



PERI-IMPLANTITIS

Dental Science

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ABSTRACT

The 2017 world workshop on the classification of periodontal and peri implant diseases and conditions is using this narrative review to present an evidence-based overview of peri-implantitis.²⁹ Periimplantitis is an inflammatory condition around dental implants, akin to periodontitis, marked by bone loss and clinical signs like bleeding on probing. Diagnosis involves clinical and radiographic examination, sometimes with microbiological analysis. Treatments vary from non-surgical debridement to surgical interventions, emphasizing disease control and tissue regeneration. Multidisciplinary management and ongoing patient education are vital, with future research aimed at refining diagnostics and improving treatment outcomes.

KEYWORDS

Peri-implantitis, Dental implants, Peri-implant mucositis, Bone loss, Inflammation

INTRODUCTION-

Dental implant therapy has become the prosthetic standard of care in modern comprehensive dental care. With increase in placement of dental implants, increase in prevalence of peri-implant diseases have also been reported.² Two entities are described within the concept of peri-implant diseases; peri-implant mucositis and peri-implantitis.¹ Peri-implant mucositis is the reversible inflammation in the soft tissue surrounding implants. Peri-implantitis is an irreversible inflammatory reaction involving the underlying supporting bone.³ The bacteria from dental biofilms are considered as the major etiological factor for peri-implant disease. The associated risk factors for peri-implant diseases are alteration in the balance of host-parasite interaction, cigarette smoking, oral hygiene and history of periodontitis.⁴

Prohormones gingivalis, *Prevotella intermedia* and *Aggregatibacter actinomycetemcomitans* are some of the bacterial species responsible for peri-implant disease. The prosthetic design is also considered as risk factor when the prosthesis obstructs the patient or the dental professional in daily hygiene measures or gaining access to the implant surface.⁵

Peri-implantitis

Biological complications involving dental implants include peri-implant diseases such as peri-implant mucositis and peri-implantitis.¹⁵ Periimplantitis is a medical condition associated with implants that significantly raises the possibility of implants failure. Levignac originally characterised this ailment in 1965.⁶ Mombelli⁷ is credited with coining the phrase "peri-implantitis," who defined the illness as comparable to chronic in 1987 periodontal disease.

Classification of peri-implantitis

The following are the classification systems for peri-implantitis:

1. Froum and Rosen, 2012 classified peri-implantitis based on distinct clinical stages as follows.⁹
2. Bogaerde et al 2014 proposed classification of bone defects adjacent to dental implants highlighting the defect anatomy in the progression of the regenerative process.¹⁰
3. Ata-Ali et al (2015) classified peri-implantitis based on the clinical status.¹¹
4. Sarmiento et al (2016) classified peri-implantitis based on etiology.¹²
5. Passi D et al (2016) classified peri-implantitis based on bleeding on probing, probing depth, percentage of bone loss and mobility.¹³
6. According to Rucha Shah et al (2016), Retrograde Peri-implantitis

is classified based on the amount of the bone loss,¹⁴

Classification based on defect morphology

1. Nishimura et al, 1997 gave another system of classification exists amount of bone loss with shaped of defect associated¹⁶
 - (a) Class 1: Slight horizontal bone loss with minimal peri-implant defects
 - (b) Class 2: Moderate horizontal bone loss with isolated vertical defects
 - (c) Class 3: Moderate to advanced horizontal bone loss with broad, circular bony defects.
 - (d) Class 4: Advanced horizontal bone loss with broad, circumferential vertical defects, as well as loss of the oral and/or vestibular bony wall
2. Schwarz et al 2019¹⁷ classified peri implant defect depending on the configuration of the bony defect as:
 - (a) Class I defect – Intraosseous
 - (b) Class II defect – Supra-alveolar in the crestal implant insertion area.
3. Spiekermann¹⁸ 1984 characterized peri-implant defect into the type of bone resorption pattern into 5 category.
 - (a) Class I – Horizontal,
 - (b) Class II – Hey-shaped
 - (c) Class III a – Funnel shaped
 - (d) Class III b – Gap-like
 - (e) Class IV – Horizontal-circular form

Etiology

Plaque microbiota's role in bacterial infection Dental biofilm, also known as dental plaque, is a framework of extremely microbiological community arranged in a precise matrix which sticks to the mouth cavity's harsh surfaces. An cause-and effect connection between the development of biofilms and Human cases of peri-implant illnesses have been reported.¹⁹

Microbes connected to Facial flora and failing dental implants are comparable associated with periodontally involved teeth. The microorganisms most commonly related to the failure of an implant are rods and motile forms of gram negative anaerobes and spirochetes. These include *Fusobacterium nucleatum*, *Peptostreptococcus micros*, and *nigrescens*.²⁰⁻²¹ The bacteria that cause peri-implantitis can differ in species between subjects with partial and complete dentition. Patients with incomplete dentition have provided samples larger aerobic gram-negative microorganisms in comparison to cases of whole dentition.²²

Dental Periodontal infections Combines Actinomycetemcomitans Treponema, Porphyromonas gingivalis (PG), and (AA) denticola (TD), which is more frequently documented in incomplete situations that are less than total edentulous.²³⁻²⁴

Overly high mechanical tension Mechanical overloading has been proposed as a potential cause of peri-implant bone loss and implant failure that occurs later. How can occlusal overload occur? through the design of prosthetics. Implants that are occlusally micro motion at the implant abutment is caused by overload which impairs the osseointegration during the initial restorative. As a result, tiny fractures of the implant's surrounding bone and start peri-implant crestal bone loss that will continue to spread in the event that microbiological plaque.²⁵

Clinical features

Inflammation of the soft tissue surrounding the implant accompanied by a loss of supporting bone is known as peri-implantitis. It is comparable to periodontal disease surrounding natural teeth. early indications of GCF production is elevated in peri-implantitis, and blood when pressed.²⁶

Two crucial elements that distinguishes between peri-implant mucositis and peri-implantitis are the attachment and peri-implant pocket's existence. defeat. Other clinical characteristics include the redness of the tissue, tissue oedema, suppuration, and mucosal expansion.²⁷

Other crucial characteristics of late stage peri -implantitis include movement of implants and pain during operation .The traditional characteristic bone loss is a peri-implantitis symptom. Despite significant variance corners emerge over the quantity of bone needed to define a case.⁸

Diagnosis

Studies found various diagnostic criteria and risk factors for peri-implant disease, like poor oral hygiene, smoking, and history of periodontitis. Light force probing is safe, and bleeding on probing indicates inflammation. Regular assessment of probing depth and BOP is recommended. Radiographs help evaluate bone levels. Poor oral hygiene, periodontitis history, and smoking are strong risk indicators, but future prospective studies are required to confirm these factors as true risk factor.¹²

Management

Future prospective studies are required to confirm these factors as true risk factors.¹² The first option for the treatment of peri-implant lesions has been assessed to be the non-surgical one.³¹ Following surgical interventions around implants diagnosed with peri-implantitis, clinical improvements as judged by reductions of probing depths and bleeding on probing have been reported. Bone or bone substitutes have been used in attempts to regenerate bone loss around implants. When regenerative modalities have been employed, radiographic evidence of defect fill has been reported. Positive treatment results can be maintained over a period of 3-5 years. Regardless of the treatment performed, adequate plaque control by the patient is fundamental to treatment success. If the patient cannot obtain an adequate level of oral hygiene, the infection around the implants will reoccur.²⁸ on-Surgical Treatment of Peri-Implantitis

CONCLUSION

With the ever-growing demand for implant placement to re-establish edentulous sites, the incidence of peri-implant diseases is estimated to increase. The first step in appropriately managing such diseases is to appropriately diagnose peri-implant health, peri-implant mucositis or peri-implantitis. This is of particular effect in periodontitis patients where the threat of peri-implant disease is significantly higher. Diagnosis is attained through probing, appreciation of clinical signs such as bleeding and/or suppuration and radiographic assessment.

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