

# Pediatric Dentistry

## 1st Year of Dentistry

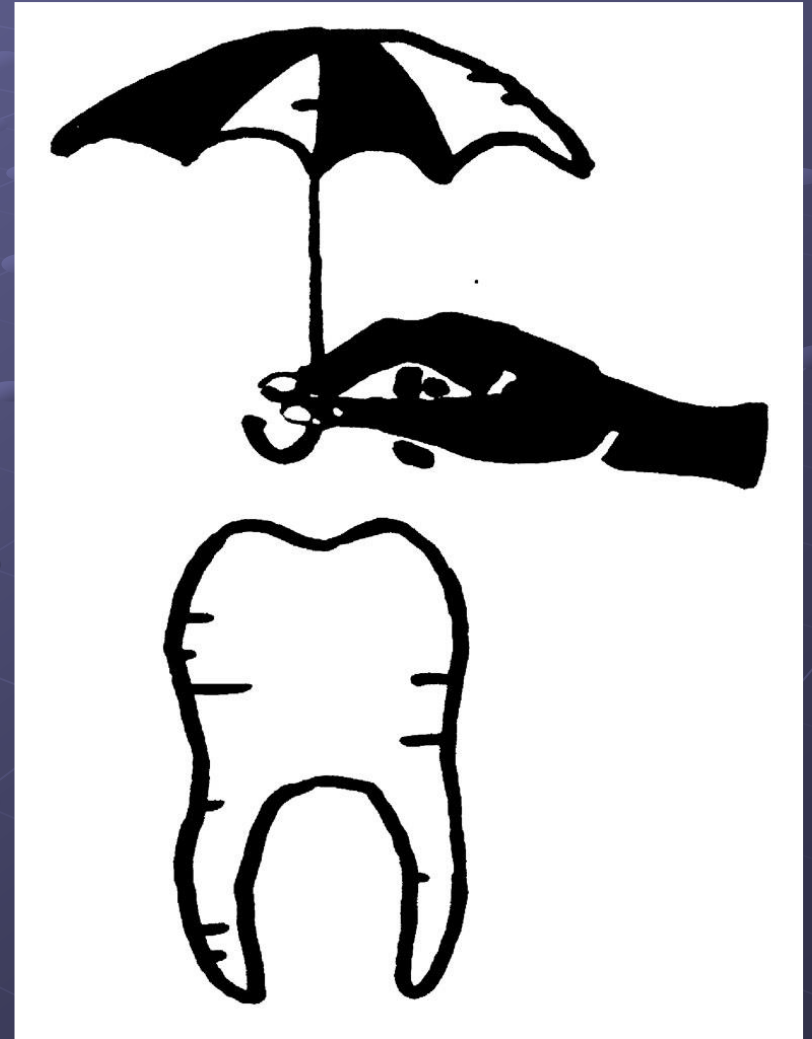
Prof. Kukletová

# Pedodontics

- Preventive dentistry
- Restorative dentistry
- Prosthetics
- Surgery
- Periodontics
  
- Adapted to the age 0 – 18 years
  
- Collaboration with orthodontics –  
diagnosis of anomalies

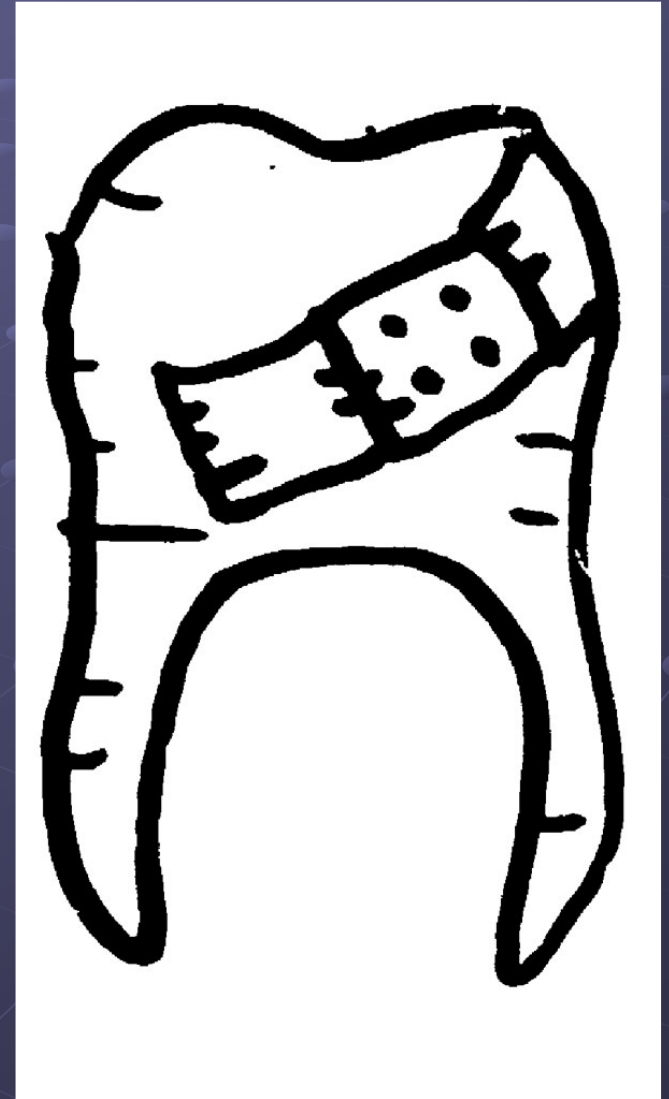
# Preventive dentistry

- Methods to prevent
- Dental caries
- Periodontal diseases



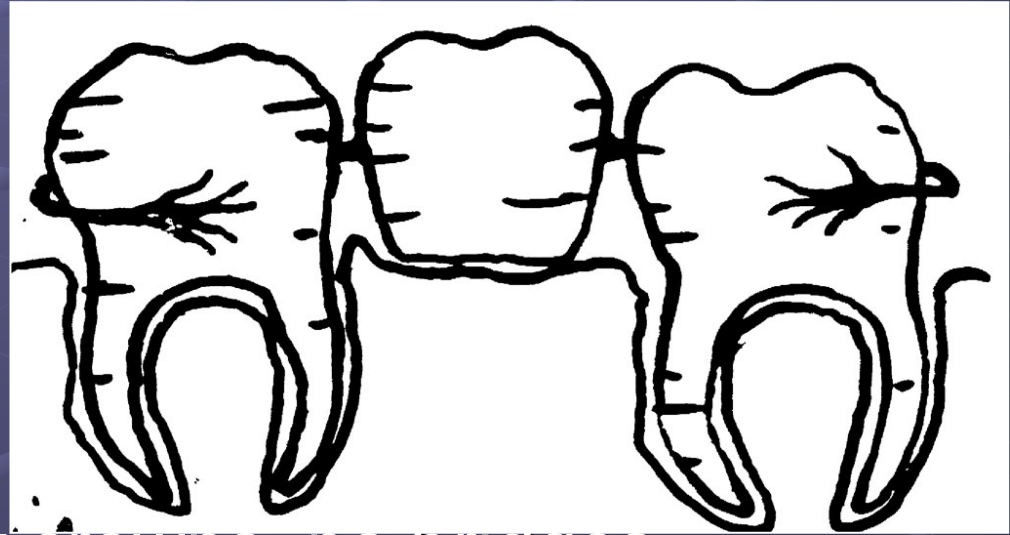
# Restorative dentistry (Operative dentistry)

- Caries therapy
- Esthetic dentistry
- Endodontics
- Endodontic surgery
- Materials



# Prosthetic dentistry

- Restoration of dentition
- Severely damaged teeth, missing teeth



- Fixed dentures – only crowns, no bridges
- Removable dentures – space-maintainers
- Materials
- Laboratory technology

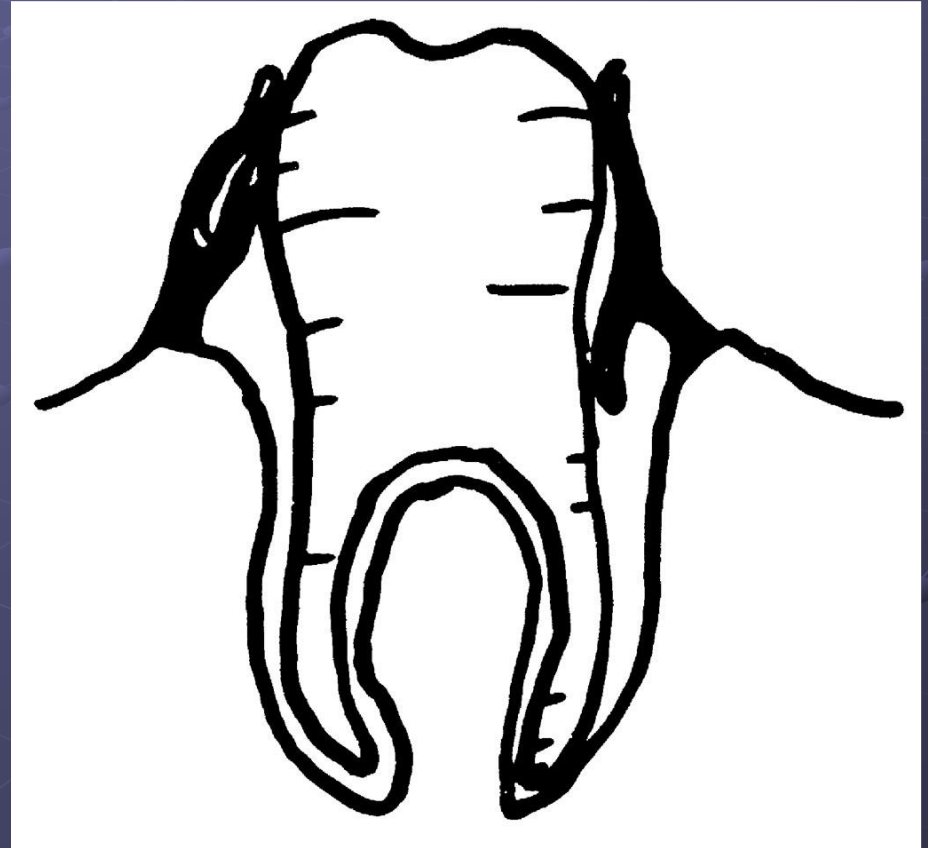
# Oral surgery

- Surgical intervention in the mouth
- Tooth extraction
- Incision
- Surgical extraction
- Treatment of fractures, inflammations, tumors e.t.c.



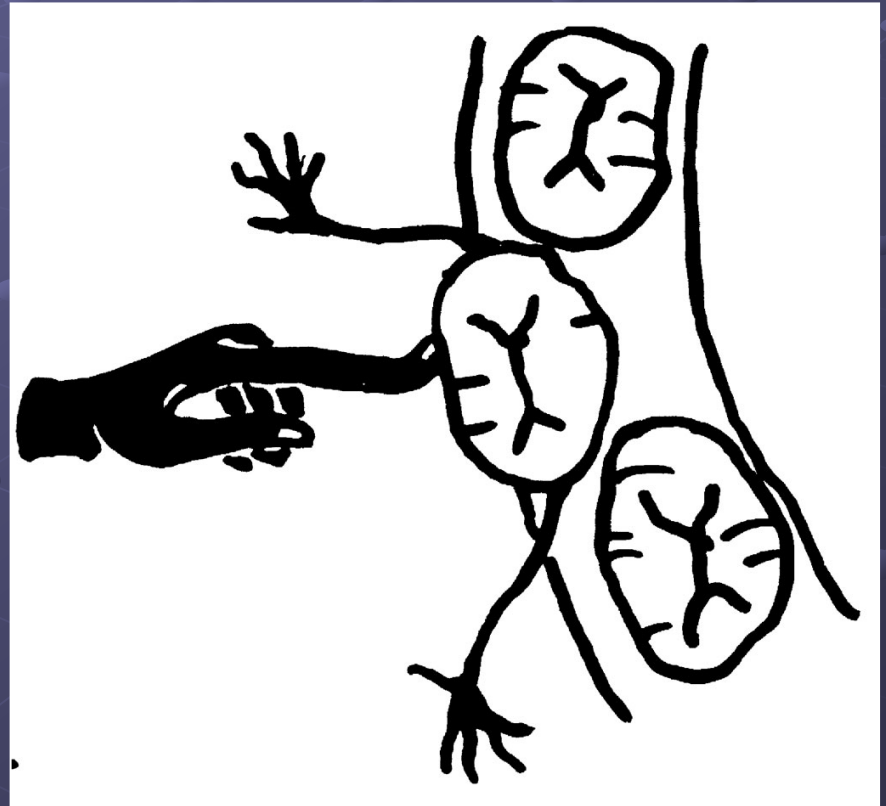
# Periodontics

- Treatment of periodontal diseases
- Not so frequent as in adults
- Gingiva
- Periodontal membrane
- Bone
- Cement



# Orthodontics

- Diagnostics of anomalies
- Tooth position
- Intermaxillary relations





# The Primary Dentition

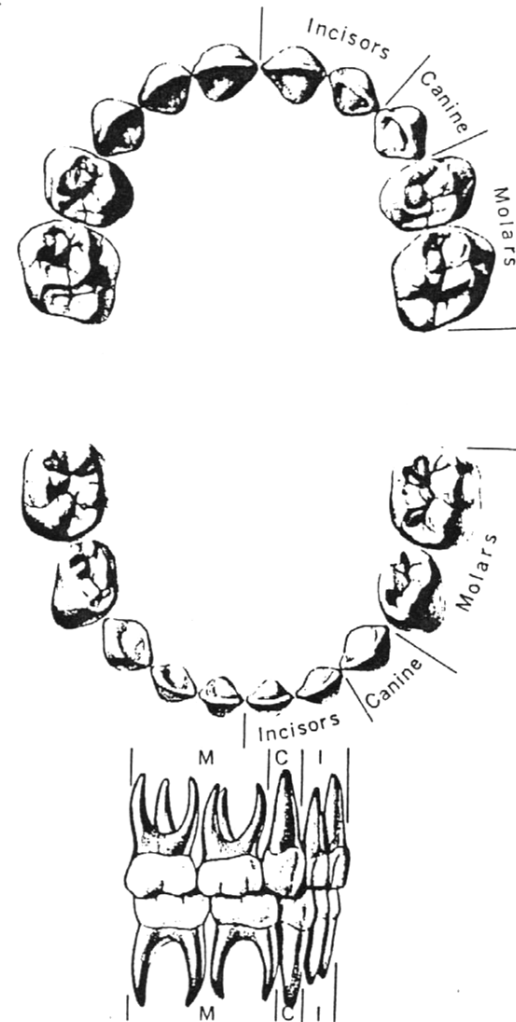
There are 20 primary teeth  
5 in each quadrant

- two incisors
- one canine
- two molars

**no premolars**

# Topography of the oral cavity

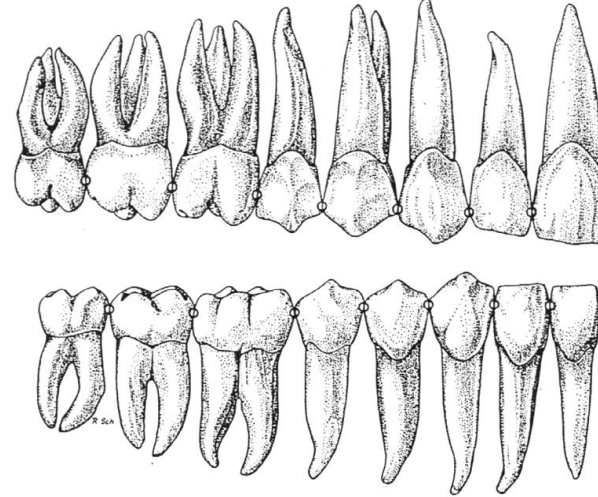
- The deciduous arch



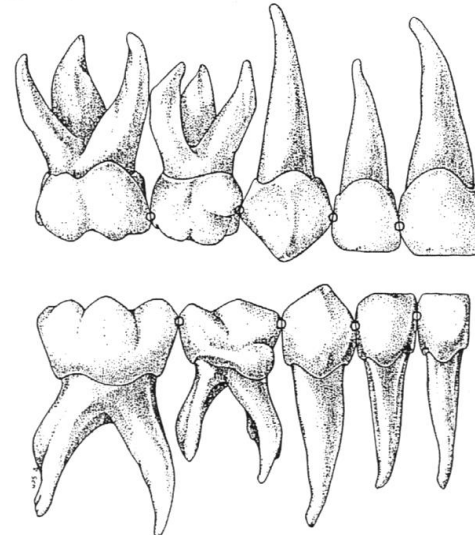
# Topography of the oral cavity

- Points of contacts

Permanent dentition



Primary dentition



# Topography of the oral cavity

- Numbering of teeth

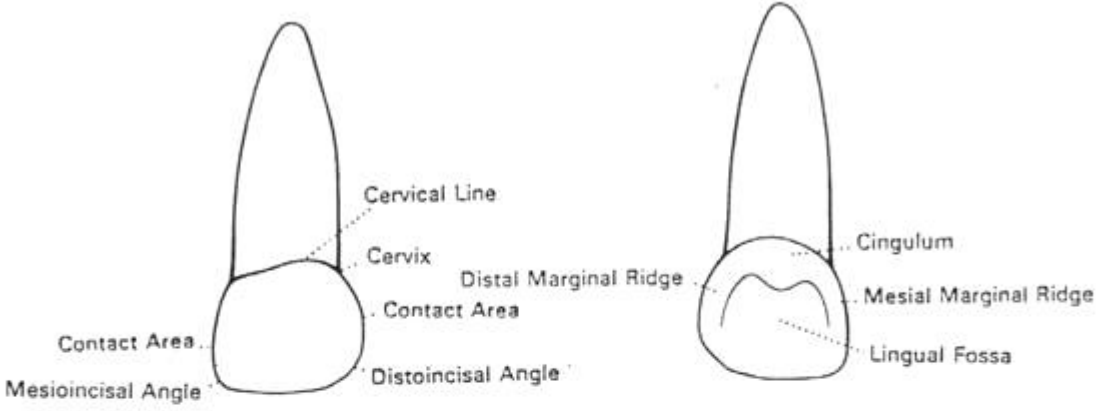
## Permanent teeth

Upper right		Upper left
18 17 16 15 14 13 12 11		21 22 23 24 25 26 27 28
49 47 46 45 44 43 42 41		31 32 33 34 35 36 37 38
Lower right		Lower left

## Primary teeth

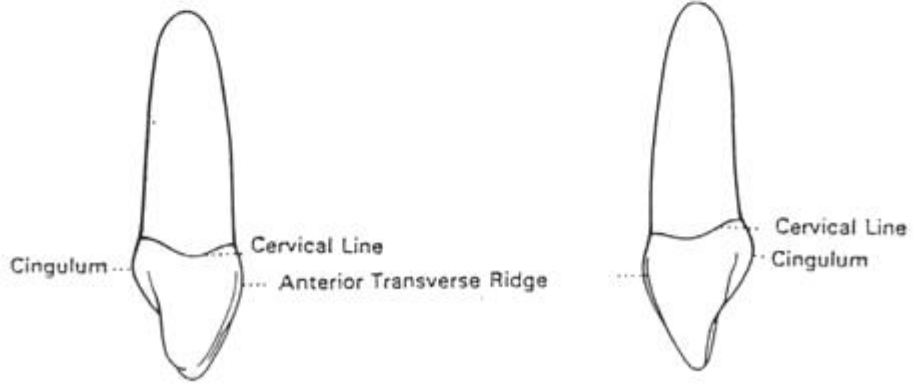
Upper right		Upper left
55 54 53 52 51		61 62 63 64 65
85 84 83 82 81		71 72 73 74 75
Lower right		Lower left

Primary maxillary central incisor



a

b



c

d

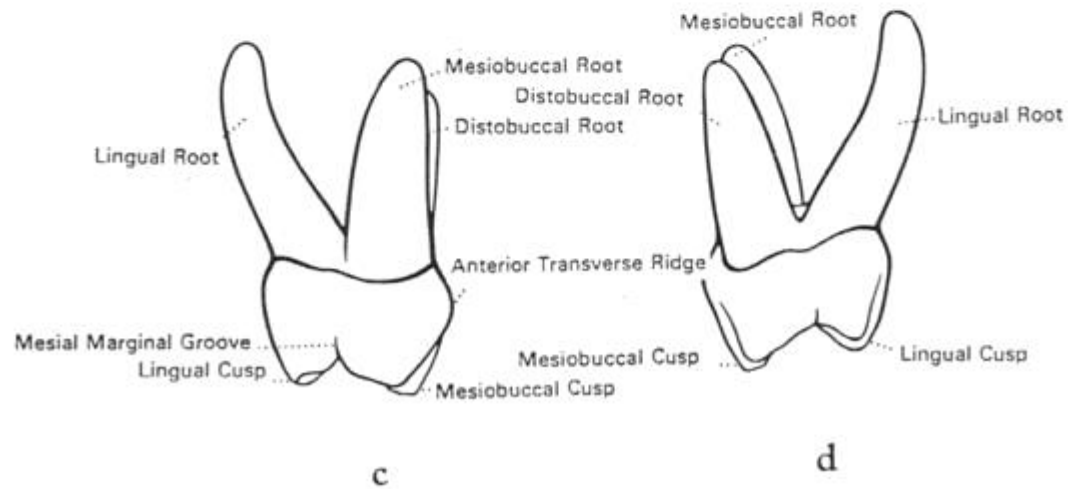
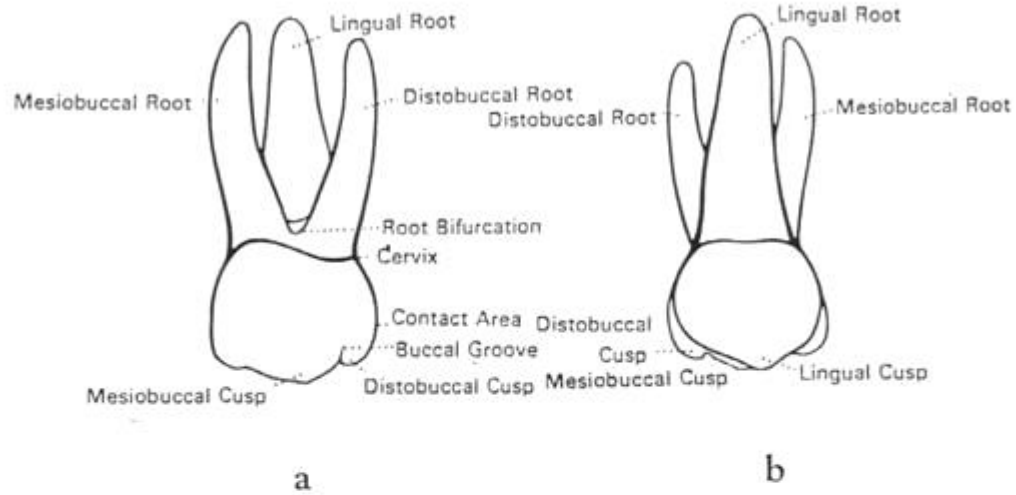




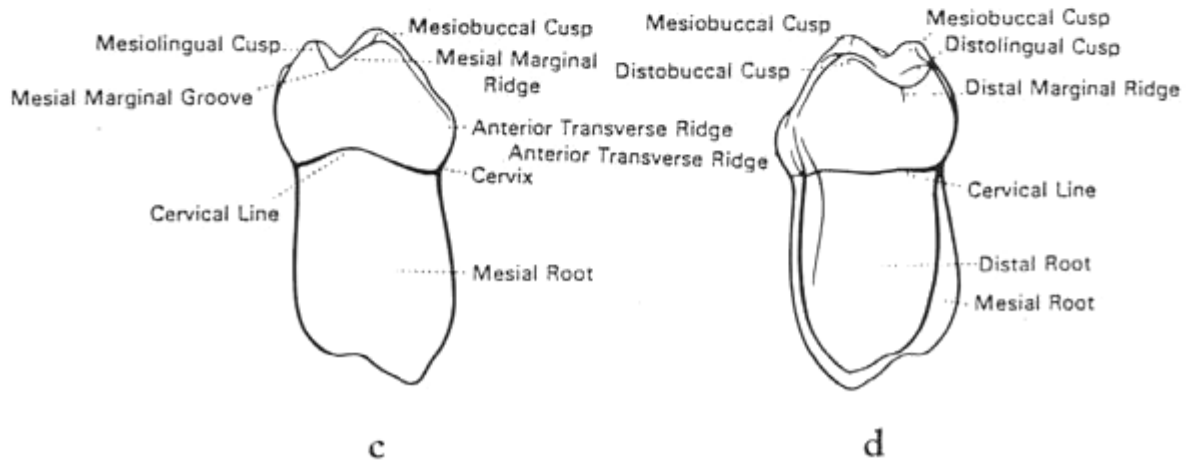
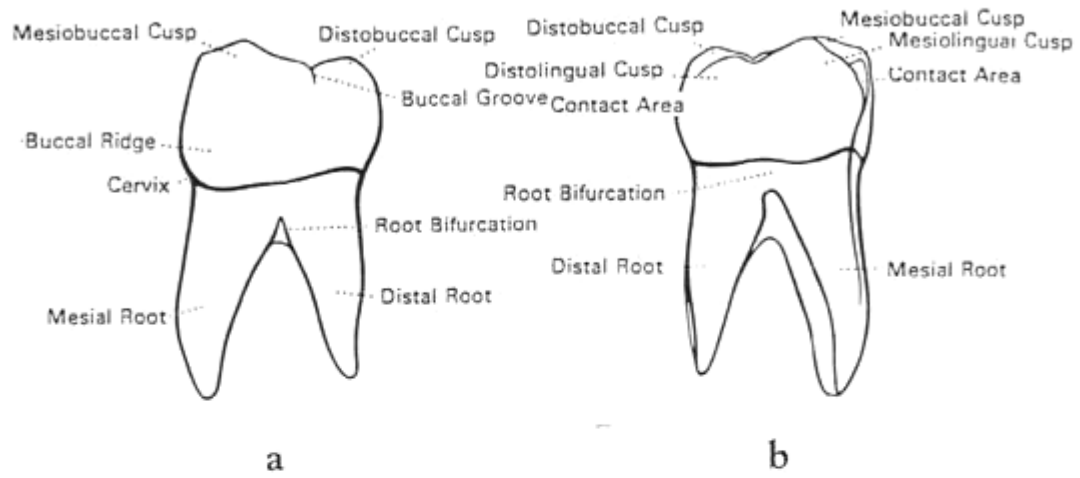




Primary maxillary first molar



Primary mandibular first molar



# Congenitally missing teeth

## Oligodontia – Fig. 20

Missing groups of teeth

13, 23 25

35, 33 – 43, 45

Shape anomaly

12, 22, peg shaped teeth

## Hypodontia - Fig. 21

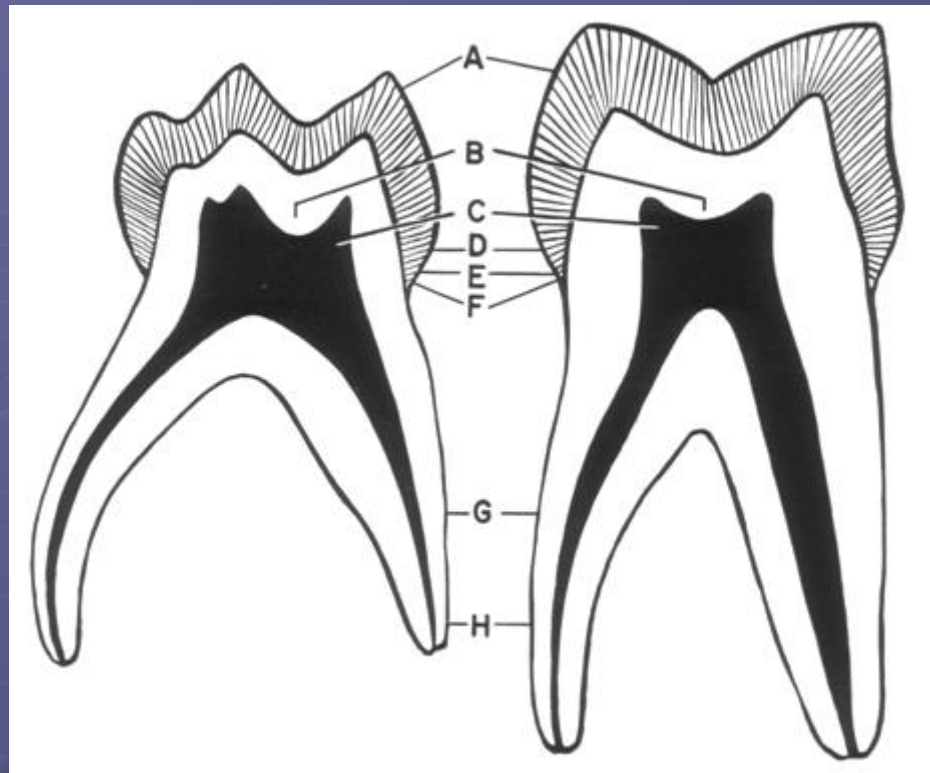
Missing teeth – individual, mostly of the same kind

35, 45





Handwritten text at the bottom of the X-ray, including the number 7944.



- A. Enamel of primary molars is thinner, about 1mm thick throughout the entire crown.
- B. Greater thickness of dentine over the pulpal wall at the occlusal fossa of primary molars.
- C. Dental pulp proportionally larger, pulp horns are higher, especially the mesial horns.
- D. Cervical ridge in primary teeth.
- E. Enamel rods slope occlusally (in permanent gingivally)
- F. Constricted neck (cervix)
- G. The roots of primary molars are longer and more slender in comparison with crown size.
- H. The roots of the primary molars flare out nearer the cervix than do those of the permanent teeth.

# Roots – root canals

## Maxillary teeth

	N° of roots	N° of root canals
<b>incisors</b>	1	1
<b>canine</b>	1	1
<b>molars</b>	3	3

In molars – one root palatally, two roots vestibularly in each root one canal

# Roots – root canals

## Mandibular teeth

	N° of roots	N° of root canals
<b>incisors</b>	1	1
<b>canine</b>	1	1
<b>molars</b>	2	4 (3)

In molars – one root mesially, one root distally  
in each root two canals (in the  
distal root – one canal)



# Spatial relation between the permanent and primary dentitions

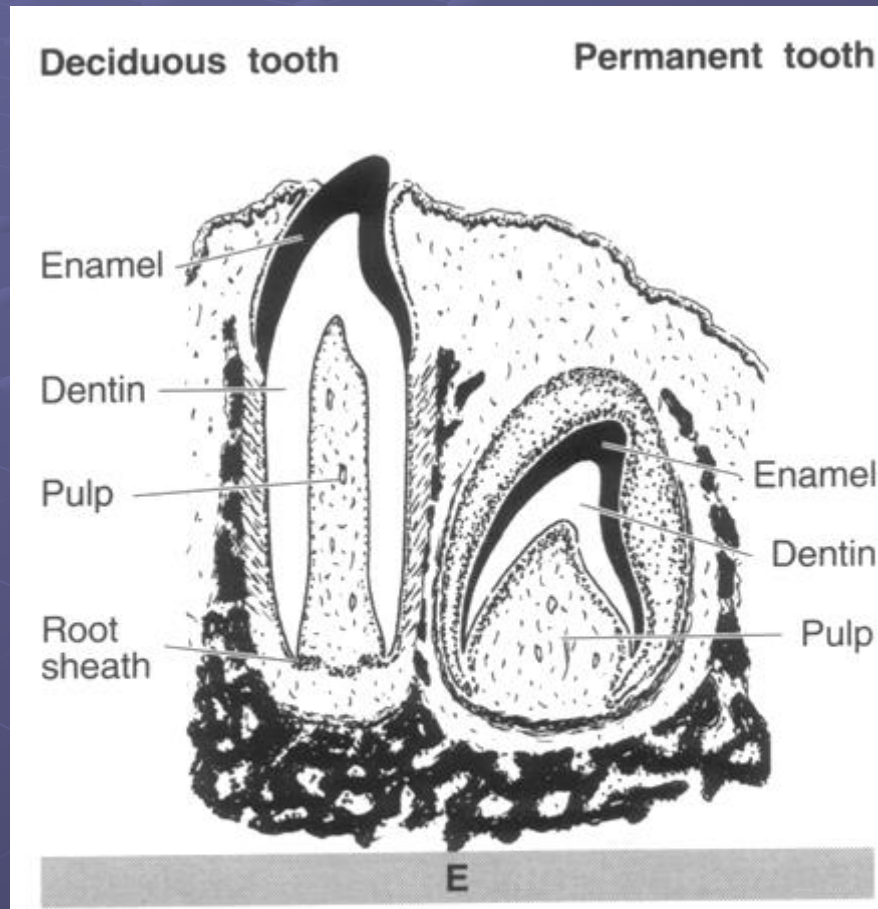
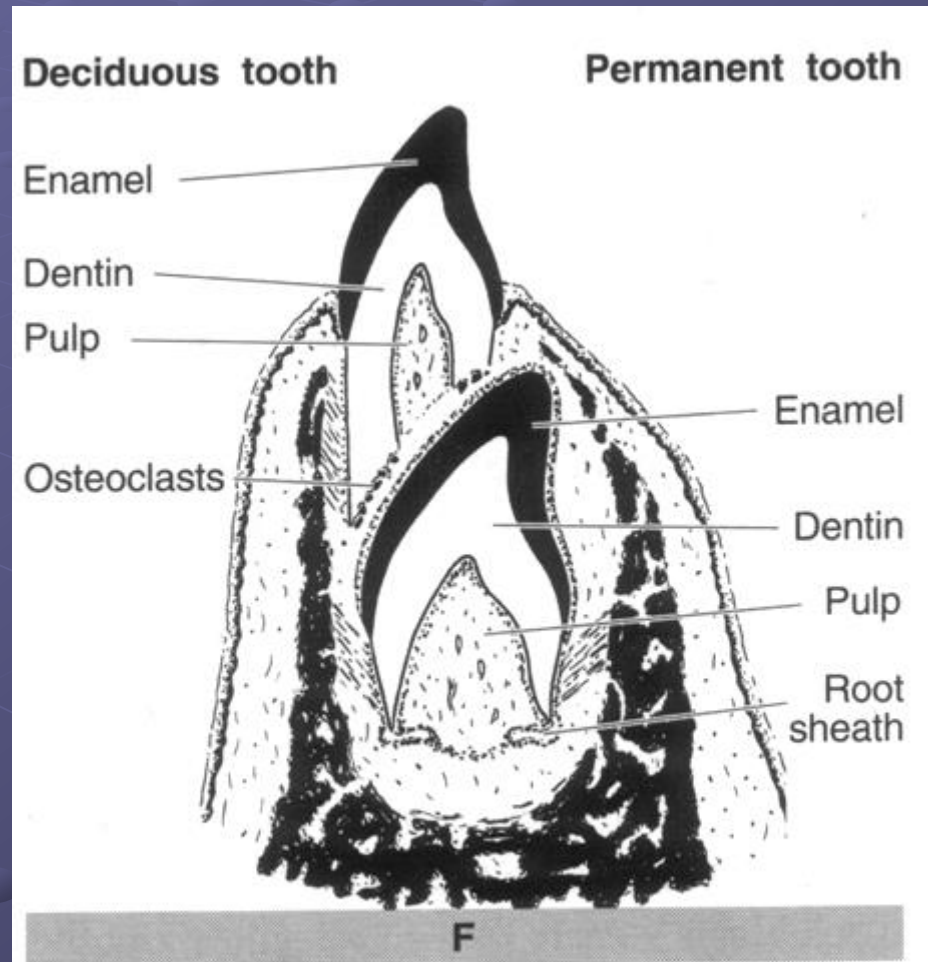
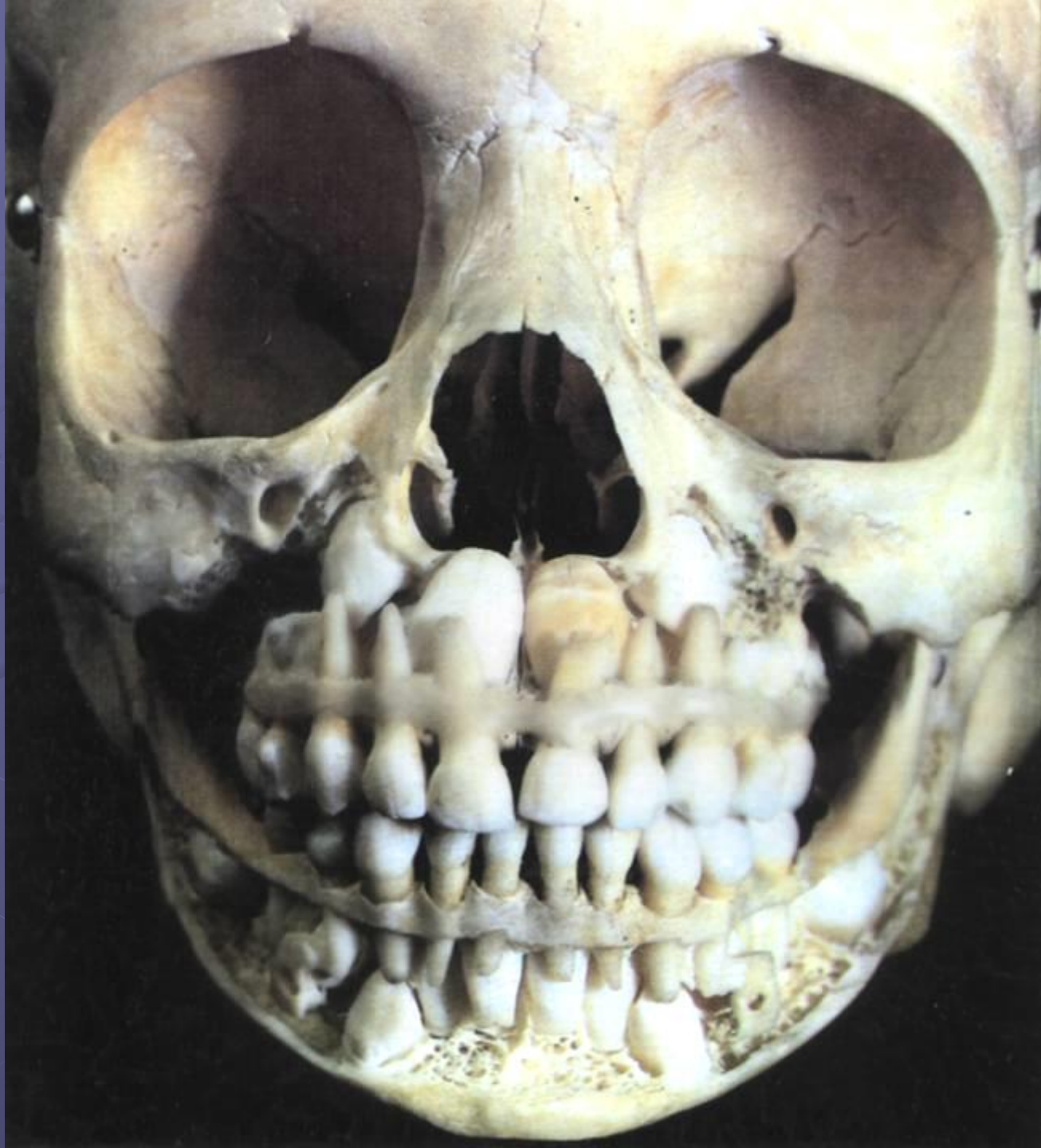


Fig. 4-1. Development and eruption of a lower permanent successor. Redrawn from(4).

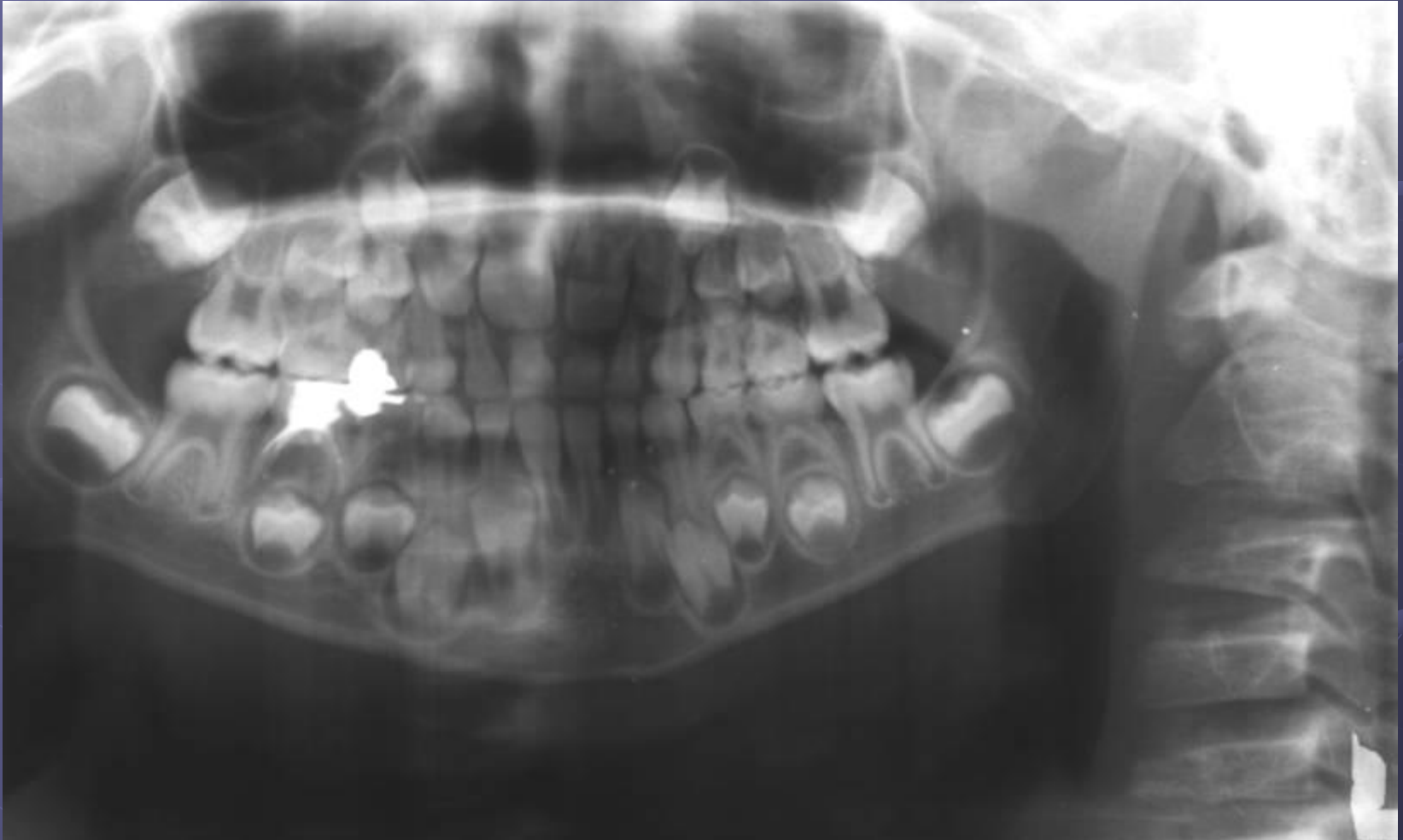
# Spatial relation between the permanent and primary dentitions



primary incisor and its replacement by the perma-



- Mixed dentition. Presence of the first permanent molars in the upper jaw, in the mandible, first permanent molars and the first permanent incisors are erupted. Endodontic treatment in the primary dentition is possible in case the root resorption has not started yet. (tooth 85)



**Age: 0-1 month, up1 year, 1-4 years**  
**Newborns, Succlings, Toddlers**

- **Caries shortly after eruption**
- primarily inferior quality of enamel
- dummmmy with honey  
circular caries
- sweetened drinks in the night

### **Pre-school age**

- **Complete primary dentition**

6		6
6	1	6
	1	

- **Caries in primary molars**

### **2-6 years**

- + I. permanent molars
- + lower permanent
- + lower incisors

occlusal surfaces  
 approximal surfaces

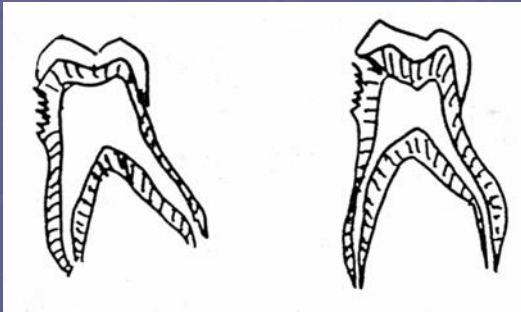
# Early school age years

6-12

- Caries in primary molars
- Caries in primary canines
- Risk of caries transfer to permanent molars —  
*immature enamel*

# Dental caries - primary dentition

Caries depth



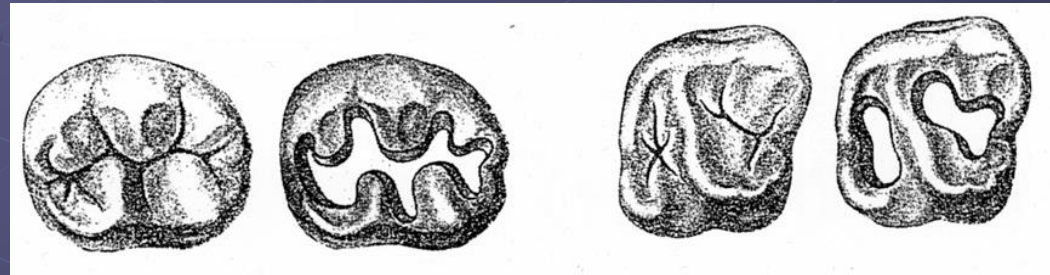
a) 3 years    b) 6 years

2 mm — molar

a) car. pulp. proxima

b) caries media

**Occlusal caries**



diameter of the bur – 1 mm, depth - 0,5 mm in dentin

**Filling**

GIC, composite resin, compomer



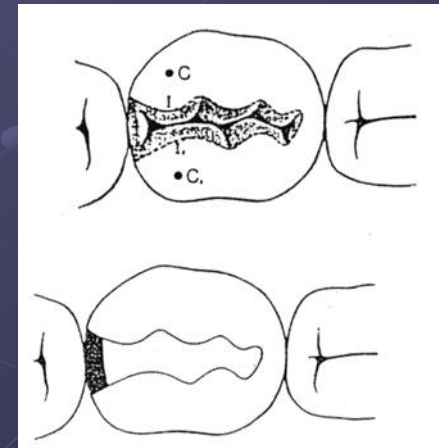


# Approximal caries

caries in dentine – marginal ridge is not affected  
otherwise  
caries pulpaе proxima or caries penetrans

The filling should include  
extention for prevention  
retention  
resistency

Neighbouring tooth has to be investigated  
isthmus -  $\frac{1}{3}$  of the intercuspal distance  
not less than 1,5 mm  
gingival wall 1 mm

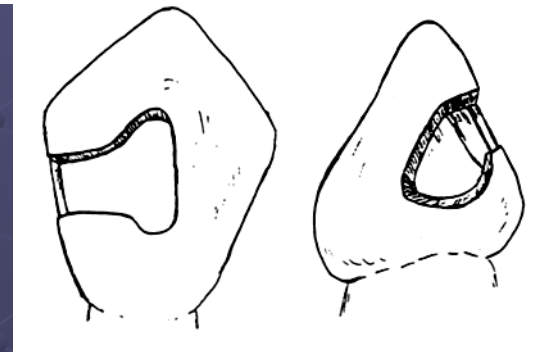


# Class III.

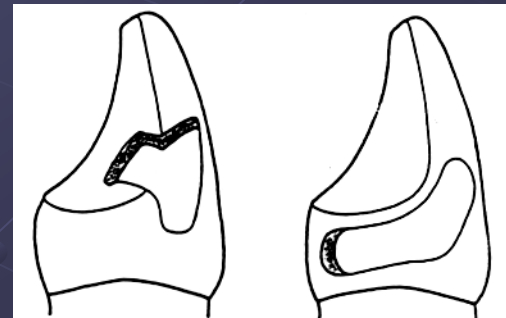
- Access opening from the labial surface, the size of cavity is given by the caries extent



Access opening in primary maxillary canines may be from the palatatal surface, in mandibular canines from vestibular surface.



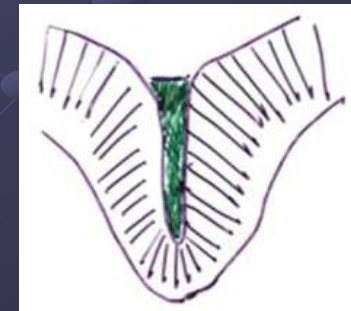
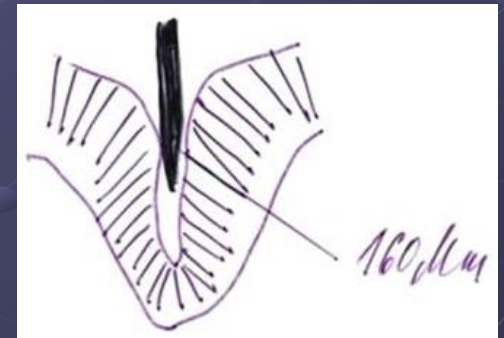
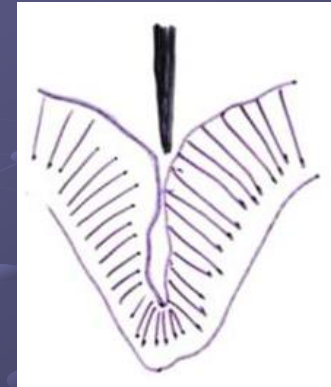
- The dovetail is usually placed to the strong marginal ridge, not directly to the oral surface



# Fissure sealing

Fig. 36

1. Prevention of caries development
2. Too narrow fissures are not suitable
3. suitable fissure
4. wall protects the cement





# Preventive restorations

Fig. 38, 39

Glass ionomer

Composite resin

Sealant

Removing isolated carious sites

Conversing healthy pits and fissures

Restoration-composite resin

All pits and fissure areas-sealant





# Healthy dentition





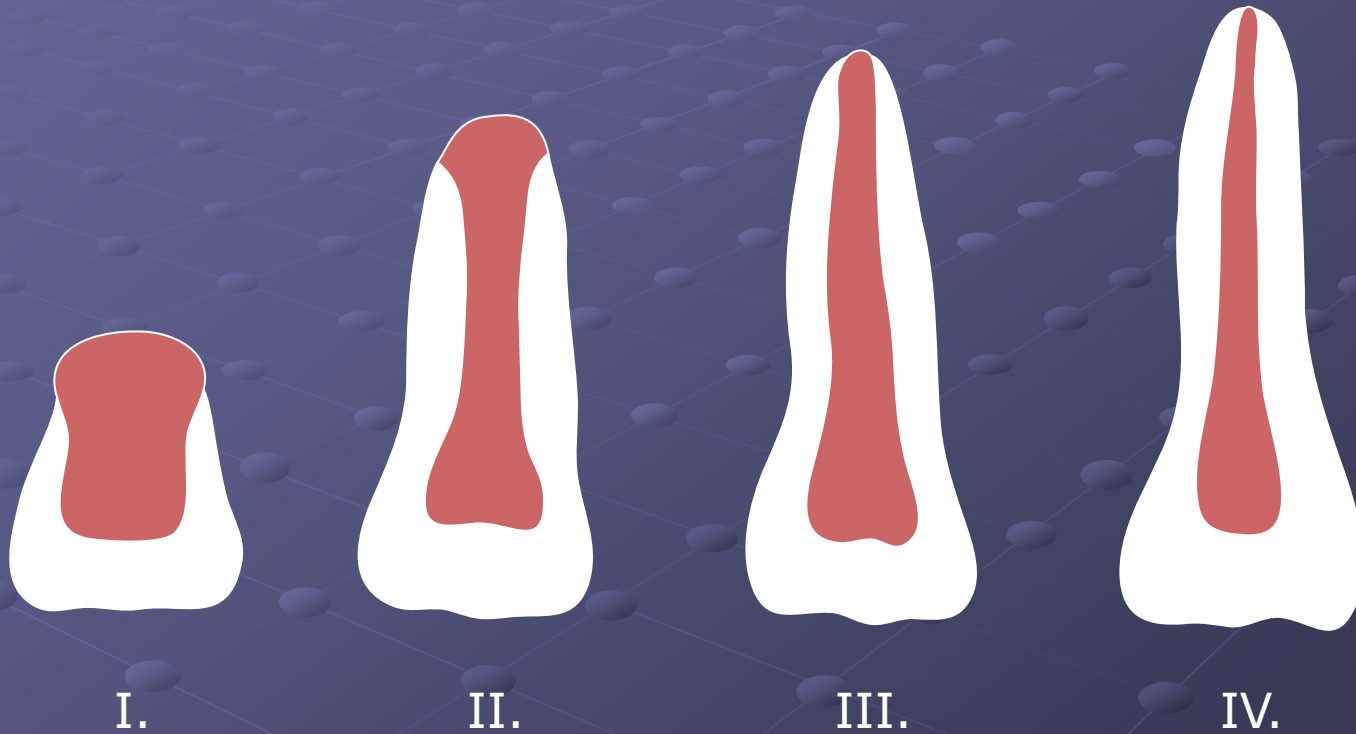
Decayed primary dentition, almost all the teeth are affected –  
Early childhood caries (ECC).

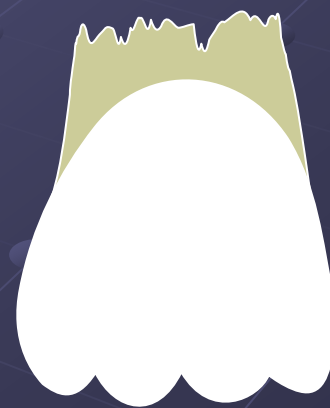
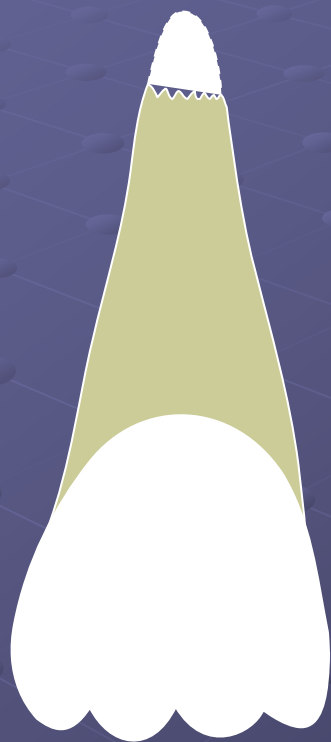


# Transfer of caries into the permanent dentition



Developmental stages of root of erupted teeth, root is growing continuously about 3 years, then it remains in so called rest period and later its resorption is started, and the tooth is finally shedded (fig.44, 45).







# Root filling

Root filling materials for primary dentition – only in the rest stage

## requirements

- Resorption of the material – resorption of the root
- Inert to periodontium
- Inert to buds of permanent teeth
- Antiseptic properties
- Easy to apply to the canals
- No shrinkage on setting
- Easy to remove when necessary
- Adherence to the walls
- X-ray opacity
- No discoloration of tooth structure

No ideal material at the present time

## Materials used

- ZnO –eugenol cements
- Calcium hydroxide
- Iodophorm based materials

Reconstruction of primary dentition in case of ECC.  
In primary dentition only removable dentures



# Reconstruction of primary dentition in case of ECC





# Reconstruction of primary dentition in case of ECC Space maintainer



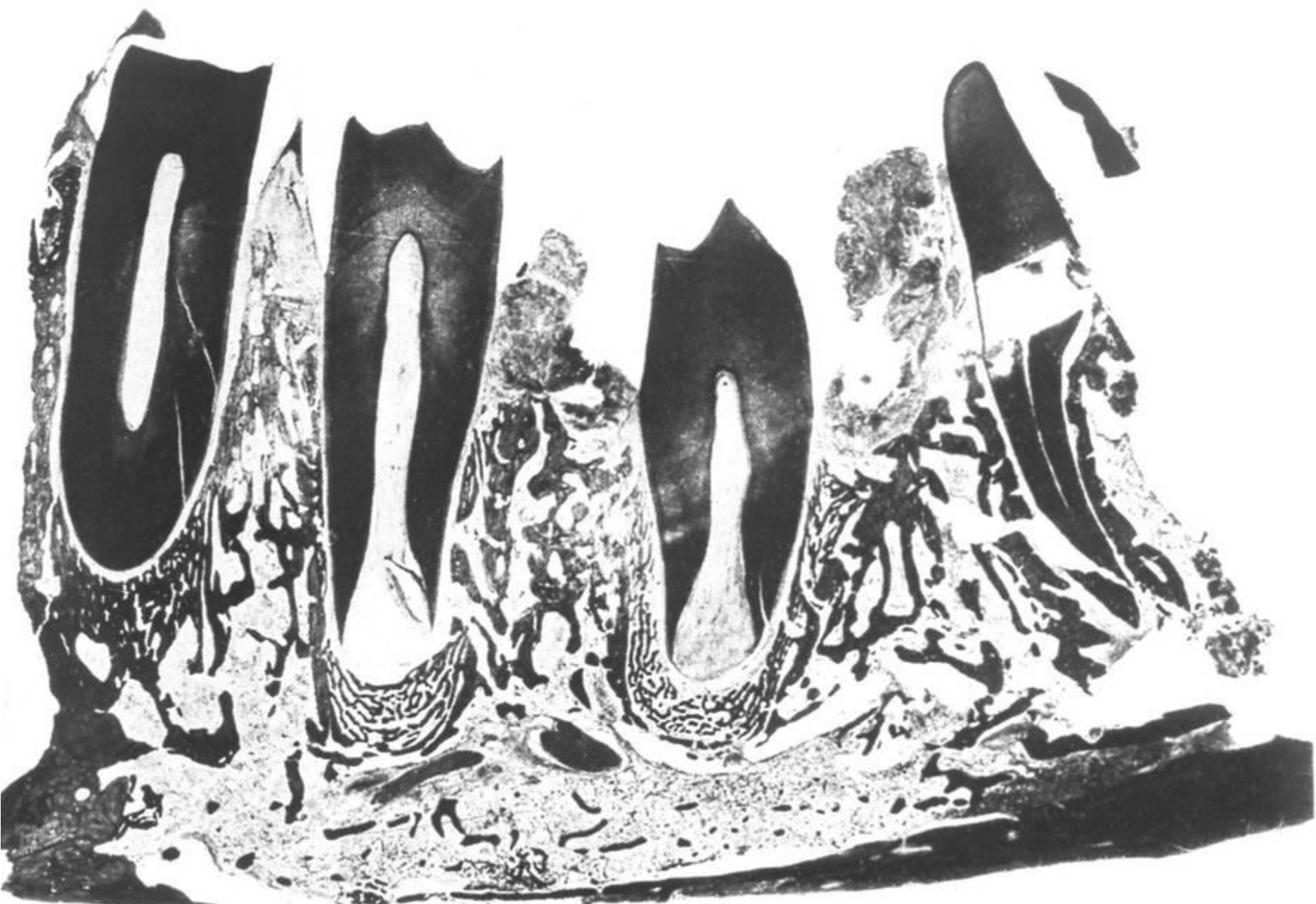
# Space maintainers in primary dentition

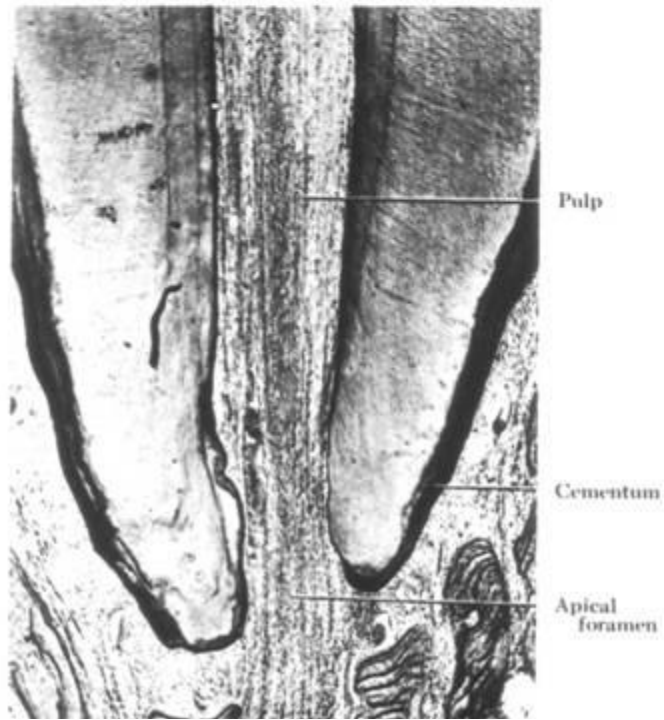
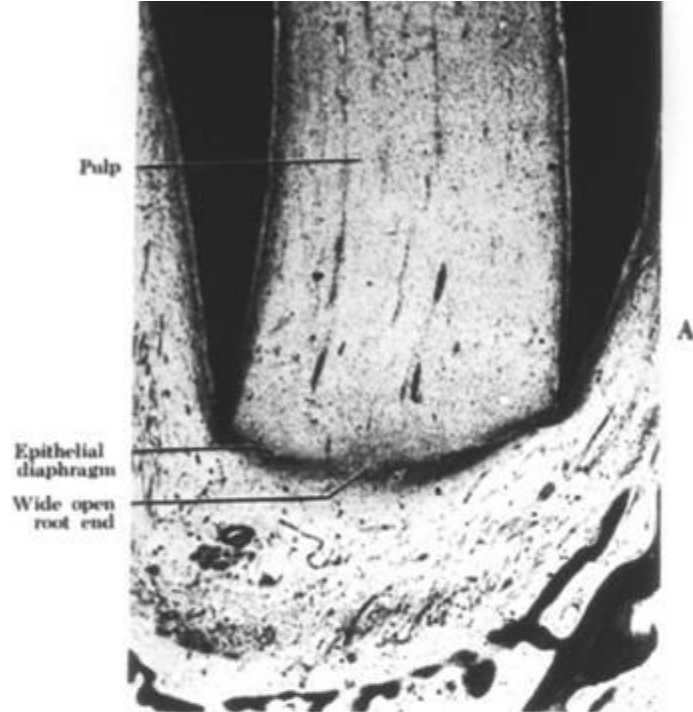


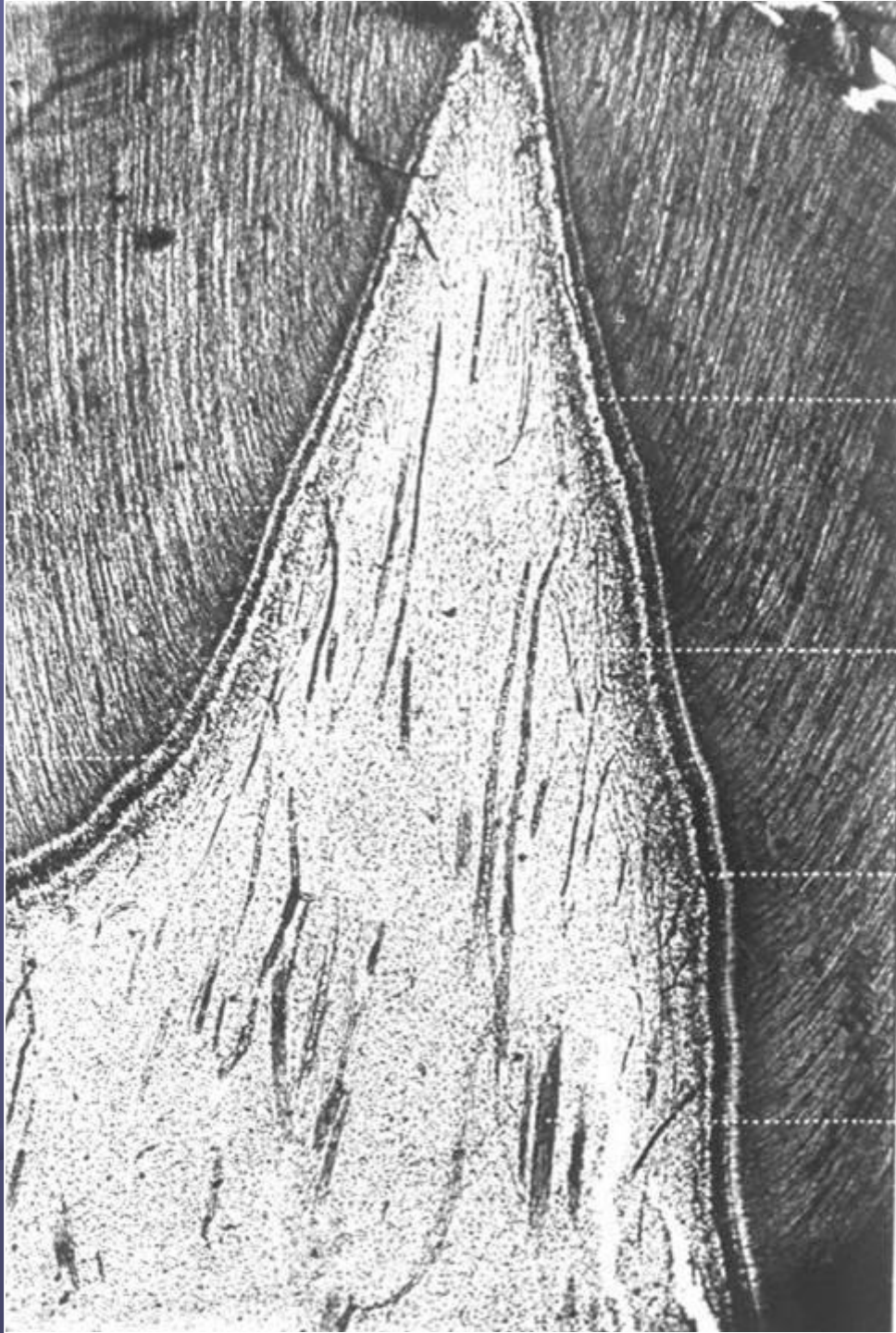
# Permanent dentition in children

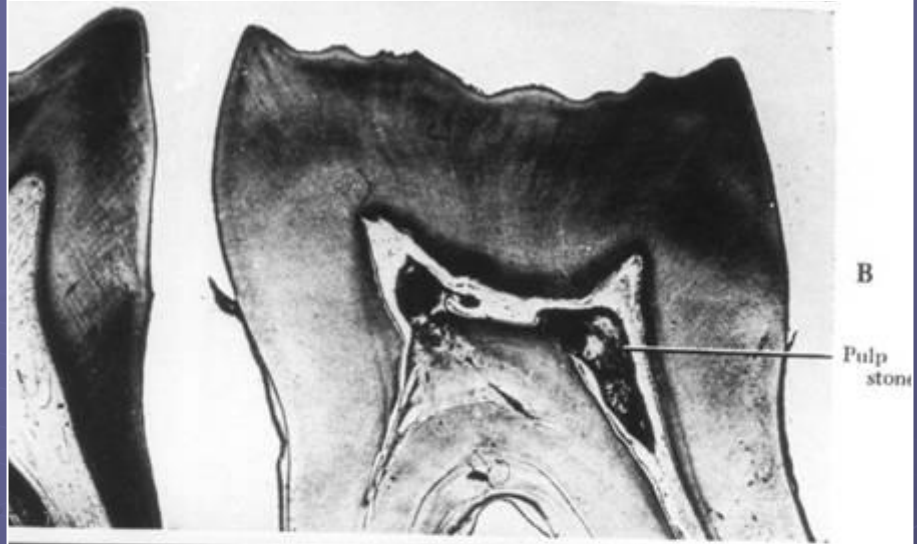
- Change from primary, to mixed and to permanent dentition, the age 6-12 years.
- Root is growing continuously, duration-3-4 years
- Dental pulp cavity is large with high horns, foramen apicale is large (see figs. 53 – 56). Continuous apposition of primary and secondary dentine is narrowing the dental pulp cavity with increasing age (Fig. 57).















A



B



C



D



E



F

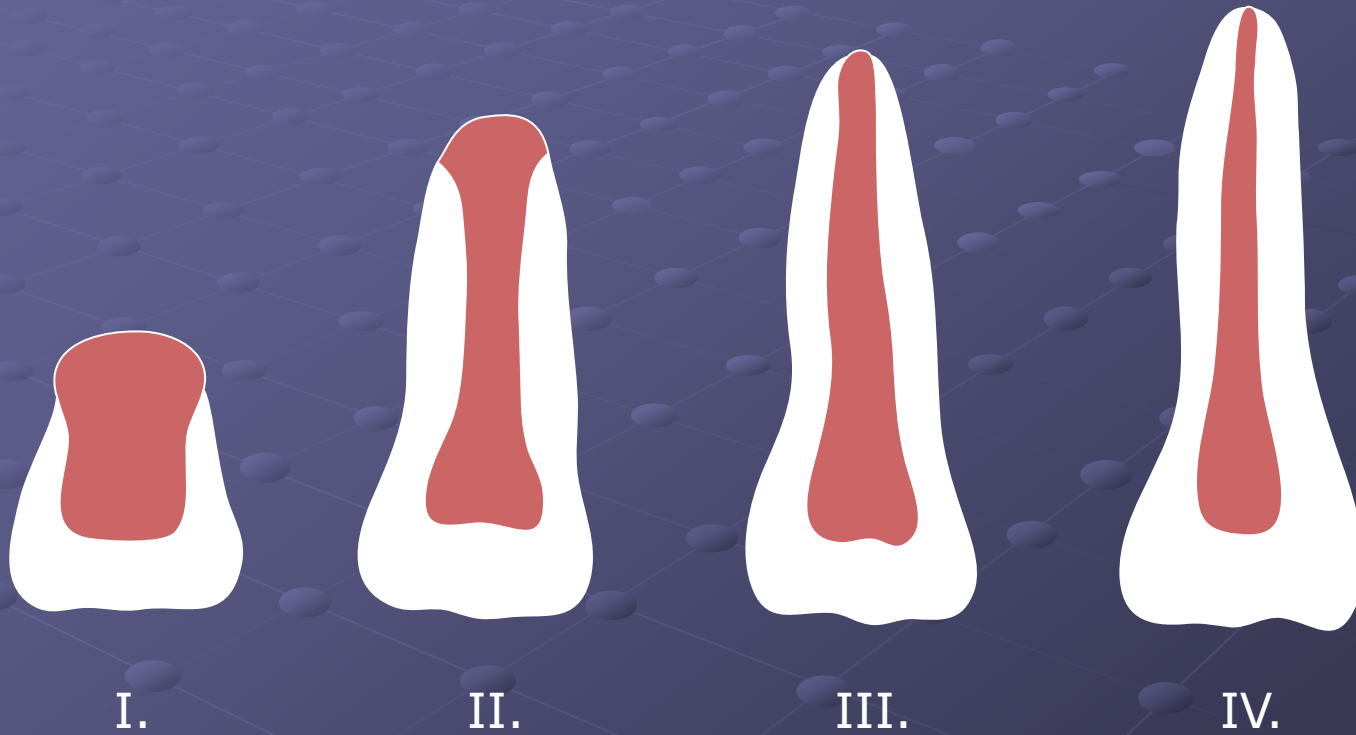


G



H

Stages of the root development in permanent dentition are the same as in primary dentition, the development lasts 3-4 years.



# Teeth with incomplete root development

Tooth eruption - complete apex formation ( 3 years)

## ● Anatomical difference

- Larger dental pulp cavity both in crown and root
- Thinner dentine layer
- Root shorter
- Clinical crown lower

## ● Histological differences

- Lower degree of enamel mineralization
- Rich vascularization
- apex – shape of mesenchymal papilla

## ● Biological properties

- favourable
- Rapid removal of noxes
- No blood stasis - wide apex
- Easy cell differentiation
- Rapid formation of tertiary dentine

# Orthodontic anomalies

- Orthodontic anomalies should be diagnosed by pedodontists soon.
- Deep bite (Fig. 61)
- Mandibular progeny (Fig. 62)
- Supernumerary teeth (Fig. 63, 64)
- Anomal eruption (Fig. 65)





# Supernumerary teeth







# Vestibular eruption



## Diseases of periodontium

- Diseases of periodontium are not very frequent. Gingivitis accompanies infection diseases.
- Most frequently – bad habits (Fig. 67)
- Genetically conditioned diseases – fibromatosis gingivae (fig. 68).
- Oral mucous membrane diseases – lingua geographica (Fig. 69)



**258** Gingivitis artefacta produced by the fingernails in a 6-year-old child. The maxillary anterior gingivae are the most severely affected. There is recession of the gingival margins and the root surfaces are visible.



**259** Gingival damage produced by a fingernail.



**260, 261** Gingival damage as a consequence of a class II division 2 malocclusion (**260**), and with a deep overbite (**261**).





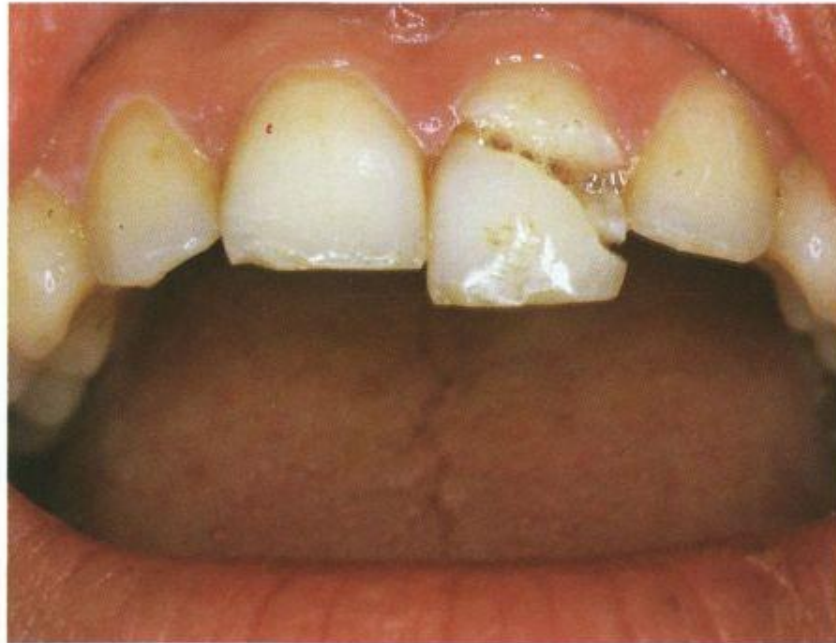
**Fig. 14.6** Geographic tongue. (By kind permission of Wolfe Publishing.)

# Injuries

- Crown fractures (Fig. 71)
- Injuries of periodontium (Fig. 72)
- Technique of taking X-ray in children (Fig. 73)
- Consequences of primary teeth injuries are given by the close relationship between the primary teeth and buds of permanent teeth (Figs. 74-76).
- Mouth guards are strongly recommended in contact sports.

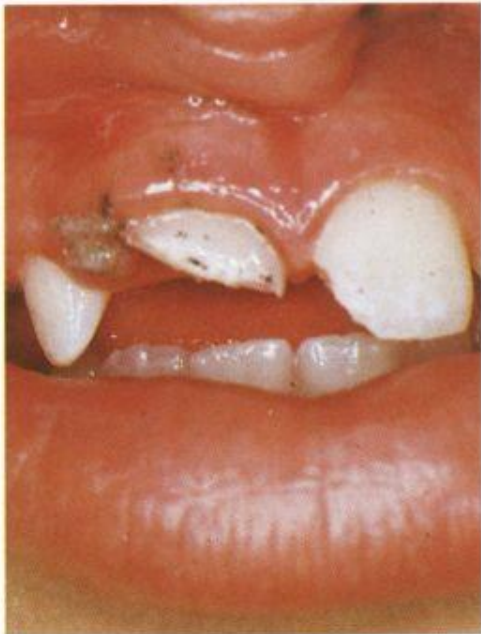
**Fig. 3.2. Clinical and radio-**  
**graphic diagnosis of a**  
**crow-root fracture**

The coronal fragment is mobile.  
The radiographs are not able to  
reveal the apical limit of the frac-  
ture.



**Fig. 7.2. Intrusion of a tooth with completed root formation**

The difference in the level of the incisal edge, as well as the apical shift of the cemento-enamel junction indicates intrusion.





**Fig. 10.3. A parent can assist in stabilizing the child during the radiographic examination**

The parent and child are furnished with lead aprons. One arm is used to hold the child while the other holds the filmholder and stabilizes the child's head against the parent's chest.

