OCCLUSION TRAUMATIC AND IATROGENIC FACTORS

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***Abstract**: The role of occlusion in temporo-mandible joint disorders etiology has not been fully cleared up until now and there cannot be drawn up treatment schemes in order to solve them. The clinical picture associated with traumatic occlusion takes various forms and can be highlighted at the level of any oro-dental structures. In the etiology of traumatic occlusion occur several factors (decaying processes, edentulous without restoration, iatrogenic dentistry, bruxism, primary tooth position changes and migration) which contributing to showing up of premature occlusal contact and interference with the effect of unbalanced occlusal forces. Has been observed a correlation between the 35-50 aged group and occurrence of periodontal diseases (p<0,001) as a result of unadjusted fixed restored prosthetics, and these subscribe to the ordinary clinical forms of the periodontal disease (gingivitis, chronic superficial land deep marginal periodontitis) which can add manifestations of occlusion trauma.*

***Key words:** occlusion traumatic, iatrogenic factors*

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1. Introduction

The occlusion causing trauma injuries can include the lesions of all components of the dento-maxillary apparatus (teeth periodontium, dento-periodontal joint, neuromuscular system) coducted by occlusal interrelationships(Popa, 2004). The role of occlusion in temporo-mandibular joint disorders etiology has not been fully cleared up until now and there cannot be drawn up treatment schemes in order to solve them. Much of confusion about cause and effect relation ships results from failure from differentiating between causative factors and contributing factors (Dawson, 2007). The occlusion trauma is a disorder that produces a lesion at the teeth-maxillary apparatus, due to some dysfunctional forces in the long term that overcome its adjusting capacity. This can be primary or secondary(Popa, 2004).The primary occlusion trauma refers to the harmful action of an occlusion force dysfunctional as direction, intensity and time on a periodontal healthy tissue. Unlike the primary occlusion trauma, the secondary one appears as a result of physiological or not occlusal forces on a affected periodontium. Patients with temporo-mandibular disorders have the clinical aspects and symptoms that sometimes are classifiedas parafunctions. That is why the treatment the initial treatment must be directly focused to remove the parafunction in order to reduce the trauma present at the occlusion level and implicitly on thetemporo-mandibular joint components and muscles (Wright, 2005).

2. Purpose of the Study

Due to a reduced number of information about patients, the manifestations, most of the times, remain without a diagnosis and there is no intervention in proper time in order to correct them (Shillingburg et al., 1981).

The study on temporo-mandibular disorders aim to point out a synthesis view on appearance, diagnose and treatment of these disorders.

Drawing up the dentist’s attention on errors and medical mistakes that arepotential iatrogenic periodontal factors with patients with fixed restored prosthetics and changes occurred in the periodontal irritation area.

3. Material and Method

There have been selected 655 patients, taken over through medical assistance by request, aged 20-60, having different degrees of periodontal disorders, 198 patients with unadjusted periodontal fixed prosthetic restorations. It has been followed underlining the existence of iatrogenic factors, periodontal status, appreciation of fixed prosthetic restorations quality correlated to the marginal periodontium, correlation between the clinical aspects and the x-rays (retroalveolar x-rays, OPT) in order to realise the shape, degree of osseous periodontium disorder and clear up the etiopathological aspects. The study carried out on temporo-mandibulardisorders is meant to point out a synthesis view regarding the appearance, diagnose and treatment of these problems.

4. Results

Atpatients with periodontal diseases and prosthesis with periodontal iatrogenic potential, we have observed an increased incidence of fixed prosthetic restorations (54,29%), followed by incorrect obturations(32%) and incorrect removable bridges (17,35%). Prosthesis is present in all 198 patients with fixed prosthetic restorations maladapted periodontal and adds to iatrogenic prosthetic factors (cervical, occlusal, proximal marginal unadjusted, incorrect report of the bridge with the crest, material used in prosthesis). We established a greater frequency of direct iatrogenic prosthetic factors through un-corresponding cervical adaptation (42,4%), followed by the association of direct and indirect iatrogenic factors through the cervical and occlusion lack of adaptation of fixed prosthetic dentures (22,7%). Bacterial plaque is present in all cases in the study, occupying a decisive position in the etiopathogeny of periodontal disease. There has been observed a correlation between the 35-50 aged group and occurrence of periodontal diseases ($p<0,001$) as a result of unadjusted fixed restored prosthetics, and these subscribe to the ordinary clinical forms of the periodontal disease(Gingivitis, chronic superficial marginal periodontitis, deep marginal periodontitis) to which can add manifestations of occlusion trauma.

5. Discussion

5.1 Etiology of Traumatic Occlusion–iatrogenic factors

Iatrogenic causes areincorrect prosthesis, obturations unadjusted with the occlusion, orthodontic treatments incorrectly coordinated.

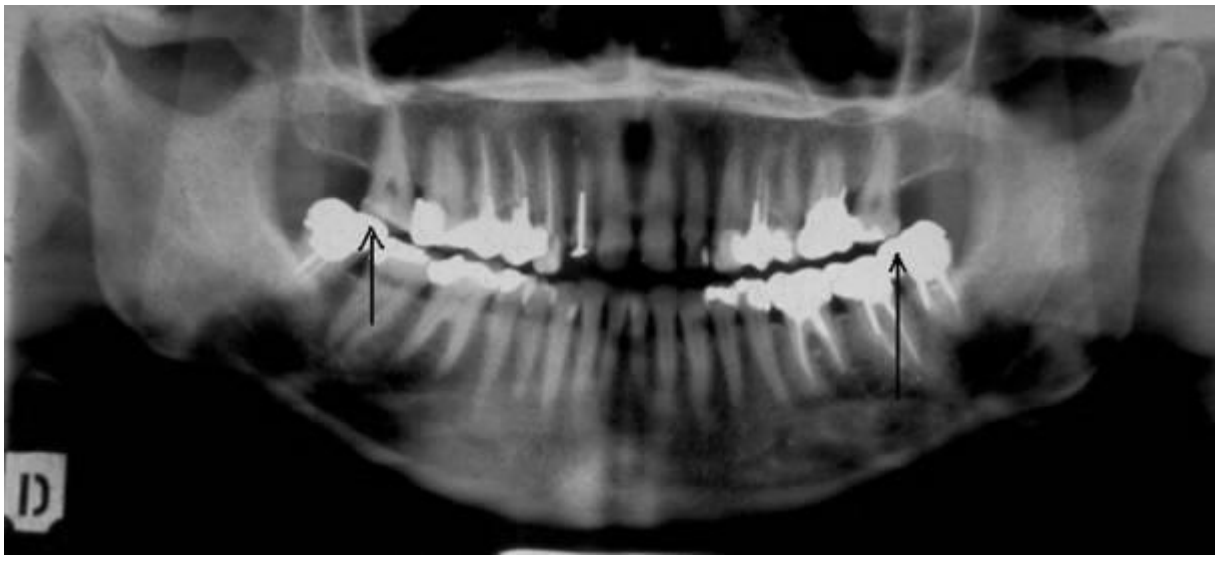

Fig. 1. Iatrogenic factor: incorrect obturations(illustrated trough panoramic x-ray)

Pathological contact at the level of back teeth hinders the front gear. Balance of arches can be troubled in the case there is a premature contact, where there is a pressure on the occlusion side of a tooth by the slope of an incorrectly remade cusps. This phenomenon shall lead in time to a tooth shift that shall break the proximal contacts continuity.


Fig. 2. Iatrogenic cause: incorrect fixed restored prosthetics(illustrated trough clinical and panoramic x-ray)

Incorrect fixed restored prosthetics with plan uneven bite, Rxis observed condensation in bone structure at the intermediary pole which is in occlusal trauma (Fig.2.).

5.2 Etiology of Traumatic Occlusion –bruxism, abrasion, cracks, fractures

Bruxism, abrasion, cracks, fractures that appear in teeth are caused by occlusion disorders. Apart from physiological wearing, if an excessive abrasion appears at the level of a tooth face it important to determine the cause and, if possible, to take the measures in order to stop the phenomenon from its very appearance.

Abrasion faceting are small wearing surfaces on a tooth (slant or slope) that identically correspondent on the opposed tooth. Located pathological abrasion is a form characteristic by presence of faceting at the level of 2-3 pairs of teeth between which there are no functional contacts either in RC or IM. In order to overlap them, the patient has to make a combined antero-lateral movement of the mandible. As a result of this movement there can occur pains that lead to the diagnosis of eccentric bruxism. Generalized pathological abrasion is not in accordance with the biological age and appears most frequently in bruxism.

It is noticeable that in teeth suffering from occlusion trauma, especially in those with pathological abrasion, there can occurs fractures that affect reduced enamel areas but can lead to a "peeled" aspect of the crown.

Fig. 3. Pathological abrasion

5.3 Etiology of traumatic occlusion–pathologic migration of teeth

One of the earliest signs that appear after pulling out teeth not followed by fitting in prosthesis is a modification of teeth bordering the breach. Extractions not

followed by fitting in prosthesis are the origin of abnormal movements of the teeth close to the edentulous. They can migrate horizontally, by bending, or vertically by egression or extrusion in order to find an opposing contact. These movements damage serious the occlusion (Le Breton, G. 1997).

Lack of harmony can appear after some time subsequent to an intervention at the arches level and can be the origin of an intra and/or interarches disorganization.

Wrong occlusion, in some cases, modifies the position of mandible, damaging its relation with the maxilla even if the teeth have contact. Because of this, the mechanism at the level of the temporo-mandibular joint changes (Wright, 2005).

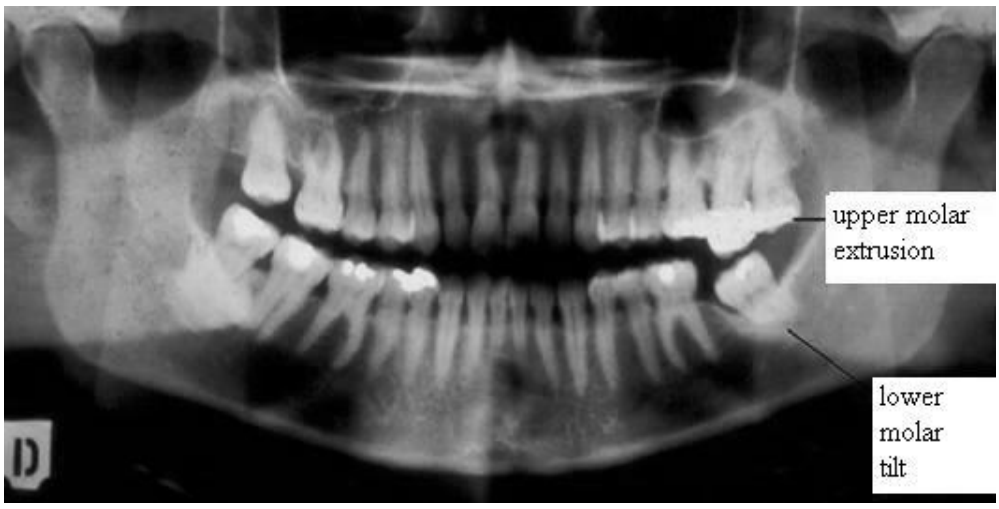

Fig. 4. Vertical and horizontal migration (illustration with panoramic x-ray)

Damaged occlusion as a result of extraction not followed by fitting in prosthesis of 3.7 that caused the extrusion of opposing molar and migration by bending of the adjacent wisdom tooth (Fig. 4.).

4.4 Symptoms of traumatic occlusions–dental signs

Dental signs represented by cuneiform lesions are the most frequent lesions at the junction between enamel and cement and lead to a loss of tough substance and cause local hyperesthesia. After carrying out a study that included 655 cases, it has been pointed out the cause-effect relation between the cuneiform lesions, hyper-esthesia caused by them and the occlusion relation at the teeth level. Observing this alteration type in patients affected by parafunctions can only strengthen this assumption.

Fig. 5. Cuneiform lesions caused by occlusal trauma. Generalized pathological abrasion

4.5 Symptoms of traumatic occlusions–periodontal signs

Periodontal signs are: gingival recession, alveolar bone resorption, tooth mobility, Stillman's striated (Popa, 2004). Dental mobility in traumatic occlusion different from the one in periodontitis trough the fact that in occlusion trauma we find 1-2 mobile teeth which have no periodontal pockets.

Patient M.C. came with pains in quadrant 2 and 3. As a result of the clinical examination there have been noticed the following aspects: maxillary left lateral edentulous, conjunctively prosthesis with a metal-acrylic bridge, made incorrectly; covering all esthetic crowns unadjusted with 1.4 and 1.5; (Fig. 6.)latero-lateral mandible edentulous without prosthesis. There has been noticed a major gum retraction that shows out the external face of the vestibular root of 1.4 and 2.5 (Fig. 7.).

Fig. 6. Intermaxillary relations, front view and upper arch appearance

Fig. 7. Gum retraction at the level of 1.4 and 2.5

Subsequent paraclinical investigations with aid of panoramic x-ray show the following situation:

Fig. 8. Panoramic x-ray

- at the maxilla - horizontal osseous atrophy, stressed by a vertical resorption at the level of pillar teeth of the fixed prosthesis (Fig.8.).

- at the mandible -chronic apical lesions and overflowing obturations.The patient has suffered from an occlusion trauma due to fitting in unadjusted prosthesis that have overcharged the pillar teeth and caused damage to the superficial and deep periodontium (Fig.8.).

4.5 Symptoms of traumatic occlusions–joint signs

Clinical signs arearthralgia, stiffness of ATM, artrogenahypokinesia, joint noises. Radiological signs are narrowing of the joint space and presence of unevenradiotransparency, irregular osseous contours, deformation of mandibular condyles, atrophy of articular tubercle, osteophytes that transpose an adjusting favorable process.

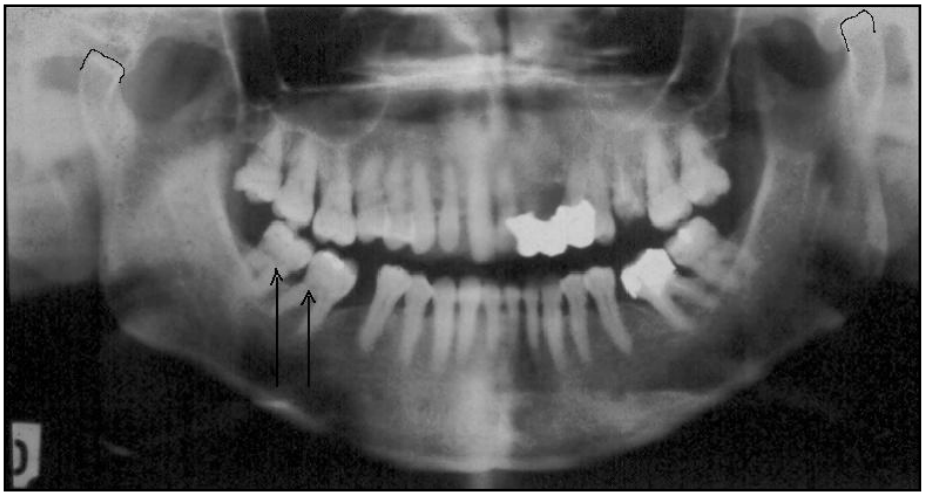

Fig. 9. Joint modifications – distortion of mandibular

Mandibular condyles have lost their oval shape (arthrosis), the mandible movesto the left by sliding due to premature contacts at the level of molars on the right and the migration of those on the left (Fig.9.).

Fig. 10. Joint modifications-arthrosis, asymmetry of ascending branch of the mandible in a teenager who benefited from orthodontic treatment

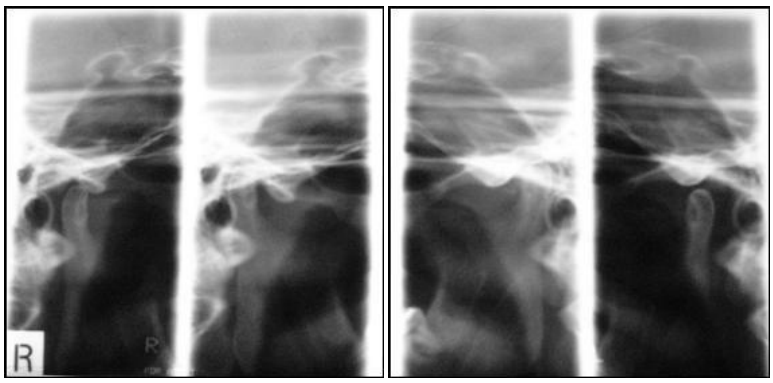

Fig. 11. Asymmetry of mandibular condyles when the oral cavity opens

4.6 Symptoms of traumatic occlusions–muscular signs

Muscular pathologies are according to the same scheme like joint disorders when the situation occurred is of an occlusion one. Clinical forms are numerous: myositis, myospasm, localised myalgia, myofibrotic contractions.

4.7Treatment- directions

- Removing the cause which caused the traumatic occlusion;
- Occlusal balance (identification premature contacts and interferences; methods of repositioning the mandible; selective polishing);
- Restoration of the occlusal balance by obturations, conjunct and adjointprostheses.

5. Conclusions

- Teeth restoration has to be made in harmony with the masticator apparatus structures.
- The prosthetic restorations have to be made by an individually functional occlusal concept in order not to favor the occlusal trauma.
- Therapy in traumatic occlusionis very complex and has to be carried out by a multidisciplinary team.

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