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A Meticulous Approach On Bone Defectsarround The Implants

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ABSTRACT:

For the early detection of peri-implant infections, a variety of diagnostic options are currently available. These range from typical clinical parameter assessments to radiographic examinations of the marginal bone level, as well as microbiological and genetic test systems. These diagnostic tools should be used in the initial diagnosis, treatment planning, and maintenance therapy. The primary goal of this article is to examine the many elements that influence bone loss in dental implants, as well as the amount to which they contribute to implantation success.

KEYWORDS: Bone defects, Peri-implant, Radiographic diagnosis

I. Introduction

Biological complications associated with dental implants are mostly inflammatory conditions of the soft tissues and bone surrounding implants and their restorative components, which are induced by the accumulation of bacterial biofilm. Such conditions, which have been named peri-implant mucositis and peri-implantitis, need to be clearly defined and differentiated from a state of peri-implant health, so that the clinician may assign a proper diagnosis and select a proper treatment modality in cases where disease is present

II. Peri-implant diseases[2]

Peri-implant mucositis as a disease that includes inflammation of the soft tissues surrounding a dental implant, without additional bone loss after the initial bone remodelling that may occur during healing following the surgical placement of the implant. The etiology of peri-implant mucositis is the accumulation of a bacterial biofilm around the implant. Peri-implantitis has been defined as an inflammatory lesion of the mucosa surrounding an endosseous implant and with progressive loss of supporting peri-implant bone.

III. Stages of bone loss:[1]

Bone loss occurs in 2 stages: Early bone loss andLate bone loss

Early bone loss, which depends on the time for which the implant was exposed and the prosthetic connection. The ‘late bone loss’ which is visible during function of the implant. Late bone loss is usually caused due to peri-implantitis

IV. Classification of bone defects around the implants

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Based on a clinical examination, peri-implant bone defects can be subdivided into definable classes

Schwarz et al., (2008)[3] classified peri implant defect depending on the configuration of the bony defectas:

Class I defect – Intraosseous defect

Class II defect – Supra-alveolar defect in the crestal implant insertion area.

Intraosseous defect components can be clinically divided into a total of five classes:[4]

CLASSIa - buccal or oral dehiscence defects with position of the implant body within or beyond the envelope

CLASSIb - buccal or oral dehiscence defects with semicircular bone resorption to the middle of the implant body (position of the implant body within or beyond the envelope)

CLASSIc - dehiscence defect with circular bone resorption under maintenance of the buccal or oral compact layer (position of the implant body within or beyond the envelope)

CLASSId - circular bone resorption with buccal and oral loss of the compact layer (position of the implant body within or beyond the envelope)

CLASSIe - circular bone resorption under maintenance of the buccal and oral compact layer

Only two classes are mentioned in this classification. There is no clinical or radiological interpretation to be found.

Zhang L et al., (2014)5 classified peri-implant bone defects (PIBDs) in patients with lower implant-supported overdentures based on their Panoramic radiograph. They are grouped into the following categories in decreasing order of occurrence:

Saucer-shaped defects, Wedge-shaped defects, Flat defects, Undercut defects, Slit-like defects

Radiologic classification based on bone defects around the implants:

Radiologic classification wasdescribed by Spiekermann[6]

Class I - Horizontal bone resorption

Class II - Patelliform bone resorption

Class III -Funnel-form bone resorption

Class IV - Gap-form bone resorption

Classification Based on Defect Morphology And Severity Were Determined Using Cone Beam Computer Tomography (CBCT) In Periimplantitis Conditions

According to the morphology was classified as follows:

Class I: Infraosseous defect

Class Ia: Buccal dehiscence

Class Ib: 2-3 walls defect

Class Ic: Circumferential defect

Class II: Supracrestal/horizontal defect

Class III: Combined defect

Class IIIa: Buccal dehiscence + horizontal bone loss

Class IIIb: 2-3 walls defect + horizontal bone loss

Class IIIc: Circumferential defect + horizontal bone loss

V. Implant subclassification based on bone defect severity

FORMULA:

$$\frac{\text{The defect depth from the implant neck and ratio of bone loss}}{\text{Total implant length}}$$

Grade S: Slight: 3-4 mm/<25% of the implant length

Grade M: Moderate 4-5 mm/≥25%-50% of the implant length

Grade A: Advanced: >6 mm/>50% of the implant length

VI. Conclusion

Apart from these factors, such as the lifestyle of the patient, the bone quality, and the response of the human body to external stimulus also cause variance in the bone loss rate. The technique for fixation of the dental implant is also of great importance Moreover the use of excessive force during the surgical procedure leads to failure in the implant due to excessive frictional bone loss. All these factors need to be considered to understand the bone loss rate since they vary from patient to patient.

VII. References

1. Nimbalkar S, Dhatrak P, Gherde C, Joshi S. A review article on factors affecting bone loss in dental implants. *Materials Today*: Proceedings.2020; 9:7-8
2. Renvert S, Persson GR, Pirih FQ, Camargo PM Peri-implant health, peri-implant mucositis, and peri-implantitis: Case definitions and diagnostic considerations J Clin Periodontol.2018; 45:S278-85.
3. F Schwarz, N Sahm, J Becker, Aktuelle Aspekte zur Therapie periimplantarer Entzundungen. Quintessenz 2008; 59: 521-530.
4. Schwarz F, Jurgen Becker, Martin Sager, Katrin Schwarz, Anton Sculean, Aristeo Atsushi Takasaki Periimplant infection etiology, diagnosis and treatment.2009;(56-115)

5. Zhang L, Geraets W, Zhou Y, Wu W, Wismeijer D A new classification of peri-implant bone morphology: a radiographic study of patients with lower implant-supported mandibular overdentures Clin Oral Implants Res. 2014; 25(8):905–909.
6. Spiekermann H, Jansen VK, Richter EJ. A 10-year follow-up study of IMZ and TPS implants in the edentulous mandible using bar-retained overdentures.*Int J Oral & Maxillo fac Implants*:1995 1;10(2).
7. Alberto Monje , Ramón Pons , Angel Insua , José Nart , Hom-Lay Wang , MS, Frank SchwarzMorphology and severity of peri-implantitis bone defects: Review. *Clin Implant Dent Relat Res*. 2019;1–9.