

Clinical and radiographic aspects of peri-implantitis diseases: a case report

Aspectos clínicos e radiográficos das doenças periimplanteres: um relato de caso

Anyelen Remigio de Gois¹, Érika Feitosa Melo Meireles¹, Manassés Tercio Vieira Grangeiro², Sérgio Éberson da Silva Maia³, Ravena Pinheiro Teles⁴, Augusto Henrique Alves de Oliveira⁵

¹Graduated in Dentistry by Centro Universitário Leão Sampaio. Juazeiro do Norte, Ceará, Brazil. anyelen_ardg@hotmail.com, erikameireles.em@gmail.com

²Author for correspondence. Graduated in Dentistry. Master in Dental Prosthesis by Universidade Estadual Paulista. São José dos Campos, São Paulo, Brazil. terciomanasses@gmail.com

³Graduated in Dentistry by Centro Universitário Leão Sampaio. Juazeiro do Norte, Ceará, Brazil. sergioeberson@gmail.com

⁴Graduated in Dentistry. Specialist in Implantation. Professor at Centro Universitário Leão Sampaio. Juazeiro do Norte, Ceará, Brazil. ravenateles@leaosapaio.edu.br

⁵Graduated in Odontology. Specialist in Implantation. Doctorate in Implantation by São Leopoldo Mandic. Professor at Centro Universitário Leão Sampaio. Juazeiro do Norte, Ceará, Brazil. augustohenrique@leaosampaio.edu.br

Resumo | A peri-implantite é uma doença de resposta inflamatória aos tecidos peri-implantares de sustentação com perda de suporte ósseo. Estudos relatam que a peri-implantite se assemelha ao início e avanço da doença periodontal. O objetivo deste estudo é relatar um caso de peri-implantite com abordagem clínica e radiográfica de um paciente de 58 anos, ex-fumante, retornou 03 anos após a instalação da reabilitação, queixando-se de dor na região onde se localizavam os implantes do lado direito, gosto ruim na boca e um odor desagradável. A partir dos achados clínicos, observou-se aumento na profundidade de sondagem e na análise radiográfica observou-se uma rarefação óssea, sugestiva de reabsorção e comprometimento do tecido peri-implantar compatíveis com os sinais de peri-implantite. A partir disso, a intervenção dada ao caso foi a remoção do implante comprometido, curetagem do tecido ósseo, e após o reparo, foi instalado um novo implante. Embora a peri-implantite se assemelhe à periodontite, as diferenças existentes entre os tecidos periodontal e peri-implantares sugerem a necessidade de um acompanhamento periódico para que ocorra a avaliação da resposta dos tecidos à instalação do implante, bem como da funcionalidade do mesmo. A identificação precoce de alterações patológicas no sítio de instalação do implante são passíveis de controle e reversão quando intervindos precocemente. A aplicação de uma terapêutica efetiva para obtenção do controle da doença peri-implantar podem ocasionar em tecidos ósseos e mucosos restabelecidos e aptos a receberem novos implantes sem prejuízo para o processo de osseointegração.

Palavras-chave: Diagnóstico. Implantes dentários. Osseointegração. Peri-implantite.

Abstract | The peri-implantitis is a disease related to an inflammatory reaction in peri-implant supporting tissues with loss of supporting bone. Studies show that this disease looks similar to a start and progress of a periodontal disease. This paper aims to report a peri-implantitis clinical case with a clinical and radiographic approach of a 58 years old patient, ex-smoker, returned 3 years after the implant was fitted reporting pain on the right side where the implants were located, bad taste and breath in her mouth. The clinical findings showed an increase in the probing depth and a bone rarefaction in the radiography, suggestive of peri-implant tissue reabsorption and damaging that are compatible with peri-implantitis indicators. After the diagnosis, the compromised implant was removed, there was a curettage in the bone tissue, and another implant was fitted. Nowadays the patient is being monitored periodically, and it was not found any indicators of osseointegration failure. Although the peri-implantitis is similar to periodontitis, the differences between the periodontal and peri-implant tissues imply the necessity of a periodical monitoring to evaluate the tissues' response to the new procedure and the implant's functionality. Identifying pathological changes at the implant site is manageable and could be reverted with early intervention. The implementation of an effective therapy to control peri-implant diseases might lead to restored and suitable bone and mucosal tissues ready to get new implants with no harm to the osseointegration process.

Keywords: Diagnosis. Dental Implant. Osseointegration. Peri-implantitis.

Introduction

Throughout the centuries, a great evolution in Dentistry was observed, concerning implantation, aiming at developing esthetics and mastication function of the patients. In the beginnings, rudimentary prosthesis were used with the goal of replacing lost teeth in these people. In the 10th century, new questions were raised about the dental implant, until achieving the new concept of professor Brånemark, bringing the proposal of osseointegration and revolutionizing the implantodontia¹. This osseointegration consists of the stable and functional union of bone and dental implant, involving an anchorage of the implant by the formation of the bone tissue around it with no growth of the fibrous tissue in the interface bone-implant².

However, with the propagation and the success of the treatment with implants, new questions came up, due to the growth of peri-implant diseases. The term 'peri-implant disease' is collectively used to describe biological complications in dental implants, including peri-implant and peri-implantitis mucositis, which are infectious diseases.³⁻⁷ The peri-implantitis is a disease of inflammatory answer to the peri-implant tissues of sustenance with bone loss. Studies report that the peri-implantitis is similar to the beginning and advance of periodontal disease.

The clinical evaluation of this disease is done by the following exams: peri-implant survey, bleeding and survey depth, modified bacterial plaque index, exudate, suppuration, keratinized mucosa and mobility.⁸ Another method for the evaluation of the level of bone support around the implants is the radiographic, considering radiographical evidences show vertical bone destruction, which are generally related to the peri-implant bags. Ideally, a radiography occurs after the implant installation, aiming at verifying its position and working as control for future comparisons and preservation of it.

Radiographically, the affected peri-implant bone tissue presents radiolucent images around the implant, and it can be vertical or in crater form, promoting the discontinuity of the junction bone and implant, evidencing the process of bone loss that compromises its support. The progression of the

reabsorption of the peri-implant bone compromises directly the osseointegration that will result in rehabilitation failure.

There is not a propaedeutic consensus concerning to how diagnosing such disease, since there is not a unique exam that is able to evidence it, but there is a set of clinical and/or radiographical evaluations. Because of this, new researches, articles and studies in this area are relevant, which justifies the high relevance before the necessities of more information about peri-implantitis.^{10,11}

The objective of this study is to report a case of peri-implantitis with clinical and radiographical approach, based on the current literature, which favors and supports us in the diagnosis before these cases.

Case report

The patient M. L. A. O., feminine, 58 years old, searched for attendance in a private dentistry office, claiming discomfort in the lower prosthesis due to the low retention and stability. According to the patient, the prosthesis moved and hurt her gum. In the anamnesis, the patient affirmed she is a controlled hypertensive and makes use of Atenolol 25 mg and hyposodic diet. She has been a non-smoker for 18 years, she smoked during 27 years (from 13 to 40 years old). She consumes alcoholic drink, but she does not use any other drugs. In the intra oral exam, a partial removable prosthesis was observed, it was supported by a few teeth, among them, the following dental elements: 31, 32, 33, 42 and 43. A severe absorption was still diagnosed in the posterior part of the jaw, due to lack of mastication charge because of the dental elements lack in the region, which caused a maladaptation of the prosthesis.



Picture 1. Initial panoramic radiography



Picture 2. Panoramic radiography 30 days after the installation of the dental implants

Considering the patient's discontentment in relation to her prosthesis and also to the great posterior bone absorption, the following treatment was suggested: removal of the remaining dental elements in the jaw and the 4 implants installation of 4.1mm diameter, platform RN Straumann, surface SLActive and 12mm length, aiming at supporting a cast-bar protocol type prosthesis, uniting the 4 implants and the acrylic resin was the cover material used.

The patient agreed with the treatment suggested and after all the necessary previous exams in the acceptable time limit, a surgery for the dental implant installation occurred, within the most perfect normalcy. Considering the time for the surgical protocol, reopening was unnecessary, since the implants selected were not immediately loaded and the patient received a total immediate prosthesis in acrylic with the resilient resin. The initial molding of the implants with addition silicone for making the final prosthesis occurred 30 days after its installation.

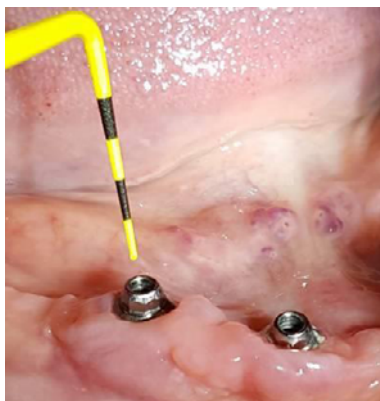
An annual recurring return of the patient was required by the professional for a follow-up of the dental implants, however, the same patient did not appear during a period of three years, not returning for the maintenance consultations previously set up.

When she returned after three years from the implants installation, she complained of pain, bad taste in the mouth and bad smell. She associated it to the distal implant on the right side, in the region equivalent to where the elements 43 and 44 met. In relation to the prosthesis, it presented an expulsion floor that permits in an efficient way the removal of residues and bacterial plaque, nevertheless, it contained a certain plaque accumulation and presented calculation in its inferior part.

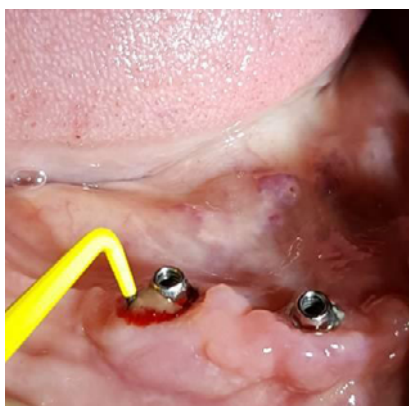


Picture 3. Occlusal registration with demarcation of occlusion points in the elements 31, 41, 43 and 44

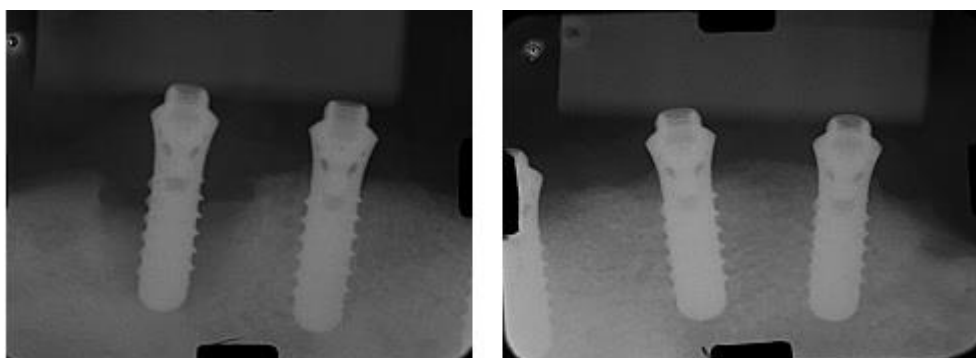
The professional conduct before such claiming was to perform a radiographic and survey examinations in the region where bone loss around the implant was observed, associated with the bad taste and discomfort by the patient, which led her to search for treatment again. After the removal of the prosthesis in the poll exam, an exacerbated deepness was observed, achieving about 80% of the 12 mm implant. In the poll exam, bleeding and suppuration were also noticed.



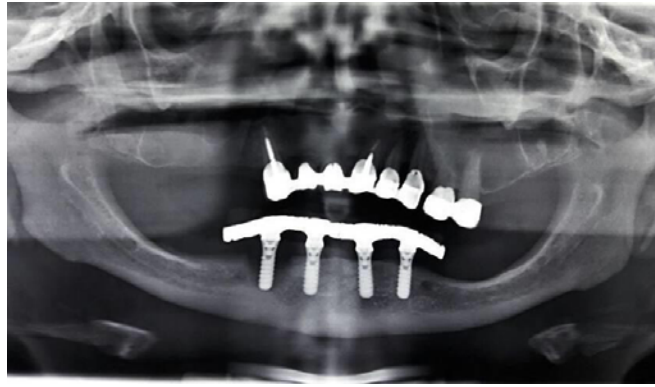
Picture 4. Detail of the probe PCP 12 Colorvue – Hu-Friedy



Picture 5. Peri-implant site survey evidencing deepness in the survey, bleeding and suppuration



Pictures 6 and 7. Periapical radiographs of the implants evidencing the severe bone loss of the implants in the region of the element 44

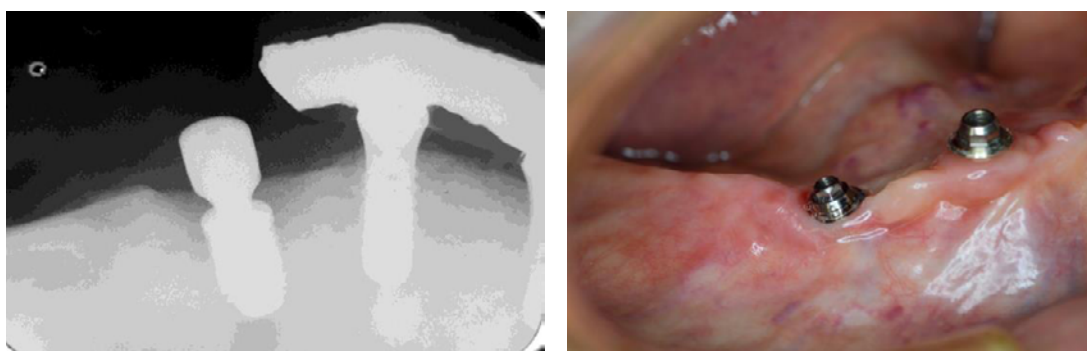


Picture 8. Panoramic radiography indicating bone absorption in the implant in the region of the element 34 after three years in function

Considering the extensive bone loss in the dental implant, it was decided that the best treatment would be its removal and the surgical site curettage for posterior new implant, as soon as the site is totally repaired. The prosthesis the patient used was cut out to avoid the excessive occlusion forces would compromise the three remaining implants, and after two months, a new implant was installed in the region of the removed implant.



Pictures 9 and 10. Implant after surgical removal and the surgical curettage site for posterior implantation



Pictures 11 and 12. Implant placed two months after occlusal

The new implant installed followed the protocol of a time, unique stage. The same was installed and, immediately, the pillar on the implant was exposed in the mouth area so that it avoided a second surgical time, that is, a reopening surgery.

Discussion

Based on the clinical findings related to the interaction of the implant with the peri-implant tissues elucidated in this case and the data collected, the factors that led to the maintenance failure of the osseointegration were: the inefficient hygiene that favored the accumulation of bio film around the implants components and the prosthetic devices, which led to its loss.

According to the studies^{8,11}, the principal reasons for failure in the implants are factors that are related to the presence of affections that interfered in the quality of the bone tissue, in the process of remodeling and neoformation and the local conditions of the periodontal tissues, conditions of the hygiene of the patient, as well as the present of the installed periodontal illness.

The clinical peri-implant evaluation is primordial in the determination of the staging of the disease, determination of the health conditions of the tissues and the implant. Maneuvers as depth measurement, bleeding, suppuration and radiographic evaluation work as parameter for the therapeutic planning and formulation of the most appropriate approach for the case.

The typical signs and symptoms of the peri-implantitis can be described in the following way: bone defect in crater form; Bleeding and/or suppuration in probing; Peri-implant depth survey >4 mm. A trustworthy diagnosis of the peri-implantitis demands the simultaneous presence of all signs and symptoms indicated above. A unique characteristic is not enough for the diagnosis.

Although there is not a consensus about the ideal therapy before the peri-implant diseases, many authors indicate the use of therapies combined with the use of antiseptic substances (Chlorhexidine) and antimicrobial agents (Metronidazole and Amoxicillin), that when correctly applied, they favor the control of bone loss around the implant, and consequently, its maintenance in function.¹²

The success of the rehabilitation is due to the evaluation of the clinical conditions: functionality, pain absence, mobility and healthy aspect of the peri-implant tissues. Another criteria of great importance

is the level of satisfaction of the patient. According to the studies^{10,11}, the principal factors related to the failure in the implantation protocols are: poor bone tissue concerning quantity and quality, traumatic surgery, occlusion overload, structural conformation of the implant unfavorable and also presence of deleterious habits (smoking and use of anti reabsorbing drugs).

Many factors act in an isolated way or together favoring or preventing the osseointegration. The professional must be alert to these conditions for the definitions of the safest planning and with great predictability, preventing the complications and morbidity of the patients. The success of the therapy involves a broad knowledge for the achievement and maintenance of the osseointegration, correlating the systemic and local conditions favorable to the installation of the implant.¹⁰

For the case approached in this study, taking into consideration the level of commitment of the implant, the symptomatic presented by the patient and the instability of the implant-supported prosthetic part, we opted for the removal of the implant and application of the regenerative technique (graft) with attendance of bone repair and posterior installation of a new implant.

Final remarks

Based on the case approached here, we can conclude that the factors that can lead to the commitment and, consequently, to the loss of an implant osseointegrated, are dependent on the interaction of the receptive tissues with the implant and its components, and all this attached to the habit of oral hygiene. In this context, it is necessary a rough management and diagnosis, through the directed anamnesis and clinical and radiographical exams to evaluate the installation and progression of the peri-implant pathologies.

However, with the application of an effective therapeutic for the obtainment of the control of peri-implant disease, the bone and mucosa tissues can be reestablished and become ready to receive new implants with no harm to the osseointegration process.

Although the peri-implantitis is similar to the periodontitis, the differences existent between the periodontal and peri-implant tissues suggest the necessity of further studies concerning the methods of diagnosis and treatment of the peri-implantitis.

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