ARTIGO ORIGINAL

ORAL REHABILITATION WITH OVERDENTURE AND O'RING SYSTEM : A SIMPLIFIED APPROACH IN IMPLANTODONTICS: CASE REPORT

Reabilitação oral com overdenture e sistema o'ring: uma abordagem simplificada em implantodontia: relato de caso

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ABSTRACT

Rehabilitation with overdentures has been consolidated as an effective and cost-effective strategy for the treatment of edentulous patients, aiming to improve the stability, retention and functionality of removable complete dental prostheses. In addition, this type of rehabilitation favors cleaning and maintenance when compared to fixed rehabilitations on implants, since they can be removed by the patient for cleaning. This study aims to describe a clinical case of a female patient, 61 years old, who sought care at the dental clinic of the Federal University of Ceará, Sobral campus, in need of oral rehabilitation. After anamnesis and clinical and complementary examination, it was observed that she had chewing difficulties, significant loss of lip support, compromising the patient's aesthetics and self-esteem. Therefore, a rehabilitation with 5 implants and an overdenture prosthesis with an O-ring system was planned . The rehabilitation resulted in a significant improvement in the patient's functionality, aesthetics and comfort. Furthermore, the system is low cost when compared to other retention systems, and offers easy adjustment and maintenance. It is concluded that rehabilitation with overdentures can be a viable and relatively affordable solution for fully edentulous cases, and that it considerably improves the quality of life of patients.

Keywords: Dental prosthesis, rehabilitation, dental implants.

RESUMO

A reabilitação com overdentures tem se consolidado como uma estratégia eficaz e de baixo custo para o tratamento de pacientes desdentados, visando melhorar a estabilidade, retenção e funcionalidade de próteses dentárias totais removíveis. Além disso, esse tipo de reabilitação favorece a limpeza e manutenção quando comparada às reabilitações fixas sobre implantes, uma vez que podem ser removidas pelo paciente para limpeza. Este estudo tem como objetivo descrever um caso clínico de uma paciente do sexo feminino, 61 anos, que procurou atendimento na clínica odontológica da Universidade Federal do Ceará, campus Sobral, com necessidade de reabilitação oral. Após anamnese e exame clínico e complementar, observou-se que ela apresentava dificuldades de mastigação, perda significativa do suporte labial, comprometendo a estética e a autoestima da paciente. Portanto, foi planejada uma reabilitação com 5 implantes e uma prótese overdenture com sistema O-ring. A reabilitação resultou em melhora significativa na funcionalidade, estética e conforto da paciente. Além disso, o sistema é de baixo custo quando comparado a outros sistemas de retenção, e oferece fácil ajuste e manutenção. Conclui-se que a reabilitação com sobredentaduras pode ser uma solução viável e relativamente acessível para casos totalmente desdentados, e que melhora consideravelmente a qualidade de vida dos pacientes.

Palavras-chave: Prótese dentária, reabilitação, implantes dentários.

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INTRODUÇÃO

Oral rehabilitation is currently an area of dentistry of utmost importance and plays a vital role for many patients who suffer from tooth loss. Many of these patients reach the stage of edentulism, which is total tooth loss, causing several setbacks, such as aesthetic, psychological and functional sequelae, consequently considerably affecting the individual's quality of life[1].

It is well known that oral rehabilitation is complex and can completely change a patient's life. Even the type of prosthesis a person uses can bring different results, both aesthetically and functionally. Completely edentulous individuals who use conventional prostheses often end up removing from their diet several foods that provide essential nutrients for a healthy diet, because they prefer foods that are easier to ingest and that avoid the use of chewing. This can generate several deleterious changes to the individual, both nutritionally and to the stomatognathic system, such as atrophy of the muscles involved in chewing and damage to the functions of the tongue[2].

Faced with this problem, some possibilities emerge as solutions, such as conventional removable total dentures, which are a more accessible option, given their low cost. However, this type of prosthesis has some functional limitations, as they are only mucous-supported and have relatively low retention, which may indicate a reduced cost-benefit when compared to other possibilities. Thus, many edentulous patients are unable to adapt to this type of prosthesis, either due to the discomfort generated by low retention or even due to insecurity and fear that the prosthesis will not be stable in social situations and in daily work[2].

A very notable alternative are implant-supported prostheses, which have several advantages when compared to conventional removable total dentures, especially when it comes to retention and stability. An implant-supported prosthesis provides the patient with greater comfort and retention, thus being a more interesting and cost-effective option[3].

There are several different types of implant-supported prostheses for edentulous patients, among which we can mention fixed total prostheses, which are generally installed on 4 to 6 dental implants and have the greatest retentive power among existing prosthetic rehabilitations[3,4].

Another possibility is the overdenture prosthesis , which, unlike fixed prostheses, can be removed by the patient for cleaning, facilitating the process of cleaning the prosthesis and the peri-implant areas. Overdentures have several types of fixation systems, and can be fixed to the implants by means of " clips ", "bars" or " O-ring " systems , with the O-ring system being the simplest and least expensive. The O-ring system basically works as a male/female system. The male part of the component is connected to the implant, and is characterized by a type of small rod with a sphere at its end, into which the

female part, which has a rubber ring, a type of capsule, which is fixed to the prosthesis, will fit. This makes it easier, if there is a need to replace the rubber ring, which is the most common complication associated with this system, this change can be performed simply, without the need to change the entire system[3,5,6].

The objective of this work is to report a clinical case rehabilitated by means of a prosthesis of the overdenture type , where the o-ring system was used , presenting the step-by-step process of making it and its benefits.

This study was duly approved by the Research Ethics Committee of the Vale do Acarau State University (Opinion: 4,138,242), in accordance with Resolution No. 466/12 of the National Health Council. This is a report of a clinical case attended in the "Integrated Clinic II" Discipline of the Federal University of Ceará - Sobral Campus , attended by two undergraduate students, Lucas de Araújo Albuquerque and Antônio Ednardo de Souza Filho, and supervised by professors Marcelo Magalhães Dias and Poliana Lima Bastos.

Case description

A 61-year-old female patient was seen at the dental clinic of the Federal University of Ceará, Sobral campus, reporting masticatory deficiency, dissatisfaction with oral aesthetics and a desire to be rehabilitated with implants. During clinical examination, it was observed that, in the upper arch, the patient had teeth 13, 12, 11, 21, 22 and 23 (Figure 1).

Figure 1: Initial clinical situation.

After anamnesis and clinical and complementary examination, it was observed that she had chewing difficulties, significant loss of lip support, compromising the patient's aesthetics and self-esteem. The different rehabilitation possibilities were discussed with the patient, and finally, a rehabilitation with 5 implants and an overdenture prosthesis with an o-ring system was planned .

After the planning stage, the existing teeth were extracted and a temporary prosthesis was installed (Figure 2).

Figure 2: Extractions of the remaining teeth.

After healing of the alveoli and a waiting period of 4 months, surgery was performed to install 5 external hexagon implants, 3.5 mm x 10 mm (Neodent®, Curitiba, Brazil). After the osseointegration period, surgery was performed to open and install the prosthetic components (Figures 3 and 4).

Figure 3: Implants with *o-rings* (male component) installed.

Figure 4: Radiograph after installation of prosthetic components.

Overdenture type prosthesis associated with the system was planned for rehabilitation. retention with o-rings . Initially, an initial upper and lower molding was performed with alginate (Maquira®, Maringá, Brazil) and study models were made. Then, an individual mold was made

and the functional molding was performed, for this, the material used was light condensation silicone paste (Yller®, Pelotas, Brazil). And later, test bases and orientation planes in wax were made on the working model.

In a subsequent consultation, the orientation plan was individualized by adjusting the lip support, buccal corridor, resting line and lip curvature, in addition to adjusting the occlusal plane and reference lines. This was followed by recording the facial arch and intermaxillary relationships, and assembly in a semi-adjustable articulator. In the same session, the color of the artificial teeth was selected, with color 66 (VIPI®, São Paulo, Brazil) being chosen.

During the next appointment, the teeth were tried in and the assembly was checked, following criteria established in the orientation plans (vertical dimension, lip support, buccal corridor, occlusal plane and reference lines), and the patient's satisfaction with the color, shape and size of the teeth was assessed. The patient was very satisfied, and the gum color selection step was followed, using a personalized scale (VIPI®, São Paulo, Brazil), and the color selected was medium pink. After this, the prosthesis was sent to the laboratory for acrylic coating.

Once the acrylic coating process was completed, the patient returned for the prosthetic rehabilitation installation stage. At this stage, the quality of the acrylic coating and its adaptation to the mouth were first assessed. Next, the rubber rings were positioned on the prosthetic components, the O-rings were mapped with prophylactic paste, and the prosthesis was subsequently worn in the demarcated region, leaving enough space for future accommodation of the females of the system. After ensuring that there was enough space, the female was captured by adding acrylic resin (Figures 5 and 6).

Figure 5: Addition of acrylic resin to capture the components (females).

Figure 6: Prosthesis after capture, before final finishing.

Occlusal adjustments were made and were given to the patient (Figure 7). instructions on use, hygiene and maintenance

Figure 7: Occlusal Adjustment.

Clinical follow-ups were performed after 7, 15 and 30 days for minor adjustments. Finally, a good adaptation of the prosthetic rehabilitation was observed, with no presence of tilting, trauma to the oral structures or any other significant alteration. The patient was satisfied with the result and reported an increase in the improvement in the quality of chewing, comfort and aesthetics (Figures 8 and 9).

Figure 8: Installed Prosthesis (front view)

Figure 9: Installed prosthesis (profile)

DISCUSSION

There is a consensus in the literature that there is a harmonious set of factors that is fundamental for good aesthetic and functional restoration of implant rehabilitations. Factors such as the need for retention, lip support, interocclusal space, hygiene and cost are essential to be discussed in the planning of total implant rehabilitations, to define which option is most appropriate for the clinical case[7,8].

Within removable rehabilitations on implants, although some studies defend the choice of the bar- clip system, due to its greater retentive power, the o-ring system was chosen in this case, due to its more accessible cost, since there is no need to manufacture the bar, as the system allows fitting in isolated implants, in addition to being a simple system, in addition to presenting favorable retention and stability[9,10,11,12].

Another factor of vital importance for choosing the overdenture in this case was the recovery of lip support, an aesthetic factor of great relevance for patients. In the present study, rehabilitation with an overdenture was chosen instead of a fixed protocol prosthesis, mainly due to its superior capacity for recovery of lip support[13].

As discussed in this study, some factors must be taken into consideration when choosing the system, such as motor coordination, for example, key factors, as they are directly involved with hygiene. Hygiene represents an essential factor for the success of osseointegrated implants, and can be performed in several ways and using a variety of devices. Therefore, the use of isolated implants and the indication of removable prostheses, such as the modality chosen in this report, are the best choices in cases of patients with motor difficulties or manual dexterity, as they are easier to clean when compared to other systems[11,14].

Several authors argue that the patient must be constantly advised on care after the installation of prostheses on implants, and that clinical follow-ups are essential for adjustments, maintenance of components and monitoring of implants[15,16,17,18].

Therefore, weekly adjustments were made over the course of a month for monitoring, until no further adjustments were necessary. The overdenture

prosthesis used in this report It was presented as a safe and effective technique, corroborating many studies carried out, which show that these prostheses promote improved retention, stability and function of oral rehabilitations, corresponding to the satisfaction of their wearers, in addition to preserving bone structures and improving the quality of life of patients[19,20].

Another very relevant factor in the subject of implantology is cost. Fixed total rehabilitations on implants are usually more expensive when compared to overdentures , and therefore, they are often not the first choice of patients, exactly what was observed in this report, as the patient ended up deciding to do the rehabilitation with less cost-benefit.[21].

It is well known that oral rehabilitation can completely change a patient's life, and even the type of prosthesis can bring different results, both aesthetically and functionally. Completely edentulous individuals who use conventional prostheses often change their diet due to difficulty chewing. This can cause several harmful changes to the individual, both nutritionally and to the stomatognathic system, such as atrophy of the muscles involved in chewing and damage to the tongue's functions[2]. And in this study, this relationship between the type of prosthesis and quality of life was clearly observed. After the installation of the prosthesis on implants, a significant improvement in chewing, quality of diet, aesthetics and self-esteem was observed.

CONCLUSION

It is concluded that rehabilitation with overdentures using the o'ring system can be a viable, relatively accessible and simplified solution for totally edentulous cases, and that it considerably improves the masticatory function, aesthetics and quality of life of patients.

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