

IATROGENIC PROSTHODONTICS IMPACT ON OCCLUSAL AND TMJ DYSFUNCTIONS

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ABSTRACT

Introduction Occlusal disharmonies might be quite challenging especially when considered in a very strict aesthetic context. This is especially true when dealing with multiple periodontal problems, carious disease, in combination with incorrect occlusal relationship, extruded or migrated teeth and vicious habits. In these cases a complete examination, comprising clinical and paraclinical exam (simulator, X-rays etc.), is mandatory. **Aim of the study** The present study focused on evaluating the iatrogenic impact of prosthodontic restorations on occlusion relationship and TMJ. **Material and methods** In order to assess the oral status of the patients in the study group a thorough history, combined with a specific clinical examination and complementary tests were performed. All results were recorded in specific patient charts. All the factors that may interfere with physiological functionality of maxillary system were taken into account. **Results** The study group comprised 132 patients (69 women, 63 men), aged 20-61, with different types of prosthodontic restorations. 68.18% of patient had fixed prosthodontics and 31.82% combined – fixed prosthodontics and removable partial dentures. 47.27% of patient had occlusal dysfunction. A higher percentage of occlusal and TMJ dysfunctions was recorded in patients with combined – fixed and removable prosthesis (61.20% of patients with combined restorations versus 43.58% of patients with fixed prosthodontics). **Conclusions** Prosthodontic restorations cannot be limited to clinical and technological standard paths. No matter how well the restoration is done, it must overcome the challenge of been accepted by the patient, or it depends greatly on the ability of the practitioner to understand the patient's expectations, and in carrying out the treatment accordingly to patient's personality.

Keywords: occlusal-articular disorders, combined prosthodontics, fixed prosthodontics

INTRODUCTION

Some occlusal problems seem almost untreatable at first. This is especially true when dealing with multiple periodontal problems and carious disease, which occur in combination with incorrect occlusion relationship, vicious habits and extruded or migrated teeth. The same clinical situation can present both excessively worn and extruded teeth. The aesthetic challenge,

accompanied by the need to correct the distribution of forces on teeth, might seem impossible to overcome.

In order to address to all occlusal issues one should never begin a prosthodontic treatment without a mental projection of the final result. In many cases, the treatment plan is established before real problems being identified. The first step in implementing a treatment plan is the identification of

aetiopathogenic factors. It is mandatory to clearly identify each problem, and this stage requires a very thorough examination [1, 2].

In this research we considered that a complete examination is to achieve clinical assessment, using study casts fitted on an articulator and performing a complete set of radiographs. On the fitted casts in the articulator with the facial bow, dental interferences can be identified. Interferences are eliminated from the casts in order to see the relationship between the teeth of the two arches at a proper vertical dimension.

After identifying of interdental relationships with established vertical dimension each segment of occlusion can be evaluated taking into account the long-term prognosis of this condition. Teeth that are not in a stable position should be analysed to see if their correction involves selective grinding, reshaping, repositioning or replacement. These corrections, previously simulated on casts, are necessary for the proposed treatment in order to be assessed adequately in terms of feasibility and correctness. The most appropriate way of anticipating the final treatment outcome is reproducing it on the dental casts [3].

MATERIAL AND METHODS

In order to assess the oral status of patients with prosthodontic restorations, thorough history combined with specific clinical examination and complementary tests were performed. All results were recorded in specific prosthodontic observation charts.

All the factors that may interfere with physiological functionality of maxillary system were taken into account.

The clinical examination of patients was conducted according to the stated algorithm: subjective and objective examination (facial and oral exam) completed with paraclinical tests.

Subjective clinical examination began

emphasizing the reason for which the patient addresses to the specialist and the symptoms influenced by occlusal dysfunction, disease history and current lifestyle history indicating existing systemic diseases and vicious habits (teeth grinding, dental arches maintaining physical efforts contact, unilateral mastication, etc.).

To demonstrate the importance of rehabilitation of dento-maxillar system by correcting prosthetic iatrogenesis we conducted a comprehensive study of the occlusal-articular disorders, highlighting their importance of the rehabilitation tool of homeostasis system choosing specific therapeutic measures; diagnosis and subsequent removal of these dysfunctions by specific therapeutic means achieved maximum satisfaction of the medical team and of the patient [4].

In order to formulate the diagnostic one used the data from the observation records and the evaluation results obtained by proper consultative methods. Periodontal status, oral mucosal lesions, caries and oral hygiene, factors involved in the success of any prosthetic therapy, were also assessed.

After dental arches impressions, the occlusion was recorded and mandibular-cranial relationships were transferred in the simulator with facial bow.

A complete set of X-rays is required. TMJ radiographs should be performed when the presence of TMJ dysfunction is suspected. Ideal imaging study starts with choosing the most appropriate radiological technique and ending with the interpretation of the images, in order to obtain useful information for the diagnosis. An X-ray imaging strategy designed to take into account the imaging needs of the patient, his exposure to radiation and the costs associated with these manoeuvres must be developed.

Therefore, the main concern of the dentist should be to identify and eliminate all

elements that determine iatrogenic functional disorders in order to maintain optimal oral health status.

RESULTS

In order to restore the functionality of dento-maxillary system by prosthodontic treatment, taking into account the patients clinical prosthesis fields aspects, the patients were evaluated according to clinical appearance and the performance of prosthetic restorations.

132 patients (69 women, 63 men), aged 20-61, who were previously treated with various prosthetic therapies, were examined.

Patients were selected from private Clinic - DentEstet, Bucharest, where they addressed for the primary consultation. Taking into consideration the correlation between occlusal disorders and the state of the "TMJ – muscles of mastication" in the selection of patients, the clinical examination phase evaluated the subjective and the objective symptoms.

Study and analysis of subjective clinical

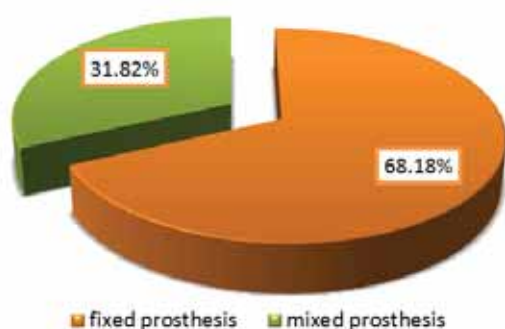


Figure 1. The percentage distribution of patients according to the prosthetic treatment

Based on objective clinical examination of the dental arches it was shown the dependence of the expression occlusal dysfunction with the number of affected teeth, extending the pathological process, topography, time of onset for disorders etc.

examination results allowed us to determine that the base of occlusal disharmony of patients included the prosthetic iatrogenic factors.

Objectively, from the total number of 132 patients, 68.18% of patient presented fixed prosthesis and 31.82% combined prosthesis.

From the patients included in the study, 47.27% presented occlusal dysfunction. We detected a higher proportion of occlusal and TMJ dysfunction in patients with combined prosthesis (61.20% of patients with combined prosthesis presented occlusal-articular dysfunctions versus 43.58% of patients with fixed prosthesis).

One can say that the aetiology of occlusal-articular disorders occupies an important level of oral hygiene. Anamnestic evaluation revealed that 63.33% of patients with fixed prosthesis and 54% of those with combined prosthesis affirmed that they did not receive any information at the end of prosthetic treatment in the use of personal oral hygiene aids in order to maintain oral health.

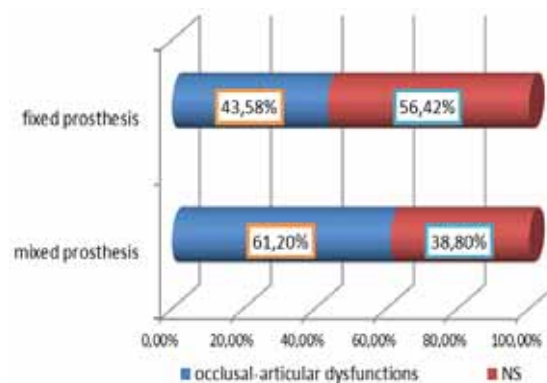


Figure 2. The percentage distribution of patients according to the prosthetic treatment and the presence of occlusal-articular disorders

Design weaknesses of fixed prosthetic plan and associated parafunctional phenomena cause occlusal-articular disorders or complications thereof, but we believe that this association requires further investigation, particularly regarding the influence of these

factors on restorations longevity.

Table 1. The presence of iatrogenic factors by gender and age

Etiologic factor	No. of patients	Gender		Age (years)				
		F	M	20-30	31-40	41-50	51-60	≥ 61
<i>Carious lesions</i>	18	14	5	7	6	4	0	0
<i>Anatomical dysfunctions of TMJ</i>	10	6	3	6	3	2	0	0
<i>Other prosthetic iatrogenics (ex. superelevation of occlusion, incorrect marginal adaptation)</i>	18	10	8	9	7	2	0	0
<i>Occlusal premature contacts in prosthesis</i>	86	39	47	20	35	11	7	13
Total	132	69	63	42	51	19	7	13

Table 2. The degree of patient dissatisfaction for the prosthetic treatment

Evaluated factor	Mixed prosthesis	Fixed prosthesis
<i>Physiognomy (coronal level colour and edge)</i>	51,42%	38,76%
<i>Masticatory disorders</i>	34,85%	18,32%
<i>Phonetic disorders</i>	40,15%	22,57%
<i>Disorders of TMJ</i>	34,63%	19,65%
<i>Parafunctions</i>	20,21%	13,56%

Table 3. The degree of doctor appreciation of the proper prosthetic execution

	Mixed prosthesis	Fixed prosthesis
<i>Static premature contacts</i>	51,42%	38,76%
<i>Dynamic premature contacts</i>	63,13%	41,34%
<i>Cervical maladjustment</i>	34,85%	18,32%
<i>Occlusal overheight</i>	40,15%	22,57%

Table 4. Type of iatrogenic factors depending on the type of prosthetic restoration

Etiologic factor	Mixed prosthesis		Fixed prosthesis	
	<i>metal ceramic restoration</i>	<i>metal acrylic restoration</i>	<i>metal ceramic restoration</i>	<i>metal acrylic restoration</i>
<i>Static premature contacts</i>	31,62%	49,75%	38,76%	41,92%
<i>Dynamic premature contacts</i>	47,22%	61,12%	52,34%	71,62%
<i>Cervical maladjustment</i>	34,85%	51,43%	18,32%	31,42%
<i>Occlusal overheight</i>	40,15%	49,75%	22,57%	43,81%

DISCUSSIONS

For a correct and complete interpretation of clinical events in static and dynamic occlusal dysfunction, anamnestic data were combined with those obtained from the

comprehensive assessment of current prosthodontic restorations.

Analysing anamnesis dates concerning on aetiopathogenesis onset of occlusal – TMJ disorders found that after installing the main

factor affecting physiological occlusion occlusal surfaces of the teeth presents prosthetic iatrogenic factors. Therefore, the first signs of damage to the occlusal surface of the teeth may be considered at risk in causing dysfunction and occlusal maxillary system functions [2, 4, 5].

Due to the morphological changes of the dental arches as a result of the prosthetic treatment (decreasing the number of occlusal contacts, tooth migration, partially edentulous, etc.) gradually changes occur in TMJ and muscular system with consequences for patient health. Therefore, the primary dysfunction of occlusal relief shows that risk factor that negatively influences the maxillary functionality. It was found that with increasing length of time after prosthetic treatment develops character and changes in the dental arches, and hence the occlusal dysfunction [6, 7].

Analysis of the results of clinical examination, study and model of the radiographic gave us the opportunity to note that once the extent of iatrogenic prosthetic

surface occurs also the destruction of occlusal morphology [8].

We consider that the degree of such dysfunction is dependent on individual compensatory adaptive capacities. Therefore morphological manifestations in some individuals are practically absent or poorly expressed, and the other has a major degree.

CONCLUSIONS

1. Prosthetic restoration can not be limited to clinical and technical compliance templates. As well as made the shade, it must overcome the handicap accepted by the patient, or it depends largely on the ability of the physician to understand the patient's desire, and in carrying out patient treatment adequately edentulous personality.

2. This spectrum of attitudes requires the doctor to broaden the scope of knowledge and perception of the patient and of its manifestations can bring the kind of dysfunction in the patient falling even at presentation in office, the first visit.

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