

PERIIMPLANT DISEASE COMPLICATIONS

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Abstract

Now-a-days use of dental implants play vital role in rehabilitation of partial & complete edentulous subjects due to availability of wide range of treatment modalities. Although many literatures regarding dental implant reported to have long term success rate, they are not spared from complication & failure. Implant failure occurs due to wide variety of reasons including improper treatment planning, surgical and prosthetic reason, material failure, and improper maintenance. Among them disease of soft & hard tissue surrounding implant is presently major concern in implantology. This literature review deals with of peri-implant disease & its management.

Keywords: *Implant complications: multiple treatment modalities; periimplantitis*

Introduction

The high predictability and long-term success rate of dental implants is well documented in the literature, complications and failures do occur. Success and predictability of dental implants have been well documented throughout the years with purported success rates of more than 90%. [1] These success rates, however, have been established according to an older criteria. An implant without pain, mobility, radiolucency, or 1 mm of bone loss during the first year and 2 mm thereafter was considered a success.[2] A recent review that considered excessive bone loss as an additional criteria of implant failure suggested that “implant survival and success rates in general dental practices may be lower than those reported in studies conducted in

academic or specialty settings” and quoted an 80% success rate.[3] In addition, proportional with the increase in the volume of dental implants being placed is the amount of adverse events that will occur. Two recent systematic reviews and meta-analyses reported that the prevalence of peri-implantitis was present in approximately 10% of implants and 20% of patients eight to ten years after implant placement.[4] Considering the number of implants placed or projected to be placed from 2013 to 2017 in the United States alone, this number would mean more than 1.2 million implants will require therapy for this disease.[5]

Review of Literature

Peri-implant diseases present in two forms; peri-implant mucositis and peri-implantitis. Both of these are characterized by an inflammatory reaction in the tissues surrounding an implant. Peri-implant mucositis has been described as a disease in which the presence of inflammation is confined to the soft tissues surrounding a dental implant with no signs of loss of supporting bone following initial bone remodelling during healing. Peri-implantitis has been characterized by an inflammatory process around an implant, which includes both soft

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tissue inflammation and progressive loss of supporting bone beyond biological bone remodeling. Some complications may be relatively minor and easy to correct, while others will be major and result in the loss of the implant or prosthesis. Implant complications can typically be categorized by temporal sequence and defined as either an **early** or **late** complication. An early complication can be defined as a problem that arises prior to osseointegration of the dental implant, whereas a late complication occurs after the implant osseointegrates and the final prosthesis is placed. In addition, implant problems can further be subcategorized into biologic or mechanical complications. Biologic complications involve pathosis of the peri-implant hard and soft tissue. Mechanical complications occur when the fatigue strengths of the dental implant or restorative components are reached and breakdown occurs resulting in material failure.

Early implant complications arise prior to dental implant integration and often are the result of intraoperative or short-term postoperative problems. Typical early complications include intrasurgical problems such as hemorrhage, damage to adjacent teeth, neurosensory disturbances, jaw fracture, and maxillary sinus violations. Other early complications during implant placement include overpreparation of the implant osteotomy or underpreparation of the implant osteotomy. Underpreparing an implant site can result in surgically overheating the bone and bone necrosis if the critical threshold of greater than 47°C is reached by the surgical drills or dental implant. [6] Contamination of the surgical site and/or the dental implant surface from bacteria is also possible during fixture placement, which can result in the failure of the implant to integrate. Lack of primary stability, stability of the implant when it is first placed into the alveolus, can result in implant micro-motion above 100 microns and loss of the implant due to fibrous tissue bonding to the implant surface instead of bone.[7]

Late implant complications occur after the implant has integrated and the final prosthesis has been placed. On the other hand, if allowed to progress, a minor complication can often result in loss of the implant and/or prosthesis. Late complications of the dental implant

fall into the category of biologic or mechanical complications. Late biologic complications are those in which the peri-implant soft and hard tissues are affected. Peri-implant mucositis describes a reversible inflammatory reaction in the mucosa adjacent to an implant, [8] a term that has become known as implant gingivitis. Studies show that the prevalence of peri-implant mucositis can be as high as 50% to 80% of implants in function [9] with the etiology of peri-implant mucositis being bacterial plaque. Typical clinical presentation includes erythema, edema, swelling, and redness. Although bleeding upon probing and increased probing depths are not always indicative of peri-implant mucositis, [10] the absence of these two factors usually means implant health. [11]

Treatment of peri-implant mucositis can often be accomplished via nonsurgical mechanical therapy. Although systemic antibiotics have been shown to reduce inflammation associated with peri-implant gingival tissue, as a monotherapy, they have been shown to be ineffective due to the bacterial recolonization of the implant surface without mechanical debridement.[12] Studies show that proper scaling and root planing with attention to bacterial plaque removal can be effective in reducing peri-implant mucositis lesions.[13] Localized drug delivery has also shown to have a positive effect in reducing mucositis lesions in conjunction with mechanical debridement, especially in the areas of the mouth that are hard to reach.[14] After nonsurgical intervention, the patient should be recalled within three weeks. If no resolution of the inflammation has occurred, surgical intervention should occur. [15]

Discussion

Peri-implantitis has been defined as an inflammatory process that affects the tissues around an osseointegrated implant in function and, like periodontitis, results in loss of supporting bone. The prevalence of peri-implantitis has been shown in some studies to range from 11% to as high as 47% of implant sites analyzed.[16] Most literature reviews agree that once bone loss has occurred around an implant, nonsurgical therapy is not as effective as surgical treatment.[17] Surgical intervention by the dentist or specialist includes raising a full thickness flap around the affected dental

implant in order to completely expose the dental implant surface. Mechanical debridement with hand and high-speed instrumentation as well as irrigation with various medicaments is advocated in order to detoxify the implant surface and alleviate bacterial contamination. After decontamination, the flap can be apically or coronally positioned. In addition, various regenerative technologies, including bone and soft-tissue grafts, growth factors, and barrier membranes have been used to rebuild lost tissue support around the dental implant. Different methods of guided bone regeneration around implants affected with peri-implantitis were demonstrated, and the results have been shown to be stable for a follow-up period of up to seven years.[18] That being said, no gold standard of peri-implant disease has been documented and “available evidence does not allow specific recommendations for the therapy of peri-implantitis.”[19]

Conclusion

For successful therapy the establishment and maintenance of proper home-care practices and supportive care at regular intervals. This has been documented in the literature with respect to both periodontal and peri-implant maintenance and treatment outcomes. Many studies suggest that patients who are placed on three-month recare schedules typically perform better than those seen on longer intervals and tend to keep their teeth for longer periods of time.20 Optimal home care, short maintenance intervals, and proper treatment are keys to success when dealing with peri-implant disease. In addition, treatment, whether nonsurgical or surgical intervention, must be performed in a timely manner. Sacrifices in treatment or delay of services should not occur, because the progression of this disease can be quick in nature.

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