

Permanent maxillary molars

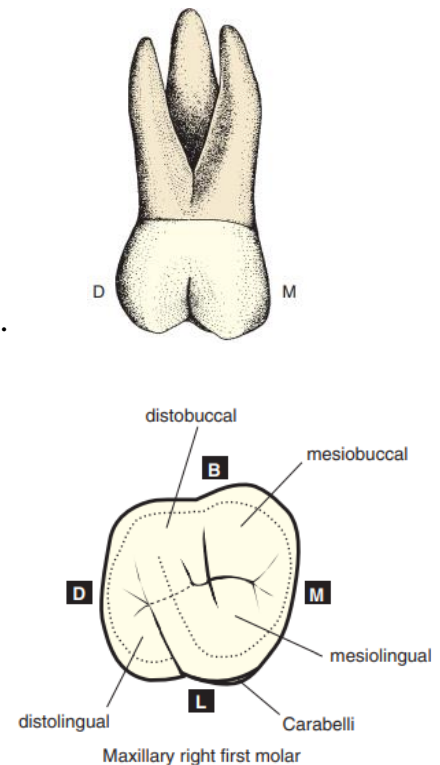
The maxillary molars differ in design from any of the teeth previously described. These teeth assist the mandibular molars in performing the mastication (grinding the food), also they support the muscles of mastication. They are the largest and strongest maxillary teeth. They have large crowns with four well-formed cusps; two buccal cusps and two lingual cusps. Also, they have three roots; two buccal and one lingual, the lingual root is the largest. The outlines and curvatures of all the maxillary molars are nearly similar. They are not successor teeth, because they have no predecessors, they erupt behind the primary molars.

Maxillary first molar

It is the largest tooth in the maxillary arch. The permanent first molars usually appear in the oral cavity when the child is 6 years old, the mandibular molars precede the maxillary molars. The first permanent molar (maxillary or mandibular) erupts posterior to the second deciduous molar, taking up a position in contact with it.

Principle 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.
- 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 one is the longest.



Buccal aspect

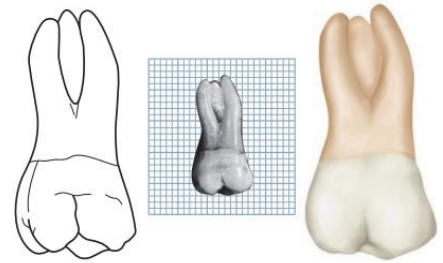
1-The crown is roughly trapezoidal and the cervical line shows very little convexity which is directed to the root surface.

2-The mesial outline of the crown is straight, curving occlusally as it reaches the contact area, which is located at the junction of the middle and occlusal thirds.

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

5-The buccal developmental groove divides the buccal cusps into two equal distance and it terminates apically.

6-The three roots are visible and inclined distally, with the lingual root is the longest.



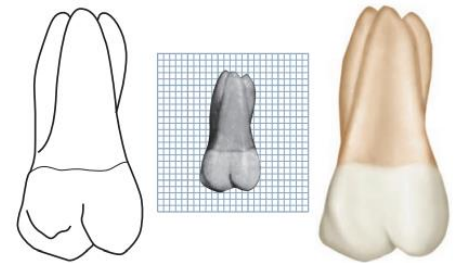
Lingual aspect

1. 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.

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

3. 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.

4. There are three roots visible, with the lingual root making most of this aspect

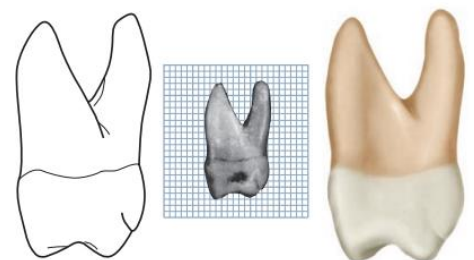


Mesial aspect

1-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.

2-The lingual outline has a crest of curvature within the middle third, and it shows a convex pattern until it reaches the cusp of carebelli.

3-The cervical line curves occlusally about 1 mm.



4-The inter-cuspal distance of the two buccal cusps is a little more than half the bucco-lingual dimension of the crown.

5-The mesial contact area is buccal to the bucco-lingual center of the crown.

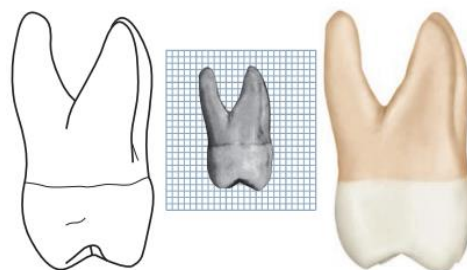
Distal aspect

1-The general outline is similar to that of the mesial aspect, but the bucco-lingual measurement is more mesially than distally.

2-The distal marginal ridge is located more cervically, so we can see part of the occlusal surface.

3-The curvature of the cervical line is zero.

4-All the three roots are visible, and the disto-buccal root is the smallest one.



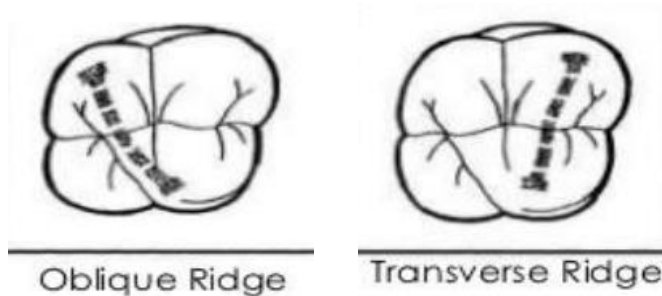
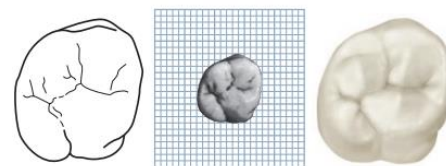
Occlusal aspect

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

2. There are five cusps can be seen: the mesio-lingual cusp is the largest then the mesio-buccal, disto-lingual, disto-buccal then the cusp of Carabelli.

3. The mesio-buccal and disto-lingual line angles are acute and the mesio-lingual and disto-buccal line angles are obtuse.

4. 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.



5. There are four fossae:

A. Major fossae

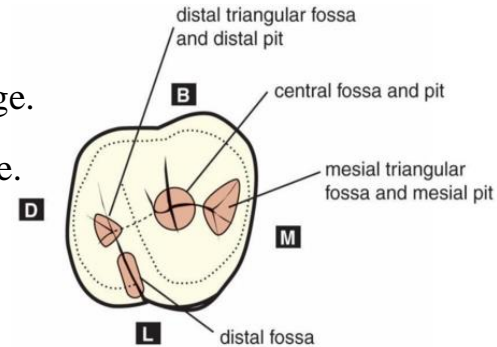
1. Central fossa: roughly triangular in shape located mesial to the oblique ridge.
2. Distal fossa: located distal to the oblique ridge.

B. Minor fossae:

1. Mesial triangular fossa: located distal to the mesial marginal ridge.
2. Distal triangular fossa: located mesial to the distal marginal ridge.

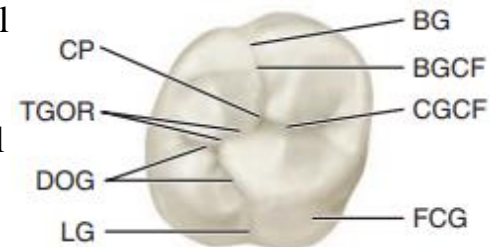
6. There are three pits:

- (a) 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.
- (b) Mesial pit: it is located at the deepest part of the mesial triangular fossa.
- (c) Distal pit: it is located where the distal fossa and distal triangular fossa join.

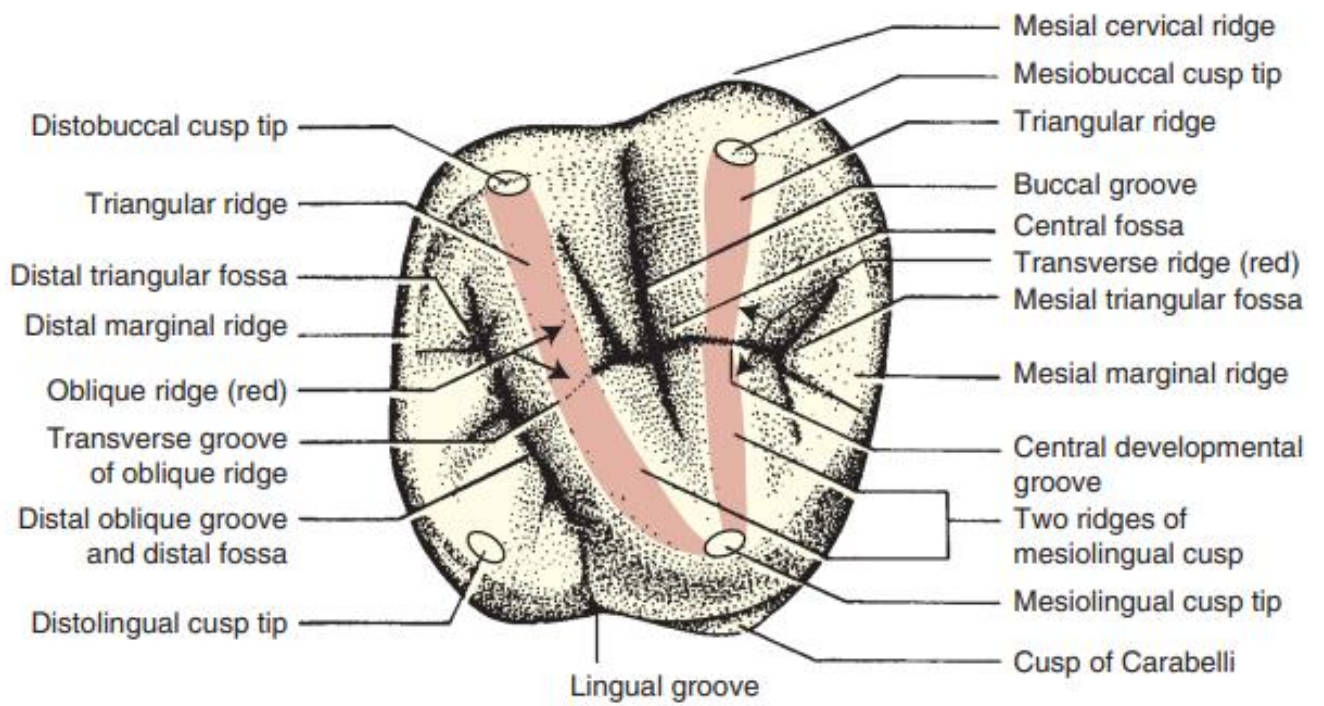


7. There are six developmental grooves:

- (a) Central developmental groove: from the central pit to the mesial triangular fossa.
- (b) Buccal developmental groove: from the central pit to the buccal surface between the mesio-buccal and disto-buccal cusps.
- (c) Distal oblique groove: from the distal triangular fossa going obliquely.
- (d) Lingual developmental groove: this groove joins with the distal oblique groove going between the mesio-lingual and disto-lingual cusps in a cervical direction.
- (e) Transverse groove of the oblique ridge: this groove crosses the oblique ridge.
- (f) Fifth cusp groove: this groove passes between the fifth cusp and the mesio-lingual cusp.



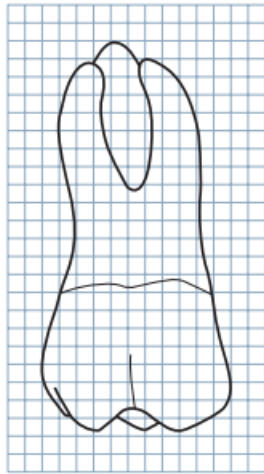
Maxillary right first molar, occlusal aspect, developmental grooves. BG, Buccal groove; BGCF, buccal groove of central fossa; CGCF, central groove of central fossa; FCG, fifth cusp groove; LG, lingual groove; DOG, distal oblique groove; TGOR, transverse groove of oblique ridge; CP, central pit.



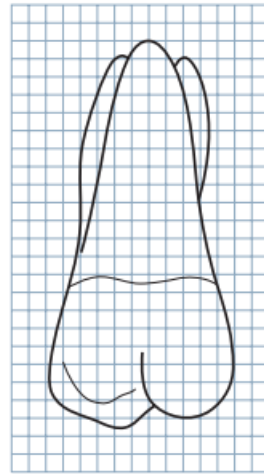
MEASUREMENT TABLE

	CERVICO- OCCLUSAL LENGTH OF CROWN	LENGTH OF ROOT	MESIODISTAL DIAMETER OF CROWN	MESIODISTAL DIAMETER OF CROWN AT CERVIX	LABIO- OR BUCCOLINGUAL DIAMETER OF CROWN	LABIO- OR BUCCOLINGUAL DIAMETER OF CROWN AT CERVIX	CURVATURE OF CERVICAL LINE—MESIAL	CURVATURE OF CERVICAL LINE—DISTAL
Dimensions* suggested for carving technique	7.5	Buccal = 12 Lingual = 13	10.0	8.0	11.0	10.0	1.0	0.0

*In millimeters.



Buccal



Lingual



Occlusal

