

# DENTO-GINGIVAL JUNCTION

---

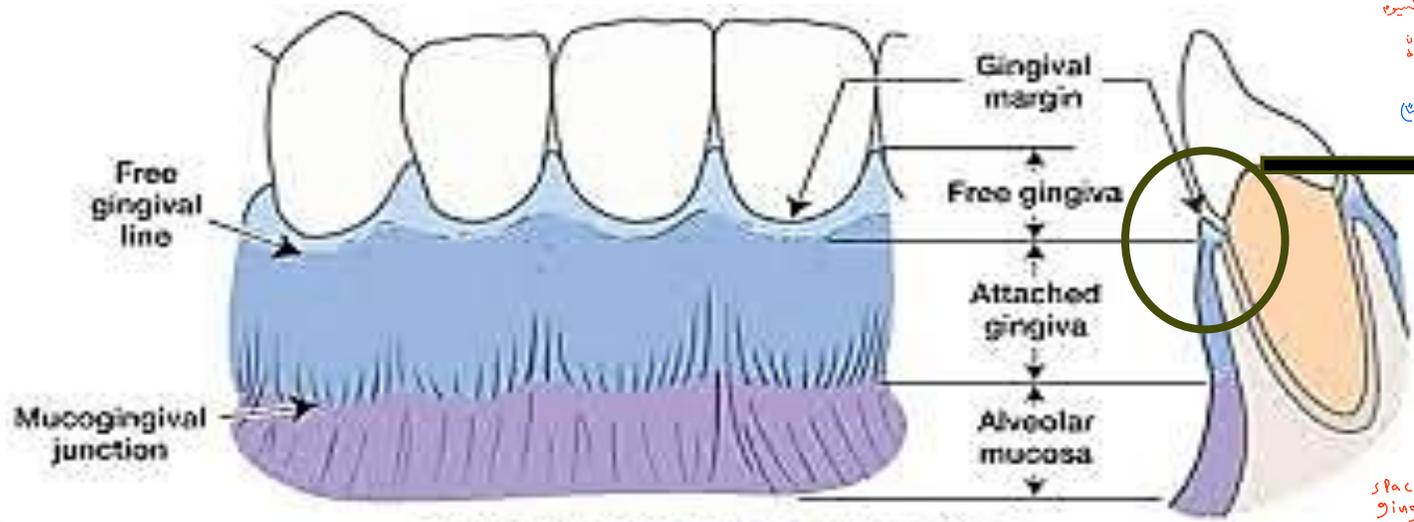
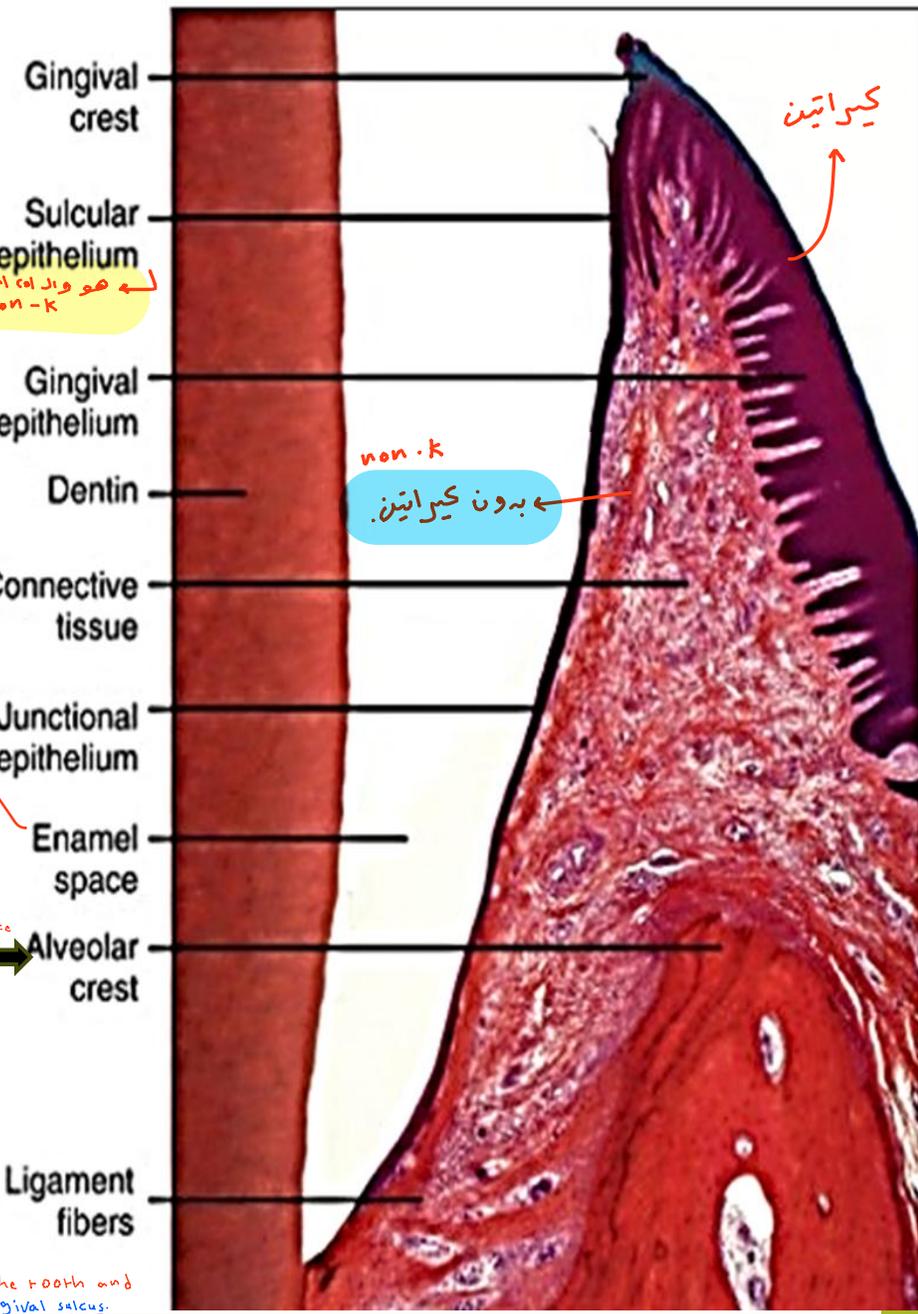
Omyma Mohamed

*between tooth and gingiva*

# Dento-gingival junction

↳ = sulcular <sup>epithelium</sup> E + junctional E = dento-gingival junction.  
 ↳ JE <sup>يتمد</sup> cervically <sup>نسبة إلى</sup> (JE) → attaches to tooth surface.

• **Def:** The dento-gingival junction consists of a sulcular epithelium which extends cervically to become the junctional epithelium (JE) that attaches to the tooth surface.

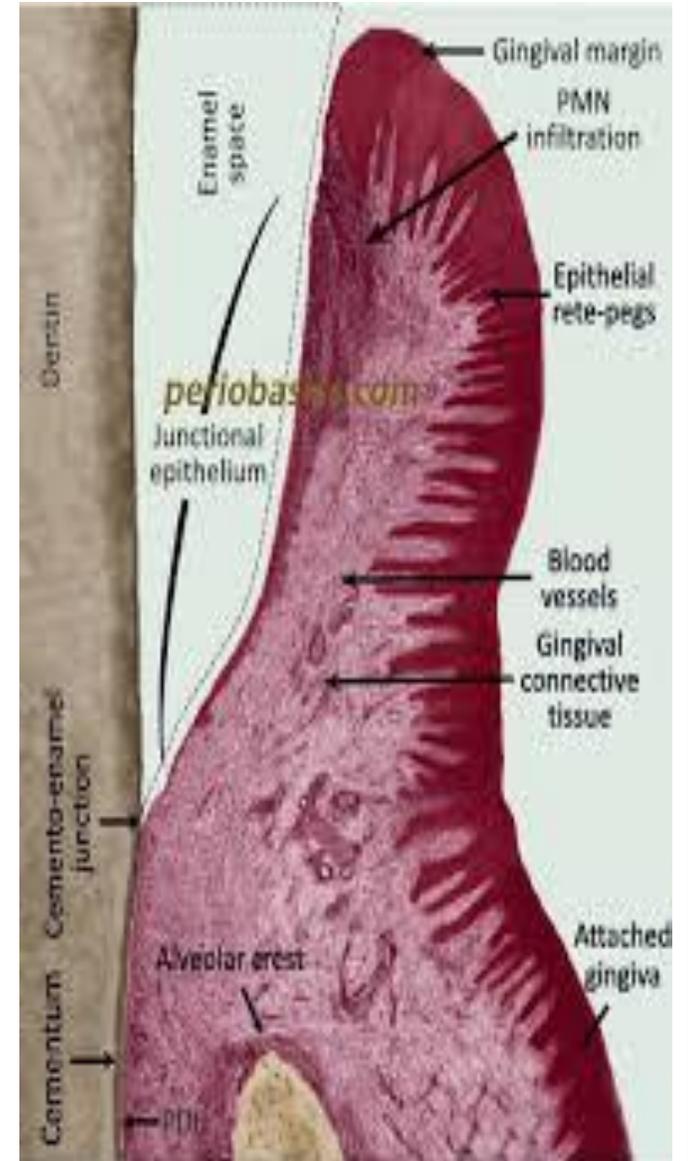


المينا (enamel) مابينه بصفه ال H&E  
 Enamel space  
 مكان نسبة الظالمين  
 في المينا ال ٩٤٪  
 والباقي المكونه بكون  
 decalcified section  
 بانها انزل  
 بالاسود  
 Enamel space  
 Enamel space

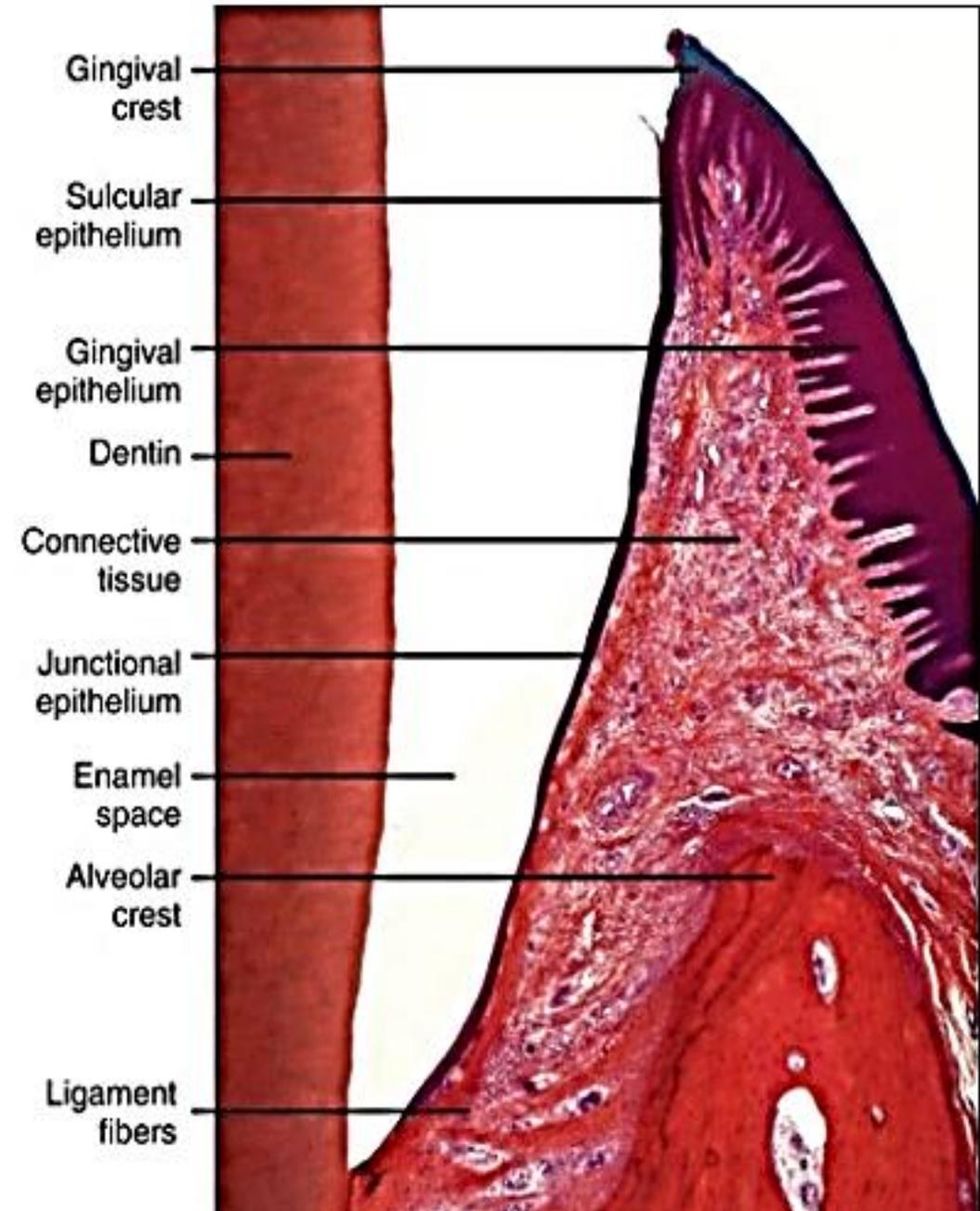
space between the tooth and gingiva is gingival sulcus.

- **The sulcular epithelium** is separated from the tooth by a space referred to as the **sulcus**.
- When the tooth first becomes functional, the bottom of the sulcus usually is found on the cervical half of the anatomical crown
- with age a gradual migration of the sulcus bottom occurs that eventually may pass on to the cementum surface.

\* بعض مرضى السكري يتكون ثنائهم طويلة ركن بالفعل موبناتهم طويلة وإنما اللثة تراجع.

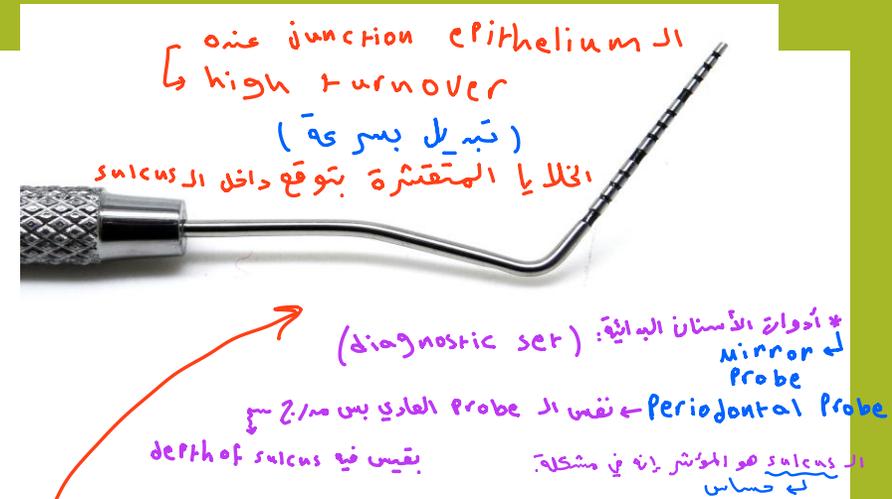


- The walls of the sulcus are lined by epithelium derived from the oral mucosa.
- This oral sulcular epithelium has the same basic structure as **nonkeratinized oral epithelium**.
- The <sup>→ organelles فيها</sup> orthokeratinized or <sup>→ organelles فيها</sup> parakeratinized surface of the free gingiva (or oral epithelium) is continuous with the oral sulcular epithelium at the level of the gingival crest

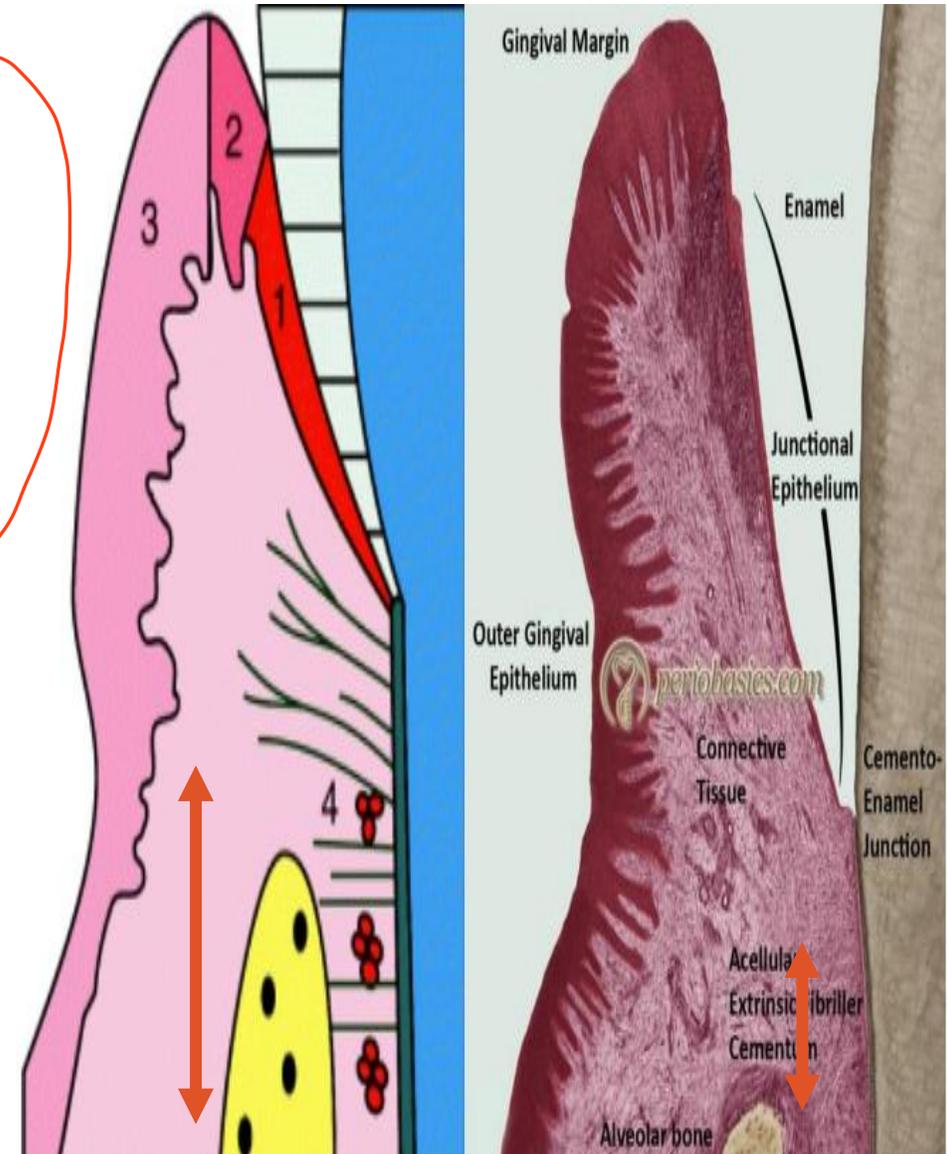


# sulcus contents

- The sulcus contains fluid that has passed through the junctional epithelium and a mixture of desquamated epithelial cells from the junctional and sulcular epithelia and inflammatory cells.
- polymorphonuclear leukocytes, continually migrate into the junctional epithelium and pass between the epithelial cells to appear in the gingival sulcus and eventually in the oral fluid.
- the gingival sulcus has a depth of 0.5 to 3 mm, with an average of 1.8 mm. Any depth greater than 3 mm generally can be considered pathologic; a sulcus this deep is known as **a periodontal pocket**.



- **Attachment or junctional epithelium:** is the epithelial component of gingiva which is in direct contact with tooth surface
- It extends from the bottom of gingival sulcus towards the cemento-enamel junction
- The length varies from **1-3mm**

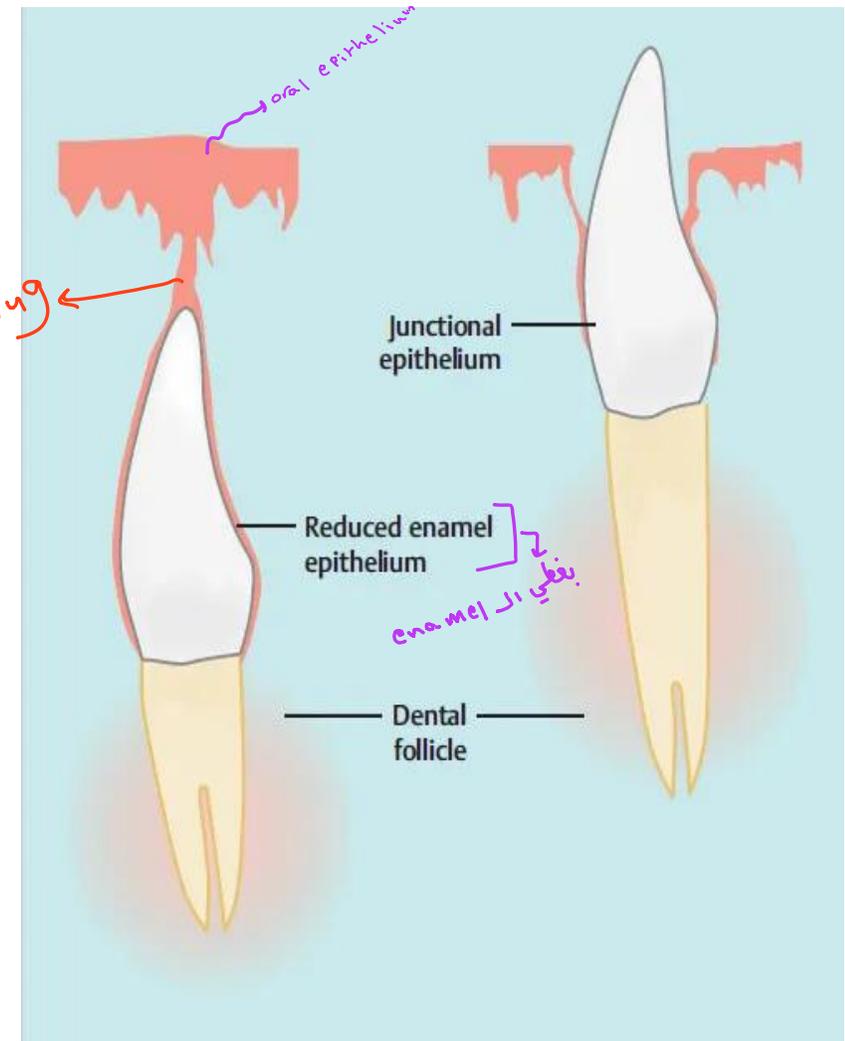


الأجهزة المتصلة ← epithelium apparatus ← epithelium ← قبة في عن الأشياء المتصلة بال ← E attachment  
 epithelium ← attachment epithelium ← قبة في عن ال ← attachment epithelium  
 epithelium

# Development of dento-gingival junction

- When enamel is completely formed it is covered by primary enamel cuticle and reduced enamel epithelium → REE
- Connective tissue is present between REE and oral epithelium
- REE secretes desmolytic enzymes to break down connective tissue
- Cells of REE and basal cells of oral epithelium proliferate to form mass of epithelial cells called epithelial plug
- Cell death in the middle of this plug to form epithelial lined canal through which tooth erupts without hemorrhage
- Once tip of tooth has emerged to oral cavity, REE becomes primary attachment epithelium

E-plug



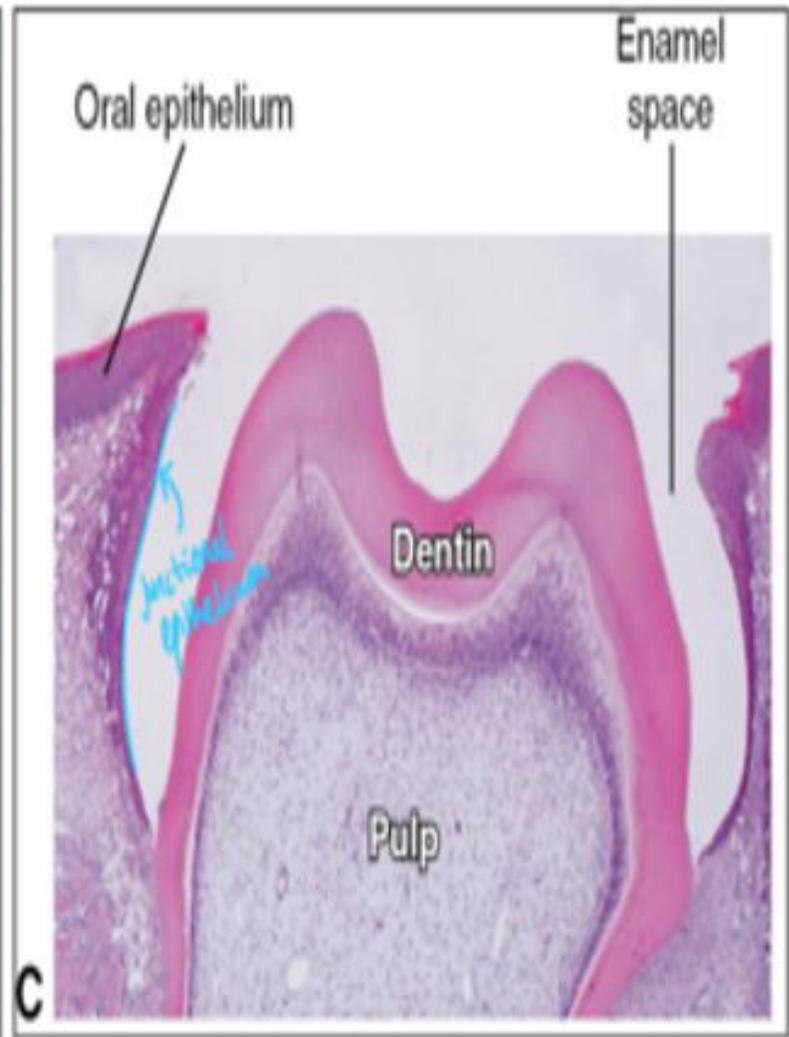
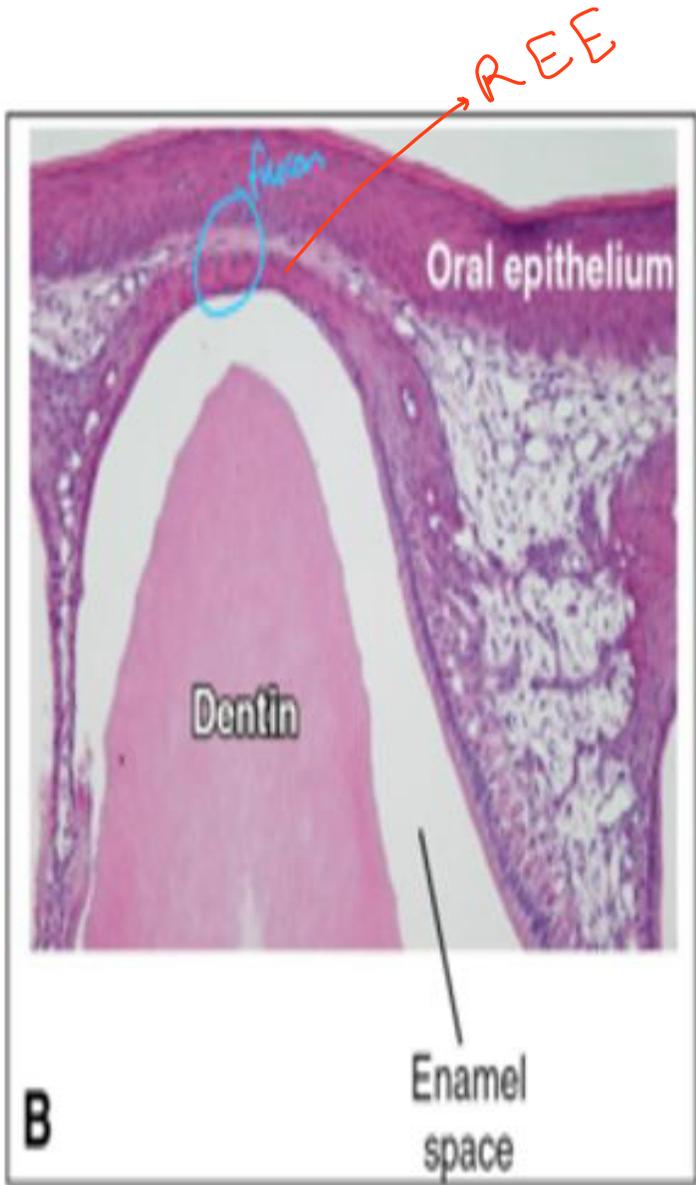
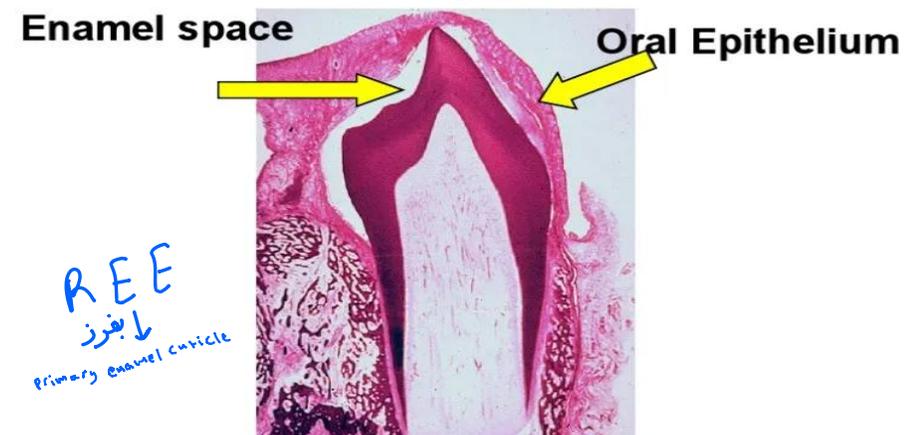
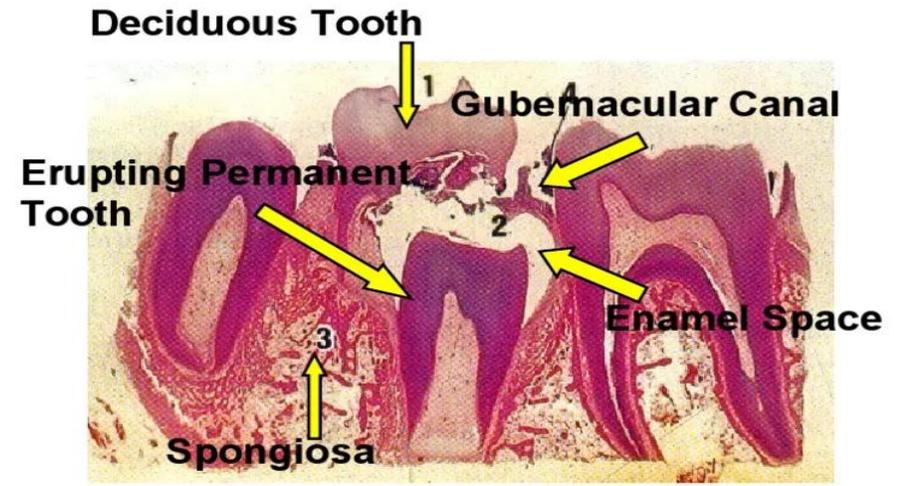


Fig. 5-32: Ten Cate's Oral Histology, 8th ed



during development — Primary epithelium attachment

REE — secondary epithelium attachment

لايفرز من الgingiva ثورد

# Histology of dento-gingival junction

جفت → junctional E  
sulcus gingivae

## ❖ The attachment epithelium under LM:

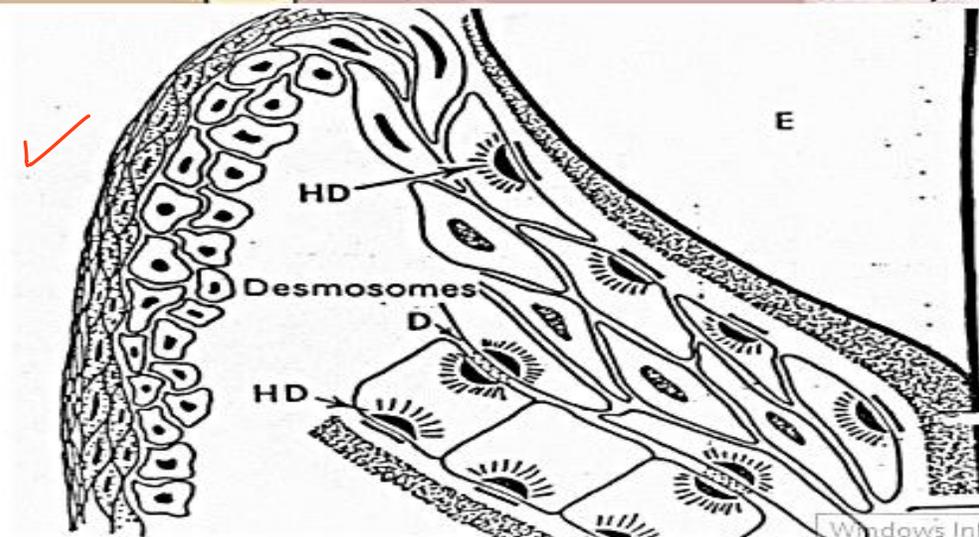
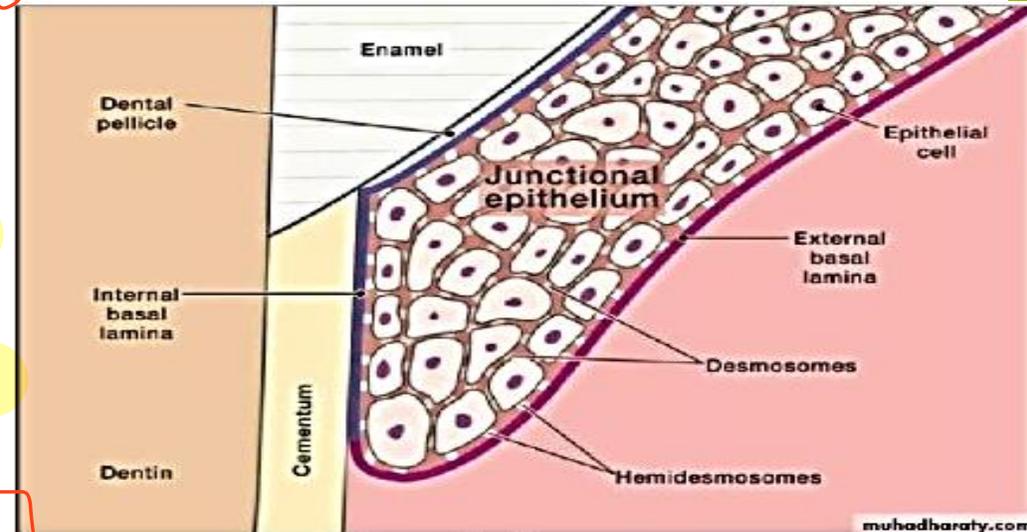
- Non keratinized stratified squamous epithelium , Thin in the beginning consisting of 3-4 layers of cells , Thickens with age to about 10-30 layers coronally and 2-3 apically

10-30 ✓

↳ 2-3

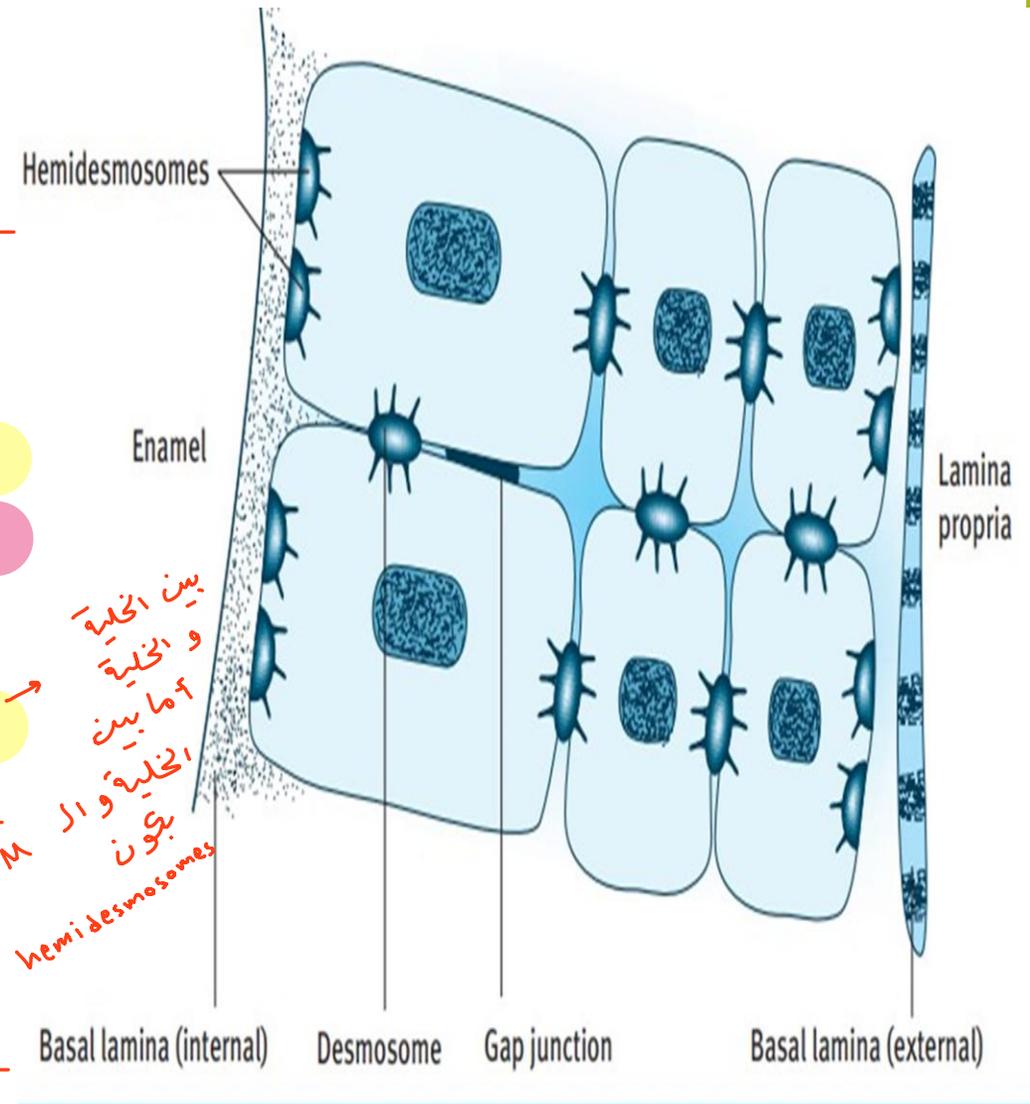
دیس

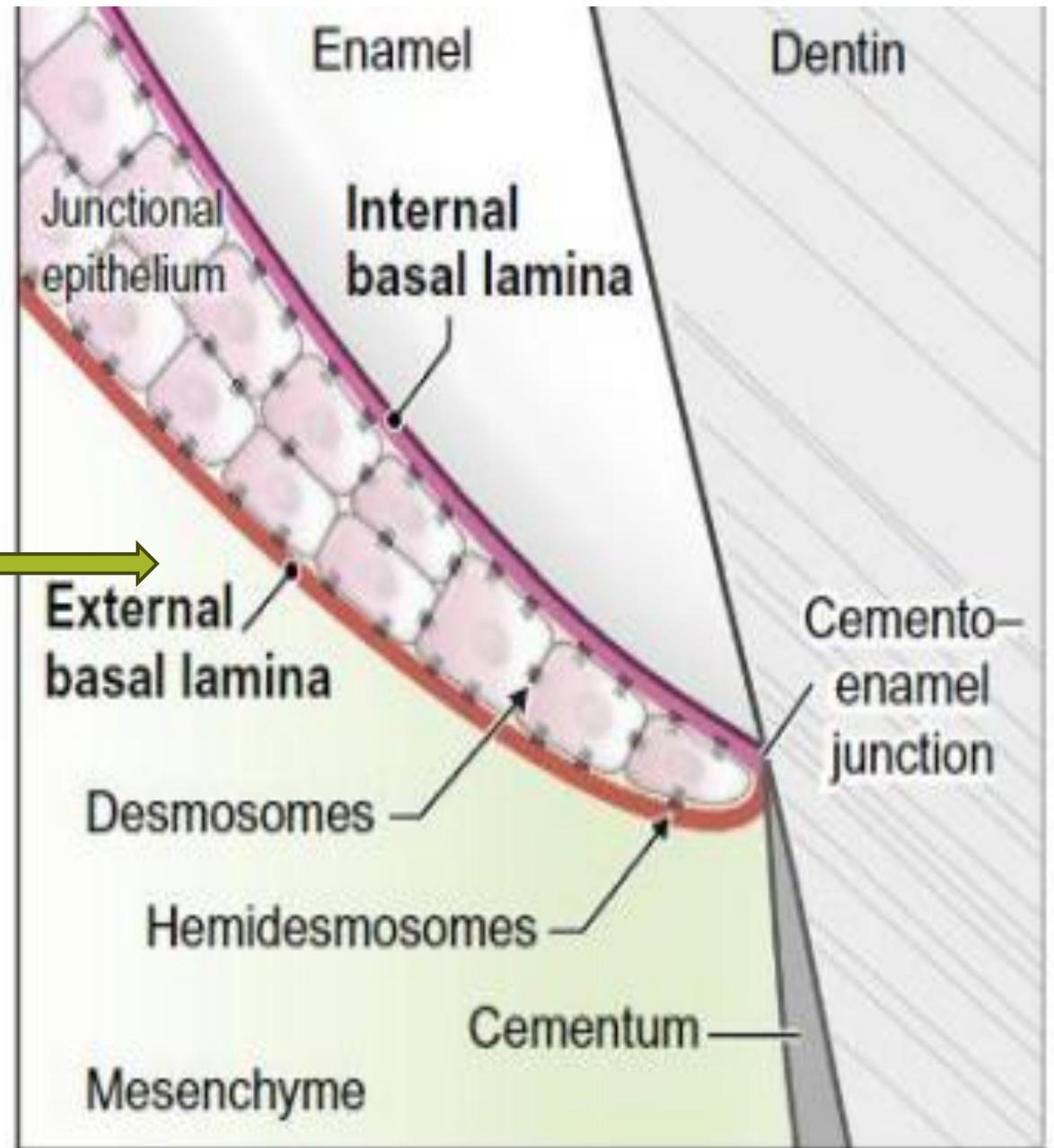
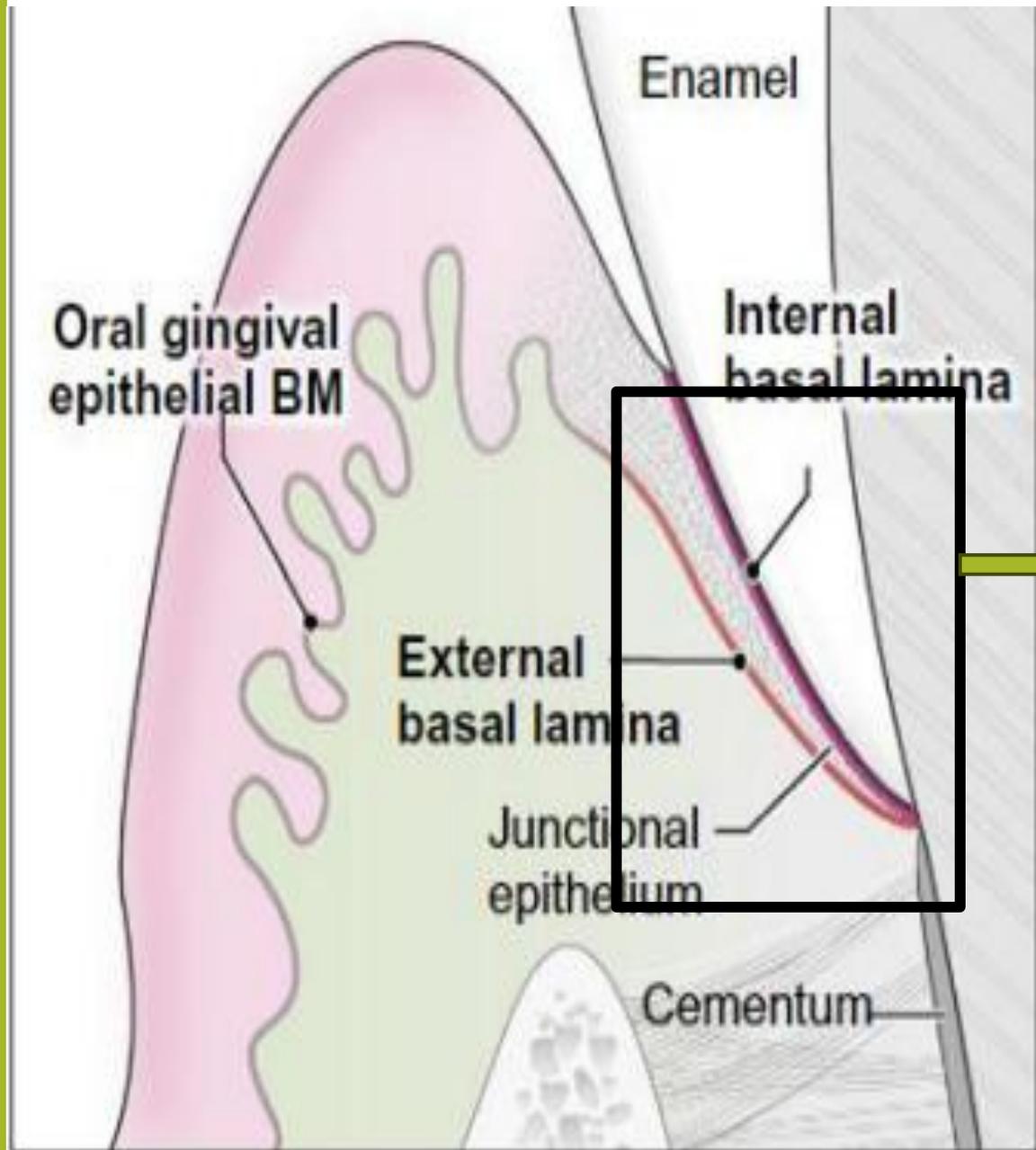
- Smooth basement membrane lacks epithelial corrugations, Cuboidal basal cells , Flat obliquely arranged superficial cells with wide intercellular spaces , In the intercellular spaces there are lymphocytes and mononuclear cells



## ❖ The attachment epithelium under EM:

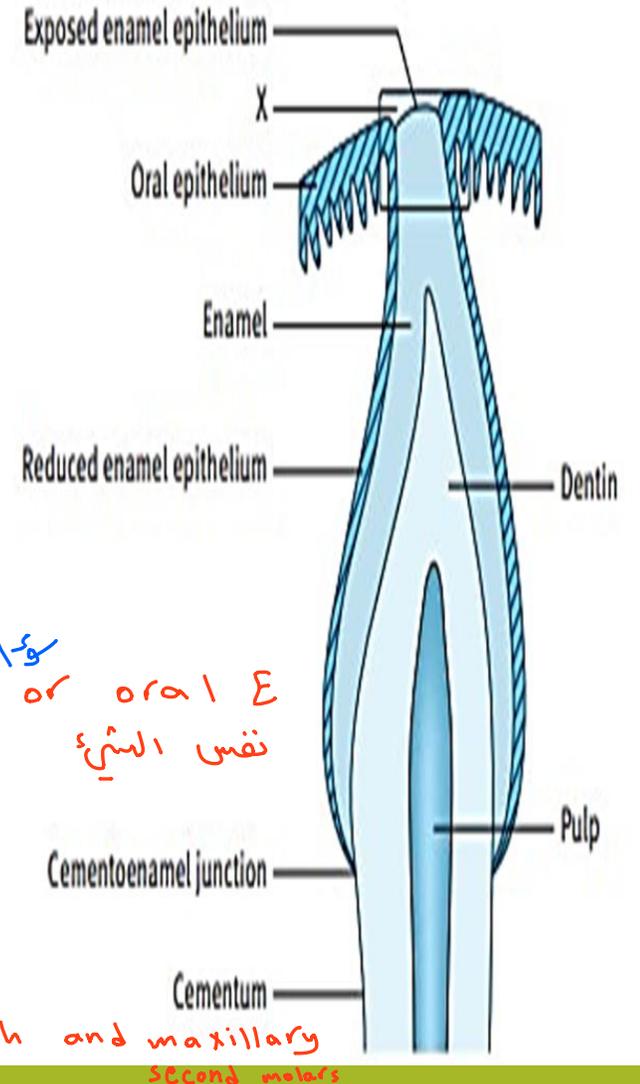
- Basal cells appears with hemidesmosomes external basal lamina (lamina lucida, densa & fibroreticularis) to word CT
- Superficial cells appears with hemidesmosomes & internal basal lamina (lamina lucida & densa without fibroreticularis) to word tooth
- Cells have lesser number of desmosomes tonofilaments and keratinosomes than gingival epithelium
- The inner most suprabasal cells facing the tooth surface are also called as **DAT cells** (Directly Attached to Tooth)





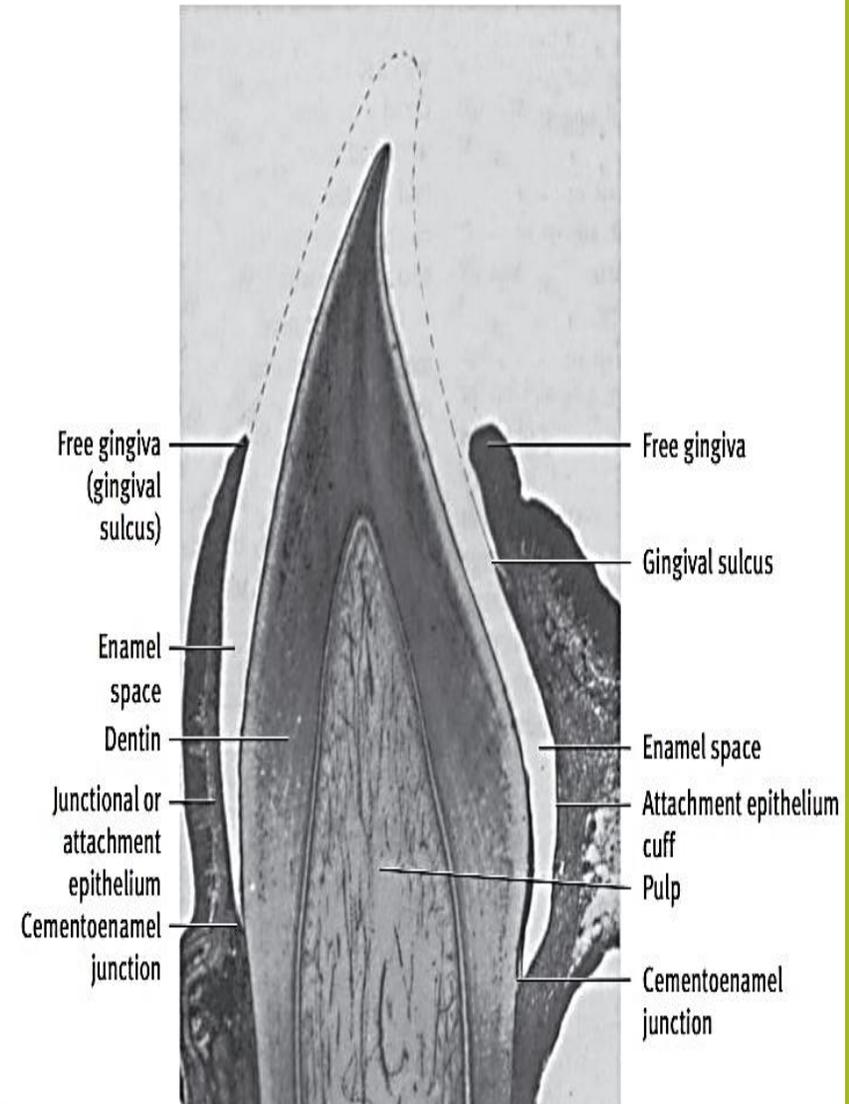
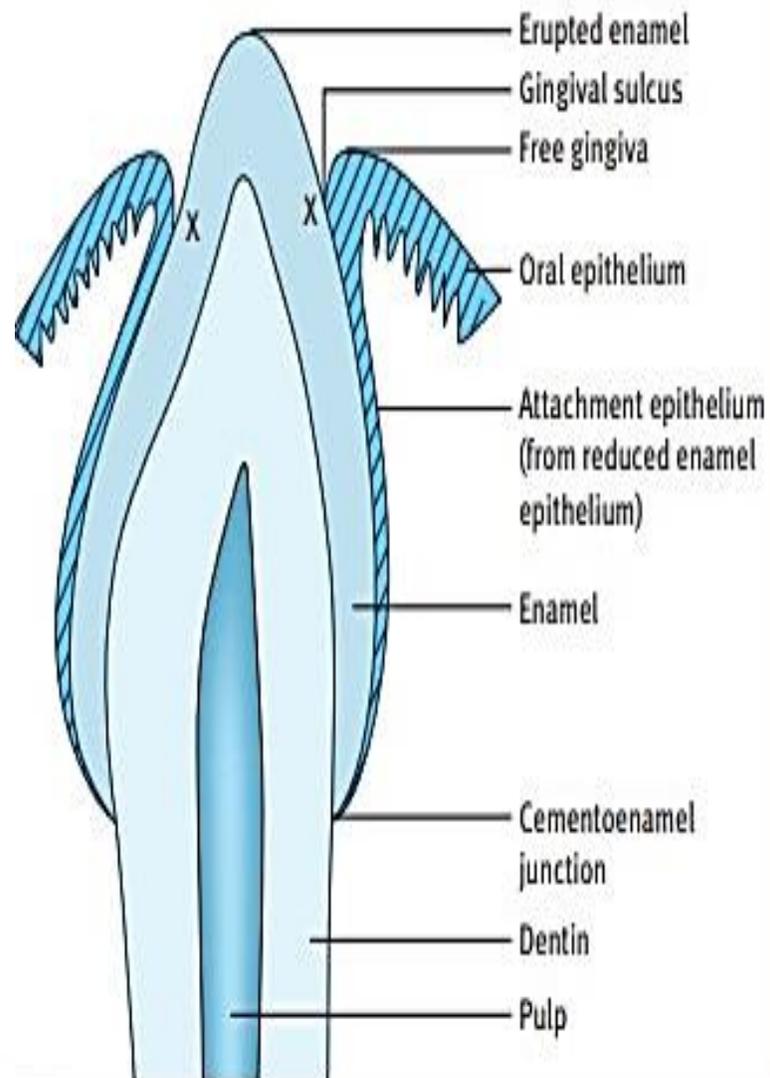
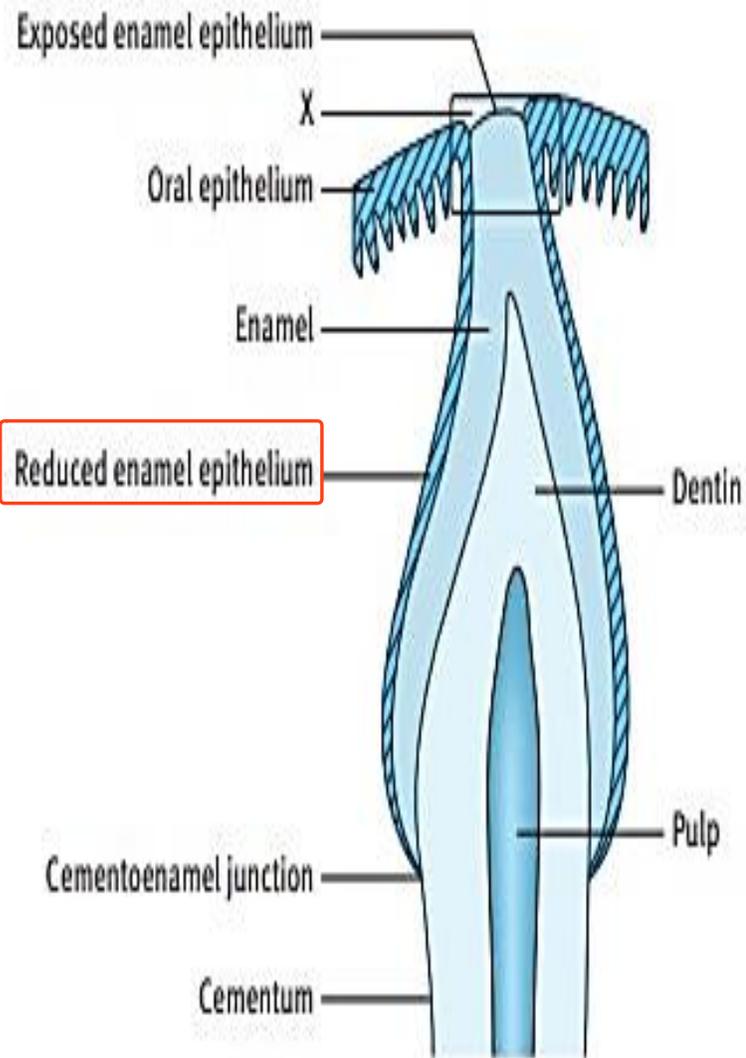
# Shift of dento-gingival junction

- The position of gingiva on tooth surface changes with age
- When tooth reaches occlusal plane,  $\frac{1}{3}$  to  $\frac{1}{4}$  of enamel is still covered by gingiva
- **Active eruption:** actual movement of tooth towards occlusal plane
- **Passive eruption:** gradual exposure of crown by separation of primary attachment epithelium from enamel (gingival recession)
- **Primary attachment epithelium** (derived from REE) is replaced by **secondary attachment epithelium** (derived from gingival epithelium) after 3-4 years of tooth eruption which secretes secondary enamel cuticle
- Further gingival recession may occur exposing cementum



بجنان مريض السكري  
أكثر شيء

Lower anterior teeth and maxillary second molars  
أكثر أماكن بهر فيهم حيز عشان فتحة الفهد اللعابيه

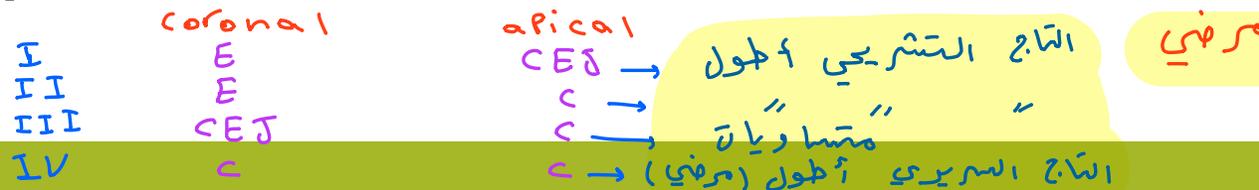
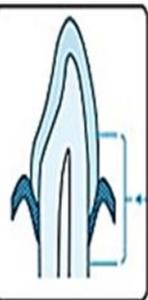
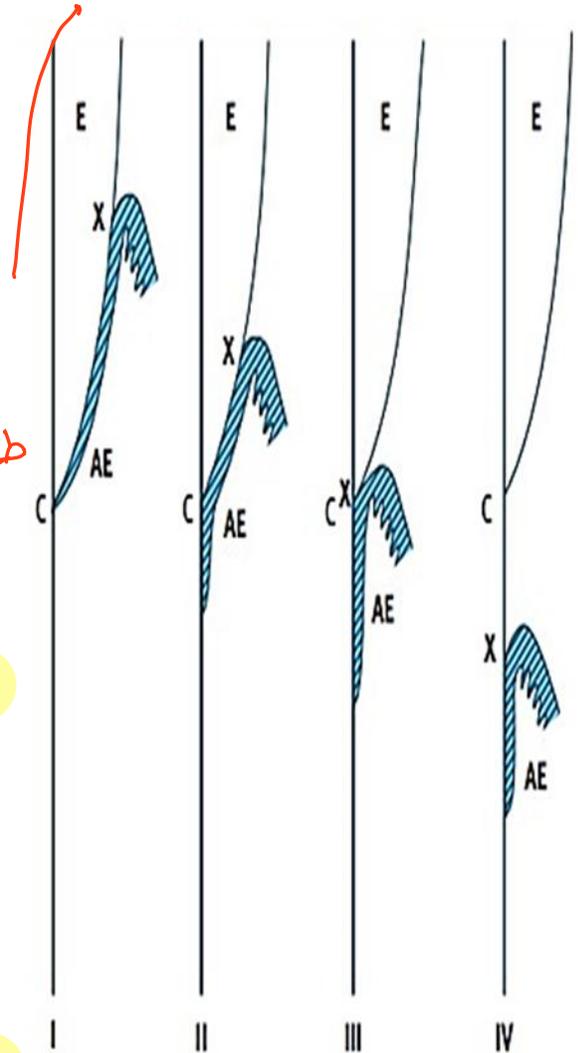


(خطوات تراجع اللثة)

حفظ

The crown exposure by passive eruption is described in four stages:

- 1. The coronal end of attachment epithelium is found on enamel, the apical end on enamel or CEJ from, till age of 20 or 30 طبيعي وليس باثولوجي فسيولوجي وليس مرضي
- 2. Coronal end of attachment epithelium on enamel, apical end on cementum, till age of 40 طبيعي
- 3. Coronal end of attachment epithelium on cementoenamel junction, apical end on cementum, transitional stage, clinical and anatomical crowns are equal مرحلة انتقالية بين الطبيعي والمرضي
- 4. Coronal and apical ends of attachment epithelium are on cementum, pathological condition, clinical crown more than anatomical مرضي



# Epithelial mode of attachment (epithelial attachment)

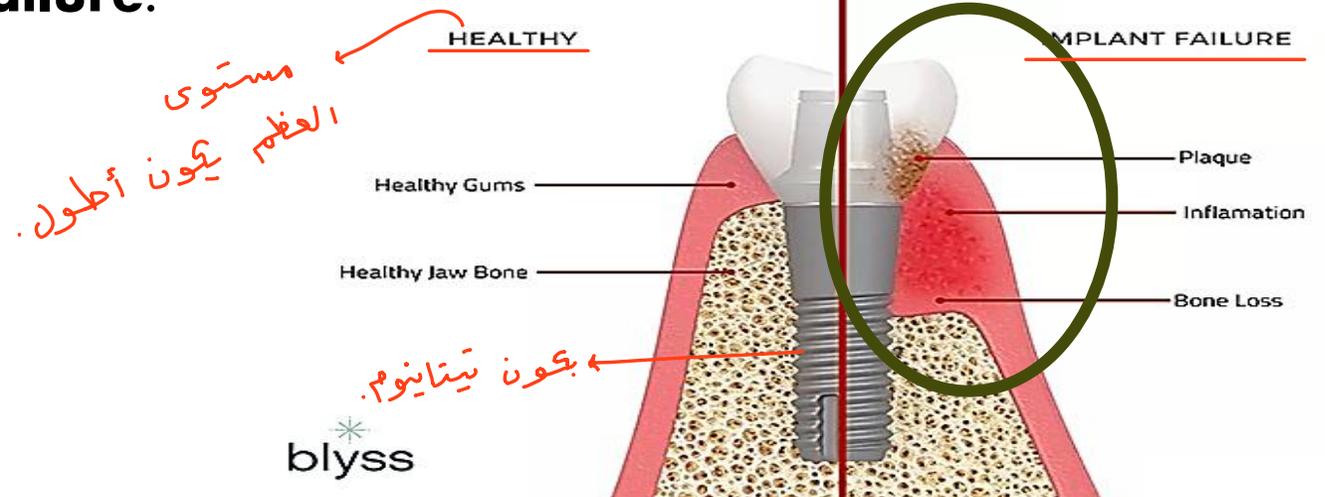
كثير قوي لدرجة  
ذاتك ممكن تخلو  
السنن من  
العظم بس الـ  
E.attachment  
بعده تعلق  
بالسنن.

- **The attachment of epithelium to the tooth is very strong**
- **in an attempt to detach the gingiva from the tooth the junctional epithelium tears rather than peels off.**
- **This strong attachment is achieved by epithelial attachment**
- **Under electron-microscope the epithelial attachment was found to be a basal lamina material to which hemidesmosomes are attached .** ↳ and hemidesmosomes
- **(primary attachment, secondary attachment)**

تفريش الأسنان يكون بزاوية ٤٥° عشان  
الفرشاة تفوت بال sulcus وتنظفه.

# Clinical significance

- The junctional epithelium may be regarded as **the most interesting structure** of the gingiva.
- The formation of junctional epithelium in the implant/ mucosal interface can be considered as the first barrier of defense against oral micro flora.
- Any kind of disruption of this barrier will lead to initiation and progression of periodontal disease and implant failure.



الي لشي تعبانه ما بعمله زراعه.

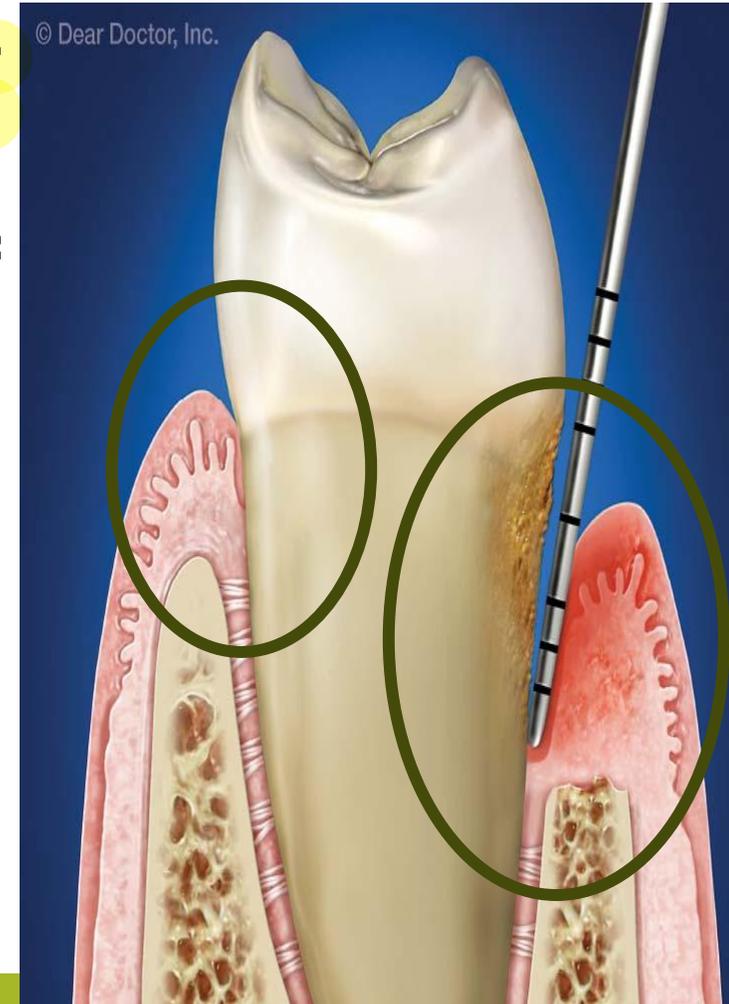
# Transformation of gingival sulcus to periodontal pocket

الأكل تبصير بين الأسنان  
وفي حكة.

- the transformation of gingival sulcus to periodontal pocket is the result of disturbances or imbalance between microbial attack and host defence mechanisms.
- this process includes the degeneration and detachment of coronal DAT cells from the tooth surface.
- Various factors of both microbial and host origin which can clinically alter J.E, they are:
  - The attachment apparatus between the JE and the teeth can be broken down
  - DAT cells biosynthetic function can be altered
  - Stimulation of DAT cell lysis
  - DAT cell lysis renewal inhibited

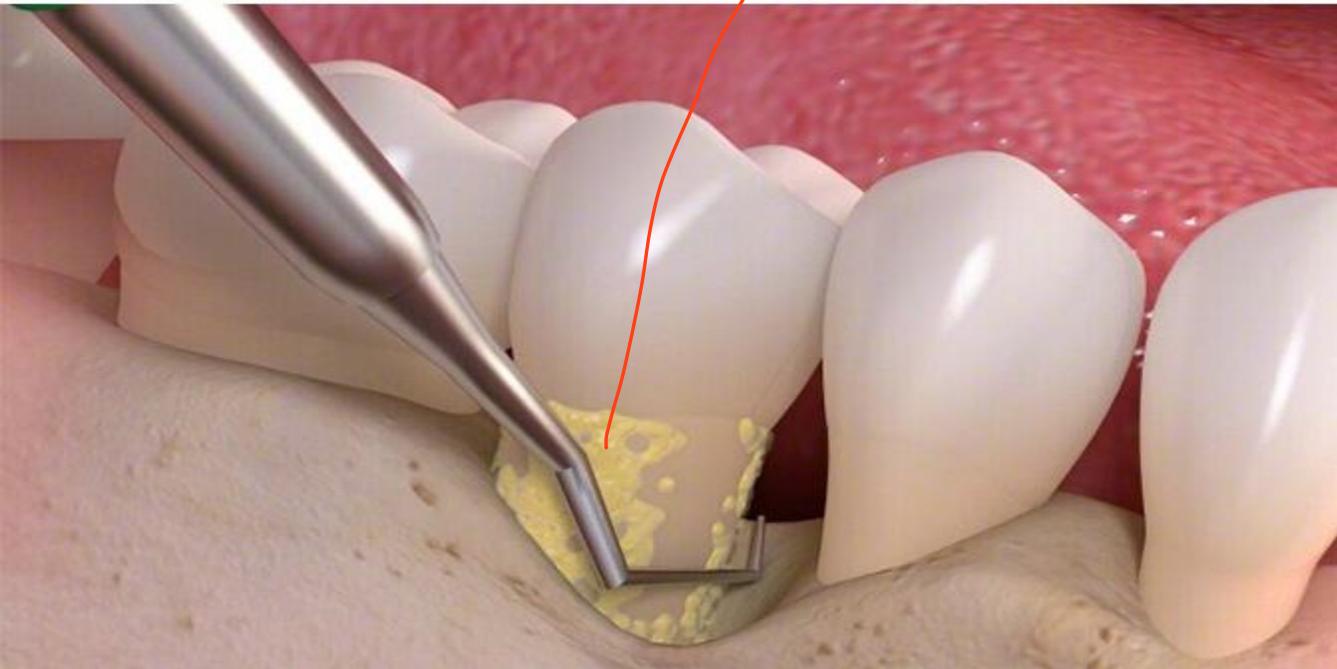
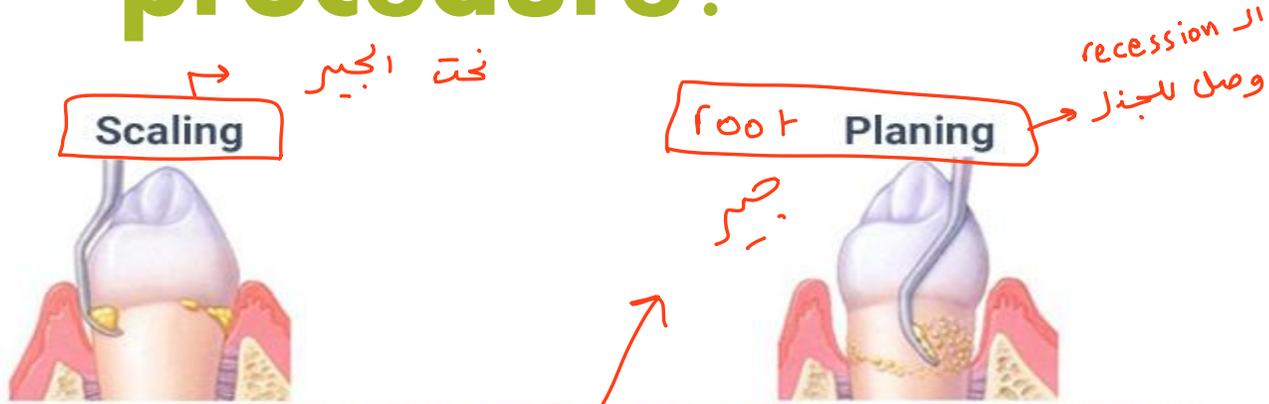
بدا يتكسر

تبدأ تحول الـ sulcus إلى pocket



# What do you think about this procedure?

كأزم تفريش الأسنان مرتين باليوم  
عشان اللثة ترجع تلتئم لأنو لو ما  
بفرش ← تجوي و يرجع الجير حتى لو عملت  
لا تنظيف يرجع بعد تجوي لو ما فرشته.



Thank  
Thank you