Editorial Endpoints in Oral Implantology: It's Time to Set the Bar Higher

Scientific discovery and clinical translation carried out in the second half of the 20th century laid the foundation for the introduction of osseointegrated implants into dental practice, a breakthrough that changed the profession forever.[1] Decades of technological innovation in oral implantology have catalyzed a continuous evolution toward the development of novel surgical and prosthetic solutions, with optimizing the outcomes of therapy as the ultimate goal. Quality basic, translational, and clinical research, as well as meticulous empirical observation, have pushed the boundaries of established knowledge, serving as a conduit to expand the scope of practice and refine existing clinical protocols.

The criteria that define success in the context of implant therapy have also evolved. Recognizing that arguments can be made in favor of or against any specific set of implant-success criteria, it is evident that the bar has been raised over time. Current standards stress the importance of assessing implant therapy from a holistic perspective on the basis of biologic, prosthetic, and patient-centered outcomes.[2]

Clinicians and researchers often rely on the findings from published investigations to make clinical decisions and to design new studies, respectively. In the research arena, early studies in oral implantology were driven by biocompatibility and implant survival as primary endpoints of interest. Nowadays, the biocompatibility and high survival rates of root-form titanium endosteal implants are well documented. As the field expanded and matured, investigators incorporated other relevant endpoints to widen the focus of their work, in accordance with the progression of current implant therapy standards and success criteria. These include, but are not limited to, esthetic and prosthetic variables; indicators of peri-implant tissue health or disease, such as progressive marginal bone loss (MBL); and patient-reported outcomes.[3] Nonetheless, acknowledging that all studies have inherent limitations, the proportion of publications in the field of oral implantology that fall short in reporting and analyzing the effect that concomitant variables have in the endpoint(s) of interest is alarming.

Using MBL as an example, its minimization or complete avoidance is a fundamental component in the prevention and management of peri-implantitis. In fact, early MBL can be considered one of the prime predictive factors of peri-implantitis. Although a cross-sectional assessment of MBL, per se, is insufficient for establishing a diagnosis of peri-implantitis,[4] it should not be overlooked that a direct correlation between early MBL and progressive loss of supporting bone has been demonstrated up to 18 months after the delivery of the final prosthesis.[5] Numerous individual studies conducted in recent years have provided substantial knowledge and understanding that the initiation and progression of MBL could be affected by a plethora of factors, such as vertical thickness of the peri-implant mucosa, prosthetic abutment design, implant position, or smoking, among others. However, in the available scientific literature on this topic, the vast majority of studies largely underreport these putative variables affecting MBL.

If this trend of reporting oral implantology endpoints in function of one or a limited set of variables persists, the validity and applicability of the findings derived from future clinical studies will be at risk, largely due to

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the limited ability to analyze the concomitant effect of different patient- or site-specific confounding variables.

Thus, it is of paramount importance to raise the bar in oral implantology research. Future investigations, particularly clinical studies aimed at evaluating outcomes of implant therapy in specific clinical scenarios, should involve the recording and analysis of as many variables known or suspected to influence the primary endpoint(s) of interest as possible, as well as the exclusion of factors that have been proven irrelevant in previous studies. A precise and comprehensive assessment of the role of pertinent variables will allow for the continuous generation of new, valuable information through quality research, including well-conducted systematic reviews and meta-analyses. This research can be utilized in daily practice to elevate the level of implant therapy by providing more predictable and satisfactory long-term outcomes to our patient population.

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