

Prosthetic resolution of malpositioned dental implants with 5-year follow-up

Resolução protética em implantes dentários mal posicionados com 5 anos de acompanhamento

Resolución protésica en implantes dentales mal posicionados con seguimiento de 5 años

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Abstract

The poor positioning of dental implants directly influences the functional and esthetic result of the implant-supported prosthesis. And as an alternative to correcting the positioning, prosthetic components such as prefabricated and customized abutments may be used. The current study aims to present an alternative resolution for malpositioned dental implants, with the hopes of minimizing damage to osseointegration and gingival tissues. A 53-year-old female patient had two implants in regions 11 and 21 with a height discrepancy of approximately 7 mm between them. The following treatment plan was proposed: the manufacture of two metal-free crowns and the use of a customized abutment to correct the height of the implant. A metal UCLA (Universal Long Castable Abutment) was used as a healer. The case includes 5 years of follow-up. It can be concluded that the use of a customized abutment as a prosthetic solution for an implant installed far below the cervical region of the tooth presented satisfactory esthetic and functional results with peri-implant bone maintenance and long-term gingival health.

Descriptors: Dental Implantation; Dental Prosthesis, Esthetics, Dental.

Resumo

O mal posicionamento dos implantes dentários influencia diretamente o resultado funcional e estético das próteses implantossuportadas. Como alternativas para corrigir o posicionamento, componentes protéticos, como pilares pré-fabricados e personalizados, podem ser usados. O presente estudo tem como objetivo apresentar uma resolução alternativa para implantes mal posicionados, com a esperança de minimizar os danos à osseointegração e aos tecidos gengivais. Paciente do sexo feminino, 53 anos, com dois implantes nas regiões 11 e 21, com discrepância de altura de aproximadamente 7mm entre eles. O seguinte plano de tratamento foi proposto: a fabricação de duas coroas sem metal e o uso de um pilar personalizado para corrigir a altura do implante. Um metal UCLA (Universal Long Castable Abutment) foi usado como cicatrizador. O caso possui 5 anos de acompanhamento. Pode-se concluir que o uso de um pilar personalizado como solução protética para um implante instalado muito abaixo da região cervical do dente apresentou resultados estéticos e funcionais satisfatórios com a manutenção óssea periimplantar e a saúde gengival em longo prazo.

Descritores: Implantação Dentária; Prótese Dentária; Estética Dentária.

Resumen

El mal posicionamiento de los implantes dentales influye directamente en el resultado funcional y estético de la prótesis soportada por implante. Y como alternativa a la corrección del posicionamiento, se pueden utilizar componentes protéticos como pilares prefabricados y personalizados. El presente estudio tiene como objetivo presentar una resolución alternativa para implantes mal posicionados y profundamente posicionados, con la esperanza de minimizar el daño a la osteointegración y los tejidos gingivales. Una paciente de 53 años tenía dos implantes en las regiones 11 y 21 con una discrepancia de altura de aproximadamente 7 mm entre ellos. Se propuso el siguiente plan de tratamiento: la fabricación de dos coronas sin metal y el uso de un pilar personalizado para corregir la altura del implante. Se usó un UCLA (Universal Long Castable Abutment) como un sanador. El caso incluye 5 años de seguimiento. Se puede concluir que el uso de un pilar personalizado como solución protésica para un implante instalado muy por debajo de la región cervical del diente presentó resultados estéticos y funcionales satisfactorios con mantenimiento óseo periimplantario y salud gingival a largo plazo.

Descritores: Implantación Dental; Prótesis Dental; Estética Dental.

INTRODUCTION

The high survival rate of dental implants, together with the satisfactory esthetics and function of implants, has made them an increasingly used option in dentistry^{1,2}. The planning of each case should always include the expectations of the patient based on the therapeutic possibilities available, taking into consideration that, currently, reverse planning, the use of surgical guide and computerized tomography, are considered fundamental for the diagnosis, planning and execution of cases^{1,3,4}.

When rehabilitation with dental implants is in an esthetic area, especially in the maxillary arch, there are a number of challenges^{5,6}. Among them, the position of the implant mimicking the position of the tooth is fundamental to ensure an adequate emergence profile for the final restoration^{5,6}. If the implants are poorly positioned, the esthetic result is often compromised^{2,5,6}.

Dental implants are poorly positioned for various reasons, such as anatomical limitations, bone resorption, inexperience of the professional, non-use

of a surgical guide and reverse planning^{1,7-9}. Some clinical situations with poor positioning can be solved with the use of prosthetic components such as UCLA (Universal Long Castable Abutment) and angled intermediate abutments, marginal fit of porcelain crowns, artificial gingiva or secondary grafts⁷⁻⁹. Regardless of the component used, the final result must meet esthetic requirements and allow for oral hygiene^{3,10,11}. In extreme cases of malposition, surgical removal of the implant is necessary, usually causing bone and soft tissue defects and increasing the complexity of case resolution^{8,12}.

In this context, the present study aims to show an alternative resolution for implants that are poorly positioned and deeply installed, in order to minimize damage to osseointegration and gingival tissues.

CLINICAL CASE

A 53-year-old female patient attended the dental office after having undergone installation of

two implants in regions 11 and 21. With the aid of a radiographic examination, it was verified that there were two Revolution External Hex implants (S.I.N. Implant System, Brazil), which presented a diameter of 5.0mm and length of 11mm in element 11 and 4.0mm by 11mm long in element 21 and a height discrepancy of approximately 7mm (Figure 1a). The proposed initial treatment plan was to perform esthetic-functional rehabilitation, since the patient had several dental absences in the buccal cavity, but due to previous trauma the patient chose only to resolve the installed implants, rather than removing them. Thus, two metal-free crowns with zirconia structure were proposed. The greatest difficulty in the case was the selection of the prosthetic component, considering that the implant was installed far below the cervical region of the teeth. Thus, during the reopening procedure a metallic UCLA was used as a healer of 21 (Figure 1b), due to the absence of scar tissue with sufficient height to perform its function (Figure 1c). For the preparation of the prosthesis, a customized abutment was used with its end in the correct region for preservation of periodontal health (Figure 1d and 1e).



Figure 1: Initial radiography (a); Radiography with titanium UCLA in position (b); Intral-oral aspect with titanium UCLA (c); Machined abutment with coping in duralay (d); Radiography with the installed machined abutment (e).

After installation of the prostheses, the patient was satisfied with the esthetic-functional result, leading to the end of the case in an atraumatic way, that is, without the need to remove the implant (Figure 2a, 2b and 2c). After 5 years, the patient returned to the clinic presenting peri-implant bone maintenance and gingival health, with the esthetic-functional result maintained, thus, evidencing that the alternative chosen for this case was successful (Figure 2d and 2e).

DISCUSSION

In all dental planning, in order to reach the goal of the final treatment, it is important to approach the patients' expectations^{3,4}. In implantology, osseointegration has always been one of the

parameters evaluated to determine success of the treatment; however, currently, due to the demands of the patient and the clinician, in parallel to the great variety of techniques and materials available, the esthetic harmony between the white and red has become one of the evaluated parameters of success^{5-7,13}. The position of the marginal gingival tissue, the emergence profile and the preparation of the prosthesis over the ceramic implant mimicking the natural tooth, result in a final treatment with the desirable characteristic of natural appearance¹³. In this context, the present case aimed to preserve osseointegrated implants installed in an unfavorable position and to provide function and esthetics through prosthesis over an implant with customized abutments.



Figure 2: Intraoral aspect with coping in duralay (a); Final aspect of the metal-free crowns with zirconia structure (b); Final radiographic aspect (c); Final Radiographic appearance after 5 years (d); Complete smile, 5 years after treatment (e).

For the cases of implants with unfavorable positioning there are some prosthetic components that aid in rehabilitation, such as the personalized abutments that positively favor esthetics and preservation of bone and gingival tissue; and prefabricated and preparable abutments which, despite having certain limitations, have low costs, require a simple technique and can be used satisfactorily in a wide variety of cases⁸⁻¹⁰. However, these components are usually used for correcting implant angulation and there are no components available for correcting implants installed far below the cervical region of the teeth.

Maintenance of peri-implant bone tissue and gingival tissue health are indicative of the success of implant prostheses, and in cases of poorly positioned implants the occurrence of mucositis or peri-implantitis are common¹⁴. Due to this, selection of

the prosthetic component, definition of end height and the anatomy of the crown should allow for correct oral hygiene by the patient, thus guaranteeing the long-term health of the peri-implant tissues^{13,14}. During preservation, the plaque index, clinical depth of probing around the implants, and the radiographic and tomographic aspects should be evaluated¹⁵.

CONCLUSION

The use of a customized abutment as a solution for prosthetic implant located far below the cervical region of the tooth presented satisfactory esthetic and functional results with peri-implant bone maintenance and long-term gingival health.

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CONFLICTS OF INTERESTS

The authors declare no conflicts of interests.

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