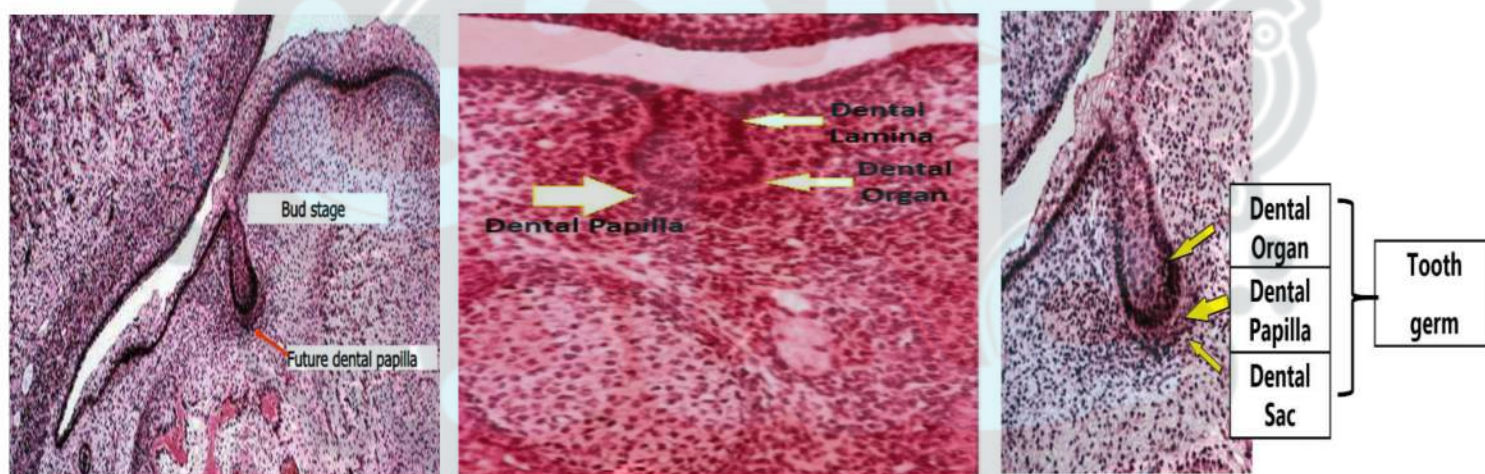


(2) Bud Stage:

- The dental lamina has labial and lingual sides.
 - On the labial side there are 10 swellings for the development of the deciduous teeth for each jaw.
 - These swellings having the bud shape (**ectodermal swelling**) which is called the **enamel organ**.
- The supporting **ectomesenchymal cells** are closely backed beneath the epithelial bud and called **dental papilla**.
 - The dental organ and dental papilla remain separated by the basement membrane, and both are surrounded by another condensation of **ectomesenchymal tissue** called **dental sac** (or **tooth follicle**).

(Dental organ + Dental papilla + Dental sac = Tooth germ.)

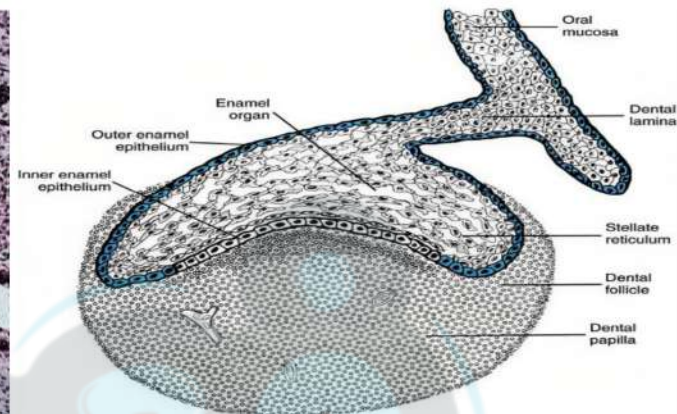
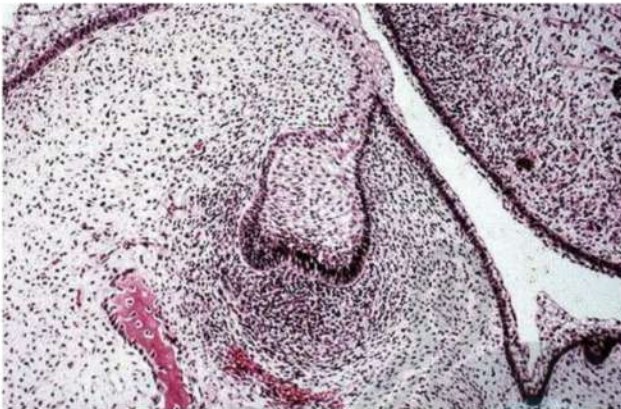


- The epithelial component of the tooth germ is known as:
(Dental lamina - Dental papilla - Enamel organ - Dental follicle).
- Which of the following is not part of the tooth germ:
(Dental papilla - Dental follicle - Dental lamina - Enamel organ).
- The lateral dental lamina gives rise to:
(Deciduous teeth - Permanent successors - Permanent molars - Vestibular lamina).
- The down growth of an epithelial thickening buccal to the dental lamina is known as:
(Vestibular lamina - Linguo-alveolar Sulcus - Lateral dental lamina - Successional dental lamina).

MCQ

(3) Cap Stage:

- By **differential growth** of the epithelial, bud will change its shape to a cap which is characterized by:
 - Outer convex** and **inner concave** surfaces which face the dental papilla.
 - The enamel organ has **short and broad connection** to the dental lamina.

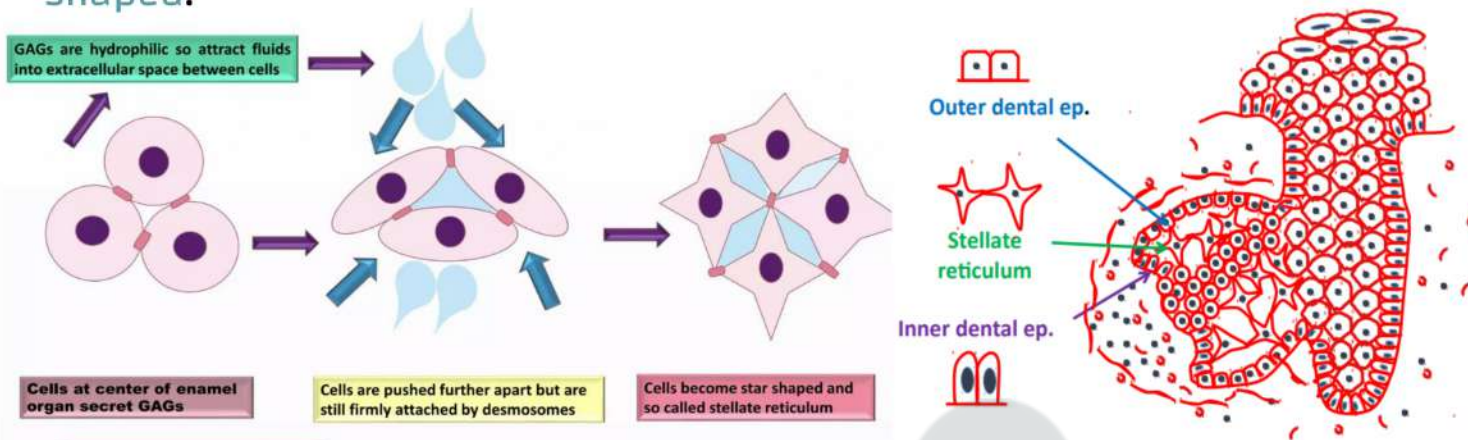


Histologically, the cap stage is formed of:

a) Dental (Enamel) Organ:

- Outer enamel epithelium (O.E.E.):**
single layer of **cuboidal** cells with deeply stained rounded nucleus at the convex surface.
- Inner enamel epithelium (I.E.E.):**
single layer of **columnar** cells with deeply stained nucleus at the concave surface.
- Any invagination of the (I.E.E.) to the dental papilla may be present with **condensation** of the (I.E.E.) cells and is called **Enamel knot**.
- From the enamel knot cellular condensation extend to the (O.E.E.) and is called **Enamel cord**.
- Stellate reticulum:**
 - This layer occupies the center of the enamel organ between (O.E.E.) and (I.E.E.) and united with them by **desmosomes**.

- It is formed of star shaped cells produce and secrete **mucoid substance** (glycosaminoglycans) which is hydrophilic substance.
- The intercellular space is filled with **fluids** so, the cells are **forced apart**, because the presence of desmosomes they **become star shaped**.

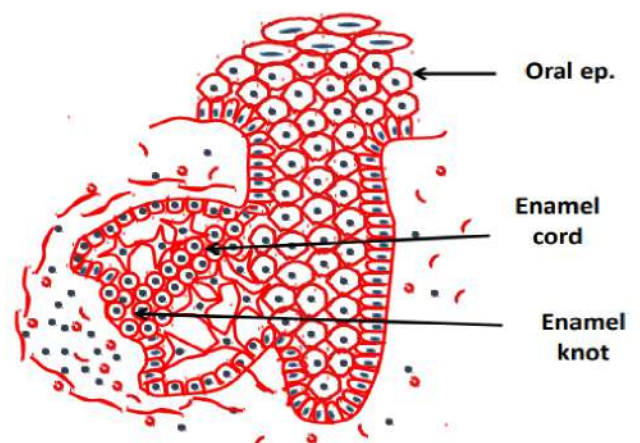
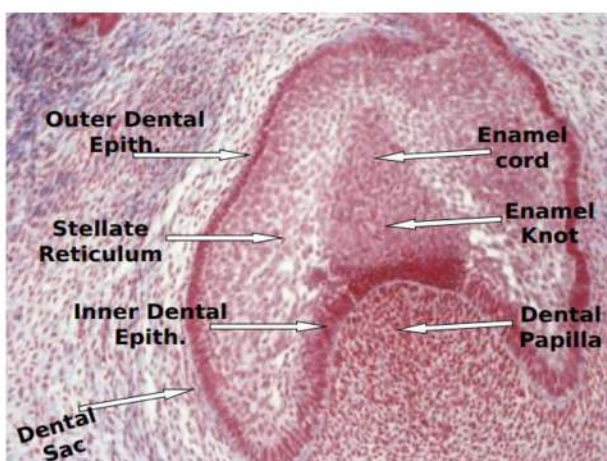


Enamel Knot:

- Cluster of cells condensed in the region of the inner enamel epithelium at the center of the dental organ forming a bulge into the dental papilla.
- disappears before enamel formation. (**Transitory Structure**)
- represents an organization center which control cuspal morphogenesis.

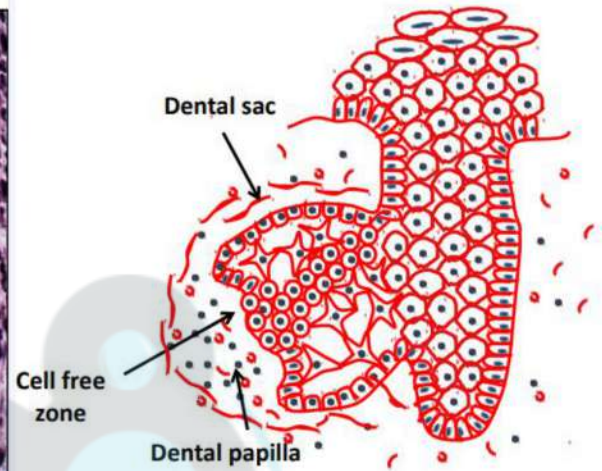
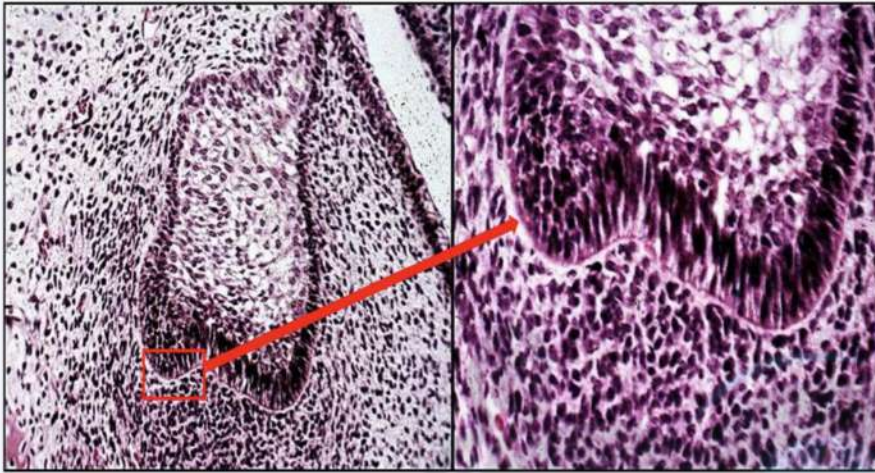
Enamel Cord:

- Vertical strand of cellular condensation extending from the enamel knot to the outer enamel epithelium.
- When it completely divides the stellate reticulum into two parts it is termed **enamel septum**.
- disappears before enamel formation. (**Transitory Structure**)
- represents a focus for the origin of stellate reticulum cells.



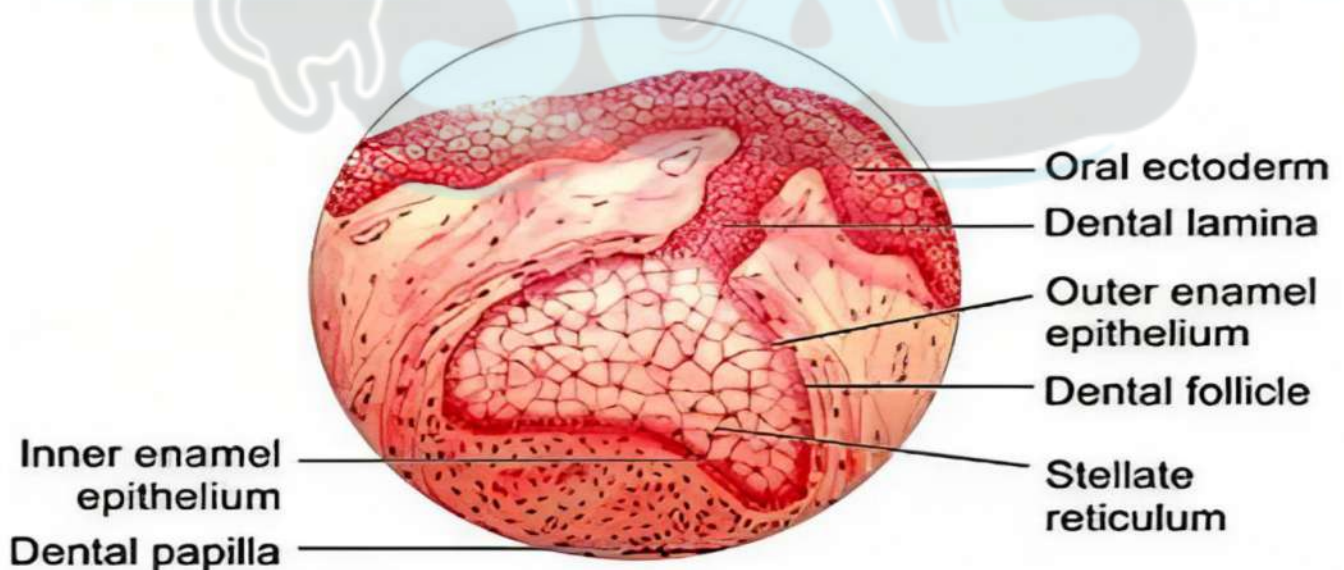
b) Dental Papilla:

1. Formed of condensation of **ectomesenchymal** cells.
2. Separated from the enamel organ by **basement membrane** and a **cell free zone** (acellular zone) this contains cytoplasmic process of ectomesenchymal cells + fibers.



c) Dental Sac:

1. Formed of condensation of ectomesenchymal cells and fibers around the enamel organ and dental papilla.
2. Gradually become denser and fibrous.



Development of tooth showing cap stage.