

The Need for Consensus

Current interest in peri-implantitis is on the rise. A look at the number of courses and articles dedicated to the subject compared with 5 years ago suggests just how much this interest has grown. Concurrently, there is a great deal of passion and some controversy concerning this disease when it comes to understanding just how pervasive this problem is and how seriously it ought to be taken.¹⁻³ A possible reason for this controversy stems from the fact that replacement of both condemned and/or missing teeth with dental implants is considered among the most successful procedures in the history of dental practice. This has led to millions of implants now being placed on an annual basis.⁴ Some fear that gaining a clear understanding of just how pervasive peri-implantitis has become might kill the "goose that continues to lay the golden egg." Is the prevalence of peri-implantitis being exaggerated by a group of alarmists or is the prevalence data that are being reported just the tip of the iceberg? Is etiology related to patient susceptibility, iatrogenic causes, or suboptimal care? Let's look at some of the essential issues regarding peri-implantitis.

Currently, there are no clearly defined metrics at which point peri-implantitis is diagnosed. Should the threshold be 5 mm or greater of probing depth with radiographic evidence of bone loss based on comparison to radiographs exposed at the time of implant restoration? How much marginal bone loss is necessary beyond physiologic remodeling to make a diagnosis of peri-implantitis? If there is a lack of agreement as to disease diagnosis, then how can the prevalence of this problem be determined? This certainly has led to a significant disparity among research studies as to the incidence and prevalence of peri-implantitis.^{5,6}

A number of case series reports with entirely different protocols have demonstrated successful treatment of the disease. Will any of these algorithms provide predictable and maintainable long-term success? Is the successful treatment of peri-implantitis determined upon the stage at which the disease is diagnosed, ie, is a case where bone loss is less than 25% of the implant length less likely to respond to treatment than one where the loss is \geq 50% of the implant length? Does the morphology of the lesion impact the long-term success of treatment?

The list of possible causes of this biologic complication continues to grow and clearly requires updating. Beyond those risk factors listed in the report from the Sixth European Workshop's Consensus Report on peri-implant diseases,⁷ others have emerged. For example, iatrogenic cementation is now a recognized risk.⁸ But do all cements behave the same? Should all restorations be screw retained? Do restorative parts that have a less than optimal fit create excessive micromotion and should this be included as a possible etiologic cofactor? A better understanding of these issues may go a long way toward preventing and treating this problem.

Updating the terminology used to define mucositis and peri-implantitis would be helpful. In the past, inflammation around a dental implant without bone loss has been referred to as peri-implant mucositis.⁷ This entity has been clinically identified by redness and swelling of the soft tissue. Today, bleeding on probing is currently recognized as an important clinical sign of peri-implant inflammation. However, one must remember that oral pathologists refer to tissue that is keratinized, be it around a tooth or on an edentulous ridge, as gingiva. Hence, it would appear that peri-implant gingivitis would be the more proper term for those

implants with surrounding keratinized tissue and inflammation without bone loss beyond that due to physiologic modeling. Considering this distinction, dental implants lacking gingiva around them, displaying these same symptoms, should then be called peri-implant mucositis. Why is this distinction important? The lack of gingiva has been implicated as a risk factor for the development of peri-implantitis.⁹ Thus, clinical definitions may need to be clarified to more accurately determine prevalence, risk, and the appropriate treatment options.

A key component in the treatment of peri-implant mucositis and peri-implantitis is surface decontamination. Can infected implant surfaces be predictably decontaminated? To date, and according to various publications, there is no consensus on the best way to accomplish this.

What are the best methods for treating these biologic complications and should more attention be paid to saving the natural dentition? A recent systematic review suggests that implant survival rates do not exceed those of adequately treated and maintained teeth, supporting the notion that the decision to extract a tooth and place a dental implant should be made cautiously.¹⁰ When should periodontally involved teeth be extracted in light of the possibility that their retention will adversely affect the future implant site? A number of options exist for treating implants diagnosed with peri-implantitis. All have their own benefits and limitations. However, is

there a stage of disease after which certain methods should be abandoned? Some would advocate that all implants with bone loss greater than 50% be removed. Human case series reports suggest that bone gain on an infected implant is possible. However, is it predictable, does it reflect reosseointegration, and is it maintainable long term?

We cannot bury our heads in the sand regarding these very important issues. This is not something that affects patients in one area of the world, as the reports are emanating from all over the globe. We ourselves, both in private practice and at dental school clinics, are seeing a greater number of implants with peri-implant bone loss associated with bleeding on probing and increased probing depth. Moreover, we feel it is essential for clinicians, dental students, patients, and implant companies to recognize the importance of diagnosis and treatment of peri-implantitis, especially in light of the numbers of implants being placed. We all share a common desire to help our patients reach a steady state of health, comfort, and function. To that end, we recommend more global collaboration to evaluate the diagnosis, prevalence, and most appropriate treatment options. Our patients are counting on us to do the right thing. One suggestion is to convene a State of the Science Global Consensus Conference where dispassionate scientific method would be applied. Certainly, this would help the dental profession to better understand

this biologic complication and could provide an evidence-based way to answer these questions.

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References

1. Albrektsson T, Buser D, Sennerby L. On crestal/marginal bone loss around dental implants. *Int J Periodontics Restorative Dent* 2013;33:9–11.
2. Albrektsson T, Buser D, Chen ST, et al. Statements from the Estepona consensus meeting on peri-implantitis, February 2-4, 2012. *Clin Implant Dent Relat Res* 2012;14:781–782.
3. Froum SJ, Rosen PS, Clem DS III. Response to "On crestal/marginal bone loss around dental implants." *Int J Periodontics Restorative Dent* 2013;33:407–409.
4. Brown LJ, Babbush CA. The future need and demand for dental implants. In: Babbush CA, Hahn JA, Krauser JT, Rosenlicht JL (eds). *Dental Implants: The Art and Science*, ed 2. Maryland Heights, MO: Saunders Elsevier, 2011:1–16.
5. Roos-Jansåker AM, Lindahl C, Renvert H, Renvert S. Nine- to fourteen-year follow-up of implant treatment. Part II: Presence of peri-implant lesions. *Clin Periodontol* 2006;33:290–295.
6. Koldsland OC, Scheie AA, Aass AM. Prevalence of peri-implantitis related to severity of the disease with different degrees of bone loss. *J Periodontol* 2010;81:231–238.
7. Lindhe J, Meyle J. Peri-implant diseases: Consensus Report of the Sixth European Workshop on Periodontology. *J Clin Periodontol* 2008;35(8, suppl):282–285.
8. Wilson TG Jr. The positive relationship between excess cement and peri-implant disease: A prospective clinical endoscopic study. *J Periodontol* 2009;80:1388–1392.
9. Block MS, Kent JN. Factors associated with soft- and hard-tissue compromise of endosseous implants. *J Oral Maxillofac Surg* 1990;48:1153–1160.
10. Levin L, Halperin-Sternfeld M. Tooth preservation or implant placement: A systematic review of long-term tooth and implant survival rates. *J Am Dent Assoc* 2013;144:1119–1133.