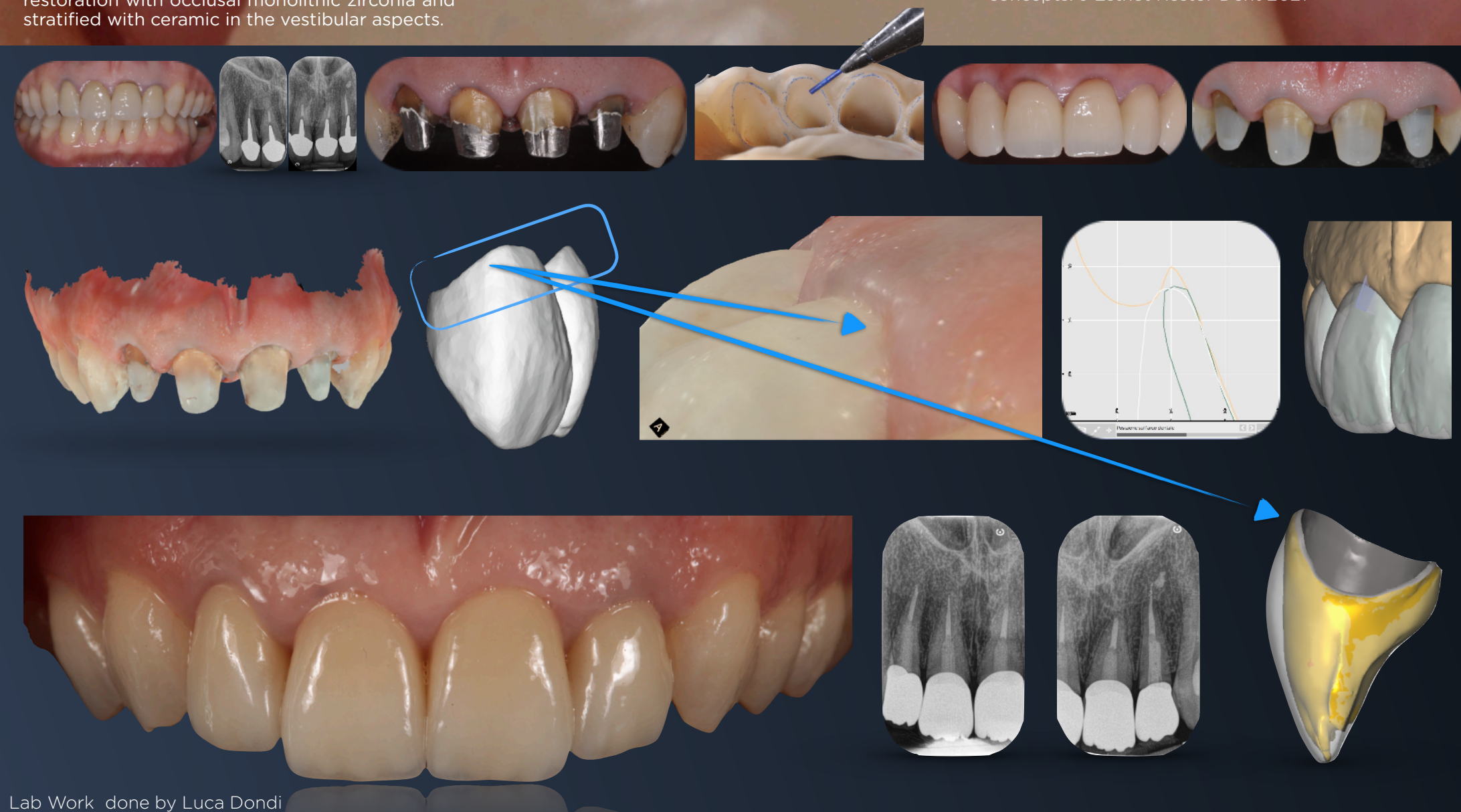
Results: An ASA-1 female patient came to our attention seeking for an improvement of esthetics of her anterior upper old metal-ceramic restorations, which had altered proportions. The x-rays showed the presence of four metal posts and inadequate canal therapies. A Digital Simulation of the ideal design helped to communicate with the patient and the multidisciplinary team. The proposed treatment plan included endodontic re-treatments of the upper incisors and their rehabilitation with metal free crowns. The natural abutments were prepared, through the mock up, with featheredge finishing lines and then restored with a relined and refined PMMA milled provisional consistent with the initial digital wax-up.

This step is fundamental in order to test occlusion and esthetics of the final restorations. After 2 months, the Scan Strategy utilized for the Digital Impression was: scan of the provisional restoration in situ; scan of the opposing arch; scan of the bite; high definition scan of each single abutment with the double cord technique; chair-side scan of the provisionals. All the files were imported into the 3D CAD Software in order to design the final restoration. In this step the technology allowed the technician to copy and paste the provisional's emergence profile position and occlusion tested into the patient's mouth, thus eliminating the need for arbitrarily establish it.

Conclusions: the proposed protocol fulfilled the desired objectives and the digitalization was a key element in every step of the workflow. Thanks to this approach the final prosthetic emergence profile perfectly matched the soft tissues adaptation to the provisional's margins. Nonetheless, it is obvious that in order to achieve an optimal esthetic outcome and a long-term success the clinician needs to master all the analogue milestones of prosthodontics such as position and accuracy of the prosthetic margin, properties and manufacturing of dental materials, emergence profile and patient compliance. If the above mentioned concepts are fulfilled, digital innovations will lead to a better final results in terms of efficiency, standardization and quality. In conclusion, the evolution of dental technologies gives the possibility to test every step and replicate what is achieved, simplifying every clinical procedure and offering a better experience to any patient.

Bibliography:

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Lab Work done by Luca Dondi

The Goal is to Copy and Predictably Replicate the Tested Provisional Restoration Emergence Profile

Case Acceptance

Data Acquisition

DSD Smile Simulation

Teeth Preparation

PMMA Provisional Relined

Soft Tissue Healing

IOS Clinical Situation Impression

Chairside Provisional Restoration

Copy Paste Dentistry at the CAD Software

Cad Cam Workflow

Final Restoration