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CASE PRESENTATION

Clinical case of conventional bimaxillary total prosthesis

Caso clínico de prótesis total bimaxilar convencional

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ABSTRACT

The Conventional Total Bimaxillary Prosthesis is an artificial appliance that allows us to replace the lost dental organs and underlying tissue caused by factors such as: caries, periodontal disease or professional iatrogenic presenting alterations in their masticatory, phonetic, aesthetic and psychological functions in patients with edentulism. Among the treatment methods for this clinical case we have the elaboration of a Conventional Total Bimaxillary Prosthesis, carried out with individual trays and myofunctional impressions. The aim of this article is to describe the most efficient and conservative treatment method to return to the total edentulous patient a correct morphophysiological function and allowing the recovery of dentofacial esthetics and functions such as mastication, swallowing and phonation. Through the study of 17 scientific articles we investigated the different treatments performed for the rehabilitation of patients with bimaxillary edentulism. The results obtained that we found in 20 articles indicated that the most conservative treatment such as mucosa-supported prosthesis restores self-esteem in total edentulous patients. It was concluded that these conservative treatments entail less complications by managing an adequate occlusion preserves the bone over time.

Keywords: Dentures; Prosthesis; Dentofacial.

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RESUMEN

La Prótesis Total Bimaxilar Convencional es un aparato artificial que nos permite reemplazar los órganos dentales perdidos y tejido subyacente ocasionados por factores como: caries, enfermedad periodontal o iatrogenia profesional presentando alteraciones en sus funciones masticatorias, fonéticas, estéticas y psicológicas en pacientes con edentulismo. Dentro de los métodos de tratamiento para este caso clínico tenemos la elaboración de Prótesis Total Bimaxilar Convencional, llevada a cabo con cubetas individuales e impresiones miofuncionales. El objetivo del presente artículo es describir el método de tratamiento más eficiente y conservador para devolver al paciente edéntulo total una correcta función morfofisiología y permitiendo la recuperación de la estética dentofacial y las funciones como la masticación, la deglución y la fonación. Mediante el estudio de 17 artículos científicos se investigaron los diferentes tratamientos que se realizaron para la rehabilitación de pacientes con edentulismo bimaxilar. Los resultados obtenidos que encontramos en 20 artículos indicaron que el tratamiento más conservador como las prótesis mucosoportadas devuelve la autoestima en pacientes edéntulos totales. Se concluyó que estos tratamientos conservadores conllevan menos complicaciones manejando una adecuada oclusión preserva el hueso en el tiempo.

Palabras Clave: Dentaduras; Protesis; Dentofacial.

INTRODUCTION

The conventional bimaxillary total prosthesis allows the rehabilitation of an edentulous patient by replacing the missing pieces in their entirety, prevents severe bone resorption, restores the loss of vertical dimension, reintegrates the masticatory function, and therefore aesthetics. Edentulous patients have physiological, anatomical, social, aesthetic and phonetic needs, which prevent them from having a correct morphophysiology, causing feeding problems, poor chewing function and negatively influencing the psychological health of patients. The causes of total edentulism are usually related to the social, economic and biological conditions of the person, being an avoidable problem that affects the quality of life, especially in the most vulnerable mature population, which is the elderly. [1,2,3]

The prosthetic bases of total dentures offer three fundamental aspects: support, retention and stability, acrylic bases still continue to be an acceptable option to meet the three requirements, however, sometimes retention and stability are a problem in very ridges. atrophied in which endosseous implants are very acceptable alternatives to fix an overdenture. Occlusion in the rehabilitation of the completely edentulous is essential as it will allow the retention and stability of the prosthetic bases to be met. The different occlusal schemes have proven to be useful depending on the case to be treated. However, the bilateral balanced scheme still continues to be the main scheme. which is used in most cases of total edentulism. [4,5,6]

The purpose of the presentation of this clinical case is to demonstrate how a conservative oral rehabilitation treatment, using the conventional bimaxillary total prosthesis, without invasive techniques, can offer the totally edentulous patient a better quality of life, improving their oral health, facial aesthetics and avoiding occlusal or TMJ problems; Above all, the conventional complete prosthesis continues to be the best option for the majority of patients, especially when there are economic limitations.

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Therefore, a case is presented where it was necessary to make a conventional total prosthesis, describe the clinical steps in the creation of a conventional total prosthesis and ensure that the conventional total prosthesis adapts to the patient's current conditions.

CASE PRESENTATION

The clinical case of an 81-year-old female patient is reported, with no apparent pathologies, currently asymptomatic, who attends the Postgraduate Oral Rehabilitation service at the University of the Americas UDLA to be evaluated, since her old prostheses are out of adaptation. and it does not have good stability, support and poor aesthetics. She mentions that she wants to improve the aesthetics of her smile. The extraoral clinical examination(Figura 1) shows facial type: facial dolic; midline: symmetrical; face proportions: asymmetrical; greater adiposity and muscularity on the left side compared to the right side; normal to oily skin; labial closure: normal; There is no deviation of the chin and a slightly deviated midline to the right.

At the intraoral clinical examination (Figure 2) upper occlusal view and lower occlusal view with presence of preserved bony ridges, without apparent pathologies.

On radiographic examination (Figure 3) total bimaxillary edentulism was observed, with a Seibert class II upper and lower alveolar ridge.

Fig. 1 Extraoral photographs of the front.

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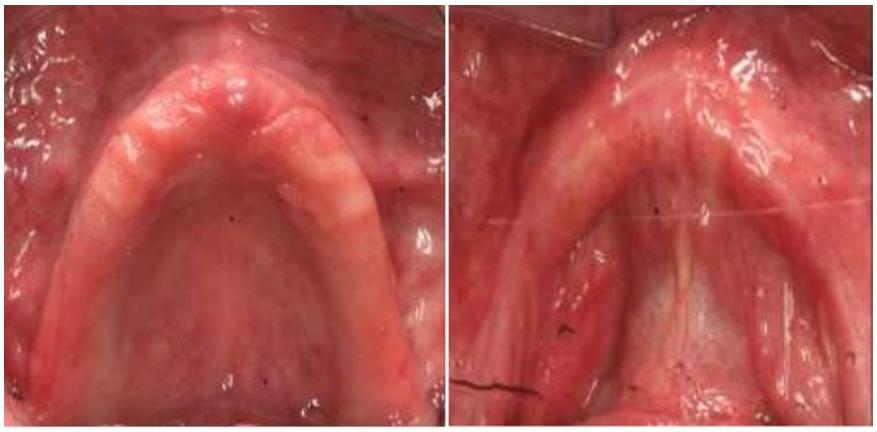

Fig. 2 Upper Occlusal View and Lower Occlusal View

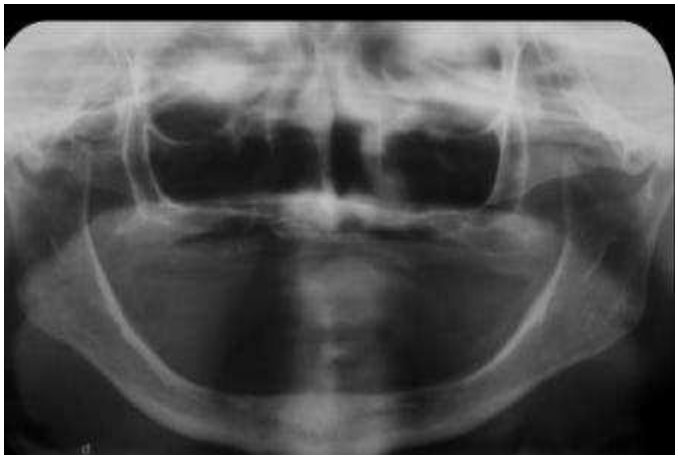

Fig. 3 Radiographic examination.

Diagnosis

Total bimaxillary edentulism was diagnosed, with a Seibert class II upper alveolar ridge and a Seibert class II lower alveolar ridge.

Treatment Plan

Preparation of conventional total prosthesis with a Bilateral Balanced tooth scheme. Extraoral photographs of the forehead are taken (Figure 4), with the lip at rest and with a wide smile.

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Fig. 4 Extraoral profile photographs.

Extraoral profile photographs (Figure 4) with the lip at rest and smiling, showing a decreased vertical dimension and an acute nasolabial angle of less than 90°.

CLINICAL SEQUENCE OF THE PREPARATION OF CONVENTIONAL PROSTHESIS.

At the first appointment, the upper and lower primary impression was taken to prepare the diagnostic models, with which the individual trays were made. The second appointment was to make the final impressions with a correct peripheral seal with the help of the levator muscles and the Pterygomaxillary ligaments with the use of Godiva low fusion and light paste addition silicone for functional impression taking. The casting is done to obtain the final models (Figure 5).

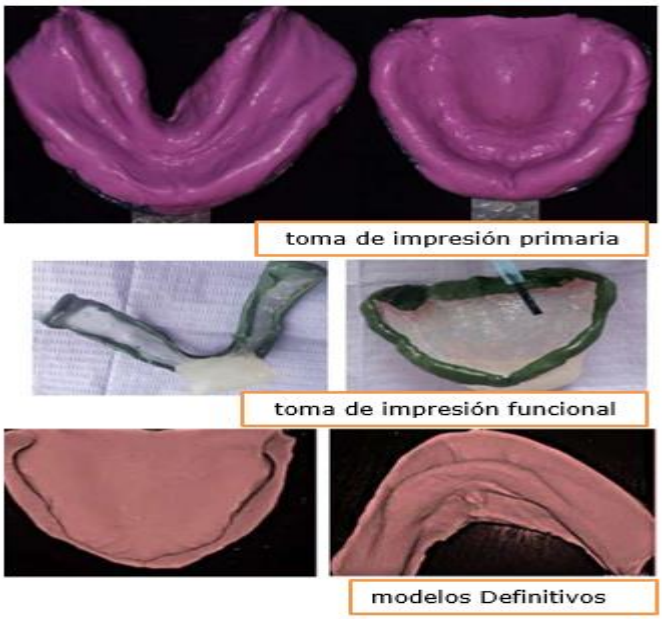

Fig. 5 Conventional Prosthesis Elaboration.

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Base plate and occlusion rims:

With the final impressions, we proceeded to make the formwork and cast it in type 4 plaster (figure 6), after which the base plate was made with acrylic and height runners. The elaboration of rims was carried out with the following measurements: height, thickness and vestibular inclination, complying with the following measurements: antero-superior 22 mm, postero-superior 17 mm, antero-inferior 18 mm, postero-inferior 15 mm. Regarding the thickness: in the anterior area it is 5 mm, in the premolar area it is 7 mm and the molar area is 10 mm in both arches. These measurements refer to the distance between the vestibular reflection mucosa and the occlusal surface of the rims.

The DVR (Vertical Dimension at Rest) is measured. The Vertical Dimension (Figure 7) was taken with the rims in the mouth, opening and closing the patient, determining it with the measurement that was repeated the most, subtracting two millimeters to have In references for our impellers, in this case it was 6,0 cm, subtracting 2 mm resulted in 5,8 cm.

Fig. 6 plaster casting.

Fig. 7 The Vertical Dimension.

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Fox template usage:

The upper labrum is regularized with the Fox plate, to have parallelism between the references of the bipupillary plane, the wing and tragus of the ear, to verify the plane of occlusion and Camper. (Figure 8)

Fig. 8 A. Verify the occlusal plane and Camper's plane.
B. Semi-adjustable articulator.

Then we proceed to place the face bow to assemble the final upper and lower models on the semi-adjustable articulator (Figure 8). For correct articulation, the different reference lines will be taken into account:

Midline: Called inter-incisor, it corresponds to the person's sagittal midline; It serves to position the central incisors and thus achieve a symmetrical alignment.

Canine line: It is a line that corresponds to the extension of the external part of the wing of the patient's nose; It is used to determine the width of the artificial teeth, where each line corresponds to the cusp of the canine.

Smile line: distance between the lower edge of the labrum and the lower edge of the patient's upper lip when they smile, used to determine the height of the artificial teeth.

Crossing line: corresponds to overjet and overbite. All these strokes are made for a correct alignment of the artificial teeth in terms of size, position and arrangement, then the patient was induced with the Dawnson Bimanual technique

Taking the patient by the jaw and taking the jaw towards the most posterior, carrying the condyles in their most anterior and superior part in the glenoid cavity. To make an occlusal key with godiva, and take it to the articulator to straighten the teeth.

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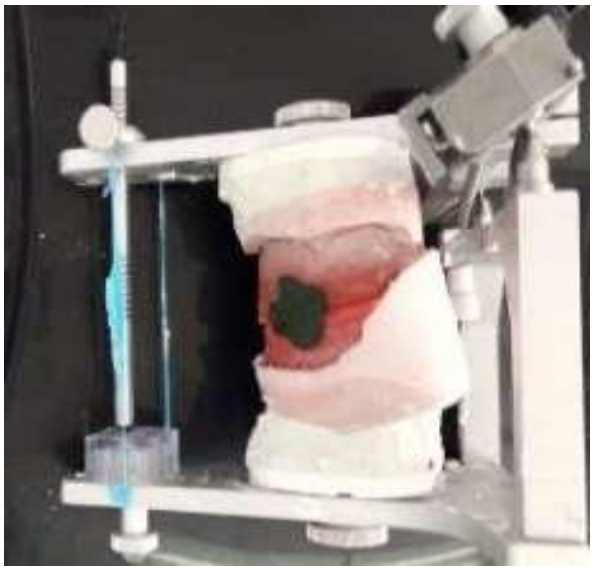

Fig. 9

DENTAL PROFILE[5,6,7]

It is characterized by the placement of the teeth, selected in this case D80 and D82, previously taken the color, with the VITA Classic 2A 130 colorimeter. It begins with the upper jaw since it is the one that delimits the type of arch and then continue with the alignment of the lower jaw which will determine the type of occlusion.

Upper jaw: We begin with the central incisors, placing the mesial surface next to the midline. The incisal edge must make contact with the plate of the articulator. These pieces must have an angle of 88º in relation to the sagittal plane; We continue with the lateral incisors following the following considerations: the incisal edge of the pieces must be 0,5 mm above the plate, the heel must have a position more posteroanterior than that of the central ones, presenting an angulation of 85º, they continue the canines positioning the clinical crown in such a way that only the mesial half or mesial facet of its vestibular surface should be visible from the front. The cusp of this piece must be in contact with the plate of the articulator; In the case of the first premolar, the buccal and palatal cusps must both have contact with the platen.

Regarding the second premolar, only the vestibular cusp must have contact with the platen, leaving the palatal cusp in a superior position; To continue with the first molar, it must be taken into account that it has four cusps of which the mesiobuccal one must be at a height of 0,5 mm, the distobuccal 1,5 mm, the distopalatine 1 mm with respect to the plate. so only the mesiopalatine cusp has contact with the platen; The second molar also has four cusps but none of them have contact with the plate. This molar follows the trajectory of the curve of Spee, heading backwards towards the condyles of the lower jaw.

Lower jaw: We begin by articulating the first molars in order to determine what type of Angle key will be used. Once the type of occlusion has been determined, we continue aligning the second molars, which only depend on the occlusion corresponding to the upper teeth. It continues in the same way with the rest of the lower teeth, varying these only in the order of the articulation, which is as follows: second premolar, central incisors, lateral incisors and finally it ends with the first premolar. (Figure 9)

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Fig. 10 Central and lateral incisors.

Fig. 11

Waxing and wax testing: It is the addition, wax correction, tooth movement, if the case warrants in relation to the patient, for which it should be left in a bilateral balanced occlusion, where we can still correct the location of our teeth. This test will help us to have our prosthesis acrylicized and final, this process is important for the aesthetics and functionality of the patient's prosthesis.(Figure 10)

Acrylization of the prosthesis: This is the final step in the development of the prosthesis where the laboratory is responsible for acryllizing the wax with the teeth already positioned. The steps consist of flasking, where the wax is removed and replaced with thermo-curing acrylic, then the acrylic is polymerized and finally deflasking is done. This process is in charge of the laboratory and it is recommended to carry it out with a trusted laboratory technician.

Occlusal finishing and adjustment: It is the procedure by which the almost finished prosthesis will be taken to the articulator to see the occlusal adjustment and polish the prosthesis. Then it will be performed on the patient to see points of interference that do not allow adequate occlusion, in this case we leave the patient with a class I bite and in bilateral balanced occlusion with anatomical teeth. (Figure 11)

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BILATERAL BALANCED OCCLUSION: Simultaneous contact points on the working, non-working side, centric and eccentric movements. [8,9,10]

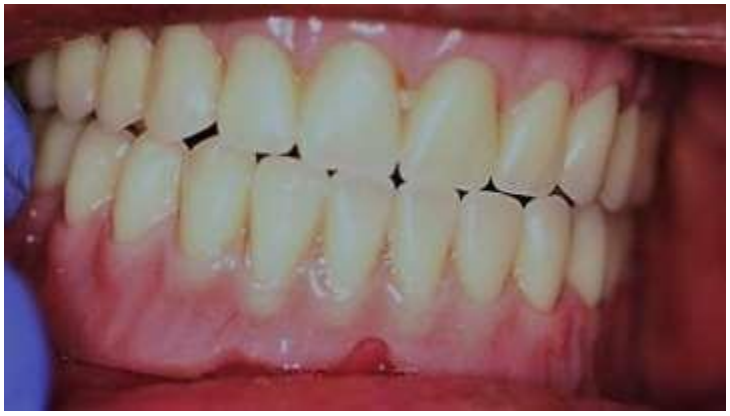

Fig. 12 Acabado y ajuste oclusal.

Fig.13 Instalación de la prótesis

The patient's expectations were met and the appearance of the smile was improved, achieving a youthful appearance and improving the naso-genial support of the lip at rest and while smiling.

DISCUSSION

Although conventional prostheses do not completely meet the expectations regarding biological teeth, these artificial appliances continue to be the most recommended treatment for patients with edentulism. According to the World Health Organization (WHO), most low- and middle-income countries do not have sufficient services for the prevention and treatment of oral health conditions, so we can say that edentulism is a problem that involves non-factors. only biological but also economic and social. [8,9]

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The lack of promotion and prevention of oral health and hygiene, from an early age, allows the development of diseases such as periodontitis, dental cavities, among others, which lead to the loss of partial and total teeth. Causing not only aesthetic problems that affect the patient's self-esteem, but also conditions in phonation, biting, chewing and therefore alterations in the temporomandibular joint (TMJ). [10,11,12]

In the present clinical case, it is observed that total dentures continue to be the main therapy for the completely edentulous. The majority of patients with total dentures report satisfaction and improvement in chewing function with the use of total dentures.

The average age of onset of complete edentulism is usually 65 years. In our case, our patient is 70 years old, an age considered the typical age for complete edentulism. Kimoto et al mention that conventional acrylic total prostheses still continue to be a good option in the therapy of the totally edentulous. In our case, the sequence shown conforms to the conventional construction of total acrylic dentures; the different techniques and impression materials described as recommended by Rahn, the choice of a type of occlusion in the creation of dental prostheses is a critical step in the treatment of the edentulous patient.

The patient's chewing ability, comfort and the preservation of their alveolar bone will depend on it. There are many factors that determine the establishment of correct occlusion, maintaining balance of the artificial teeth during lateral and protrusive movements. In our case we opted for a Bilateral Balanced occlusion which refers to simultaneous dental contacts during eccentric movements; the occlusal and lateral forces generated during movements; They are shared by all teeth and temporomandibular joints.

Patient satisfaction is usually the fundamental pillar with better acceptance and perception, phonetics, in addition to improving food, nutrition and therefore the patient's diet. Total prostheses must be checked periodically since classic post-operative problems such as fractures of the prosthetic bases and loss of artificial teeth are not exempt from occurring.

CONCLUSIONS

The conventional total prosthesis is a good way to return to completely edentulous patients, the functionality, aesthetics and psychological aspects regarding the stomatological system. The prosthesis performed was satisfactory for the patient, returning her vertical dimension, balanced masticatory function and aesthetic parameters.

Conflict of interest statement
The authors declare that there are no conflicts of interest.

Author contributions
All authors participated in conceptualization, data curation, formal analysis, research, methodology, supervision, writing-original draft, writing-review and editing.

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