EDITORIAL

Innovations and Digital Approach for New Ceramic-based Restorative Materials in Dentistry

Rodolfo Reda[1], Alessio Zanza[2], Francesco Pagnoni[3], Shilpa Bhandi[4], Maurilio D'Angelo[5], Luca Testarelli[6]

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In recent years the possibility of carrying out completely digital prosthetic and implant-prosthetic rehabilitations without the development of a physical cast for the realization of the indirect restorations has become a reality.[1–3] The development of software and devices for the acquisition of intraoral digital impressions has reached very high levels, representing a valid choice in most clinical situations.[4,5] The possibility of using completely or partially digital workflows allows the use of different materials, which allows clinicians to achieve good clinical results, and with advantages both in terms of time and costs.[6,7]Furthermore, the now high precision achieved by millers in the production of milled monolithic zirconia and ceramics, the levels also achieved in obtaining differently microfilled three-dimensional printed resins, allow to reach quality levels similar to the previous milling processes in chromium-cobalt (Cr-Co) and titanium or laser sintered in Cr-Co.[8,9]

The increasingly accurate digital planning that is currently possible allows for the realization of complex implant-prosthetic rehabilitations with screw-retained solutions, considering an implant axis that allows the creation of prostheses with adequate emerging profiles.[10,11] This prosthetic solution makes it possible to avoid the use of cemented prostheses on implants or at least to reduce it as much as possible, guaranteeing solutions that often allow more space for the soft tissues at the level of the implant/abutment connections.[12] These findings allow us to obtain great results also in terms of soft tissue adaptation and inflammatory response.[13] The fundamental importance of keeping the inflammation of the peri-implant soft tissues under control is what guarantees the stability of the result in terms of marginal adaptation and mucosal seal, and probably, in the long term, of marginal bone loss.[14,15] Even in implant rehabilitations, the possibility of using digital workflows even for complete arches today represents an important stimulus, both for the design and for the creation of the most complex full arches.[16]

As far as partial restorations on natural teeth are concerned, attention is focused on limiting the dental preparation thickness and guaranteeing maximum resistance and reliability of the restoration at limited thicknesses over time.[17,18]

Adhesive techniques now represent the standard of care in partial restorations with resinous materials (direct and indirect composites) and ceramics (die-cast or milled).[19]

The possibility of managing and planning these processes digitally allows for correct intraoperative management of the thicknesses, the possibility of working on the master cast and simulating a virtual rendering of the patient, which can also be easily adapted with facial scanners or cheaper standardized photographs of the face, to obtain a complete virtual rendering, on which to base a first additive mock-up.[20,21]

[1]Department of Oral and Maxillofacial Sciences, La Sapienza University of Rome, Rome, Italy; Department of Prosthodontics and Implantology, Saveetha Dental College & Hospital, Saveetha Institute of Medical and Technical Sciences (Deemed to be University), Chennai, Tamil Nadu, India

[2,3,5,6]Department of Oral and Maxillofacial Sciences, La Sapienza University of Rome, Rome, Italy

[4]College of Dental Medicine, Roseman University of Health Sciences, South Jordan, Utah, United States of America; Department of Cariology, Saveetha Dental College & Hospital, Saveetha Institute of Medical and Technical Sciences (Deemed to be University), Chennai, Tamil Nadu, India

Corresponding Author: Luca Testarelli, Department of Oral and Maxillofacial Sciences, Sapienza University of Rome, Rome, Italy, e-mail: luca.testarelli@uniroma1.it

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