

Interrelations Between Odonto-Parodontal Affects of the First Permanent Molar and their Odontogenetic and Morfostructural Peculiarities

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The permanent first molar is the first tooth in the permanent series that erupts into the archway and thus transforms the temporary dental arcade into mixed arcade, being the only stable element throughout the mixed dentition. The plurivalent importance of the permanent molar must be considered permanently in the harmonious development of the dento apparatus. This tooth has a determining role in dental arcade functionality, being the oldest witness of the permanent occlusion. The permanent first molar is a guardian of the occlusal memory and contributes to the agreement of the predetermined with the posterior one (the temporo-mandibular joint). The first permanent molar improves the relationships in the vertical plane, the early loss of it generates morphological and functional disorders which takes place cascaded across the arcade, and its extraction must be considered a personal failure of the dentist. The study consists of 80 patients divided into two groups; the group I consists of 45 children with chronological ages ranged between 5-6.6 years; the second group selected from dental care, a total of 35 children aged between 8.6-10 years. Dental caries morbidity has increased significantly over time and surprised by age the younger becoming a true social scourge. The current pediatric dentistry emphasizes new aspects of the normal and pathological growth of the dento-maxillary apparatus and underlines the special significance of the morpho-structural and functional integrity of the odontous units in close correlation with the subsequent development of the dento-maxillary apparatus in general.

Key words: permanent primal molar, permanent occlusion, morphological and functional disorder

The permanent molar occupies a special place in the permanent teeth category due to its particular vulnerability to caries, which results in the worsening of all indicators for the entire period of growth [1-10].

Thus, it can be the only tooth injured in children with limited causality. The premature damage to the permanent molar with the compromise of the lateral support zones constitutes an authentic risk factor for the systemic hemostasis of the dento-maxillary apparatus. Early loss of this molar generates morphological and functional disorder that unfolds in cascade throughout the arcade extent - the so-called *first permanent molar syndrome*.

Among the factors that favour the carioactivity of the first molar permanently and justify the vulnerability of this tooth, we mention:

1. The formation and mineralization of this tooth occurs, at least in part, in the difficult stages of development, i.e. from the moment of birth to the age of three, the frequency of first-year imbalances is responsible for the mineralization disorders of the harsh structures, neonatal of Schoor-Orban, which marks the deficiency from the moment of birth, passes to the cracks and occipital dips.

This results in a particular vulnerability of the occlusal face to the dental caries, and structural deficits and hypoplasias may also occur.

2. The eruption of this tooth is very long, and from the moment it appears under the mucosa until the antagonist

encounters the occlusion plan, it takes an average of 6 months to one year, a period that is devoid of functionality. Massive accumulations of bacterial plaque on the occlusal surface would follow.

3. Posterupting is done in difficult conditions because, at least immediately after the eruption, this molar cohabits with caries and mobile milk teeth that favour retention and disfavour self-cleansing.

Therefore, enamel macro- and microdefence does not benefit from salivary repair possibilities.

4. The morphological features of this tooth are also disadvantages that favour the appearance of cavity. These peculiarities are represented by the following main aspects:

- the occlusal face of the lower molar is provided with deep and retentive cracks, and the upper molar with two deep beaks, separated by a strong diagonal ridge; this tooth has the largest occlusal surface;

- the medial face has the second temporary molar a wide contact on the surface that changes disadvantageously after the age of 7 through the intermediate migrations and the closure of the retrocanine space, and after 8 years of age by the cavities and by the mobility of the temporary teeth. All these thus favouring retention and the consequent appearance of pack injuries that are difficult to diagnose and treat;

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- the distal face also becomes subject to retention after the eruption of the second permanent molar with which the contacts are firm for a long time,

- the vestibular face of the molar may be the seat of deep and retentive dips, and the palatal face at the upper one may present an area the retention in the junction with the Carabelli tuber

- the root growth is accomplished in a long post-eruptive period, it takes about four years to reach the final length so that the apex gains the diameter of the teeth mature at the age of 10.

5. The predominance of carbohydrate in the diet at this age, as well as the oral environment with poor oral hygiene, often because hygiene skills at this age are not yet well formed, may be factors that explain the causality of susceptibility.

All these factors explain not only the frequency of dental caries, but also those of pulp complications, and especially that of chronic pulp and gangrene at this tooth. These can be complicated and have the disadvantage that they can stop the growth of the root.

The pathology of the first permanent molar include dental caries, pulp disorders and structural abnormalities.

Thus, abnormalities such as hypoplasia, fluorosis, discromy, acquired or hereditary abnormalities (amelogenesis and imperfect dentinogenesis, dentinal dysplasia, odonto-dysplasias) affects the hard tissues, modifying the coronary anatomy of this tooth.

The permanent prime molar cavity is predominantly occlusal, related to the physiological defects of enamel and dentin. In the case of an immature molar, a particular type of caries, the occlusal ampular cavity. The early detection of this type of cariotic lesion is very important.

However, the permanent first molar may also be the seat of caries that have been evolving and sometimes an average of 0.5% of lesions on the medial face can be healed if retention conditions disappear as a result of destruction or molar extraction [11-20].

The temporary lesion has a number of peculiarities in relation to the age:

- the permanent premature premolar has early cavities and retains a long-lasting cavity with a change in localization of the lesions, which dictates to the curve a characteristic profile

- the first lesions appear on the occlusal face that remains vulnerable between 6 and 8 years after which the lesions are mainly cantonal on the medial face, and after 12 years with the rash of the second molar there are frequent disturbances on the distal face.

At all stages there is additionally added the possibility of localizations in the pits of the vestibular faces of the lower molars or the vestibular faces of the lower molars or of the palatal faces of the upper molars [20-30].

The different caries at this age stage of the first permanent molar demonstrate the close interrelation between the odontogenetic and morphic peculiarities structural features of this tooth and the aggressiveness of the cariogenic agents, as well as the low defense capacity against the risk factor aggression. The permanent first molar, the *problem child* of pediatric dentistry (Kuntzel), is the most affected tooth in the permanent series [31-38].

This tooth during the period of growth, and especially the 7-year-old child, is a significant general and dental health problem, which imposes rigorous preventive priorities on prophylactic priorities.

Experimental part

Material and method

In the argumentation of the proposed goal, we conducted a clinical and epidemiological study on two samples of subjects during which we monitored the evolution of the first permanent molar in the age range of 5-11 years (first between 5-6.6 years for the first sample, and 8-11 years for the second sample).

Results and discussions

The transversal epidemiological study was conducted on a group of 45 children within a community with chronological age ranges of 5-6,6 years (pre-school age). In terms of gender distribution, 21 boys and 24 girls.

We have tried to adhere to a working methodology that avoids errors that may occur during examinations and data processing.

We determined: dental caries prevalence indices at this age-global age group and gender distribution, CAO index, severity index and intensity index for the temporary second molar and for the permanent first molar as well as the structure of the teeth affected by gender, and on surfaces in the areas of these molars and differentiated on the two maxillaries.

Although we have dealt with our study of the carioactivity of the first molar, we have also approached the pathology of the temporary molar two given the potential implications of its pathology on the subsequent evolution of the first permanent molar.

After the clinical visual and tactile examination of the subjects, we obtained the following results:

- index of the dental cavity prevalence shows for the group of children the high values both globally (86%) and gender-differentiated for boys 84.5% and for girls 88.7%.

- The CAO index has a total value of 3.1 and is gender-differentiated by 2.5 in boys and by 3.01 in girls, with the female sex being affected predominantly for this age stage. In terms of the CAO index, two arches, the mandibular arcade (2,2) is well ahead of the jaw arcade (0.9).

- The severity index for the temporary second molar illustrates extremely high values, which is an alarm signal. We obtained the overall gravity index with a value of 51.3 and with large differences between the two sexes (girls-56.4, boys-45.7) and between the two jaws (for mandible -63, 51 and for maxilla- 39.18). The differences between the two hemiarcs, right and left, are insignificant (right 50.6 and left 52.02).

- The intensity index for the temporary second molar has a value of 3.62 (global) and differentiated by gender 2.7 at boys and 4.4 girls. The interdental intensity index for the mandible is higher (2.6) than the jaw (1.04).

The structure of the temporary teeth affected at this age is as follows: the largest share has complicated caries (16, 5 in boys and 18, 6 in the girls) and then follows the root remnants (10.5 in the boys and 18.6 in the girls).

Analyzing the structure of the affected teeth on the surfaces we find that for the temporary second molar the occlusal faces are affected. This is motivated by the specific dento-dental stage. While the maxillary molars are affected only by occlusal and distal caries, the mandibles are particularly affected by occlusal caries associated with caries on the mesal and distal faces.

Regarding the permanent first molar, most of the subjects had the molars received in varying degrees of eruption (1,2,3 or 4) and very few of them had molars in contact with the antagonist or completely erupted.

For these reasons, for the molar one permanent, a gravity index of 2.5 with a higher female prevalence and an intensity index of 1. was obtained. However, these indices are irrelevant.

If we estimate the coefficient of marbles that is 11.6%, it becomes relevant, expressing the particular susceptibility to dental caries of this tooth and its vulnerability in the oral environment, closely related to its structural defects as an expression of some disorders either in the intrauterine or postnatal life.

II. Clinical-epidemiological study on the 8- 11 years.

The second sample selected from the dental medical care at the request of the Pediatric Clinic, a total of 35 children aged between 8.6-10 years, with a gender distribution: 19 girls and 16 boys.

We would examine 140 permanent molars. The following results were obtained:

- the prevalence index shows a 83% overall with a higher prevalence of female gender (85.6%).

- The CAO has a total value of 3.21, with female gender being mainly affected

- the severity index for the definitive first molar is high with 38.4 with large gender differences (43.05%) compared to the male gender (34.6) .

- Following the carial pattern we notice in the age range 8-9 the predominance of simple occlusal dental caries, deep occlusal caries, while in the age range of 9-11 years are more frequent occlusal-occlusive and occlusal caries lesions, as well as simple deep caries and complicated dental caries.

It is signaled that in the subjects studied by us, about 75-80% of them presented obtuse-distal dental caries, complicated, non-assembled, at the level of the second permanent molar, aspect materialized as an imminent risk factor in the occurrence and evolution and the approximate carious lesion of the permanent first molar.

The image illustrated by us is also significant in that it correlates with a low educational level of these children with inadequate food hygiene habits, often with oral or sporadic hygienic skills, inconsistent, misused and misconduct. Thus, the role of pediatric dental health education is particularly important. Pediatric dental health education should aim not only at awakening and keeping in mind the individual's interest in their own health but also the creation of mental behaviours, their practice, manifested by sets of skills capable of ensuring the state of health both in the prophylactic stage and the actual therapeutics.

The permanent first molar produces together with the upper and lower central incisor (the so-called *molar-incisive tripod*) the second elevation of occlusion. Thus, this tooth improves vertical relationships by its eruption force and position it is being able to compensate for vertical imperfections that occur during the rotation of the two maxillaries such a permanent first molar participates in the formation of the Angle occlusion key.

The permanent prime molar is the oldest witness of perpendicular occlusion, being a guardian of the occlusal memory and contributing to the agreement of the previous determinant with the posterior. Shudi considers it the occlusion opener, because of the lower frontal teeth that are its closures. That is why this molar is also called the *queen of the chess game* which in our case is the genus of the permanent occlusion.

All these elements have a great influence on the subsequent evolution of the dento-maxillary apparatus, considering that the early loss of the primary molar

permanent generates morphological and functional disorder, which is cascaded throughout the arcade. The young age of children with dental caries at the level of the definitive first molar, the intellectual demands that children are subjected to in the first years school, the interference of many contagious diseases of childhood, unreal nutrition with abundance of sweets and pasta, the existence of untreated caries in the temporary teeth are only some of the factors that favour the appearance of carious processes acting on the integrity of the permanent first molar. Difficult endodontic treatments, complications which can occur, often make an unrecoverable tooth from the first molar. The premature eruption of this molar is the basis for the occurrence of complex manifestations of postextractional disorders, leading to an occlusal dysfunction.

Often, the carious exclusion of this dental pattern, even in children with limited cariogenicity, unfavourably affect all indicators for almost the entire period of growth.

This particular vulnerability to caries in the primary permanent molar dental pattern demonstrates the close interrelation between particularity of the odontogenetic and morphostructural deviations of this tooth and the aggressiveness of the cariogenic agents, as well as the low defense capacity against the risk factor aggression.

The permanent prime molar remains vulnerable throughout the growth period. In each stage, another face accumulates conditions that favour both carial attack and the growth of extremely unfavourable pulp complications, especially until the age of 10. The prerequisite of dental caries in this type of dental during the period of growth and especially in the 7-year- a significant problem of general and dental health, which imposes rigorous preventive priorities. In order to hope for an oro-dental healthy adult population, the application of an oral health programme to this age group when the population is organized in school and preschool colleges, is of major importance.

Conclusions

If there is a concordance between the bone development and the formation of this tooth, the permanent prime molar does not disturb the existing balance of the temporal teeth.

In the case of an insufficient growth of the bone bed or a rhythm too fast of the permanent prime molar to evolve the temporary tooth the connections are disturbing and they will be displaced earlier.

In some cases, premature resorptions of the roots of the temporar molars two may occur, which will expedite the removal of this tooth from the teeth arch.

The definitive molar one will then behaving as a successional tooth (and not accessory) replacing the temporary second molar and causing either inclusion or ectopic eruption of one of the successive teeth in the support zone.

Knowing the particularities of growth and general and mental development of children is an absolutely necessary requirement for every dentist working in the pediatric field.

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Manuscript received; 21.03.2018