

TEMPORARY PROSTHESIS AS PART OF FIXED IMPLANT DENTURE SUPERSTRUCTURE RESTORATIONS

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Keywords: mobile and fixed temporary restoration, over-implant restoration, late-loading implants, immediate-loading implants

Cuvinte cheie: restaurare provizorie mobilă și fixă, restaurări supraimplantare, implantate cu încărcare tardivă, implantate cu încărcare imediată

Abstract: The article describes the temporary prostheses employed during the osseointegration of the late-loading two-step implants. Benefits and weaknesses are briefly described for each type. Owing to the said weaknesses, for two patients immediate –loading implants were applied. The therapy plan was influenced by the patients’ preferences, for urgent restoration of the frontal edentatias and the intolerance to the discomfort caused by the mobile prosthesis for a period of three or four months. The patients preferred temporary yet fixed dentures.

Rezumat: Articolul prezintă protezele provizorii folosite în perioada de osteointegrare a implantelor în doi timpi cu încărcare tardivă. Pentru fiecare tip sunt descrise succint avantajele și dezavantajele. Datorită unor dezavantaje. Pentru doi pacienți, s-a recurs la introducerea implantelor cu încărcare imediată. Planul de tratament a fost influențat de preferințele pacienților, pentru restaurarea urgentă a edentației frontale și de imposibilitatea suportării disconfortului determinat de prezența protezei mobile pentru o perioadă de 3-4 luni de zile. Pacienții erau adepții restaurărilor provizorii dar fixe.

SCIENTIFIC ARTICLE OF BIBLIOGRAPHIC SYNTHESIS

Owing to the success achieved in the past decades, oral implantology has come to high development, during which many types of osseous implants have been imagined and employed.

At present, oral implantology is considered a breakthrough in dental prosthetics, since it allowed the restoration of the dental crown and the dental arch without affecting the teeth adjacent to the edental space.

The Kennedy class I and class II (terminal, E.Costa) edentulous situations now can enjoy the benefits of fixed prostheses in every aspect.

The prosthetic fixed implant denture superstructures on late-loading implants required and were conditioned on using both mobile and fixed temporary dentures during osseointegration (3-4 months). Thus, as a result of the clinical observations tens of articles have been published in the specialized journals with regard to temporary dentures.

The purpose of such articles was to describe the two categories of prostheses, that is the traditional partial acrylic mobile prostheses and the modern fixed prostheses that are cemented either to the adjacent teeth of the edentulous space or to the new types of transition implants.

Each prosthesis category has been analyzed following the clinical observations acquired in long periods of time with application to a large number of patients.

The conclusions spell out the following:

The traditional partial acrylic mobile prosthesis have been used for the following **benefits:**

- the flow process (the clinical and the laboratory phases) is very simple;
- low cost resulting from the low value of the consumables and the flow process;

- insertion and desinsertion from the field are easy to do, which helps keeping a hygienic condition;
- allow for a correction to the mucosal and the occlusal surfaces;
- when a tooth serial extraction is needed, teeth can be added with much easiness.

The **weaknesses** are limiting the indications, since they may cause the occurrence of some physio-pathological reactions in the form of:

- psycho-nervous and oral-lingual discomfort that is more severe during phonation;
- the occlusal pressures are carried to the structures of the non-physiological prosthetic field;
- the compression applied to the peri-implantary surgical site, if hard, is not favourable to the healing of the mucous-periosteal tissues; the compression might become a harmful factor owing to the perturbation caused at the capillary level, which results in delayed wound healing.

The shortcoming of the oral and general discomfort has generated limit clinical situations, in that the patients refused to use the mobile prosthesis and showed the tendency to quit the over denture restorative treatment for reduced edentulous spaces (1-2) in the frontal area.

Since the temporary restoration was very necessary, they came up with the fixed prostheses, which are attached by use of the following techniques:

- bonding to the adjacent teeth;
- the transition implants.

Prostheses bonded the adjacent teeth

The features of such fixed prostheses are hereby evaluated in terms of benefits and weaknesses:

The **benefits** are given by:

- the comfort ensured both by fixity in the oral cavity and by

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Article received on 03.05.2010 and accepted for publication on 19.05.2010

ACTA MEDICA TRANSILVANICA September 2010; 2(3)294-296

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small sizes equal to those of the natural teeth; the patient shows neither phonation perturbations nor any interest in possibly moving the prosthesis out of the prosthetic field, as the companions notices.

The weaknesses are given by:

- reductive preparation of the adjacent teeth in the areas of contact with the antagonist teeth, in order to create the clearance necessary for the adhesive resin layer;
- the preparation of the adjacent teeth is in contradiction to the implant benefits, which claim to prepare the teeth for the prosthetic restorations in the class III and IV Kennedy edentias;
- fixity does not mean strength, the prosthetic work might get mobile, particularly if the edentulous space resulted from the extraction of two or three teeth;
- it is time-consuming and requires particular manual skill at the surgery for preparing and bonding the prosthesis;
- the dental technique laboratory needs to perform a particular prosthetic work;
- the recommendation is conditional on the teeth volume and shape and on the occlusal relations with the antagonist teeth.

Such weaknesses are limiting the recommendations for bonded prostheses so that they end up being viewed as exceptional alternative solution.

Temporary dentures attached to transitions implants

Owing to the weaknesses limiting their use, the mucous-periosteal anchor mobile dentures and the fixed ones cemented to the adjacent teeth have been decisive factors that led to using the transition implants in order to cement the fixed implant denture superstructures.

The transition implants display the following features:

- reduced dimensions, they can be inserted into small bone tissue;
- loading can be achieved immediately, which could be favorable to the formation of the bone tissue;
- favourable to the healing process of the peri-implantary surgical site;
- the dentures applied have sizes and shapes similar to those of the natural teeth.

Weaknesses:

- present if the occlusal pressures are big;
- excessive loading could cause fractures to happen;
- requires further intervention which increases the effort and the attention.

The temporary dentures are necessary, being recommended for the osseointegration of the two-step implants.

However, the temporary dentures cannot deal with all clinical cases, since the clinician's practice has come across very different clinical cases in terms of:

- the conformation distribution of the edentulous space, being known the perturbations of the different functions of the dental-maxillary apparatus, that is, for the frontal area, the physiognomy and the phonation and, for the side areas, the mastication; the edentulous space in the frontal area is a prosthesis emergency for a number of patients; the interest in restoring the integrity of the dental arch increases according to age, profession, gender, concern for the look of the lower face part during phonation.
- The size of the edentulous space, particularly for the frontal area which, the larger it is, the more intense are the perturbations it produces, which renders even more urgent the restoration;
- The psycho-nervous behavior of each patient during everyday's activities may suffer significant changes of

lower to higher degree, in terms of relationships they have with their companions in the healing period following the implantation surgery; the mobile dentures present in the frontal area of the oral cavity might induce discomfort, hence the refusal to use prosthesis; a subjective clinical examination should identify and define the patient's attitude and psycho-nervous behavior before determining a therapy plan; in the patients of relatively young ages requesting over-implant frontal denture repulsion can be noticed as to the mobile dentures, therefore the doctor should take a prudent stance on it.

The therapy plan provides two additional alternatives consisting in:

- fixed dentures with classic bridge affecting the adjacent teeth, which was denied;
 - fixed dentures with over-implant bridge, where immediate-loading implants must be used.
- the request for the restoration of the dental arch integrity in a very short time, that is in two or three procedures;
- time (2005-2006), the patients displayed very similar responses and accepted the risk of potentially unfavourable results.

The patients were informed about the running of the risk of potential failure of the immediate-loading implants.

We proceeded to informing them about the content of the therapy sheet and the request to sign it. The patients showed a highly optimistic mindset and confidence in the success of the therapy, as proven by the words "we should try".

In the relation to the fixed and mobile dentures, here are two clinical cases conducted between 2004-2005, with the diagnosis Kennedy IV class edentia caused by losing the two maxillary central incisors. The cases are hereby described as the patients refused the two-step implantation with temporary prosthesis.

Case n.1

The patient V.I. of age 39 requested the dental arch integrity to be restored in the maxillary frontal area corresponding to the two central incisors, which were restored by means of acrylic crowns attached to a prefabricated post inserted into the root canal and cemented.

Figure no. 1. The frontal maxillary area – the free extremities of the two prefabricated posts are visible; the acrylic crowns were attached to them



According to the anamnesis, the procedure was chosen since it was an urgent request for immediate restoration of the dental arch integrity. The patient decided to have that type of restoration five years ago. The acrylic crowns did not fit properly to the dental crown horizontal surfaces, which caused an infiltration process to occur with the consequence of root tissue damage.

The urgent therapy consisted in the following operations:

- emergency extraction of the irretrievable roots;
- immediate mobile temporary denture for three days, which was not tolerated;
- insertion of two immediate-loading implants;

The therapy plan was influenced by the patient's request, who had some knowledge about implantation and

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disagreed to the use of two-step implants.

Figure no. 2. Immediate temporary denture in which the vestibular flange was cut out, since the upper lip could not tolerate it



Figure no. 3. Esthetic crowns attached to the two implant crowns stumps



The crowns were fitted to the mouth so as to allow the free movement of mandible, without taking any pressure. The patient was advised not to use the frontal area.

The therapy solution was chosen upon the request of the patient, who desired temporary and fixed prosthetic works.

Case 2

The patient D.O. of age 27 came with the request for an examination of the two maxillary central incisors, which showed mobility and violent pain.

Objective clinical examination

The crowns of the maxillary central incisors were covered with acrylic crowns axially and transversally unfitted to the cervical area, where they created chronic inflammation with deep periodontal pockets. The infection process has caused very painful sensations.

Therapy

The therapy plan was made known to the patient, since it consisted in the following operations:

- extraction of the central incisor;
- mobile temporary denture, which was tolerated very badly for 27 days;
- insertion of two immediate-loading implants on which the acrylic crowns were attached;
- the patient requested not to use the mobile dentures longer than 30-35 days, for the following considerations:
 - very badly psycho-nervous discomfort;
 - perturbed pronunciation of certain words;
 - lack of patience to wait for the osseointegration of the implants.

Figure no. 4. Alveolar crest healed after extraction of the maxillary central incisor



The patient has been subject to regular examinations for two years, the implants showed no mobility and the crowns

proved cervical and occlusal fittingness.

Figure no. 5. Screw implants in the fixed prosthesis stage



Figure no. 6. Fully ceramic covering crowns for the maxillary central incisors attached to the implantary stumps



In conclusion, the patients were subject to regular examinations in order to monitor the evolution of the prosthetic restoration, in clinical and radiography terms, and to find out any tendency of implant mobility.

Five or six years have passed since the over-implant therapy was conducted and no changes were noticed in morpho-clinical and radiography terms.

CONCLUSIONS

The implant denture superstructures restorations abutted late-loading implants are appreciated for highly favourable results, since it allows for the osseointegration process to take place, however they cannot deal with absolutely all the clinical cases, particularly in the frontal edentulous. The patients concerned, owing to biological considerations and social and professional conditions, requested immediate prosthetic restorations, therefore immediate-loading implants were used.

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