wjpmr, 2024, 10(1), 212-215

SJIF Impact Factor: 5.922

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

Case Report

ISSN 2455-3301

WJPMR

PARTIAL REMOVABLE DENTAL PROSTHETICS – CASE STUDIES

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Article Received on 19/11/2023 **Article Revised on 09/12/2023** **Article Accepted on 29/12/2023**

ABSTRACT

Partial edentulism is a very challenging condition of the stomatognathic system, regarding the predictable possible solutions. Replacing the teeth that are missing also requires replacement of the gum tissue and thus of the resorbed bone structure. The design of a partial denture is individually meticulously planned. Depending of the quality of the teeth the plan treatment will include whether classical partial acrylic dentures or skeletal dentures will represent an option for replacement of the lost dental structures. There is not a solution design available for every partial edentulism. Thus meaning that every patient will be treated clinically and paraclinically individually depending on the patients needs. In patients who have partial edentulism and parafunctions such as bruxism, skeletal dentures are manufactured so that these patients can prevent themselves from themselves.

KEYWORDS: partial edentulism, teeth replacement, partial removable dentures, solution design, individual plan treatment.

INTRODUCTION

Partial edentulism is a great challenge for both the dental prosthodontist and the dental technician. Patients come to our offices every day with partial edentulism looking for a fast solution. An observation that has been made during the everyday clinical practice is that some of the patients come to the dentist when they have visible aesthetic and notable functional changes. Namely we see patients with extraoral decrease of their vertical dimension, then visible sulcus nasolabialis and mentolabialis. Firstly patients complain about their physical appearance. Then, most of our patients' complaints derive from the fact that they have feeding disorders, the food cannot be properly chewed, then digested. That is why patients experience different kinds of pain such as toothaches (from traumatic occlusion, the Godonov phenomenon, parafunctional habits etc.), headaches, earaches (from the temporomandibular disorders), stomachaches from improperly digested foods and many others. These changes did not appear overnight. Some of our patients come to the dental office when they lose even one tooth. Other wait years and years until they have other problems and decide to overcome the fear and come for a dental treatment.

Historically even Leonardo da Vinci made detailed drawings of peoples' faces among which is a lateral portrait of a person who has significant tooth loss. He was interested in analyzing the dental anatomy, which was discovered in his notes and drawings.[1]

Since there is no case similar to the other, several dental rehabilitation solutions exist. Today the dental implantology is very much implemented in everyday clinical practice, especially among younger patients with edentulism.[2]

However sometimes we are challenged with many aspects of our patients' history of medical diseases. We have patients with early menopause and osteoporosis, patients with severe chronic diseases and patient with autoimmune diseases. We also have a group of patients with the parafunctional habit bruxism, probably the hardest to treat. Also in our offices come patients that are challenged financially.

How to treat a patient with partial edentulism has been of great interest of many therapists worldwide, it is our filed of interest as well. For the easiness of division in the following subtitles, various treatment modalities are elaborated for the aim of this study. In the mentioned clinical cases and in many more to come we need to manufacture a removable dental appliance[3.4], that will be satisfactory for both the patient and the entire dental team. The classical acrylic removable partial denture is maybe not as attractive as an appliance. It is well known that it possesses an orthodontic effect from the clasps on

the remaining teeth.[5] However for some patients it is the first and the last choice of treatment.

CASE STUDIES

For the purpose of the study three patient with partial edentulism were examined, analyzed and treated in our dental office. They were in need of dental functional-aesthetic rehabilitation.

Before the beginning of treatment, each of our patient received a consent form and was informed about the procedures and the interventions. Our patients are patients with partial edentulism in one jaw or in both jaws. Before beginning with work extraoral examination is usually performed, by measuring the vertical third of the face with a digital caliper. Then we ask our patients what kind of problems they have. We continue with intraoral examination when we check the status of the remaining teeth, the periodontal tissue, the intraoral mucosa, the tongue and any other susceptive intraoral changes. If the patients have complaints about pain in their ears, head or their muscles, we must check the temporomandibular joint. We make paraclinical examinations with panoramic and cone bean computer tomography. Afterwards we palpate the region around the temporomandibular joint. We see if the patients' joint makes sounds, which is mandatory for further treatment. When we diagnose the patients condition we continue with functional-aesthetic prosthetic rehabilitation. Depending on the possibilities of the patient and the treatment plan modalities several types of removable partial dentures are designed. Each of our patient documented bellow signed consent form for the photography made of them.

The success rate of a prosthetic device is usually assessed after a certain period of time. We name that follow up of our patients when we make scheduled control after handling the prosthetic device, after one week, after one month, after three months, after six months, after a year. It is very satisfactory if we find that after five year follow up the patients prosthetic devices are in a good condition. It is why we need to predict how to treat each patient individually.

Case Study 1

The primary reason for manufacturing the dentures in figures 1 and 2 was the financial aspect of the patient. Here we are limited with the possibilities of creating a more practical solution that would be even more efficient in its usage (figure 1a and b and 2 a and b).

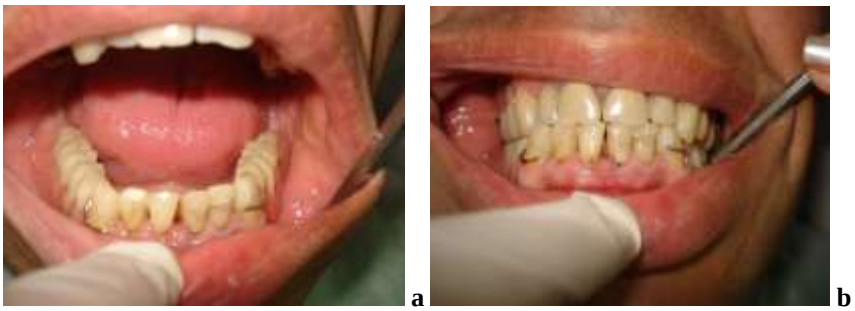


Figure 1: a. Intaoral view of the lower denture
Figure 1: b. Intraoral view of both dentures in occlusion.

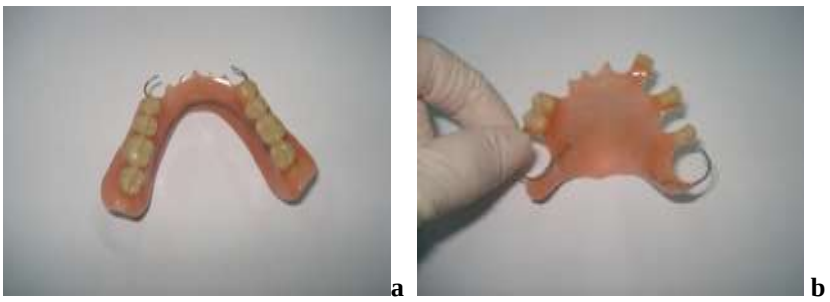


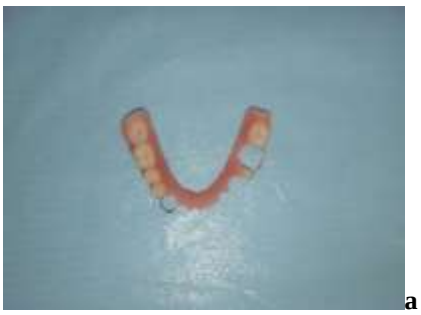
Figure 2: a.Lower classical acrylic denture.
Figre 2: b.Upper classical acrylic denture.

In other cases, this patient can be a good candidate for a dental bridge with attachments and a skeletal denture. In the upper jaw, dental bridges can be made with paying meticulous attention of his bite. However, we will see in the future if another solution can be made.

Case Study 2

Another situation where classical partial removable acrylic dentures are produced is as a temporary solution when the patient is in a healing process, or other interventions are planned.

The temporary situation requires bone augmentation or gum healing or dealing with systematic diseases (figure 3 a and b).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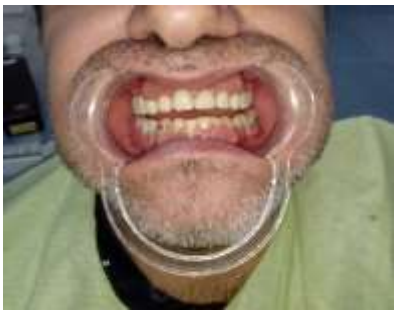
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Figure 3: a.Lower classical partial removable denture.
Figure 3: b.Intraoral aspect of the denture in the patients' mouth.

This is a patient suitable for bone augmentation in the lower right area, since he lost his teeth a long time ago. After that implants will be placed with suprastructures above them. Also the patient will need a dental bridge on his frontal teeth.

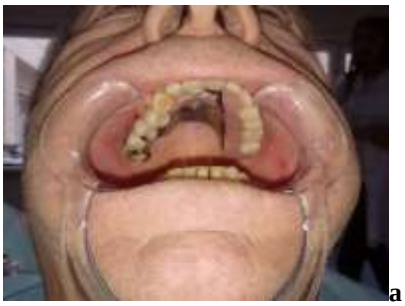
This is a very young patient that has the condition and possibilities for optimal dental functional-aesthetic rehabilitation treatment.

Case study 3
The skeletal dentures are still very popular and authentic, and thus they can serve a patient for quite a long period of time.[6]

They have many possibilities for their design according to the status of the remaining teeth, according to the remaining edentulous dental alveolar ridges and the imagination of both the therapist and the dental technician.[7]

Usually most of the patients coming to our dental office accept these removable dental appliances very well and tell us that they use them for a long period of time.

Specifically this patient had a lower partial skeletal denture that was worn (figure 4 a and b).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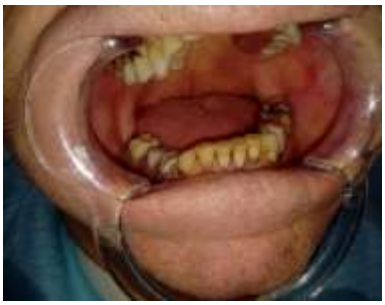
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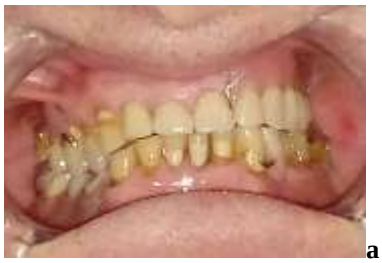
Figure 4: a. Upper skeletal partial removable denture.
Figure 4: b. Lower skeletal removable denture.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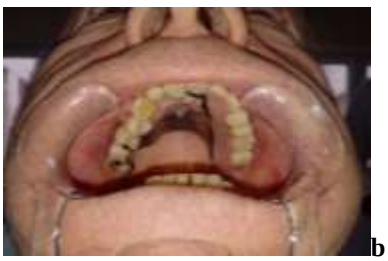
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Figure 5: a. The complex construction in occlusion.
Figure 5: b. Intraoral view of the complex construction.

Furthermore he will need a new treatment plan for preserving the remaining teeth and for equivalent distribution of the masticatory forces. He has parafunctional habit bruxism, which is the reason why here classical acrylic dentures are out of the question.

Bruxism can cause severe damage to the remaining teeth such as horizontal and vertical fractures, then it can cause luxation of the teeth, abrasion of the teeth, bone resorption and damage to the prosthetic devices.

Furthermore, bruxism can cause problems with the temporomandibular joint.[8]

The patients usually go to other specialist such as otorhinolaryngologists, neurologists, because they have earaches, headaches and lastly they discover that they have temporomandibular dysfunctions caused by bruxism.

The patient in figure 4 had severe headaches, pain in the masticatory muscles and in the region of the temporomandibular joint. He had horizontal fracture of his upper teeth and pulp exposure. He went into endodontic treatment, then his roots needed elongation with posts and cores, after which a complex dental bridge was designed. In her upper jaw also a new complex dental skeletal denture (figure 5 a and b) was designed. It is highly recommended for patients with bruxism to wear the skeletal dentures at night especially with night bruxism to protect themselves from the consequences that arrive from this parafunctional habit.

Even though now we live in a digital era, still there is a group of patients that must be treated the classical way.

CONCLUSION

Partial removable dental prosthetics is an interesting chapter in the field of dentistry. It represents a challenge for the dental prosthodontist, the dental technician to meet the individual requirements of the patients. Even though modern dental prosthetics forces the frequent usage of dental implants not every patient can be a possible candidate for dental implantology. Then it remains the creativity and the compromising in the process of manufacturing classic removable partial dentures, skeletal partial removable dentures or complex skeletal dentures. In patients with the parafunction bruxism, the skeletal desntures need to be worn at night for protection. Thus, these treatment modalities meticulously planned and designed fulfill the patients' needs on the mutual satisfaction of the patients themselves and the entire dental team.

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