



Maxillary first molar

Omyma Meabed

- **The maxillary molars differ in design from any of the teeth previously described.**
- **These teeth assist the mandibular molars in performing the major portion of the work in the mastication of food.**
- **They are the largest and strongest maxillary teeth, anchorage in the jaw**

Extraction upper six

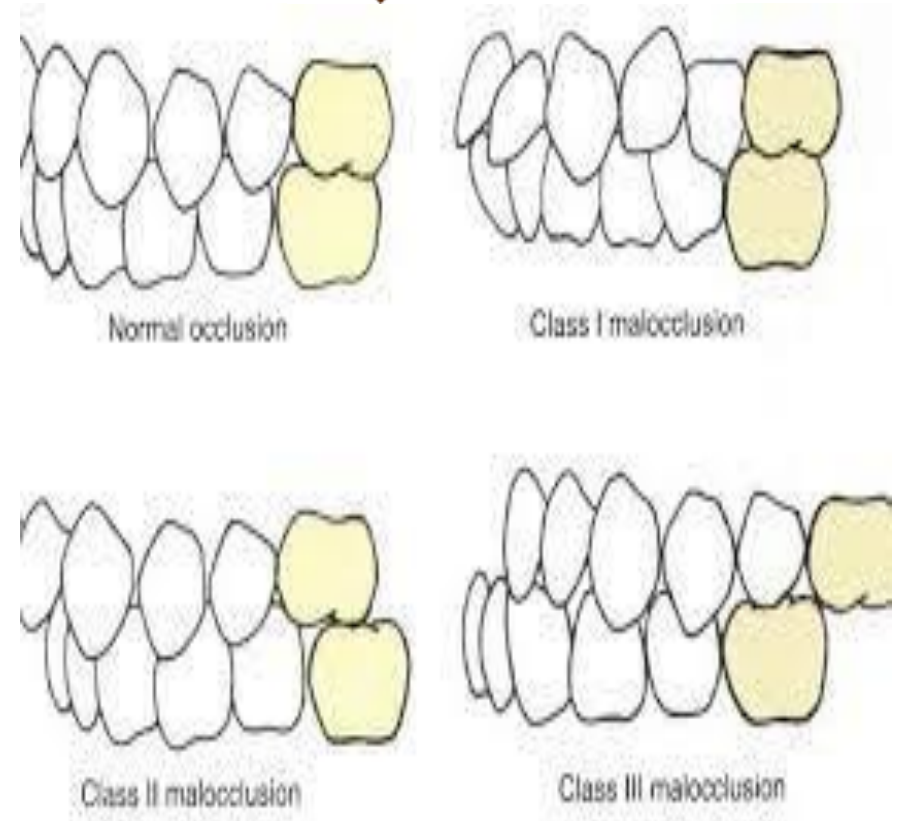


General differences between premolars and molars

- Although the crowns on the molars may be somewhat shorter than those on the premolars, their dimensions are greater in all aspects.
- Roots are longer in the premolars than molars.
- The maxillary molar root is broader at the base, trifurcated into three roots from a common broad base above the crown.

Upper first molar is considered the key of occlusion, why??

- The first tooth to erupt
- No predecessors.
- Erupt distal to the deciduous second molar.



First evidence of calcification

At birth

Enamel completed

3-4 yr

Eruption

6 yr

Root completed

9-10 yr



Buccal



Lingual



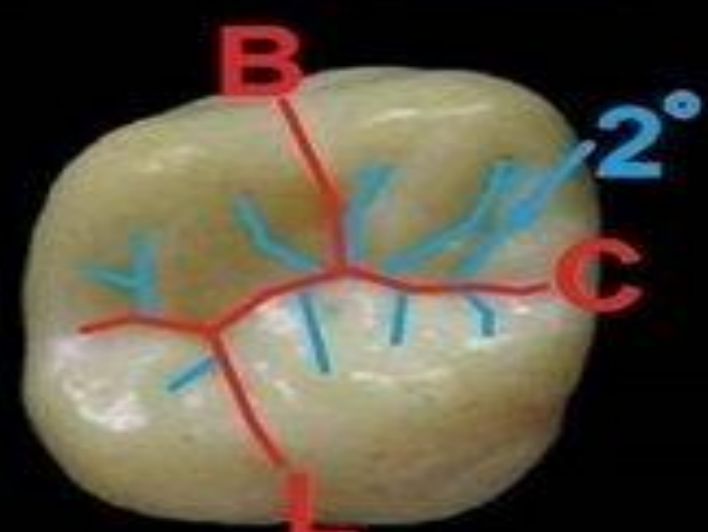
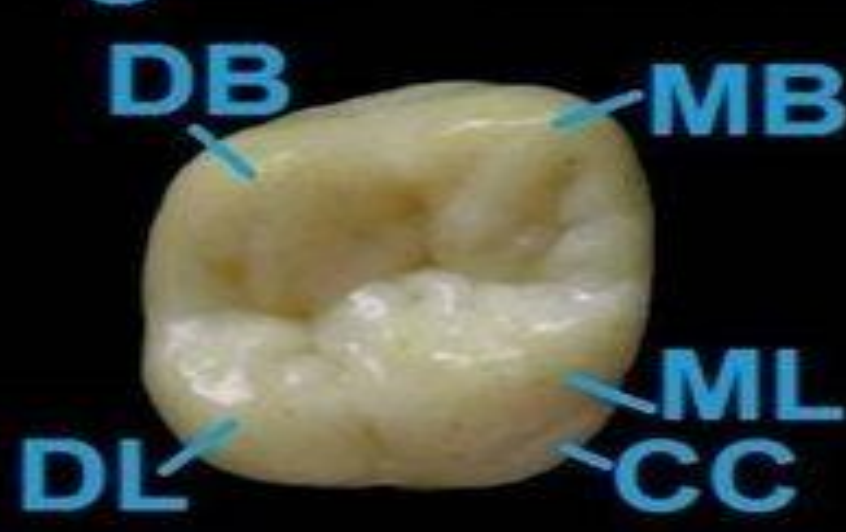
Mesial



Distal

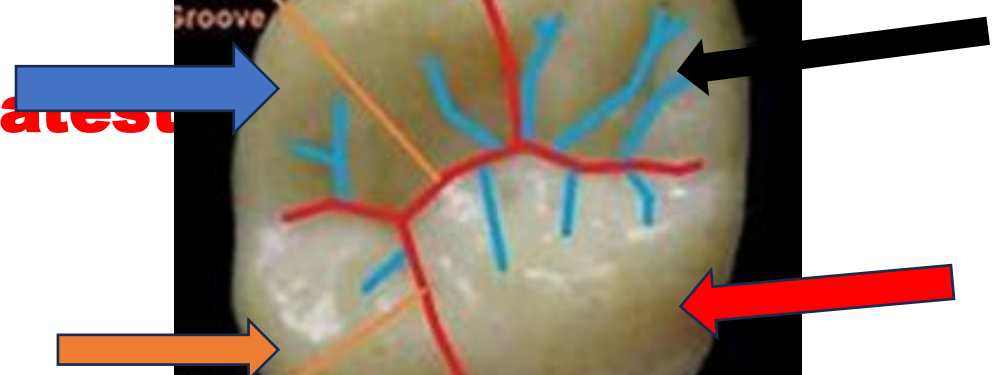
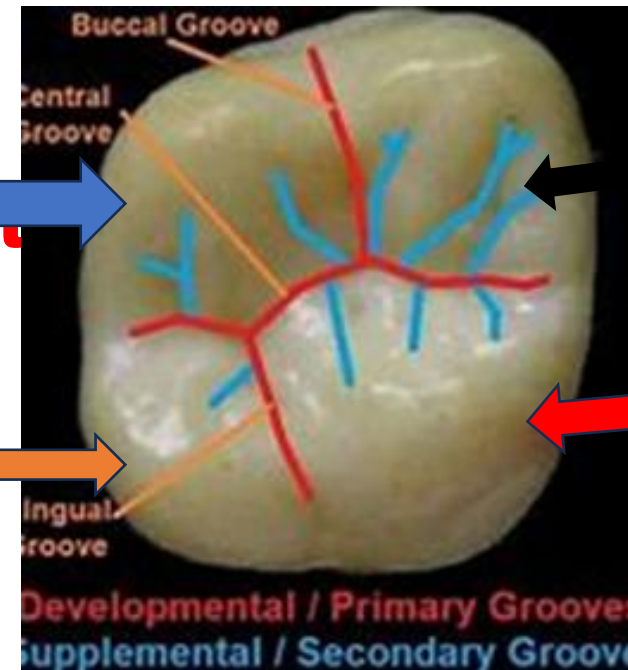


Occlusal



- **Has 3 roots:**
- **Mesiobuccal root**
- **distobuccal root**
- **Palatal root**
- **4 main functional cusps and 1 non functioning cusp (cusp of carabelli).**
- **functioning cusps are:**
 - 1. mesiolingual cusp the greatest**
 - 2. mesiobuccal cusp**
 - 3. distolingual cusp**
 - 4. distobuccal cusp**

Non functioning cusp: fifth cusp or tubercle or cusp of Carbelli



Remember

For good description you should mention

- **Geometric out line**
- **Out line form**
- **Land marks or surface anatomy**
- **Cervical line**
- **Root form**

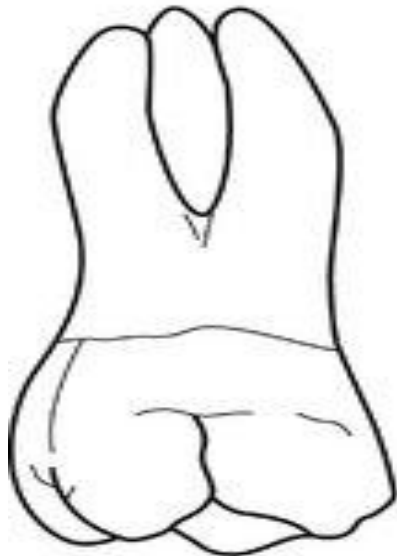


DETAILED DESCRIPTION OF THE MAXILLARY FIRST MOLAR FROM ALL ASPECTS

Buccal aspect

Geometric out line

- The crown is roughly trapezoidal, with cervical and occlusal outlines representing the uneven sides

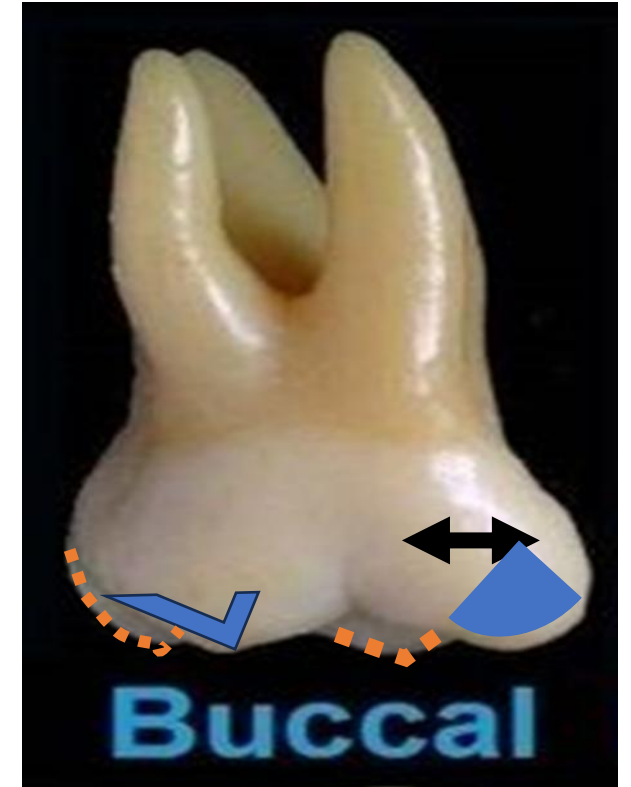


Out line form

- **The mesial outline of the crown a nearly straight till the contact area at (at the junction between occlusal and middle third).**
- **The distal outline of the crown is convex; the distal surface is spheroidal. The distal contact area is in the middle of the middle third.**



- **Parts of four cusps are seen, the mesiobuccal, distobuccal, mesiolingual, and distolingual.**
- **The mesiobuccal cusp is broader than the distobuccal cusp, and its mesial slope meets its distal slope at an obtuse angle.**
- **The mesial slope of the distobuccal cusp meets its distal slope at approximately a right angle.**
- **The distobuccal cusp is therefore sharper than the mesiobuccal cusp, and it is at least as long and often longer.**



D

M

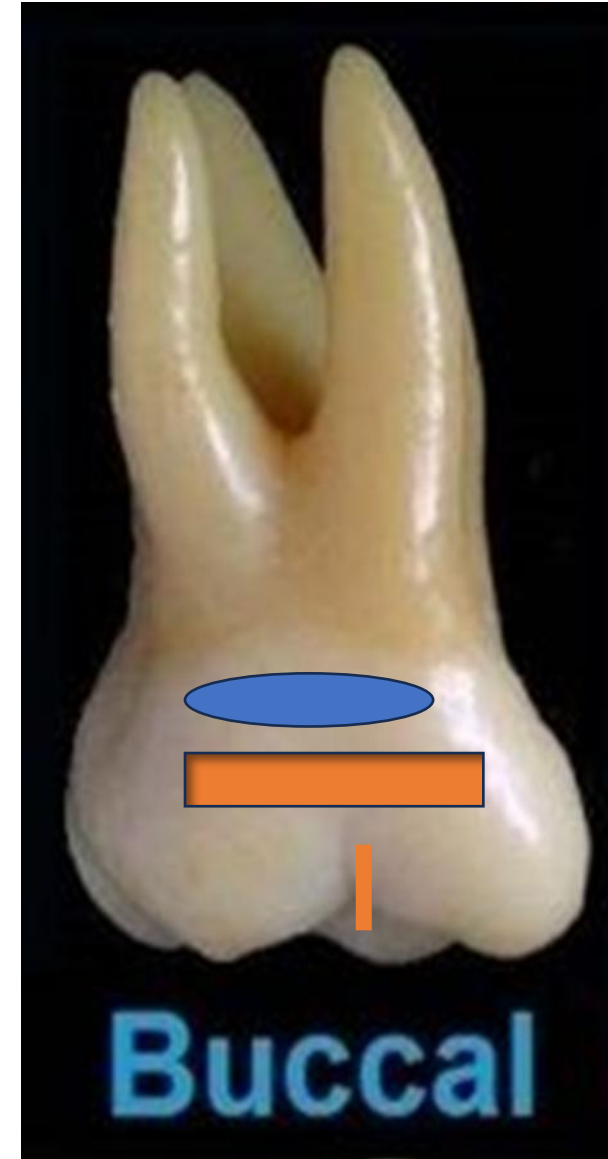
Surface anatomy

- Elevations

The buccal aspect is convex with max. convexity at the cervical ridge

- Depressions

1. Buccal developmental groove
2. Shallow depression occlusal to the cervical ridge extends MD

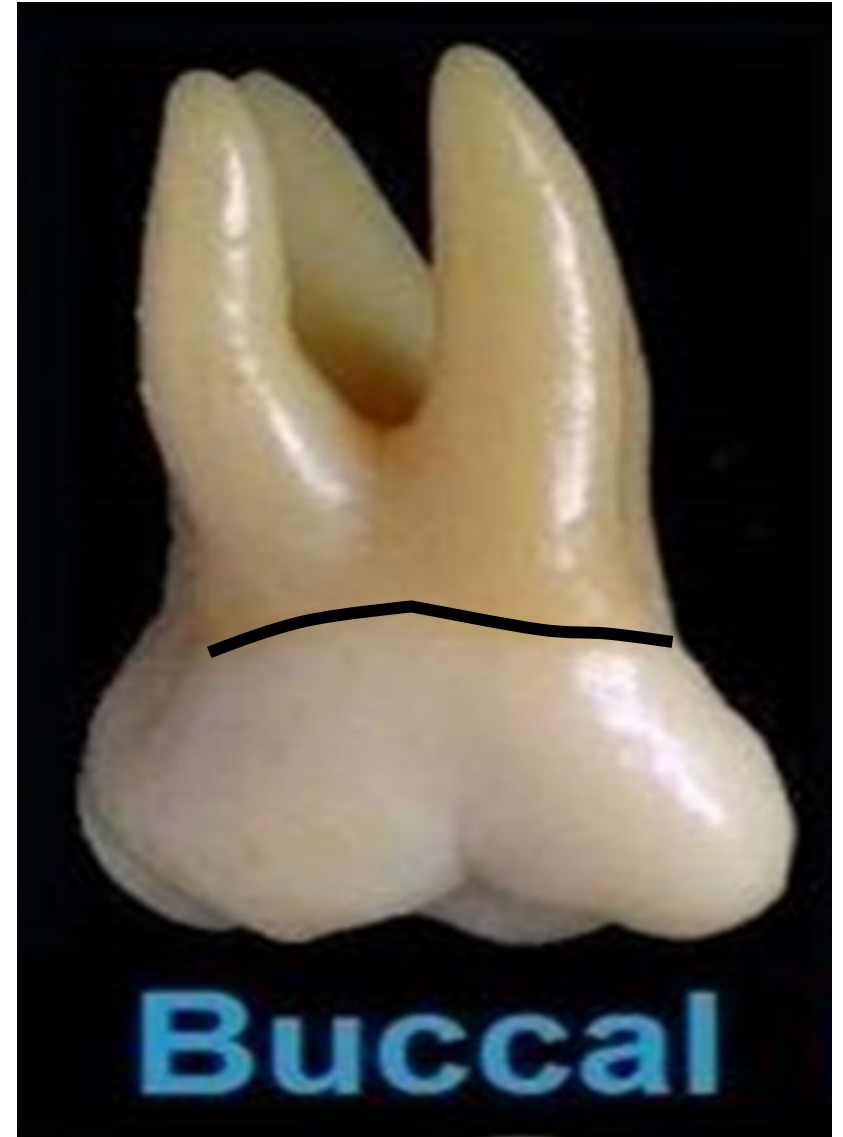


- The buccal developmental groove that divides the two buccal cusps.
- It terminates at a point approximately half the distance from its origin occlusally to the cervical line of the crown.



Cervical line

- The cervical line of the crown does not have much curvature. The line is generally convex with the convexity toward the roots.



Roots

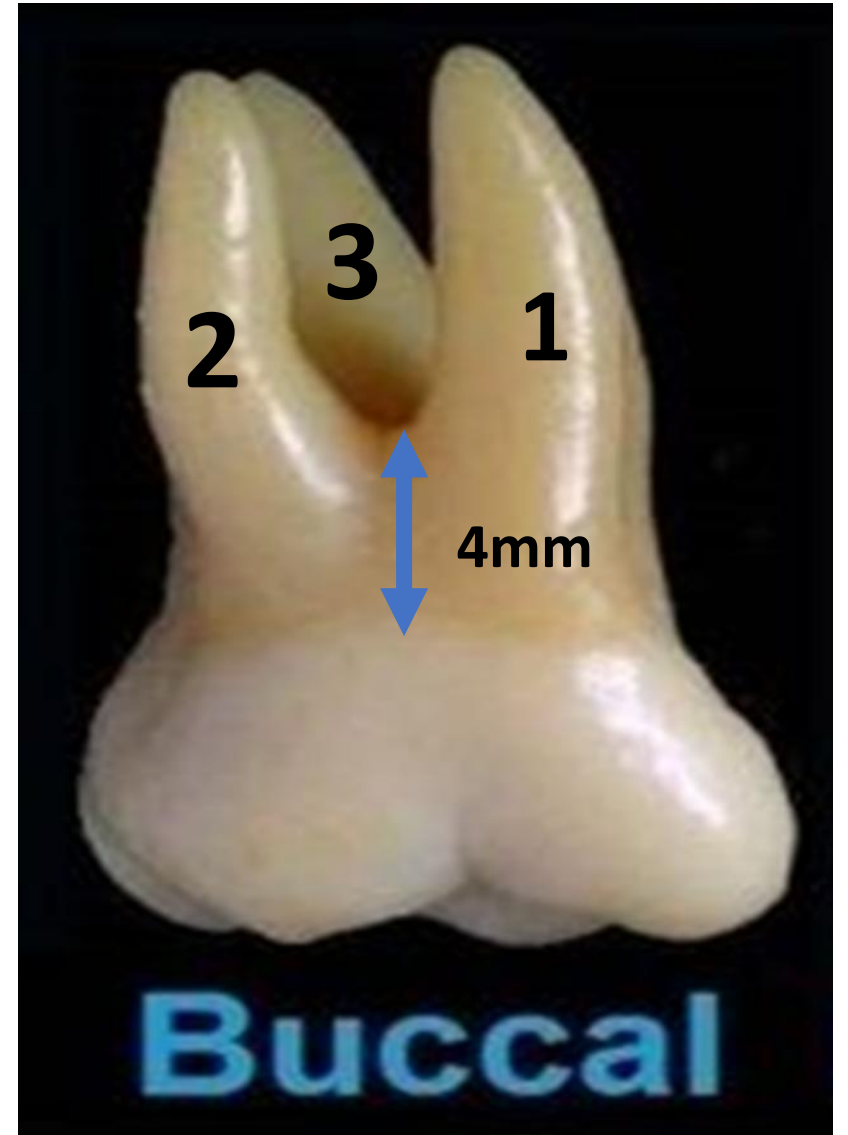
- All three of the roots may be seen from the buccal aspect

1-The mesiobuccal root curves distally, starting at the middle third.

2-The distobuccal root is straighter. It has a tendency toward curvature mesially at its middle third.

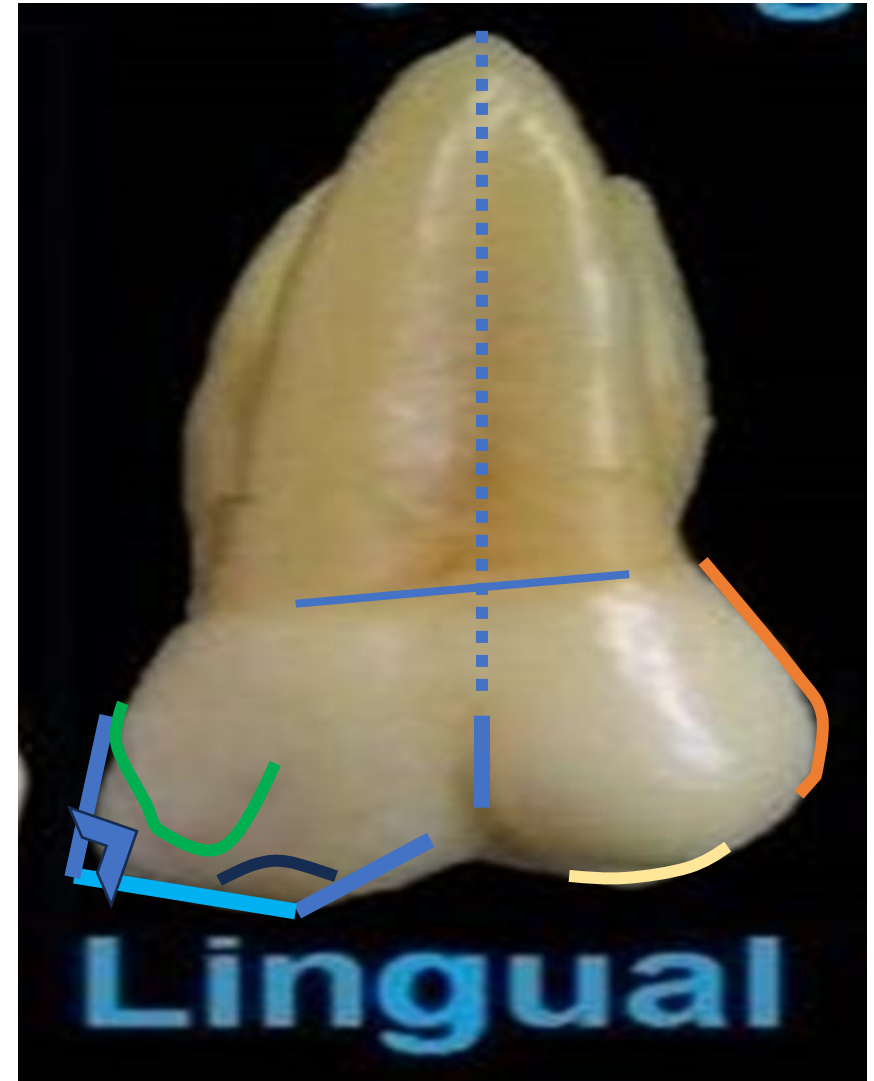
3- the palatal root is the longest, and the two buccal roots are approximately nearly equal in length. MB root may be longer than DB by 1 mm

The point of bifurcation of the two buccal roots is located approximately 4 mm above the cervical line.



Lingual Aspect

- Lingual Aspect From the lingual aspect, the gross outline of the maxillary first molar is the reverse of that from the buccal aspect.
- Straight mesial outline. The mesial slope of mesiolingual form 90° with the mesial wall.
- The M and D slopes of mesiolingual cusp is straight forming an obtuse angle with each other.
- distal outline is semicircular
- Occlusal outline: formed of large and long MLC and smaller **DLC which is more rounded.**
- **Cusp of carbelli** found on ML cusp by 60%
- Cervical line: nearly straight

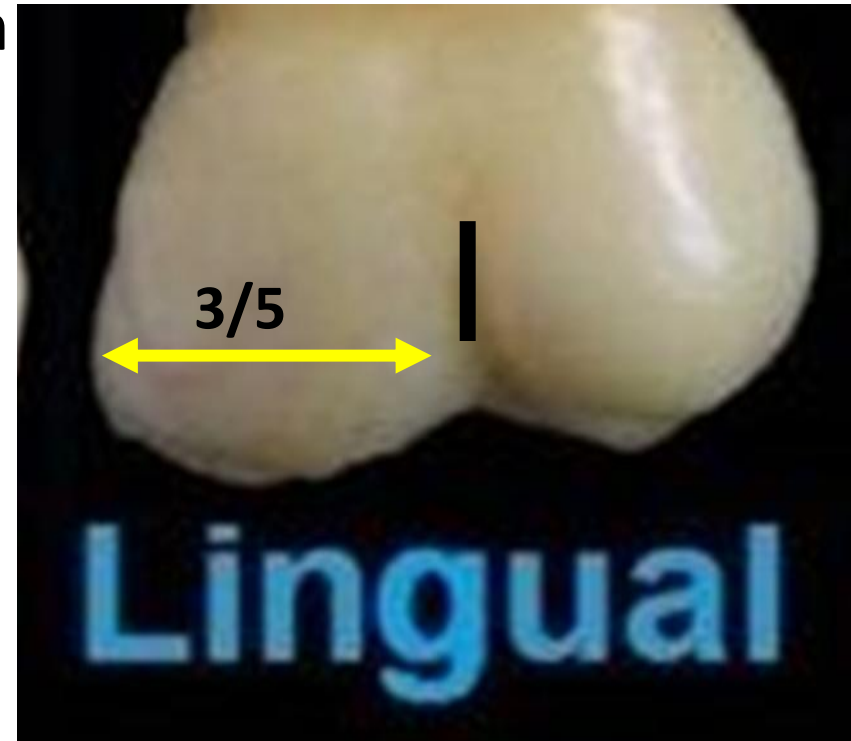


M

D

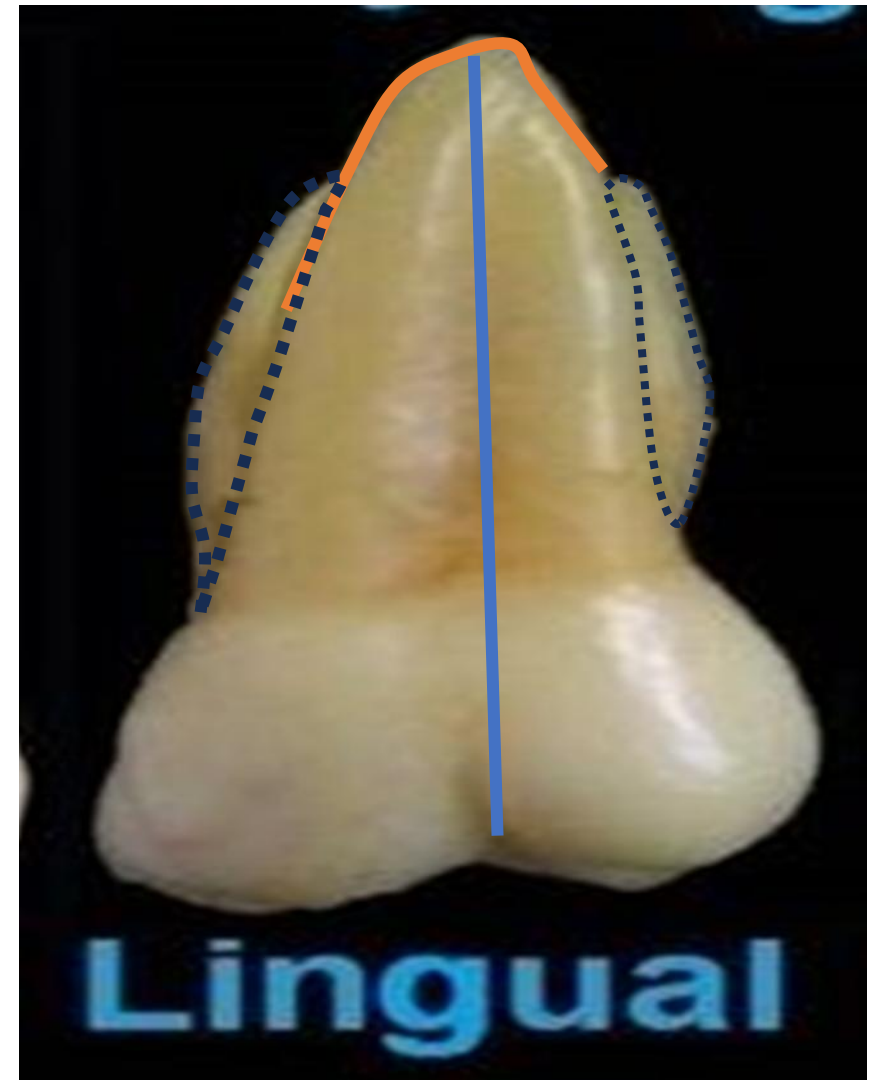
Surface anatomy

- Lingual surface is convex
- Lingual developmental groove divides 2 lingual cusps un equally
- It runs till the half of crown length
- MLC $\frac{3}{5}$ crown width



Roots

- All three of the roots are visible from the lingual aspect.
- palatal root is large conical, terminating in a bluntly rounded apex. All of the mesial outline of the mesiobuccal root and part of its apex may be seen from this angle
- The distal outline of the distobuccal root is seen above its middle third, including all of its apical outline.
- The apex of the lingual root is in line with the lingual groove.



Mesial Aspect

Geometric out line:

- Trapezoid with the shortest un even side occlusally.

• From the mesial aspect, the increased buccolingual dimensions may be observed this tooth characterized by distobuccal convergence.

- the difference in dimensions between the crown at its greater measurement of BL dimension than MD dimension.

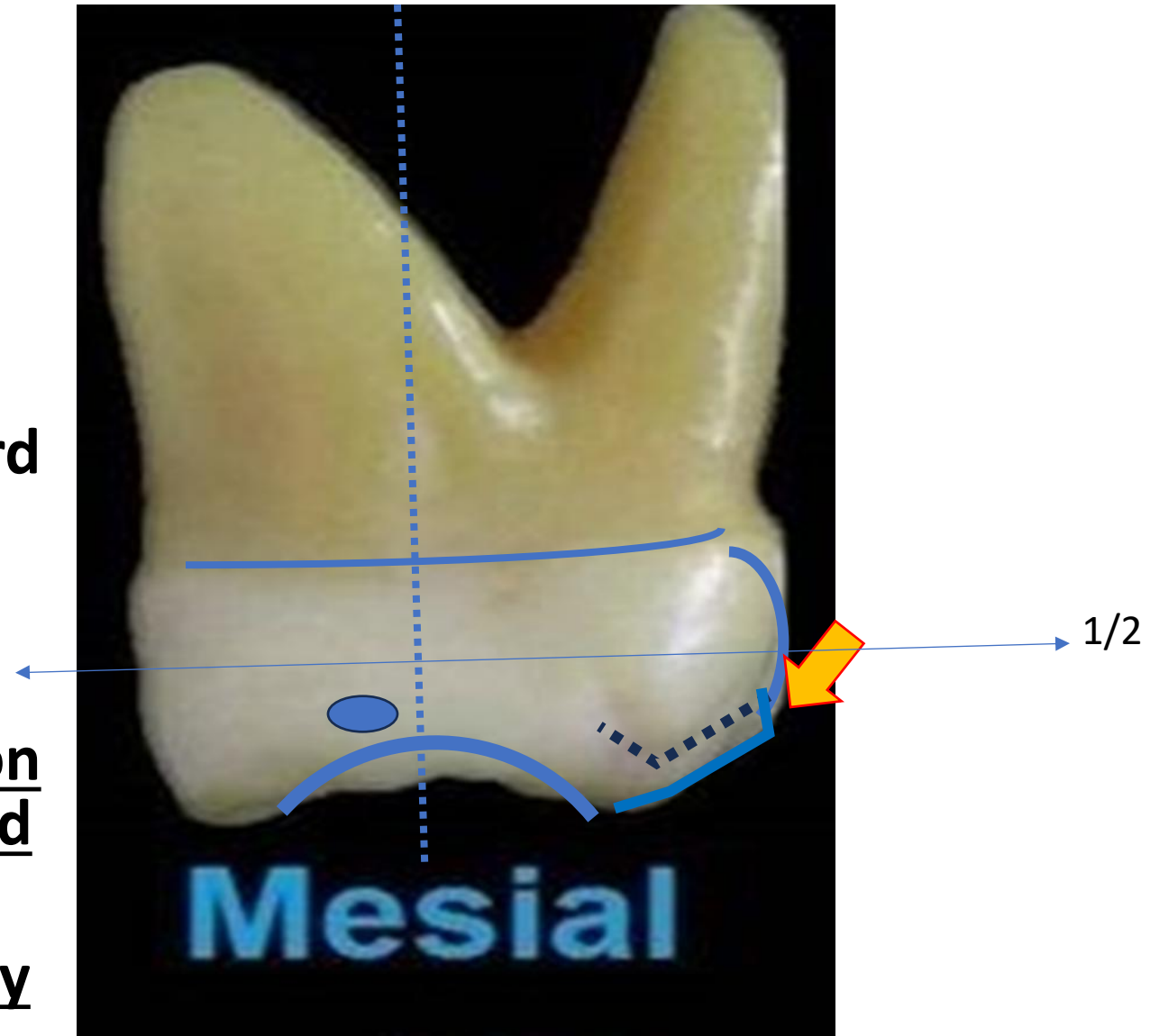


Outline form of mesial aspect

- Buccal out line: Starting at the cervical line convex then a shallow concavity immediately occlusal to the crest of curvature. The outline then becomes slightly convex as it progresses downward and inward to circumscribe the mesiobuccal cusp.
- The max.convexity in cervical third representing cervical ridge

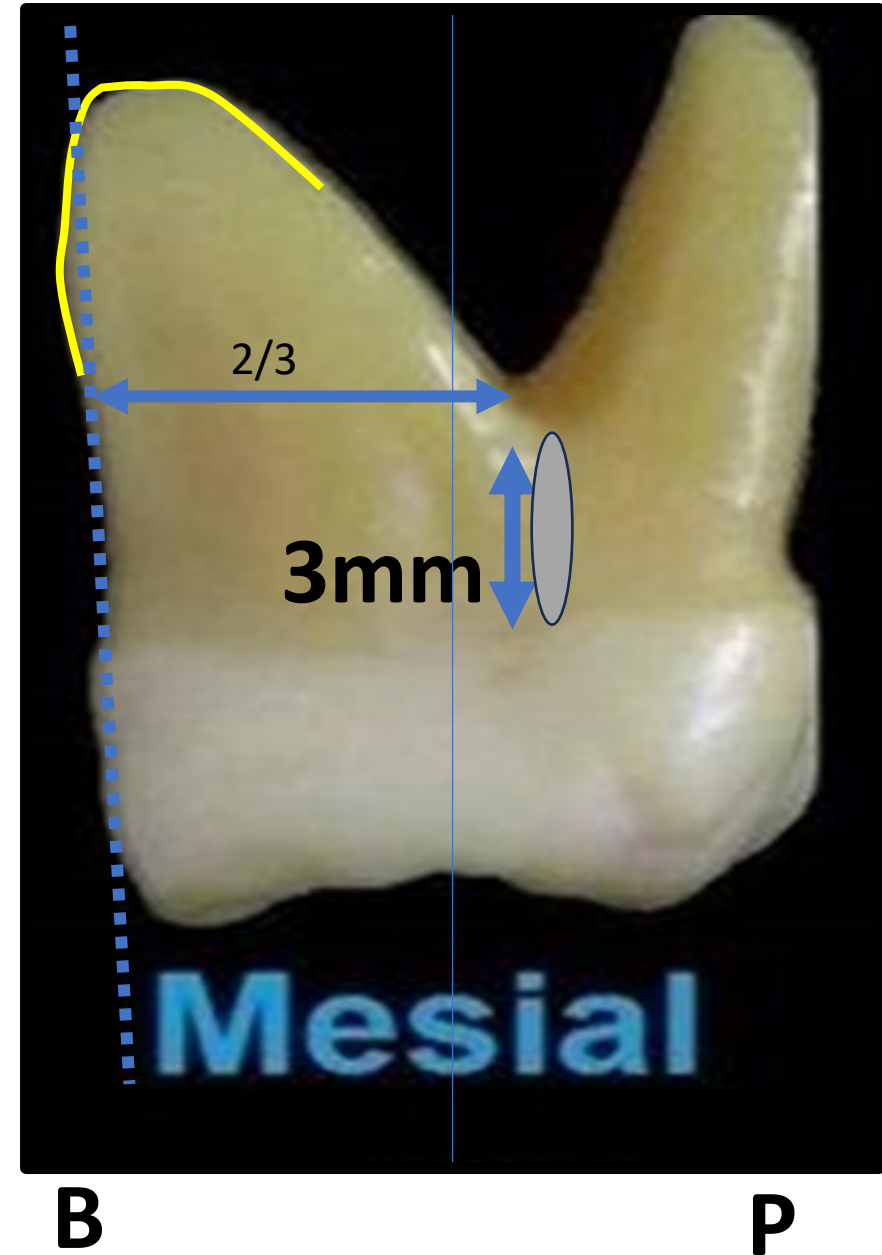


- The lingual outline of the crown curves outward, the level of the crest of curvature is near the middle third of the crown rather than a point within the cervical third, as it is buccally
- The lingual out line dipped in word in the site of cusp of Carbelli.
- Mesial marginal ridge : irregular convex to-word root.
- Mesial contact area at the junction between occlusal and middle third
Buccal to the mid line
- Cervical line : irregular and slightly convex toward crown

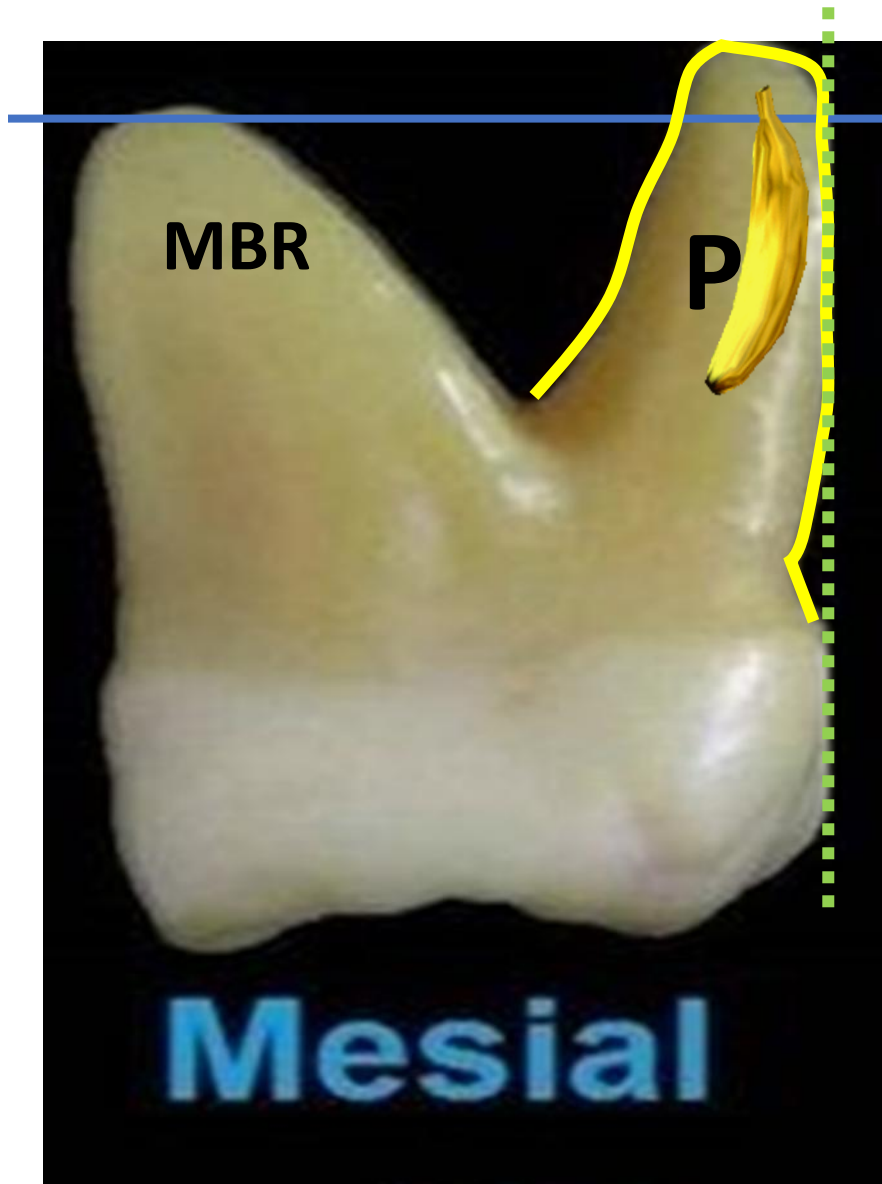


Roots

- The mesiobuccal root is broad and flattened. The width of this root two thirds of the crown measurement buccolingually. ends at the blunt apex.
- The greatest projection on this root is usually buccal to the greatest projection of the crown.
- The level of the bifurcation is a little closer to the cervical line than is found between the roots buccally. bifurcation is 3 mm .
- A smooth depression congruent with the bifurcation.

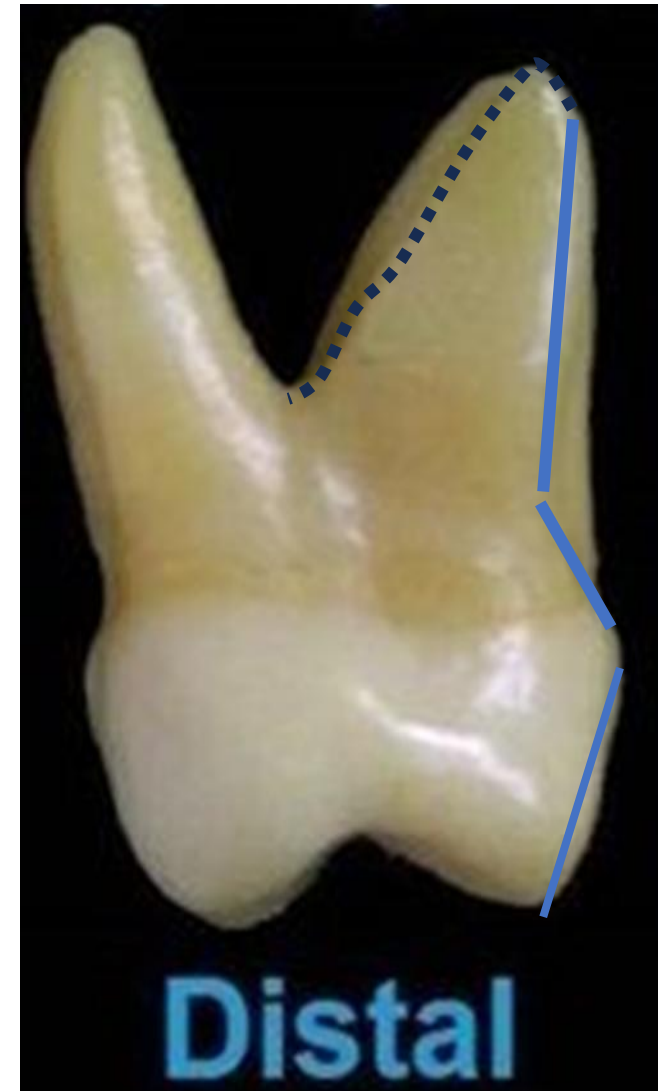


- The palatal root is longer than the mesial root but is narrower from this aspect. It is banana-shaped, extending lingually with its convex outline to the lingual and its concave outline to the buccal.
- At its middle and apical thirds, it is outside of the confines of the greatest crown projection.
- Its apex is rounded.



Distal Aspect

- The outline of the distal aspect is similar to that of the mesial aspect . Certain variations must be noted when the tooth is viewed from the distal aspect. Because of the tendency of the crown to taper distally on the buccal surface.
- Most of the buccal surface of the crown may be seen from the distal aspect
BECAUSE OF

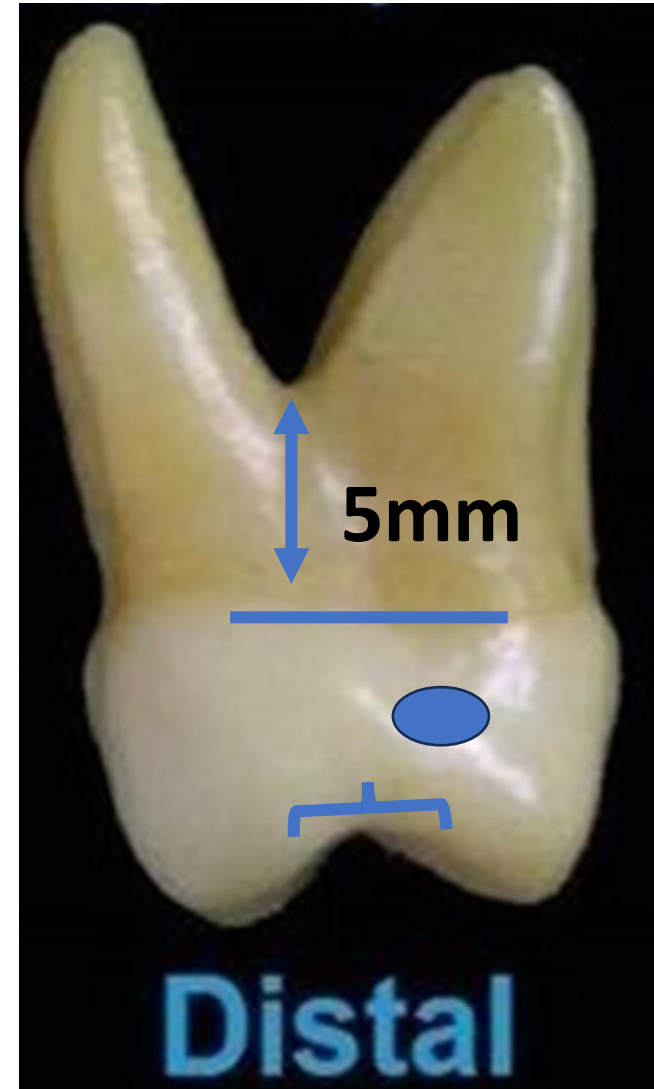


P

B

Main differences between M & D

1. The distal marginal ridge dips sharply in a cervical direction
2. Contact area more cervical and broader.
3. The cervical line is almost straight.
4. The bifurcation here is more apical than either of the other two areas on this tooth. The area from cervical line to bifurcation is 5 mm or more in extent



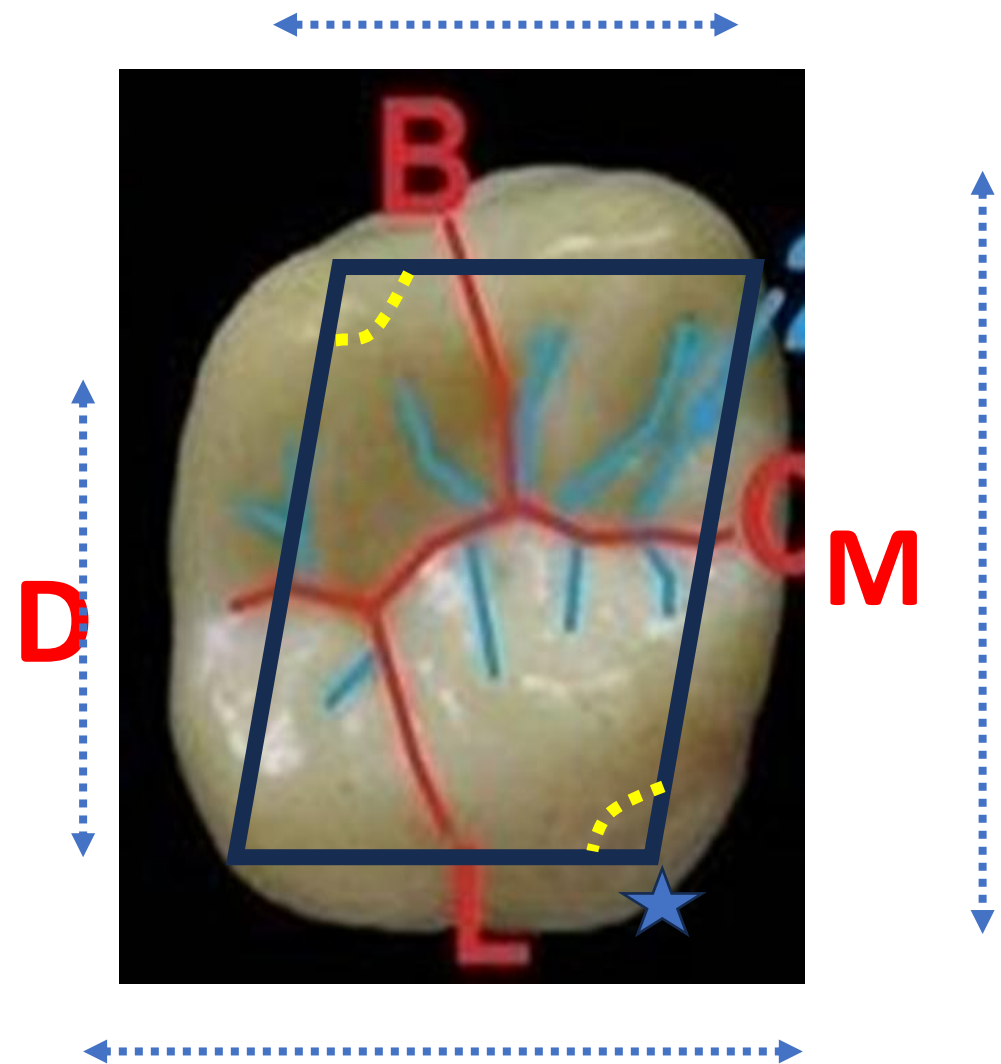
TAKE A BREATH



Occlusal Aspect

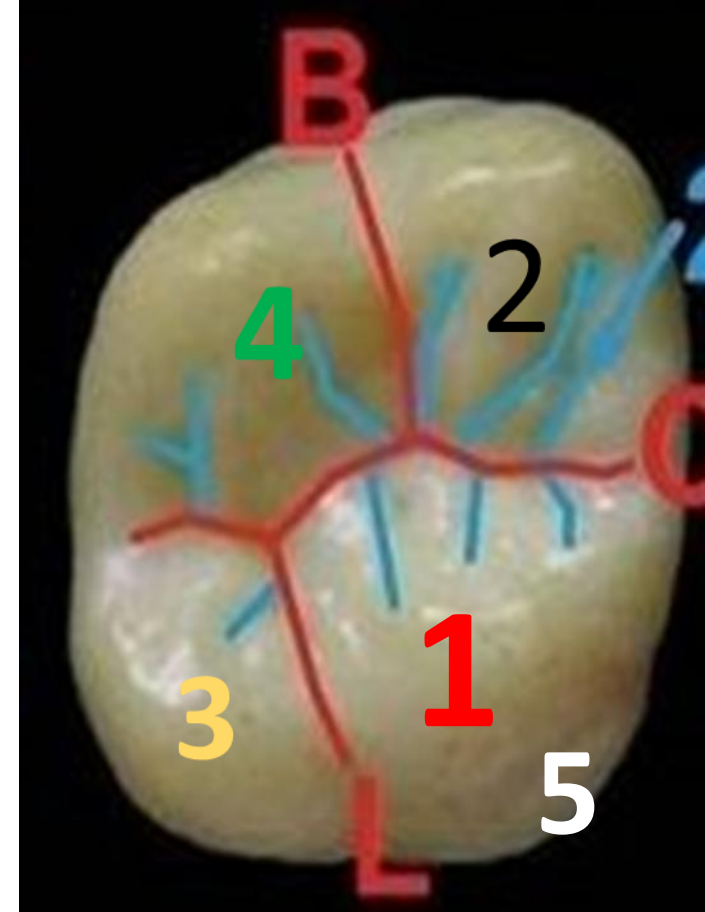
outline form

- **The occlusal aspect of the maxillary first molar is rhomboidal.**
- **OBTUSE ANGLE IN: MLC,DBC**
- **ACUTE ANGLE IN: DLC,MBC**
- **crown is wider mesially than distally and wider lingually than buccally.**



Elevations

1. The four major cusps are well developed, with the small minor, or fifth, cusp appearing on the lingual surface of the mesiolingual cusp.
2. The **mesiolingual** cusp is the largest cusp; it is followed in size by the mesiobuccal, **distolingual**, **distobuccal**, and fifth cusps

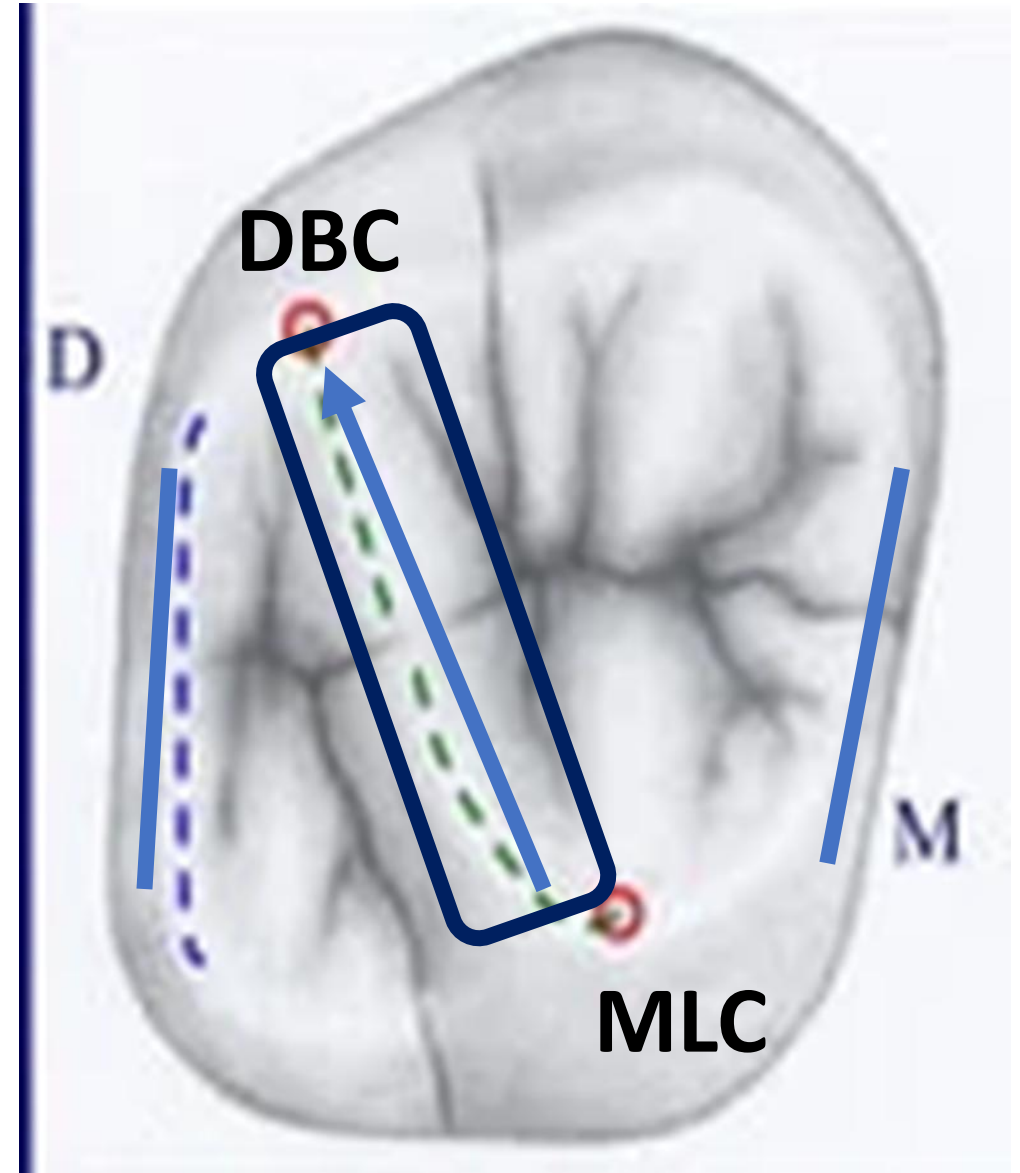


3. The oblique ridge is a ridge that crosses the occlusal surface obliquely.

It is the union of the triangular ridge of the distobuccal cusp ridge and the mesiolingual cusp ridge.

4. This ridge is reduced in height in the center of the occlusal surface. Sometimes it is crossed by a developmental groove that partially joins the two major fossae Called transverse groove of oblique ridge

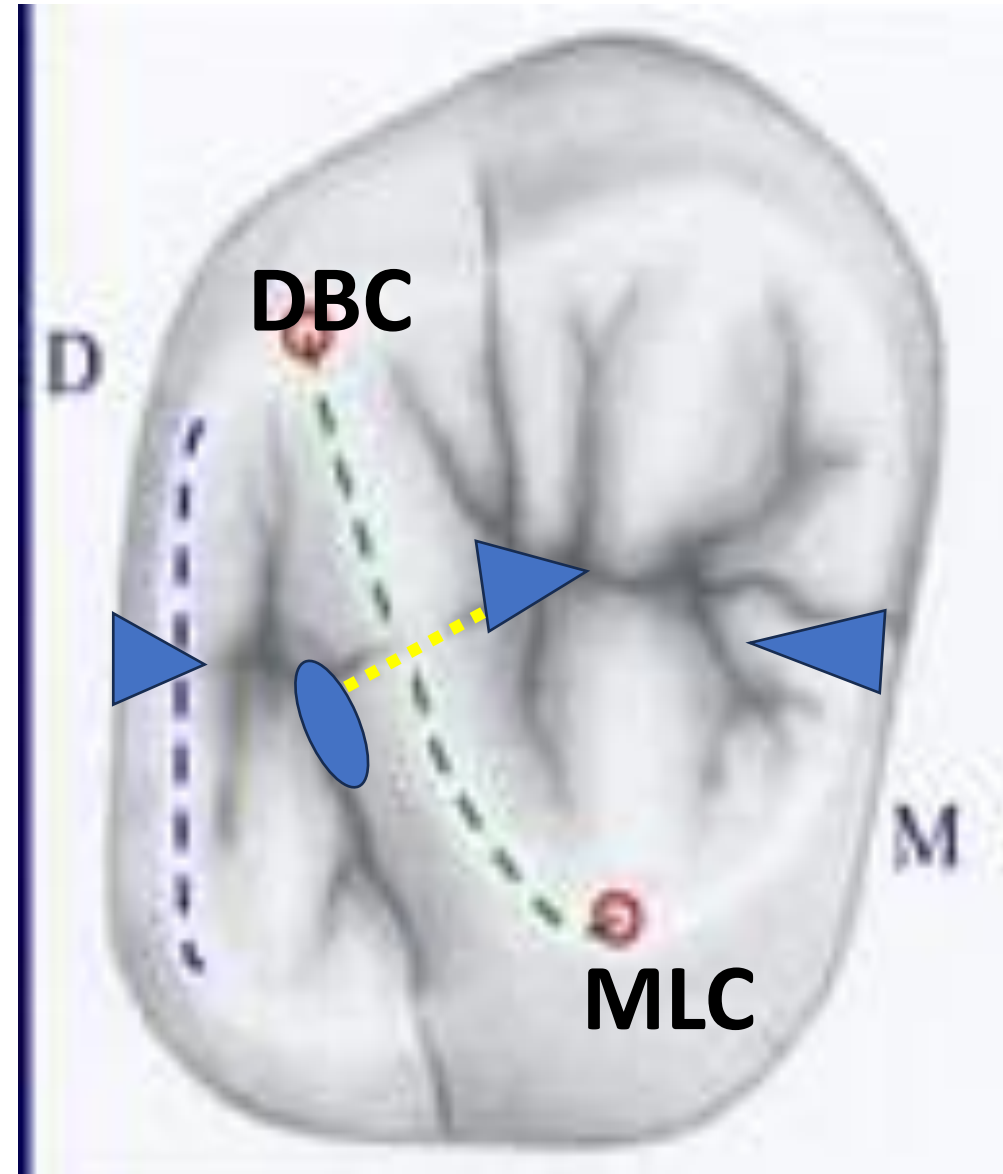
5. 2irregular marginal ridges M &D MR



DEPRESSIONS

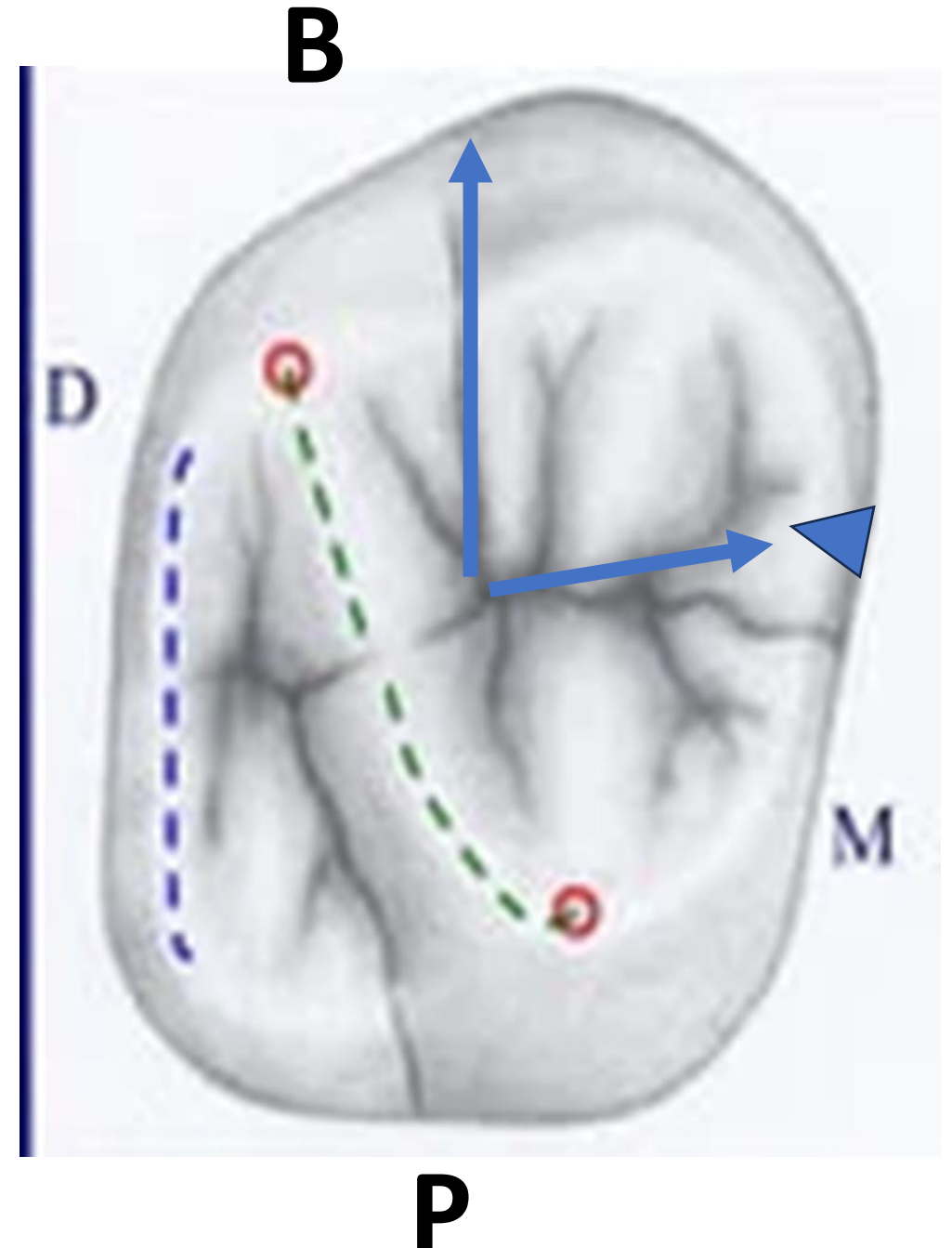
1. Fossae

- There are two major fossae and two minor fossae.
- The major fossae are the central fossa, which is roughly triangular and mesial to the oblique ridge, and the distal fossa, which is roughly linear and distal to the oblique ridge.
- The two minor fossae are the mesial triangular fossa, immediately distal to the mesial marginal ridge, and the distal triangular fossa, immediately mesial to the distal marginal ridge.



2. Grooves

- In the center of the central fossa, the central developmental pit. This pit is located in the approximate center of that portion of the occlusal surface. From this pit the
 1. buccal developmental groove radiates buccally to the buccal surface of the crown between the buccal cusps.
 2. the central developmental groove is seen to progress in a mesial direction. The central groove at the bottom of the sulcus of the central fossa usually terminates at the apex of the mesial triangular fossa.



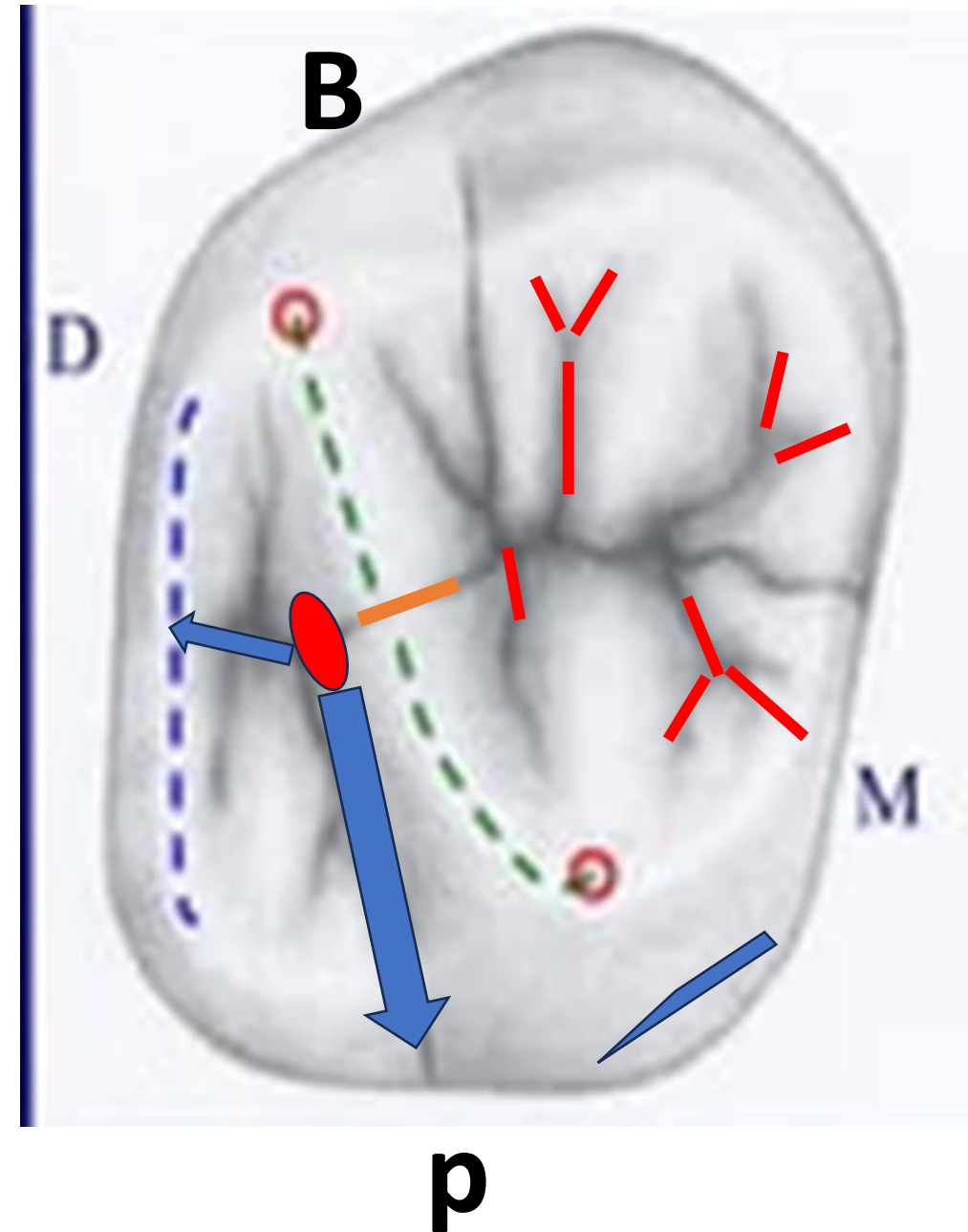
3. **Distal groove** : radiates from distal fossa to Dtriangular fossa.

4. **Lingual developmental groove** : : radiates from distal fossa extending lingually between MLC and DLC.

5. **Fifth cusp groove**: separates the cusp of Carabelli from the MLC

6. **Transverse groove of oblique ridge**

7. **Supplemental grooves**: radiating from CDG and DG



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Pulp Cavity of Upper 6

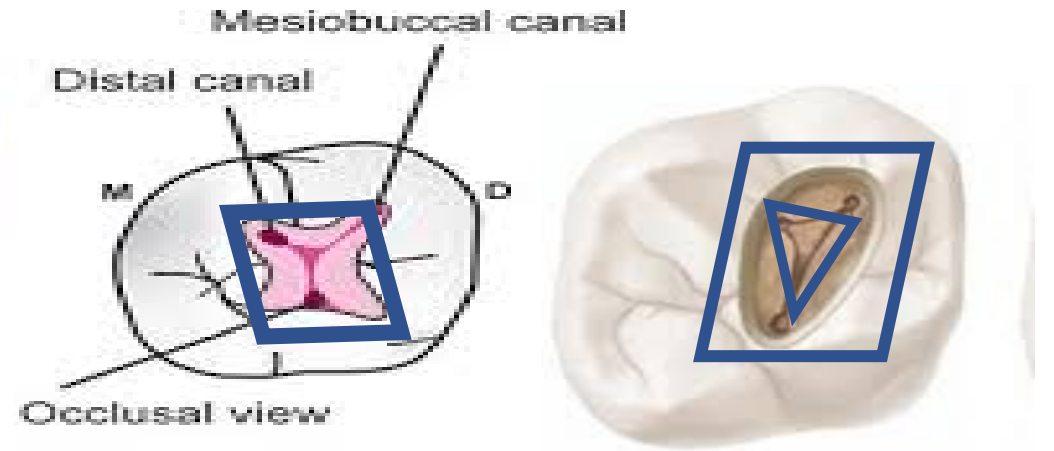
The cervical cross section of the pulp chamber is rhomboidal in shape.

It has 4 pulp horns, the mesiolingual one is the highest. This tooth has 3 roots, each root has one root canal, but the mesiobuccal root may have 2 canals.

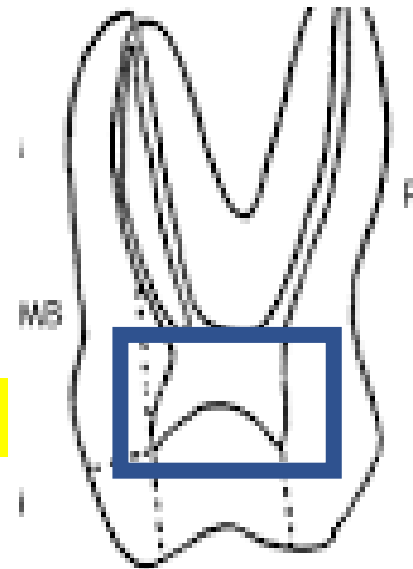
In cross section the orifices of the canals form a triangular pattern.

Buccolingual section:

- Pulp chamber is rectangle.
- Lingual canal is large and broad while mesiobuccal canal is narrow
- the mesiobuccal root may exhibit **two mesial canals** end by single foramen or multiple foramens.
- Distobuccal root has only one canal

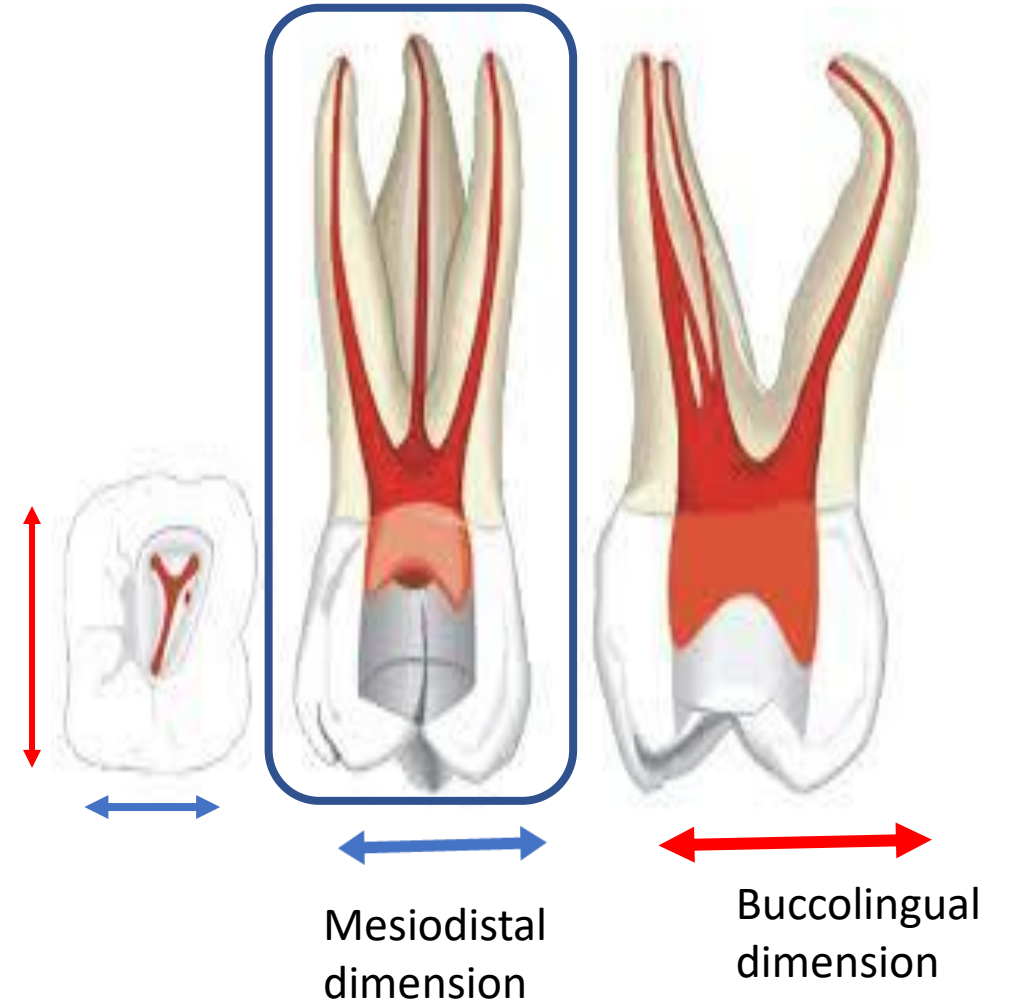


(a)



Mesiodistal Section

- mesiodistal dimension narrower than buccolingual dimension
- Pulp horns extend under mesiobuccal and distobuccal cusps.
- Root canals narrow and tapered



REMEMBER THE CHARACTERISTIC FEATURES

DB convergence

ML cusp is the master cusp

Oblique ridge

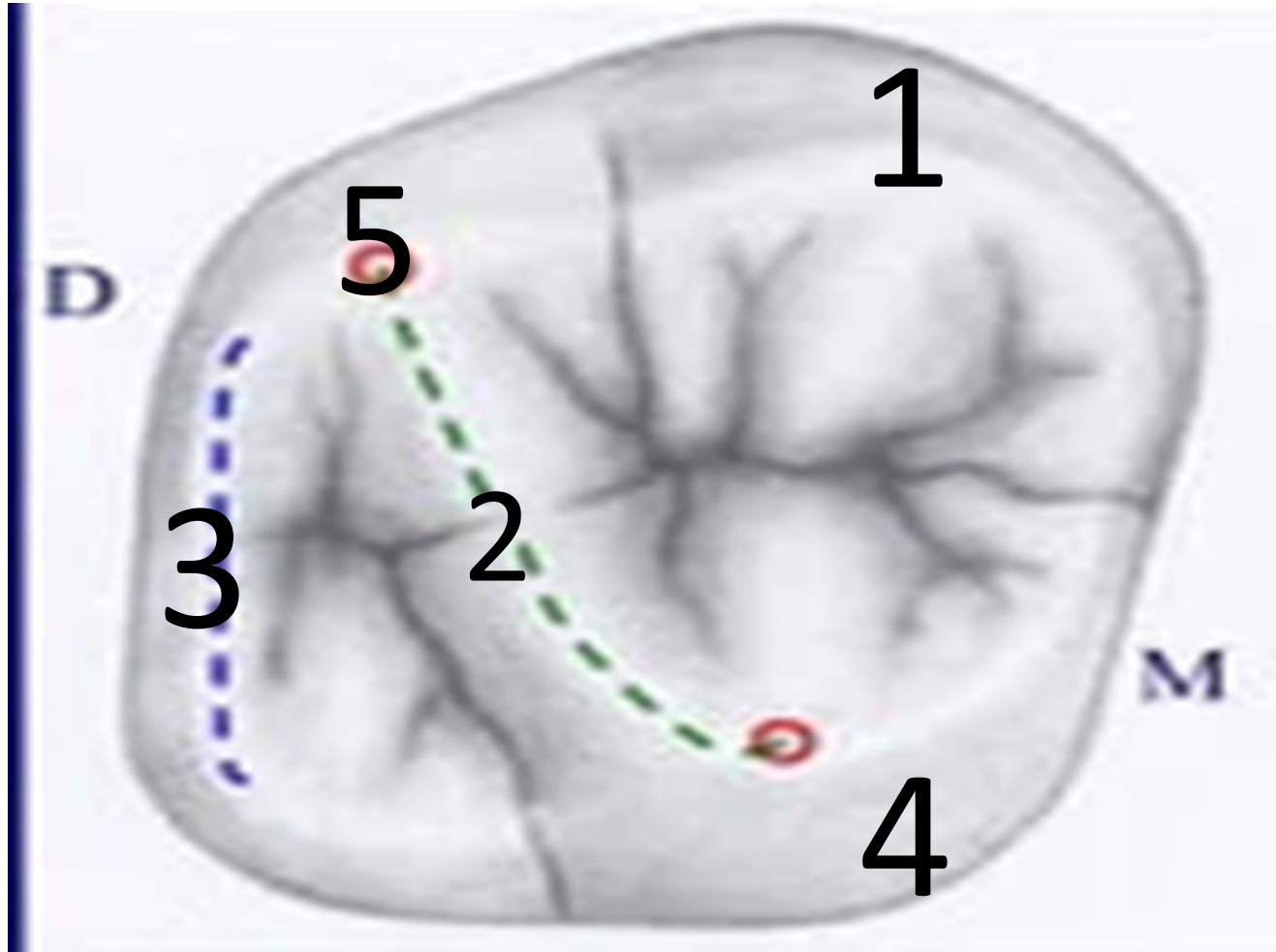
Cusp of carabelli

Divergent roots

REMEMBER



Mention the elevations



THANK

YOU