

ASPECTS OF ORAL REHABILITATION USING REMOVABLE DENTURES: ESTHETICS AND FUNCTIONALITY

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ABSTRACT

Aim of the study The study analyzed the impact of various types of prostheses in the field of removable dentures on the edentation rehabilitation degree. **Material and methods** The study lot consisted of a number of 75 patients (aged between 30 and 82), reuniting clinical entities in the field of dental prostheses. **Results** After and evolutive analysis of integrative aspects, we can notice a rising curve of defects shown by removable dentures and the age of the restoration, while we can assess negative effects that are limited to the type of modern dentures, where the biomechanical principle is well observed, the anti-tilting elements being well-placed.

The dental occlusion, the landmark of any prosthetic restoration, was balanced in a percentage of 39.47% of the study lot, a percentage of 60.53% remaining in the field of occlusion with modified parameters, this percentage being also found in the deterioration of fixed or removable dentures. The dynamic occlusion was characterized by positive indices at a percentage of 40.72%, while 59.28% of the cases indicate discontinuous trajectories and unstable dento-dental contacts. **Conclusions** The loco-regional aspects and the dento-periodontal clinical and biological indices, as well as the mucous bony ones dictate the design of the final prosthetic construction and the choice of the maintenance, support and stabilization elements.

Key words: oral rehabilitation, functionality, esthetics, removable prostheses;

INTRODUCTION

The prosthetic treatment of edentation should be seen as an end-result of the comparative analysis between the bio-functional and esthetic pros and cons that each particular clinical case involves[1,2,3]. The sheer number of denture techniques, the variation in time of dental biomaterials used, the techniques and technologies deployed in agreement with the clinical particularities, as well as the entire set of factors that influence the therapeutic decision are all to be taken into account when selecting an individualized therapeutic approach[4,5].

For these reasons, the rehabilitation of an edentulous clinical case should not

comprise only the clinical and technological aspect related to the therapeutic solution for edentation, but it should also comprise an adaptation of dental materials to each individual case, depending on the receptivity of each patient[7,8,9]. Tracking and understanding the relationships developed by the patient at a local and general level in relation to the prosthetic treatment should be part of the dental procedure[10].

The patient's general condition decisively influences the selection of the therapeutic solution, which will stress either the esthetic or the functionality aspect[11,13,15].

Thus, severe cardiac pathologies will tilt the balance of the therapeutic results of rehabilitation towards functionality and the selection of minimally invasive techniques.[6,16]

The sum of clinical and biological indices is an undisputed marker of a successful clinical finality in case of various odontal restorations that cover both the sphere of obturations in the vicinity of the

PURPOSE OF THE STUDY

The study analyzed the impact of various types of prostheses in the field of removable dentures on the edentation rehabilitation degree. The identification, using clinical and paraclinical methods, of the entire set of causes triggered by prosthetic restorations is, in fact, an essential condition of the targeted therapy, but also a starting point for the careful selection of the dental materials used and the exigences related to the reconstruction of a high-fidelity morphology.

RESULTS AND DISCUSSIONS

With regard to the adaptation of acrylic dentures, a number of 30 partial acrylic dentures were characterized by an absence of marginal adaptation; of the examined lot, 15 partial acrylic dentures were fractured, while a number of 20 patients showed partial acrylic dentures with a good adaptation. An important aspect is there were 15 cases with decubitus lesions following the instability of partial acrylic denture, and a number of 17 partial acrylic dentures with fractured clasps were included in the same negative sphere and 21 cases showed mobility at the level of the support tooth on which the clasps were applied. The explanation for the highest percentage is related to the incongruence between the resorption and atrophy at the level of the prosthetic field, as well as to the lack of adaptation of the denture, which hadn't been coated.

With regard to the evaluation of patients who wore classic skeletal prosthesis, a number of 20 prostheses required recoating, 15 showed various losses of acrylic material at the saddle level and 10 showed decubitus lesions due to the instability of the denture.

With regard to the integration of modern

gum and the prosthetic field, materialized in fixed dentures made of various biomaterials, whose structure and surface qualities decisively contribute to a good biological integration, while the mucous – bone support characterized by negative clinical and biological indices reflects a defective or absent integration in case of removable dentures[12,14].

MATERIAL AND METHODS

The study lot consisted of a number of 75 patients (aged between 30 and 82), reuniting clinical entities in the field of dental prostheses. The patients were subject to a complex clinical and paraclinical examination, following a series of criteria that led to correlative aspects, with a profound practical impact regarding the periodontal pathology, characterized by the clinical multiple aspects .

skeletal dentures, 15 cases showed good adaptation, 10 showed mobility at the level of support teeth and 17 cases required the replacement of rubber inserts.

After and evolutive analysis of integrative aspects, we can notice a rising curve of defects shown by removable dentures and the age of the restoration, while we can assess negative effects that are limited to the type of modern dentures, where the biomechanical principle is well observed, the anti-tilting elements being well-placed.

The dental occlusion, the landmark of any prosthetic restoration, was balanced in a percentage of 39.47% of the study lot, a percentage of 60.53% remaining in the field of occlusion with modified parameters, this percentage being also found in the deterioration of fixed or removable dentures.

The dynamic occlusion was characterized by positive indices at a percentage of 40.72%, while 59.28% of the cases indicate discontinuous trajectories and unstable dento-dental contacts.

A number of 3 representative clinical cases anchored in the theme of this study will be detailed further, with a focus on the

balance between functionality and esthetics.

A particularly vital role in the process of oral rehabilitation is played by the wax-up on models mounted in programmable articulator, thus providing the premises of identifying the right therapeutic solution in the context of an individualized morphological and functional reconstruction.

The first clinical case under analysis, representative for cases of total and sub-total edentation that were rehabilitated and analyzed in the study lot, is diagnosed with total maxillary edentation and sub-total mandibular edentation, with morpho-functional and esthetic implications at the facial level, through an under-sizing of the

lower floor, an increase of perioral ditches and the perturbation of the mandibular-cranial relationships(Fig.1).

The therapeutic solution was represented by 1 maxillary total denture and 1 mandibular mixed prosthesis; 2 metalo-composite crowns and a partially removable acrylic denture which, due to the choice and mounting of the teeth, had an ideal superposition on the patient's type of smile. This clinical case is representative for transitory dentures, as well as for those of a social nature, where the esthetic criteria need to be present, although functionality is a priority.



Fig.1. Initial prosthetic field



Fig.2 a, b, c. Super-opposability of the face with the shape of the teeth

From an esthetic point of view, the oval shape of the face, the complexion, age and gender of

the patients were taken into consideration as well as the height of the lips, the line of the

smile, the minimum gap required for speech, the relationship of contacting lips, the curvature of the upper lip during smile for the selection of the artificial teeth. The cervical

The concept of beauty in the interpretation of esthetic rehabilitations is mostly related to harmony of proportions.

In general, the left-right balance can be assessed visually under the form of forces located on one side and the other of the central median line. The elements that are closer to the middle will have a larger impact than those closer to the visual organ.

The second clinical case is a 68-year old patient from the urban environment diagnosed with partially extended Class I Kennedy maxillary modified edentation with carious etiology and masticatory, physiognomic, phonetic and deglutition functional disorders,

embrasures were reconstructed with pink acrylate and the prosthesis was adapted to the patient's prosthetic field(Fig.2).

with a slow evolution and local (dental and periodontal) complications, as well as loco-regional complications (at the level of the temporo-mandibular articulation), favorable prognosis for the treatment, untreated. Partially extended Class I Kennedy mandibular edentation, of carious etiology, with masticatory, physiognomic, phonetic and deglutition disorders, of slow evolution and local (dental and periodontal) complications, as well as loco-regional complications (at the level of the temporo-mandibular articulation), treated by means of a partially removable skeletal denture(Fig.3,4).



Fig.3 Initial intraoral aspect
(maxillary arch)



Fig.4 Initial intraoral aspect
(mandibular arch)

The loco-regional clinical and biological indices provide a negative image through the modifications incurred at the articular level, following the tilting of the condyle to the antero-posterior side, an essential aspect that will constitute the basis of oral rehabilitation, an inherent stage that precedes all other future therapeutic options. The odonto-periodontal local clinical and biological indices are dominated by positive aspects at the maxillary level, generated by a good implantation, a balanced distribution on the arch, the mucous

bony support being characterized by positive values due to the specific parameters of the alveolar ridge.

In view of the non-specific preparation of the oral cavity, we conducted the following operations: hygiene of the oral cavity; odontal restorations at the 3.1,3.2, 4.1,4.2 level; During the specific preparation, we conducted the following operations:

The preparation for the creation of the slots for occlusal studs at the 1.4, 1.5, 2.5 level;



Fig.5 Aspect of the maxillary working model with the prepared ; Aspects of functional impression

Regarding the treatment we opted for: Partially removable skeletal maxillary denture made up of the main connector, the palatal dento-mucosal plate, with an improved design in full agreement with the depth of the palate and the number of support and stabilization elements applied, 2 mixed metalo-acrylic

saddles with 2, namely 1 artificial, anatomorphous teeth, in medium cuspid position and, as a support and stabilization element a Bonwill clasp at the 1.4, 1.5 level, an Ackers clasp at the 2.4 level and a ring clasp at 2.7 level(Fig.5,6).



Fig.6 Maxillary removable prostheses – extra-oral aspects, intra-oral aspects

Patient, aged 65 ,following the clinical and paraclinical evaluation, received the following diagnosis :Diagnosis of the general condition: general condition affected by hypertension, compensated stage, under medication, that favors the implementation of the treatment stages. Arch integrity diagnosis: Class I Kennedy maxillary edentation of mixed etiology, treated by fixed denture, functionally adequate, Class I Kennedy partially extended mandibular edentation of mixed etiology that triggers masticatory, deglutition, physiognomic functional disorders, of slow evolution, with local complications such as the resorption and atrophy of the edentulous ridge and

articular dysfunction, with favorable treatment prognosis, treated by mixed denture, inadequate in this stage due to the fracture of the existing fixed restoration.

Given that the maxillary therapeutic option was characterized by positive parameters, the rehabilitation at the mandibular level was made using a hybrid denture, that reunites:A fixed restoration at the frontal and frontal – lateral level, cast crown at level 37, skeletal denture made up of: 2 mixed metallic-acrylic saddles, 4 namely 1 acrylic anatomorphous teeth in median cuspid position, main connector comprising an EMSS dento-mucosal metallic plate – extra-coronary slides. It

is important to mention that the hybrid denture was made entirely on the functional level, both the fixed and the removable component, in view of a complete morpho-functional harmony between the two components. The functional impression was recorded with addition silicon.

The final aspects of the clinical case

offers the image of total edentation rehabilitation, namely partial edentation by total denture, namely mandibular hybrid prosthesis, therapeutic solutions that created a cranial-mandibular repositioning, as well as the restoration of all functions affected by the edentation(Fig.7).



Fig. 7 Aspect of oral rehabilitation using partially removable prostheses

CONCLUSIONS

1. The loco-regional aspects and the dento-periodontal clinical and biological indices, as well as the mucous bony ones dictate the design of the final prosthetic construction and the choice of the maintenance, support and stabilization elements.
2. The superiority of the special system is evident at the esthetic and bio-mechanical level, surmounting the deficiencies of classic prostheses, both aspects being dictated by the particularity of the prosthetic field.
3. The therapeutic decision is the final result of the clinical and paraclinical evaluation, including the complexity of the therapy induced by the general condition, an aspect which most of the times is decisive.
4. The therapeutic solution of choice is notably influenced by the bio-mechanical aspects corroborated with the morphologic support, essential aspects of a complex treatment, without neglecting the general particularities generated by the topography of edentation.
5. The type of prosthesis is in full agreement with the particularity of the prosthetic field, the presence or absence of the specific prosthetic preparation, corroborated with the modality of esthetic reconstruction by individual modelling, which decisively influences the final results.

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