DIFFERENCES BETWEEN PRIMARY AND PERMANENT TEETH

Dr. Priyanka Gowda
Dept. Of Oral Pathology

CROWN

PRIMARY TEETH

- Bluish white in color. Refractive index similar to that of milk(RI=1).
- smaller in all dimensions . Exposed area is about one-half that of the permanent teeth.
- Wider mesio-distally in relation to cervico-occlusal dimension. this gives a cup shaped appearance to the anterior teeth and squat shaped appearance to the molars.

PERMANENT TEETH

- Grayish white to yellowish white in color.
- Larger in dimensions.
- Larger in cervico-occlusal dimension than the mesio-distal dimension. this gives a longer appearance to permanent anterior teeth.

PRIMARY TEETH

- Cuspids are slender and to be more conical.
- Cervical ridges are more pronounced especially on buccal aspect of first primary molar.
- Buccal and lingual surface of molars , especially 1st molar, converge towards occlusal surface so they have a narrow occlusal table in the bucco-lingual plane.

PERMANENT TEETH

- Cuspids are less conical.
- The cervical ridges are flatter.
- There is less convergence of buccal and lingual surface of molars towards occlusal surface.

PRIMARY TEETH

- Occlusal plane is relatively flat.
- Molars are bulbous and are sharply constricted cervically.
- The contact areas between molars are broader , flatter and situated gingivally.

PERMANENT TEETH

- Occlusal plane has relatively curved contour.
- They have less constriction at the neck.
- The contact point between permanent molars is situated occlusally.

PRIMARY TEETH

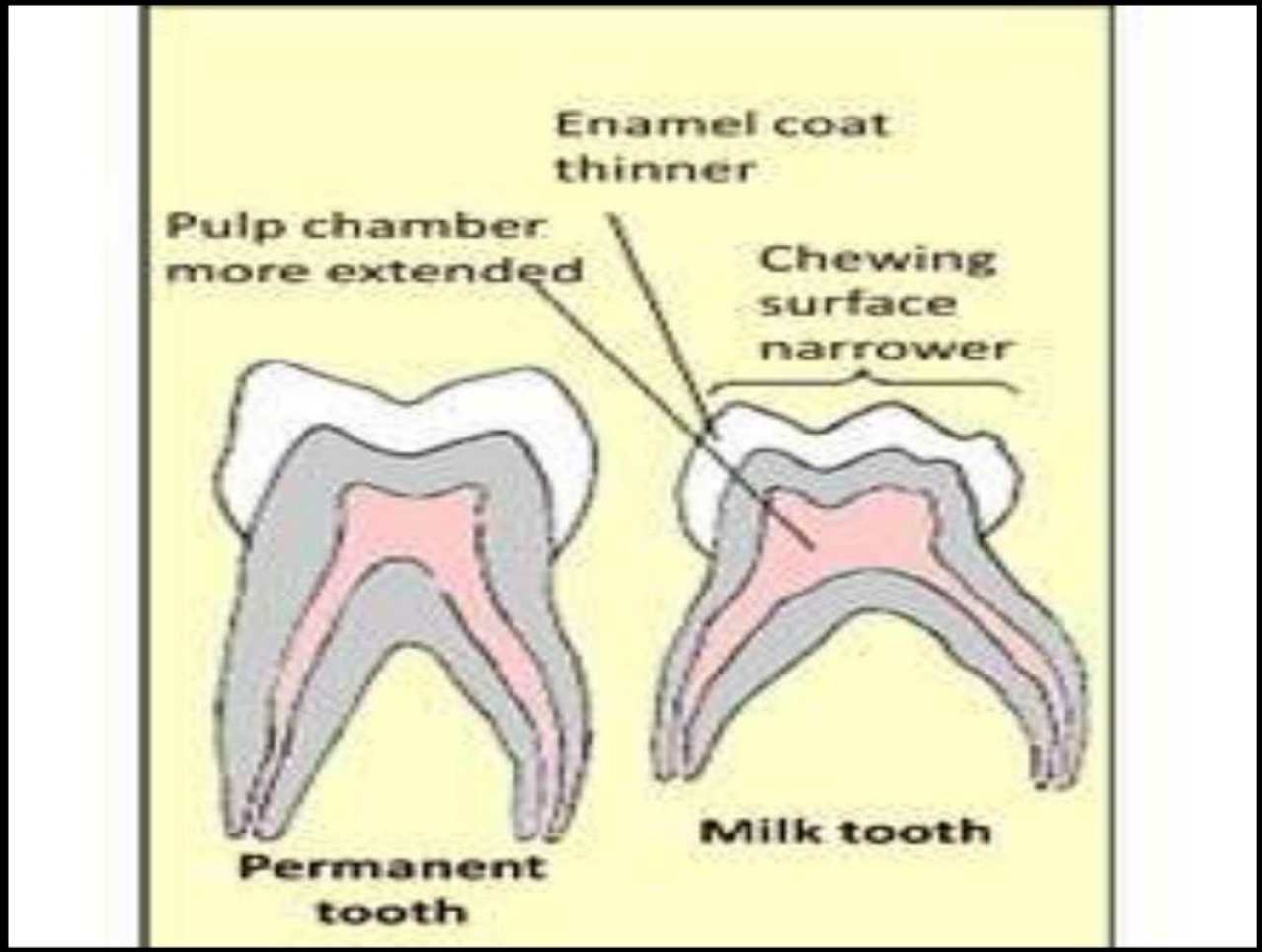
- Supplemental grooves are more.
- Mammelons are absent.
- 1st molar is smaller in dimension than the 2nd molar

PERMANENT TEETH

- Supplemental grooves are less.
- Mammelons are present on incisal edges of newly erupted incisors.
- 1st molar is larger in dimension than the 2nd molar.

Fig. 28.1a Mammelons are absent in deciduous dentition

Fig. 28.1b Mammelons are present on newly erupted permanent central incisors


Enamel coat
thinner
Pulp chamber
more extended
Chewing
surface
narrower
Permanent
tooth
Milk tooth

PULP

(PULP CHAMBER ANATOMY IN BOTH PRIMARY AND PERMANENT TEETH CLOSELY APPROXIMATES THE SURFACE SHAPE OF THE CROWN)

PRIMARY TEETH

- Pulp chamber is larger in relation to crown size.
- Pulpal outline follows DEJ more closely.
- Pulp horns are closer to the outer surface. Mesial pulp horn extends to a closer approximation of surface than the distal pulp horn.
- High degree of cellularity and vascularity in tissue.
- High potential for repair.

PERMANENT TEETH

- Pulp chamber is smaller in relation to crown size.
- Pulpal outline follows DEJ less closely.
- The pulp horns are comparatively away from the outer surface.
- Comparatively less degree of cellularity and vascularity in tissue.
- Comparatively less potential for repair.

PRIMARY TEETH

- Comparatively less tooth structure.
- Greater thickness of dentin over occlusal fossa of molars.
- Root canals are more ribbon like. the radicular pulp follows a thin , tortuous and branching path.
- Floor of pulp chamber is porous. Accessory canals in primary pulp chamber floor leads directly into inter-radicular furcation.

PERMANENT TEETH

- More tooth structure protecting the pulp.
- Comparatively lesser thickness of dentin over the pulpal wall at the occlusal fossa of molars.
- Root canals are well defined with less branching.
- Floor of pulp chamber does not have any accessory canal.

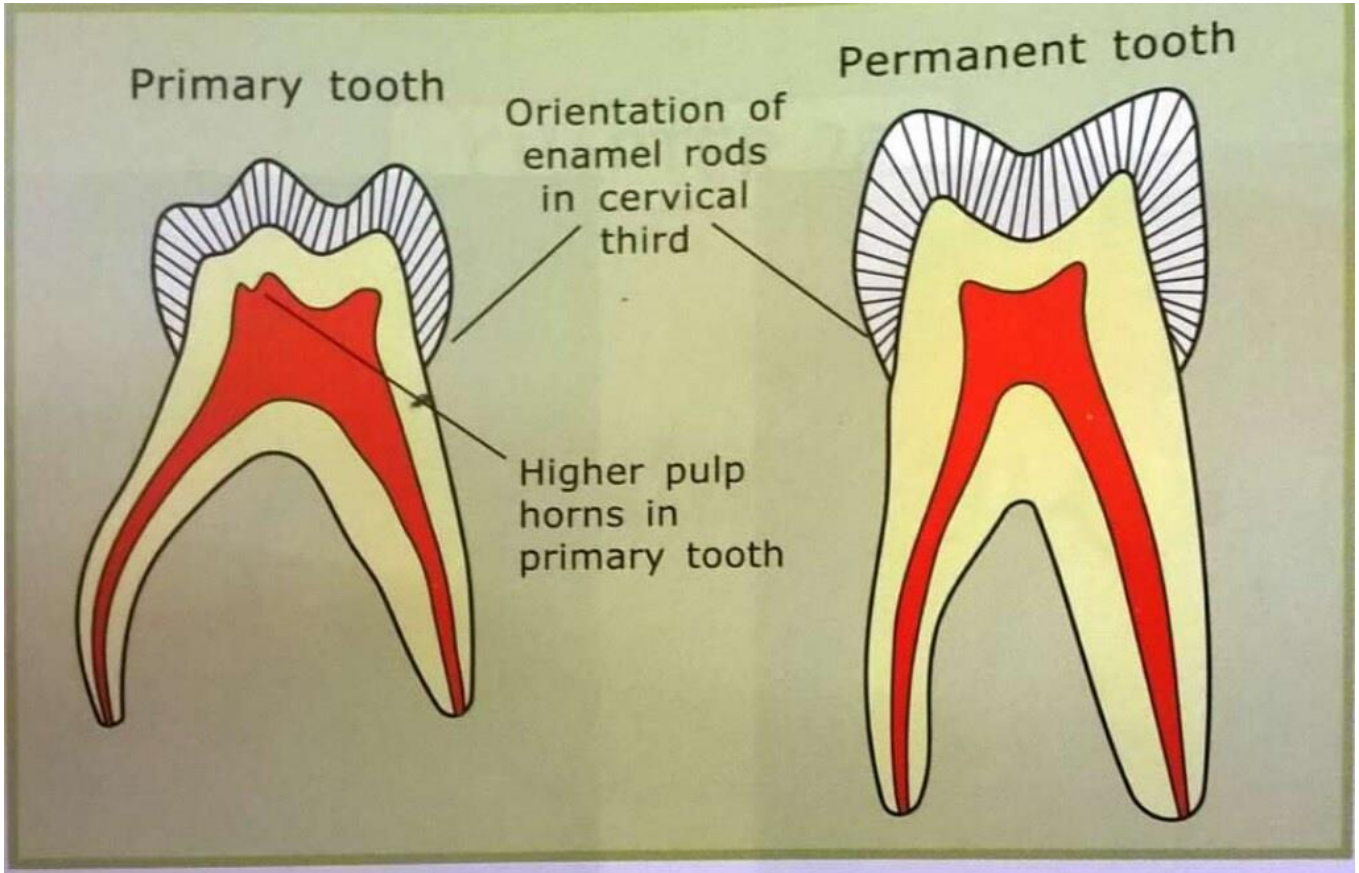


Fig. 28.1d Morphological differences between primary and permanent tooth showing orientation of enamel rods

ROOT

PRIMARY TEETH

- Roots are larger and more slender in comparison to crown size.
- Furcation is more towards cervical area so that root trunk is smaller .
- Roots are narrower mesio-distally.
- At the cervical region, the roots of the primary molars flare outward and continue to flare as they approach the apices to accommodate permanent tooth buds.
- Undergo physiologic resorption during shedding of primary teeth.

PERMANENT TEETH

- Roots are shorter and bulbous in comparison to crown.
- Placement of furcation is apical , thus the root trunk is larger.
- Roots are broader mesio-distally.
- Marked flaring of roots is absent.
- Physiologic resorption is absent.

ENAMEL

PRIMARY TEETH

- Bands of retzius are less common. This maybe partly responsible for the bluish white color.
- Neonatal lines are present in all teeth.
- Enamel is thinner and has a more consistent depth of about 1mm thickness throughout the entire crown
- Enamel rods at the cervical slopes occlusally from the DEJ.

PERMANENT TEETH

- Bands of retzius are more common.
- Neonatal lines are only present in 1st molars
- The enamel is thicker and has a thickness of about 2-3mm.
- Enamel rods are oriented gingivally.

DENTIN

PRIMARY TEETH

- Dentinal tubules are less regular.
- Dentin thickness is half that of permanent teeth. Thickness is limited in some places.
- Less dense and easy to cut.
- Interglobular dentin is absent.

PERMANENT TEETH

- Dentinal tubules are more regular.
- Den.
- Dentin is thicker.
- Dentin is denser and difficult to cut.
- Interglobular dentin is present.

PERIODONTIUM

PRIMARY TEETH

- Cementum is very thin and o the primary type. Secondary cementum is characteristically absent.
- Alveolar atrophy is rare.
- Gingivitis is generally absent in a healthy child. Similarly recession is in frequent.

PERMANENT TEETH

- Secondary cementum is present.
- Alveolar atrophy occurs.
- Gingivitis is common in adults.

HISTOLOGICAL DIFFERENCES

PRIMARY TEETH

- Roots have enlarged apical foramens. Thus , the abundant blood supply demonstrates a more typical inflammatory response.
- Incidence of reparative dentin formation beneath carious lesion is more extensive and irregular.
- Pulp nerve fibers pass to the odontoblastic area, where they terminate as free nerve endings.

PERMANENT TEETH

- Foramens are restricted. Thus reduced blood supply favors a calcific response and healing by calcific scarring.
- Reparative dentin formation is less.
- Pulp nerve fibres terminate mainly among the odontoblasts and even beyond the predentin.

PRIMARY TEETH

- Density of innervations is less because of which primary teeth are less susceptible to operative procedures. Neural tissue is the first to degenerate when root resorption takes place.
- Localization of infection and inflammation is poorer in pulp

PERMANENT TEETH

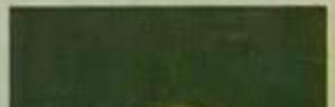
- Density of innervations is more.
- Infection and inflammation in pulp is localized .

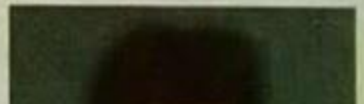
PRIMARY

PERMANENT

Labial surface of incisors

Cervical aspect of molars





MORPHOLOGIC CONSIDERATIONS

- Crowns are smaller and more bulbous than their permanent counterparts, and the molars are bell shaped , with a definite constriction in the cervical region
- The characteristic sharp lingual inclination occlusally of the facial surfaces results in the formation of distinct faciogingival that ends abruptly at the CEJ.
- The sharp constriction at the neck of the primary molar necessitates special care in the formation of the gingival floor during class2 tooth preparation .
- The buccal and lingual surfaces of the molars converging sharply occlusally results in a narrow occlusal surface or food table.
- The pulpal outline follows the DEJ more closely than that of the permanent teeth .
- The pulpal horns are longer and more pointed than the cusps would indicate.
- The dentin also has less bulk or thickness, and so the pulp is proportionately larger than that of the permanent teeth .
- The enamel of primary teeth is thin but of uniform thickness . The enamel surface tends to be parallel to the DEJ.

REFERENCES

- Textbook of Pedodontics- Shoba Tandon
- Textbook of Pediatric Dentistry-Nikhil Marwah
- Dentistry for child and adolescent-McDonald & Avery

THANK
YOU
GRACIAS
ARIGATO
SHUKURIA
TASHAKKUR ATU
SUKSAMA
MEHRBANI
GRAZIE
BÏYAN
SHUKRIA
DANKSCHEEN