PEDIATRIC DENTISTRY DISCIPLINE
UMF „VICTOR BABEŞ” TIMISOARA

PRACTICAL CLASS 3.1

THE MORPHOLOGY, STRUCTURE AND FUNCTIONS OF THE PRIMARY TEETH DURING THE GROWTH PERIOD

MORPHOLOGY OF THE PRIMARY TEETH

- **crown:** short and wide, rounded edges, whiter than permanent teeth
  - suplimentary cusps in primary dentition:
    - Carabelli (on the palatal surface of the first and second upper primary molars)
    - Zuckerkandl (on the buccal surface of the first primary molar)
- broad, flat contact points
- **root:** in monoradicular teeth, the root is long, flattened M-D and thin towards the apex; in pluriradicular teeth (molars) the roots are very thin and divergent, ”embracing” the crown of the premolar

MORPHOLOGY OF THE PRIMARY TEETH

- **pulp chamber:** voluminous, compared to the size of the crown, the pulp horns are closer to the occlusal surface, especially the mesial ones and there is generally a concordance between the number of cusps and the number of pulp horns.

STRUCTURE OF THE PRIMARY TEETH

- thin enamel and dentin
- pulp with rich vascularization (stage I and II)
- the pulp undergoes degenerative processes in stage III
- pulpo-parodontal communication established through numerous accessory canals and thin, permeable pulp floor

FUNCTIONS OF THE PRIMARY TEETH

- Masticatory
- Phonatory
- Esthetics
- Deglutition
- Space Maintenance

Clinical considerations:

- thin enamel and dentin, as well as a voluminous pulp chamber close to the surface of the tooth facilitate **rapid progression of dental caries** and **early pulp affection**

- pulpo-parodontal communication and permeability of the pulp floor favour dissemination of an infection from the pulp chamber in the inter-radicular periodontal space: **furcation pathology**

Clinical considerations:

- primary teeth play an important role in the development of the stomatognathic system and its functions; **in absence of an efficient mastication** (due to pain, early destruction and loss of primary teeth), a child’s **general development can be affected**, leading in severe cases to **malnutrition**
- **development of speech** and learning to articulate correctly certain sounds depends on **the presence of incisors**
- in some cases, a child’s **low self esteem** due to edentation can cause **psychological disturbances** and affect **social interaction**

Clinical considerations:

- **infant deglutition** is made with the tongue placed between the dental arches, to ***seal*** the oral cavity

- by the age of 3 (complete primary dental arches) the transition towards **adult deglutition** should have already taken place (in deglutition, the tongue is placed on the palate, behind the upper incisors and the dental arches are in contact, performing the ***seal***, which, in infant deglutition is made by the tongue)

Clinical considerations:

- **early loss of primary teeth** negatively impact dental occlusion. In absence of treatment, the antagonist and adjacent teeth of an edentulous space migrate into that space, causing **malocclusion** and narrowing the space required for the eruption of permanent successors, therefore causing **ectopic eruption** or **inclusion of the permanent successor.**

PEDIATRIC DENTISTRY DISCIPLINE
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PRACTICAL CLASS 3.2

THE MORPHOLOGY, STRUCTURE AND FUNCTIONS OF THE PERMANENT TEETH DURING THE GROWTH PERIOD

MORPHOLOGY OF THE YOUNG PERMANENT TEETH

➡ **young permanent teeth** = teeth in the post-emergent stage of eruption, until apex closure (up to 4 years after eruption)

- accentuated incisal and occlusal surfaces, with evident growth lobules and steep occlusal forms
- voluminous pulp chamber
- open apex

STRUCTURE OF THE YOUNG PERMANENT TEETH

- porous enamel
- incomplete hard tissue mineralization, immediately post-eruption
- **P, Ca, F** can be absorbed by the enamel
- post-eruptive maturation – lasts 2 years
- dentin with large tubules

STRUCTURE OF THE YOUNG PERMANENT TEETH

- rich vascularization of the pulp
- less innervation
- high regenerative capacity of the pulp tissue
- apical area with intense neogenesis activity (root formation)

Clinial considerations:

- the porous enamel favours adherence of bacterial plaque
- the incomplete hard tissue mineralization makes the tooth more susceptible to dental caries, with rapid progression
- the high regenerative capacity of the pulp tissue contributes to the success of vital pulp therapies such as direct pulp capping and pulpotomy
- root formation can continue even when the pulp is affected by infectious processes, if the apical third remains vital

Importance of the 6 year old molars:

- they represent the main posterior occlusal stop
- their occlusion determines the second rise of the occlusion
- they form the Angle key, which is an indicator for the position of the mandible in relation with the maxilla
- they are among the first permanent teeth to appear in the oral cavity; the early age (6years), poor oral hygiene, as well as their posterior location predispose them to early carious affection

Bibliography:

- ***Course notes***
- *Elisabeta Bratu, Florica Glăvan (coord.) – **PRACTICA PEDODONTICĂ**, Ed. Orizonturi Universitare, Timișoara, 2005 – chapter 7*
- *Pediatric Dentistry - Primary Tooth Anatomy: https://www.youtube.com/watch?v=PsubtLiLToU*