

PERI-IMPLANTITIS: PREVALENCE, DIAGNOSIS AND TREATMENT

The term peri-implant disease describes the infectious inflammatory reactions in peri-implant tissues and includes two conditions: mucositis and peri-implantitis [14]. Mucositis is defined as the presence of inflammation in the peri-implant mucosa without loss of bone support. While peri-implantitis, in addition to mucosal inflammation, is characterised by the loss of supporting bone [31].

Prevalence

There are few reliable studies with prevalence data for peri-implant diseases. Some 80% of patients may experience mucositis, a condition that is present in 50% of the implants that they wear [22]. Two important peri-implantitis studies coincide in that mucositis may affect 28% of all patients and 12% of their implants, while the most worrisome data show that 56% of patients could suffer from this disease and affect 43% of their implants [6, 22].

Aetiology

Peri-implantitis has been associated with a predominantly anaerobic, gram-negative microbiota [15]. The basic principles for the formation of pathogenic biofilms are the same in teeth as they are in implants. The microbiota that exists in peri-implant sulci seems to be similar to that which is found in periodontal pockets, with an increased proportion of the total flora, a lower proportion of overall streptococci and cocci, an increased proportion of spirochetes and an increase in gram-negative bacilli. Among the latter are *Porphyromonas gingivalis*, *Prevotella intermedia*, *Prevotella nigrescens*, *Tannerella forsythia*, *Campylobacter rectus* and *Aggregatibacter actinomycetemcomitans* [16, 17, 19, 29].

Peri-implant tissue response to biofilm

Peri-implant tissue response to biofilm is much worse (greater apical extension of the inflammatory infiltrate) when compared to what occurs in periodontal tissues [4]. The cause may lie in the anatomical differences between both tissues. In periodontal tissues, tooth collagen fibre bundles are anchored to the cement and arranged perpendicularly, while in implants, the fibre bundles run parallel to the implant surface. Furthermore, peri-implant connective tissue has a greater amount of collagen fibres and an inferior number of fibroblasts and of blood vessels than periodontal tissue [13].

Risk factors for peri-implant diseases

The three risk factors that are clearly linked to peri-implantitis are: a history of periodontitis, poor oral hygiene and tobacco smoking. Other factors whose association is more limited include diabetes and alcohol consumption. There is a very limited association, which is sometimes contradicted among the different studies, between peri-implantitis and genetic risk factors, the influence of the implant surface and the absence of keratinised mucosa [8].

Diagnosis

Early diagnosis of peri-implant diseases is essential for achieving the long-term success of implant-supported prosthetic restorations, and for this to happen:

- Baseline values must be recorded (probing depth and x-rays) during prosthetic placement on implants. These data will be used for comparison in succeeding visits [8, 11, 14].
- Probing performed with a light force (0.25 N) is a fundamental diagnostic method [5]. An increase in probing depth over time is linked to disease.
- Bleeding on probing indicates inflammation and can be used as a predictive factor for future loss of support [12].

- Suppuration always indicates tissue infection.
- X-rays are needed to assess the level of supporting bone but cannot be used as the sole parameter or as an early diagnostic technique.

Treating Mucositis and Peri-implantitis.

Mechanical therapy is effective in treating mucositis [18]. And, although no gold standard has been identified for the treatment of peri-implantitis, the efficacy of any given treatment has been determined to depend on its capacity to:

- Remove peri-implant submucosal biofilm.
- Achieve decontamination and implant surface conditioning.
- Attain regeneration of lost bone and re-osseointegration.
- Promote the establishment of an adequate peri-implant environment to prevent the formation of a new pathogenic submucosal biofilm.

Therapies suggested for treating peri-implantitis are:

1. Non-surgical treatments. These have been proven to not be effective in treating peri-implantitis [10, 18, 28].
2. Surgical treatments. Choosing a treatment will depend on lesion morphology, both in horizontal as well as vertical bone loss.

The aim of resective treatment is to control the infection and to create a favourable environment. The intention is not to regenerate bone or achieve re-osseointegration. It consists of performing apically repositioned flaps and polishing the implant surface (implantoplasty), although this involves the creation of an area of recession, which is why it is only indicated in non-aesthetic regions with suprabony defects, one-wall infrabony defects and buccal dehiscences [20, 21].

The aim of regenerative therapies is not only infection control but also regeneration of lost bone and re-osseointegration of the implant. To achieve this, the implant surface must be decontaminated and treated, however currently no standard procedure has been described. Different methods have been proposed for bone regeneration around implants. The techniques have varied depending on the forms of treatment used:

- a. Autogenous bone grafts or diverse bone substitutes [1, 2].
- b. Membranes – either resorbable or non-resorbable [3].
- c. Combining membranes with different grafting materials [9, 23, 24, 27].
- d. Submerged technique vs. non-submerged technique [7, 25, 26, 30].

No form of treatment has managed to meet all ideal treatment objectives to solve peri-implantitis. Nor do data exist in relation to stability over time for the limited results obtained.

In conclusion, predictable peri-implantitis treatments are not available, and therefore, the best option and currently the benchmark treatment should be prevention. In fact, long-term success of restorative treatment with implants will be based on peri-implant disease prevention. This prevention should start before implant placement, by previously controlling risk factors associated with peri-implantitis, and should continue with a specific programme involving regular maintenance visits to assess the condition of peri-implant tissues.

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