CASE REPORT

Treatment planning in full lower arch immediate-loading prosthesis associated to conventional upper prosthesis

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Abstract

Full arch implant-supported prostheses following Branemark protocol are widely used for oral rehabilitation of people with edentulous jaws and associated to the full upper conventional prosthesis. Their indication requires that the dental surgeon be prepared for prosthetic-surgical approach and planning. Therefore, this work aims to present the planning and execution of a lower arch implant-supported immediate-load prosthesis associated to a conventional upper prosthesis through a clinical case report. Previous planning on the installation of the implants aims at the proper fixation after defining the prosthesis design. Predictability of results and patient satisfaction demonstrate how important this planning is.

Keywords

Dental implants, immediate load on dental implant, prostheses and implants

Introduction

Full removable prostheses have been long used as the main treatment for total edentulism. With the coming of dental implants, a fixed solution for full prostheses has become available, providing more comfort, stability, and an increased masticating capacity to patients. However, surgical stage and treatment expenses are factors that interfere in the acceptance of this treatment.

Several authors have defended the use of removable or fixed implant-supported prostheses, especially on the jaw arch, as the conventional lower prosthesis does not ensure a good masticating capacity due to its lack of stability. Successful installation of lower implants between mental foramina brought the concept of immediate loading, as long as the patient had enough bone height and any micro-movement removed during the process of cicatrization process. Nowadays, immediate loading on mandibular implants are widely used, and it presents high rates of success.

Prior to the installation of the implants, the case requires a prosthetic preparation. Thus, it is necessary to reestablish the functionality of the occlusal scheme through conventional clinical procedures during the rehabilitation of the edentulous patient. Planning must be careful, using the same clinical procedures as in the conventional total prosthesis, in order to define its ideal position, shape, and esthetics; this will guide the surgical procedures of the next stage, namely, the implant installation. Planning requires proper dental anamnesis and clinical exam, mounting study models on a semi-adjustable dental articulator, diagnostic wax-up, and imaging exams, aiming to restore dental function and aesthetics to the patient. From diagnostic wax-up, it is possible to obtain the surgical guide and localization of metal structure or bar in this case of prostheses.

Therefore, this work aims to present planning and execution of a lower arch implant-supported immediate-loading prosthesis following Branemark protocol, associated to a conventional upper prosthesis.

Case Report

A female patient searched for oral rehabilitation treatment due to discommodity and aesthetical dissatisfaction with her
full upper and lower arch prostheses. Clinic and radiographic examinations revealed upper alveolar ridge with good bone height and lower alveolar ridge with severe reabsorption, as well as traumatic ulcer due to the lack of stability of the lower prosthesis [Figures 1 and 2]. After discussing treatment options, it was opted to apply the rehabilitation with lower arch implant-supported immediate-loading prosthesis following Branemark protocol, associated to a conventional upper prosthesis.

Treatment began with pre presurgical phase, in which all the stages from making prosthesis to mounting artificial teeth were performed. Upper and lower molds were made in a semi-adjustable dental articulator, using wax-up models adjusted in the buccolingual position, which defined labial support and prosthesis esthetics. Intermaxillary registration centric relation (CR) was later obtained, defining occlusal vertical dimension (OVD) and dental mounting. A test was performed to check aesthetics, CR, and OVD [Figures 2 and 3].

Afterwards, the lower arch prosthesis was duplicated in colorless acrylic resin in order to obtain the multifunctional surgical guide. This is a guide for surgery, registration, and individual molding tray [Figure 4]. The upper prosthesis was then acrylized, working as a guide for the occlusal registration to establish the correct position of the surgical guide during the installation of the implants [Figures 5 and 6].

Surgery consisted of a single intervention with the placement of four implants in the anterior part of the jaw, in between the mental foramina [Figure 7]. Transferents were then adapted to make the transfer molding with the aid of the multifunctional guide and molding with addition-cured silicone [Figure 8].

In the working model, a metal bar was prepared, upon which the teeth were placed, proved in the mouth to adjust occlusion and esthetics and verify adaptation between metal structure and prosthetic intermediates. After acrylization, prostheses were placed 72 h after surgery [Figures 9-12].

**Discussion**

Full implant-supported prostheses are able to render function, aesthetics, and comfort to the toothless patient, especially when ridges were severely reabsorbed; in these cases, a conventional prosthesis is not able to confer good retention and stability. Branemark’s protocol orientates toothless patients’ rehabilitation through full lower arch prosthesis on implants and full conventional upper denture. Scientific evidence justify the use of this technique. However, they emphasize that this procedure cannot be considered a replacement for the conventional method, but an alternative treatment for cases in which its principles are well indicated. They further suggest that the decision about immediate loading must be taken during the surgical procedure, being directly related to the clamping of the implant.

It is possible to obtain satisfying aesthetical and functional results with immediate load protocol, with the advantage of predictability, reduction of clinic time spent in adjusting prostheses, elimination of a long period for cicatrization, and use of temporary removable prostheses and their multiple relines.
In this context, a treatment associating full conventional prostheses to implant-supported ones implicates a solid planning, once it aims to not only replace teeth, but also harmonize patient’s facial aspect. Therefore, it is necessary to respect clinic aspects in order to achieve success, allowing a predictable result. In regard to the implant-supported prosthesis, it is essential that the patient be prepared (concerning prosthetics) before surgery.\textsuperscript{(7,12)} If not so, an unsuccessful procedure may lead to issues with position and angle of the implants, as well as lack of space for prosthetic elements that will invariably have a negative impact on the result.

First dental evaluation and correct diagnosis are influential factors for the success of these rehabilitations. Previous preparation defines the ideal position of the implants, as well as the orientation and angle of the implant.

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as the orientation of the prosthetic procedures, resulting in higher predictability in the production of implant-supported immediate loading prostheses.

**References**