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When Perio, When Implants?

Muthuraj MSA* and Janakiram S

Department of Periodontology, Sri Ramakrishna Dental College and Hospital, Tamilnadu, India

***Corresponding author:** Muthuraj MSA, Department of Periodontology, Sri Ramakrishna Dental College and Hospital, Coimbatore-641006, Tamilnadu, India; Tel: +91 9894249551; E-mail: mariasubashaaronm@srdch.ac.in

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Abstract

Periodontal treatment mainly focuses on the treatment of periodontally compromised tooth. The primary objective of periodontal treatment is regeneration of periodontium. Complete regeneration is still a distant dream for periodontist. For both patients and practitioners, tooth extraction is a last resort when all other treatment options fail. However, the marketing strategies of dental implant companies have changed the scenario. Many dentists won't have an intention of saving the periodontally weakened tooth. Despite saving the tooth, they focus on dental implant treatment. Therefore a clear demarcation line should be drawn to decide at which conditions we require periodontal therapy or implant. The above is the objective of this review.

Keywords: Periodontitis; Dental implants; Periodontally compromised tooth; Peri-implantitis

Introduction

"The only constant in life is change" – Heraclitus. Mankind has been making persistent attempts to replace natural body parts that are either congenitally absent or lost subsequent to disease or injury, so as to maintain a perfect combination of form and function. For decades, the underlying objective of preserving natural dentition has provided the foundation for clinical decision making in dentistry. To both patients and practitioners, tooth extraction is a last resort when all other treatment options fail. However, the marketing strategies of dental implant companies have changed the scenario. Despite saving the tooth, many dentists focus on dental implant treatment. This is particularly true while treating periodontally compromised patients. In this article, we will discuss how to choose between periodontal treatment and dental implants as strategies in the management of periodontally compromised patients.

Patient's Perspective

Function, esthetics, socio-economic status and compliance

The first step in treating a patient with periodontitis is obtaining consent. All the pros and cons of the treatment should be explained and he/she should be motivated to focus on long term goals rather than short term gain. The preservation of natural dentition should be prioritized over opting for dental implants, as implants have shorter survival rates when compared to adequately treat and well maintained periodontally compromised teeth. Aesthetically as well as functionally, periodontally treated teeth will be more efficient when compared to implants as the latter lacks natural appearance and proprioception. The patient's socio-economic status also plays a role because in case of implants are more expensive. In such situations teeth can be treated adequately with advanced periodontal surgeries and maintained till they last. Pretzl reported that periodontal therapy has proven to be cost effective when compared to tooth replacement therapy by implants over a 15-year period [1]. Patient's compliance also plays a major role in decision making because supportive periodontal therapy is mandatory for the success and survival of both implants and periodontally treated teeth.

Environmental factors

Smoking affects the prognosis of periodontally compromised teeth as well as that of implants. Renvert evaluated the effect of nonsurgical periodontal therapy on periodontal parameters in smokers and non-smokers. Non-smokers showed a greater reduction in probing depth when compared to smokers [2]. De Bruyn and Colleart reported a higher early implant failure rate in smokers when compared to nonsmokers [3].

Klokkevold and Han evaluated the influence of smoking, diabetes and periodontal disease on implant outcomes and found that smoking has an adverse effect on implant success [4]. Therefore, successful outcomes following both periodontal and implant therapy is seen in nonsmokers and former smokers when compared to smokers. Patients with stress and poor coping skills are more prone for periodontitis and they respond to periodontal treatment poorly [5,6]. In such patients, factors influencing stress should be relieved or attenuated to get good outcomes before proceeding with periodontal therapy.

According to Loe, periodontitis is the sixth complication of diabetes mellitus [7]. In Type I Diabetes patients (Cianciola 1982) and Type II Diabetes patients (Sheridan 1987) periodontal breakdown is more when compared to that seen in diabetics [8,9]. Moy (2005) reported a significantly lower patient success rate for implant patients with diabetes [10]. Javed and Romanos (2009) found that patients with good metabolic control achieved success similar to that of patients without diabetes [11].

Therefore glycemic control is crucial in diabetics before undergoing periodontal treatment or implant therapy in order to achieve favourable outcomes.

Periodontal Perspective

Based on severity of periodontal disease

Hugoson 2008 in his long term study showed that with increase in age there was an increase in prevalence of periodontitis of which advanced stage of periodontitis accounted for only 10% [12]. Therefore most of the periodontitis patients belong to mild to moderate periodontitis category, which can be successfully managed with periodontal therapy. In untreated or non-compliant individuals with advanced stage of periodontitis, both bone destruction and tooth loss are inevitable.

In some individuals with advanced stage of periodontitis, the severity of a periodontal problem is such that tooth extraction should be considered as one of the treatment modalities to resolve the problem. This can be evaluated through complete periodontal and radiographic examination. These cases might include deeper pockets with complex anatomy such as furcation's and deep infrabony defects which show progressive attachment loss and symptoms. Teeth with increasing bone loss on radiographs and increasing mobility or fremitus in function, or progression to a complex perio/endo lesion, should be extracted. We should be aware that in cases with severe periodontal bone loss, grafting techniques may be required to facilitate implant placement later.

In aggressive periodontititis patients showing extensive bone loss, comprehensive periodontal treatment should be attempted first. Refractory cases pose a problem in decision making, where elimination of the pocket flora coupled with maintenance of remaining bone for future implants may be the correct early treatment in extreme cases. However, in such refractory cases not all implants and their superstructures last forever.

Recent reports indicate that implants may follow the same survival rate as natural teeth. Thus, the risk for loss of bone support over time seems to be roughly the same for an implant as the loss of periodontal support for a natural tooth. On an average, root length of a tooth is about 20 mm while the most commonly used implant is 10 mm long. Longitudinal studies on random samples of Swedish populations have demonstrated that there is a gradual interproximal bone height reduction of about 0.1 mm per year around teeth [13-15]. Adell 1990 reported annual bone loss around dental implants (after the first year with 1 mm of bone loss) to be between 0.1 and 0.2 mm. Thus, a tooth will have a prognosis better than an implant with normal length if we simplify the assessments to amatter of distances [16].

Long-term follow-up studies have clearly demonstrated that advanced forms of periodontal disease can be successfully treated for arresting disease progression and minimizing or even preventing tooth loss, provided that the patient is enrolled in a high-quality maintenance care program after completion of active treatment and refrains from smoking [17-19]. Wennstrom in 1990, suggested that with adequate oral hygiene, regular dental check-ups and preventive care, any patient should have a bone score of at least 50% at 70 years of age, which is more than sufficient for support [20].

Lundgren and Nyman 1975 gave a periodontal–prosthodontic concept of bridgework for prosthetic rehabilitation of dentitions with markedly reduced periodontal support. The above concept contradicted the generally accepted principles for bridgework by Ante (1926). It implies that fixed bridges can be placed and successfully maintained on a minimal number of abutment teeth with significantly reduced periodontal support, provided that the prosthodontic treatment is (i) preceded by adequate periodontal treatment and (ii) followed by an effective maintenance program to prevent recurrence of periodontitis. Therefore, before considering implant supported dentures in periodontally compromised patients we have to evaluate the option of tooth supported fixed partial dentures [21].

Based on biological perspective

Peri-implant and periodontal tissues demonstrate some striking differences. The implant lacks proprioception as there is ankylosis of implant to bone without intervening periodontal ligament. Peri-implant connective tissue has minimal resistance to probing and infection as the connective tissue fibres are oriented almost parallel to the implant. Periodontal regeneration is more predictable in treatment of teeth with periodontitis than bone regeneration around the implants, as the peri-implant tissue lacks periodontal ligament which is the main source of progenitor cells. Therefore retaining a tooth is always better than implant while evaluating the biological perspective.

Treatment of peri-implantitis *vs* treatment of periodontitis

Peri-implantitis is gradually being recognized as a disease entity that constitutes a therapeutic dilemma, as the data on the prevalence of such disease remains scarce. Berglundh (2002) in his systematic review discussed the difficulty in retrieving information on the prevalence of peri-implantitis because only a few studies included the disease definition. Regenerative therapy is commonly indicated in advanced stages of peri-implantitis, but remains unpredictable [22]. Many studies are available on the positive effect of various regenerative and resective therapeutic modalities in the management periodontitis but lesser data is available for similar management of peri-implantitis. Therefore treatment of periodontitis is more predictable than that of peri-implantitis. All the periodontitis patients should be sufficiently treated and maintained properly to prevent peri-implantitis. Strict protocol should befollowed for maintenance of implants in patients treated for periodontitis. This approach will be fruitful for the patient as well as for the dentist.

Dentist's Perspective

Four decades ago, the first implant was placed in human jaws for treating complete edentulism. The scenario has gradually changed and now we are using implants for the treatment of partially edentulous patients as well, with single tooth replacement being most common. This is thanks to the strategies initiated by dental implant companies, who market them as invincible treatment options for edentulous patients. The primary question to be asked here is, "Are all dentists trained in placing implants?". The answer sadly, is, 'no.' Implant companies cannot depend on limited specialties practicing Implantology, as this limits their market. To overcome this, these companies offer short term courses as a way of encouraging all dentists to pursue implant placements. Ultimately, the patients suffer. This is because in short term courses, one cannot expect an instructor to explain the pros and cons of implant treatment in detail. They are obliged to focus on success and avoid discussing failures, in order to promote implant placement.

This incomplete knowledge can be detrimental. The focus should be on implant placement and restoration of the dentition and not just the placement of implants for monetary gain. For this reason, implants should be placed by dentists who are well versed in prosthodontic concepts. The implant placing dentist should also be equipped with sufficient knowledge on how to identify and manage complications such as peri-implantitis. These factors are all crucial to ensure that dental implants are successful.

Conclusion

Lost teeth can be replaced with tooth-supported or implant-supported reconstructions. The latter is a treatment modality that is gradually increasing in incidence and sometimes leads to premature extraction of teeth. However, there is significant evidence to indicate that periodontally involved teeth can be maintained and used to provide function for a long time. Unlike the data on teeth, our knowledge on implant survival beyond 10 years is limited and is based on implant systems that are no longer available. Risk factors for peri-implant diseases have been identified and include smoking, poor oral hygiene and a history of periodontitis. Therefore, if implant treatment is considered in patients with periodontitis, a combined patient and site risk profile assessment, together with a cost–benefit analysis based on patient's expectations, should always be performed following an extended observation period after completion of periodontal therapy.

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