



PEDIATRIC DENTISTRY DISCIPLINE
UMF „VICTOR BABES” TIMISOARA

PRACTICAL CLASS 2.1

DENTAL ERUPTION



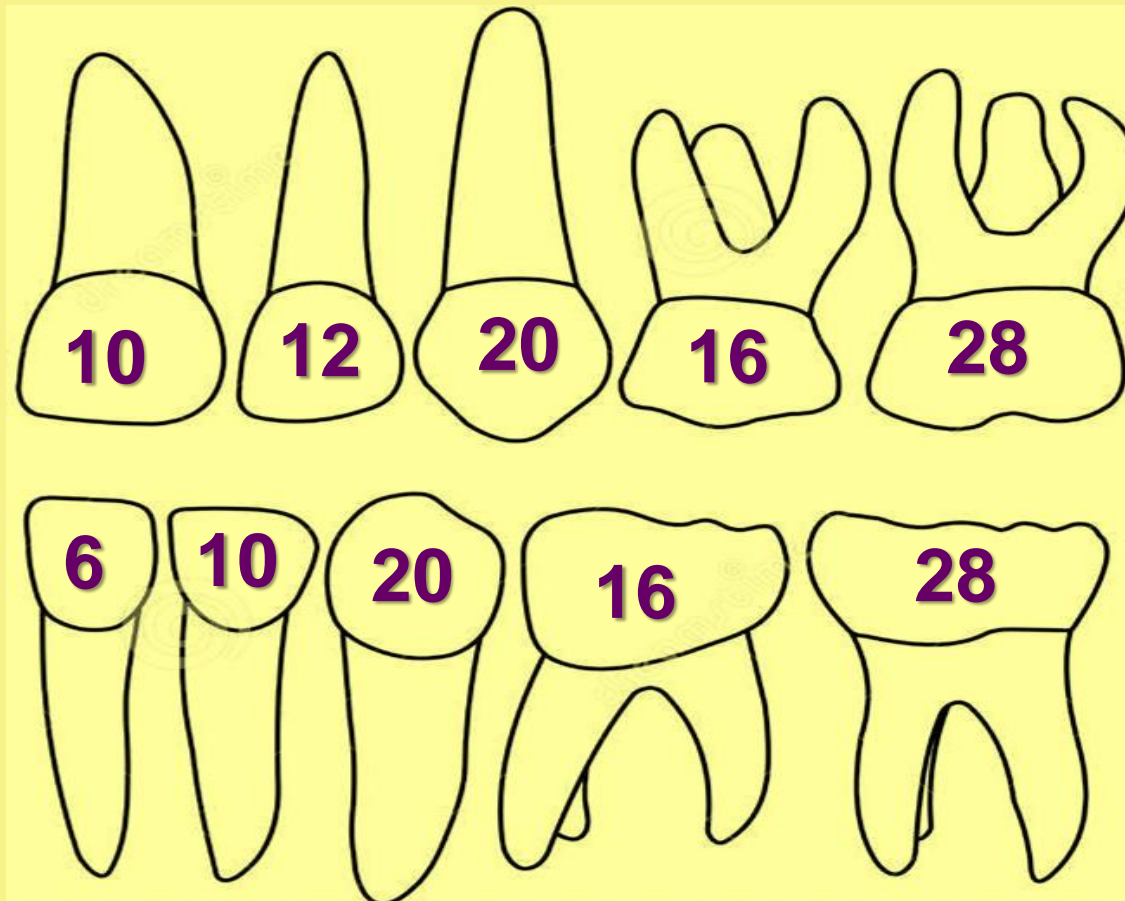
DENTAL ERUPTION

- is **defined** as the developmental process during which the tooth breaks through the alveolar bone until it reaches an antagonist or an obstacle
- takes place in 2 successive **phases**:
 - PRE-EMERGENT (before the emergence of the tooth into the oral cavity)
 - POST-EMERGENT (until the tooth reaches the occlusal plane)
- at the moment of eruption, the crown of a tooth is fully formed, but the root continues its development for about 3 more years

W. Proffit



ERUPTION TIMELINE of PRIMARY TEETH **(months)**



normal variation
± 6 months



Primary dentition

- 2 stages:
 - primary morphology: until 4 years of age
 - secondary morphology: between 4-6 years of age
 - the **primate spaces** (tremas, diastema, the canine space)
 - **attrition** (wear) of the incisal surfaces, of the cusps (especially the canines)
 - appearance of the **retromolar space**, distally to the second primary molar

Absence of the primate spaces by the age of 6 or crowding in the primary dentition is an indicator of future crowding in mixed/permanent dentition!

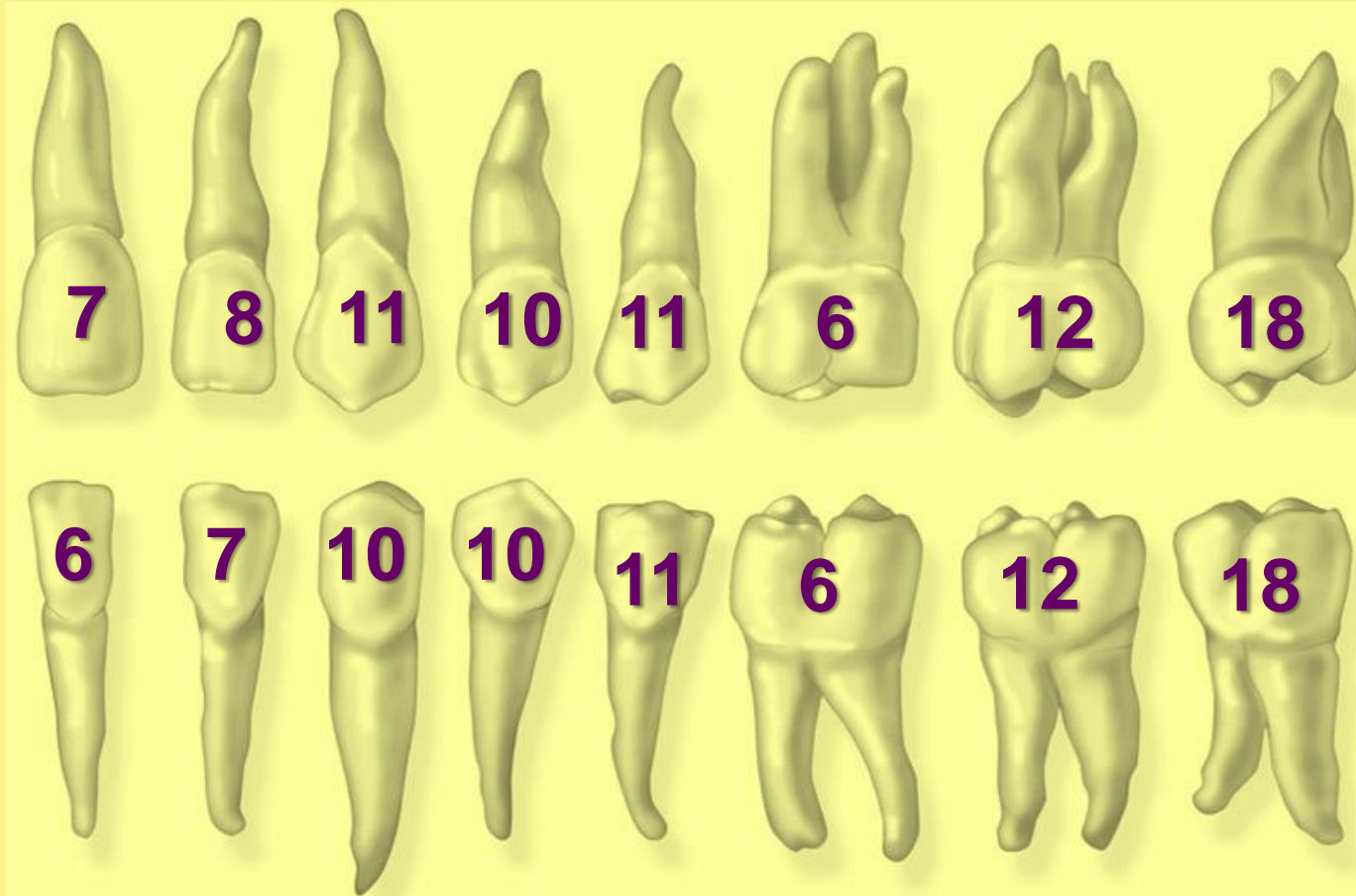


Mixed dentition

- begins around the age of 6 and lasts until about 12 years of age (until the eruption of the second permanent molar)
- is a transition period from primary dentition towards permanent dentition
- the primary molars are replaced by premolars
- the first permanent molars erupt distally to the second primary molars
- premolars can erupt earlier if early loss of primary molars occurs



ERUPTION TIMELINE of PERMANENT TEETH **(years)**



normal variation
± 1 year



Dental Age

- coincides or not with the chronological age of the child
- is calculated by using the following landmarks :
 1. teeth present on the dental arches
 2. development stage of the primary teeth
 3. development stage of the permanent teeth



Development Stages of the primary teeth

- **Stage 1: DEVELOPMENT** (lasts 1 year)
 - formation of the tooth (intra-uterine life) and development
 - eruption
 - complete development of the root
- **Stage 2: STABILITY** (lasts 3years \pm 6months)
 - the period between complete edification of the root and debut of resorption
- **Stage 3: RESORPTION** (lasts 3-4 years)
 - the period between the debut of resorption and exfoliation of the tooth



Development Stages of the permanent teeth

- 8 stages: A-H

	A	B	C	D	E	F	G	H
Molars								
Bicuspid								
Canines	x	x						
Incisors	x	x						



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PRACTICAL CLASS 2.2

DYNAMICS OF OCCLUSAL RELATIONSHIPS



DYNAMICS OF OCCLUSAL RELATIONSHIPS

Key points:

- Mesialisation of the mandible (I, II)
- Rise of the occlusion (I, II)
- The primate spaces
- The retromolar space
- Leeway space
- The terminal plane



Mesialisation of the mandible

1. The first mesialisation of the mandible occurs in the newborn, during the 6 months of life, due to the act of suckling (natural breast-feeding).
2. The second mesialisation of the mandible occurs in the 4-6 years period (during the secondary morphology period), due to attrition of the canines, which allow the advancement of the growing mandible.

The retromolar space

- appears in the 4-6 years period, distally to the second primary molars and is used for the eruption of the first permanent molars

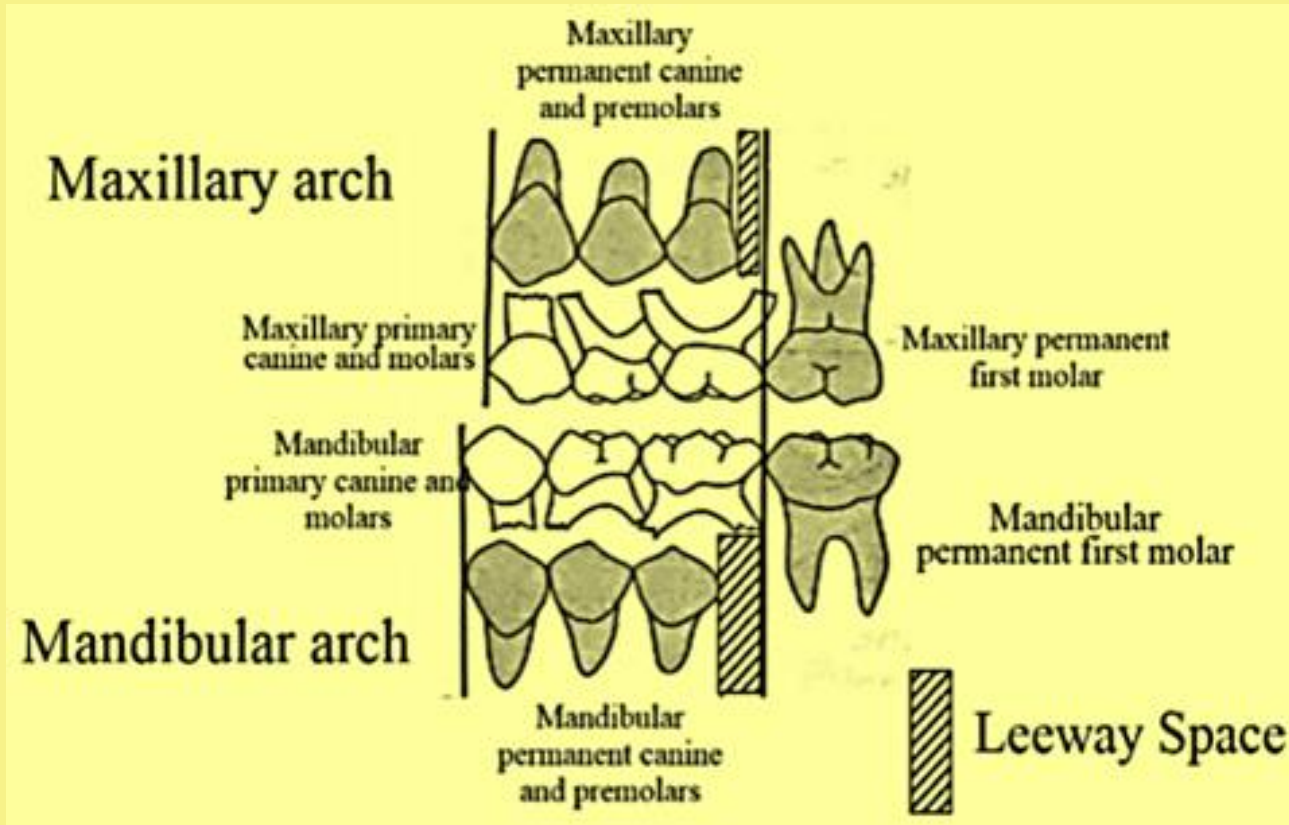


The primate spaces

1. **Diastema** (between central incisors), **tremas** (between central and lateral incisors) and **the upper canine space** (between lateral incisors and canines):
 - used for the alignment of the permanent incisors
2. **The lower canine space** (between the canines and the first primary molars):
 - used for the eruption and alignment of the lower canine and first premolar



The Leeway Space



The value of the Leeway space:

- in the maxilla: ~ 1,5 mm
- in the mandible: ~ 2,5 mm

- is a space reserve in the primary dentition used for the alignment of the permanent canines and premolars
- the space reserve resides from the difference of the mesio-distal (MD) diameter of the primary molars compared to their successors (the premolars), namely the primary molars are wider MD than the premolars, especially the second one (the E space)



Rise of the occlusion

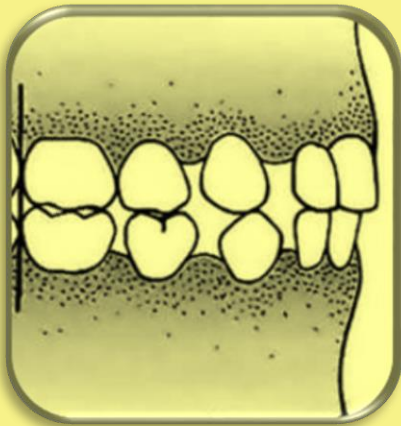
- I. determined by the occlusion between the upper and lower primary molars
- II. determined by the occlusion of the upper and lower first permanent molars
 - OB decreases from $\frac{1}{2}$ in the primary dentition to $\frac{1}{3}$ in the mixed/permanent dentition



The terminal plane

- is defined as the sagittal relationship between the distal surfaces of the second primary molars
- can be:

FLUSH



IN MESIAL STEP



IN DISTAL STEP



- used to predict the sagittal relationship that will be established in between first permanent molars (Angle's key)



Bibliography:

- **Course notes**
- *Elisabeta Bratu, Florica Glăvan (coord.) – **PRACTICA PEDODONTICĂ**, Ed. Orizonturi Universitare, Timișoara, 2005 – chapter 6*
- *Paul S. Casamassimo, Henry W. Fields Jr., Dennis J. McTigue, Arthur Nowak – **PEDIATRIC DENTISTRY: INFANCY THROUGH ADOLESCENCE**, 5th ed. ISBN-10: 0323085466 | ISBN-13: 978-0323085465 – chapters 12, 17, 36*
- **Dental eruption timeline:** <https://www.youtube.com/watch?v=d0ipNhQ6BkA>
- **Development of occlusion:** <https://www.youtube.com/watch?v=63UJmklHe2Q>