

Osseoseparation and Peri-implantitis: What's in a Name?

“We think, each of us, that we're much more rational than we are. And we think that we make our decisions because we have good reasons to make them. Even when it's the other way around. We believe in the reasons, because we've already made the decision.”

—Daniel Kahneman

“Intuitive diagnosis is reliable when people have a lot of relevant feedback. But people are very often willing to make intuitive diagnoses even when they're very likely to be wrong.”

—Daniel Kahneman

The simple answer to the question posed above is “everything.” The work of Nobel laureate Daniel Kahneman,¹ Daniel Ariely,² and others in the field of behavioral economics demonstrates how our minds are vulnerable to significant biases that lead to irrational thinking and repetitive irrational behavior. So, it is with the term “peri-implantitis.” An understandable transposition from the periodontitis condition observed around a tooth, crestal bone loss in the early years of osseointegration was an uncommon event and one that elicited significant discomfort analogous to a fear of the unknown. The rarity of crestal bone loss hampered a full understanding of its etiology—a vacuum readily filled by well-intentioned clinician-scholars who inadvertently popularized and propagated the term as a descriptor for a new “disease” entity.

It is not disputed that peri-implant crestal bone loss may be seen with inflammation and that the inflammation may be a consequence of bacterial contamination. However, these instances are far from the whole picture. Many retrieved implants do not exhibit crestal bone loss or significant inflammation and fall outside the most common application of the term peri-implantitis. It is clear that the absence of a solid interface between the surface of an implant and host bone may not be associated with crestal bone loss or inflammation at all and the term peri-implantitis, along with its accompanying innuendo of bacterial etiology, is unable to accommodate this clinical scenario. In contrast, a term that avoids misguided biases and promotes an objective description and assessment of the full range of clinical conditions, instead of just a few of them, is vital. We must avoid succumbing to a mindset that leads to inappropriate treatment decisions.

It is irrational to assume that the tooth-host interface, a product of millions of years of evolution, is similar to the induced healing response of a host-implant interface³ that also represents a foreign-body reaction.⁴ The term “osseoseparation” was, therefore, introduced to offer clinicians and scholars an objective term unhampered by historically biased associations.⁵ We propose a classification system to allow clinicians to describe both types of bone-implant interface

degradation, crestal and interfacial. The stratification system, from Stage 0 to Stage IV, offers the ability to simply quantify the degree of clinical impact of the host-implant interface degradation in the context of patient-centered outcomes. By choosing objective terms and applying their use objectively, we can limit the effect of our evolutionary vulnerability to the power of association where a new condition, such as osseoseparation, is mistakenly assigned the attributes of an existing condition such as periodontitis.

Unfortunately, the human mind is vulnerable to dismissing objective scientific evidence for the sake of feeling comfortable and, to compound the problem, easily succumbs to repetition as an alternative to truth. These mental weaknesses, described in detail in the work of Kahneman¹ and Ariely² and others, have allowed the term peri-implantitis to be widely and repeatedly used to reinforce an incorrect assumption that the crestal bone loss observed adjacent to an oral implant is akin to periodontitis. It may have made sense to associate periodontitis and peri-implantitis in the 1980s when little was known and intuition was all we had. However, modern, up-to-date scientific evidence requires us to acknowledge that today's ongoing assertions regarding peri-implantitis are built on yesterday's guesswork.

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