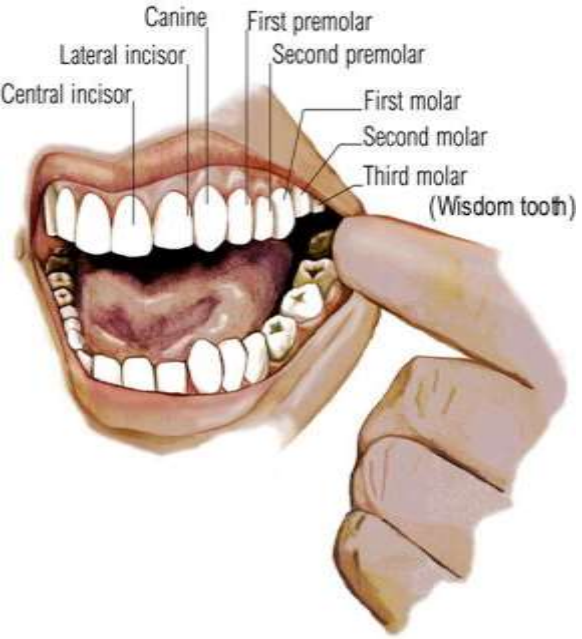


DIFFERENCES BETWEEN DECIDUOUS & PERMANENT TEETH

Dept Of Dental Anatomy,
Embryology & Histology

Purpose Statement

At the end of the lecture student should know differences between Deciduous & Permanent teeth under the following headings-

- Differences in General Characteristics
- Differences in Morphology
- Differences in Histology
- Differences in Mineral Content
- Differences in Chronology
- Importance of each set of teeth

Learning Objectives

- At the end of the lecture the student should be able to

S.N.	Learning Objectives	Domain	Level	Criteria	Condition
1	Enumerate Differences in General Characteristics	Cognitive	Must Know	All	
2	Enumerate Differences in Morphology	Cognitive	Must Know	All	
3	Enumerate Differences in Histology	Cognitive	Must Know	All	
4	Enumerate Differences in Mineral Content	Cognitive	Must Know	All	
5	Enumerate Differences in Chronology	Cognitive	Must Know	All	
6	Enumerate Importance of each set of teeth	Cognitive	Must Know	All	

GENERAL CHARACTERISTICS.

DECIDUOUS TEETH	PERMANENT TEETH
Appearance.	
Lighter in colour.	Darker in colour
Enamel is opaque.	Enamel is translucent
Duration.	
6 months to 51/2years.	6 years onwards.
Number.	
There are 20 teeth.	There are 32 teeth.

- **Dental Formula.**

Dental Formula for Deciduous teeth

$$I\ \frac{2}{2}\quad C\ \frac{1}{1}\quad M\ \frac{2}{2}$$

- 2I 1C 2M=5 per quadrant.
- 10 in each arch.

Dental Formula for Permanent teeth

$$I\ \frac{2}{2}\quad C\ \frac{1}{1}\quad PM\ \frac{2}{2}\quad M\ \frac{3}{3}$$

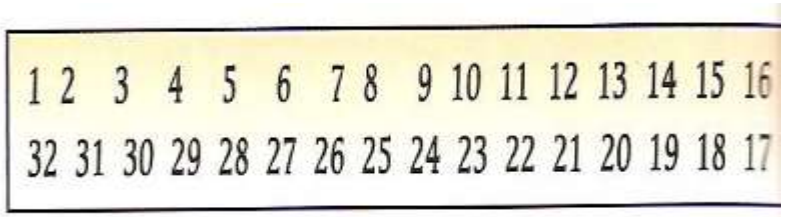
- 2I 1C 2PM 3M=8 per quadrant.
- 16 in each arch.

- **Nomenclature.**
- Zsigmondy's or Palmer System

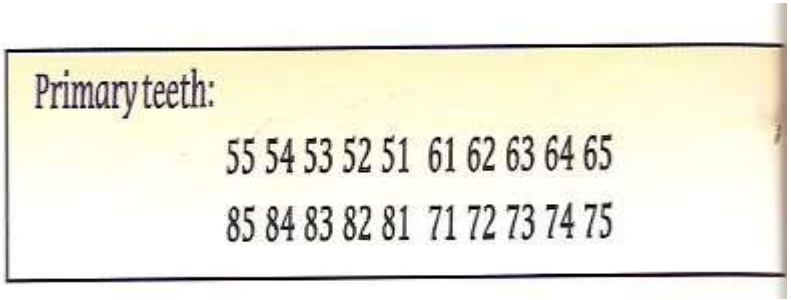
E D C B A	A B C D E
E D C B A	A B C D E

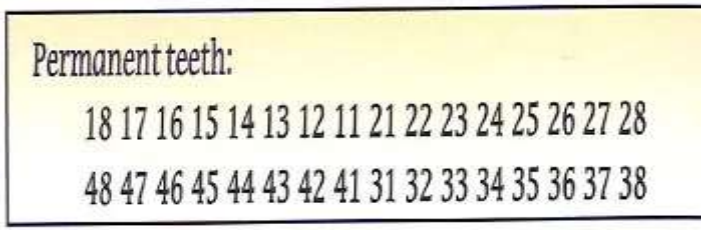
8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8
8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8

- Universal system.

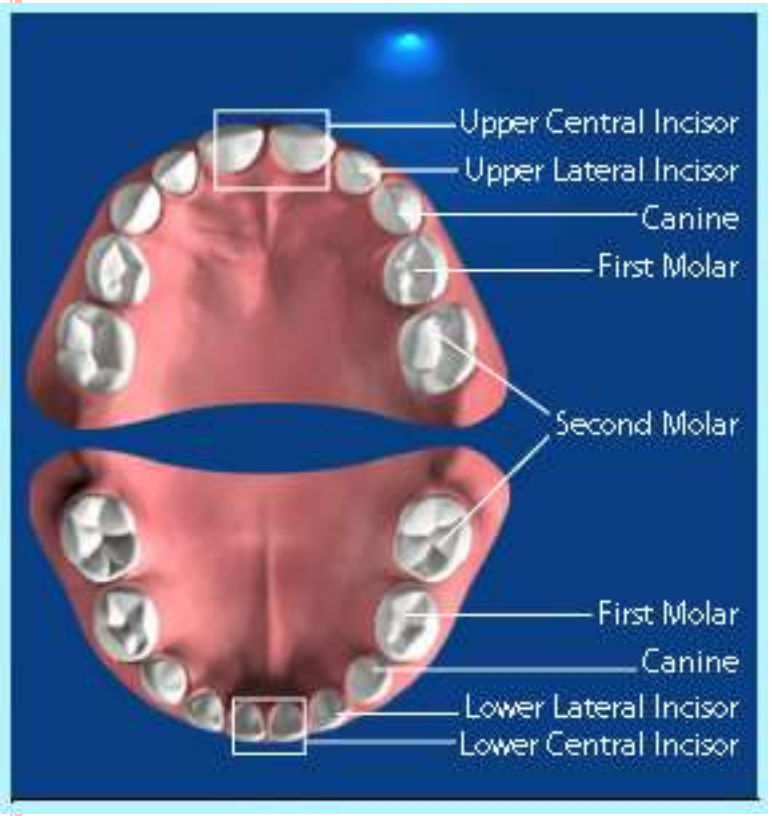


- Federation dentaire internationale (F.D.I.)

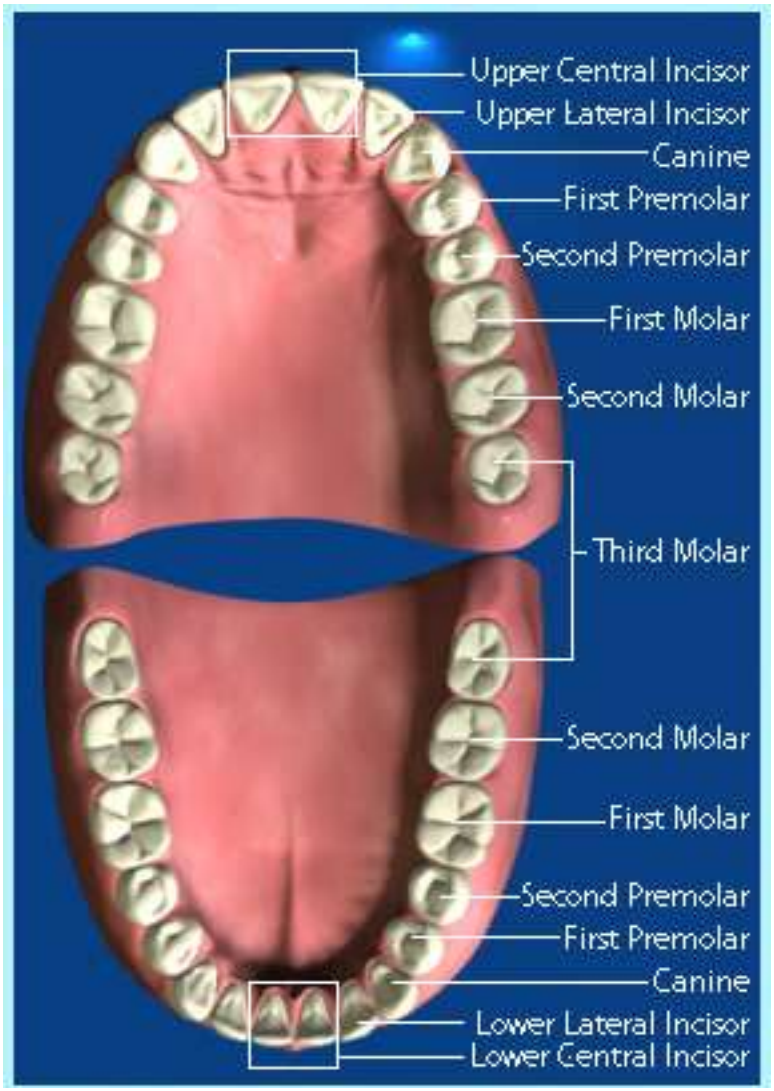




- Arch is smaller



- Arch is larger.



- **Hardness.**
- Enamel is not so hard.
- **Permeability.**
- Enamel is more permeable.

- Enamel is very hard.
- Enamel is less permeable.

MORPHOLOGY

CROWN.

- Smaller in all Dimensions.
- The crowns are wider mesiodistally in relation to cervico-occlusal height.

- Larger in all Dimensions.
- The crowns are larger cervico-occlusally than mesiodistal.

- Cuspids are slender & tend to be more conical.
- Cervical ridges are more pronounced.
- Buccal lingual surface of molar converge towards occlusal surface so that they have narrow occlusal table in bucco-lingual plane.

- Cuspids are less conical.
- Cervical ridges are flatter.
- Less convergence of buccal & lingual surface of molar towards occlusal surface.

- Occlusal plane is relatively flat.
- Molars are more bulbous & sharply constricted cervically.
- Supplemental Grooves are more.
- Mammelons absent.
- Ist molar smaller than IInd.

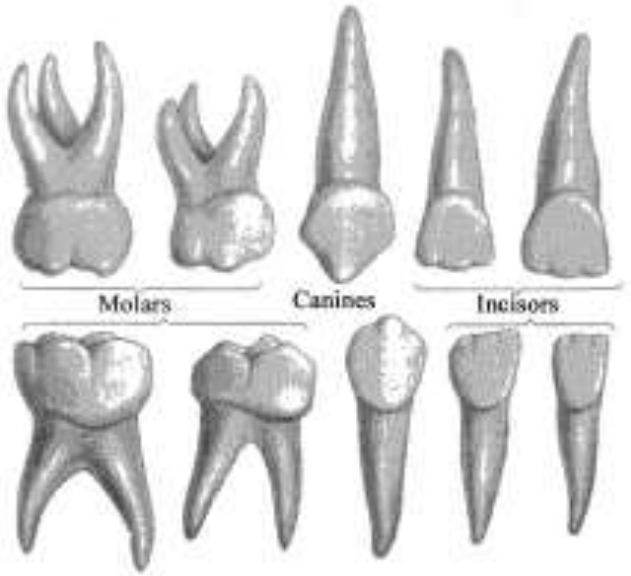
- Occlusal plane has more curved contour.
- They have less constriction.
- Supplemental Grooves are less.
- Mammelons present.
- Ist molar larger than IInd.

ROOT

- Roots are longer & more slender than the crown size.
- The furcation is close to the cervical line resulting in short root trunk.
- Roots undergoes physiological resorption during shedding

- Roots are shorter & bulbous than the crown.
- The furcation area is at a distance from the cervical lines resulting in longer root trunk.
- There is no physiological resorption.

- Roots flare out extensively from the cervical third.



- Roots does not flare to such an extent.

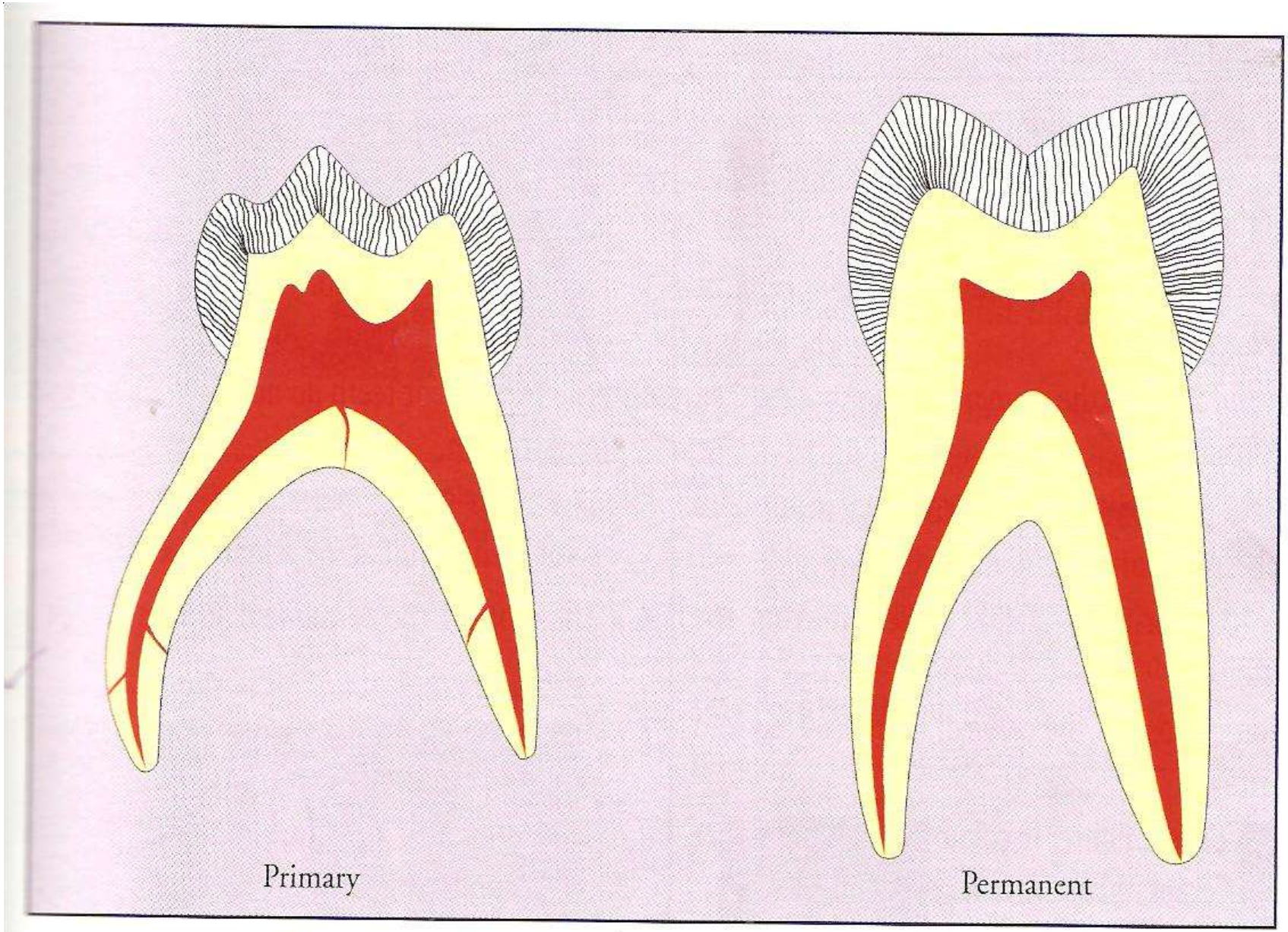
PULP

- Pulp chamber larger in relation to crown size.
- Pulp horns are at higher level.
- High degree of cellularity & vascularity in tissue.
- High potential for repair.

- Pulp chamber smaller in relation to the crown size.
- Pulp horns at a lower level.
- Comparatively less degree of cellularity & vascularity in tissue.
- Less potential for repair.

- Greater thickness of dentin over pulpal wall at the occlusal fossa of molar.
- Root canals ribbon like & branched.
- More number of accessory canals.

- Less thickness of dentin over pulpal wall at the occlusal fossa of molar.
- Root canals well defined & less branched.
- Less number of accessory canals.



▲ **Fig. 13.1.** Difference between primary and permanent teeth

HISTOLOGY

ENAMEL

- Thickness is less. Average width- 0.5-1mm.
- Number of enamel rods are less.
- Gnarled enamel absent.
- Aprismatic layer of surface enamel is wider. .

- Thickness is more.Average width-2.5mm.
- Rods are more in number.
- Gnarled enamel present.
- Aprismatic layer of surface enamel is not so wide.

- Direction of enamel rods
- Cuspal region- Vertical.
- Middle - oblique & cervical region- Horizontal.

- Direction of enamel rods
- Cuspal region- Vertical
- Middle-oblique & cervical region- from horizontal deviates apically.

DENTIN

- Thickness is less.
- Dentinal tubules are less in number ,shorter,& irregular in course.
- Reparative dentin formation is more.

- Thickness is more.
- Dentinal tubules are more in number longer &regular in course.
- Reparative dentin formation is less.

CEMENTUM

- Cemento-dentinal junction is scalloped.
- Cemento –dentinal junction is straight.

PULP

- Roots have enlarged apical foramen.
- Typical inflammatory response.
- Density of innervation is less.

- Foramen are restricted.
- Favours calcified response.
- Density of innervation is more.

MINERAL CONTENT

- Enamel and dentin are less mineralized.
- Neonatal lines present in enamel and dentin.
- Interglobular dentin absent.

- Enamel and dentin more mineralized.
- Neonatal lines seen only in 1st molar as mineralization takes place at birth.
- Interglobular dentin present.

- Bands of Retzius less common.
- Cementum very thin & of primary type, secondary cementum absent.

- Bands of Retzius more common.
- Secondary cementum present.

CHRONOLOGY

Deciduous	Eruption Time
Central Incisor	6-12 months
Lateral Incisor	9-13 months
Canine	16-23 months
First Molar	13-19 months
Second Molar	23-33 months

Permanent Teeth	Eruption Time
Central Incisor	6-8 years
Lateral Incisor	6.5-9 years
Canine	9-12 years
First Premolar	8-12 years
Second Premolar	8.5-13 years
First Molar	6-7 years
Second Molar	11-14 years
Third Molar (Wisdom Tooth)	17-25 years

IMPORTANCE

- Restorative procedure.
- Extraction.
- Orthodontic treatment.
- Evaluation of growth & development.
- Eruption sequence.
- Forensic study.
- Dental age.
- Morbidity assessment.

- To identify the developmental defect that are evident after the eruption of primary & permanent teeth & can be related to systemic local factors which include matrix formation & calcification.

Summary

- Differences Between Deciduous & Permanent Teeth from the following features
- General Characteristics
- Morphology
- Histology
- Mineral Content
- Chronology
- Importance

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THANK YOU