Can Periimplantitis Be Treated?

Jia-Hui Fu, BDS, MS[a], Hom-Lay Wang, DDS, MSD, PhD[b,*]

KEYWORDS

• Periimplantitis • Peri-implant bone loss • Infection • Guided bone regeneration
• Surgery

KEY POINTS

- Periimplantitis can be treated, but the treatment outcome is not always successful or predictable.
- The combination of resective and regenerative surgical techniques seemed to have favorable treatment outcomes in the management of periimplantitis.
- It is best to prevent peri-mucositis, which is the precursor of periimplantitis. This prevention can be achieved by eliminating bacterial plaque through meticulous oral hygiene practices and professional mechanical debridement. In addition, other contributing factors, such as wrong implant position, poor patient selection, and the presence of residual cement or deep probing depths, should be corrected.

INTRODUCTION

Over the past few decades, dental implants have been found to have high predictability and survival rates because of improvements in knowledge and clinical expertise, together with technological advances in implant designs.[1] They are thus integrated into the clinical management of fully or partially edentulous patients. However, having a high implant survival rate is not equivalent to long-term implant success, which is defined as having a functional and esthetic implant restoration with no pain, mobility, and suppuration and no more than 2 mm of radiographic peri-implant bone loss.[2] Also, despite the high early survival rates, dental implants do have their fair share of long-term esthetic, biological, and mechanical complications. The incidence of esthetic complications might have reduced because of the recent introduction of zirconia,

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[a] Discipline of Periodontics, Faculty of Dentistry, National University of Singapore, 11 Lower Kent Ridge Road, Singapore 119083, Singapore; [b] Department of Periodontics and Oral Medicine, School of Dentistry, University of Michigan, 1011 North University Avenue, Ann Arbor, MI 48109-1078, USA
* Corresponding author.
E-mail address: homlay@umich.edu

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but the incidence of biological and mechanical complications remained high.[1] Therefore, this paper aims to review the current evidence on the management of peri-implant diseases in an attempt to answer the following question: Can periimplantitis be treated?

Definition

Peri-implant diseases, which are infectious inflammatory diseases of the peri-implant tissues,[3] can be broadly categorized into peri-implant mucositis and periimplantitis. In sites with peri-implant mucositis, the inflammatory lesion is found to be limited to the peri-implant soft tissues with no evidence of progressive peri-implant bone loss beyond the initial physiologic bone remodeling that occurred following implant placement (**Fig. 1**).[4] Sites with periimplantitis, on the other hand, exhibit progressive peri-implant bone loss following the initial physiologic bone remodeling that occurred after implant placement as the inflammatory lesion progresses in both the mucosa and bone (**Fig. 2**).[4] As the discriminating feature is progressive bone loss beyond physiologic bone remodeling, it is, thus, important to establish baseline peri-implant bone levels, which is recommended to best occur at the time of prosthesis installation.[5] Changes in bone levels from the time of implant placement to prosthesis installation are considered the result of physiologic bone remodeling or early implant failure.[6] Therefore, it is challenging to determine the baseline peri-implant bone levels for immediately loaded implants, as time is not allowed for physiologic bone remodeling.

Diagnosis

Based on the abovementioned definitions, peri-implant mucositis is diagnosed by the presence of bleeding on probing, which is a key clinical parameter that indicates gingival inflammation. In addition, the presence of suppuration and/or increase in probing pocket depth (eg, $\geq$4 mm) are also used to detect peri-implant mucositis.[4] Periimplantitis often presents with similar clinical signs as peri-implant mucositis but with progressive bone loss as the main feature that distinguishes periimplantitis from peri-implant mucositis. Baseline and follow-up radiographs are needed to detect changes in peri-implant bone levels over time, however, these are only useful for assessing the interproximal regions. Changes in buccal or lingual bone levels can be determined by probing depths or recession of the peri-implant mucosa resulting in exposure of the implant threads. When the baseline peri-implant bone levels cannot be accurately determined, for example, in immediately loaded implants or when baseline radiographs are not taken, it is recommended to consider 2-mm vertical bone loss from the expected bone level as a threshold for the diagnosis of periimplantitis.[7] In

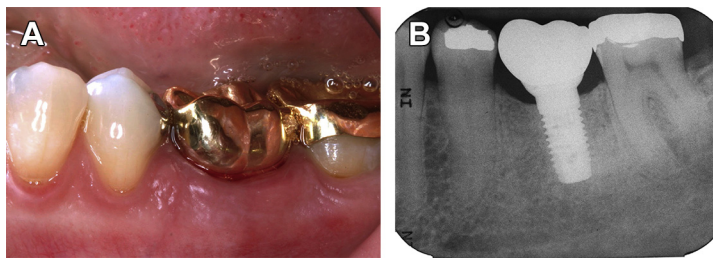

Fig. 1. (*A*) Clinical presentation of peri-implant mucositis at mandibular left first molar. Probing depth of 3 mm with bleeding on probing detected. (*B*) Radiographic presentation of peri-implant mucositis at mandibular left first molar with no evidence of progressive bone loss.