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SUPPORT AND STABILITY IN PROSTHETIC TREATMENT OF TOTAL MAXILLARY EDENTULISM

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Abstract: *The classic complete denture is still a frequent used prosthetic treatment, most of the totally edentulous patients being represented by elderly people, with modest financial status, who perceive the loss of teeth as a disability. At this moment, prosthetic restoration on dental implants almost completely solves this problem. Thus, in this material we set out to study a case in which implant supported overdentures is a therapeutic option of choice, when the classic complete denture becomes really problematic.*

INTRODUCTION

The instability of the classic complete denture and, in most cases, its precarious maintenance, has always been a problem, by creating adaptive difficulties, with all the efforts of the dental team: the dentist and the dental technician.

At this moment, prosthetic restoration on dental implants almost completely solves this problem. The rapid advancement of technology in recent decades in absolutely all medical fields, including the field of "dentistry" (the field of "dentistry" refers to both the clinical department represented by the dental office and the technical department represented by the dental laboratory) new generation of dental implants, screw implants, with revolutionary surface treatments, much more efficient and more reliable, which quickly removed from the specialized market the previous generations of implants, especially the subperiosteal implants and blade-form implants.

In Romania, in the last two and a half decades, the implant-prosthetic rehabilitation has acquired new dimensions, in this sense the dental university centres in the country, especially those in Bucharest, Timișoara, Iași, Cluj-Napoca and Târgu Mureș making truly remarkable efforts, not only for the introduction of oral implantology as a subject in the university and postgraduate curricula, but also for the allocation of substantial funds for the purchase of equipment, instruments and materials specific to implant-prosthetic rehabilitation, have contributed decisively to the implementation of new techniques and strategies for inserting and then prosthetic treatment with dental implants.(1-8)

In this material, we will try to present a case of an implant supported overdenture treatment of a maxillary total edentulous patient, who initially had a very deficient prosthetic field. The focus will be on the dental laboratory stages. Following the insertion of 2 screw type implants, special locator-type systems were attached to them, to which the prosthetic component was anchored, thus managing its stabilization on the maxillary prosthetic field.

Today, the use of dental implants in dental practice in Romania has become a very common therapeutic procedure, although quite aggressive from a financial point of view, this being included in the treatment plan for all types of prosthetic restorations (fixed, mobilizable and mobile), thus clearly improving the comfort, support, retention and stability of the prostheses.

Although, in the case of fully edentulous patients, a fixed prosthetic treatment can be chosen, with the help of an implant supported prosthetic restoration, which ensures maximum stability in the prosthetic field, in some cases it is necessary to choose an alternative solution, either for aesthetic or financial reasons, or when there is no other way, due to the presence of a prosthetic field unfavourable to the realization of such a prosthetic work.(1-8)

Thus, a correct option in replacing the treatment with classic dentures and in obtaining an improved retention, can be represented by implant supported over-dentures, either directly or through the various special systems of maintenance, support and stability.

Due to the major role of obtaining a stable prosthetic piece on the total edentulous prosthetic field, in this material we set out to study a case in which implant supported overdentures is a therapeutic option of choice, when the classic dentures become really problematic.

The prosthetic treatment of a total edentulous maxillary patient, does not raise very complex problems for the dental medical team (dentist - dental technician), except in the case of accentuated resorptions of the alveolar ridges. Maxillary acrylic complete dentures are bulky, uncomfortable and unbearable for patients in terms of maintenance and stability both at rest and during masticatory processes, especially when the adhesion and suction of these prosthetic parts are very poor. In these situations, implant-prosthetic therapy is used, with very

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satisfactory results over time, but which may require some fairly consistent financial efforts from the part of patients.

CASE PRESENTATION

The 59-year-old male X.S. patient presented to the dentist's office with total maxillary edentation and a complete antagonistic arch, made up of natural teeth in the lateral area and a porcelain fused to metal bridge in the frontal area. Objective examination revealed moderate resorption of the alveolar ridge, which would have allowed the realization of an acrylic complete denture but, for an even better maintenance and for the mental comfort of the patient, in the sense of using a denture as stable as possible on the prosthetic field, a more complex treatment plan was chosen. Thus, it was decided to insert 2 dental implants and attach special locator-type systems, from which the denture was anchored. Also, the resistance of the denture was increased, by creating a metal infrastructure in the area of the edentulous ridge, as well as on the entire palatal arch.

After the osseointegration of the two dental implants, the dentist imprinted the maxillary and mandibular prosthetic field with standard impression trays, using the irreversible hydrocolloid (alginate) as the impression material. The two impressions were sanitized and disinfected with a broad-spectrum antimicrobial chemical. Subsequently, the impressions were sent to the dental laboratory where they were cast, making the preliminary maxillary model, but also the mandibular model of class III die stone. On the preliminary model, the boundaries of the future individual tray were drawn.(9-11)

Figure no. 1. Preliminary maxillary model and mandibular model cast from class III die stone

After obtaining the preliminary maxillary model, the custom impression tray was made from composite resin and the maxillary prosthetic field was imprinted functionally with the help of addition silicone materials. Subsequently, the working model was cast with class IV die stone, the dental implants to which the 2 locator-type systems were attached were very well highlighted.

Figure no. 2. The working model of the maxillary arch, with the highlighting of the 2 special locator type systems

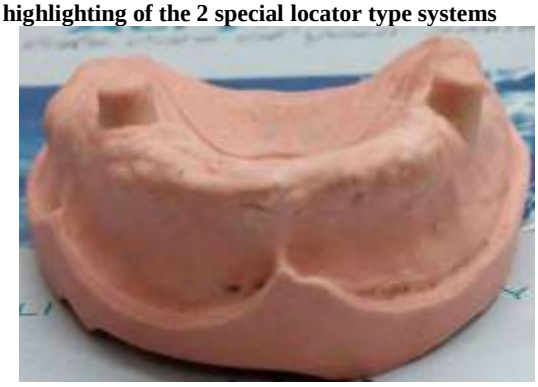


Figure no. 3. Creating of the metallic framework of the future implant supported prosthetic restoration of cobalt-chrome based alloys.

Figure no. 4. The metal framework of the future implant supported prosthetic restoration. Front view, with highlights of retentions for future acrylic material

Figure no. 5. Constructing of occlusal registration rim on the metal framework, in order to determine the jaw relationships

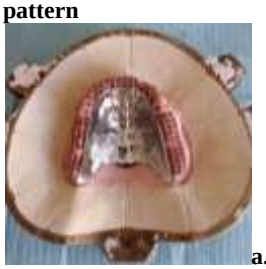
After determining the jaw relationships using the occlusal rims, the maxillary working model and the mandibular one was mounted in an occlusal simulator.

Figure no. 6. Mounting in the occlusal simulator of the 2 models (working model and mandibular model) after determining the jaw relationship

Figure no. 7. Wax trial denture, made over the metal framework on the working model fixed in the occlusal simulator

Figure no. 8. Wax trail denture, made over the metal framework. Occlusal view

Figure no. 9 a, b. Flasking of wax denture and obtaining the pattern



a.

b

Figure no. 10. Deflasking complete denture

Figure no. 11. Complete denture after processing and polishing, in contact with the mandibular model

Figure no. 12. Complete denture after processing. The mucosal face of the denture with the spaces made for the retention of the locator systems, which are glued with self-curing acrylate in the dentist's office, by the dentist

Figure no. 13. The weight of the denture was checked, obtaining an optimal result of 21 g, which will not affect its maintenance on the maxillary prosthetic field of the patient

Figure no. 14. Complete denture with locator-type systems, ready to be sent to the dentist's office for insertion in the patient's oral cavity

DISCUSSIONS

The treatment option approached in this material was very well received and finally accepted by the patient, taking into account the quality-price ratio. Basically, this overdentures on dental implants using special locator systems, offers multiple advantages over the standard prosthetic solution, namely the all-acrylic prosthesis, which allows a better adaptation and a more favourable prognosis over time, as follows:(12-16)

a. prevents bone resorption;
b. offers a better aesthetics and requires the insertion of a smaller number of implants than in the case of fixed prosthesis;
c. reduces or eliminates dentures movements, improving mastication efficiency and increasing occlusal forces;
d. improves retention and stability;
e. the size of the denture is considerably reduced;
f. reduces or eliminates the need for preimplantation surgical treatment or bone addition;
g. increases the possibilities of implantation in different places at the level of the edentulous ridge;
h. sanitization is easily performed, and can be mobilized by the patient;
i. easily repaired etc.

The classic complete denture is still a frequently used prosthetic treatment, most of the totally edentulous patients being represented by elderly people, with modest financial status, who perceive the loss of teeth as a disability, becoming true convicts of solitary confinement.(17-18)

Properly performed prosthetic work, by obtaining a good maintenance and stability, helps to quickly accommodate the patient with it, helping him to get out of the depressing mental state that had progressively settled.

CONCLUSIONS

According to recent statistics on implant supported overdentures, the most common complications and difficulties in the maintenance of prostheses are related to anchoring systems and include time degradation of matrix retention, mechanical failure of the matrix and retentive abutment, dislocation of the prosthesis matrix and fracture acrylic base of the denture.

Based on these issues, the most important features of an anchoring system should include good retention power, adequate longevity of retentive components, easy component replacement, adequate structural strength of components, and minimum dimensions to maintain integrity. structural strength of the prosthesis.

Despite the fact that there is a lot of information in the literature on the clinical performance of anchoring systems, choosing a suitable system is not an easy task, as there are a large number of valid options, due to the continuous appearance on the market of new and varied types of special systems.

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