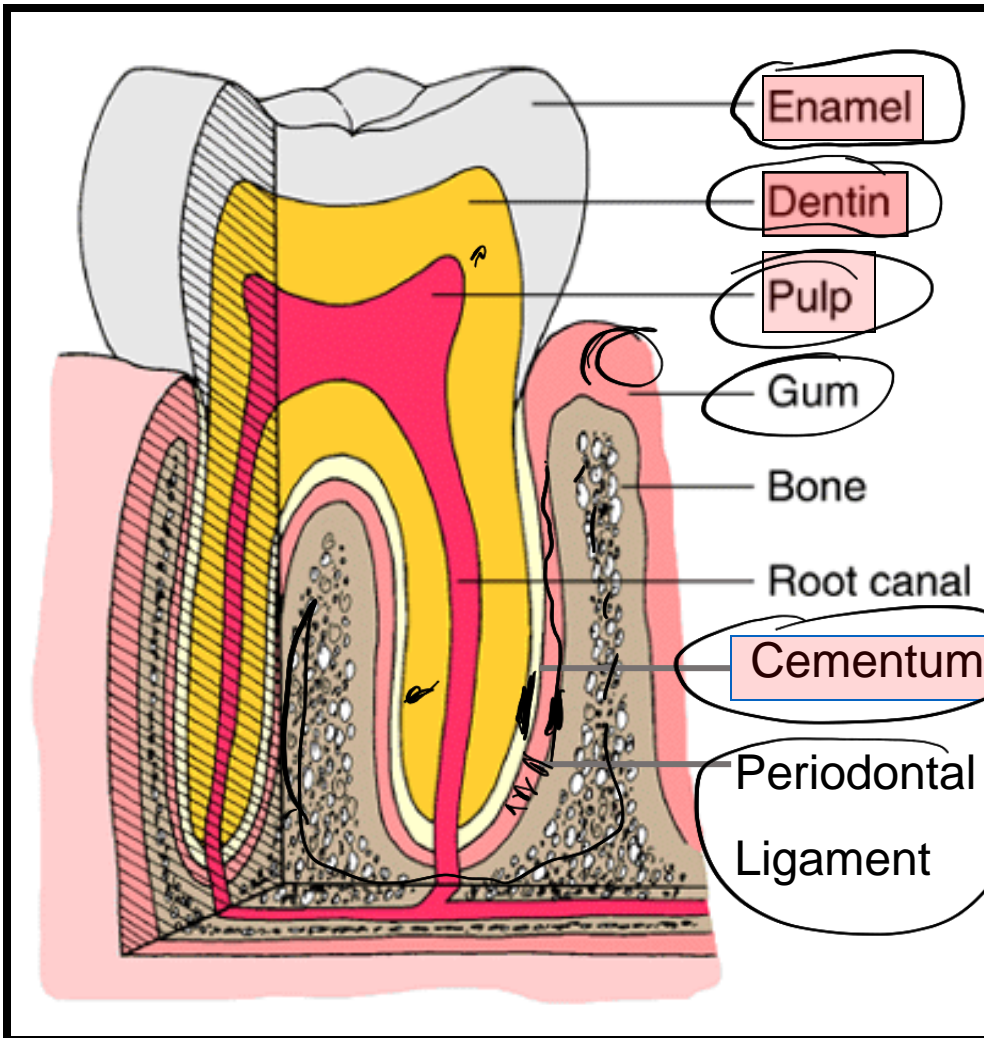


Tooth Anatomy

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

Pulp horn

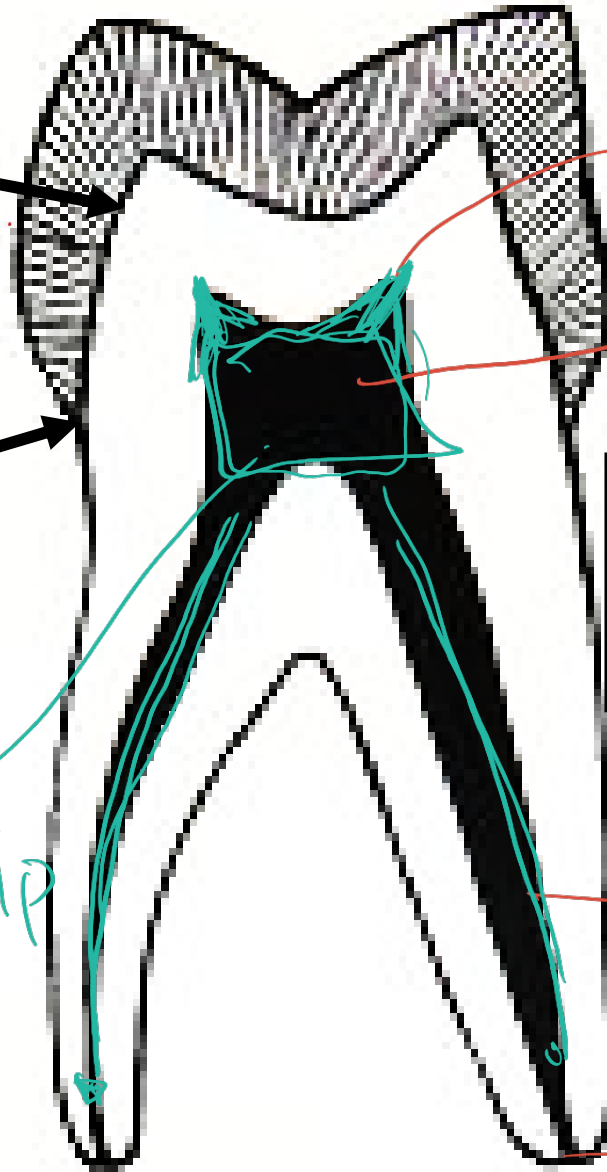
pulp chamber

Dentino-
cemental
junction

Root
canal

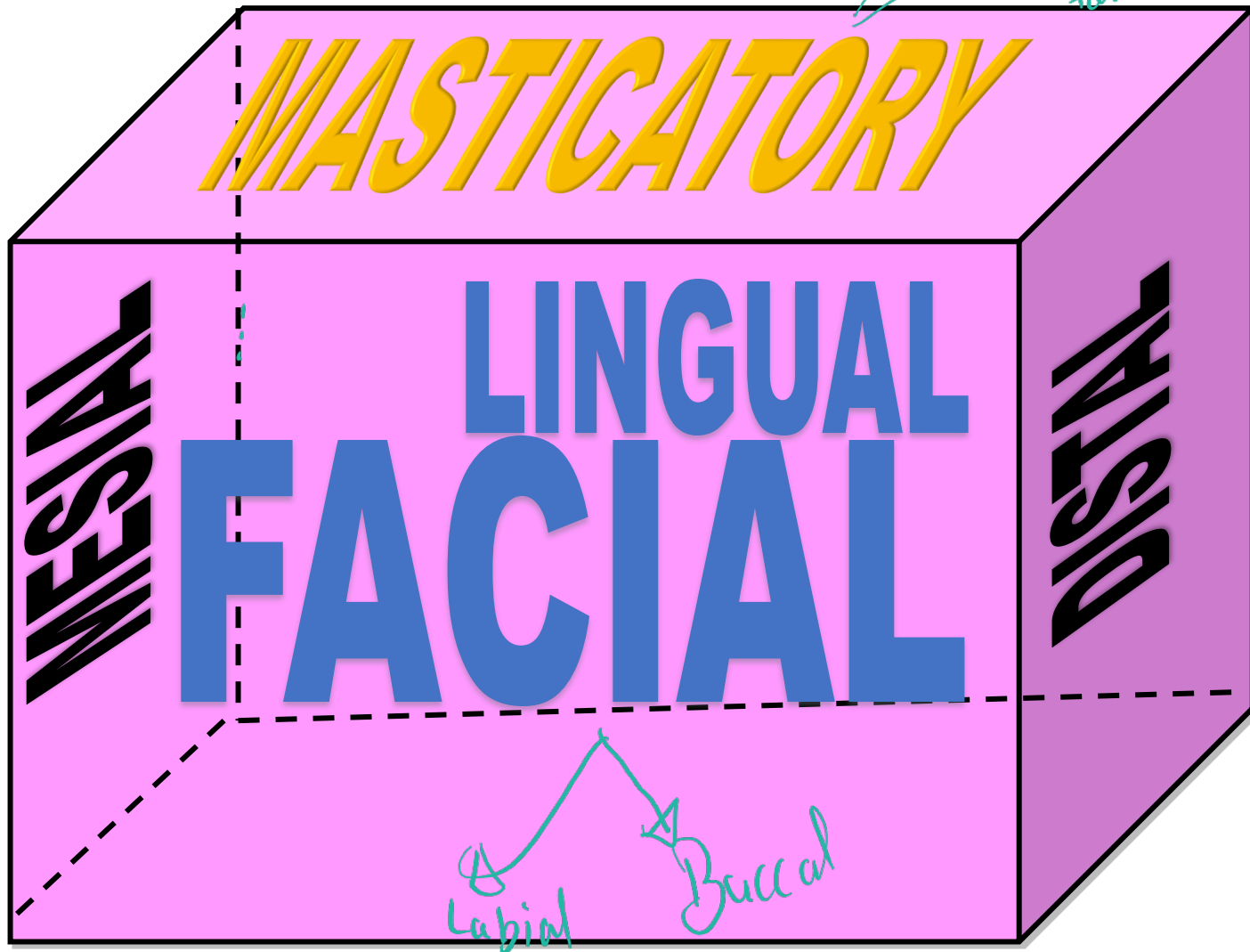
Apical Foreman

pulp



Tooth Surfaces

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

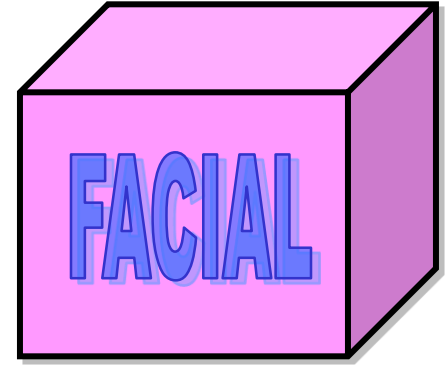


Facial Surface

- **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

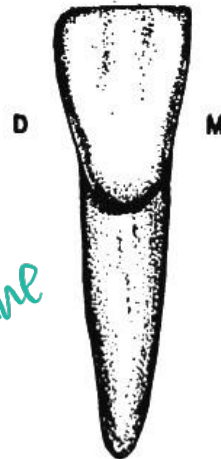
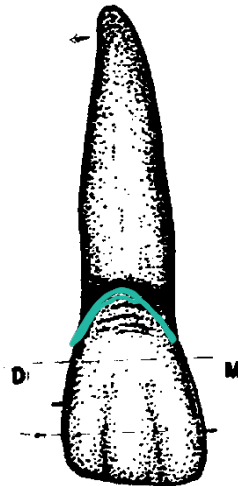


Labial

(LIP)

for

anterior teeth



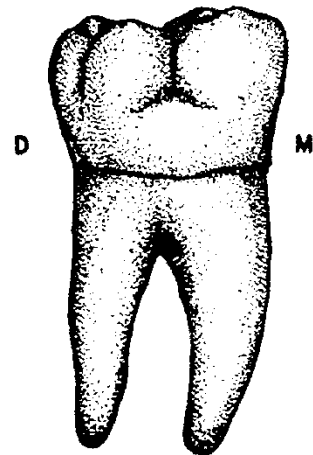
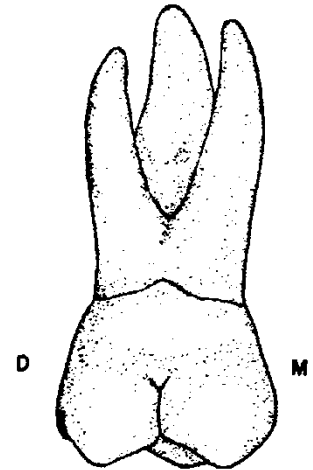
LABIAL

Buccal

(CHEEK)

for

posterior teeth



incisors & canine
✓

Lingual Surface

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

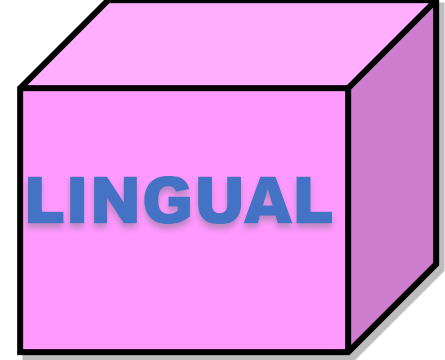
Lower

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



Upper

Lingual Surface

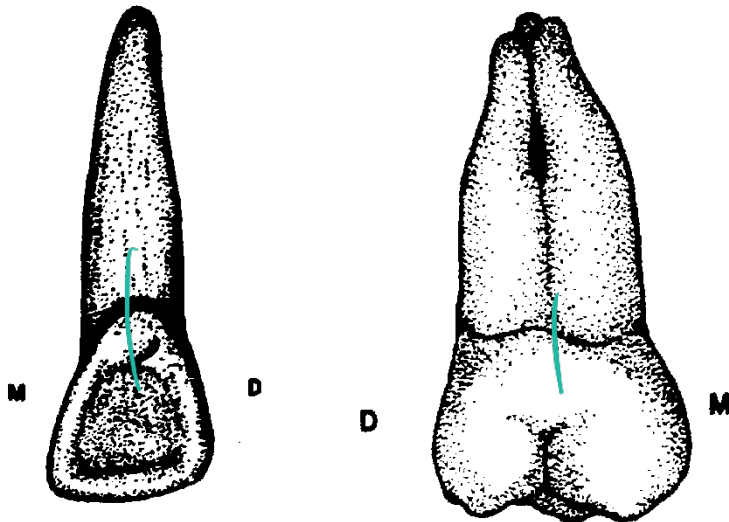


Palatal

upper

(palate)

for maxillary teeth

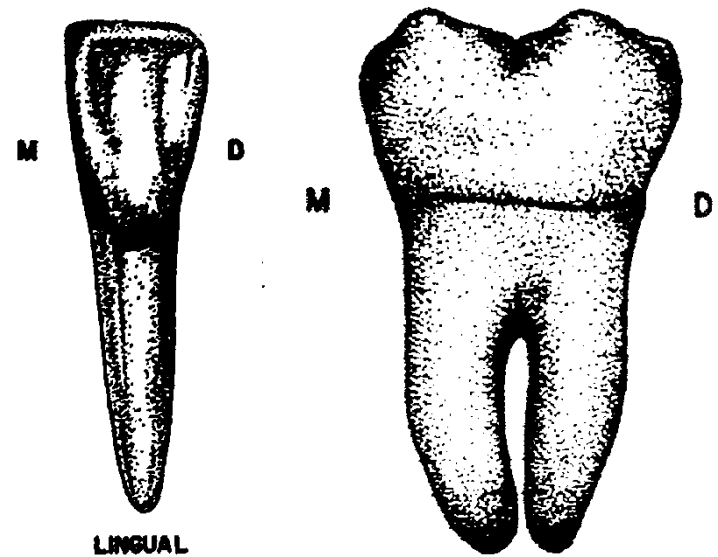


Lingual

lower

(tongue)

for mandibular teeth

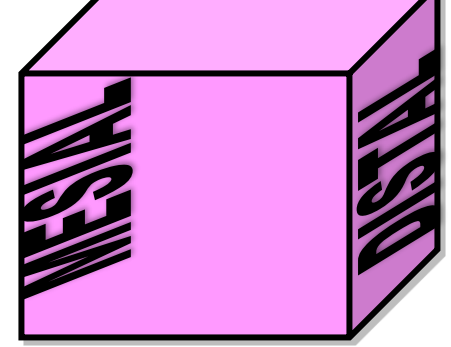




Proximal Surface

- **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

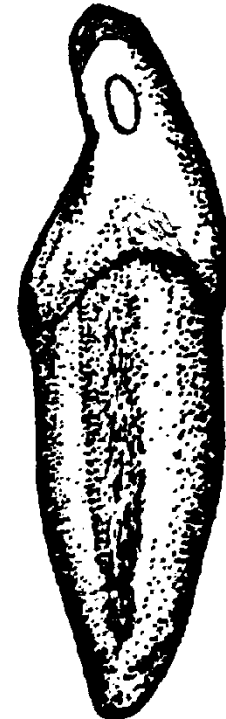
(toward midline)



MESIAL

Distal

(away from midline)



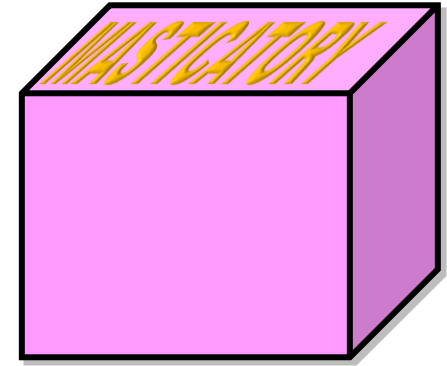
DISTAL

for all the teeth

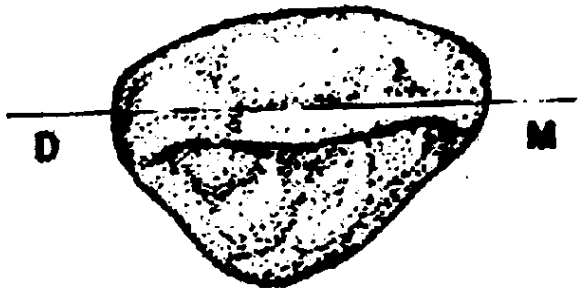
Masticatory Surface

- 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

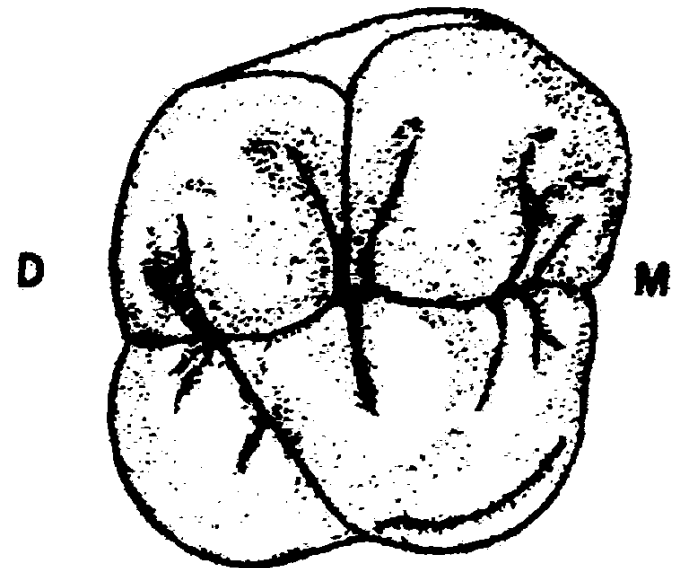


Incisal



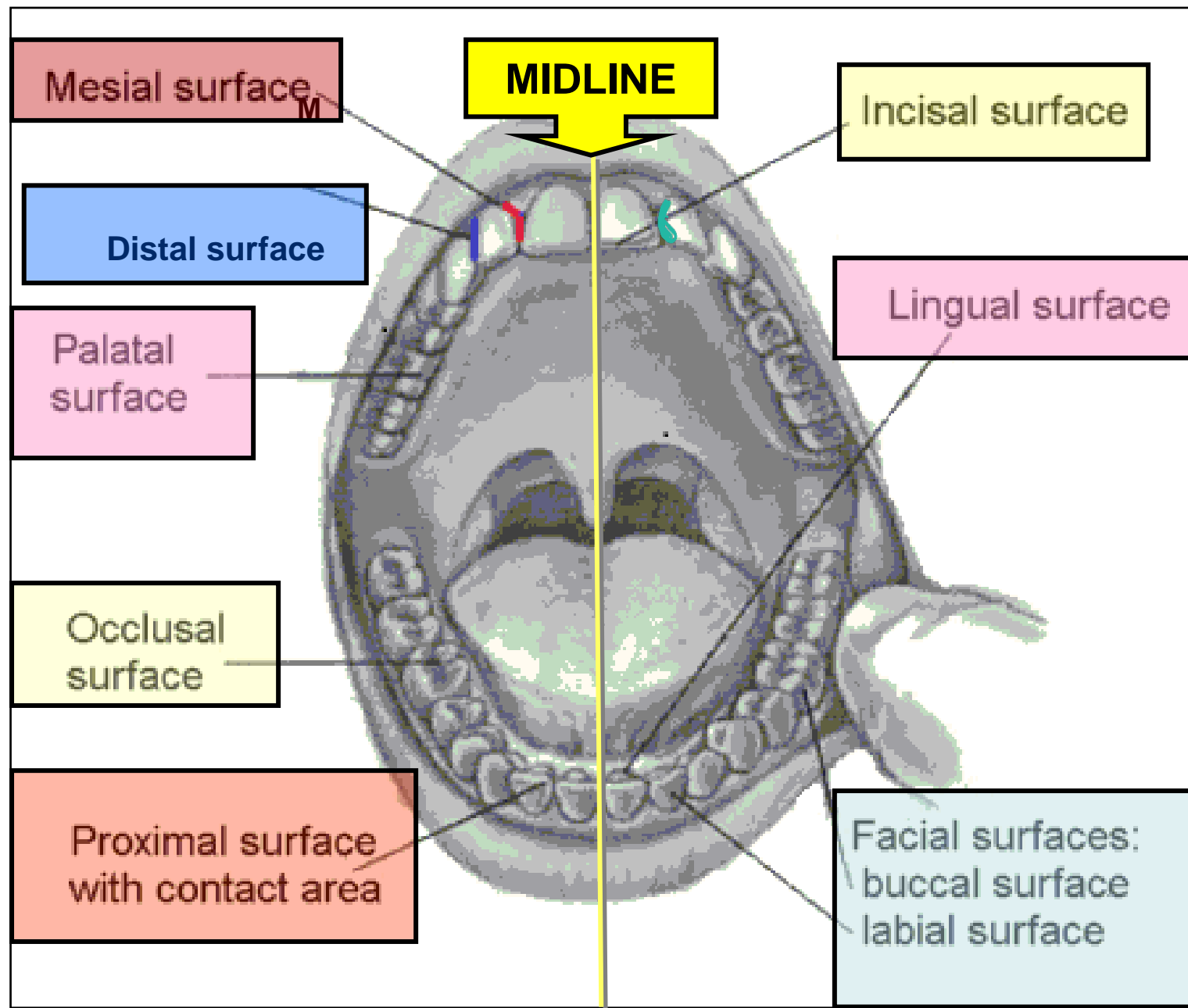
For anterior teeth

Occlusal



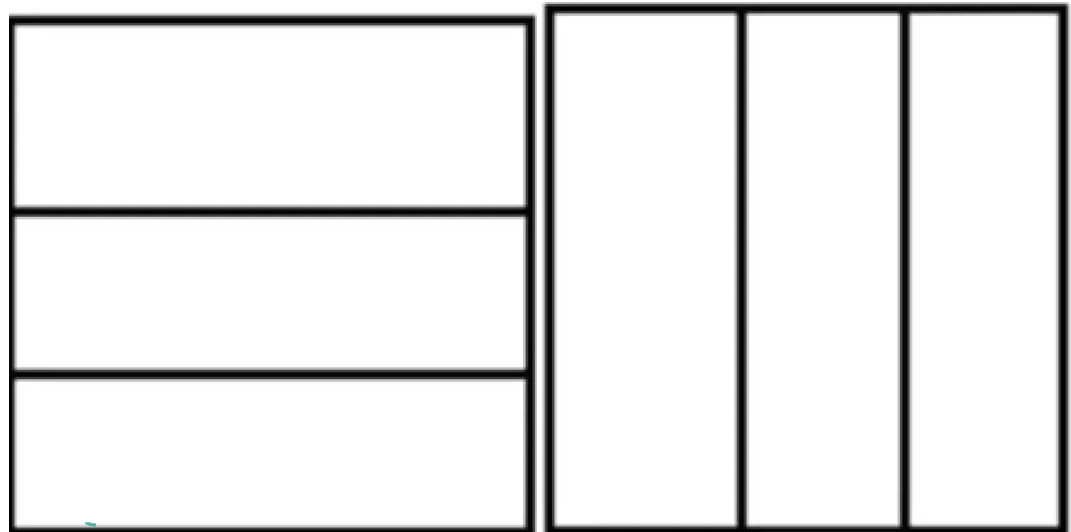
For posterior teeth

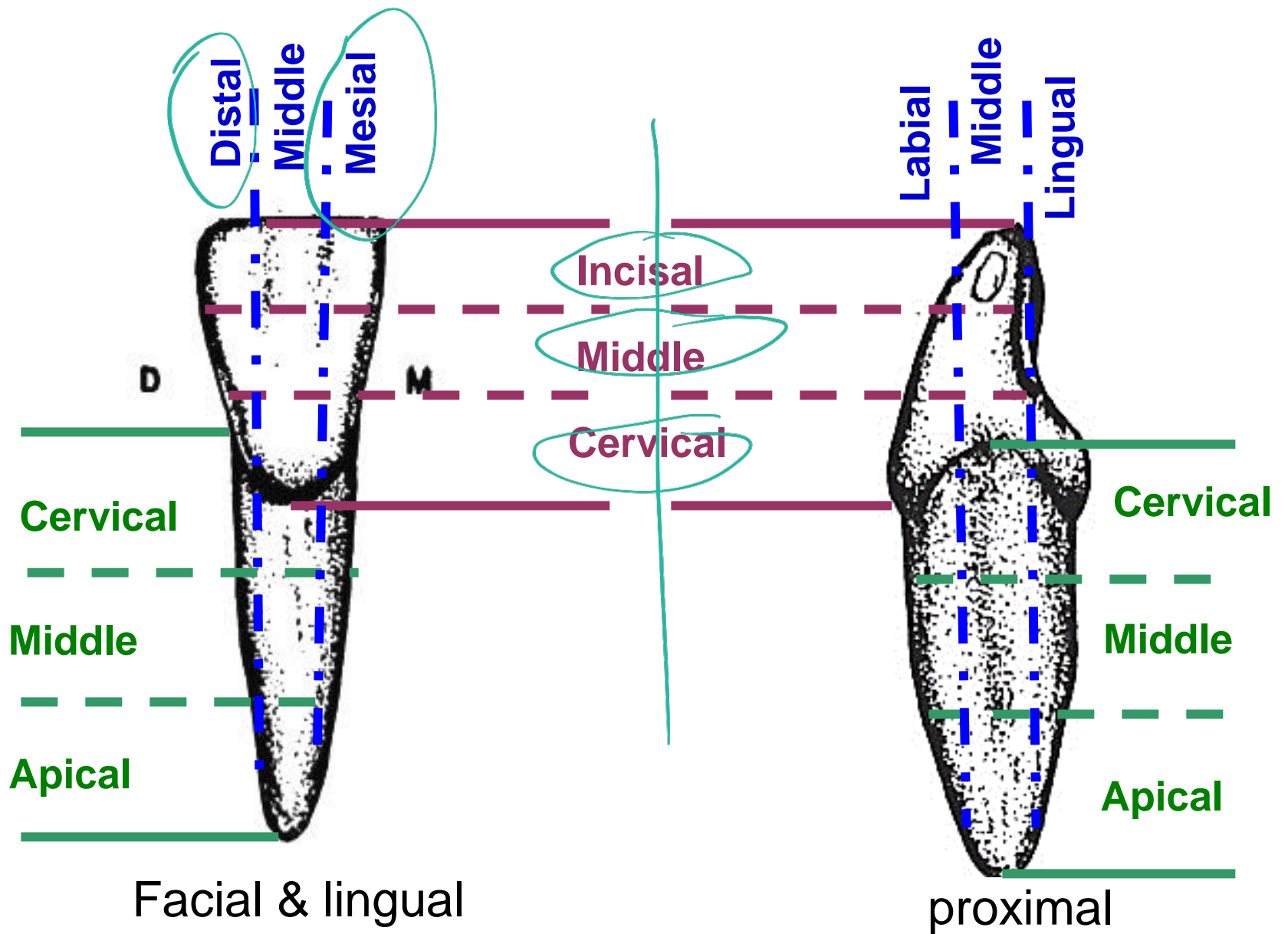
- The surfaces are identified by the relationship to other orofacial structures.



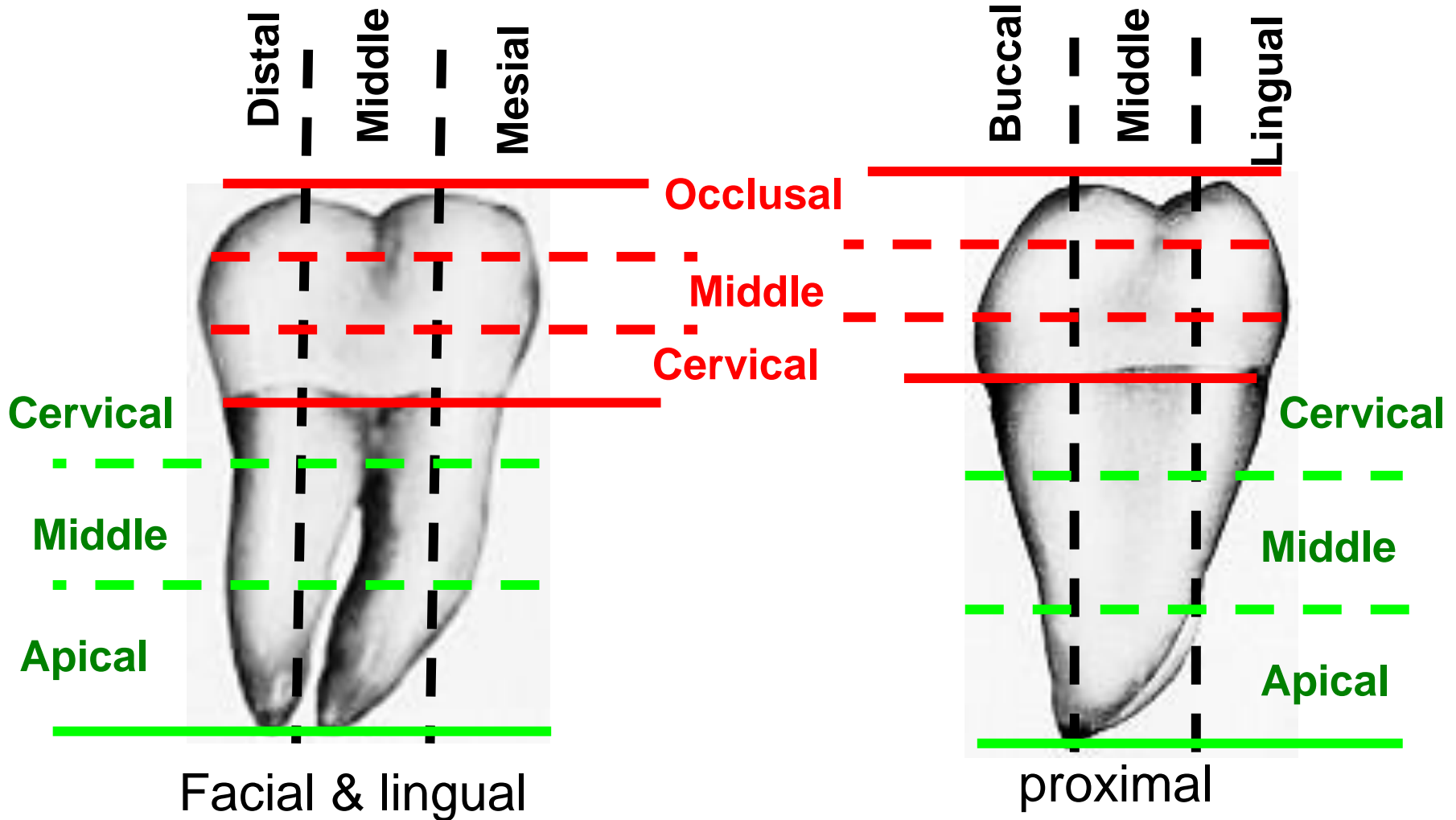
Division of surfaces Into Thirds

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



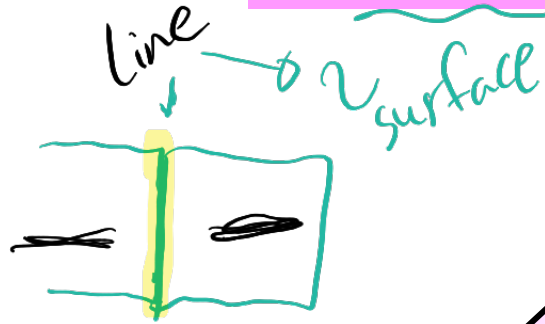


For anterior teeth

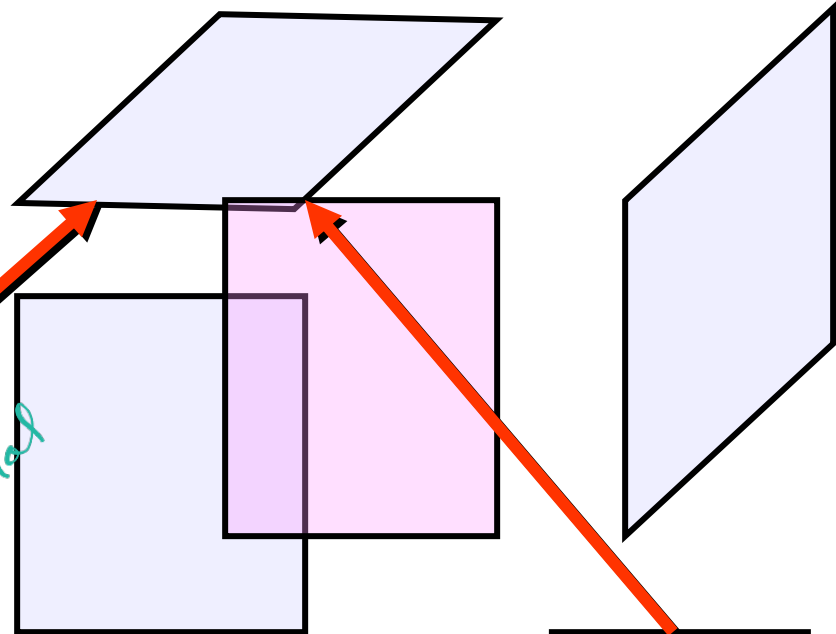
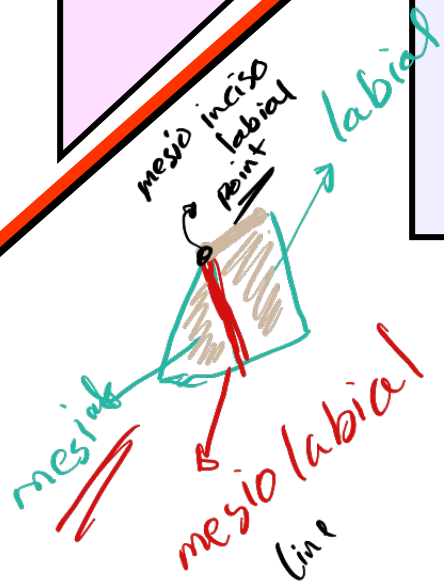


For posterior teeth

Line & Point Angles



**Line
angle**



**Point
angle**

Incisal Edge

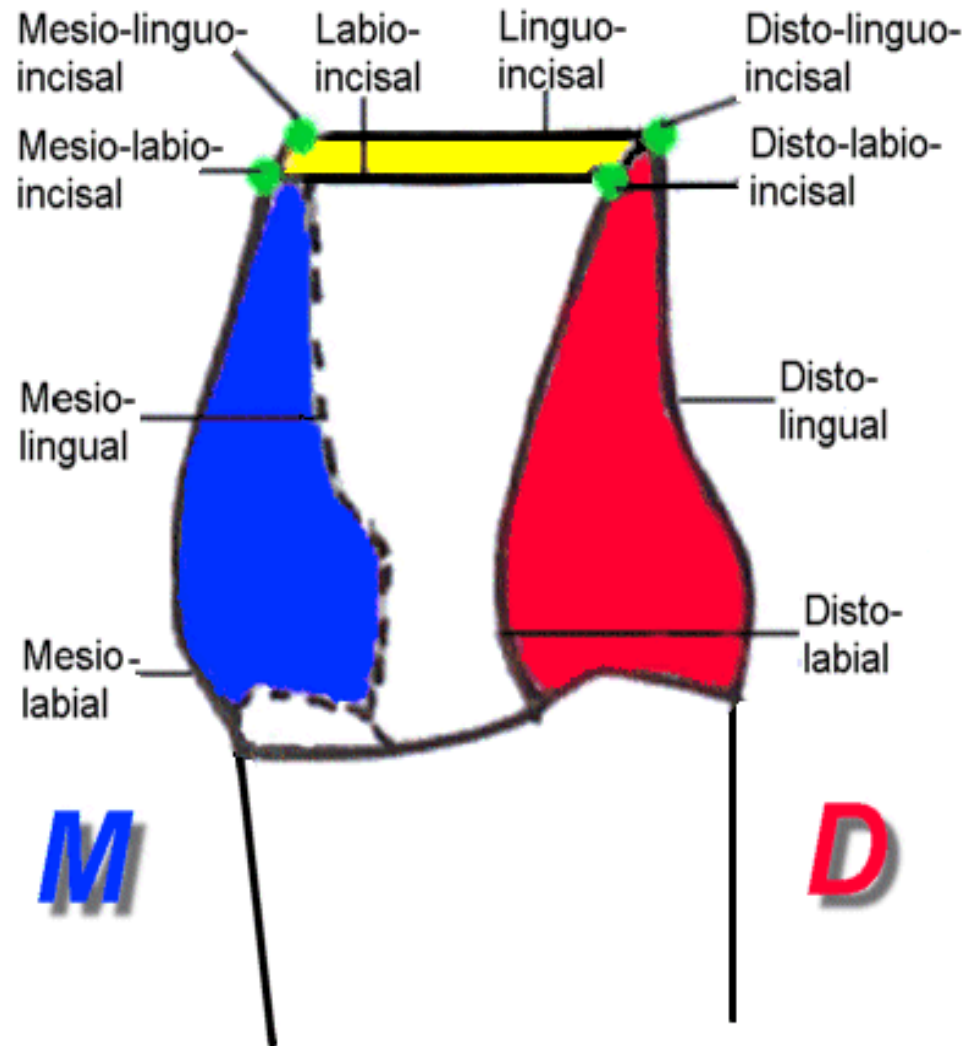
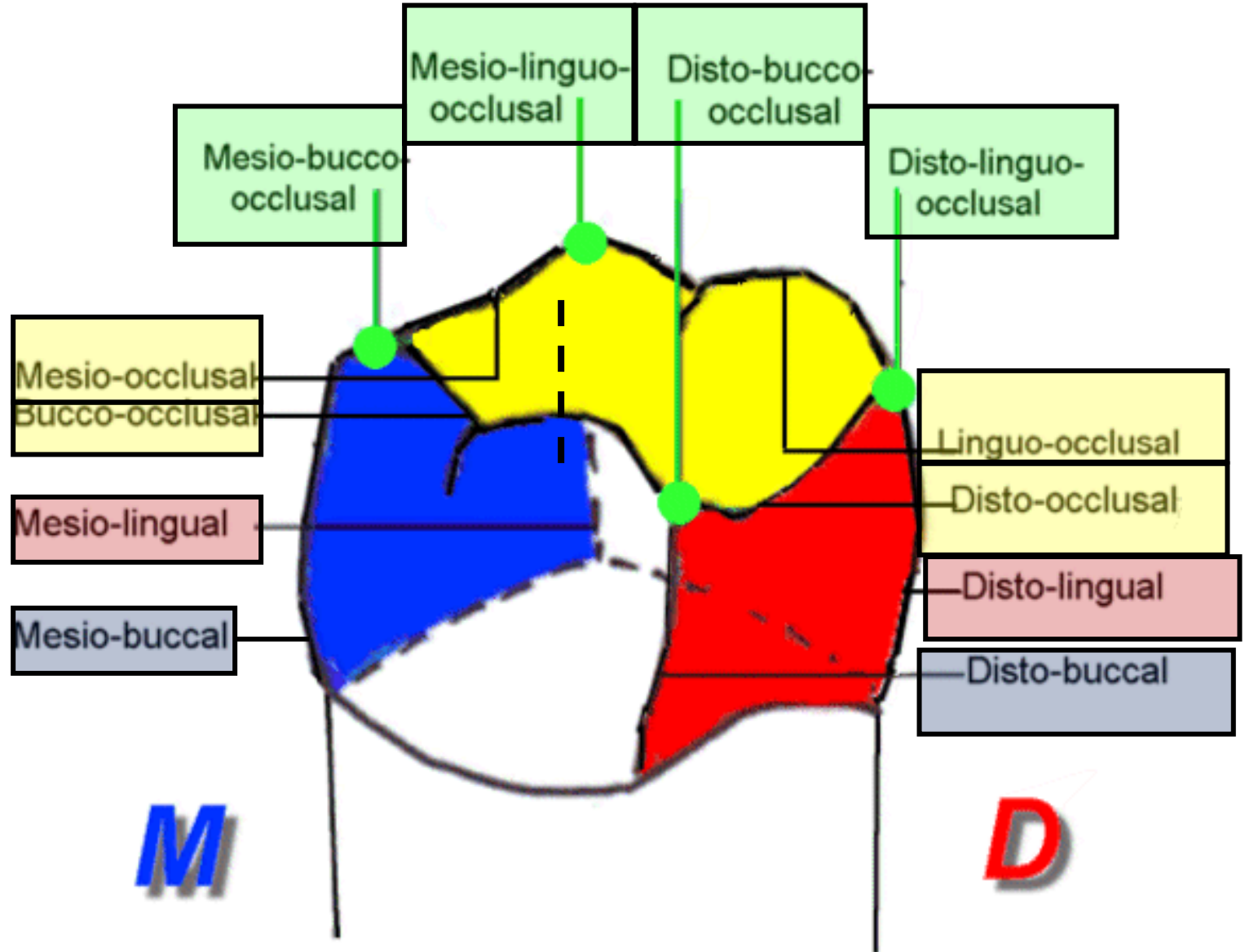


Fig. 9: Line and point angles of anterior teeth.



Line and point angles of posrterior teeth



Anatomical Landmarks Of The Crown

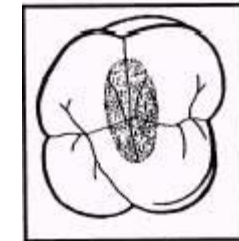
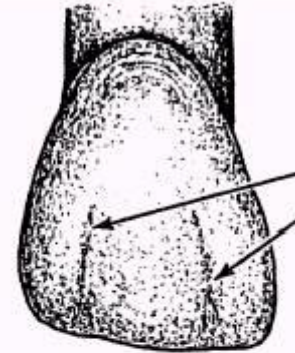
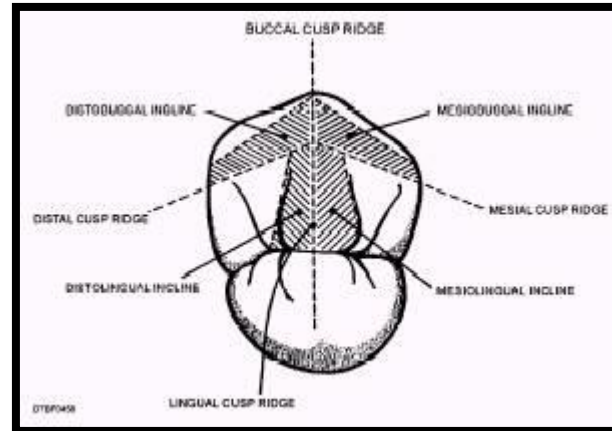
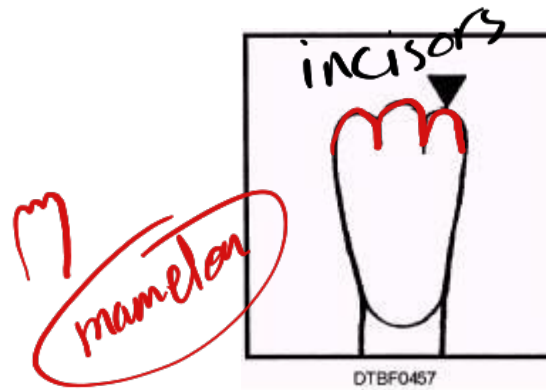
Elevation

Depression

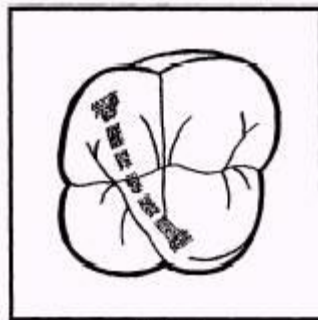
Surface anatomy

- Each elevation and depression is described based on its:

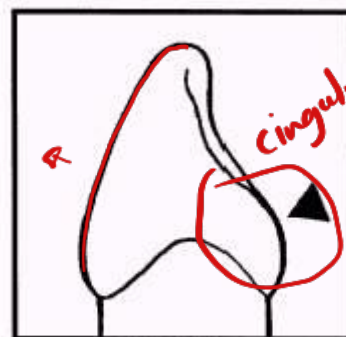
location, shape & function.



MAXILLARY MOLARS



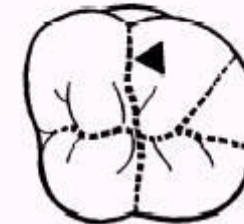
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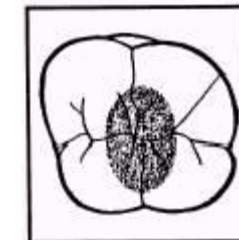
DTBF0449



DTBF0448



DTBF0454



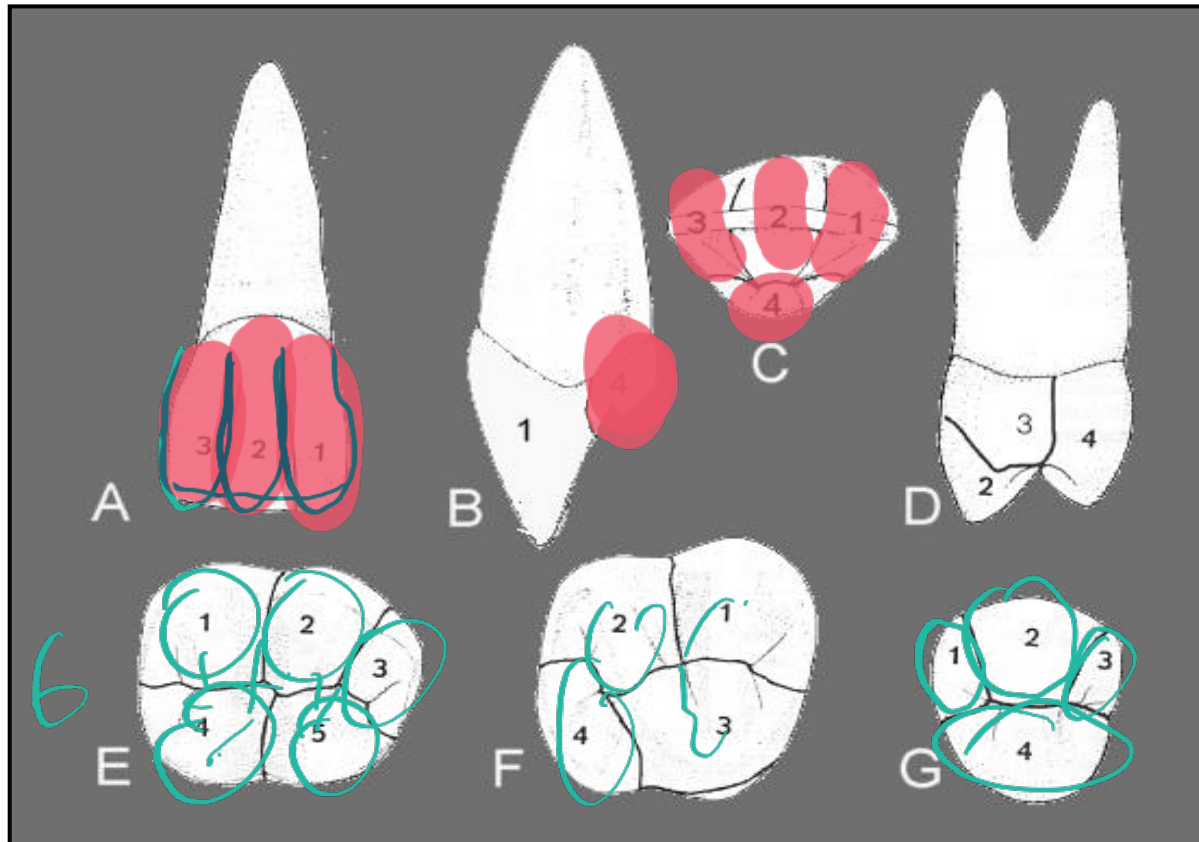
MANDIBULAR MOLARS

DTBF0451

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**.



incisor 5 + Canine
✓
anterior
↓
3 labial lobe
+
1 cingulum lobe

Tooth Development From Lobes

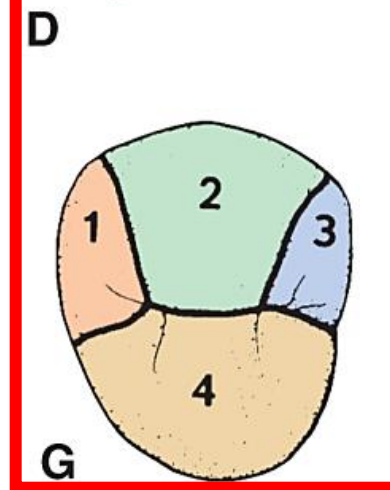
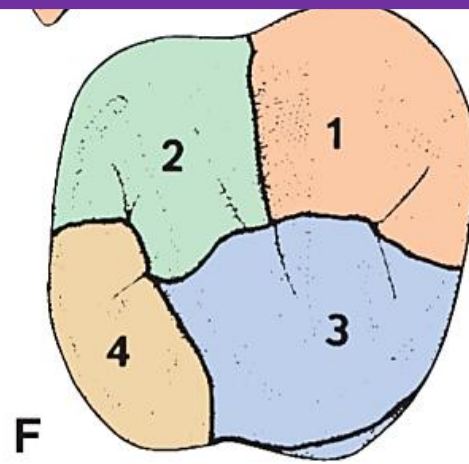
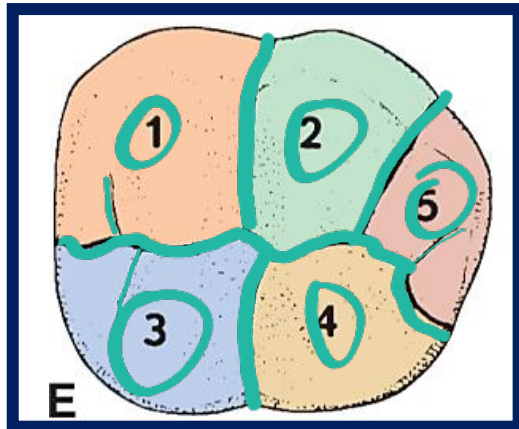
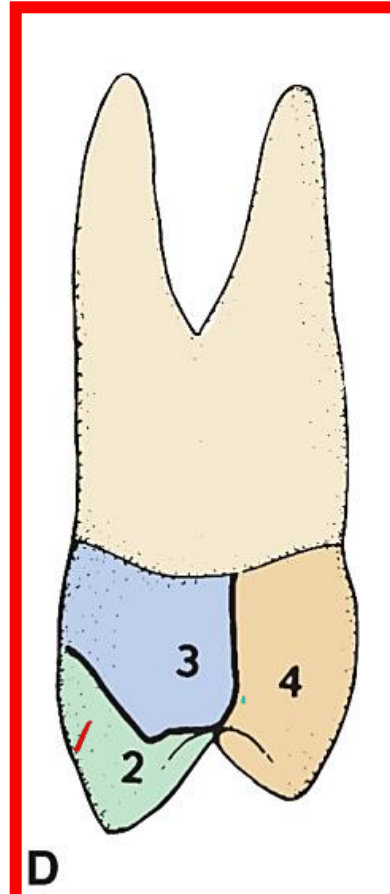
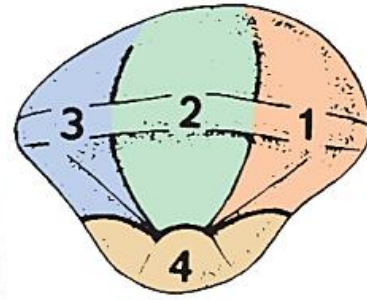
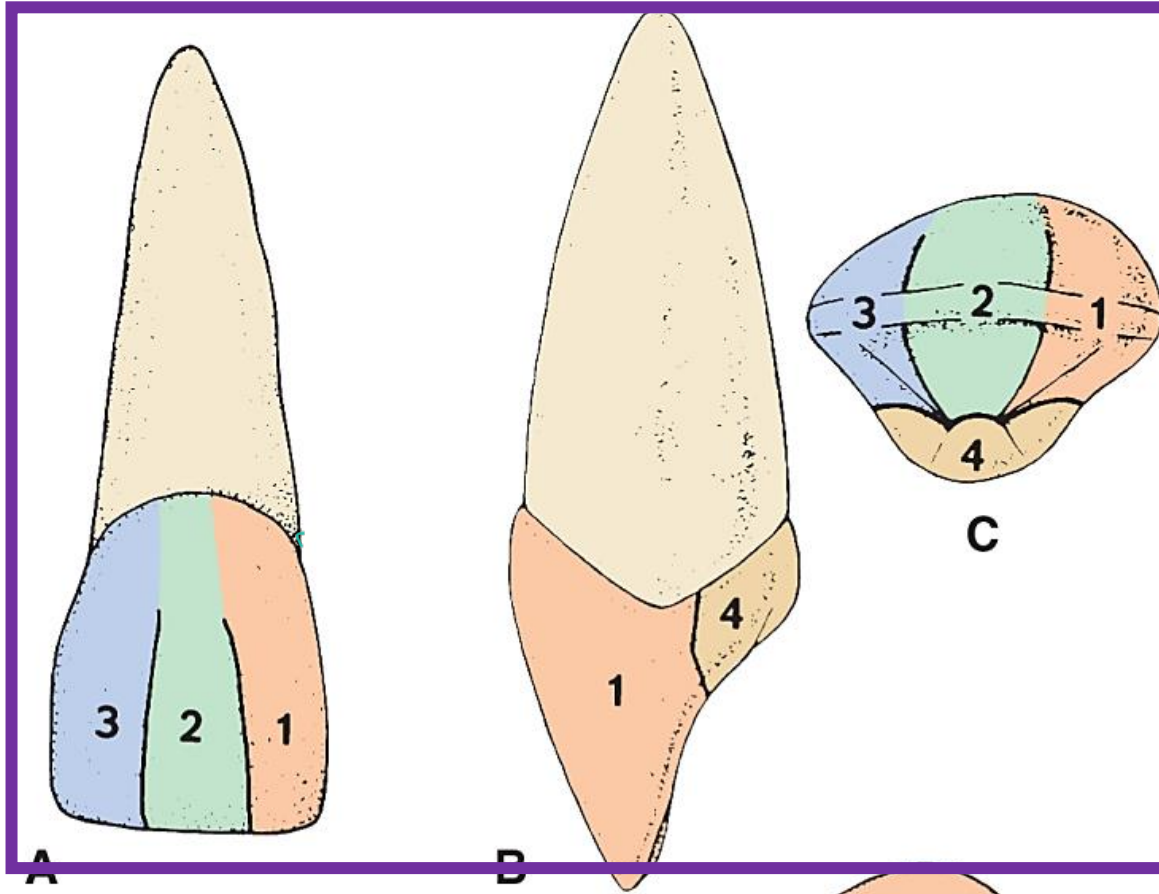
- As a general rule:

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

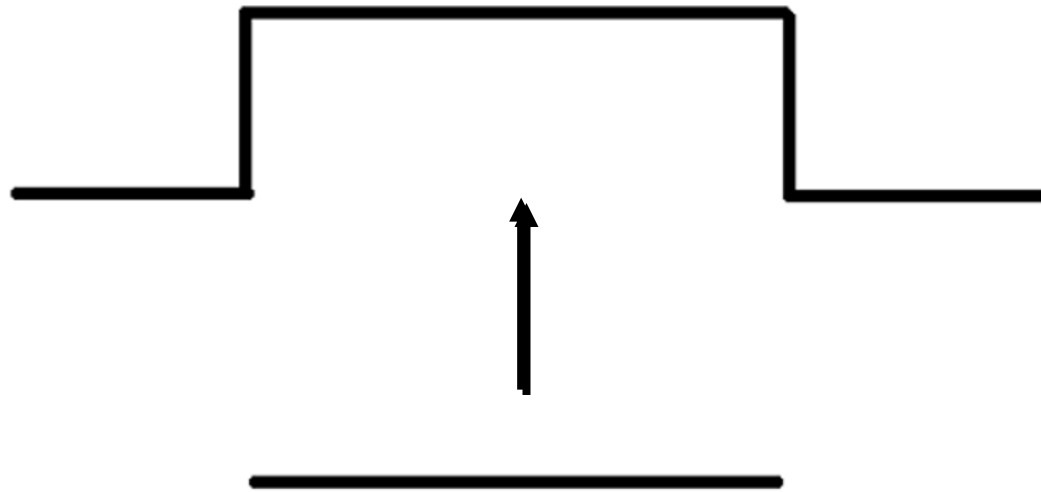
2-Premolars are developed from **four lobes** except the **lower 2nd premolar** may be developed from 5 Lobes.

3- Each molar cusp is developed from one Lobe.

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



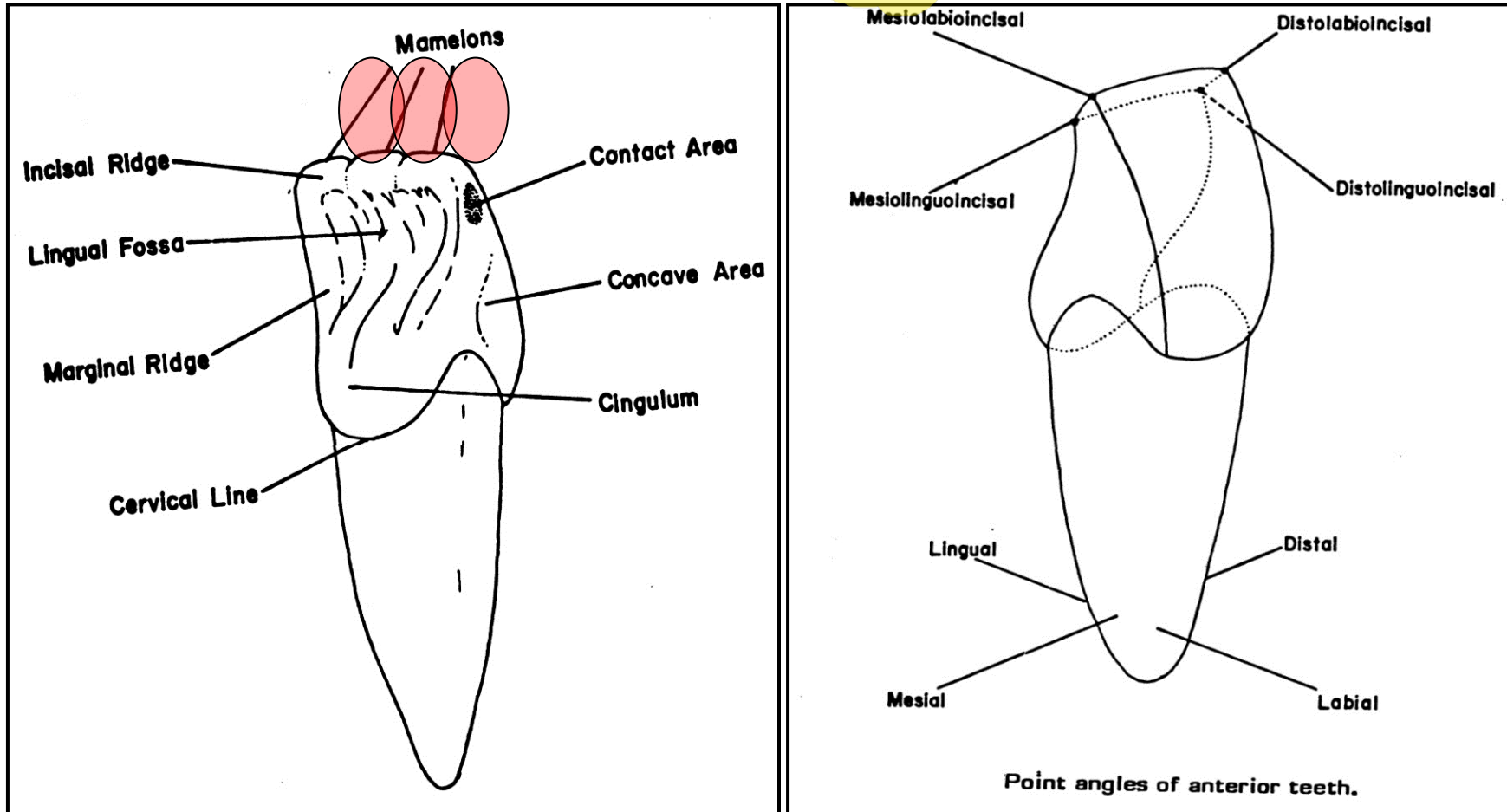
A - Crown Elevations



A - Crown Elevations

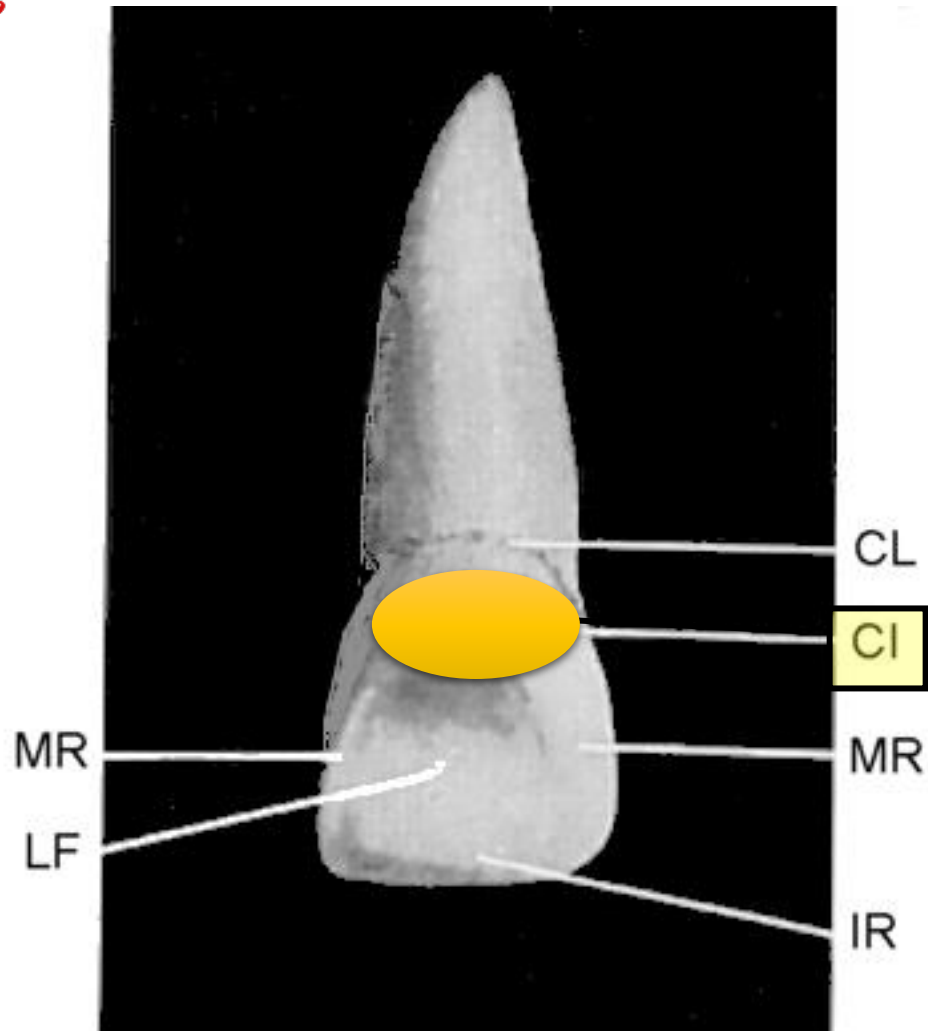
1- Mamelons

- 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

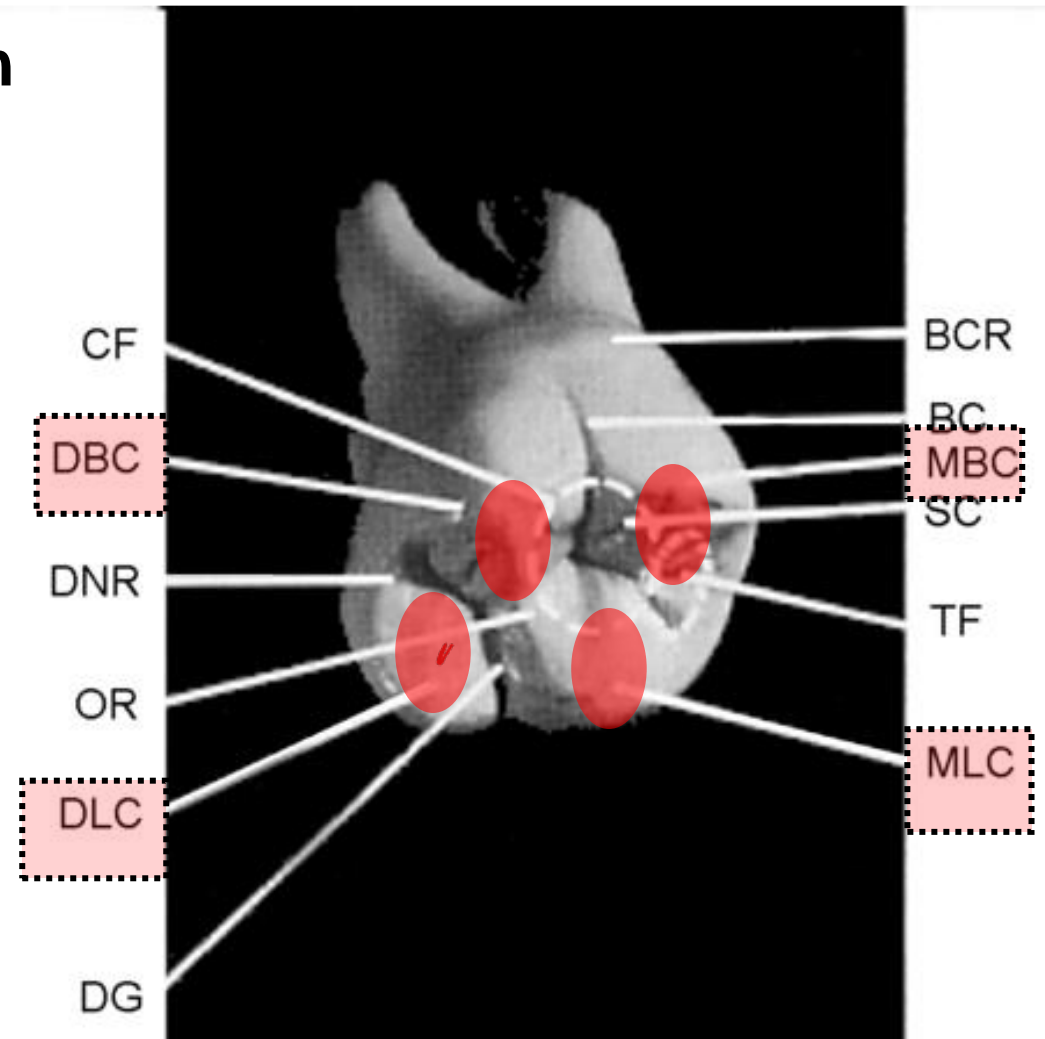
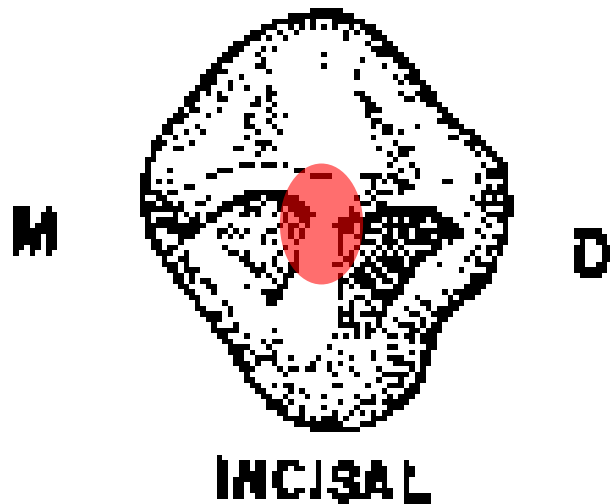
- It is the enlargement or bulge on the cervical 1/3 of lingual surface of the crown in anterior teeth (incisors and canines).



3- Cusps

قرومي

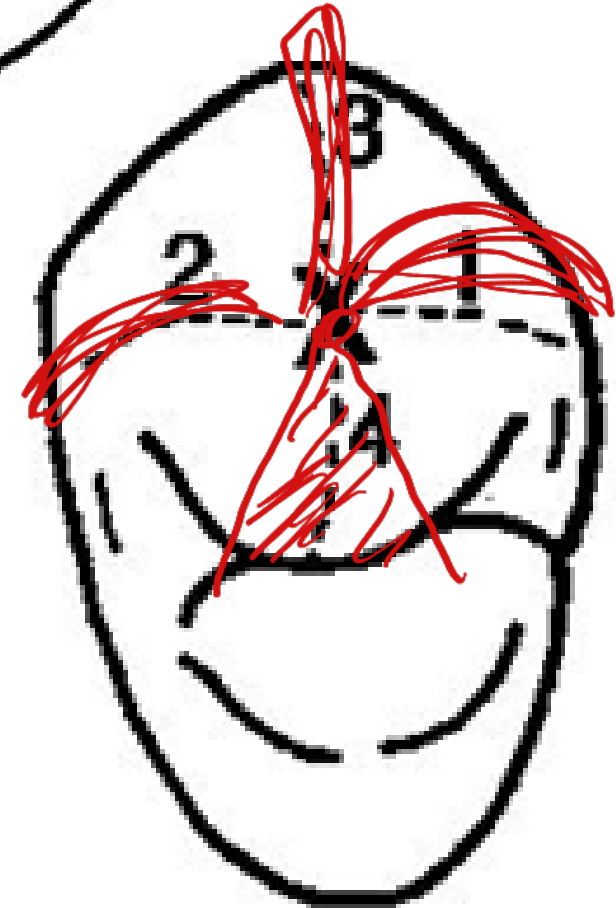
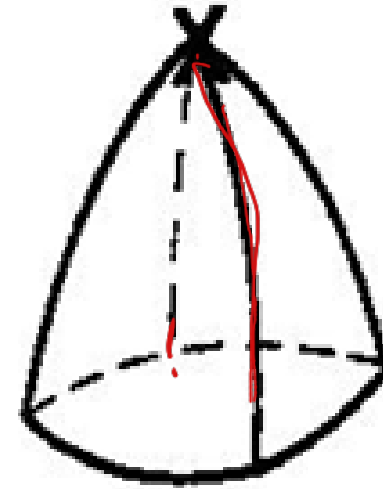
- They are pyramidal projections on the incisal portion of the **canine** and on the occlusal surfaces of the **premolars** and **molars** teeth.
- Each cusp is **named** according to its **location** on the tooth



- Each cusp tip has **four cusp ridges** converging toward it.

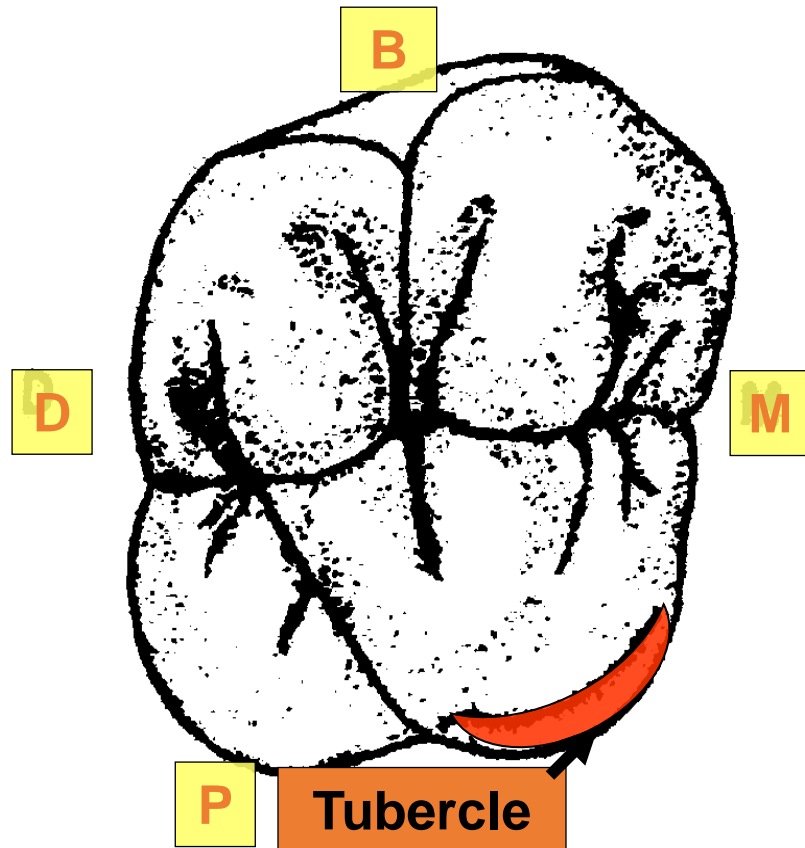
Example: The buccal cusp of lower first premolar has 4 ridges:

- 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.



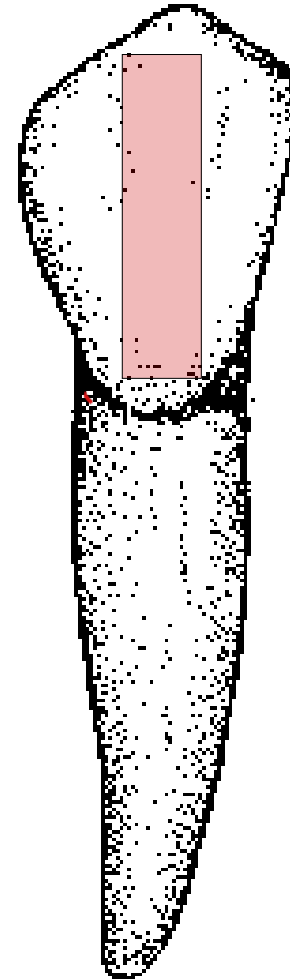
5- Ridges

- 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**.



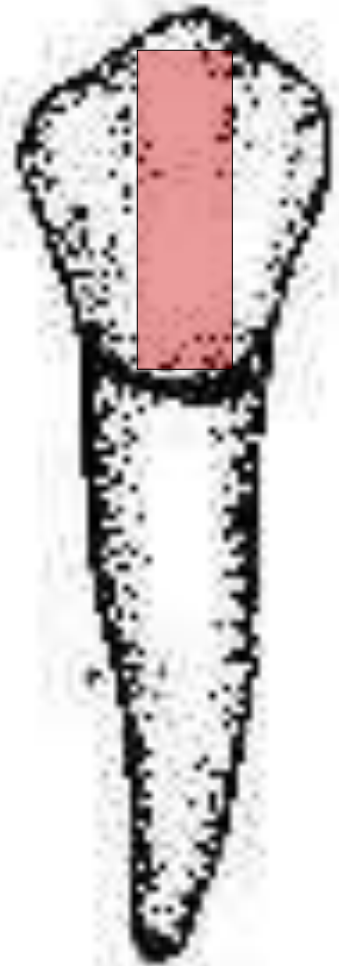
5- Ridges

- 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**.



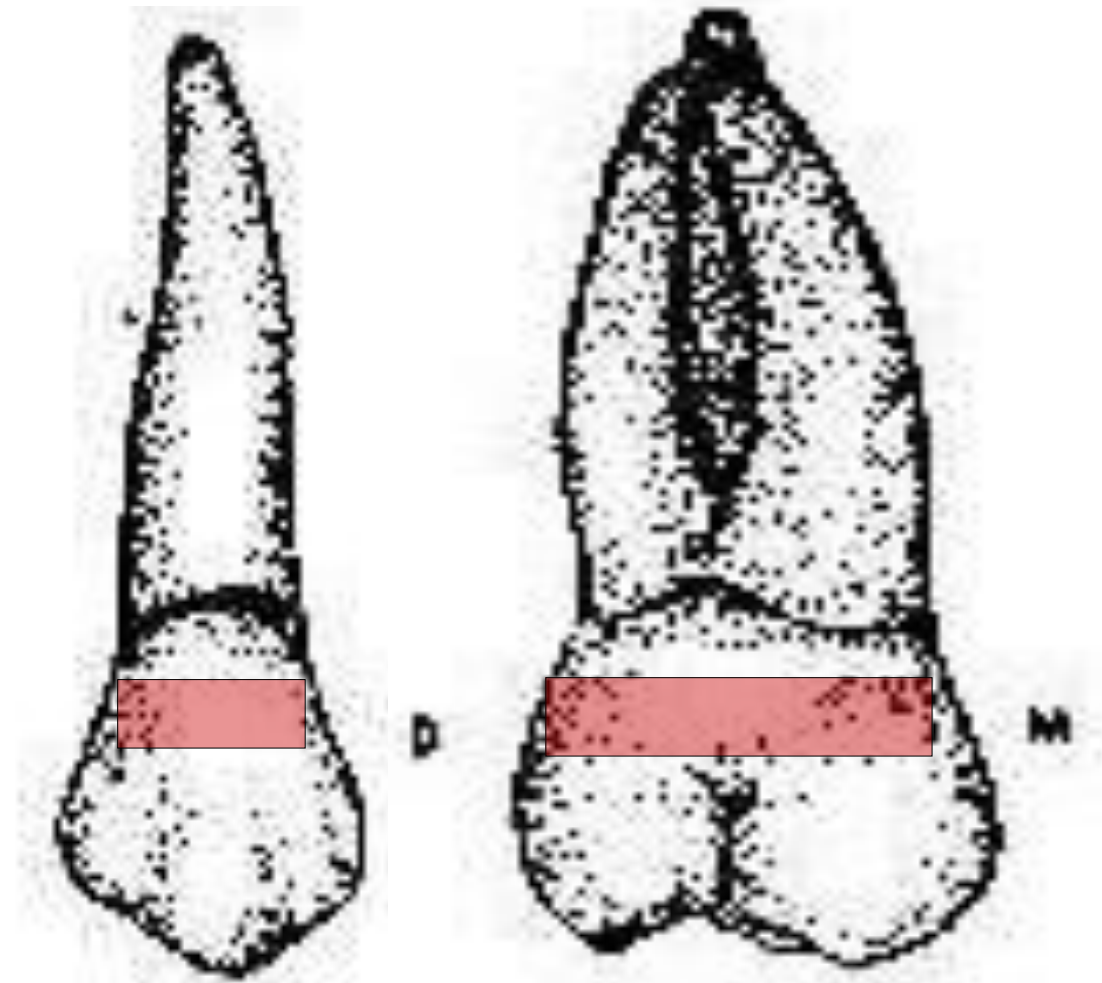
5- Ridges

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

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

3- Cervical Ridge

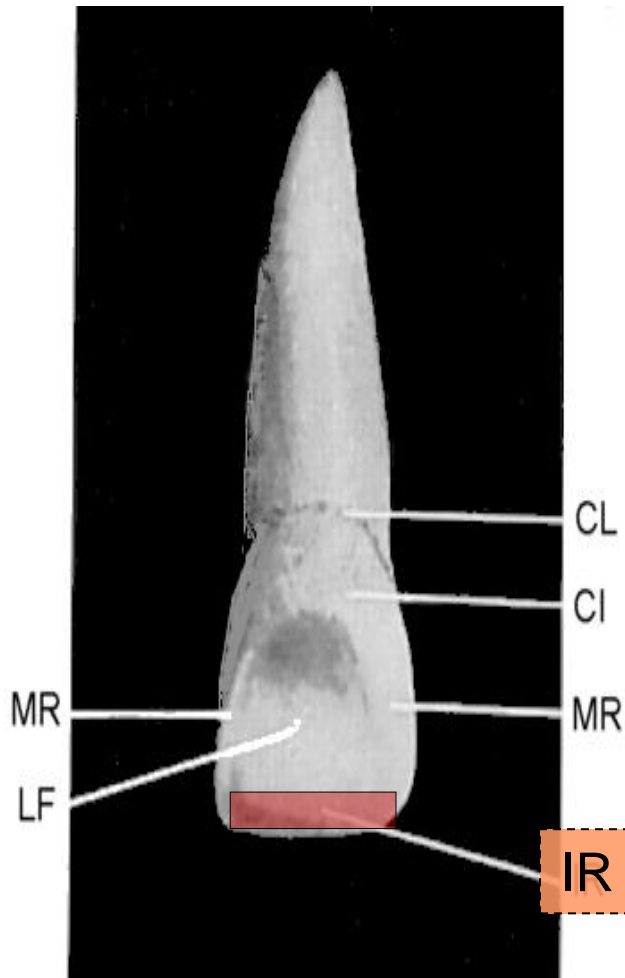
- It is a ridge running **mesiodistally** on the **cervical third** of the facial surface of all teeth.



B- Ridges on the lingual surface

Incisal Ridge

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

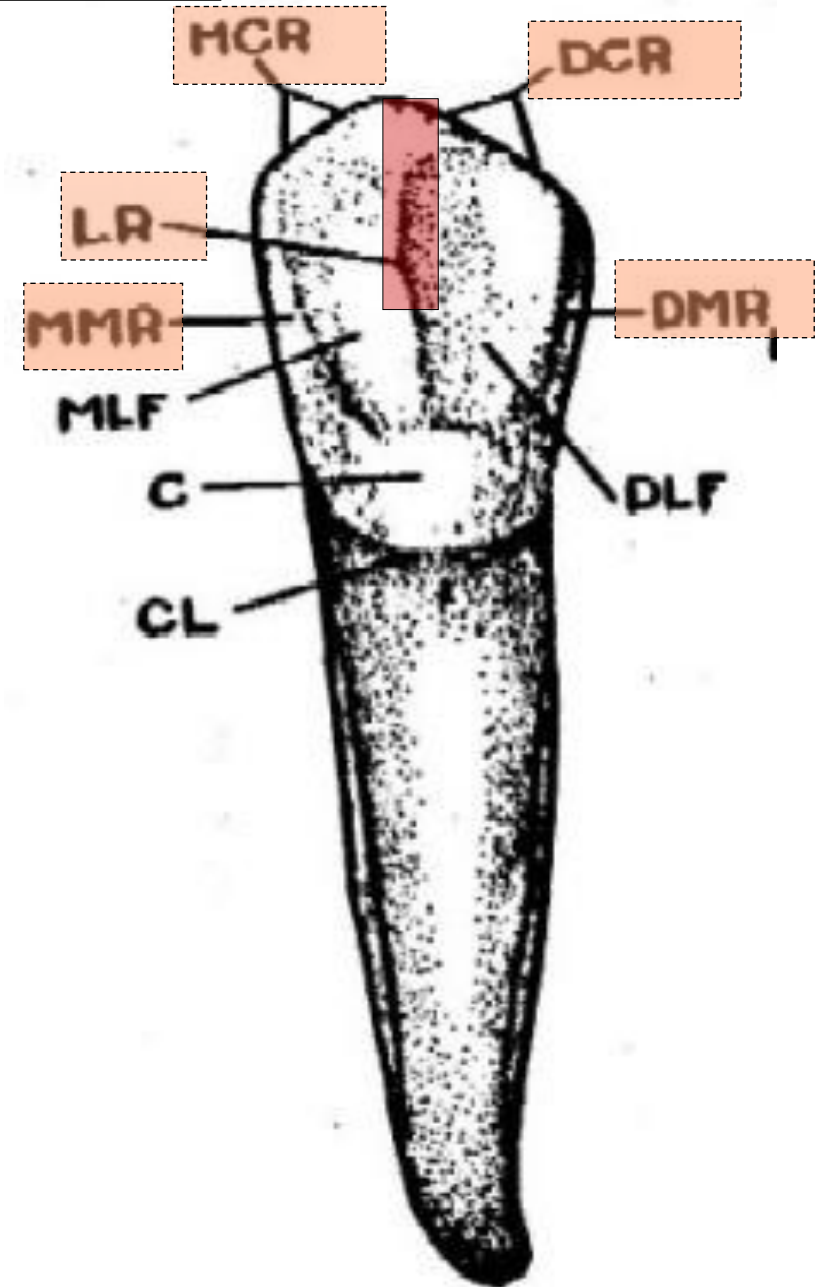


Cusp Ridge

Lingual Ridge

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

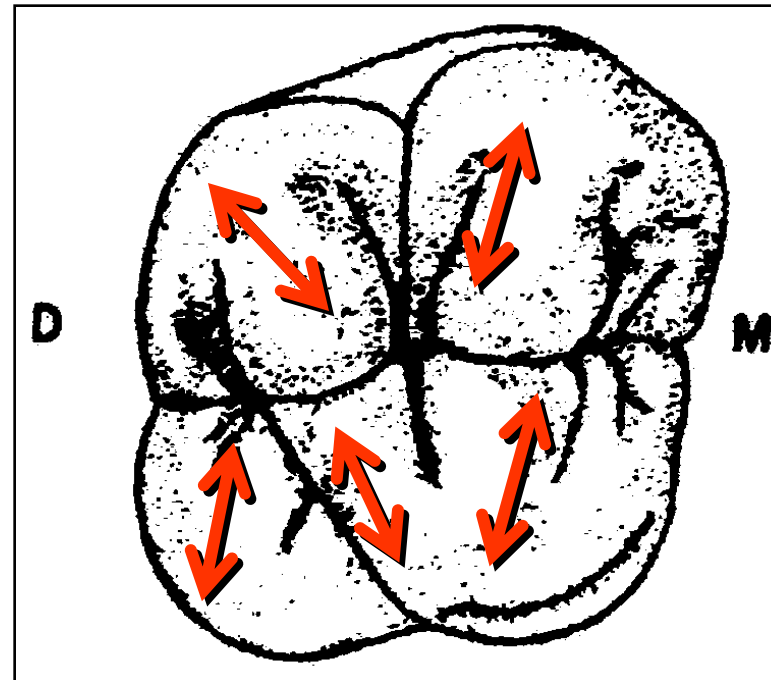
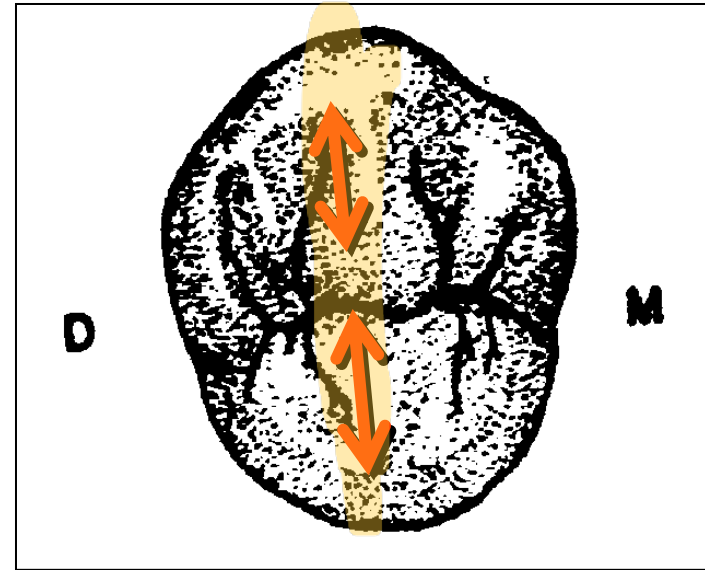
Marginal Ridge



C- Ridges on the occlusal surface of posterior teeth

Triangular Ridges

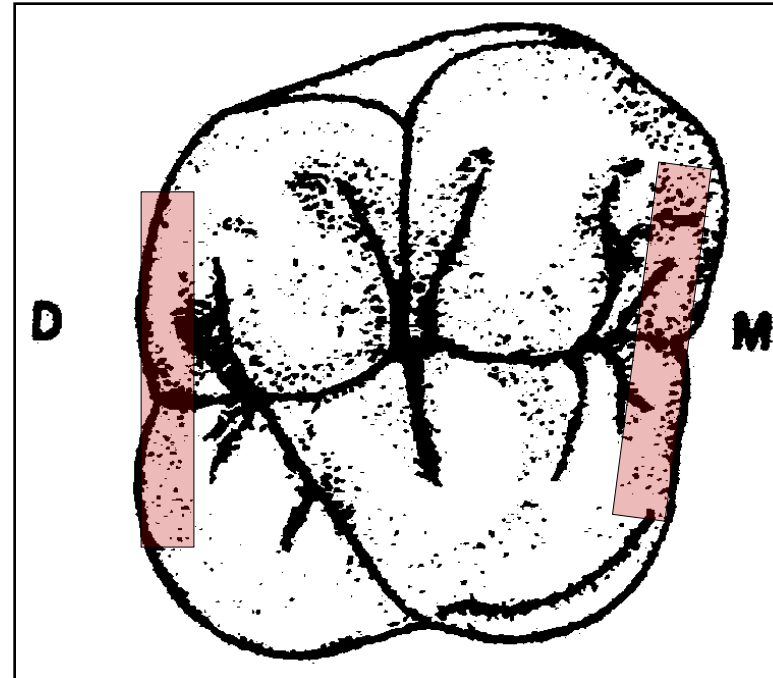
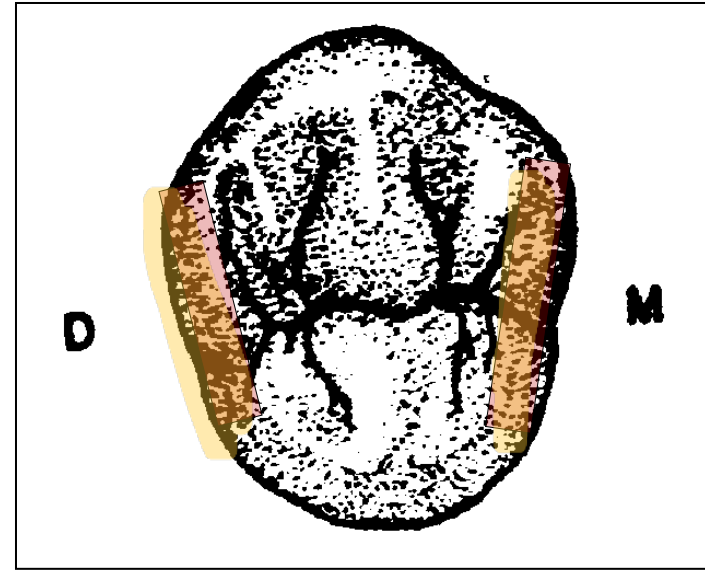
- Located **on each cusp** of posterior teeth.
- Each triangular ridge extends from a cusp tip toward the middle of the occlusal surface Bucco-lingually.



C- Ridges on the occlusal surface of posterior teeth

Marginal Ridges

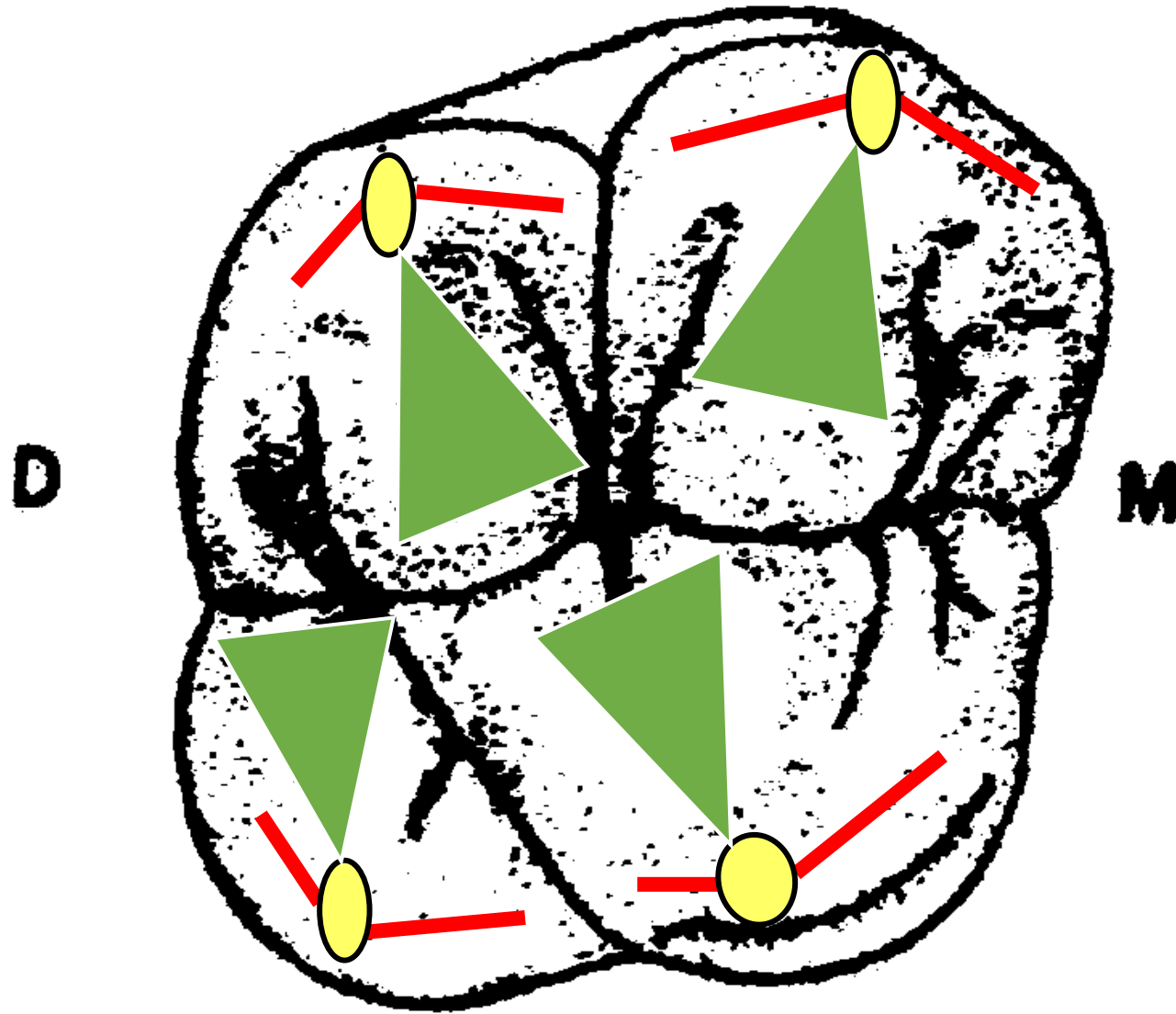
- It is a linear round elevation which terminates on the mesial and distal borders of the **lingual surface on anterior** teeth and converge toward the cingulum.
- **On posterior teeth** it is located on the mesial and distal borders of the occlusal surface.



Cusp Tip

Cusp Ridges

Triangular R.



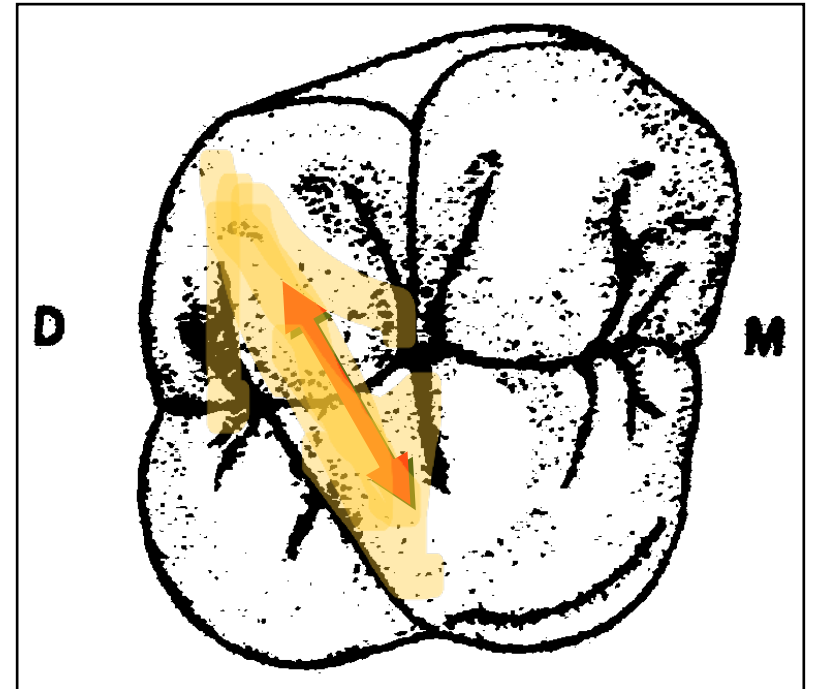
Transverse ridge

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

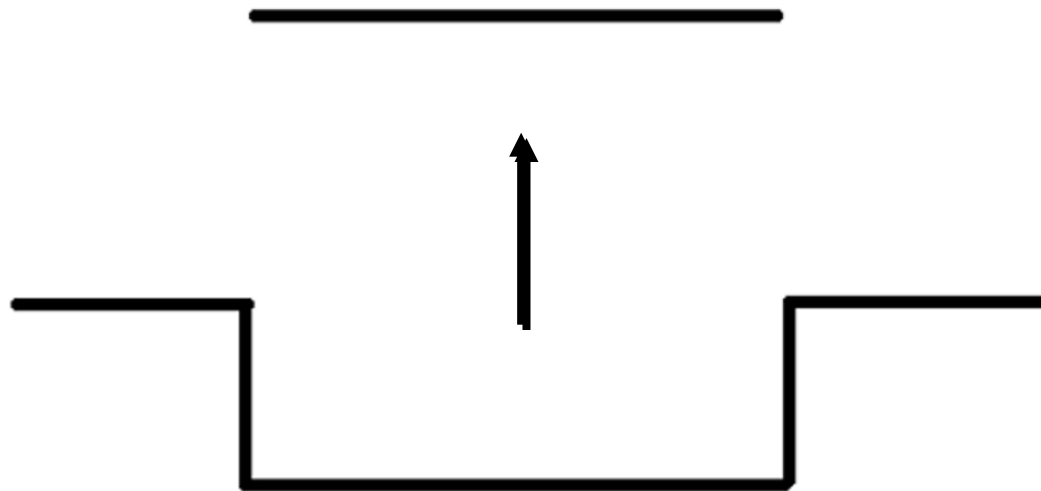


Oblique Ridge

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



B - Crown Depressions

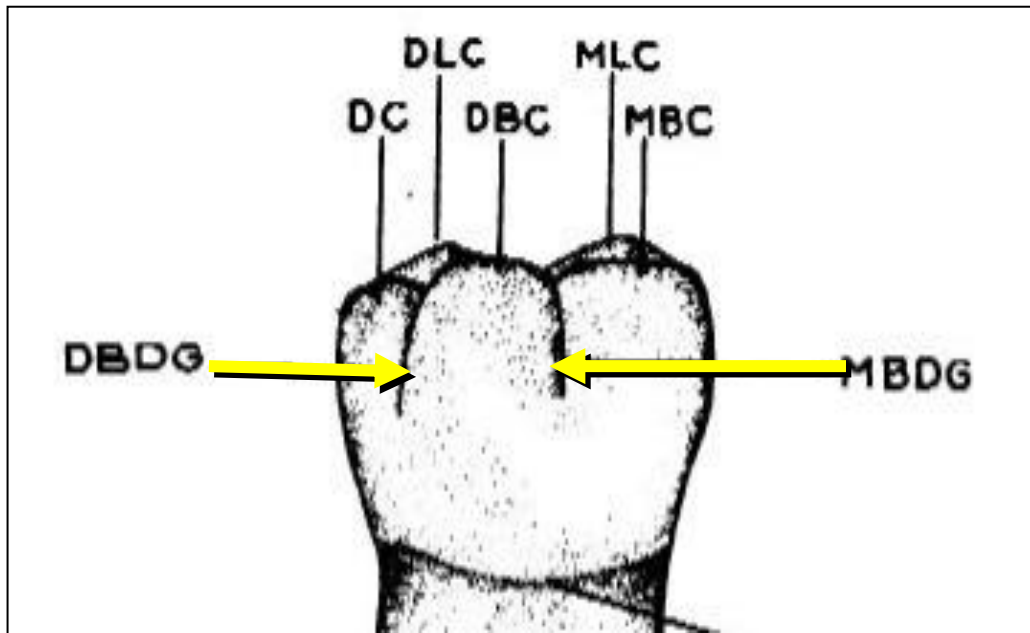
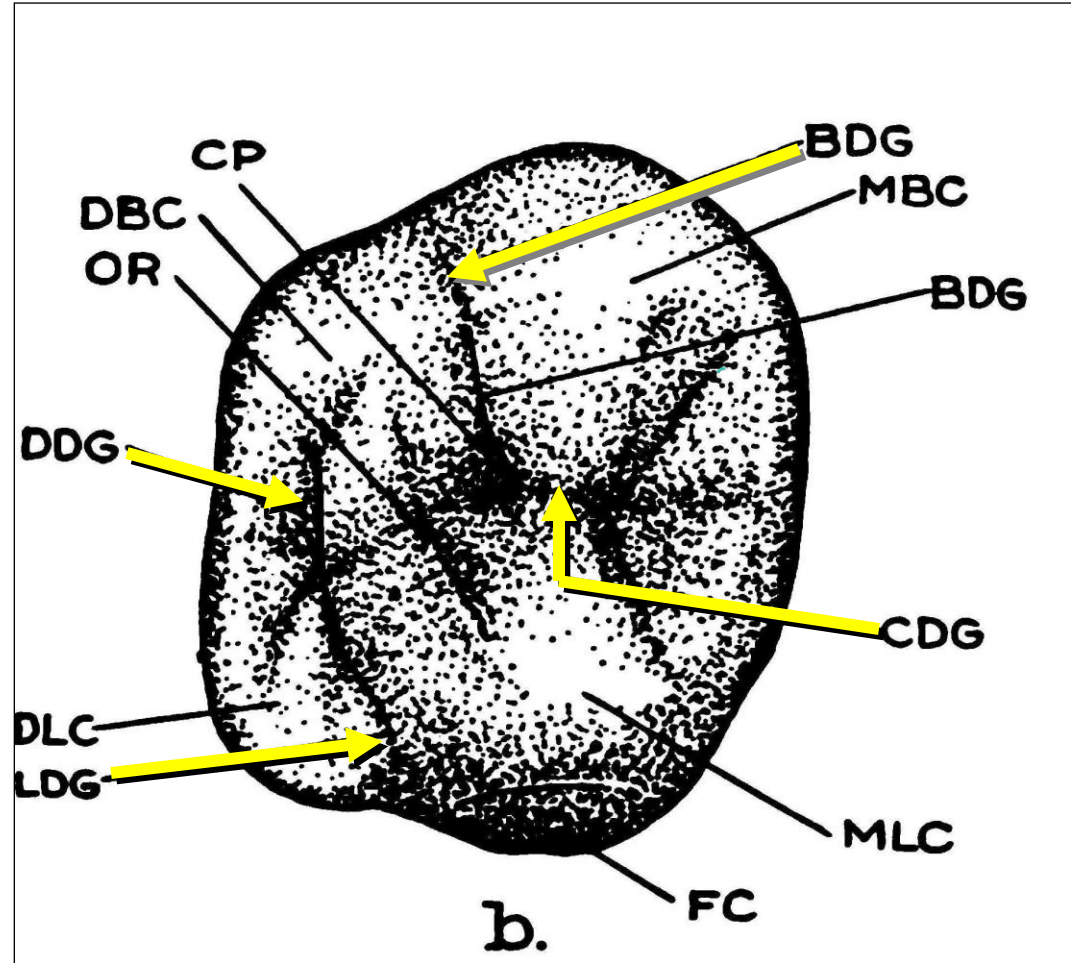


B- Crown Depression

I- liner depressions

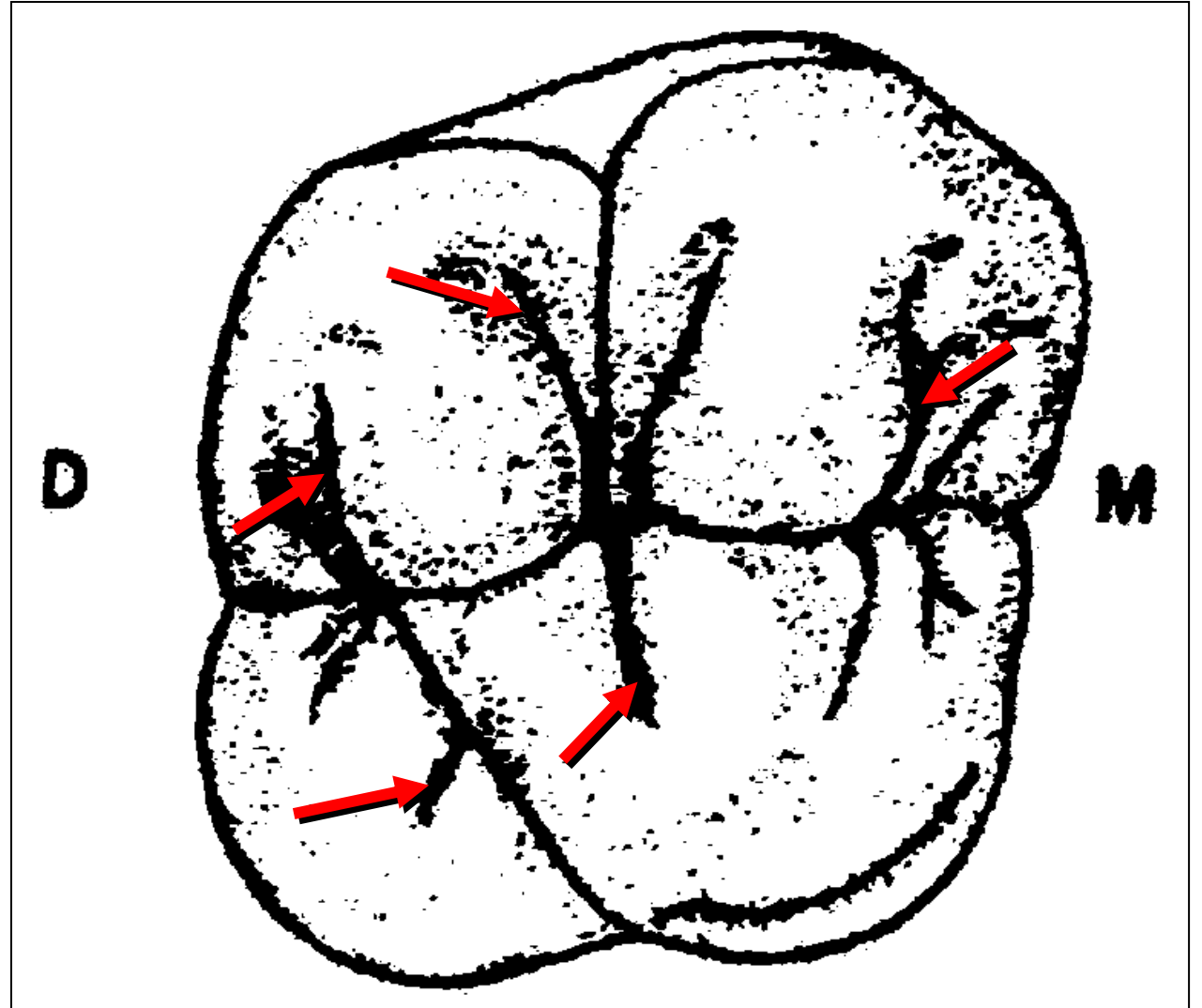
A. Developmental Grooves:

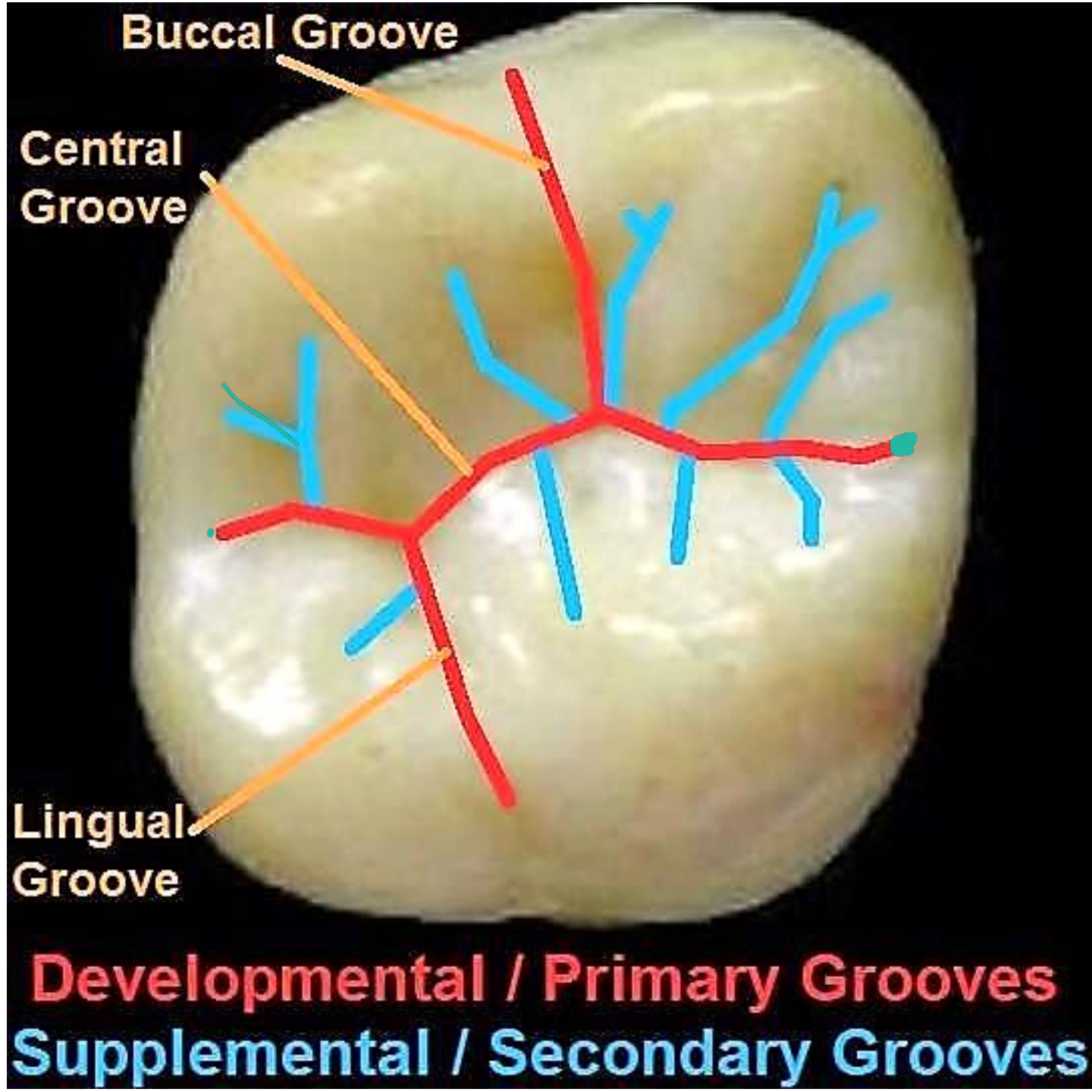
- It is a narrow linear depressions short or long formed during tooth development and usually separating the lobes or major portions of a tooth.



B. Supplemental Grooves:

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





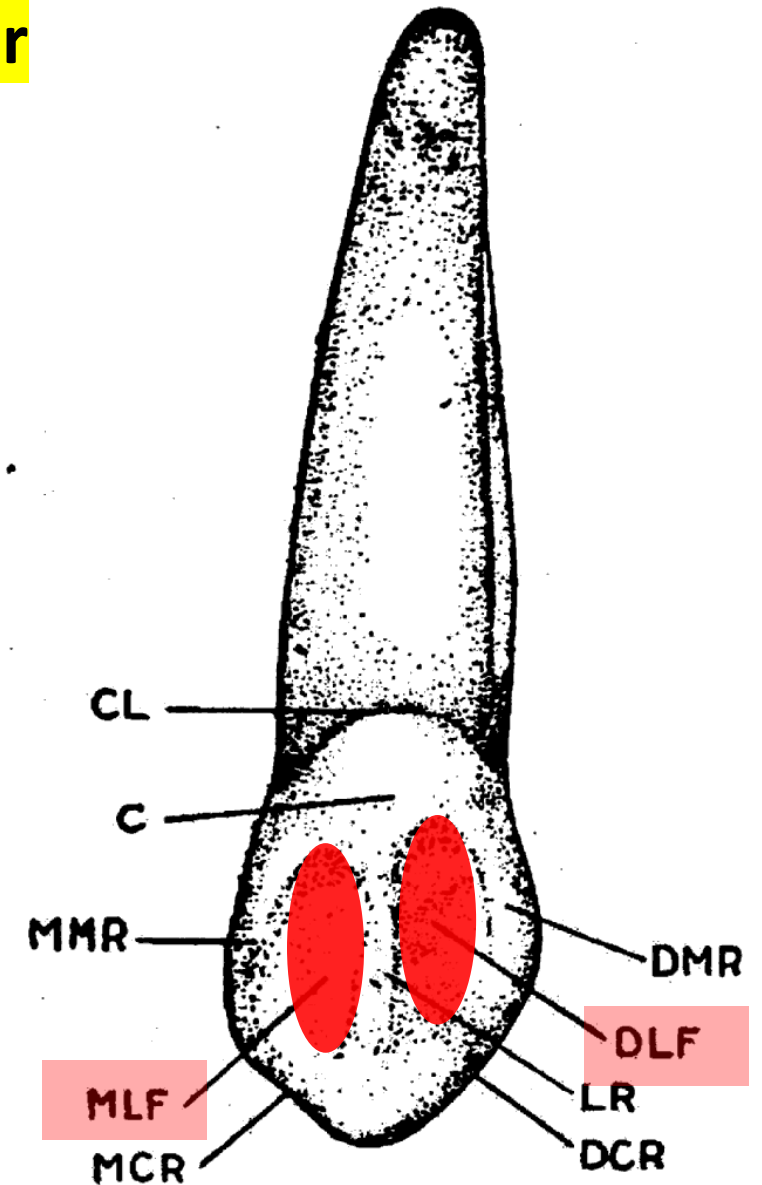
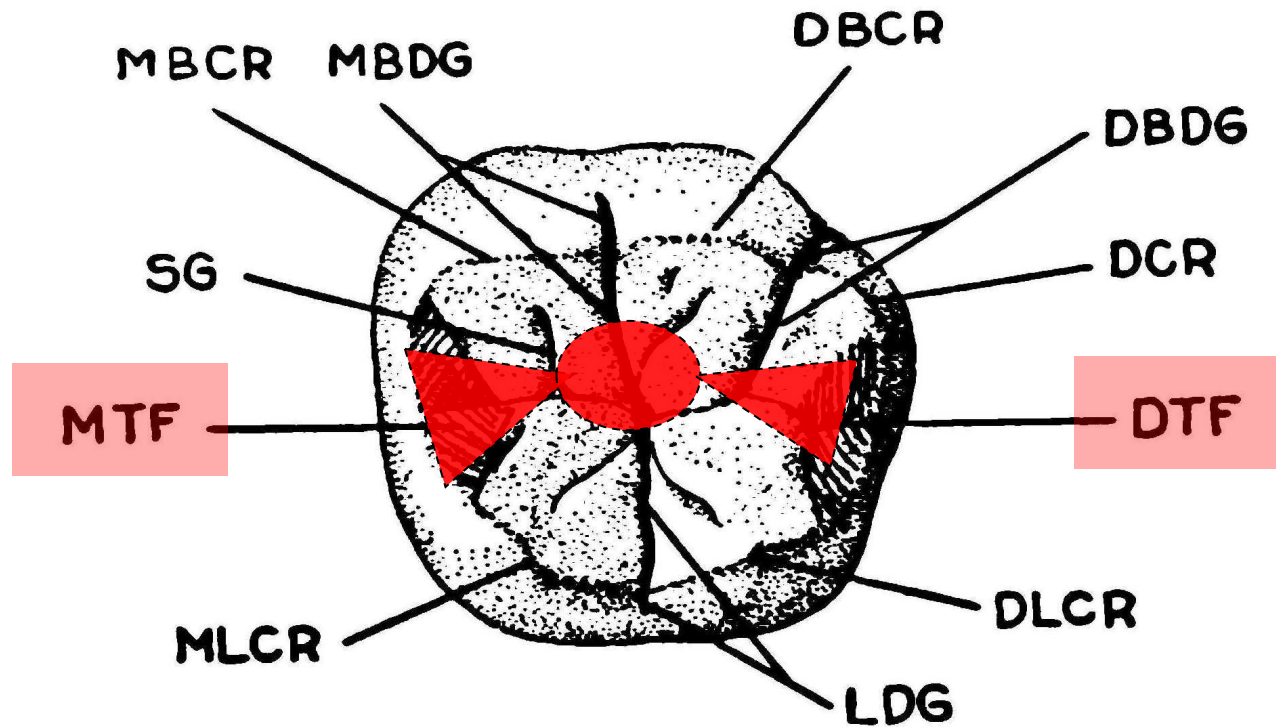
II- CIRCUMSCRIBED DEPRESSIONS

I- Fossa

Lingual

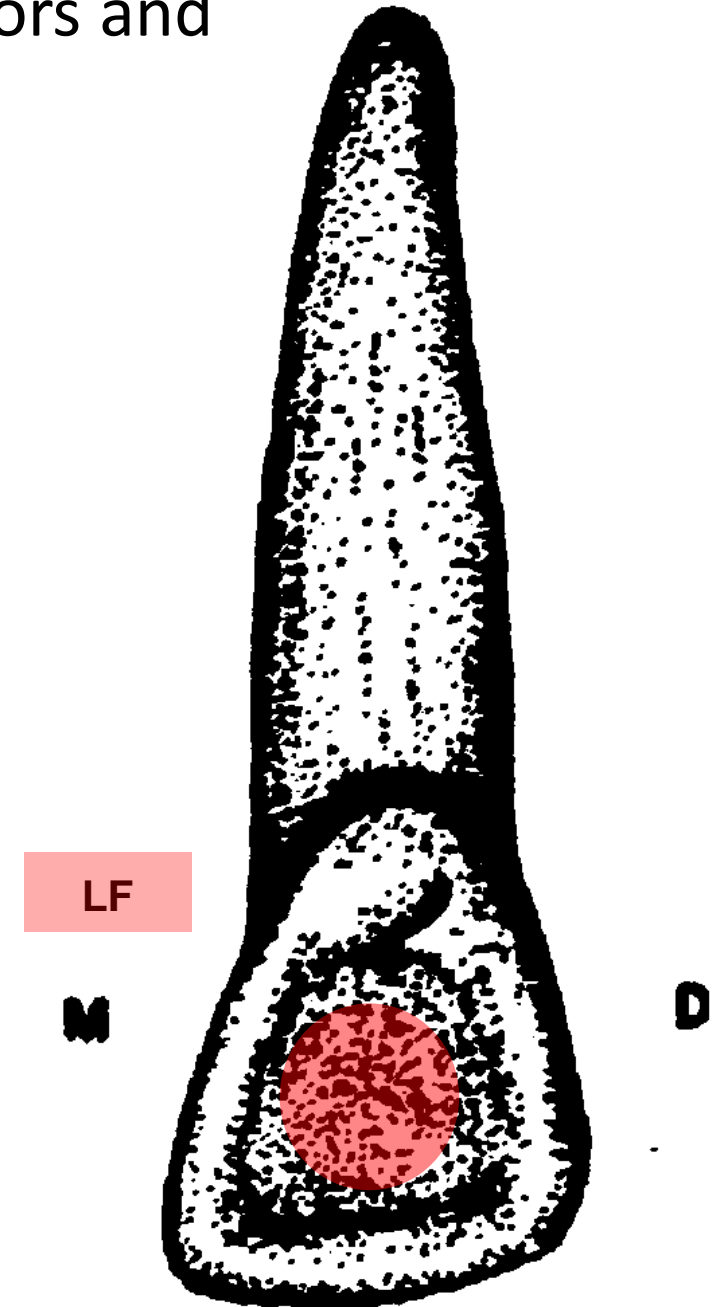
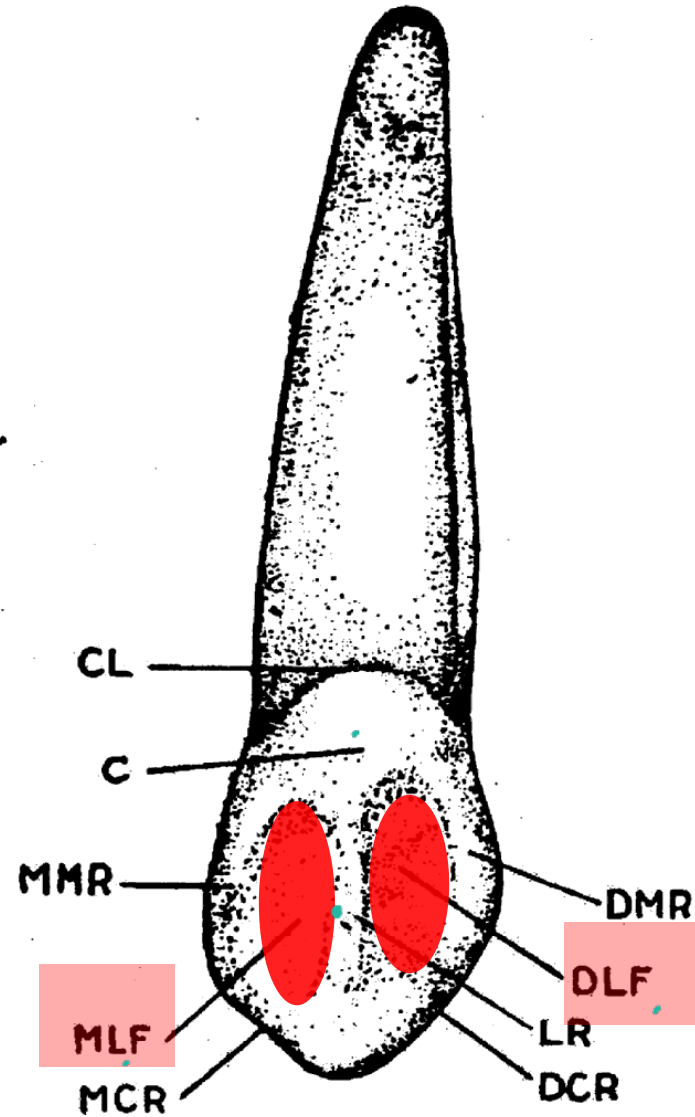
Central

Triangular



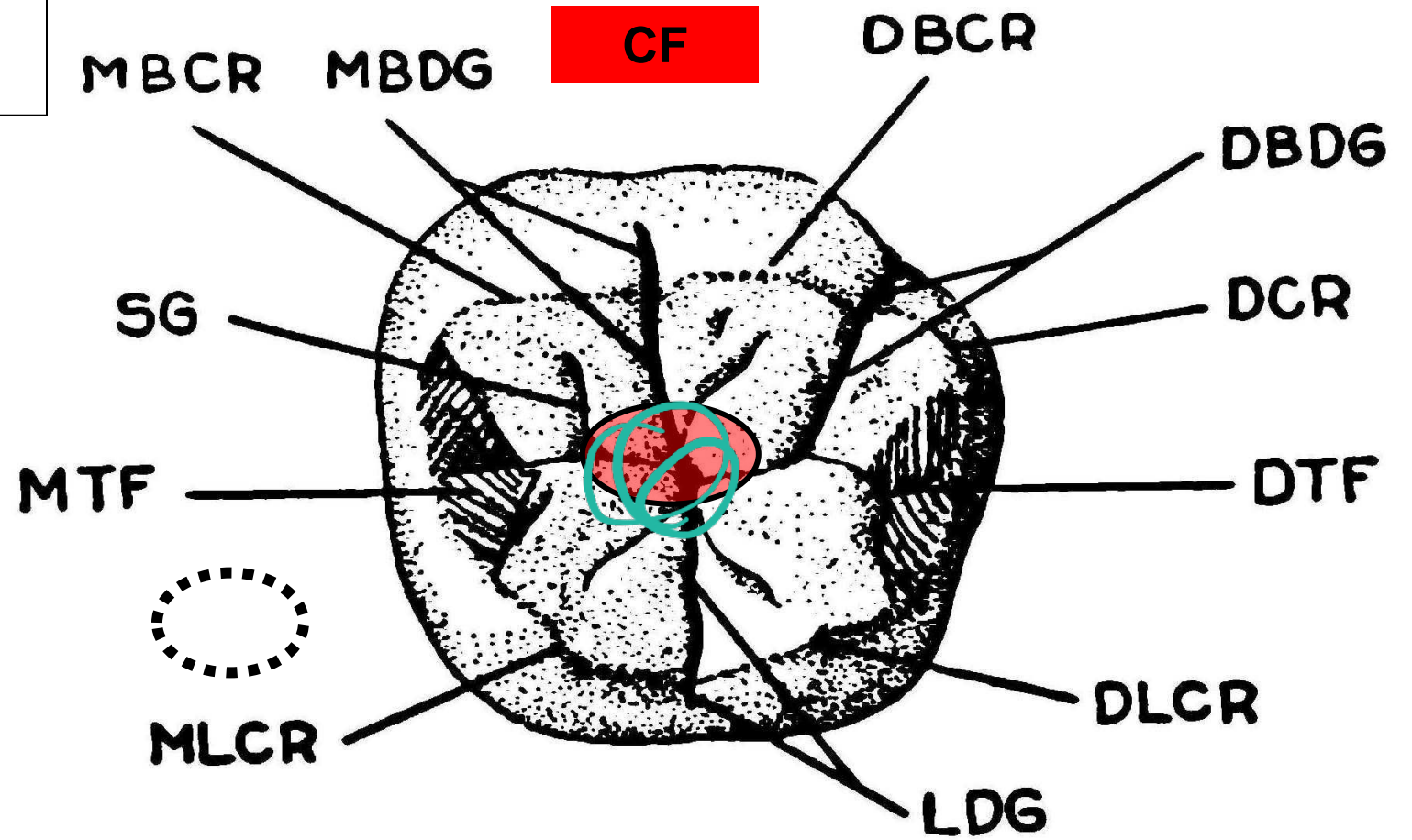
A. lingual fossa

- on the lingual surface of incisors and canines



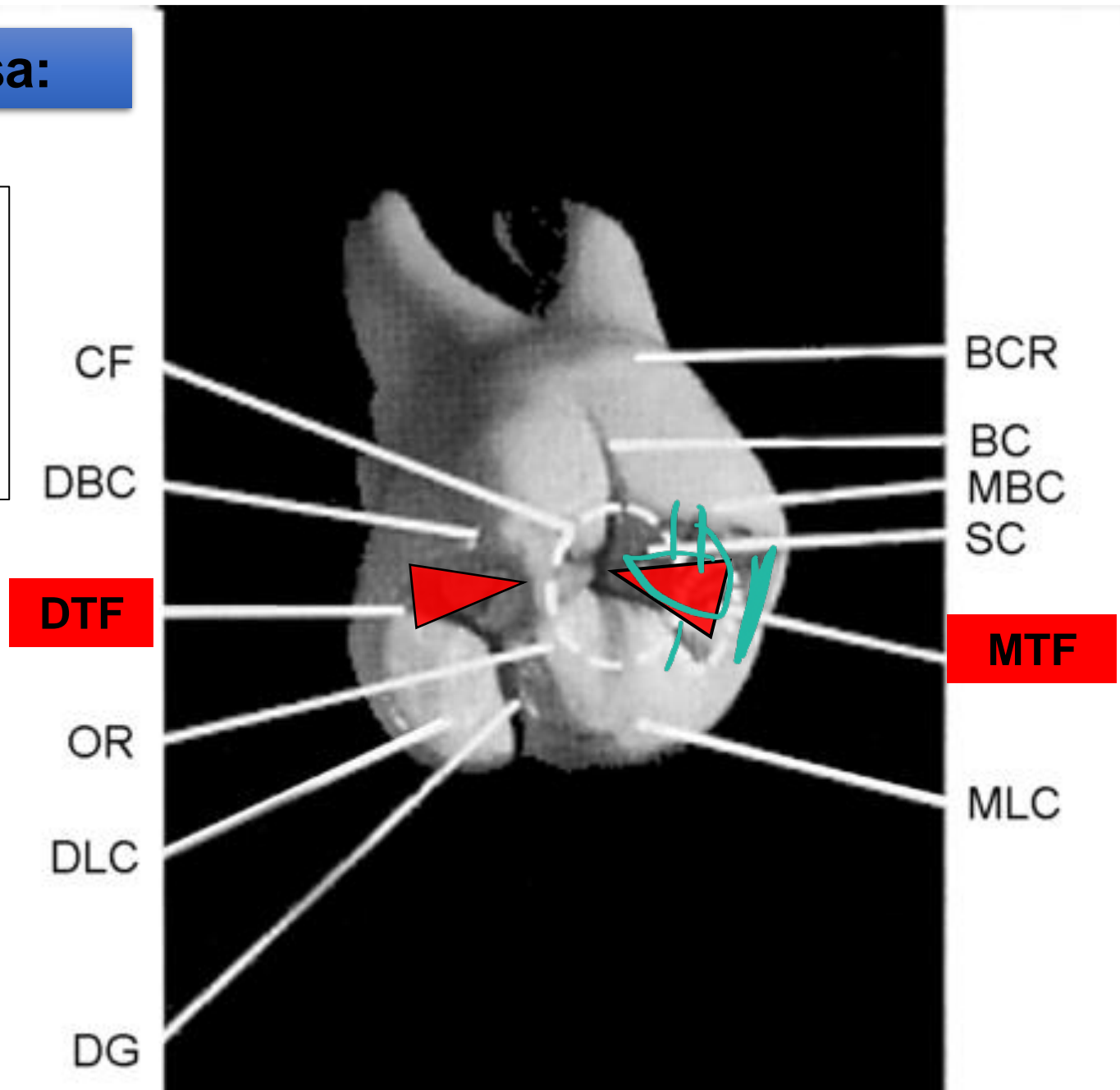
B- Central fossa

- on the occlusal surface of
molars and premolars.



C- Mesial and distal triangular fossa:

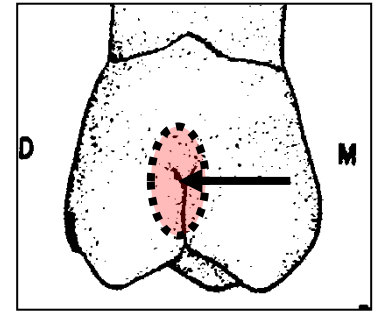
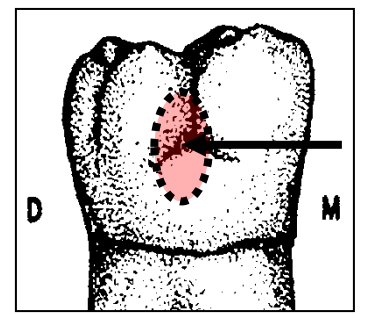
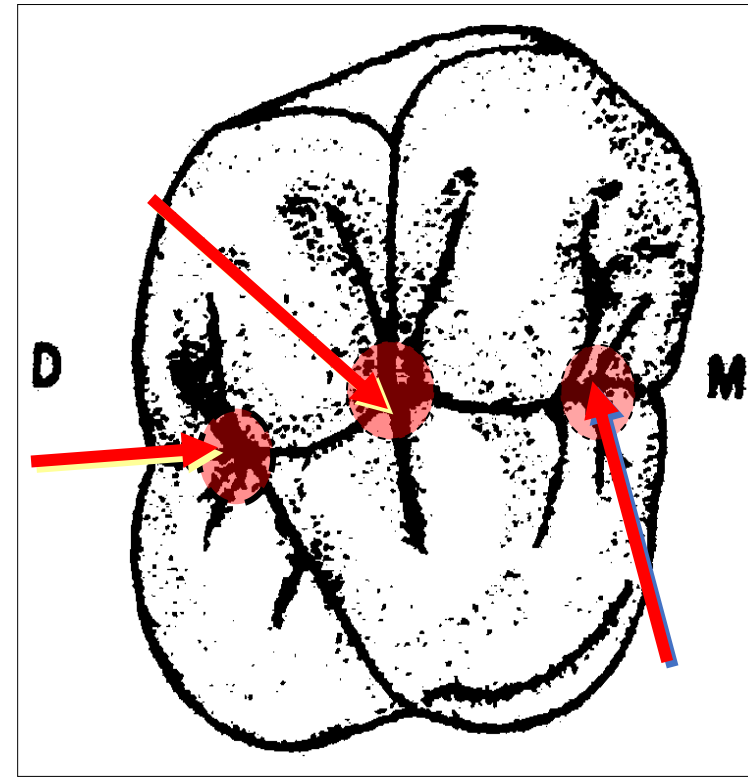
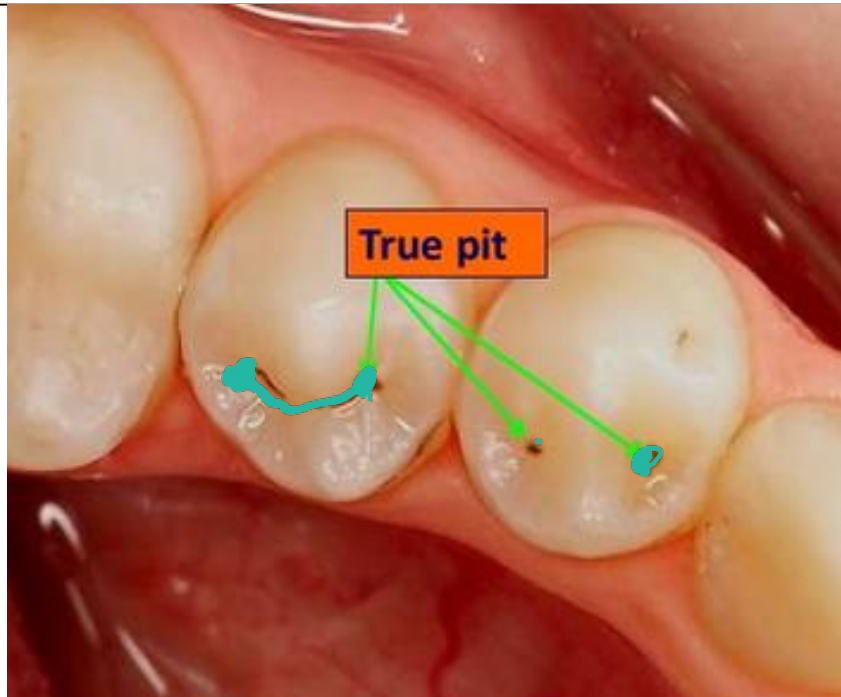
- It is found on **molars and premolars** on the occlusal surface, mesial or distal to the marginal ridges.



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).



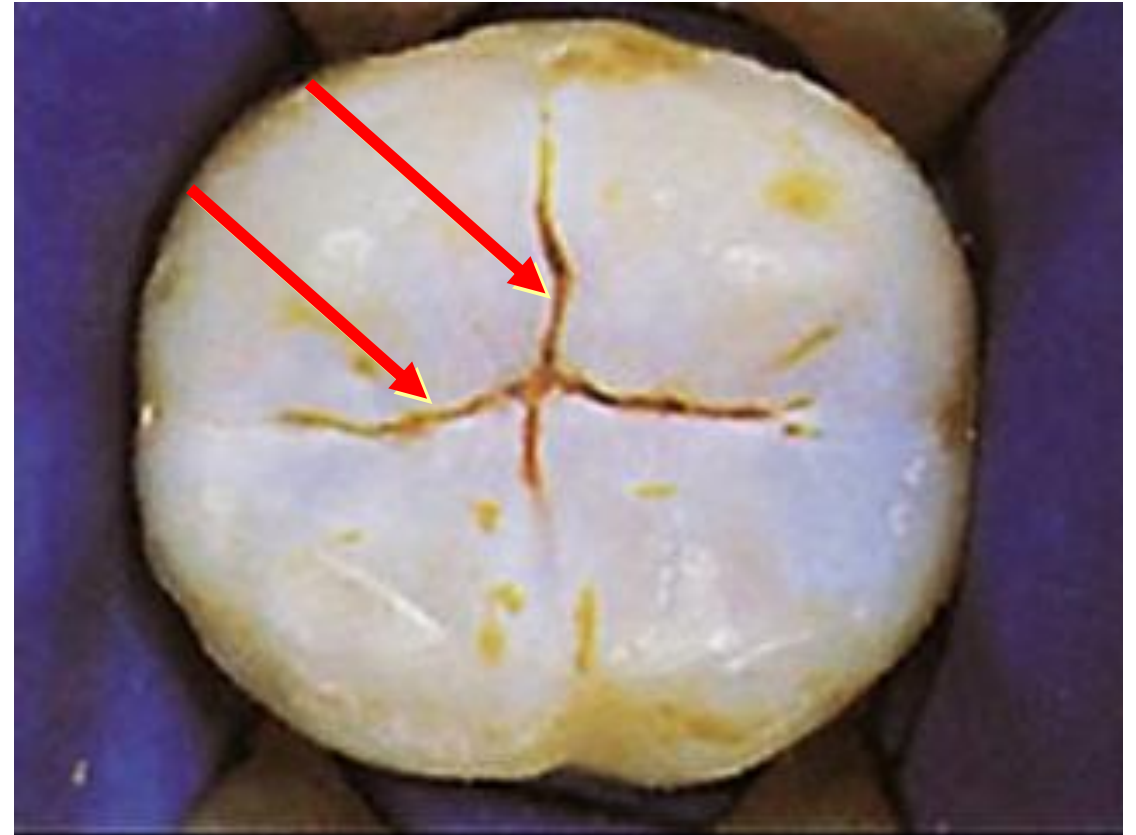
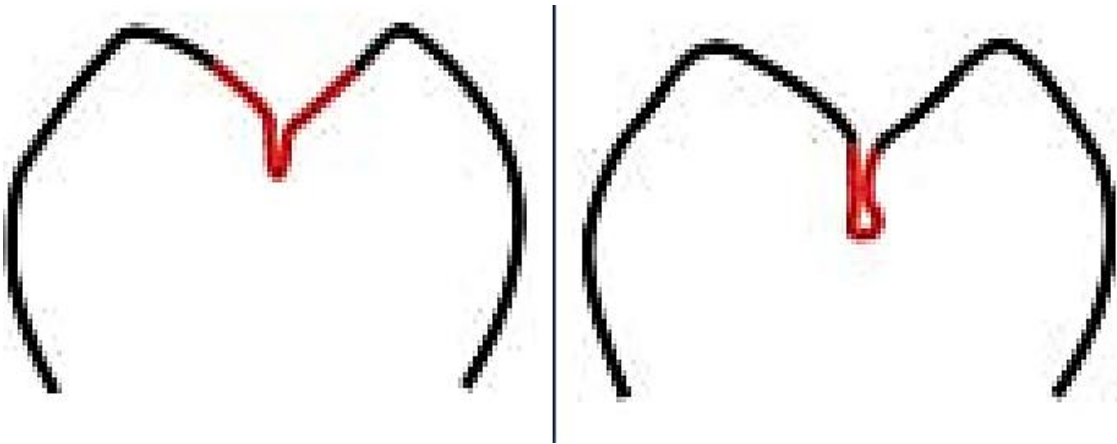
B- Faulty pit

- 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

Deciduous
Permanent

- 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:

$$\begin{array}{ccccccc} 2 & & 1 & & 2 & & 3 \\ | & \text{----} & C & \text{----} & PM & \text{---} & M & \text{----} & = & 16 \\ 2 & & 1 & & 2 & & 3 \end{array}$$

- For deciduous teeth:

$$\begin{array}{ccccccc} 2 & & 1 & & 2 & & \\ | & \text{----} & C & \text{----} & M & \text{----} & = & 10 \\ 2 & & 1 & & 2 \end{array}$$



Primary

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

Thank
You

Permenat

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

