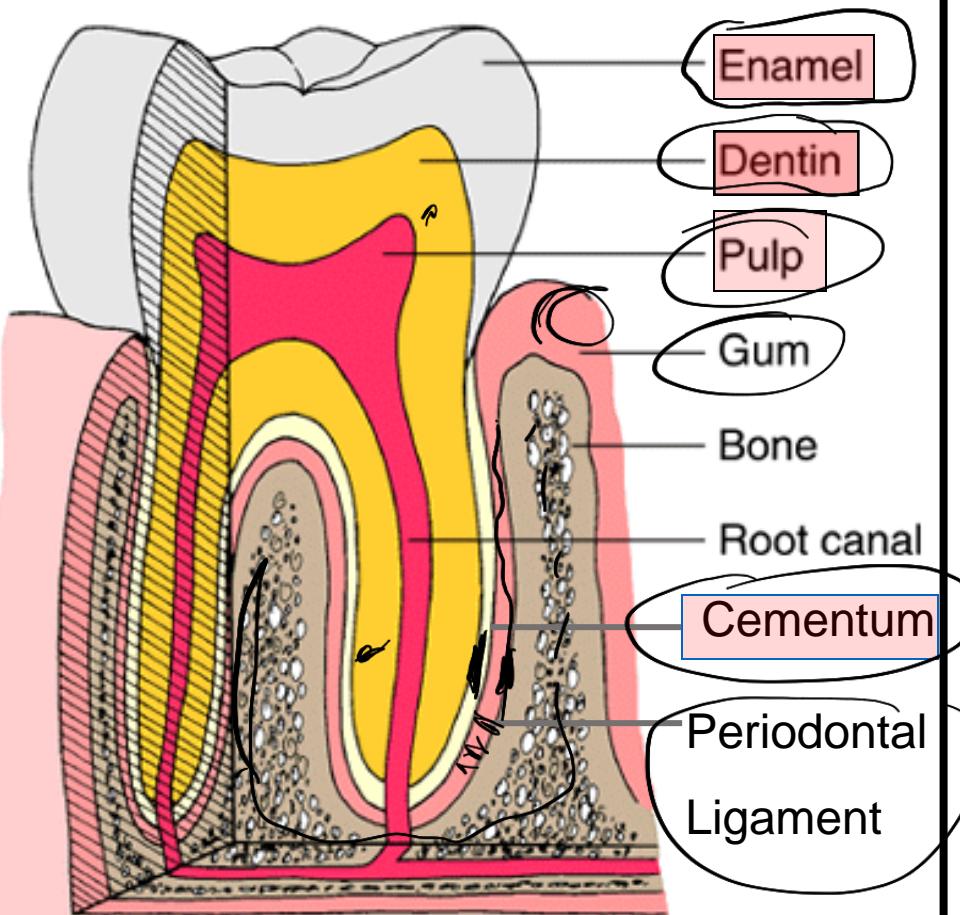


Tooth Anatomy

2- Micro-anatomy of the tooth



- **3 calcified tissues:**

Enamel: white protective
external surface of the
anatomic crown.

Dentin: the major bulk of the
inner portion of each tooth
crown and root.

Cementum: yellow external
layer of the tooth root.

- **1 soft specialized CT:**
Pulp

Tissue Junctions

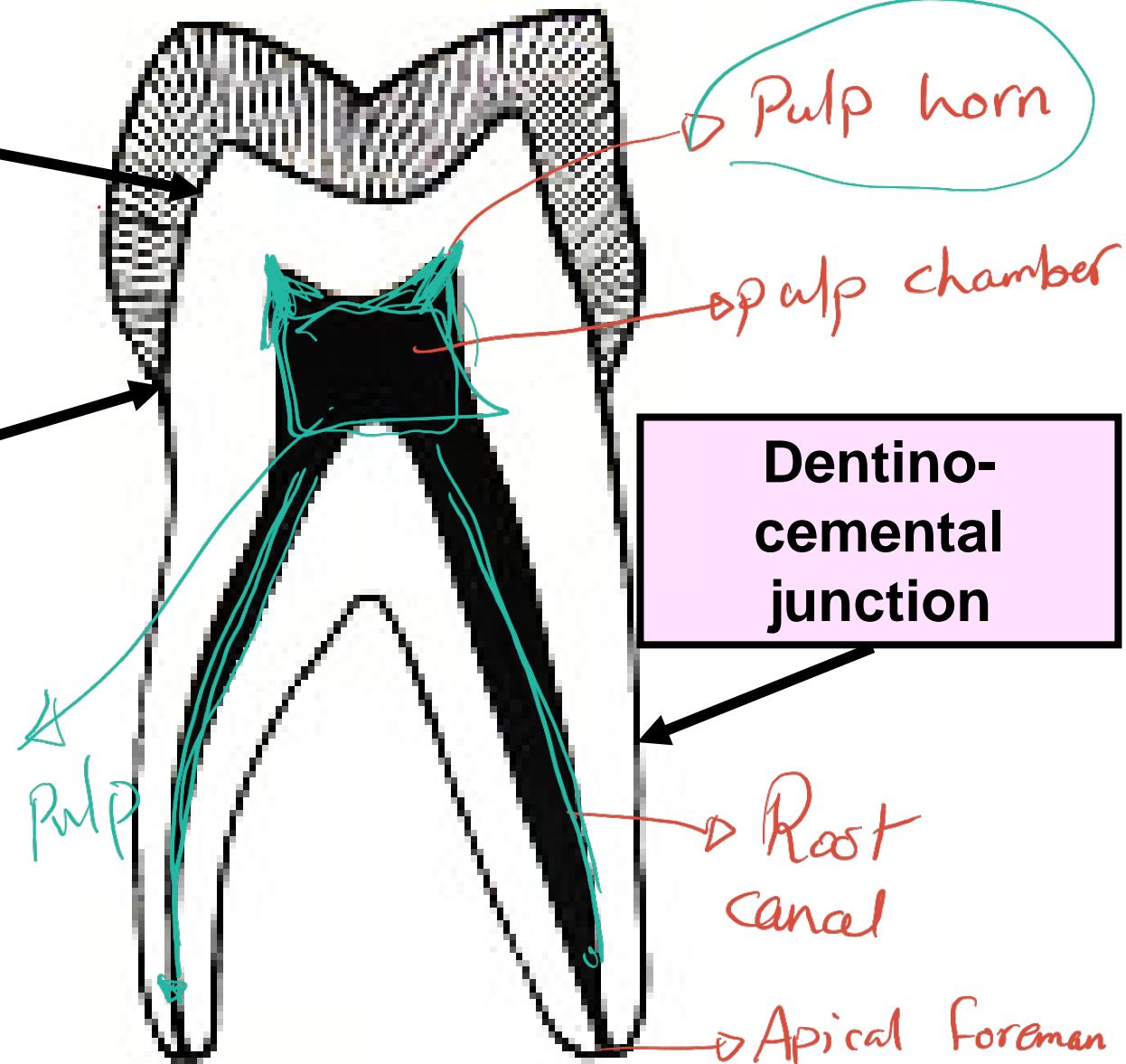
Dentino-enamel
junction (DEJ)

Cemento-enamel
junction (CEJ)

or

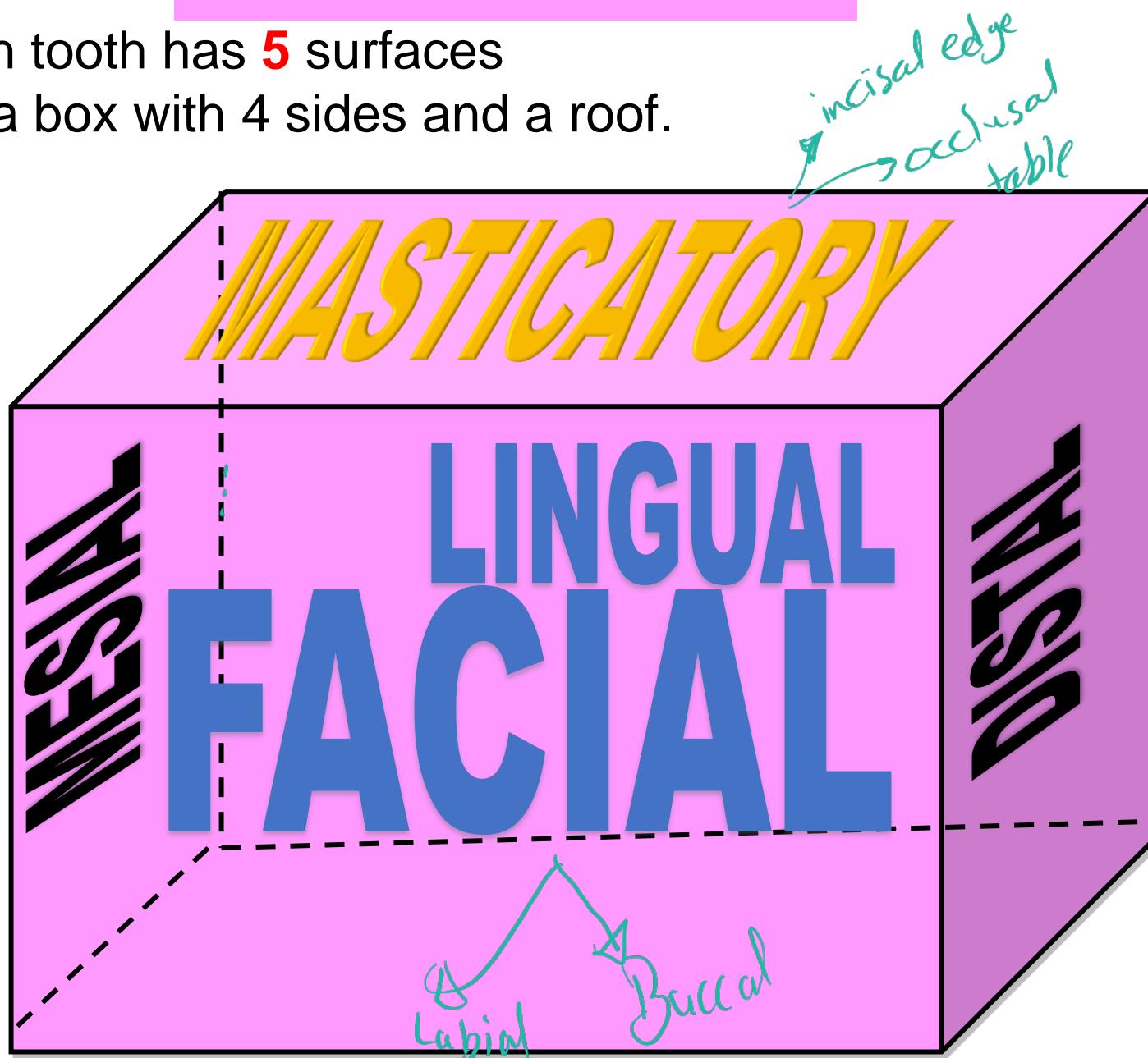
Cervical line

or
neck of tooth



Tooth Surfaces

- Each tooth has **5** surfaces
- like a box with 4 sides and a roof.



Facial Surface

- **Facial Surface:** It is the surface of the tooth which facing the **lip** or **cheek**. The facial surface also known as the **labial surface** if it is an anterior tooth, or **buccal surface** if it is a posterior tooth.

Buccal → Posterior
Labial → Anterior

Facial Surface

FACIAL

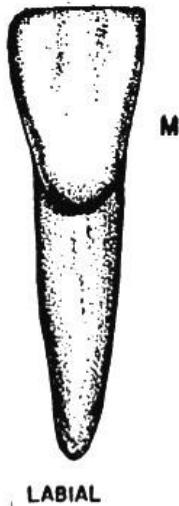
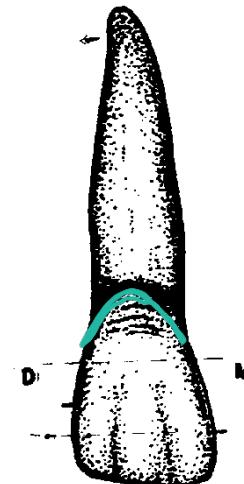
Labial

(LIP)

for

anterior teeth

incisor & canine

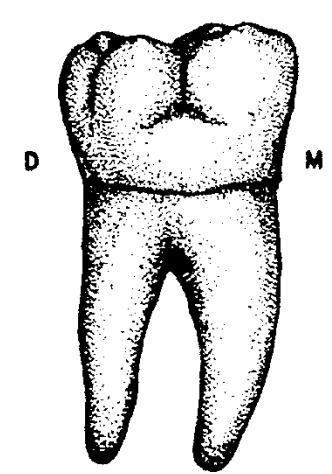
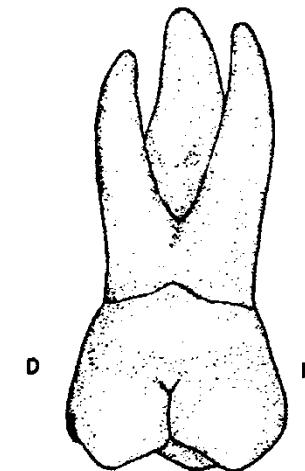


Buccal

(CHEEK)

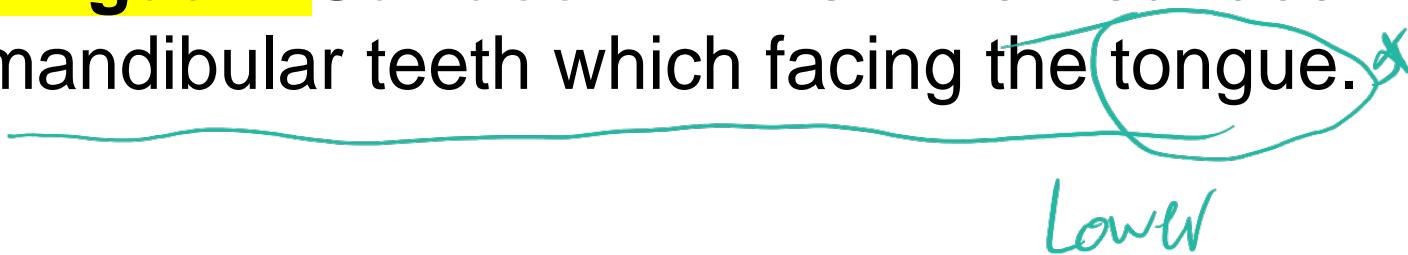
for

posterior
teeth



Lingual Surface

- **Lingual Surface:** It is the surface of the mandibular teeth which facing the tongue.



- **Palatal Surface:** It is the surface of the maxillary teeth which facing the palate.

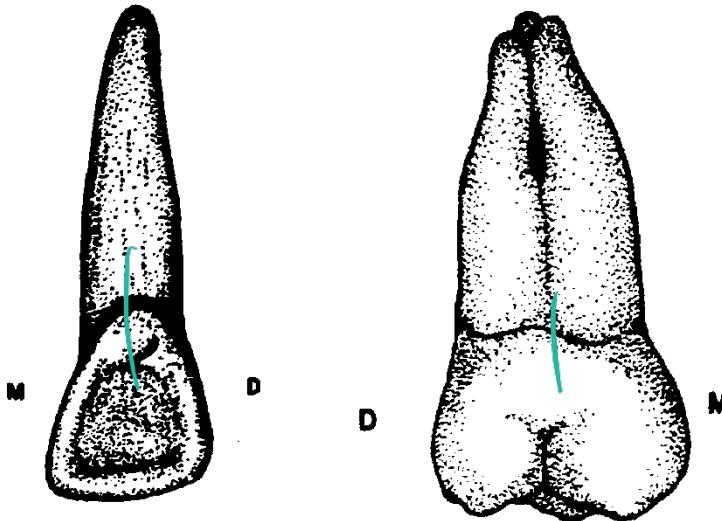


Lingual Surface

LINGUAL

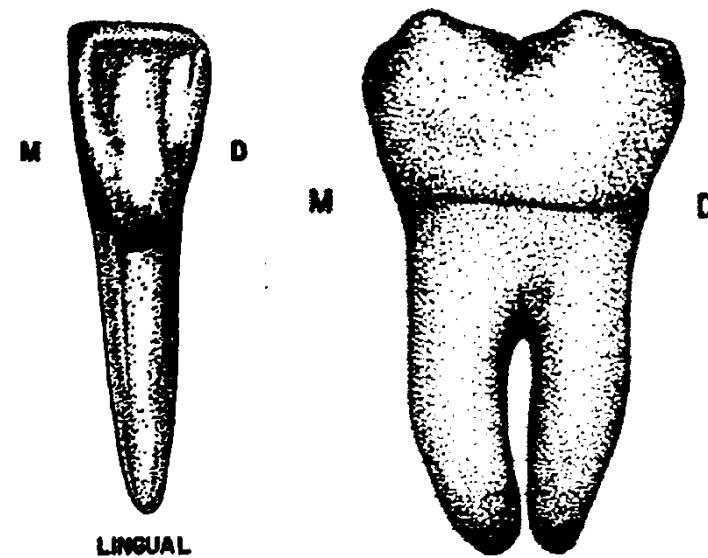
Palatal *upper*
(palate)

for maxillary teeth



Lingual *lower*
(tongue)

for mandibular teeth

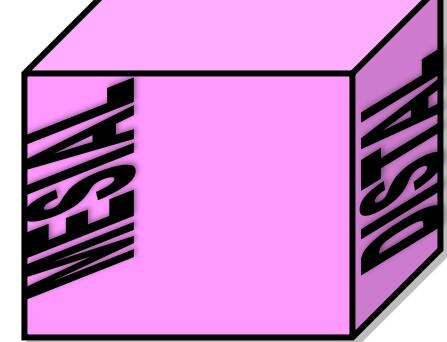




Proximal Surface

- **Proximal Surface:** It is the surface of the tooth that faces the neighboring tooth's surface in the same arch. Each tooth has two proximal surfaces (mesial and distal).
- The **mesial proximal surface** of a tooth is closest to the midline of the face.
- The **distal proximal surface** faces away from midline.

Proximal Surface



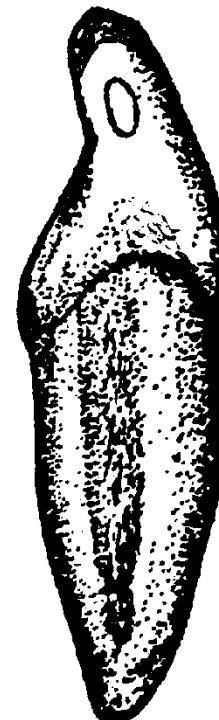
Mesial

(toward midline)



Distal

(away from midline)

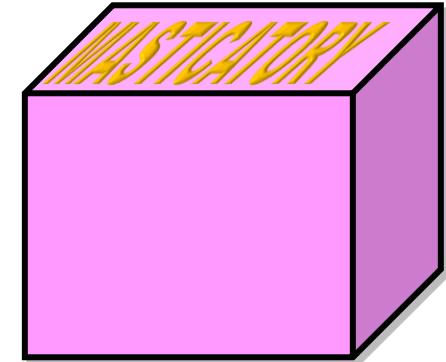


for all the teeth

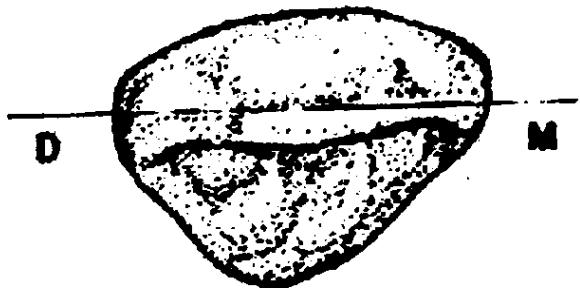
Masticatory Surface

- The **masticatory or biting Surface:**
- The **occlusal surface:** - It is the fifth surface of the posterior teeth.
- The **incisal surface:**-It is the fifth surface of the anterior teeth.

Masticatory Surface

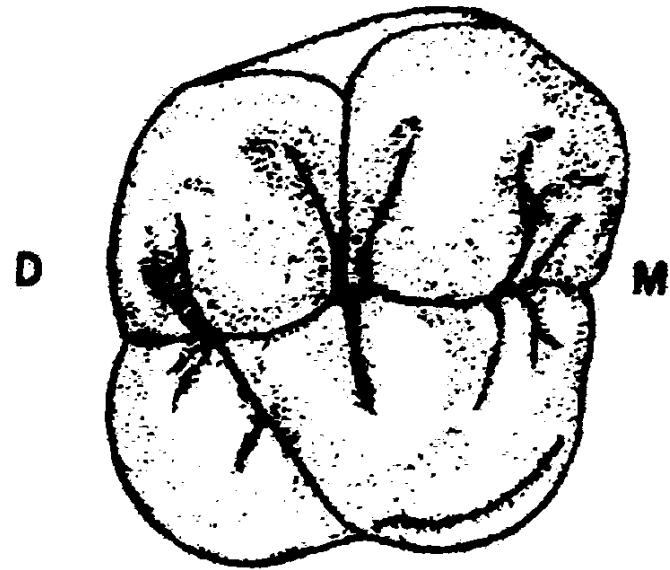


Incisal



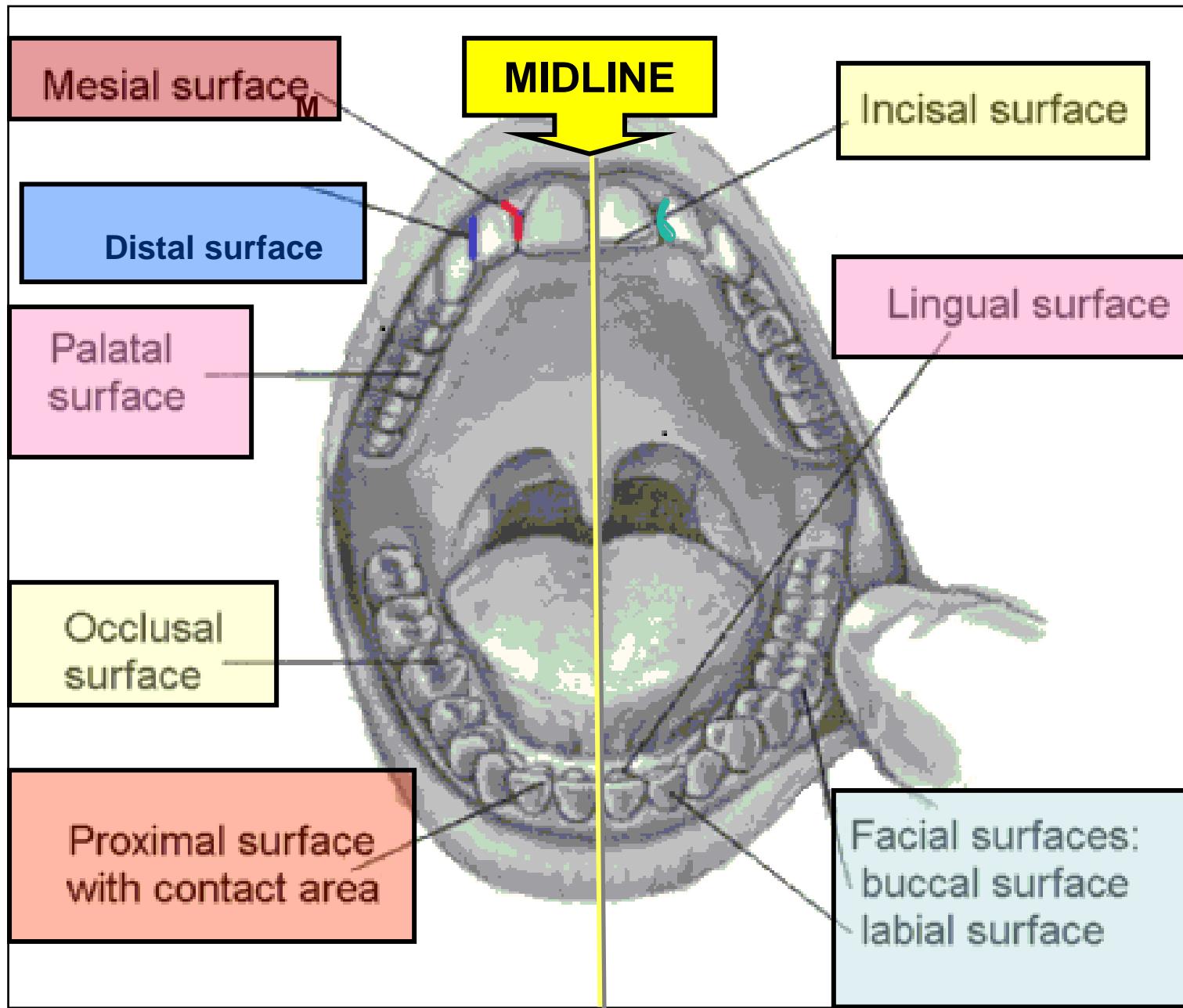
For anterior teeth

Occlusal



For posterior teeth

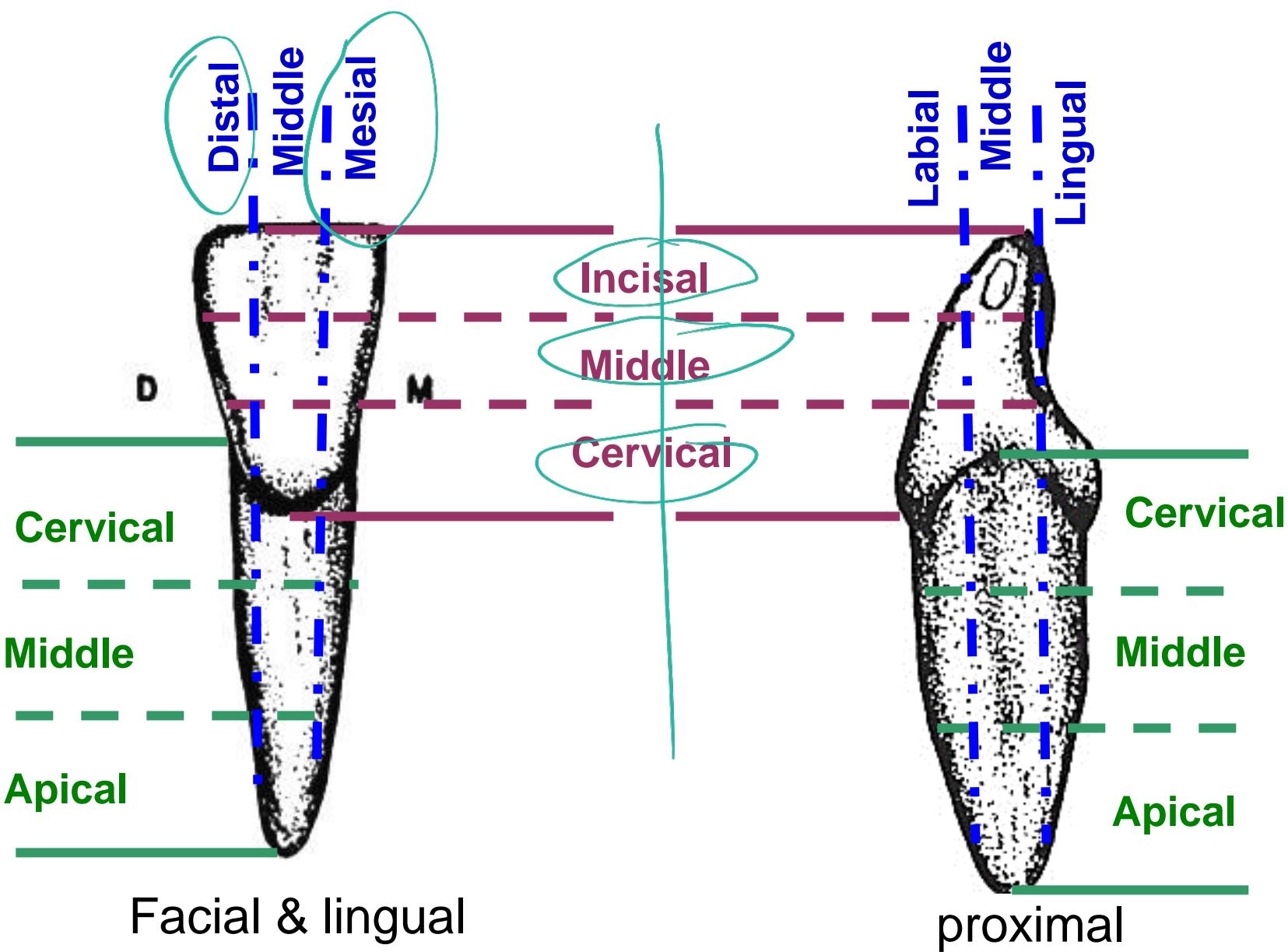
- The surfaces are identified by the relationship to other orofacial structures.



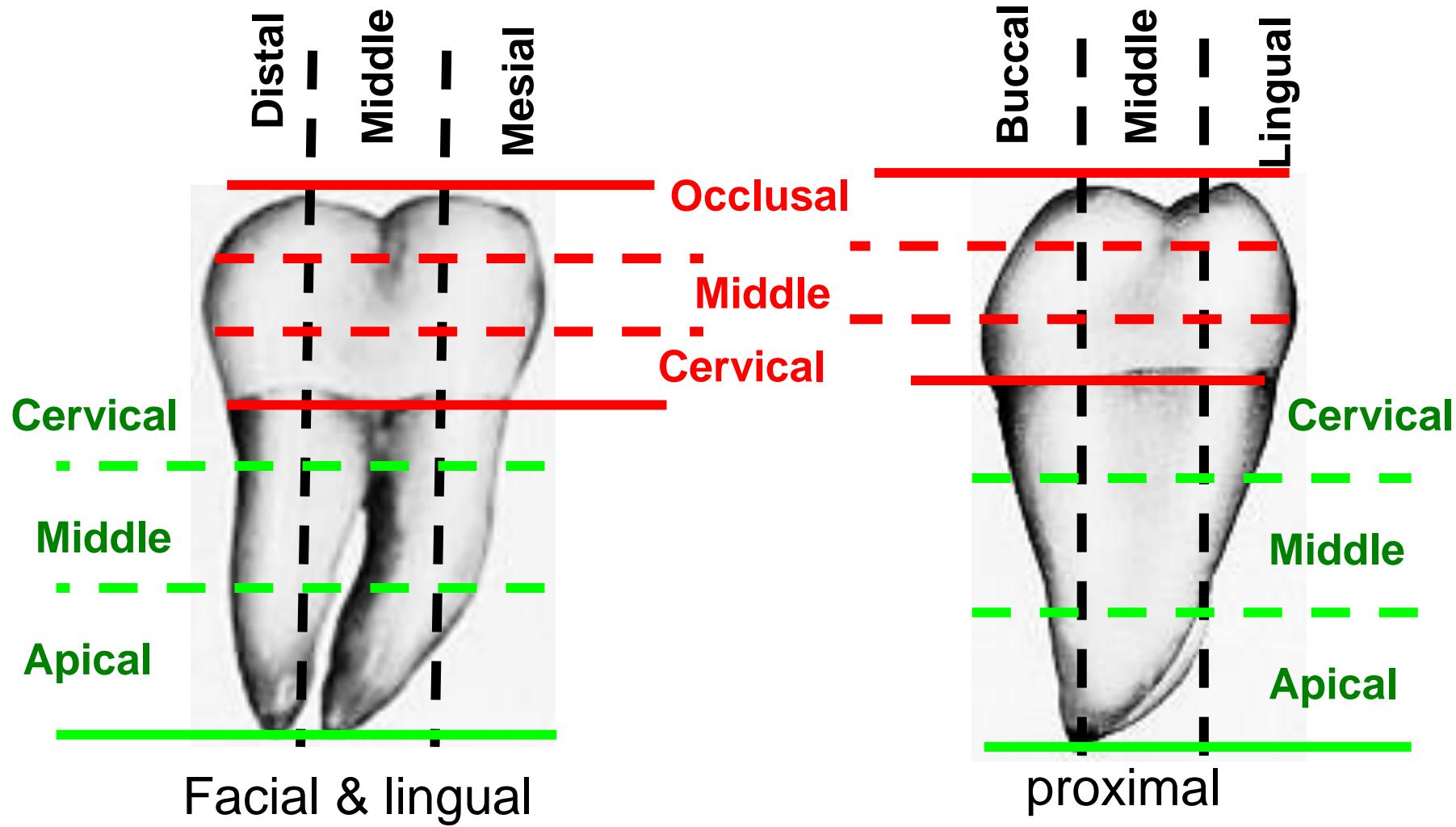
Division of surfaces Into Thirds

- For descriptive purposes (to locate the anatomical landmarks)
- For crown surfaces & the root
- Divided horizontally or vertically into three portions or thirds.





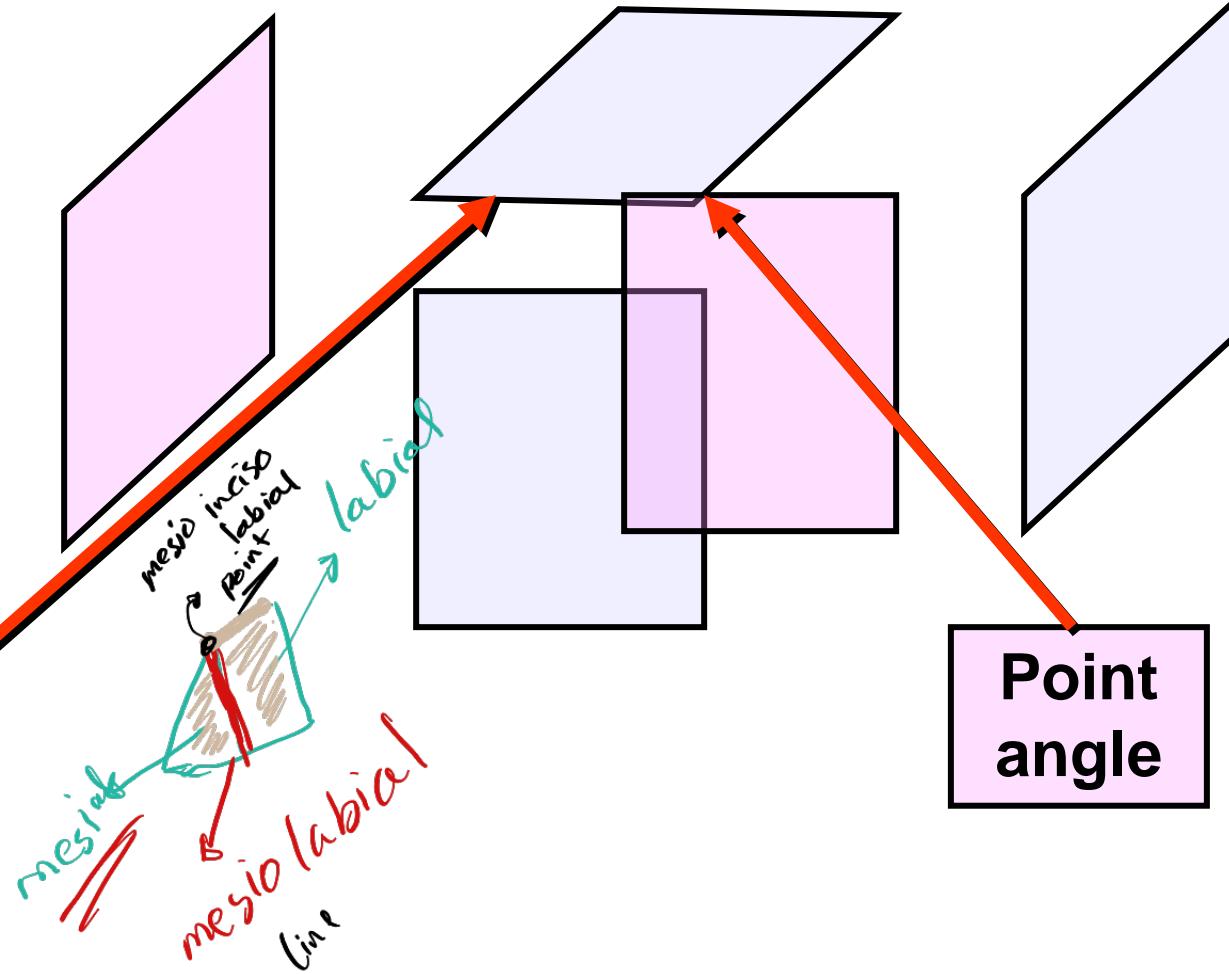
For anterior teeth



Line & Point Angles



Line angle



Point angle

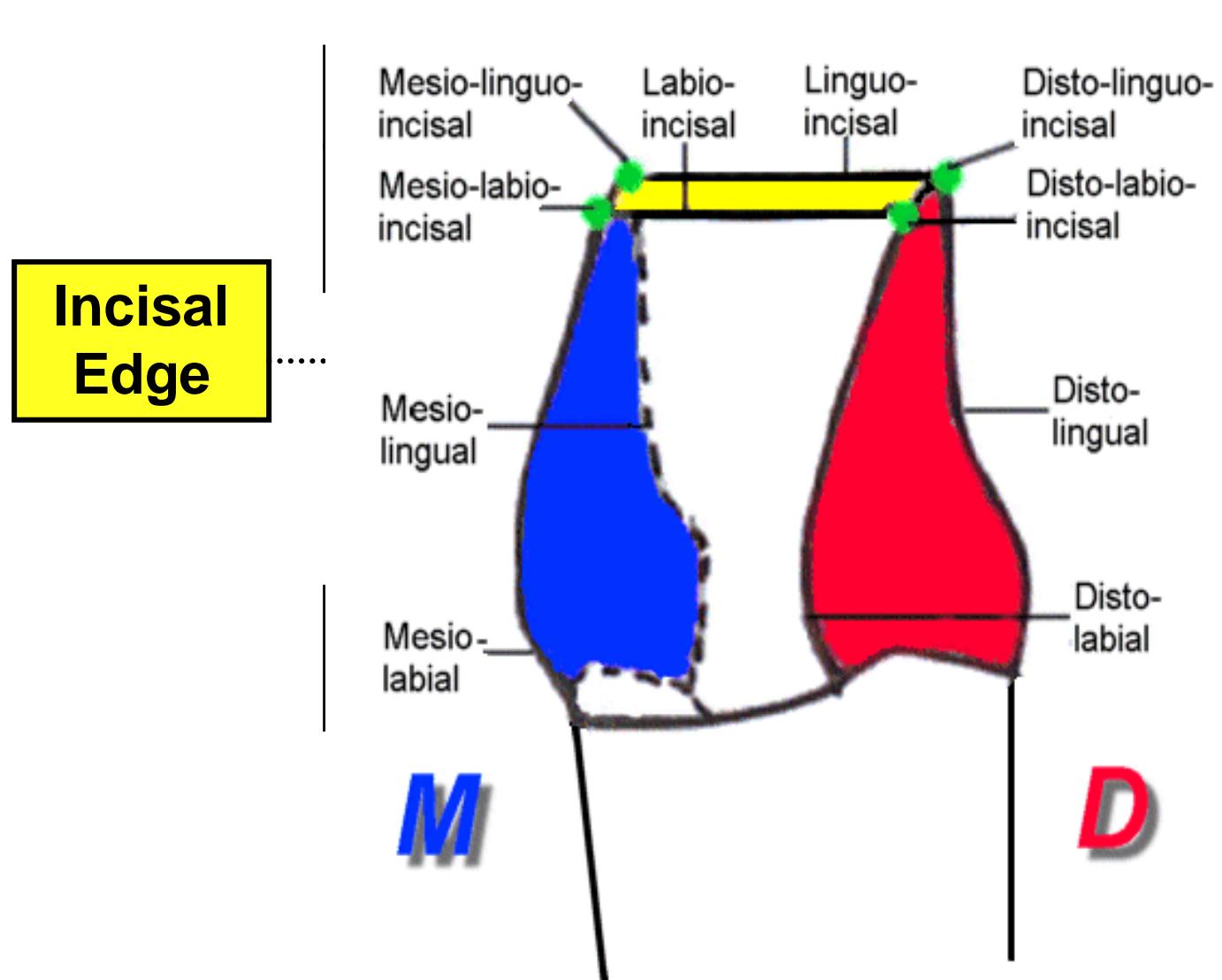
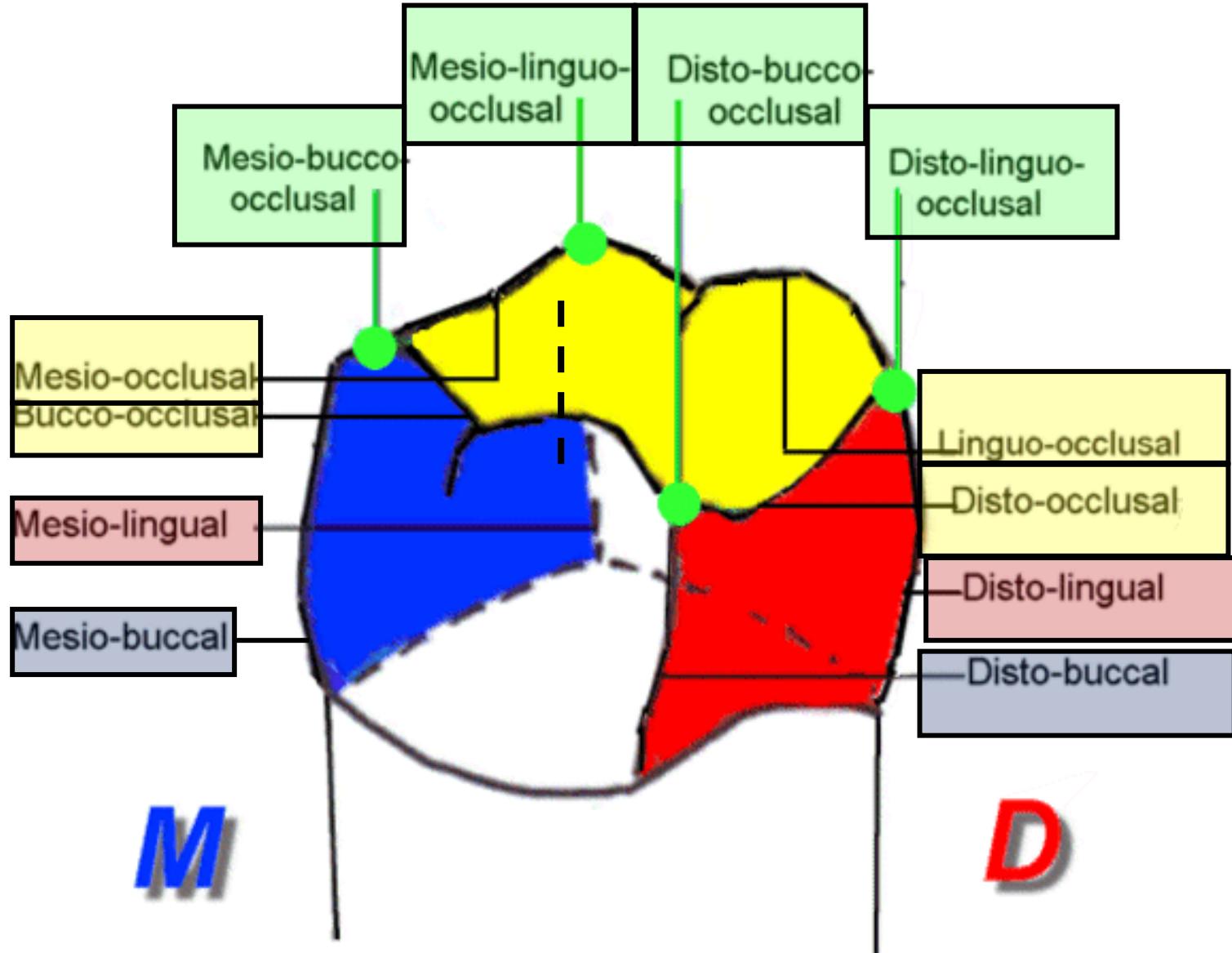


Fig. 9: Line and point angles of anterior teeth.



Line and point angles of posrterior teeth



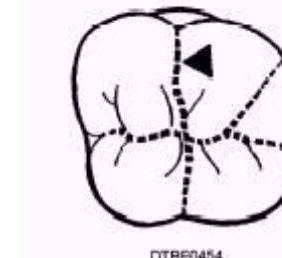
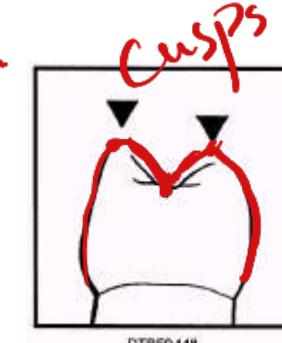
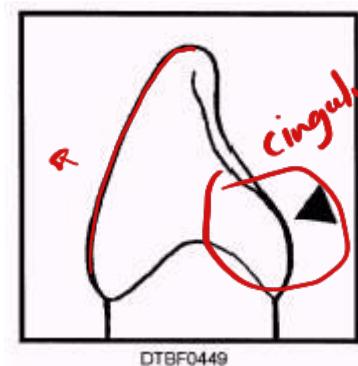
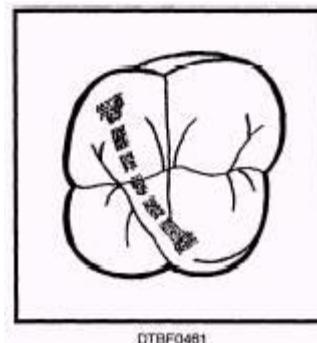
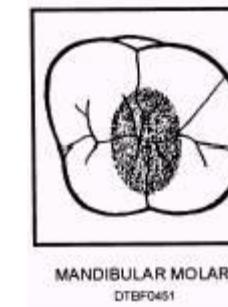
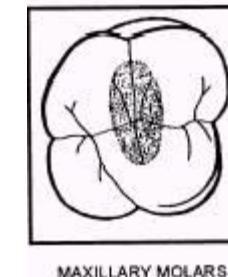
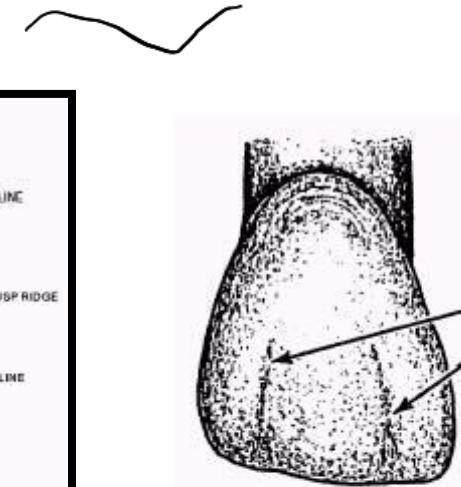
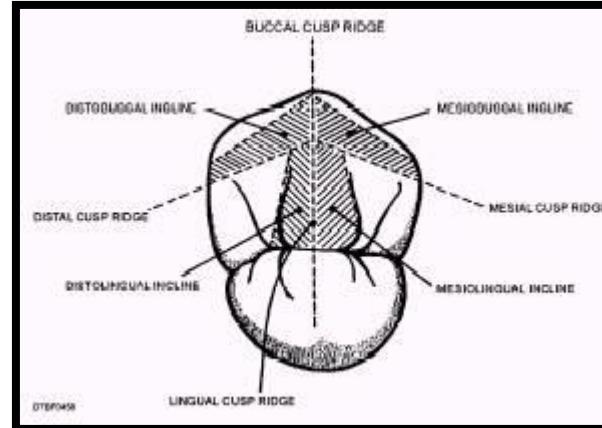
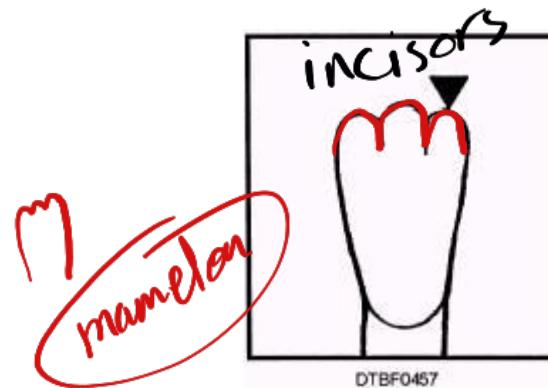
Anatomical Landmarks Of The Crown

Elevation Depression

Surface anatomy

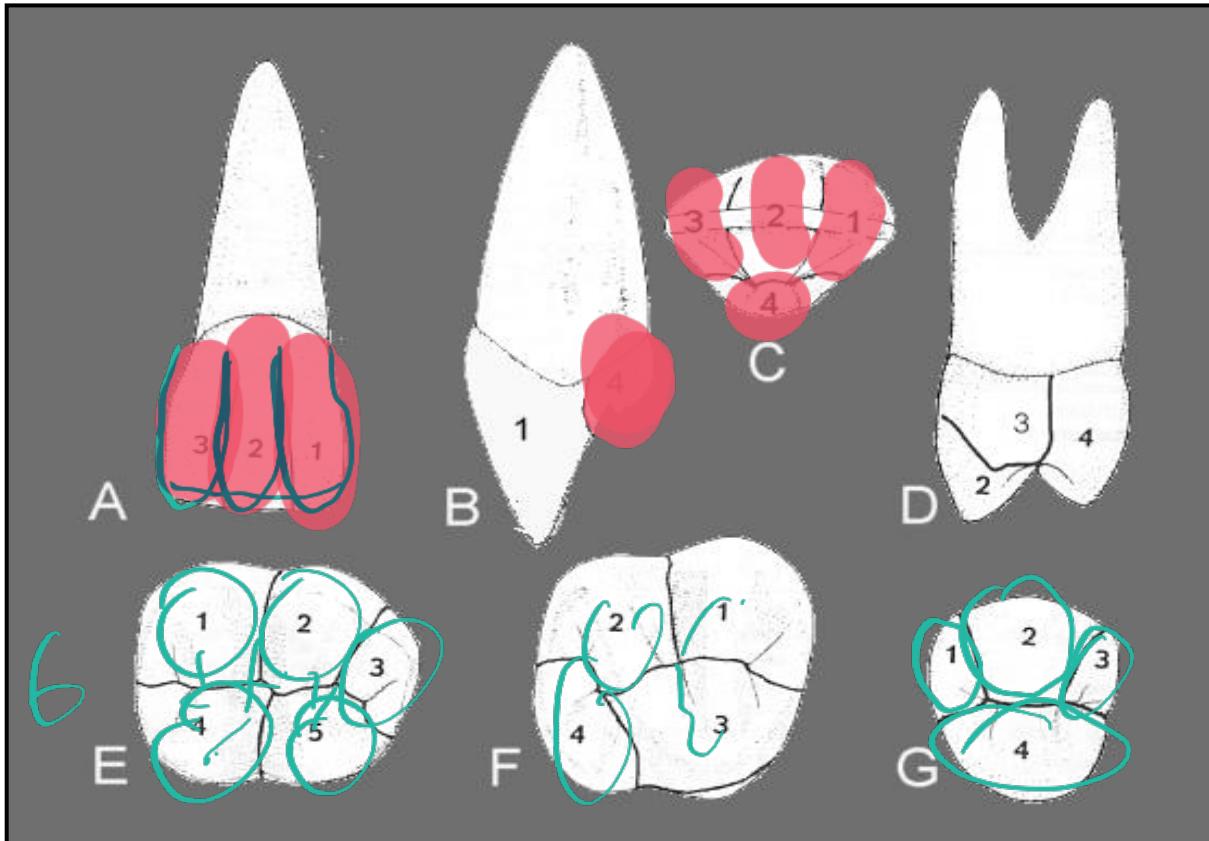
- Each elevation and depression is described based on its:

location, shape & function.



Lobe

- It is one of the **1ry centers** of calcification and **growth** formed during the crown development.
- **Each tooth develop from 4 lobes or more.**



incisors + Canine
anterior
↓
3 labial lobe
+
1 cingulum lobe

Tooth Development From Lobes

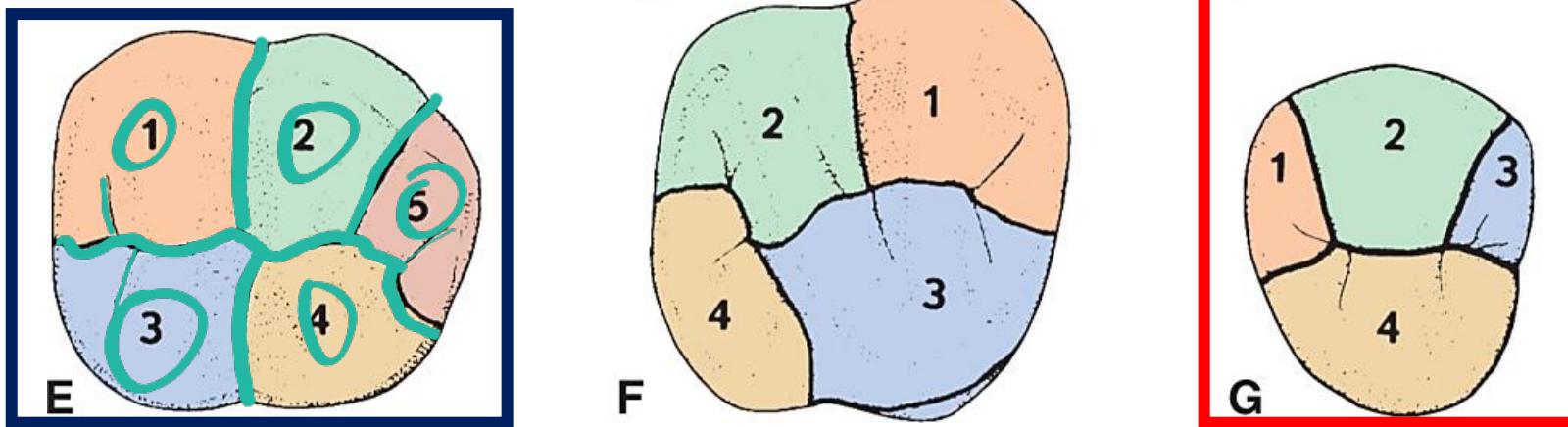
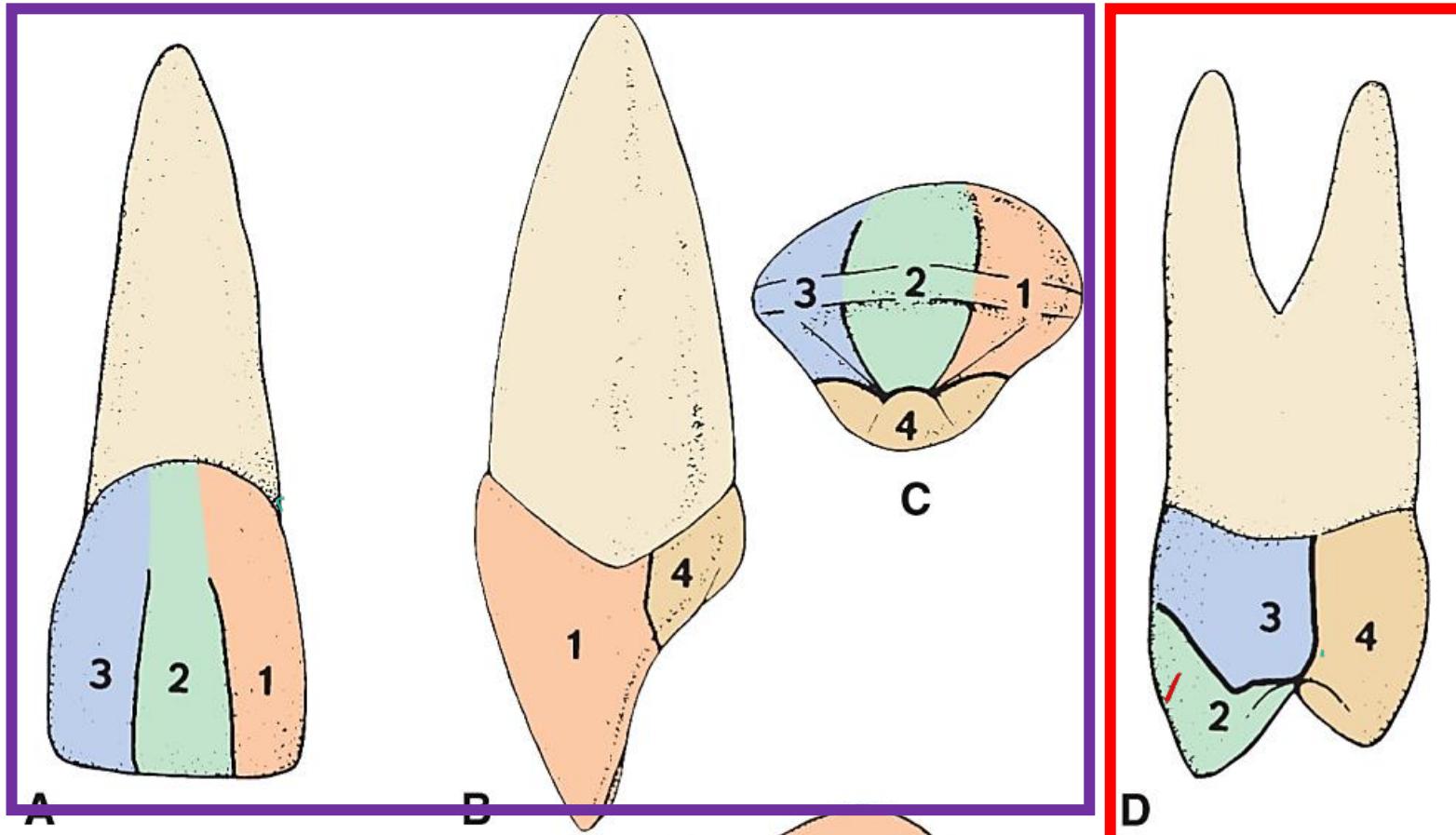
- As a general role:

1- Incisors and canines are developed from **four lobes** (three facial lobes forming three located mamelons and the cingulum are formed from one lobe).

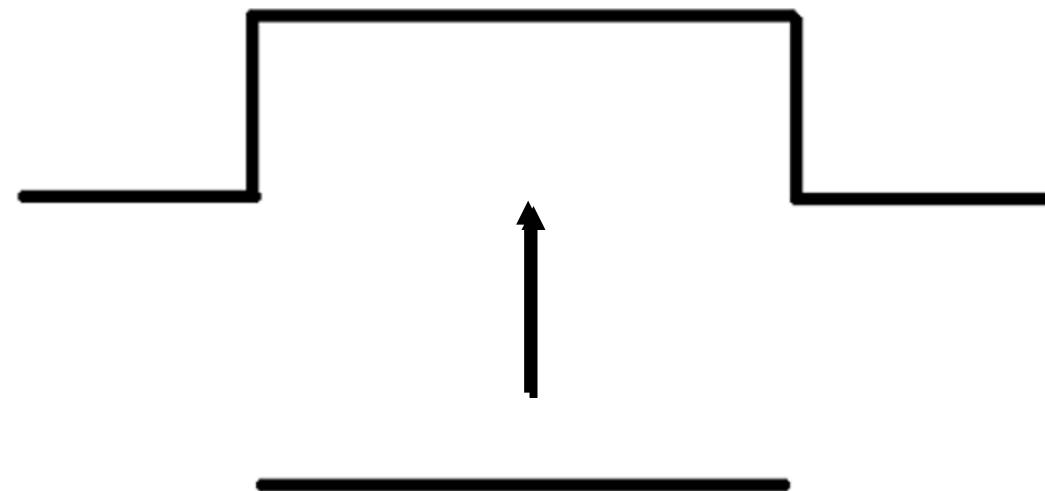
2-Premolars are developed from **four lobes** **except** the **lower 2nd premolar** may be developed from 5 Lobes.

3- Each molar cusp is developed from one Lobe.

Example: The mandibular first molar has five cusps & is developed from five Lobes.



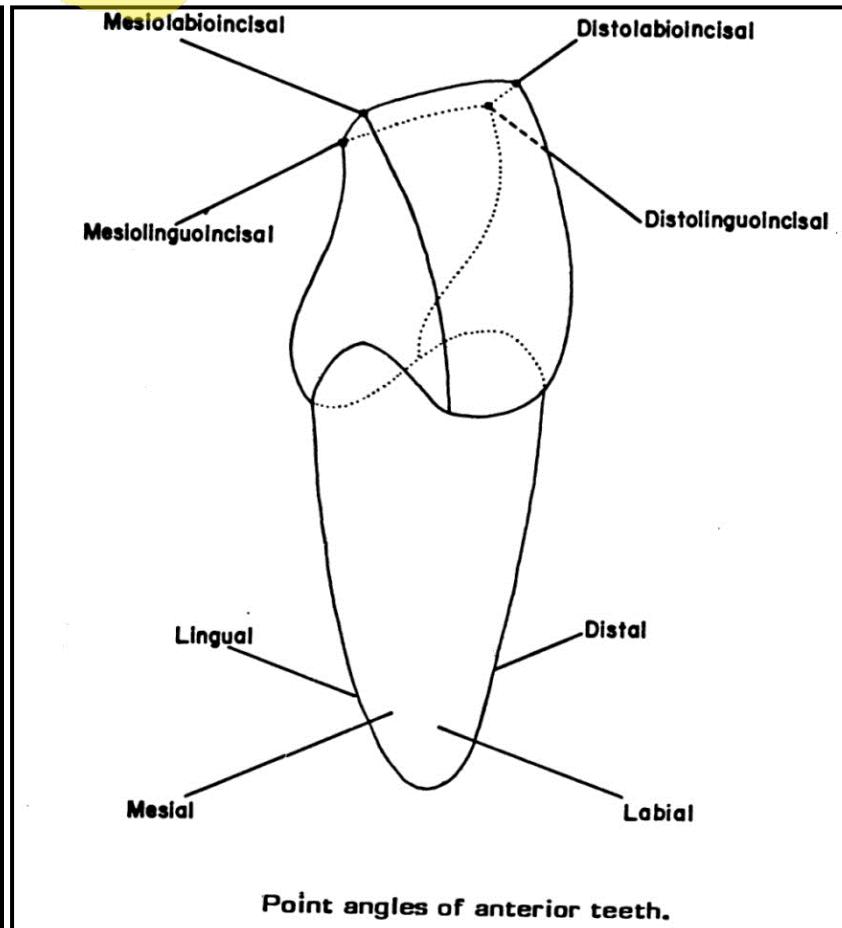
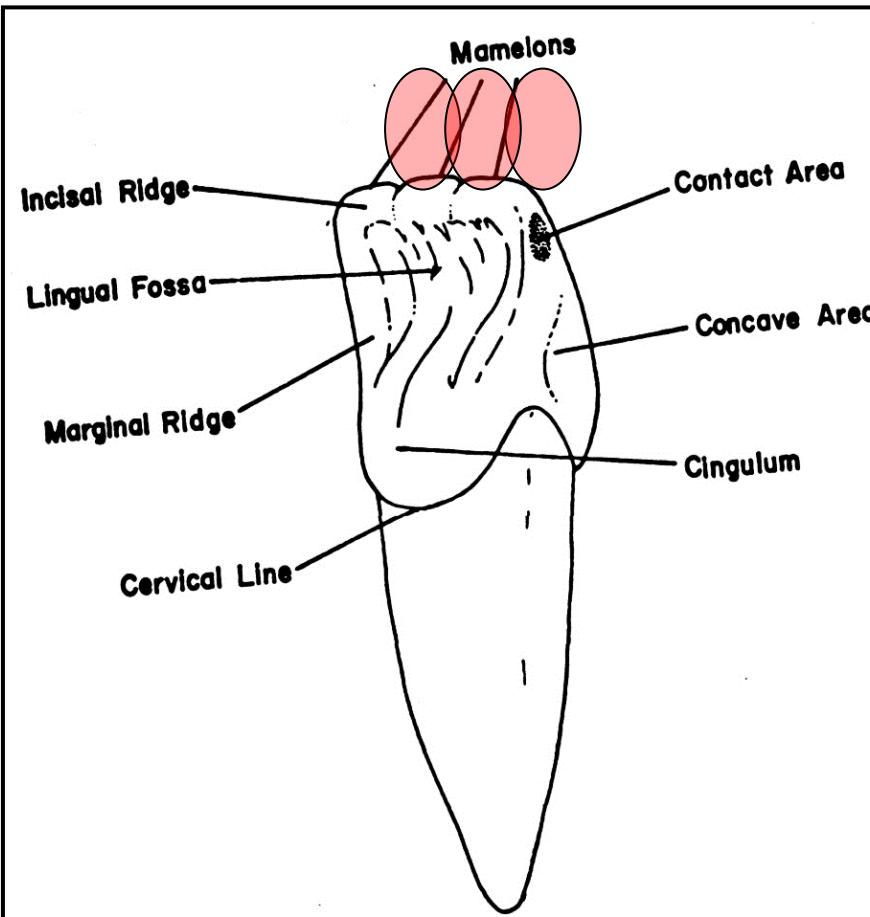
A - Crown Elevations



A - Crown Elevations

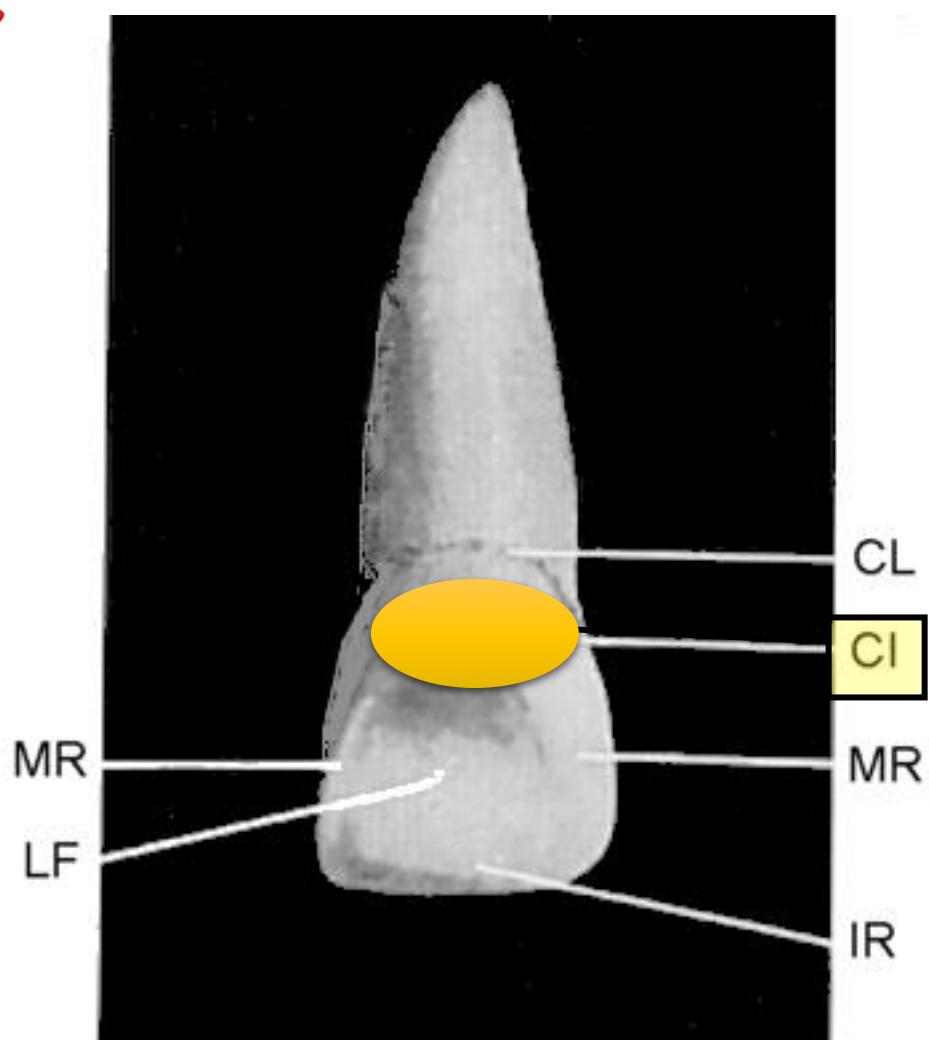
1- Mamelons

- 3 small round projections of **enamel** present in the **incisal 1/3** of **newly erupted incisors**.
- After **normal use**, eventually the **mamelons** **wear** down into a flat edge.



2- Cingulum

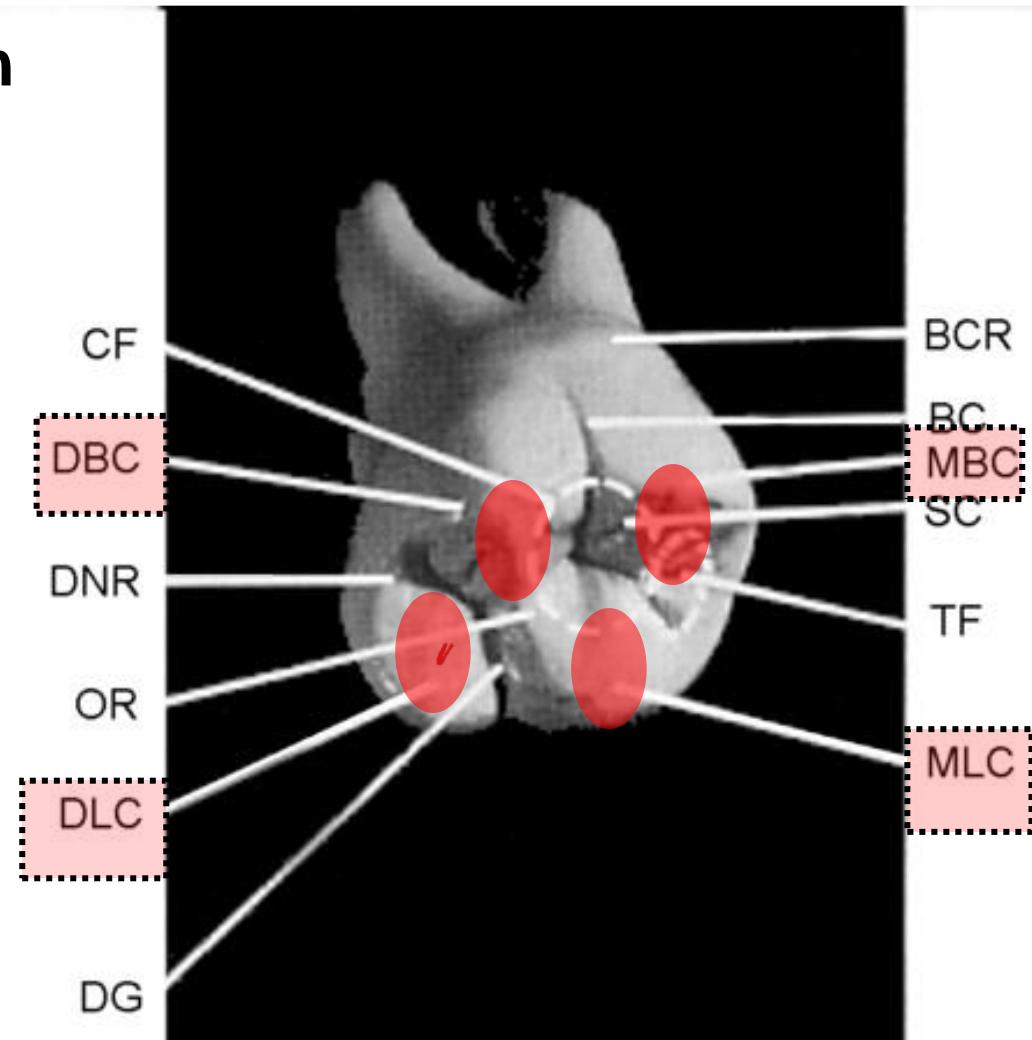
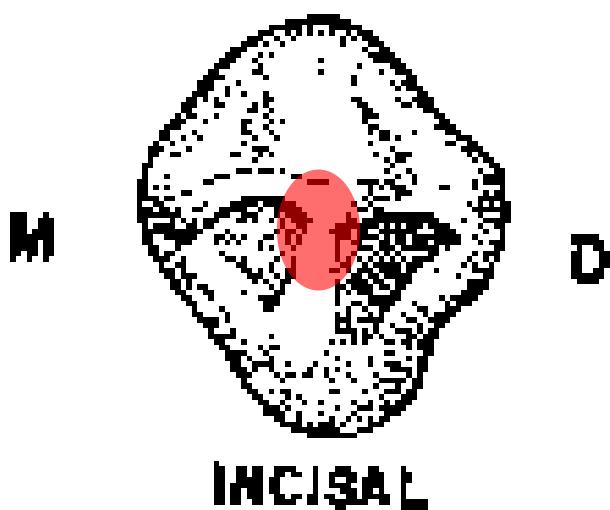
- It is the enlargement or bulge on the cervical 1/3 of lingual surface of the crown in anterior teeth (incisors and canines).



3- Cusps

مَرْسَى

- They are pyramidal projections on the **incisal** portion of the **canine** and on the **occlusal** surfaces of the **premolars** and **molars** teeth.
- Each cusp is **named** according to **its location** on the tooth



- Each cusp tip has **four cusp ridges**

converging toward it.

Example: The buccal cusp of lower first premolar

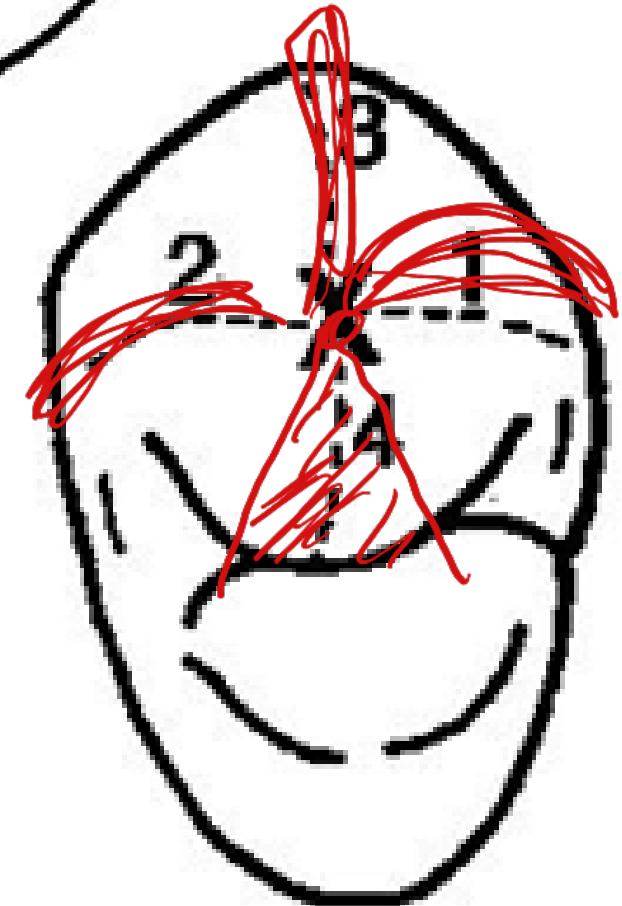
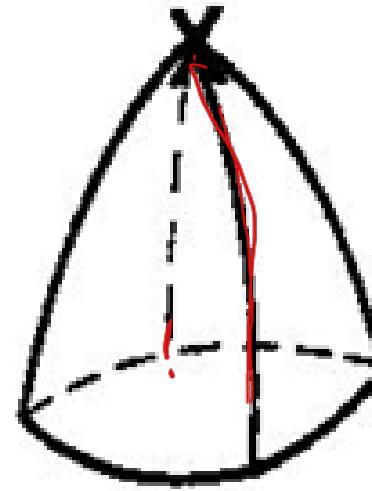
has **4 ridges**:

1- **The mesial ridge** extends from cusp tip into the mesial surface.

2- **The distal ridge** extends from cusp tip into the distal surface

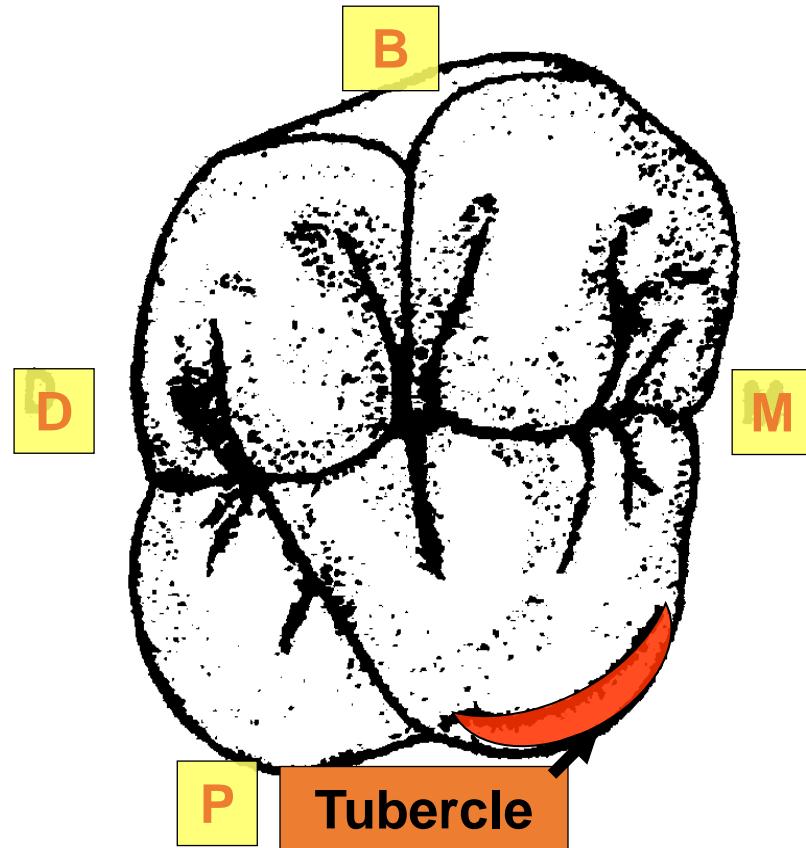
3-**The buccal ridge** extends from cusp tip into the buccal surface.

4- **The triangular ridge** which extends from the cusp tip to the center of the tooth.



4- Tubercle

- **Small elevation** formed of **enamel** only while cusp is formed of pulp horn covered by dentin and enamel.
- It is commonly seen on the lingual surface
- of maxillary incisors adjacent to the cingulum.



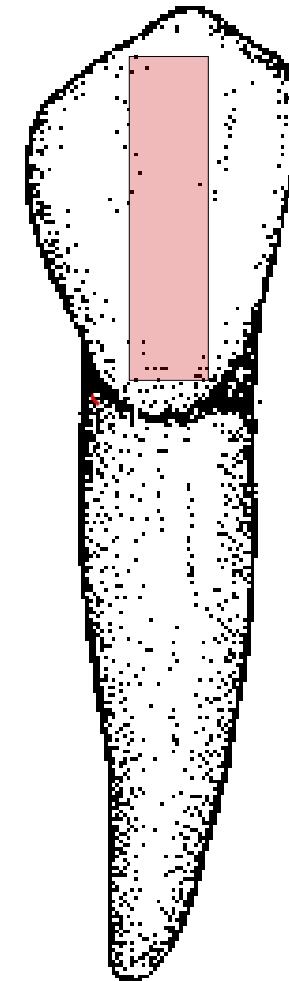
5- Ridges

- It is a linear elevation on the different surfaces of the crown.

A- Ridges on the facial surface (Labial and Buccal):

1- Labial Ridge

- It is a linear elevation extends **cervico-incisally** in anterior teeth and it is most prominent in the center of the **middle lobe** of the **maxillary canines**.



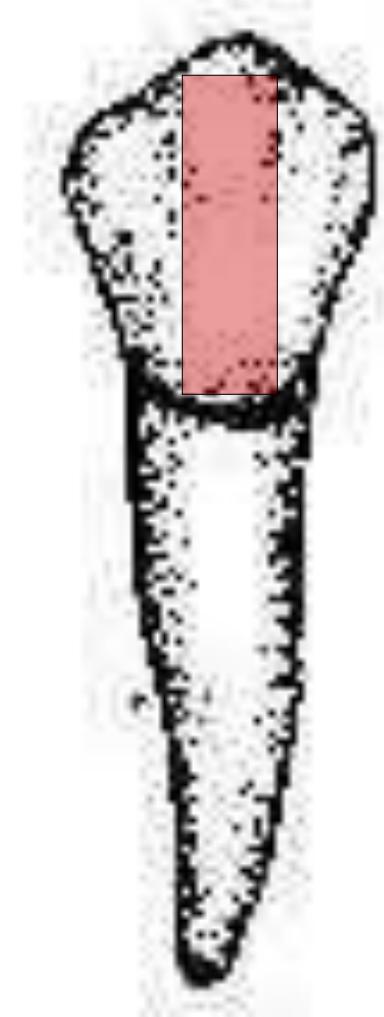
5- Ridges

- It is a **linear elevation** on the different surfaces of the crown.

A- Ridges on the facial surface (Labial and Buccal):

2- Buccal Ridge

- It is a linear elevation running **cervico-occlusally** in the center of the **buccal** surface of **posterior teeth**. It is most prominent in the **premolars**.



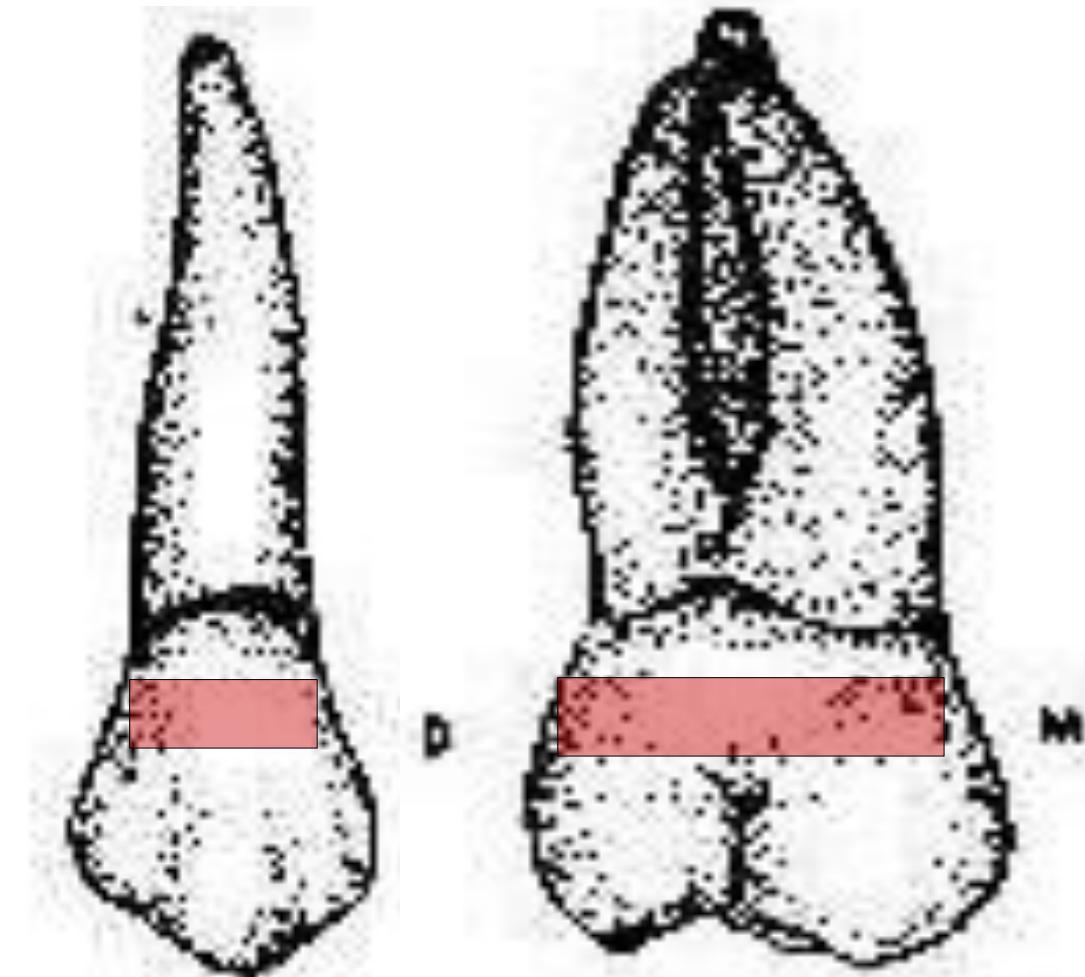
5- Ridges

- It is a **linear elevation** on the different surfaces of the crown.

A- Ridges on the facial surface (Labial and Buccal):

3- Cervical Ridge

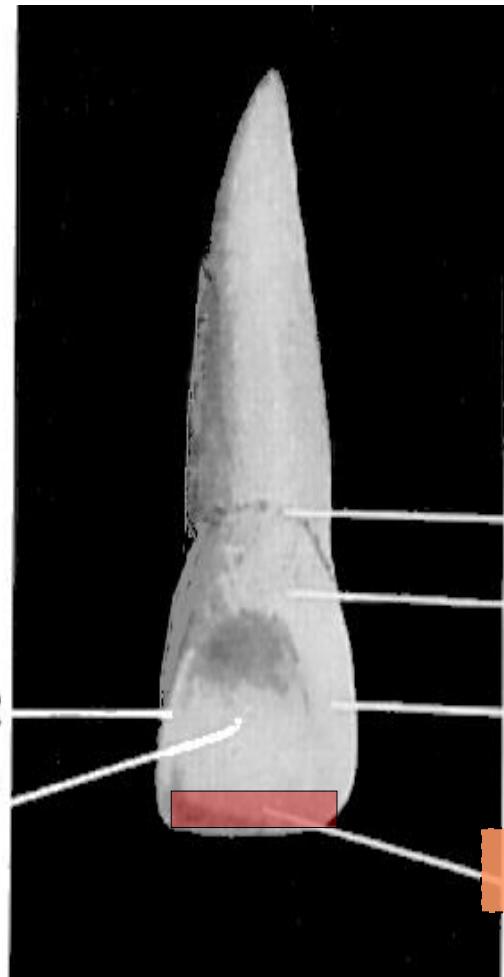
- It is a ridge running **mesiodistally** on the **cervical third** of the facial surface of all teeth.



B- Ridges on the lingual surface

Incisal Ridge

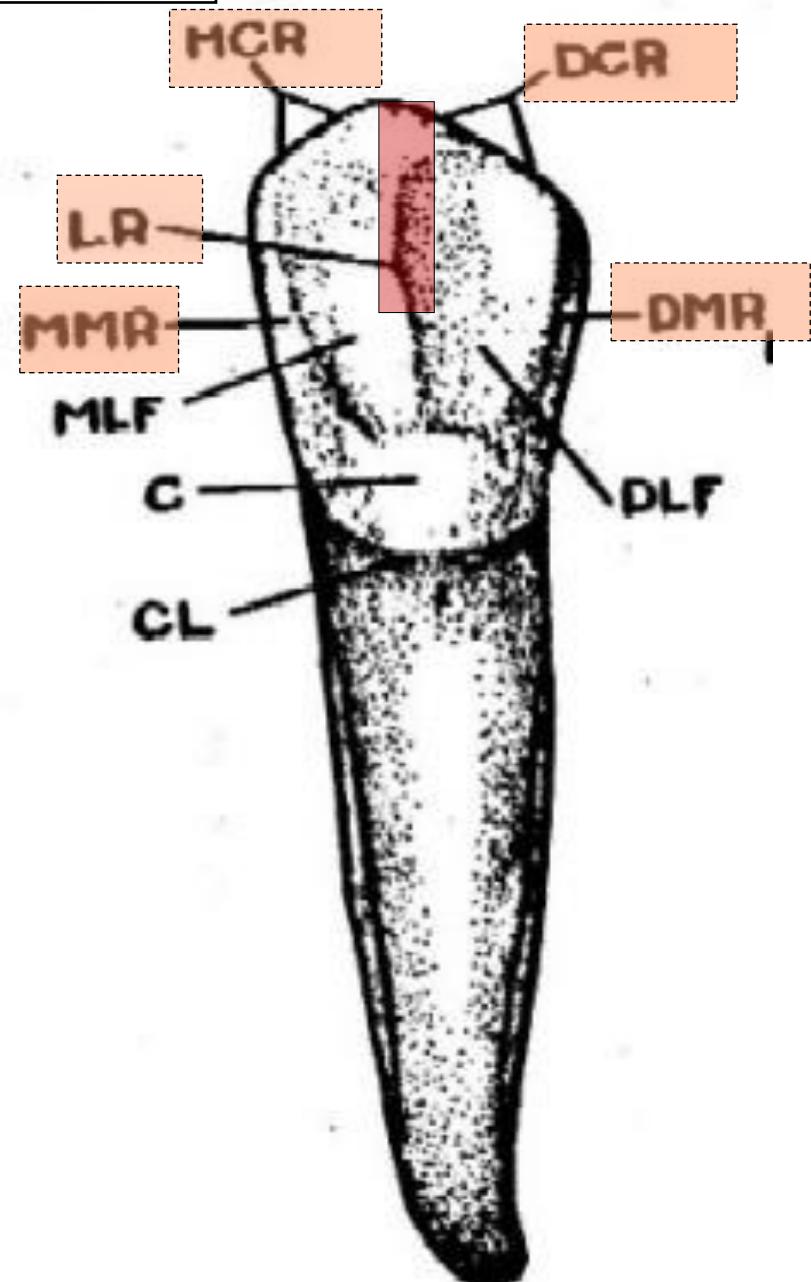
- Incisal portion of lingual surface of **incisors**.



Cusp Ridge

Lingual Ridge

- on the lingual surface of the **canines**.

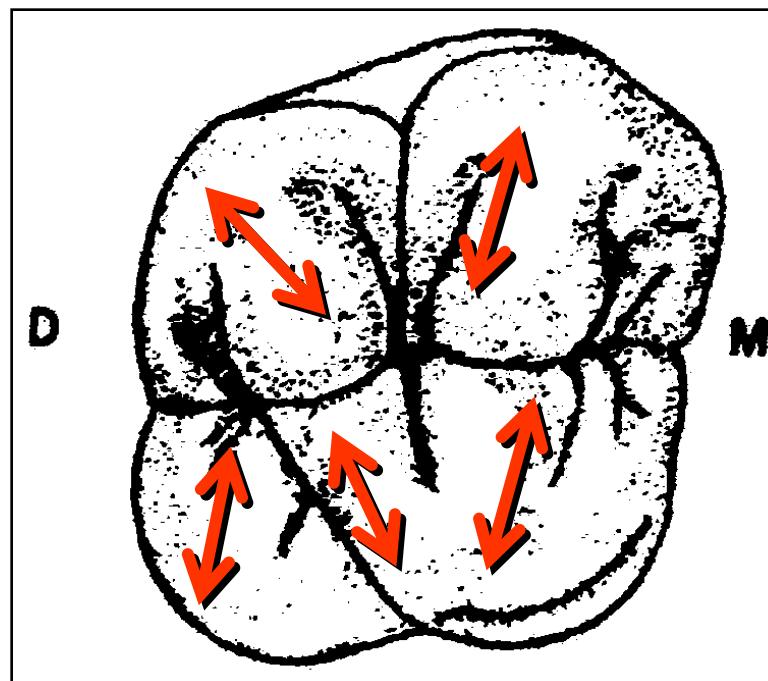
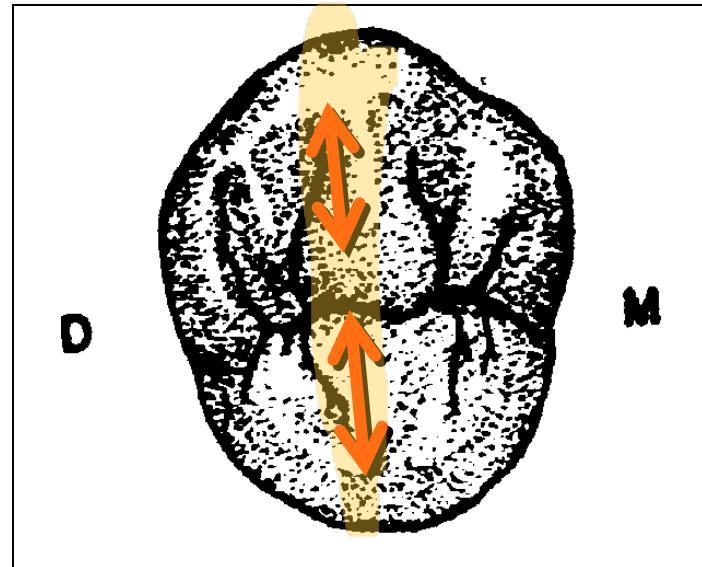


Marginal Ridge

C- Ridges on the occlusal surface of posterior teeth

Triangular Ridges

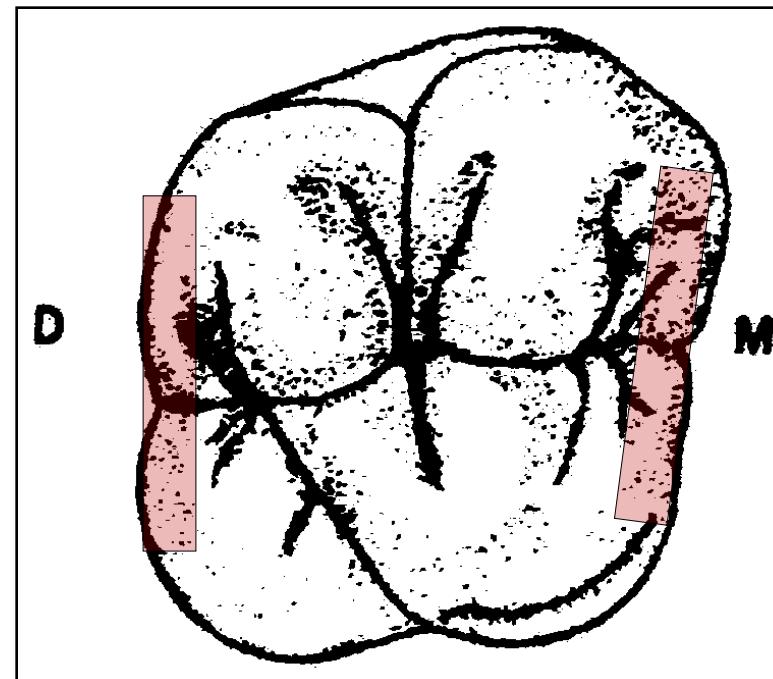
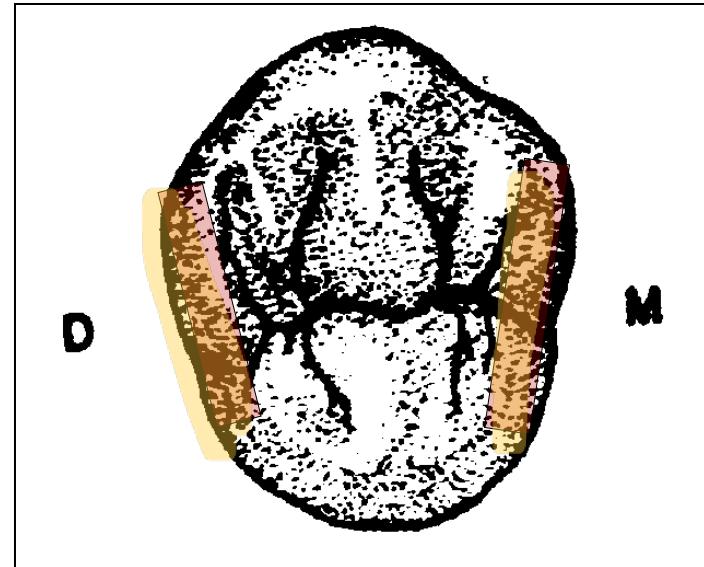
- Located on each cusp of posterior teeth.
- Each triangular ridge extends from a cusp tip toward the middle of the occlusal surface Bucco-lingually.



C- Ridges on the occlusal surface of posterior teeth

Marginal Ridges

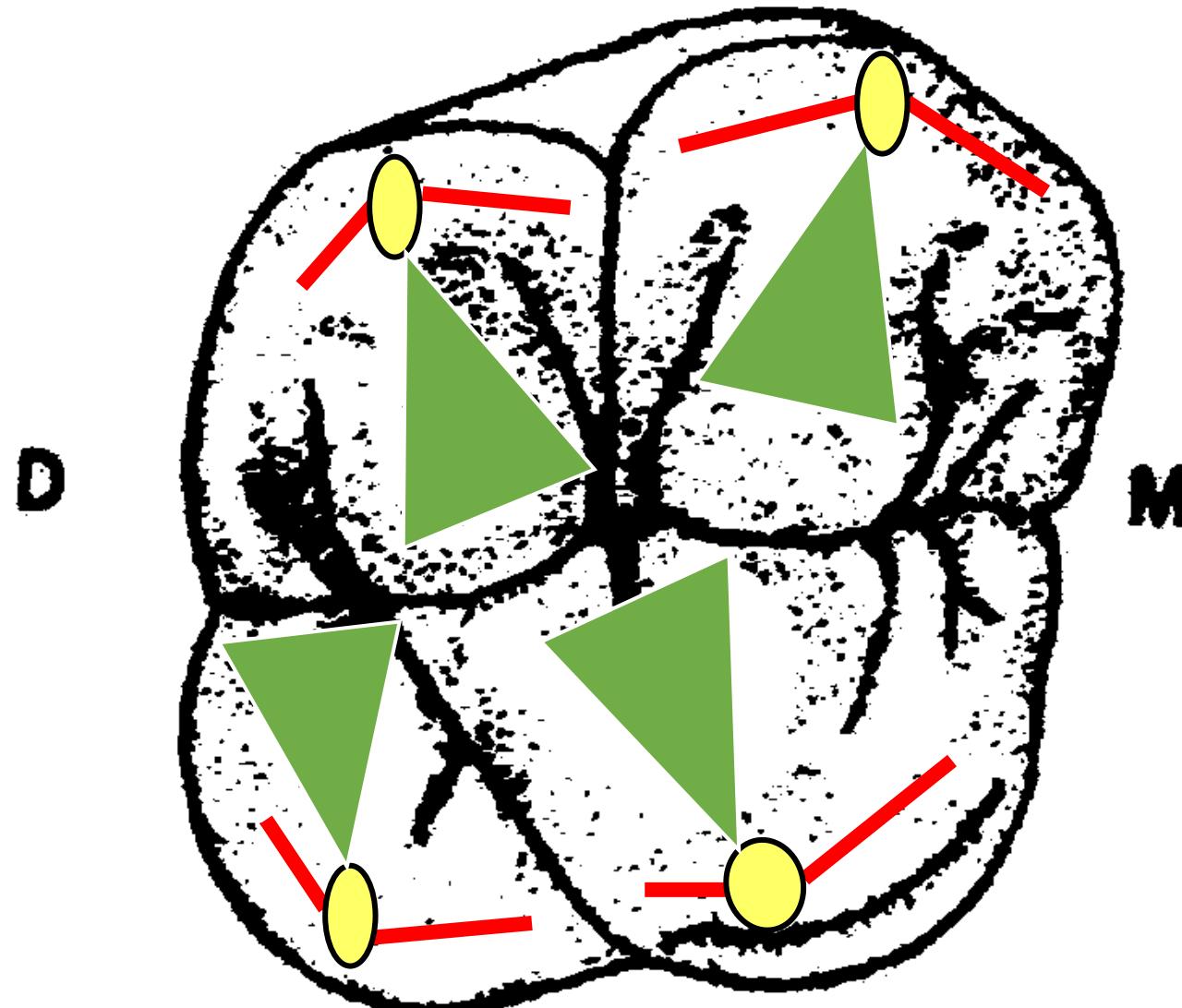
- It is a linear round elevation which terminates on the mesial and distal borders of the **lingual surface on anterior teeth** and converge toward the cingulum.
- **On posterior teeth** it is located on the mesial and distal borders of the occlusal surface.



Cusp Tip

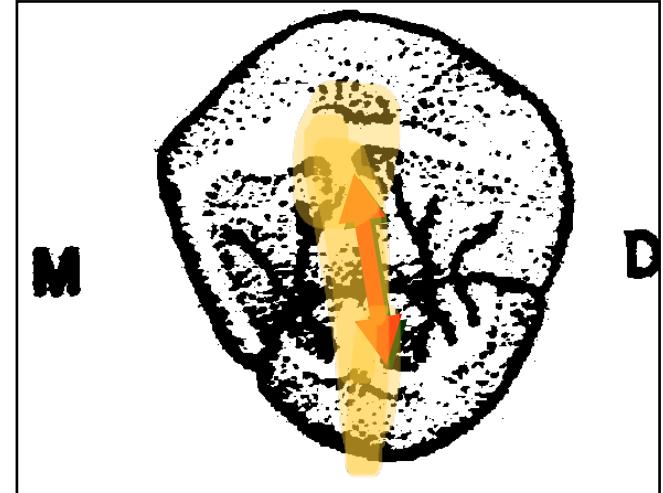
Cusp Ridges

Triangular R.



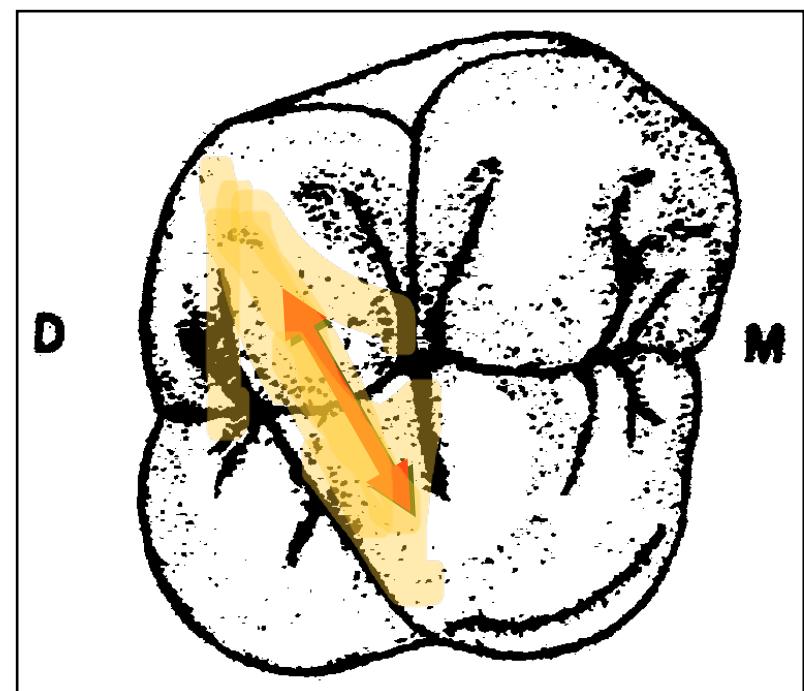
Transverse ridge

- It is **union** of two triangular ridges which crosses the occlusal surface of most of posterior teeth **transversely** (buccolingual).

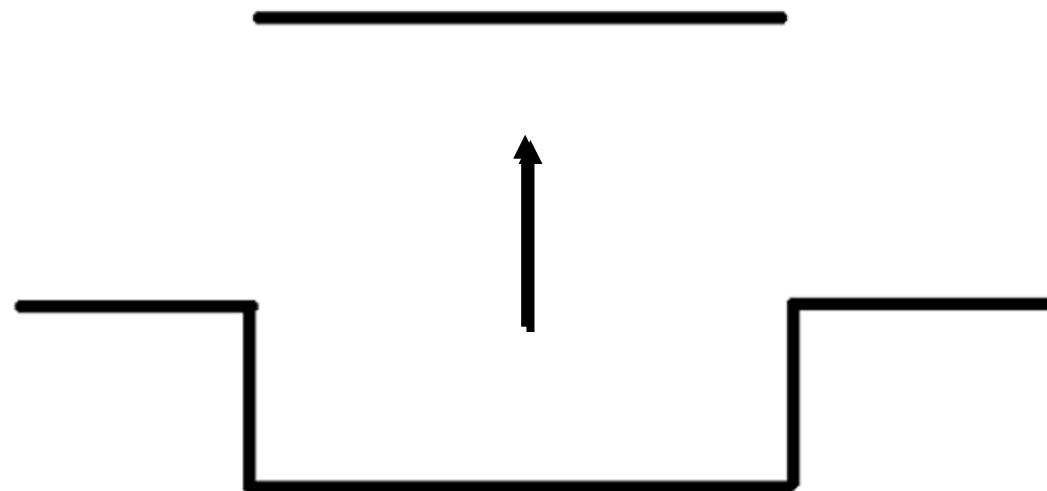


Oblique Ridge

- It is **union** of two triangular ridges which crosses the occlusal surface of **maxillary molars** **obliquely**.



B - Crown Depressions

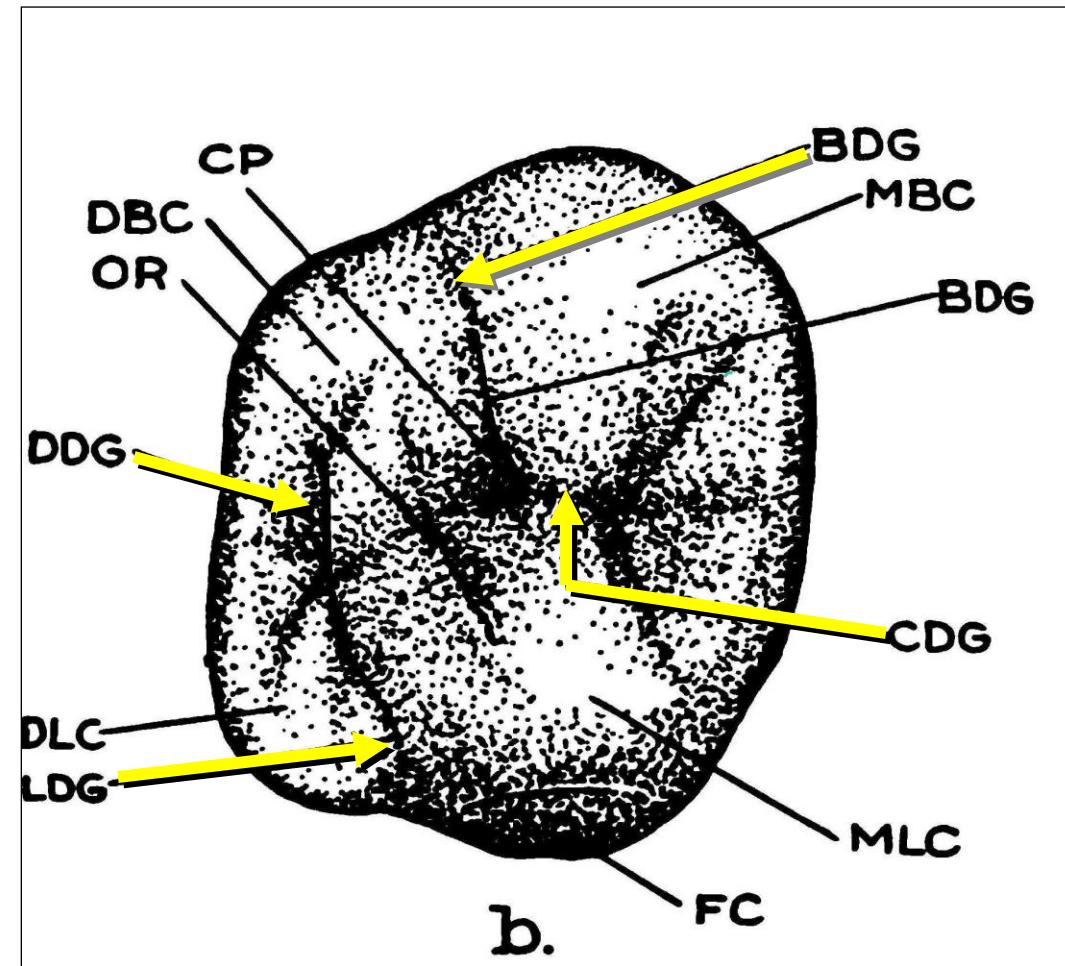
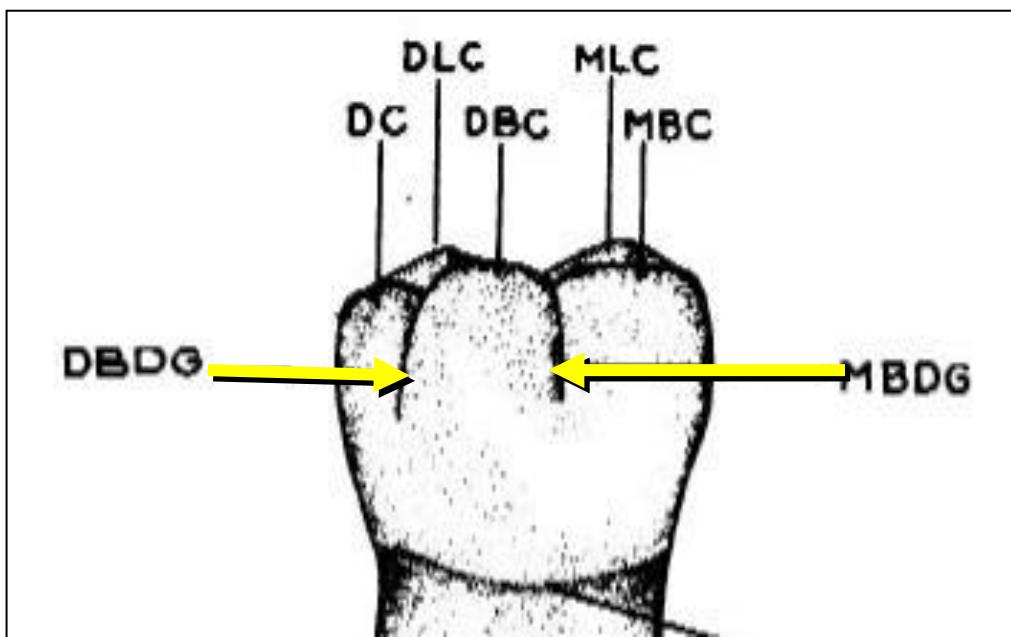


B- Crown Depression

I- liner depressions

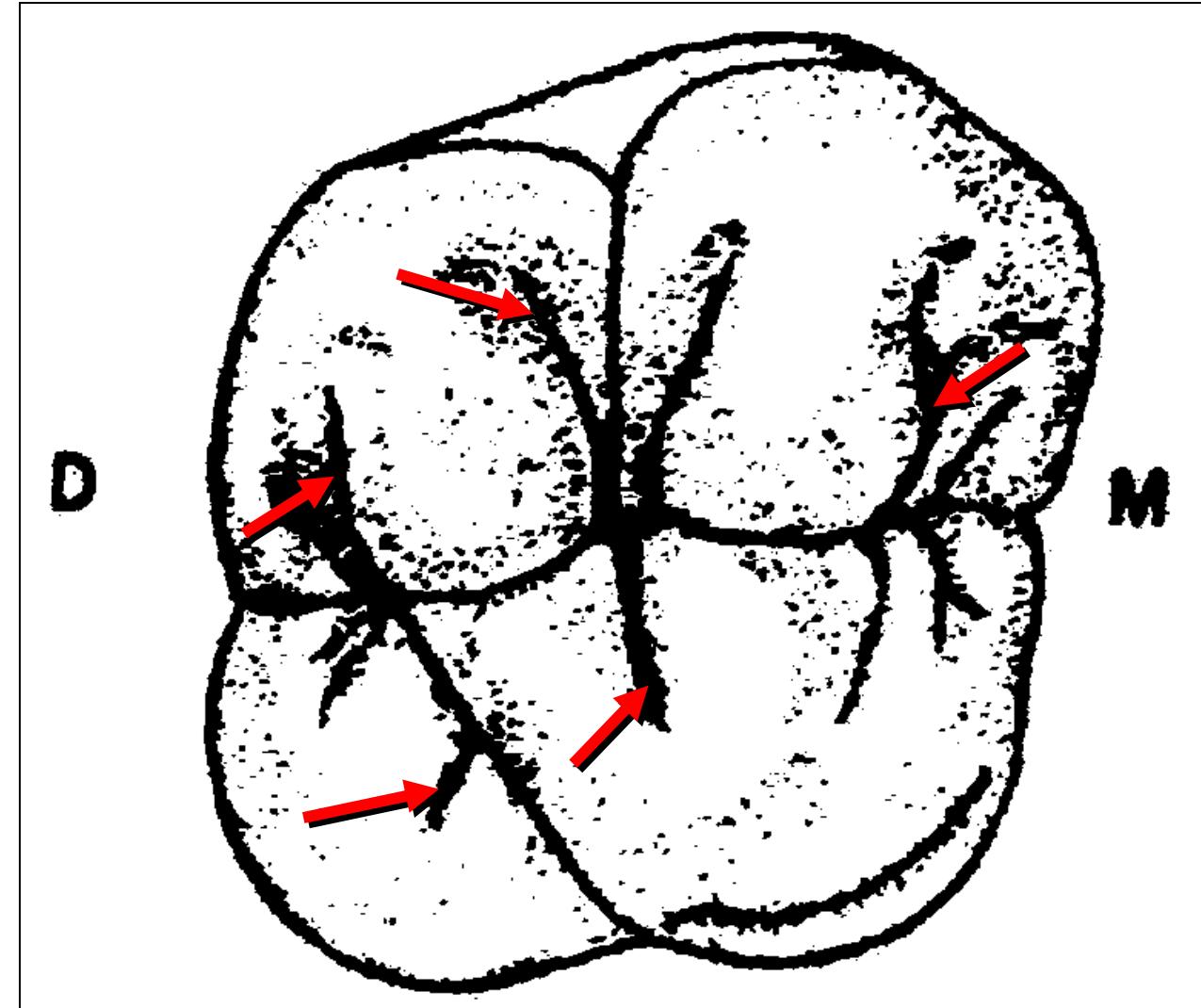
A. Developmental Grooves:

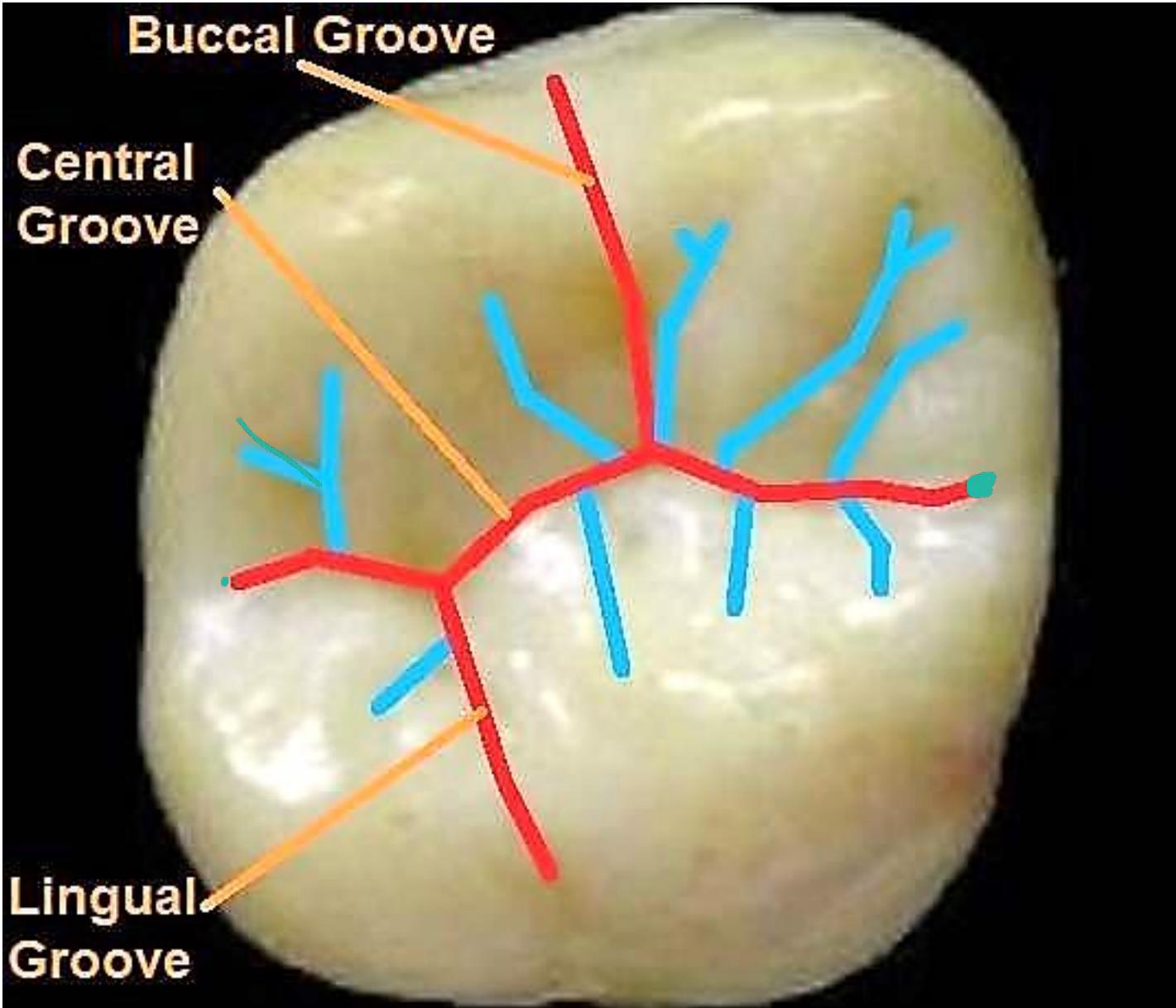
- It is a narrow linear depressions short or long formed during tooth development and usually separating the lobes or major portions of a tooth.



B. Supplemental Grooves:

- less distinct branches from the developmental groove, they do not occur at the junction of lobes.





Developmental / Primary Grooves
Supplemental / Secondary Grooves

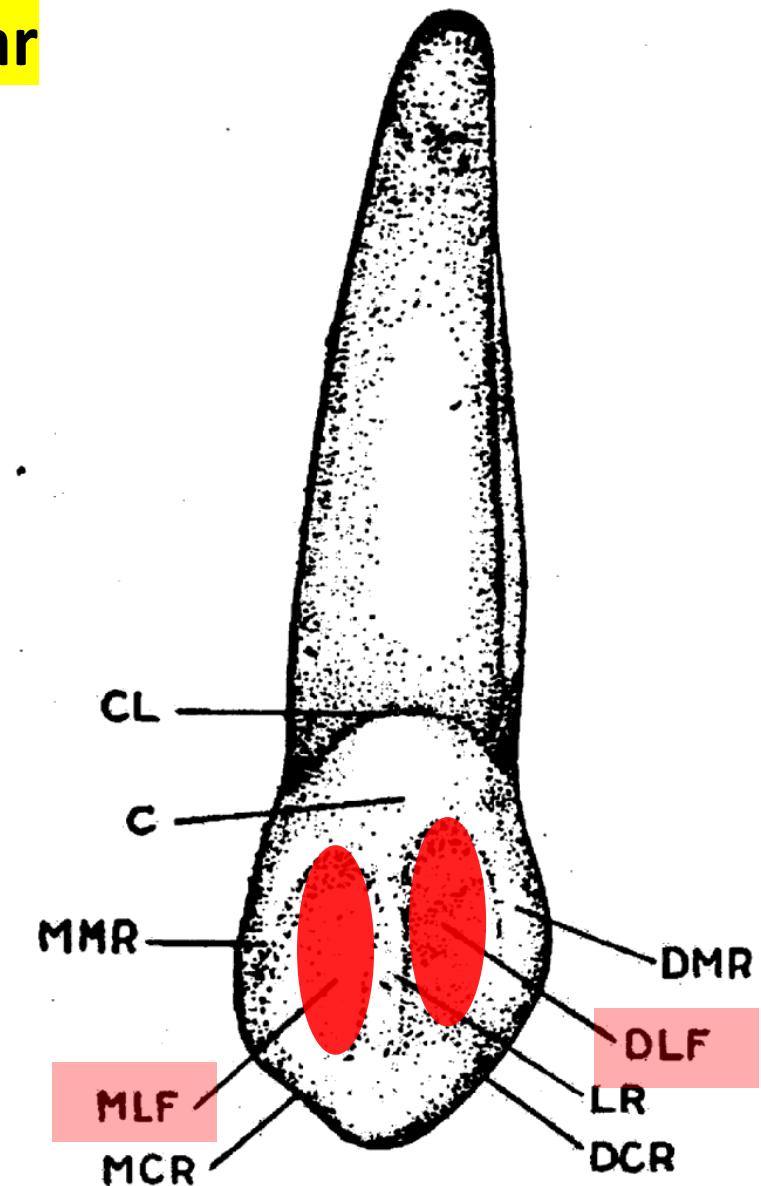
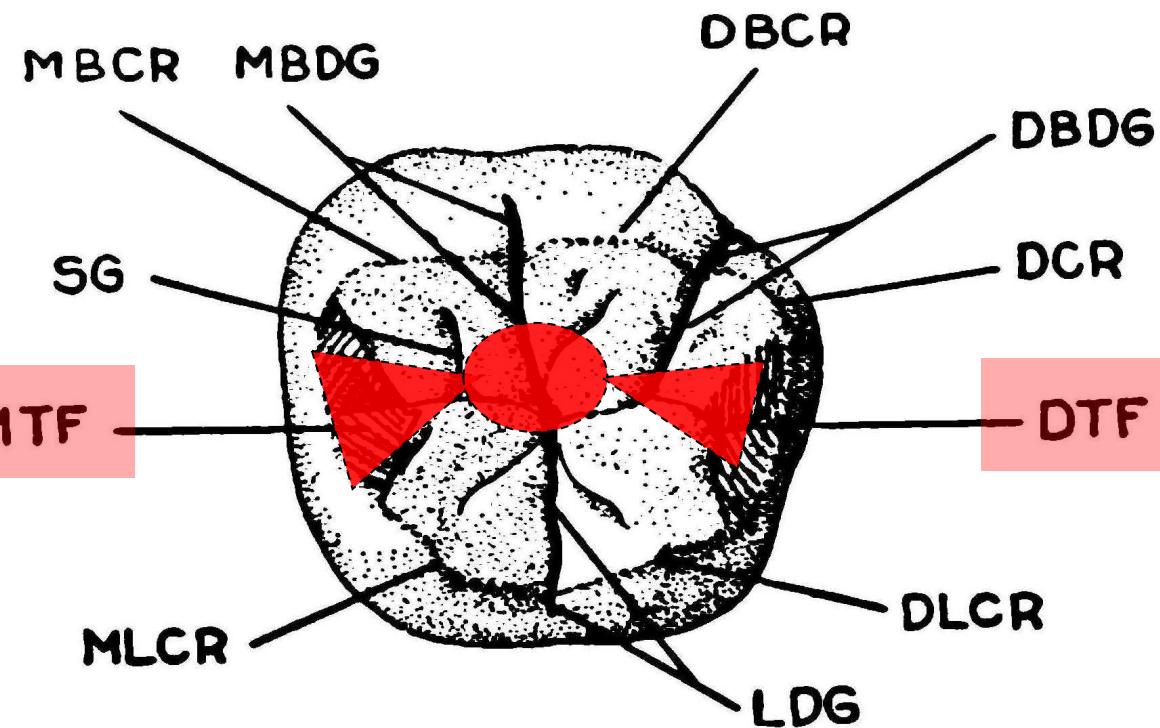
II- CIRCUMSCRIBED DEPRESSIONS

I- Fossa

Lingual

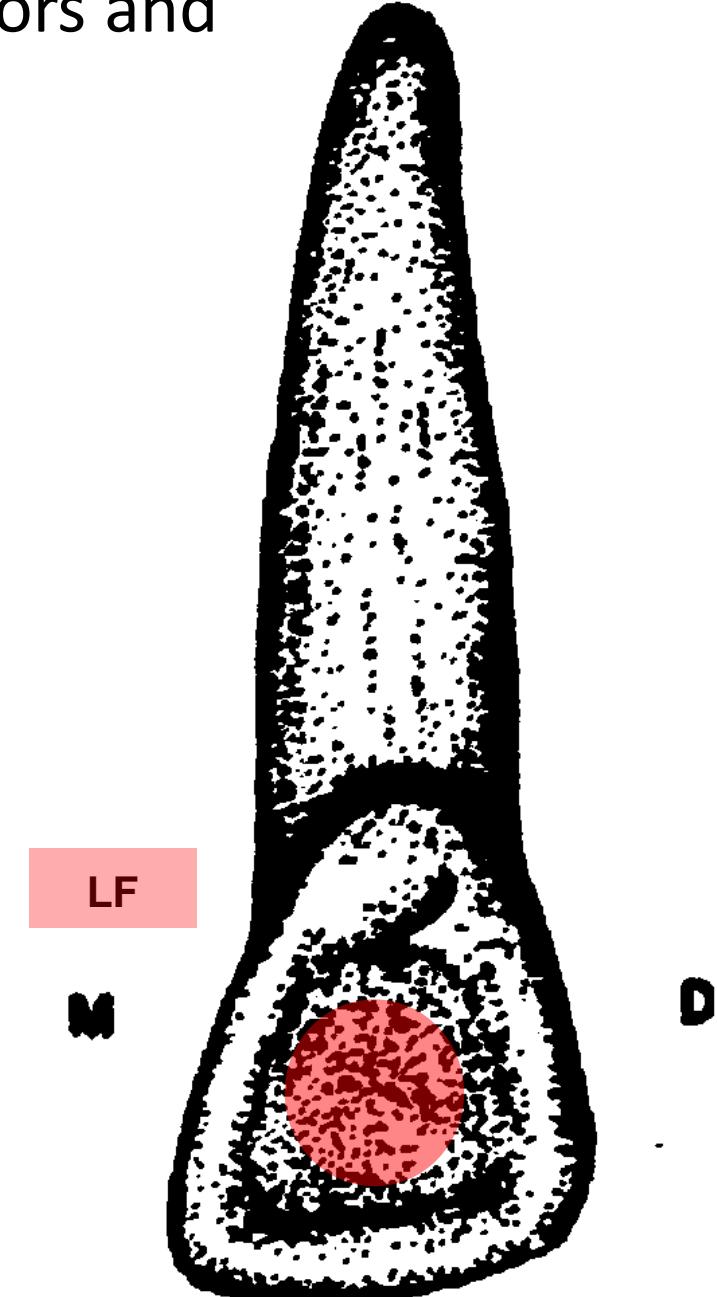
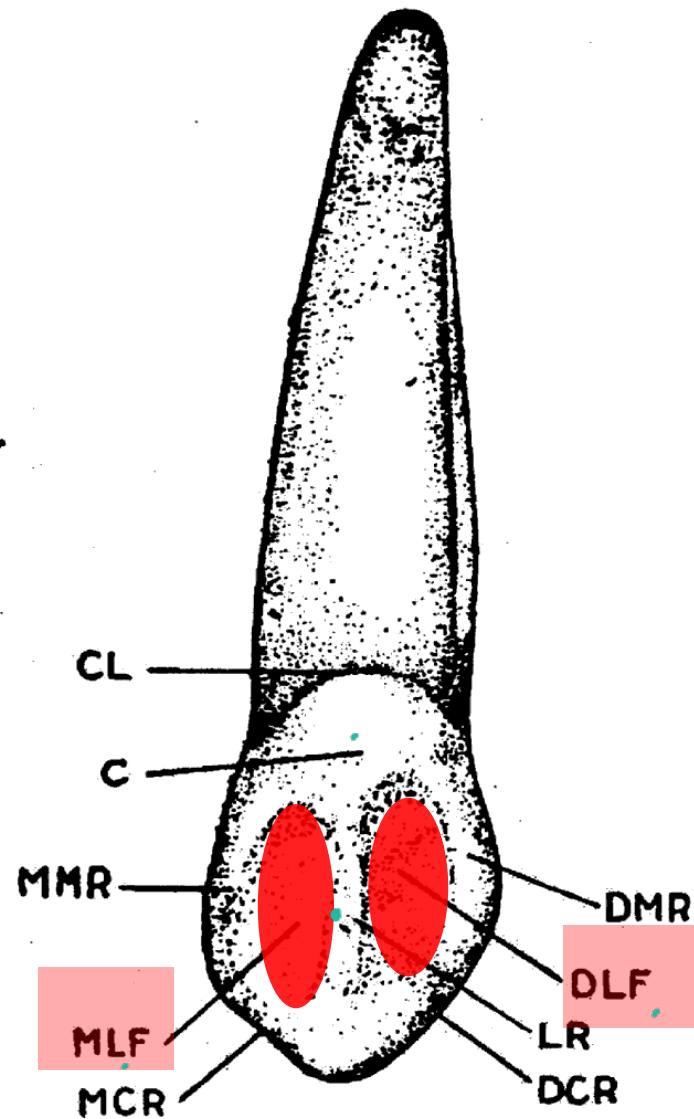
Central

Triangular



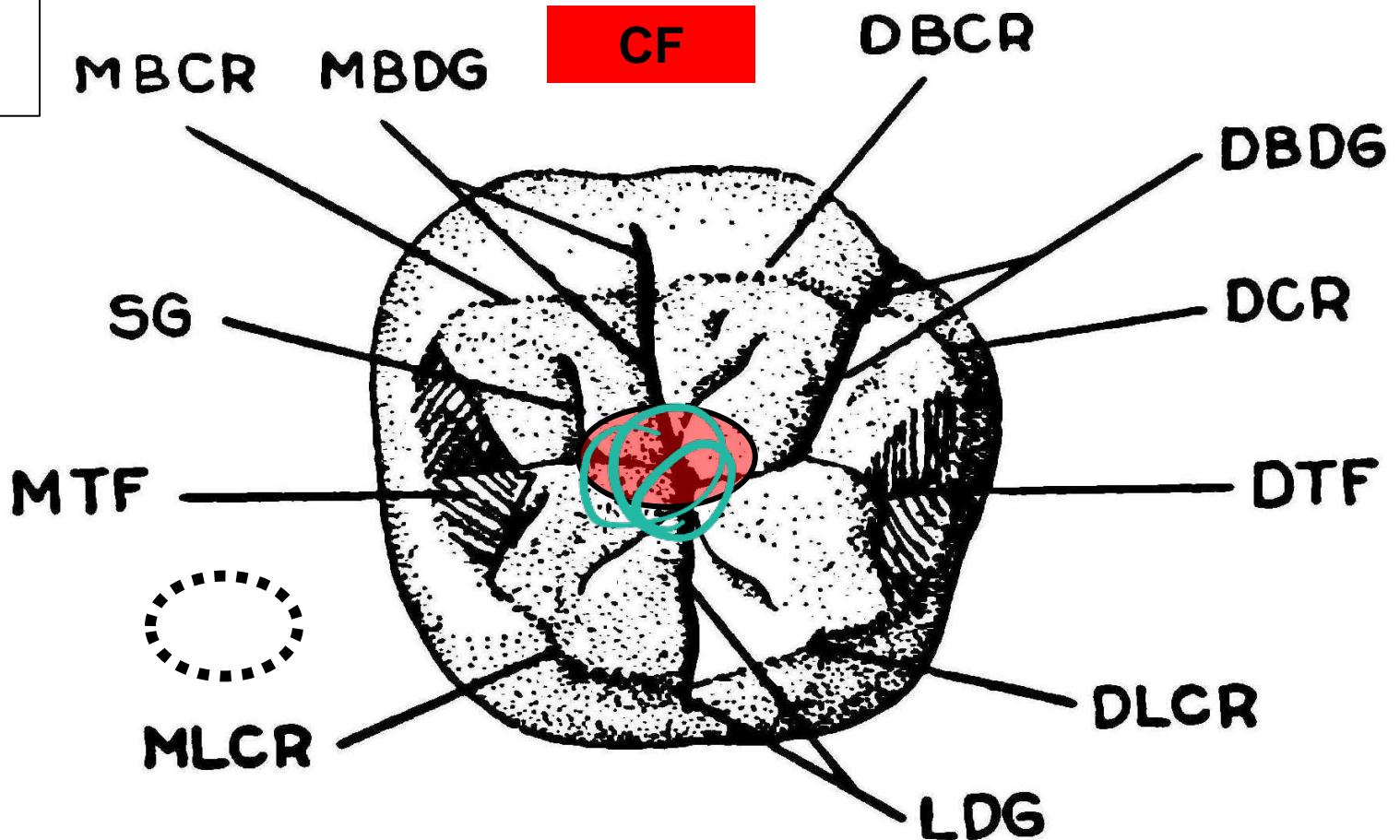
A (lingual fossa)

- on the lingual surface of incisors and canines



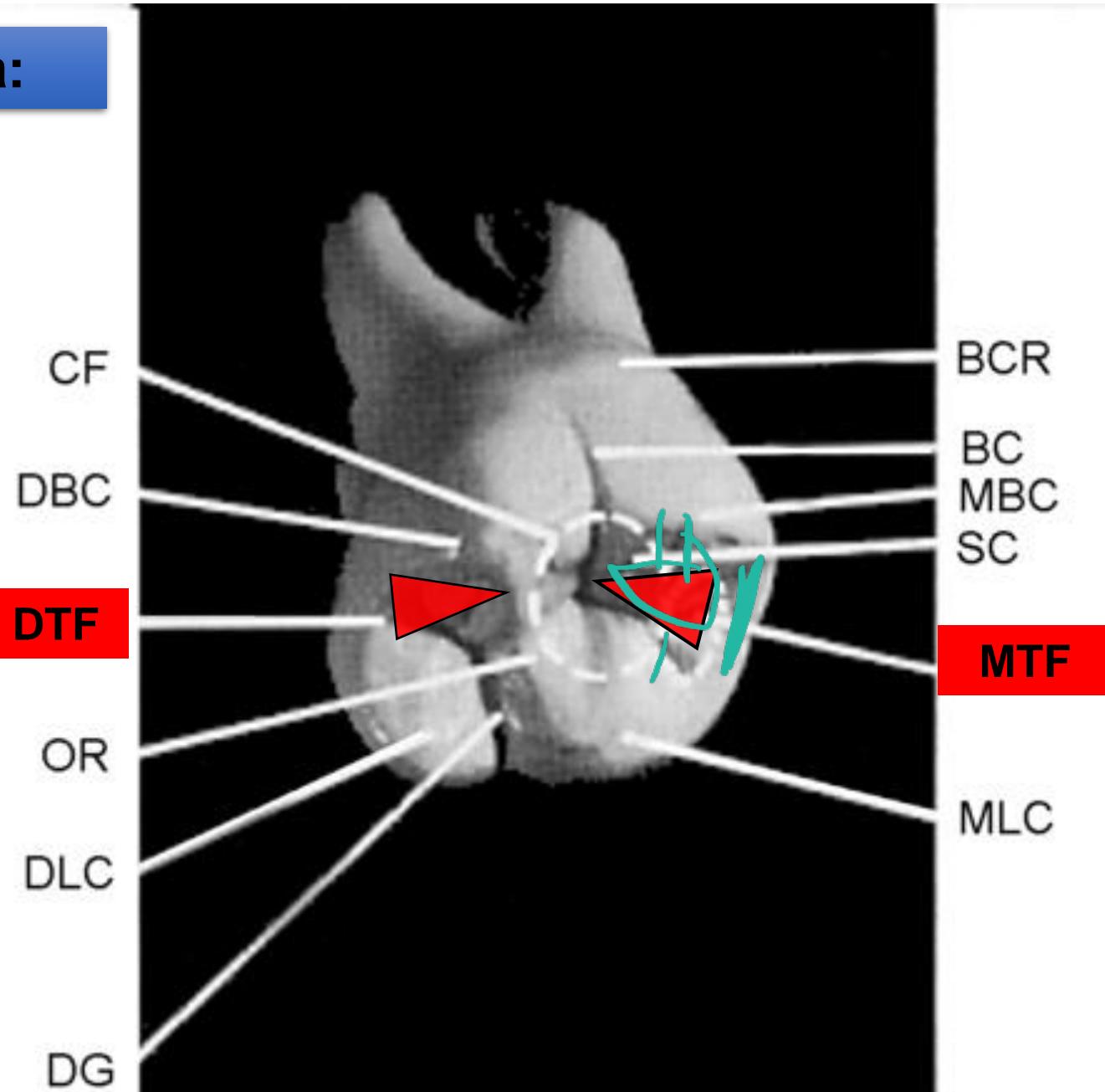
B- Central fossa

- on the occlusal surface of molars and premolars.



C- Mesial and distal triangular fossa:

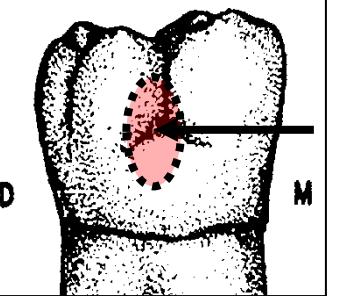
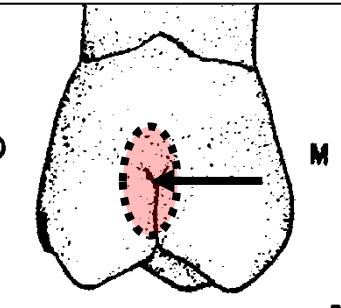
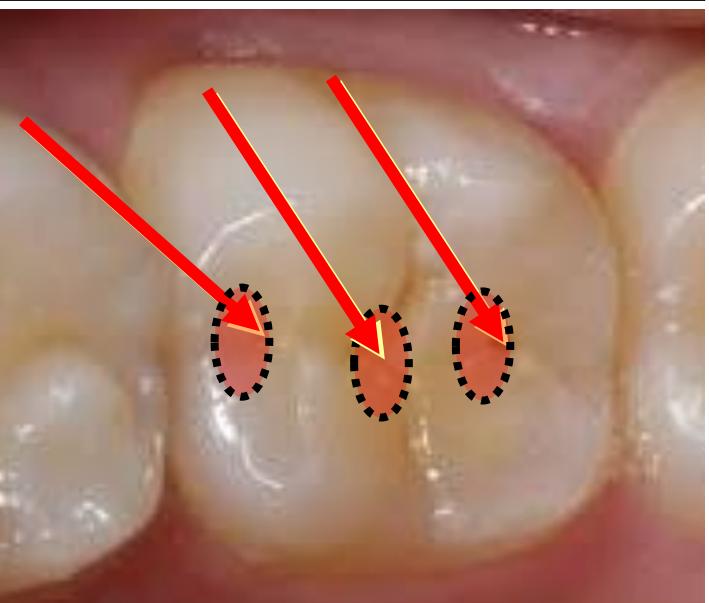
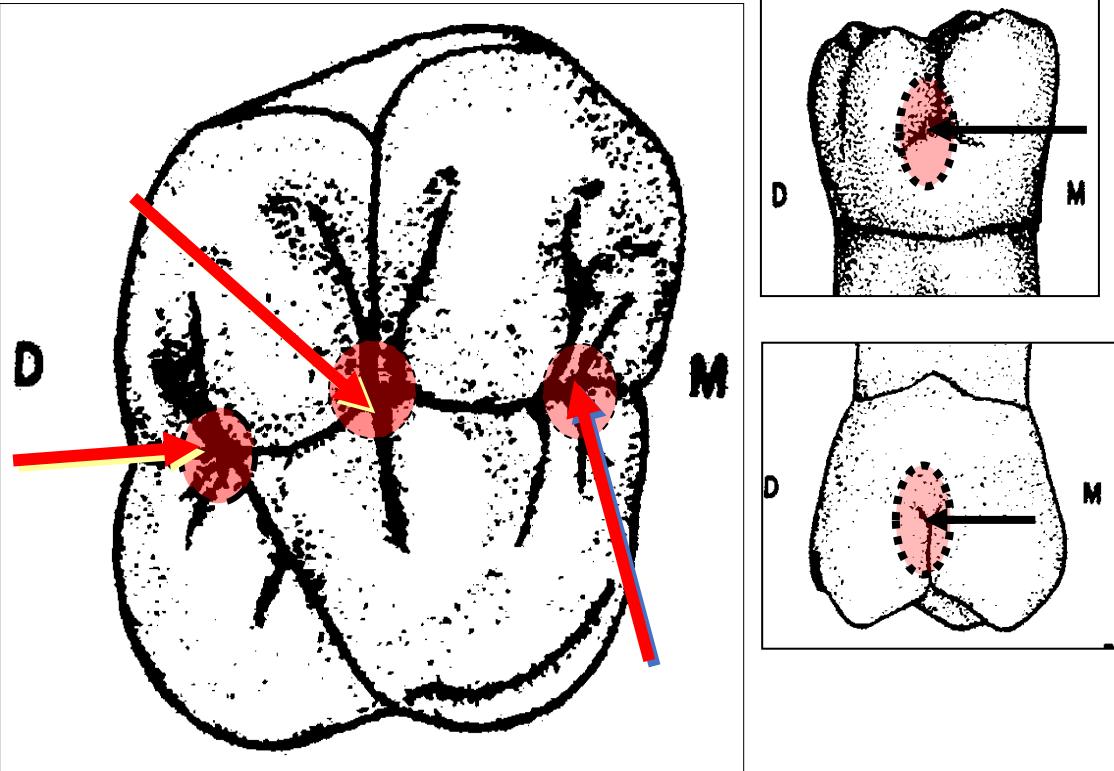
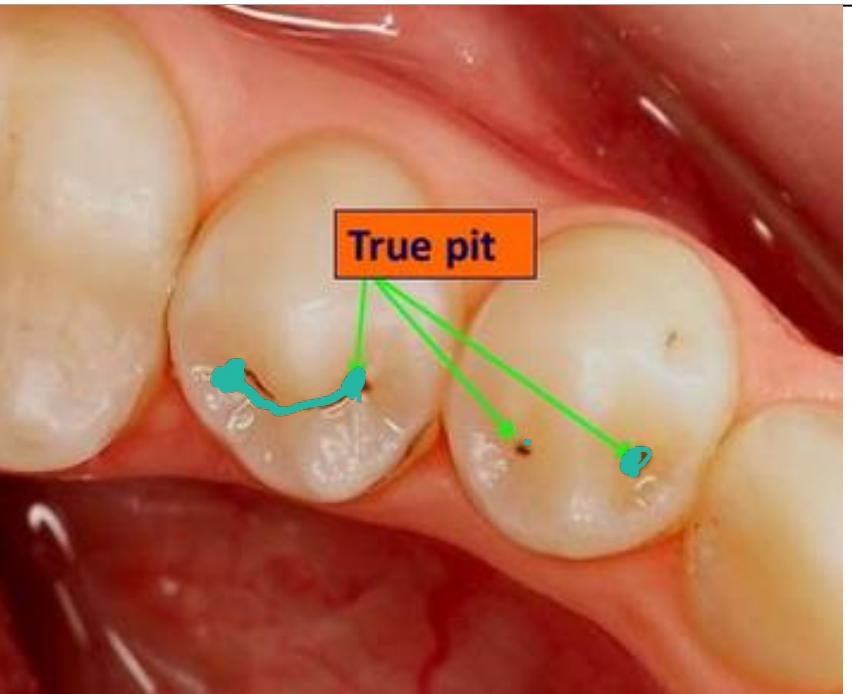
- It is found on **molars** and **premolars** on the occlusal surface, mesial or distal to the marginal ridges.



2- Pits

A- true pits

- They are small pinpoint depressions located at the **end** of the developmental groove or at the **junction** of the developmental grooves (bottom of the fossae).



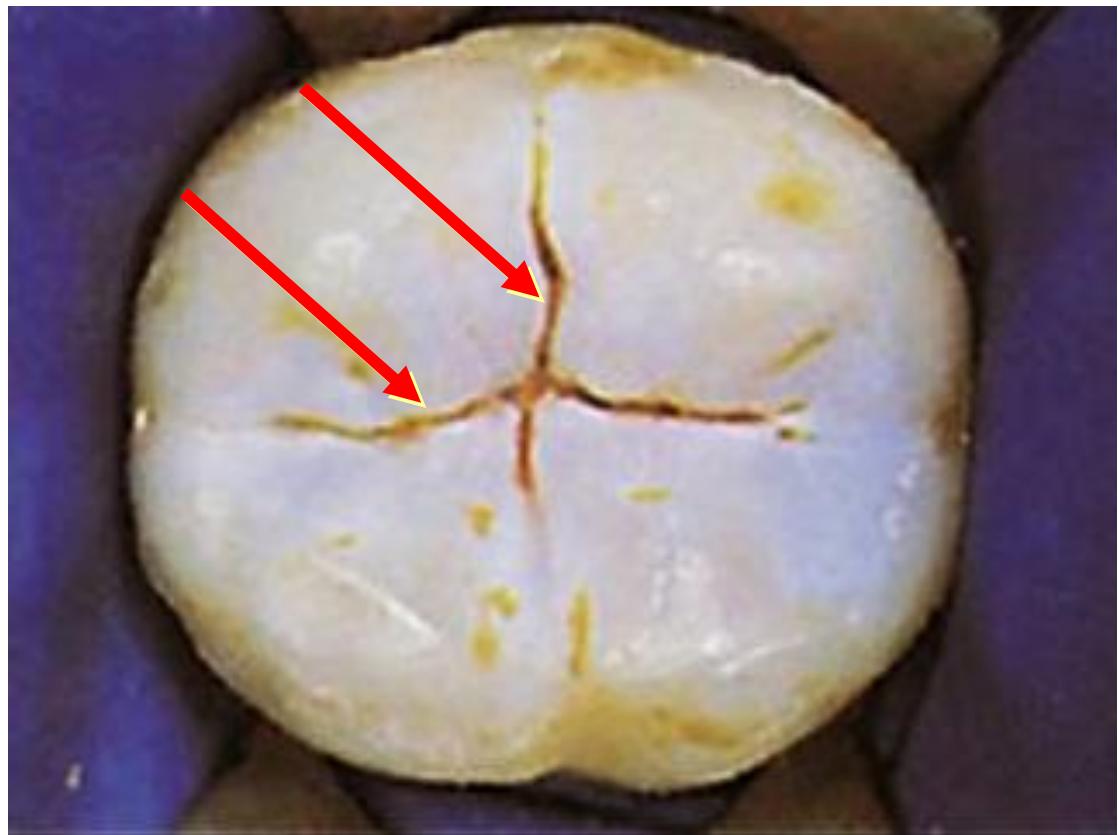
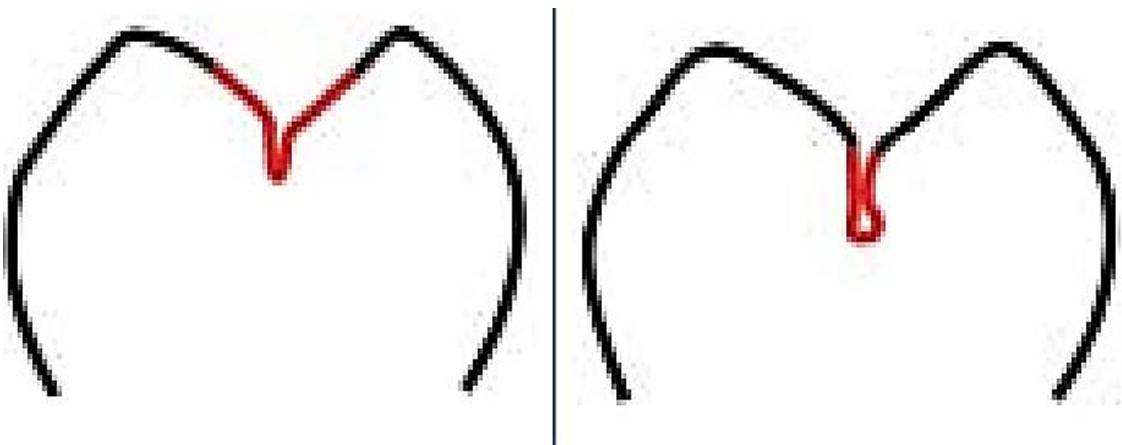
B- Faulty pit

- Usually developed as a result of incomplete formation of enamel



Fissure

- Linear **fault** that is resulted due to **incomplete union of enamel**.
- Appear at the bottom of the **developmental groove**.
- Appear as **cracks**.





Dental formula

- The formula include **one side only** (1/2 of the total number of the teeth). 
- The denomination of each tooth is represented by its **initial letter**.
~~I~~ I for incisor C for canine P for premolar
M for molar.
- Each letter is followed by a **horizontal line**.
- The number of each type of tooth is placed **above** the line for the maxillary teeth and **below** the line for the mandibular teeth.



Dental formula

- For permanent teeth:

2	1	2	3
I ----- C ----- PM ----- M -----	= 16		
2	1	2	3

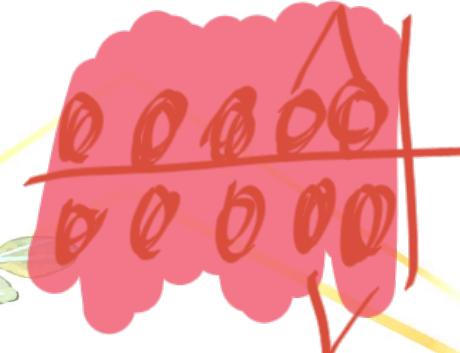
- For deciduous teeth:

2	1	2
I ----- C ----- M -----	= 10	
2	1	2

Permanent

$$I \frac{2}{2} + C \frac{1}{1} + P \frac{2}{2} + M \frac{3}{3} = 16$$

Thank
You



Primary

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

