

ANATOMICAL, CLINICAL AND HISTOPATHOLOGICAL STUDIES REGARDING DENTAL ERUPTION IN CHILDREN

PhD candidate: Monica-Cristina Muica (Nagy-Bota)

Coordinator: Prof.dr Păcurar Mariana, PhD

Introduction. Tooth eruption is a highly complex, genetically influenced process, which should ensue normally, without disorder. The order and timing of temporary teeth eruption, especially of permanent ones, underwent a series of changes in recent decades as a result of intensive refining process of foods with fiber removal, and eating habits of the younger generation, a fan of fast food diets, giving up eating fresh vegetables and fruits, which causes a physiological attrition of enamel, favoring the physiologic root resorption.

The motivation of this study was to evaluate patterns of eruption at a local group of children and quantification of existing misstatements by studying records and orthopantomography x-rays in patients of Pedodontics-Orthodontics Clinic in Tg. Mureș. Also we planned to conduct a study of the presence of immunohistochemical markers Ki 67, P53 and CD34 at the level of dental buds in various stages of intrauterine development to better understand odontogenesis mechanisms and achieve a forecasting model of tooth eruption in embryonic stage.

The thesis is comprised of two parts: 1. Current status of knowledge and 2. Personal contribution

Current status of knowledge (General) includes information about: tooth eruption mechanisms, tooth odontogenesis, eruption sequences of teeth and dentomaxillary anomalies with eruptive etiology.

Personal contribution consists of three studies which aim at assessing patterns of tooth eruption in children, assessing the eruptive etiology of dental anomalies of position and an immunohistochemical study carried out in dental germ.

a) CLINICAL STUDY TO EVALUATE TOOTH ERUPTION PATTERNS OF PERMANENT TEETH IN A GROUP OF CHILDREN. For this evaluation, we selected a total of 456 children from both urban and rural area. Meanwhile, parents were handed a questionnaire of own conception, comprising a total of 10 questions relating to eating habits, dental hygiene and knowledge of parents about dental eruption.

Following our study we highlighted 3 atypical sequences of eruption of permanent teeth with higher frequency in females in urban areas. Pathological eruption is more common than the normal eruption, especially in females compared to males. From the answers to the questions, I found a mediocre concern of parents over the situation of dental status in children regarding eruption, tooth decay and a negligent attitude regarding temporary tooth therapy.

b) RETROSPECTIVE LONGITUDINAL STUDY ON ANOMALIES OF TOOTH POSITION WITH ERUPTIVE ETIOLOGY. We conducted a retrospective longitudinal study in which we studied the records and orthopantomography x-rays of 685 patients which presented at the Department of Pedodontics-Orthodontics in Târgu Mureș in 2005 - 2013. From the study I noticed that of all the studied dental anomalies, the one with the highest incidence is dental inclusion followed by ectopic teeth, and diastema, tooth rotation and dental transposition. Decreasing order as frequency of inclusions is: canine, premolar, incisor and molar. Inclusions in the upper arch are more common than those in the lower arch. Dental inclusion is more common in females than males.

c) IMMUNOHISTOCHEMICAL STUDY OF PHASE Ki 67, CD 34, P 53 IN HUMAN DENTAL GERMS. Ki 67 is a cellular marker for proliferation often used for lymphoma, malignant tumors of the breast, endocrine malignancies and malignant brain tumors. P53 protein regulates the cell cycle and has

inhibiting action over cell multiplication. It seems that by maintaining a constant level of P53 in embryonic cells, they benefit from development under optimal conditions, any disruption of P53 levels leading to possible malformations. CD34 is a transmembrane glycoprotein that is expressed in blood cells in the early stages of development, missing in the mature cells. It seems that they govern the migration and differentiation of blood cells. As result of this study we note: all markers Ki67, P53 and CD34, were marked out at the level of dental germ. Phrase Ki67 gradually decreases with the stage of embryonic development of the tooth, starting with weeks 9-10 of intrauterine life until weeks 21-24 of intrauterine life. Phrases P53 and CD34 were decreased from weeks 9-10 until weeks 13-16 of intrauterine life, following a level increase by weeks 21-24 of intrauterine life.

After all the studies we report 10 general conclusions and the thesis has 210 references.

Keywords: tooth eruption, dental inclusion, ectopic tooth, human tooth bud, Ki67, CD 34, p53, tooth development