Development of teeth, eruption of teeth, anatomy of primary teeth

Dr. Barta Adrienn

SE – Clinics of Orthodontics and Pediatric Dentistry
Development of teeth

7 weeks old embryo
Development of teeth

• **Induction (6th - 7th weeks)**
  - Initiation stage
  - Dental lamina

• **Proliferation:**
  - Bud stage (8th week)
  - Cap stage (9th – 10th weeks)

• **Histodifferentiation**
  - Bell stage (enamel organ) (11th –12th weeks)
  - Dental germ

• **Calcification (maturation)**
  - Enamel
  - Dentin

• **Eruption**
  - Root (Hertwig epithelial seath)
Development of teeth

1. Dental lamina

2. Bud-shape

3. Cap-shape

4. Bell-shape

5. Dental germ
Development of teeth
Development of teeth

The reduced enamel epithelium is produced after the completion of enamel apposition when the enamel organ undergoes compression of its many layers on the enamel surface.
Development of teeth

- Enamel
- Ameloblasts
- Stratum intermedium
- Dentinoenamel junction (DEJ)
- Future cementoenamel junction
- Epithelial rests of Malassez
- Disintegration of Hertwig’s root sheath
- Coronal dentin
- Odontoblasts
- Pulp
- Root dentin
- Inner enamel epithelium (IEE)
- Outer enamel epithelium (OEE)
- Cementum
- Cementoblast
- Cementocyte
- Dental sac
- Dental sac cell becoming a cementoblast
- Formation of periodontal ligament
- Epithelial rests of Malassez
- Developing alveolar bone
- Odontoblast
- Predentin
- Root dentin
- Dentino-cemental junction (DCJ)
- Pulp
- Cementoid
Development of teeth

Development and eruption of lower primary incisor and its replacement by the permanent successor
Development of teeth

The reduced enamel epithelium fused with the oral epithelium lining the oral cavity

Schematic presentation of histologic changes which accompany tooth eruption
Development of teeth

**Dental hard tissues**
- Enamel organ → enamel (epithelial tissue)
- Dental papilla → dentin, pulp (connective tissue)
- Dental sac → cementum, periodontal ligaments, alveolar bone (connective tissue)
Development of teeth

The chronology of mineralization of primary teeth
Development of teeth

The chronology of mineralization of permanent teeth
Development of teeth
Eruption

• Primary teeth (6 month – 2.5 year)
  – I, II, IV, III, V

• Permanent teeth (6 year – 12 year)
  – 6, 1, 2, 4, 5, 3, 7

– Dentitio praecox (too early)
– Dentitio tarda (too late)
– Dentito difficileis (difficult eruption)
Eruption
Eruption

The eruption of primary teeth is accompanied by the development of the alveolar processes with considerable increase in facial height.

At birth:

The gum pads are low, slightly lobulated and the palatal vault is flat; the mandible is retruded.
Eruption

Relations between the roots of primary teeth and the developing crowns of the permanent teeth during the functional stage of the primary dentition
Eruption

When there is a mesial step in the terminal plane of the primary dentition, the permanent molars may erupt directly into normal occlusion.

If the primary dental arches end in the same vertical plane, the permanent molars will erupt into cusp-to-cusp relation.
Eruption

The permanent upper incisors are more labially inclined than their primary predecessors. Consequently, the dental arch becomes wider and longer.
Eruption
Eruption

The eruption of the permanent teeth is accompanied by considerable vertical growth of the alveolar processes.
Dentition

Primary and permanent dentition
Anatomy of primary teeth
Anatomy of primary teeth

First primary molars
Anatomy of primary teeth

Second primary molars
Anatomy of primary teeth

The teeth 54 and 55
Anatomy of primary teeth

Attrition of primary teeth
Anatomy of primary teeth

- Occlusal wear of primary teeth (tropical among people who exist on coarse diet)
Anatomy of primary teeth

- Pulp chamber of primary and permanent molars
Anatomy of primary teeth

Difference between the primary and permanent teeth (clinical examination) of primary and permanent molars

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Root resorption
Thank you!