

# THEORETICAL AND PRACTICAL ASPECTS IN THE THERAPY OF MORPHOFUNCTIONAL DISORDERS OF THE DENTO-MAXILLARY SYSTEM AT AGE RIGHT AFTER BIRTH - PRELIMINARY STUDY

MĂDĂLINA MALIȚA<sup>1</sup>, ELENA-CRISTINA MARCOV<sup>2</sup>, OANA EFTENE<sup>3</sup>, CAMELIA IONESCU<sup>4</sup>, MIHAI BURLIBAȘA<sup>5</sup>, AUGUSTIN MIHAI<sup>6</sup>, VIOREL ȘTEFAN PERIEANU<sup>7</sup>, COSMIN MEDAR<sup>8</sup>, GABRIELA TĂNASE<sup>9</sup>, MARIA GLENCORA COSTACHE<sup>10</sup>, RALUCA COSTEA<sup>11</sup>, RADU COSTEA<sup>12</sup>, NARCIS MARCOV<sup>13</sup>, IULIANA BABIUC<sup>14</sup>

<sup>1,2,3,4,5,6,7,8,9,10,11,12,13,14</sup> "Carol Davila" University of Medicine of Pharmacy Bucharest

**Keywords:** morpho-functional imbalances, age immediately after birth, dentist

**Abstract:** Developing the dento-maxillary system (DMS) from birth (the age immediately after birth) up to the age of 12, involves a multitude of changes in the structure of this system. In the age of growth a sequence of deviations from the morphology and function of the dento-maxillary system appear. Thus, in this paper, we have approached certain aspects of both theoretical and practical nature, which can interfere in the formation and development of dento-maxillary system at the age immediately after birth.

## INTRODUCTION

As it is well known, the development of the dento-maxillary system of the individuals of our society reveals a multitude of tendencies favoring the installation of abnormal relationship, a deficient function, as well as the consecutive occurrence of odontal and/or periodontal pathological processes.(1-5) Thus, in the age of growth a sequence of deviations from the morphology and function of the dento-maxillary system appear.

Specifically, this succession or multitude of deviations of morphology and function of the dento-maxillary system, in fact reflects the factors that change the growth itself or influence it, and it also condition it.(1-5)

In this context, dental care assistance becomes more likely preventive and treatment assistance of morpho-functional imbalances between the dento-maxillary system components that occur throughout life.(1-5)

## PURPOSE

Next, we briefly present the factors that condition dento-maxillary growth, thus:(1-5)

- Hereditary conditions, inherited from predecessors, who can cause disharmony, incongruences between different dento-maxillary system components;
- Factors related to tissue trophicity (proper nutrients required for the entire body), with a significant echo in the dento-maxillary system;
- Functional factors that guide and influence the development of dento-maxillary system from the moment of birth and throughout the growing period, factors that are the most important in determining the dento-maxillary system growth.

Thus, in the growth rate of an individual, we notice four different stages of the dento-maxillary system components, which must be necessarily known by any dental practitioner when intervening on the changes of the relationships: the age immediately after birth (first period); pre-school age (up to 6 years - second period); the age range of 6-12 years, which

represents the stage of change between temporary dentition and permanent dentition (third period); the age after 12 years (which represents the fourth period).(1-5)

Generally, all of these changes can be detected in real time, and with the help of extremely complex, yet extremely comprehensive medical imaging examinations.

However, in order to better understand these extremely important aspects in the formation and development of the dento-maxillary system, a brief explanation of the aforementioned notions is required. Specifically, in the growth of bones from the dento-maxillary system (maxillary and mandibular bone), there are growth differences left from their origin, with different rhythms and conditions. The maxillary bone, which makes a common body with the bones at the base of the skull, follows their growth conditions and is less influenced by the activity of the masticatory act. Mandibular bone (the mobile element of this system) is most influenced by the whole activity of the ensemble because it acts on all the mobilizing muscles: thus, this mobile bone, the mandible, actually governs the ratios between the two alveolar-dental arches in the whole growth period.(1-5)

But the growth of dento-maxillary system is also influenced by other elements that make health condition: contaminating infections; changes in hormonal tonus; complexity of the superior activity of the individual, especially in the final phases of growth, with an important role in the final modelling of the relationship between the elements of the dento-maxillary system.(6-16)

Practically, in view of the above-mentioned aspects, we will analyze in this material, starting from the age immediately after birth, the most important problems of the formation and development of dento-maxillary system, their relationships, their conditions, and what must be practically done to prevent and correct them, things that should be thoroughly known by every dental practitioner, no matter what specialty he has.

In fact, studying these issues is the very purpose of this material.

<sup>3</sup>Corresponding author: Oana Eftene, Str. Plevnei, Nr. 19, Sector 1, București, România, E-mail: mburlibasa@gmail.com; Phone: +40723 472632  
Article received on 26.07.2018 and accepted for publication on 03.09.2018  
ACTA MEDICA TRANSILVANICA September 2018;23(3):87-90

**MATERIALS AND METHODS**

In this paper, we will refer strictly to the age immediately after birth, which is in fact the first evolution period of life. Thus, at this time when the newborn body bearing a series of hereditary characters is largely dependent on the maternal body through the nutritional factors, it is found that its own functional element, which is very strong in directing growth, of this age: breast suckling.(1-5) Generally, breast suckling is essential for guiding the growth and constitutive relationship of the dento-maxillary system. Specifically, there is a continuous change in the maxillary and mandibular relationship in the various stages of evolution mentioned above: from head to head relationship, with a distalization tendency of mandible from maxillary.(1-5)

In fact, the mandible distalization is present in most newborn individuals. At birth, the edentulous jaw arches clinically show the mandible in a distal relationship of approximately 1 cm from the maxillary. The lack of breastfeeding, which is becoming increasingly rare today, negatively influences the growth and development of the mandible. Therefore, this condition (breast suckling) must be cultivated, and negative influences must be countered.(1-5)

Another extremely interesting aspect, and especially very important for the growth and development of the dento-maxillary system, which occurs during the transition from the baby's milk diet to the mixed diet, is the nutritional problem. Thus, more or less severe nutritional imbalances, such as rickets, with repercussions on the whole body may occur, which are also reflected in the dento-maxillary system and underlying functional abnormalities.(1-5)

Although prophylaxis of rickets is carried out through extremely rigorous monitoring, there is still an element that maintains the tendency to rickets and on which there is not enough action: the eating habits issue.(1-5) But during this period, there are at least 2 main trends in the diet of children, as follows:(1-5) the first tendency to use soft foods that do not require masticatory effort, the second in the content of food diet to predominate hydrocarbons and cereal products, both of which are considered rachitogenic diets. Another aspect is the selection of foods given to children by parents and/or grandparents, which can lead to certain sensitization and allergies that appear in contact with these foods.(1-5)

In all these aspects previously discussed (lack of natural breastfeeding, rickets, etc.), other problems can be added which may be the basis of functional dento-maxillary abnormalities in children immediately after birth: thumb sucking, persistence of infantile swallowing, persistence of oral respiration caused by obstruction of upper respiratory tract, vicious positions etc.(1-5)

Starting from the above-mentioned aspects, and to make a concise and convincing study, we made a questionnaire consisting of 5 questions, applied to a number of 63 dental practitioners (simple dentists, resident doctors, specialists in dental specialties: general dentistry, dental prosthetics, orthodontics and dentofacial orthopedics, pedodontics, endodontics, dento-alveolar surgery, periodontics, oral and maxillo-facial surgery). Subjects were aged between 29 and 67 years and had the following sex distribution: 48 of the subjects were female (representing 76.19%), while the remaining 15 subjects were male (representing 23.81%) (figure no. 1). The study was conducted between April 15 and May 20, 2018. Below, we will present the questionnaire applied to the 63 subjects:

1. What do you think the periods that occur in the rhythm of growth for the components of the dento-maxillary system are?

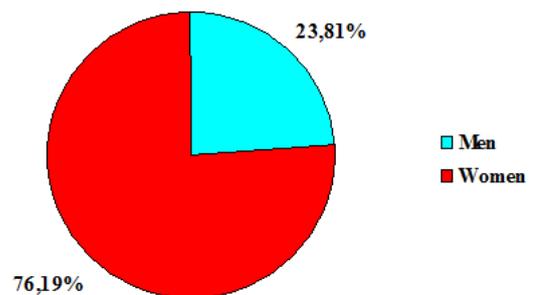
a. Age 0-6 years (first period); 6-12 years (second period); 12-18 years old (third period).

b. Age immediately after birth (first period); pre-school age (up to 6 years) (second period); the age range of 6-12 years, which represents the stage of change between temporary dentition and permanent dentition (third period); the age after 12 years (which represents the fourth period).

c. Age 0-8 years (first period); 8-14 years old (second period); age 14-18 (third period)?

**Correct answer: b.**

**Figure no. 1. Gender distribution of subjects involved in the study.**



2. How do you rate your newborn's natural nourishment (breastfeeding and/or breast suckling):

a. It is the first function in developing relationship between the components of the dento-maxillary system.

b. It has a secondary role in the growth and development of the mandible.

c. It produces frequent and sometimes very severe digestive infections?

**Correct answer: a.**

3. The tendency to replace breastfeeding with bottle-feeding and/or feeding the baby with the spoon has a negative effect on the formation and development of the mandible. In this regard, it is necessary to:

a. Infant feeding with the spoon should be fought.

b. Dental and pediatric staff should explain to mothers the importance of breast feeding of the baby, and in the case of replacing natural breastfeeding with bottle-feeding, it must completely mimic the natural suckling regarding position of the baby, head position, bottle position, of the holes, so as to allow a vigorous movement of the mandible.

c. Dental specialists should not be involved in this breastfeeding problem at all?

**Correct answer: a, b.**

4. The rickets, also known as the "nutritional disease of urbanization", presents:

a. Important repercussions on the dento-maxillary system and underlying functional abnormalities.

b. Produces sensitization and allergies to contact with certain foods.

c. It occurs during the transition from dairy food to mixed diet and is a nutritional problem.

**Correct answer: a, c.**

5. Vicious habits that can cause functional abnormalities of the dento-maxillary system are represented by:

a. Thumb sucking.

b. Persistence of infantile swallowing.

c. Persistence of oral breathing caused by obstruction of the upper respiratory tract.

d. Vicious postures.

e. An inadequate rest schedule.

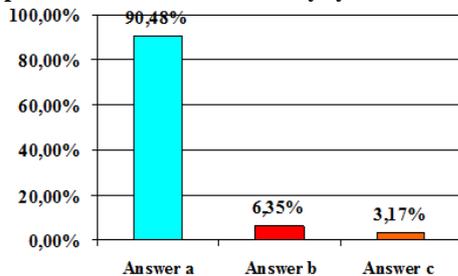
**Correct answer: a, b, c, d.**

**RESULTS AND DISCUSSIONS**

Following the study of the answers for the 5 questions, the following results were obtained:

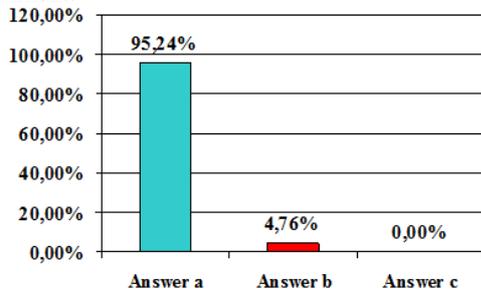
Regarding the period that occurs in the rhythm of growth of the dento-maxillary system, 57 subjects (representing 90.48%) responded correctly (variant a.), the remaining subjects choosing wrong options, 4 subjects (representing 6.35%) variant b., respectively 2 subjects (representing 3.17%) variant c. (figure no. 2).

**Figure no. 2 - Periods that occur in the rhythm of growth for the components of the dento-maxillary system**



In relation to the assessment of the natural feeding of the newborn by the study group, 60 of the subjects (representing 95.24%) provided the right answer, variant a., while only 3 subjects (representing 4.76%) chose wrong answer, variant b. (figure no. 3).

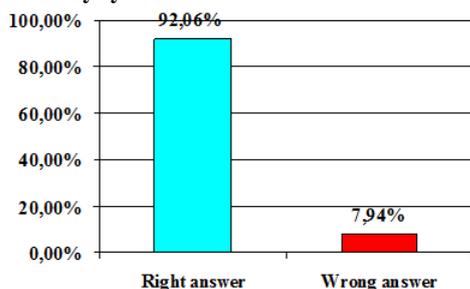
**Figure no. 3 - Appreciation of the newborn's natural nourishment.**



Regarding the replacement of natural breastfeeding, all practitioners have provided correct answers (variants a. and b.).

To the fourth question about the effects of rickets, 58 of the subjects involved (representing 92.06%) offered the correct answers (variants a. and c.), while the remaining 5 dental specialists (representing 7.94%) offered incorrect answers (figure no. 4).

**Figure no. 4 - Knowing the effects of rickets related to the dento-maxillary system**



The last question regarding the vicious habits that can cause functional abnormalities of dento-maxillary system all the practitioners involved in the study provided the correct answers.

**CONCLUSIONS**

Following the analysis of the answers to the 5 questions to which the subjects involved responded, we can conclude the following:

Breast suckling (breastfeeding) is the first function in the development of relationship between the dento-maxillary system components, on which we can effectively and prophylactically intervene through a good education of parents in this regard.

Rickets has a substantial influence on the bone development of the dento-maxillary system and is the basis for functional abnormalities caused by the vicious habit of thumb sucking, persistence of infantile swallowing, oral respiration caused by obstruction of the upper respiratory tract, but also vicious postures.

At this age, it is necessary, in addition to combating rickets, to combat the vicious habits and the defects produced by them, which persist after the removal of the causes.

The majority of subjects demonstrated a good theoretical and practical training in the therapy of morpho-functional imbalances of dento-maxillary system therapy at the age immediately after birth.

**Acknowledgement:**

*In this article, all the authors have equal contributions.*

**REFERENCES**

- Miyasaki-Ching C. Elemente clinice de stomatologie. Editura All Educational, București; 2001.
- Gall II. Asistența stomatologică. Editura Didactică și Pedagogică, București; 1971.
- Rosenstiel SF, Land MF, Fujimoto J. Contemporary fixed prosthodontics. Fourth Edition. Mosby Elsevier; 2006.
- Anusavive KJ. Dental materials. Philips' Science. Saunders Elsevier; 2003.
- Pătrașcu I, și colab. Materiale dentare. Editura Horanda Press, București; 2002.
- Cristache CM, Burlibașa M, Cristache G, Drafta S, Popovici IA, Iliescu AA, Zisi S, Burlibașa L. Zirconia and its biomedical applications. Metalurgia International. 2011;16(7):18-23.
- Lazăr V, Chifiriuc C, Bucur M, Burlibașa M, Sfeatcu R, Stanciu G, Savu B, Trăistaru T, Cernat R, Suciu I. Investigation of dental-plaque formers biofilms by optic and confocal laser scanning microscopy and microbiological tools. Revista Medico-Chirurgicala a Societății de Medici și Naturaliști din Iași. 2008;112(3):812-820.
- Burlibașa M, Cuculescu M, Tănase G, Mihai A, Temelcea A, Popa E. Dental alloys of prosthetic use - A retrospective of their use in Romania. Metalurgia International. 2009;XIV(16):51-53.
- Burlibașa M, Burlibașa L, Gavrilă LB, Gavrilă VR, Gavrilă L. microRNA a macro revolution in medical biotechnologies. Romanian Biotechnological Letters. 2008;13(6):3977-3983.
- Popescu FD, Popescu SM, Burlibașa M. Platinum group metals as contact allergens in oral rehabilitation. Metalurgia International. 2010;XV(3):12-18.
- Cristache CM, Ionescu C, Cristache G, Ionescu I, Iliescu AA, Burlibașa M. A 5-year prospective randomised clinical trial on the efficiency of two different attachment systems as retention for implant-supported mandibular overdenture. Radiographic assessment, cost analysis and final evaluation of treatment, success. Metalurgia International. 2009;XIV(16):27-34.

## CLINICAL ASPECTS

---

12. Cristache CM, Ionescu C, Burlibaşa M, Cristache G, Iliescu AA, Dumitriu HT. Retentive anchors versus magnets as attachment systems for mandibular overdenture. A 5 year prospective randomised clinical study. *Metalurgia International*. 2009;XIV(16):59-64..
13. Mocuţa D, Popovici LR, Dumitriu AS, Burlibaşa L, Ionescu CA, Sfeatcu R. Life quality-condition of social welfare. *Metalurgia International*. 2009;14:62-64.
14. Şteţiu AA, Oleksik M, Oleksik V, Şteţiu M, Burlibaşa M. Mechanical behavior of composite materials for dental obturations. *Romanian Biotechnological Letters*. 2013;18(4):8528-8538.
15. Bodnar DC, Pantea M, Bodnar T, Burlibaşa M, Dumitru SG, Cristache CM. Patologia mucoasei orale la pacienţii vârstnici – studiu clinico-statistic. *Acta Medica Transilvanica*. 2012;2(2):56-60.
16. Bodnar DC, Dimova C, Bodnar T, Cristache CM, Burlibaşa M, Sfeatcu R. Dental management of patient with psychiatric disorders. *Modern Medicine*. 2010;17(10):538-543.