Peri-implant diseases: Risk indicators and preventive measures

DEFINITIONS
Peri-implant health and peri-implant diseases were recently defined at the World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions¹.

PERI-IMPLANT HEALTH
Peri-implant health was characterized at the clinical level by the absence of signs of soft tissue inflammation, e.g. absence of bleeding on gentle probing (BoP) and suppuration¹.

PERI-IMPLANT MUCOSITIS
Peri-implant mucositis was defined as presence of BoP and/or suppuration with or without increased probing depth compared to previous examinations in conjunction with the absence of bone loss beyond crestal bone level changes resulting from initial bone remodelling⁵. Visual signs of inflammation may vary and peri-implant mucositis may be diagnosed around implants with variable levels of bone support.
PERI-IMPLANTITIS
Peri-implantitis was defined by the presence of BoP and/or suppuration, increased probing depths compared to previous examinations and presence of bone loss beyond crestal bone level changes resulting from initial bone remodelling⁵.

PREVALENCE OF PERI-IMPLANT DISEASES
The prevalence of peri-implant diseases has been widely investigated. Outcomes of a systematic review reported a weighted mean prevalence of peri-implant mucositis of 43% (range: 19 - 65%) and peri-implantitis of 22% (range: 1-47%)¹⁰. Results from cross-sectional studies indicated that the frequency of peri-implantitis ranges between 13 and 26%². However, based on the wide range of reported prevalences reflecting the high heterogeneity of the applied clinical and radiographic thresholds for disease definition, an adequate estimate of peri-implant diseases seems difficult¹⁰.

RISK INDICATORS FOR PERI-IMPLANT DISEASES
A number of risk indicators have been identified that may lead to the establishment and progression of peri-implant mucositis and peri-implantitis.

The following risk indicators and their corresponding preventive measures are presented.
RISK FACTORS AND PREVENTIVE MEASURES

**EXCESS CEMENT**
Presence of cement excess is associated with peri-implant mucositis and peri-implantitis\(^\text{15, 26}\).

**PREVENTION**
Attention should be paid to cementation in order to avoid excess cement. Alternatively, screw-retained restorations may be considered.

**LACK OF KERATINIZED AND ATTACHED PERI-IMPLANT MUCOSA**
Implants not surrounded by attached and keratinized mucosa are more prone to plaque accumulation and recession, even in patients with sufficient oral hygiene and enrolled in maintenance therapy\(^\text{20}\).

**PREVENTION**
Care should be taken before, during or after implant placement to ensure that keratinized and attached mucosa is present around dental implants.

**INSUFFICIENT SELF-PERFORMED PLAQUE CONTROL**
Poor self-performed plaque control increases the risk for peri-implant diseases\(^\text{11}\).

**PREVENTION**
High levels of self-performed plaque control are critical for the maintenance of peri-implant soft tissues without inflammation.

**CLEANABLE IMPLANT-SUPPORTED RESTORATION**
Implant-supported restorations with inadequate access for plaque control exhibit an increased risk for peri-implantitis compared with those with good access for plaque control\(^\text{22}\).

**PREVENTION**
Implant-supported restorations should provide unrestricted access for plaque control.

**TOBACCO USE**
Tobacco consumption leads to an increase in peri-implant soft tissue complications and to elevated peri-implant bone loss or implant loss\(^\text{3, 25, 13, 16}\).

**PREVENTION**
Smoking cessation protocols increase implant survival rates\(^\text{4}\).

**LACK OF ADHERENCE TO MAINTENANCE CARE**
Implant survival and success rates are lower in patients not adhering to regular maintenance care programs\(^\text{17, 19}\).

**PREVENTION**
A recall interval tailored to a patient’s risk profile (i.e. every 3-6 months) is recommended\(^\text{14, 21}\).

**UNTREATED PERI-IMPLANT MUCOSITIS**
Patients diagnosed with peri-implant mucositis that remains untreated for a period of 5 years are more likely to develop peri-implantitis compared with those receiving a yearly treatment for peri-implant mucositis\(^\text{8}\).

**PREVENTION**
Early diagnosis and treatment of peri-implant mucositis reduces the risk for the development of peri-implantitis.

**HISTORY OF TREATED PERIODONTITIS**
The survival and success rates of implants placed in patients with treated periodontitis are lower compared with those in patients without a history of periodontitis\(^\text{23}\).

**PREVENTION**
High-quality treatment of periodontitis prior to implant placement is recommended. Deep residual pockets with BoP jeopardize long-term implant success rates\(^\text{6, 18}\).

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