

## Case Report

# Study on the Importance of the Complementary Exams for the Dento-Parodontal Changes to the Patients with Occlusal Trauma

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**ABSTRACT:** The diagnosis of the occlusal disorders of the dento-maxillary is a delicate stage, but of great importance in establishing the functional rehabilitation of the dental arches. Occlusal disorders occur as a result of dental anomalies of number, odontal coronary lesions, dental migration, edentulous, gnathoprotetic devices improperly executed, changes of the occlusion parameters, and secondary musculoskeletal and joint disorders. The difficulty in the diagnosis, is that any trauma occurring in any component of the stomatognathic system may lead to occlusal dysfunction. Meanwhile, occlusal dysfunction can cause symptoms in all dento-maxillary structures. Recent research on the phenomenon of occlusal trauma etiology showed major difficulties in determining the exact causes and evolution of the phenomenon itself. This paper highlights the importance of usage in practice of the registration and transfer systems, also the important role of the radiological examination in detecting and highlighting the phenomenon of occlusal trauma.

**KEYWORDS:** occlusal trauma, occlusal dysfunction, alveolar resorption, miloliza.

## Introduction

The problem in diagnosing patients with trauma of occlusal nature of the dento-maxillary is that it is difficult to draw the dividing limit between normal and pathological state. Deviations from occlusal morphology and function are often unexpected consequence of dental procedures, plus, as a starting point dental architecture itself.

The restoration of the "peaceful state of occlusion" is a priority in the medical practice requiring the follow-up of each patient. In this case the completion of clinical information through data provided by complementary exams becomes a necessity.

## Materials and methods

The research was conducted on a total of 45 patients who presented themselves at Prosthodontics Clinic of the Faculty of Dentistry at the University of Medicine Craiova. The radiological examination was conducted in collaboration with the Department of Imaging and Radiology. In this study we included patients, of both sexes, that had no problems associated with the oral mucous or other general disorders.

In the Department of Prosthodontics the commonly used technique is the intraoral graphical registration. It is used in this manner a partially programmable articulator and the

Gelber set. Recording the position of the jaw compared to the skull involves using face bow transfer. The facial arch is provided with a nasal stopper which permits the stabilization of the patient, also materializing the horizontal plane of reference depending on the length of the stopper rod attachment site is located approximately in the plane Frankfurt. Radiological examination was performed on groups of teeth, or teeth at the front and side teeth in both the maxilla and mandible as and panoramic radiographs.

## Results

The registration intraoral graphics is a relatively simple method but with superior results compared to the classical methods of determining the premature contacts and the occlusal interferences. The clinical exam in many cases can provide wrong data on dento-dental relationships and false information on determining the centric relation and maximum intercuspidal relationship. The technique proves its importance in the occlusal rebalancing by selective polishes performed both to patients who show signs of occlusal dysfunction, and especially in situations where restoring the integrity of the dental arch is achieved by gnathoprotetics devices.

The radiological exam highlights the changes in the dental and bone injuries related to the development of dental, periodontal or other,

whose clinical manifestation and dysfunctional symptoms can overlap.

Based on these observations we selected a series of clinical cases that we present in this paper.

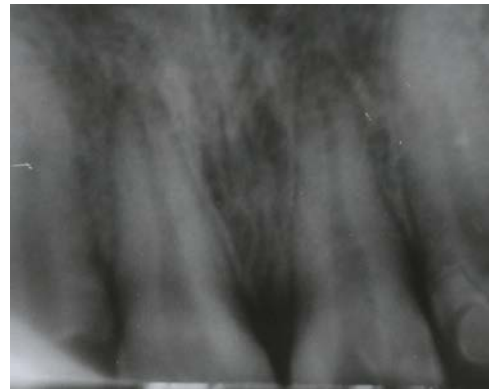
### **Case report 1**

S.M. patient, 26 years old, requires a complete dental checking and accuses a slight retraction and bleeding of the gums when brushing the front maxillary and mandibular area. The clinical examination shows the presence of the caries at the neck level of the dental units together with an abrasion located in the upper front incisor level (2.1.), at the incision level, and at the mandibular central incisor (3.1.) due to the vicious habit of interposition of various objects at this level. The mandibular dental arch presents an incorrectly executed conjunct non-physionomic prosthetic which at the clinical examination shows premature contacts and interference in the lateral movement, also proven by the studied models mounted in the articulator. At the mandible it is observed the presence of tremor together with the opening of the interdental space 3.1.a-3.2. and at the level of 4.1 - 4.2.



**Fig.1.Clinical aspect, overview**

Radiologically, at the jaw level, we have noticed minor bone injuries of various types: low bone resorption of the interalveolar septum, this one having an amputated aspect or being of the type of halisteresis resorption in the central zone of the interalveolar bone septum with the hypercondensation of the internal alveolar blade. The radiological examination at the mandibular level shows for the inferior frontal incisors a sharp amputation of the interdental septa accompanied by a decrease in volume of the pulp cavity.



**Fig.2.Interalveolar septa resorption**



**Fig.3.Horizontal and vertical alveolar bone resorption)**

### **Case report 2**

V.C.patient, 54 years old shows to the dental checking accusing the presence of lesions in the maxillary front group. Clinical examination shows at the jaw level, in the lateral areas, the presence of two non-physionomic incorrectly executed prosthetics. The models analysis in the half programmable articulator proves the presence of the premature contacts and of the occlusal interferences. The lack of the occlusal rebalance therapy after the completion of the prosthetics determined the appearance of the occlusal trauma clinically put into evidence in this case for the superior frontal group by typical myolysis lesions.



**Fig.4.Clinical aspect right maxillary arcade,**



**Fig.5.Clinical aspect, left maxillary arcade**

Radiological examination shows us the geometry of the myololysis lesions, pathognomonic sign in the occlusal trauma, hypercementosis at the 3.7. level



**Fig.6.Radiological image of the myololysis lesions, diffuse calcifications**



**Fig.7.Hypercementosis and diffuse pulp calcifications 3.7.**

## Discussions

The occlusal dysfunction determines the occurrence of some supraliminal forces, traumatogene, but their transmission direction coincides with the route of the physiological occlusal forces overtaking: the tooth - the periodontal ligament - the alveolar bone[1,2]. Our research showed that poorly made prosthetic rehabilitation in conjunction wrong endodontic treatments causes premature contacts and occlusal interferences, situations in which the horizontal occlusal forces cause changes occurring at the dental-periodontal level[3,4,5]. The consequence of this situation serves to emphasize or even aggravation of the occlusal dysfunction[6,7]. In this way the occlusal trauma occurred either in the dental unit or dental group or lead to the destructions of the periodontal ligaments manifested by tooth mobility and bone lesions manifested by resorptions or emphasized bone appositions.

The action of the microbial factors depends on the ratio of the interalveolar bone septum peak and the apical level of the subgingival bacterial plaque adherent to the gingival sulcus epithelium. The bacteria located at this level have a range of 1.5-2.5 mm. The increase of their virulence induces the increase of their outreach and causes inflammatory lesions of interdental space structures[8]. As for the patients with marginal periodontal with normal clinical aspect the gingival bacterial penetration level is low, the bacterial plaque does not penetrate deeply and completely the gingival sulcus epithelium.

It can be concluded that the dental tissues subjected to the occlusal trauma undergoes a hypercalcification process[1,8]. The coronary volume can be reduced, amputated by more or less pronounced abrasion processes. We noticed that in some cases that, after a relatively short period, the occlusal lack of balance after the prosthetic treatments allows the appearance of the abrasion areas, mainly in the antagonist arches. The pulp cavity can appear much reduced due to the deposition of the secondary dentine, and sometimes it is observed the appearance of the pulpolithes.

There can be detected inversions of the crown-root ratio in horizontal and vertical direction and myololysis lesions, showing clear that the tooth suffers from occlusal trauma. All our studies have shown the association of the myololysis lesions with the phenomenon of occlusal trauma in which the presence of tooth mobility was associated in most of the clinical

cases. The radiography is particularly important when the clinical symptoms are relatively minimal[9.10]. We noticed horizontal and vertical resorptions of the alveolar bone. The reversal of the crown-root ratio in the horizontal direction occurs when increased abrasion bring the surface of the occlusion in the maximum coronary equator, increasing the instability of the tooth. Changing the crown-root ratio in the vertical direction is highlighted when the clinical crown is increased by resorptions and alveolar atrophy, too high fillings, incorrect prosthetic treatment [11], as showed in our research.

## Conclusions

1. If the occlusal trauma occurs in patients with a periodontal with clinically normal alveolar bone and ligament it causes minor injuries without having inflammatory character.

2. The marginal periodontal disease with bivalent, occlusal and bacterial etiology, is clinically manifested by signs of inflammation, but it is accompanied by the damaging of the fibers of the ligament and of the alveolar bone structures.

3. The occlusal trauma produces in dental tissues a hipercalcification process.

4. The resorptions and the alveolar atrophy determine the changing of the crown-root ratio in both in the vertical and in the horizontal direction.

5. The deposits of dentine, side senescence produce an uniform narrowing of the pulp chamber and root canal almost to extinction.

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