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Editorial

Special Issue on Enhancement of Titanium Dental Implant/Abutment Surfaces

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In the last decades, there has been an increasing effort in enhancing the surface of dental implants and abutments, as a challenge to improve the osseointegration process and implant rehabilitation success. Nowadays several methods and innovative technologies are available to modify titanium surfaces and they might provide useful tools for clinicians [1–4].

The aim of the present Special Issue was to gather the latest studies in the field of titanium implant/abutment surfaces and cleaning protocols, in order to shed light on the biological and clinical implications of implant/abutment surface modifications and their impact in clinical practice.

A total of five papers (four research papers and one review paper) are presented in this Special Issue.

Graiff et al. [5] analyzed how structural and geometric configurations of an abutment influence the resistance of a nano-ceramic resin crown (NCRC). Their results suggested that the shape of the abutment influences the fatigue strength more so than the static tensile strength.

The study by Delucchi et al. [6] is a post-trial follow-up. Previously published papers reported clinical outcomes on the same patient sample for shorter follow-up periods [7–10], while long term randomized clinical trials on this topic are lacking. The study herein published presents a split-mouth design and reports, over a 16-year period, the clinical outcomes of an implant with a dual acid-etched (DAE) surface in the apical portion and a machined coronal part versus the test implant with a DAE surface up to its coronal portion. The conclusion was that minimally rough titanium surfaces favor peri-implant bone maintenance and their effect is greater in the first year post implant insertion.

The in vitro investigation by Gianfreda et al. [11] evaluated the osteogenic response of pre-osteoblast cell lines to a dry bioactivated surface. The results showed that sandblasted and dual acid-etched surface determines a slighter but significant increase in cell adhesion and proliferation in a shorter time compared to a surface with bioactive dry salt technology.

Menini et al. [12] evaluated five modern commercially available dental implants with different macro- and micro-structures [13], including one zirconia implant, in order to evaluate their possible pro-inflammatory effect during early inflammatory response applying an innovative in vitro study design. Macrophages were placed into contact with the implants, and the expression of genes that code for typical proteins of the inflammatory processes (cytokines and chemokines) were measured.

All the implants analysed showed optimal outcomes with low or no pro-inflammatory stimulus on macrophagic cells, suggesting that all the implants underwent a careful and effective cleaning and decontamination process.

Since titanium surfaces might be significantly affected by plaque accumulation and cleaning methods [14–16], a paper regarding professional oral hygiene techniques in implant dentistry has been included in the present special issue.

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The systematic review by Baldi et al. [17] analyzed the efficacy of different professional oral hygiene techniques described in the literature in the last 10 years in patients rehabilitated with dental implants. The authors concluded that, taking in mind that the ideal method should be effective in deposits removal without damaging the implant components surface, air polishing appears to be a viable alternative to traditional instruments. In particular, glycine air polishing has proven to be effective in reducing peri-implant inflammation and plaque around implants.

Although submissions for this Special Issue have been closed, more in-depth research in the field continues to address its challenges.

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