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## \*Corresponding author

Marvin do Nascimento, Department of  
Materials Science, Military Engineering  
Institute, Brazil

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Opinion

# Implant Planning in Patients with Periodontal Disease: A Neomodern Perspective

Marvin do Nascimento\*

Department of Materials Science, Biomaterials Laboratory, Military Engineering Institute, Brazil

## Opinion

Neo-modern implantology is performed using titanium (Ti) osseointegrated implants and zirconia (ZrO<sub>2</sub>) endosseous implants as implant biomaterials with high rates of biocompatibility. These biomaterials have their own specificities that make them unique. On the one hand, Ti implants are osseointegrated and have excellent mechanical properties, corrosion resistance, and a passive oxide layer (rutile - TiO<sub>2</sub>). While ZrO<sub>2</sub> implants are not osseointegrated, but are osteoinductive, and have good mechanical properties, low cytotoxicity, and are naturally more aesthetic [1,2]. When considering the subgingival microbiota of these implants, it can be analyzed that in ZrO<sub>2</sub> implants, as in Ti implants, the most prevalent phyla are Firmicutes (54%), Proteobacteria (27%), Actinobacteria (13%), Bacteroidetes (5%), Saccharibacteria (0,4%) and Fusobacteria (0,3%). At the genus level, Streptococcus (45%), Neisseria (17%), Rothia (12%), Haemophilus (5%), Gamella (4%), and Abiotrophia (3%) are commonly found [3]. However, when analyzed at the species level, from Socransky's microbial complexes, it can be seen that there is, in a symbiosis state, in Ti implants a prevalence of the Pink > Orange > Blue > Purple  $\cong$  Yellow complexes, while in ZrO<sub>2</sub> implants a prevalence of the Pink complex. And the following complexes are identified as in common proportional rate in both biomaterials: Pink > Red  $\cong$  Orange  $\cong$  Green  $\cong$  Yellow. That is, ZrO<sub>2</sub> implants have a better predisposition to colonization of species related and compatible with periodontal health [3-5]. Thus, some care needs to be taken to propose a better planning for patients who have periodontal disease. This is so that this subgingival microbiota is favored and does not develop a dysbiotic potential. Therefore, the first thing to think about is what bone type and what implant type is best suited for that region, as well as the patient's periodontal health condition. There is no point in wanting to install any biomaterial in any bone type, just as there is no point in wanting to implant it in a patient with uncontrolled periodontal disease.

In addition, one should think about reducing the inflammatory potential, at a dietary level, for a good post-surgical period. Although the Dentist cannot and should not prescribe a diet, since this is the Nutritionist responsibility, it is important to advise the patient to avoid some foods with high inflammatory potential, emphasize the importance of the micronutrients intake and the change of diet from liquid, pasty, semi-solid to solid. This dietary adaptation influences not only the oral microbiota modulation, but also the inflammatory potential reduction, thus helping in a better process of tissue regeneration [4]. Besides avoiding extreme chewing loads in the postoperative period. The biomaterial choice will also be crucial to determine the implants success. Not only in relation to the composition, but in properties and topography specifications, and so, a roughness relation, the design and shape of the implants, thread form, and even the surface treatments [2]. It might be much more interesting to choose a biomaterial with a specific macrotopography and with a targeted surface treatment in order to achieve a good prognosis and longevity of the implants instead of just installing a conventional and standard implant such as commercially pure grade IV titanium. These properties will designate a better control and establishment of the three implant stabilities in patients with periodontal disease. However, this planning strategy considering nutritional status, oral microbial modulation, periodontal health status, composition and topographical properties of the implants shows itself as a protocol preparation for reducing inflammatory potential and ensuring the functionality and longevity of implants, especially in patients with periodontal disease. This is in addition to possible interdisciplinary and interprofessional work with a Nutritionist.

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