

DENTAL ANATOMY

LEC 11

PERMANENT MAXILLARY MOLARS

DR.ALAA HASHIM

Maxillary molars

- ❑ Permanent maxillary molars are the **largest and strongest maxillary teeth**. They have three roots: two buccal and one lingual (palatal).
- ❑ They are **not succedaneous** teeth as they erupt behind the deciduous molars.

MAXILLARY FIRST MOLAR

Principal identifying features

1. **Rhomboidal** occlusal outline.
2. The presence of a **fifth cusp** named (**the cusp of Carabelli**) a non-functional cusp- on the lingual surface of the mesio-lingual cusp.



Principal identifying features

3. The presence of an **oblique ridge** extending from the mesio-lingual cusp to the disto-buccal cusp.
4. The presence of **three well-separated and well-developed roots**: two buccal and one lingual. The lingual root is the longest.

Buccal Aspect

- ❑ The crown is roughly **trapezoidal** and the cervical line shows very little convexity, which is directed toward the root.
- ❑ The mesial outline of the crown is **straight**, curving occlusally as it reaches the contact area(**junction between the occlusal and middle thirds**).



Buccal Aspect

- The distal outline of the crown is convex, with the contact area located at the **center of the middle third**.



Buccal Aspect

- The **mesio-buccal cusp** is **broader** than the **disto-buccal cusp**, and its mesial and distal slopes meet at an obtuse angle, while the mesial and distal slopes of the **disto-buccal cusp** meet at a right angle.



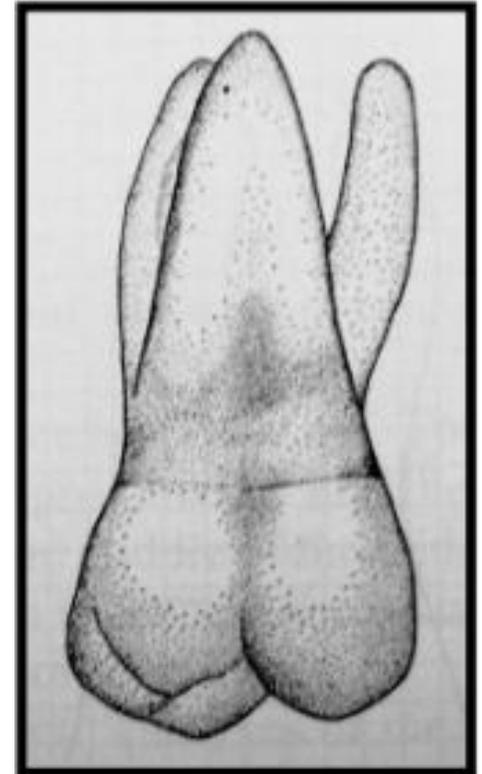
Buccal Aspect

- ❑ The **buccal developmental groove** divides the two buccal cusps in equal distance and it terminates apically.
- ❑ The three roots are visible and inclined distally, with the lingual root is the longest.



Lingual Aspect

- The **lingual cusps** only can be seen, with the **mesio-lingual cusp** is the largest cusp and accounts for $3/5$ of the mesio-distal width of the crown, while the **disto-lingual cusp** accounts for $2/5$ of the mesio-distal dimension.



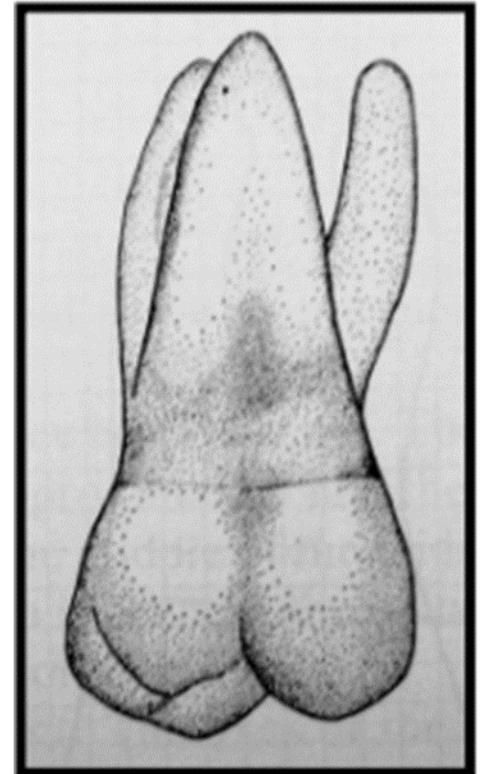
Lingual Aspect

□ The **lingual developmental groove** starts approximately at the center mesio-distally and curves sharply distally, then continues on the occlusal surface.



Lingual Aspect

□ The **fifth cusp (the cusp of Carabelli)** is 1.5 mm cervical to the mesio-lingual cusp tip, and an **irregular developmental groove** separates this cusp from the mesio-lingual cusp.



Mesial Aspect

- The buccal outline has a **crest of curvature within the cervical third**, then it continues with a **convex outline to the tip of the cusp**.



Mesial Aspect

- The lingual outline has a **crest of curvature within the middle third**, and it shows a convex pattern until it reaches the cusp of Carabelli, at which it shows another convexity.



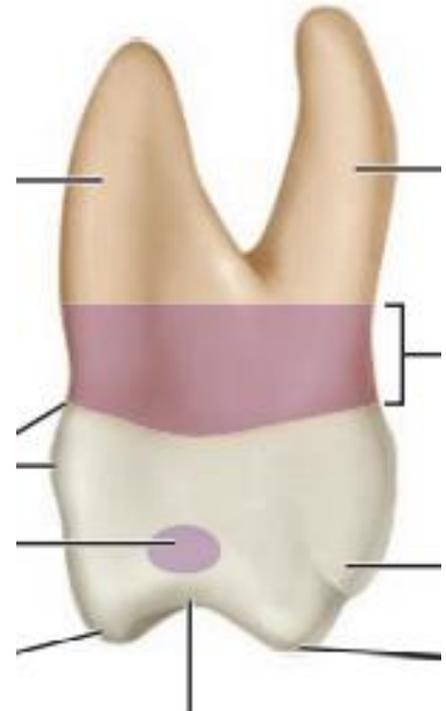
Mesial Aspect

- ❑ The mesial marginal ridge is located at a level $\frac{1}{5}$ the height of the crown.
- ❑ The cervical line curves occlusally about 1 mm.



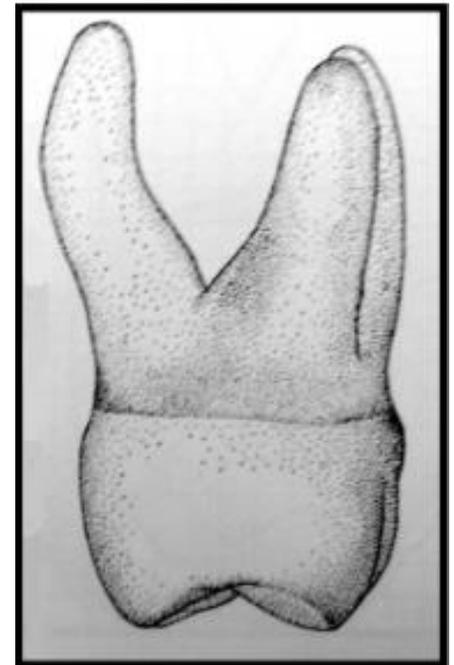
Mesial Aspect

- ❑ The mesial contact area is buccal to the bucco-lingual center of the crown.
- ❑ The lingual and mesio-buccal roots can be seen.



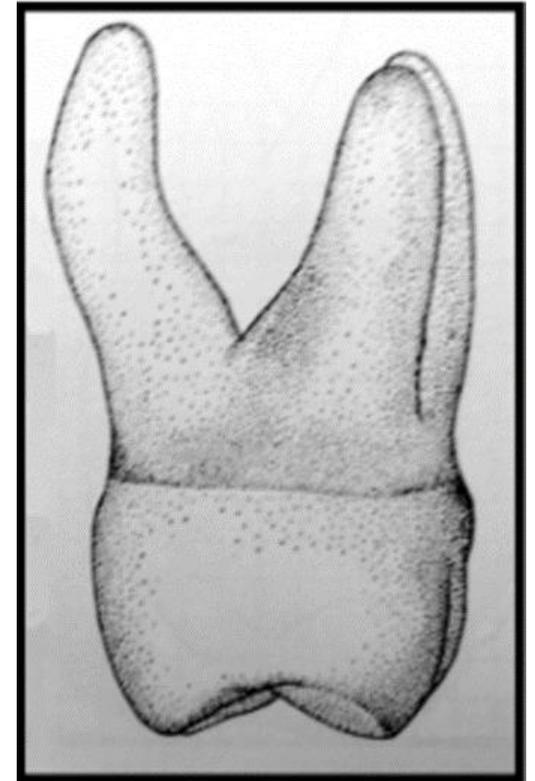
Distal Aspect

- ❑ The general outline is similar to that of the mesial aspect, but the bucco-lingual measurement is more mesially than distally.
- ❑ The distal marginal ridge is located more cervically, so we can see part of the occlusal surface.



Distal Aspect

- ❑ The curvature of the cervical line is zero.
- ❑ All the three roots are visible, and the disto-buccal root is the smallest one.



Occlusal Aspect

- The occlusal outline is **rhomboidal** with greater bucco-lingual measurement **mesially than distally**, and greater mesio-distal measurement **lingually than buccally**.



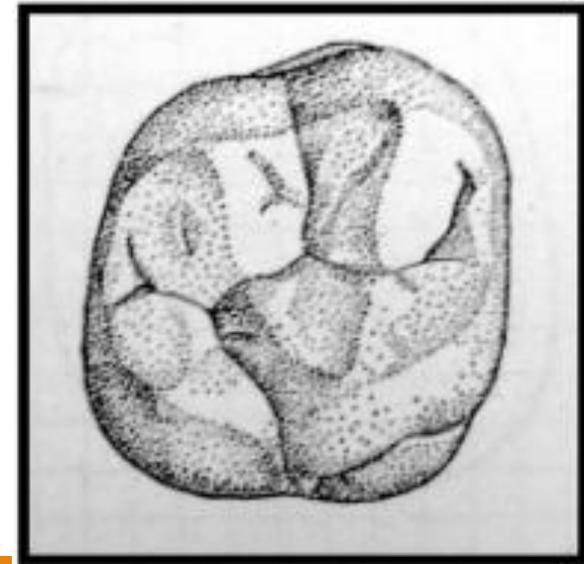
Occlusal Aspect

- ❑ **Four well-developed cusps can be seen: the mesio-lingual cusp is the largest , then the mesio-buccal, then the disto-lingual, then the disto-buccal, then the cusp of Carabelli.**



Occlusal Aspect

- There is an oblique ridge formed by the union of the triangular ridge of the disto-buccal cusp and the distal ridge of the mesio-lingual cusp, crossing the occlusal surface obliquely.



Occlusal Aspect

➤ There are four fossae

❑ **Central fossa:** roughly triangular in shape,

located mesial to the oblique ridge.

❑ **Distal fossa:** located distal to the oblique ridge.

❑ **Mesial triangular fossa:** located distal to the mesial marginal ridge.

❑ **Distal triangular fossa:** located mesial to the distal marginal ridge.



Occlusal Aspect

➤ There are six developmental grooves:

□ **Central developmental groove:** from the central pit to the mesial triangular fossa.

□ **Buccal developmental groove:** from the central pit to the buccal surface between the mesio-buccal and disto-buccal cusps.



Occlusal Aspect

❑ **Distal oblique groove:** from the distal triangular fossa going obliquely.

❑ **Lingual developmental groove:** this groove joins with the distal oblique groove going between the

mesio-lingual and disto-lingual cusps in a cervical direction.



Occlusal Aspect

❑ **Transverse groove of the oblique ridge:** this groove crosses the oblique ridge.

❑ **Fifth cusp groove:** this groove passes between the fifth cusp and the mesio-lingual cusp.



Occlusal Aspect

➤ There are three pits:

□ **Central pit:** it is located at the deepest part of the central fossa, at the junction between the central groove

and the buccal developmental groove.



Occlusal Aspect

❑ **Mesial pit:** it is located at the deepest part of the mesial triangular fossa.

❑ **Distal pit:** it is located where the distal fossa and distal triangular fossa join.

