

UMF Târgu Mureș

Doctoral School

Doctoral thesis abstract:

“Clinical research on dento- periodontal changes in orthodontically treated adult patients”

Author: **Tudor Alexandru Hăntoiu**

Scientific Supervisor: **Mariana Păcurar**

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The correlation between the presence of dento-maxillary anomalies and periodontal suffering was highlighted by many researchers, and the existence of a significant number of patients with malocclusions accompanied by periodontal changes, occurred early or late during orthodontic therapy, is a field with multiple research areas.

The thesis is divided into a general part in which the current state of knowledge is presented and a special part of personal contribution, consisting of three clinical trials and a chapter with case presentations.

The general part contains three chapters, summarizing the knowledge on morphology of and function of the periodontium. A special attention is given to the maintenance of the equilibrium of the periodontal tissues during orthodontic treatment. This is obtained by correctly dosing the forces applied on the teeth that need repositioning. The third chapter of the general part contains information on the biomechanical parameters of the orthodontic movement and on the types of orthodontic movements. The general part concludes with the fact that the periodontal evaluation of the adult patient treated orthodontically includes not only oro-dental hygiene status detection but also the level and condition of the attached gingiva.

The personal contribution is divided into four chapters, which include clinical statistic studies, clinical studies and case presentations designed to fully cover the theme issue. The purpose of the thesis is to contribute, through undertaken research, in substantiating the theories about the link between orthodontic treatment and periodontal changes. Also treatment options for late complications of the orthodontic treatment are explored and presented.

The first chapter is entitled “**Clinical- statistical study on the correlation between dento- maxillary anomalies and periodontal disease**”. Our study starts from the need to know the particularities of the dento-periodontal complex in children, youth and adult patients, the investigation and diagnosis of different types of periodontal disease present at the beginning, during or at the end of orthodontic therapy and the desire to deepen interrelationship between periodontal pathology , dentomaxillary anomalies and other parameters that can become true disease risk factors: dento-gingival junction positioning, periodontal tissue under building, higher values of plaque indices, frequent gingivitis, bad habits and puberty. The results of the study are consistent with the present literature and underline the need of constant supervision of the periodontal changes that may occur in orthodontically treated patients.

The second chapter of the personal contribution is entitled “**Periodontal changes consecutive to orthodontic treatment**”. Orthodontic therapy is long lasting and effects on periodontal structures can be both beneficial and destructive. To minimize iatrogenic effects it is necessary to carefully evaluate the periodontal structures and the orthodontic treatment needs to relay on gentle forces.

The most common types of iatrogenic effects observed during orthodontic treatment are gingival retraction and root resorption. A clinical- statistical study on 52 adult patients aged 30-52 was conducted to estimate the prevalence of gingival recession and root resorption caused by orthodontic treatment.

The third study, “**Clinical study on therapy options for late complications of the orthodontic treatment: invasive cervical resorption**”, evaluates the treatment options for teeth with cervical resorption in order to maintain these teeth on the dental arch. A series of 12 patients with cervical resorption were examined and teeth were treated. Orthodontic treatment is the most common cause of the cervical resorption. Teeth with class 1 and 2 cervical resorption responded well to conservative treatment without signs of pulpal inflammation. Teeth with class 3 and 4 cervical resorption needed more complex treatment including root canal and surgical exposure of the defect. The rate of success of the treatment in these cases decreased.

The fourth chapter, “**Clinical cases**” contains case presentations of orthodontic treatment that extends into adulthood. The end results of the treatment are presented.

The final conclusions are the following:

An important element for orthodontic biomechanics is to avoid intrusion movements of the upper and lower front group without a thorough analysis of the angles INA and INB.

Fixed orthodontic treatment in young adults should be established only after rigorous assessment of marginal periodontium and jiggling type movements (that overwhelm the muco- gingival junction) must be avoided.

Due to the significant loss of hard dental tissue, which in the case of cervical resorption interests the enamel cementum junction, these teeth are at increased risk of fracture and hence their resistance to the masticatory forces is reduced.

It is very important to maintain a good oral hygiene during orthodontic treatment to avoid periodontal complications.

Gentle force should be applied during orthodontic treatment in order to avoid complications like root resorption and gingival recession.