Dental Anatomy

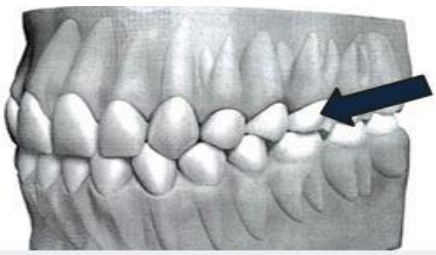
Lec 6 **Dr. Dhifaf Kamil**

Maxillary Molars

The maxillary molars are the largest and strongest maxillary teeth. They have three roots: two buccal and one lingual. Their main functions are grinding the food and supporting the muscles of mastication.

Maxillary First Molar

Maxillary first molar is the sixth tooth from the median line in the maxilla. It is the largest tooth in the maxillary arch. It has four well developed cusps and one supplemental cusp called fifth cusp or cusp of Carabelli. Normally the tooth has three well-developed roots two buccal roots and one lingual root.



MEASUREMENT TABLE

	CERVICOINCISAL 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	B 12 L 13	10	8	11	10	1	0

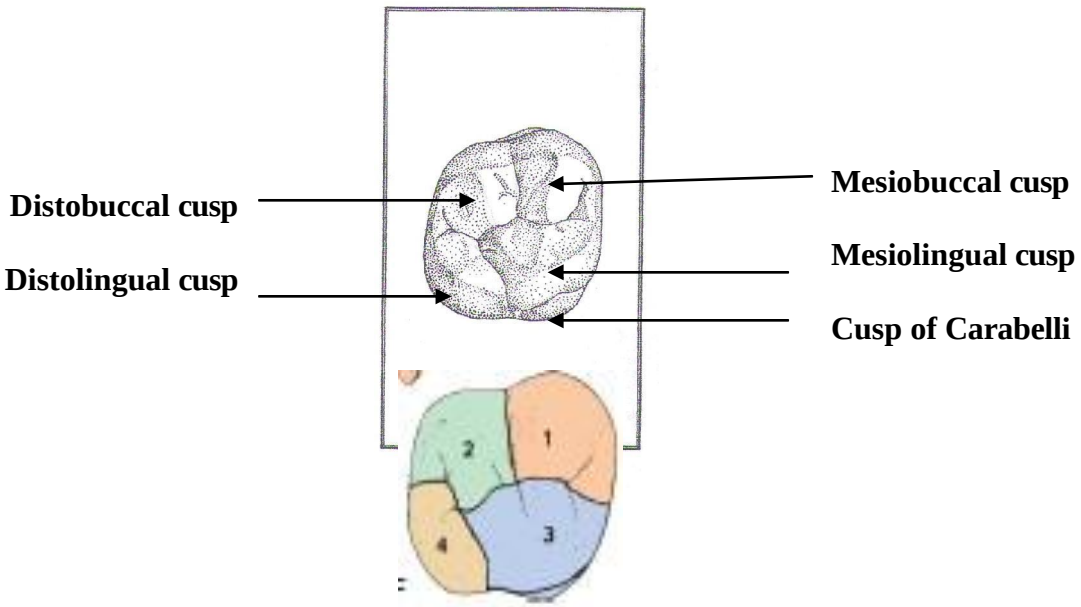
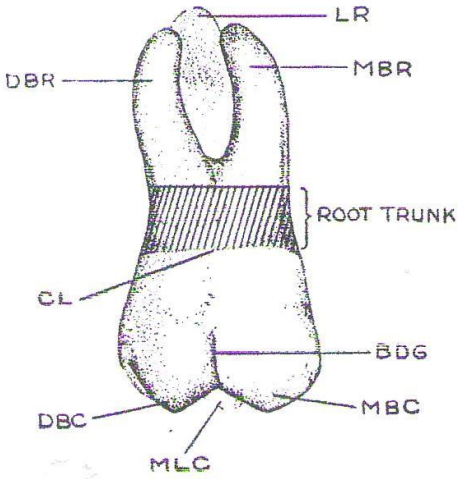
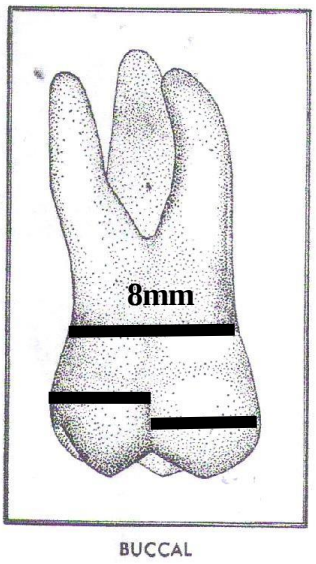


Figure 58. Maxillary right first molar—buccal aspect. *DBR*, Distobuccal root; *LR*, lingual root; *MBR*, mesiobuccal root; *CL*, cervical line; *DBC*, distobuccal cusp; *MLC*, mesiolingual cusp; *BDG*, buccal developmental groove; *MBC*, mesiobuccal cusp.

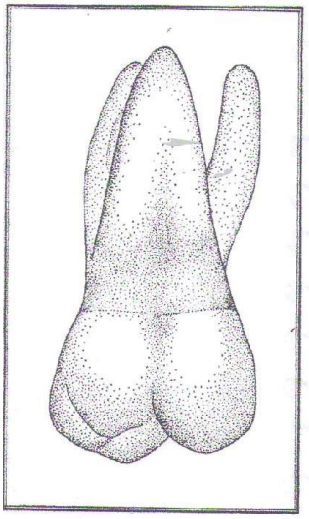


Buccal Aspect



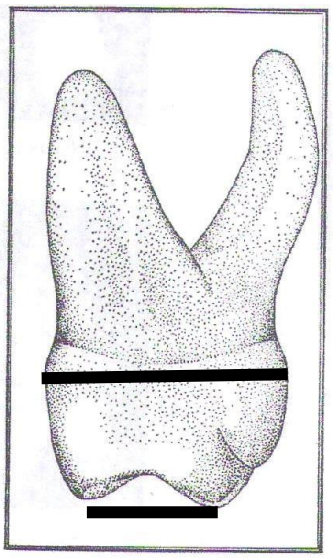
1. The line of the cementoenamel junction on the buccal surface is almost straight with slight convexity towards the root.
2. The mesial outline of the crown is very slight concave above the contact area. The outline of the contact area is convex and broad with crest of curvature in the middle third near the junction of occlusal and middle third. The line from the contact area to the tip of the mesiobuccal cusp is convex.
3. The distal outline of the crown is convex from the cervical line to the contact area to the tip of distobuccal cusp. The contact area is located in the center of middle third.
4. To complete the line of the buccal cusps two straight lines extend from the tip of the buccal cusps to the buccal groove near the center of crown slight distally.
5. The mesiobuccal cusp is greater width than distobuccal cusp. There is mesiolingual cusp can be seen between the bifurcation of the two buccal cusps.
6. The three roots are visible and inclined distally with the lingual root is the longest about 1mm than the buccal roots.

Lingual Aspect


LINGUAL

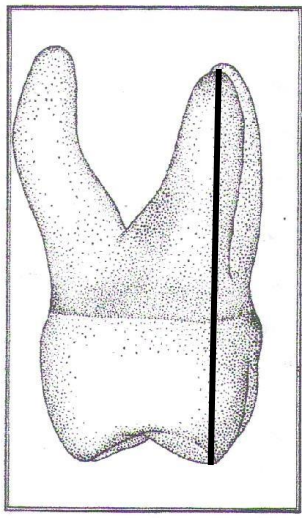
1. The lingual aspect has the same outline but a reverse to the buccal with curve cervical line is also straight.
2. The mesiolingual cusp is longer by 0.5 mm. it is wider than any other cusp which is take 3/5 of the mesiodistal width of the crown while the distolingual cusp take 2/5 of the mesiodistal dimension.
3. The distolingual cusp is semicircular outline from the contact area to the lingual groove.
4. The fifth cusp is located in the mesiolingual cusp about 1.5 mm above mesiolingual cusp tip with developmental groove separate it from the mesiolingual cusp.
5. There are three roots are visible with lingual root making the most of this aspect.

Mesial Aspect


MESIAL

1. The curvature of the cervical line towards the occlusal surface about 1mm.
2. The buccal outline of the crown is convex from cervical line to the crest of curvature which is located within the cervical third to the tip of the buccal cusp which is on the line with apex of the mesiobuccal root.
3. The lingual outline of the crown is the same extent of curvature from the cervical line to the crest of curvature in the lingual and continues its convexity to the fifth cusp which is on the line with apex of the lingual root.
4. The fifth cusp is not well developed cusp but it is a projection separated from the mesiolingual cusp by developmental groove.
5. The mesiolingual cusp is outlined from the developmental groove of the fifth cusp to the tip of the mesiolingual cusp.
6. The inter cuspal distance from the tip of the mesiobuccal cusp to the tip of the mesiolingual cusp is little more than one the half measurement of the distance of the crest of curvature buccolingual dimension of the crown.

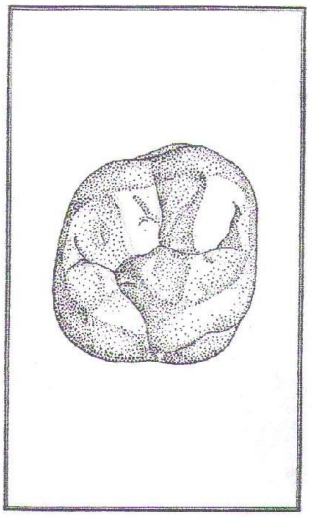
Distal Aspect



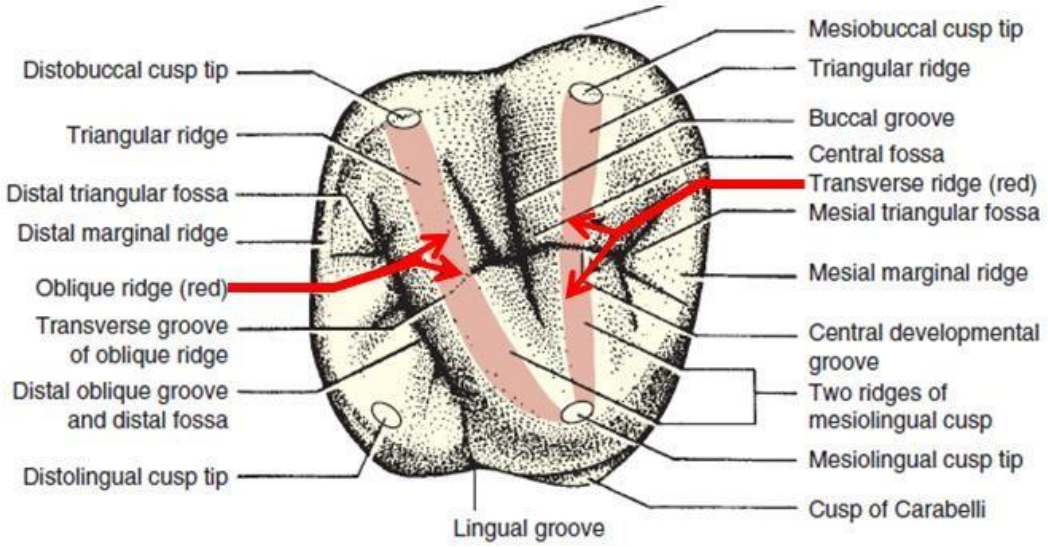
The distal aspect has the same outline as the mesial but differs in:

1. The buccolingual measurement is less (because the slope of the buccal surface).
2. The curvature of the cervical line is straight (0mm).
3. The distal marginal ridge is located more cervically.
4. The tip of the distobuccal cusp on the line of the apex of the distobuccal root.

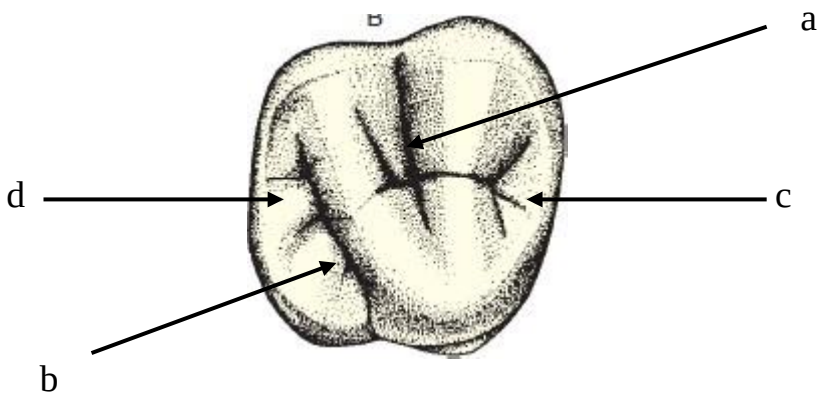
Occlusal Aspect



1. Four well-developed cusps can be seen: the mesiolingual cusp is the largest, then mesiobuccal cusp, then the distobuccal cusp. The distolingual, then cusp of Carabelli.
2. There is oblique ridge formed by the union of the triangular ridge of the distobuccal and distal ridge of the mesiolingual cusp crossing the occlusal surface obliquely.

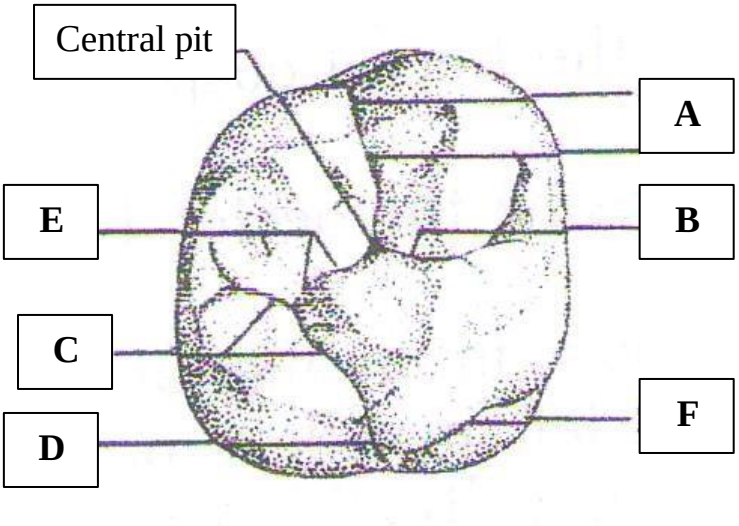


3. There are four fossae :
    a. Central fossa is triangular in shape is located mesial to the oblique ridge.
    b. Distal fossa is located distal to the oblique ridge.
    c. Mesial triangular fossa is located distal to the mesial marginal ridge.
    d. Distal triangular fossa is located mesial to the distal marginal ridge.



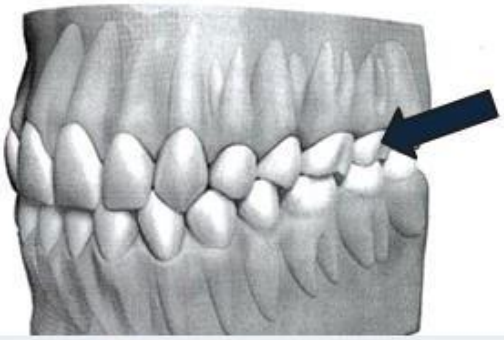
4. There are six developmental grooves:
    A. Buccal developmental groove.
    B. Central developmental groove.
    C. Distal developmental groove
    D. Lingual developmental groove
    E. Transverse groove of oblique ridge.
    F. Fifth cusp groove.

5. There three pits:
    a. Central pit.
    b. Mesial pit.
    c. Distal pit.



Maxillary Second Molar:

Maxillary second molar is the seventh tooth from the median line in the maxilla.

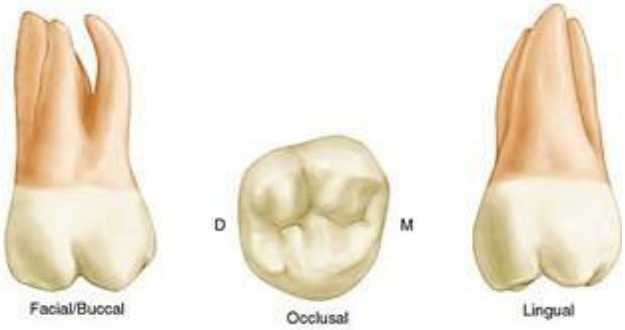


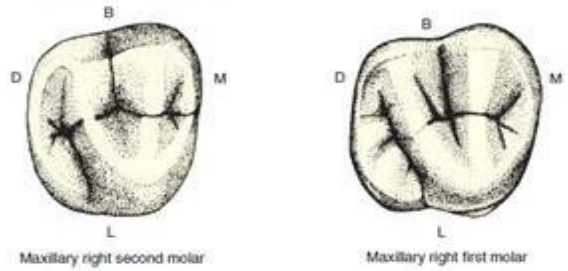
MEASUREMENT TABLE

	Cervicoincisal 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	6.5	B 11 L 12	9	7	11	10	1	0

- **Principal identifying features of maxillary second molars:**

1. There is no fifth cusp (cusp of carabelli)
2. The roots less divergent may be coalescent (joint together).
3. Both distal cusps(distobuccal and distolingual)are less developed.
4. The crown is smaller in over all dimensions than maxillary first molar except buccolingual dimensions.

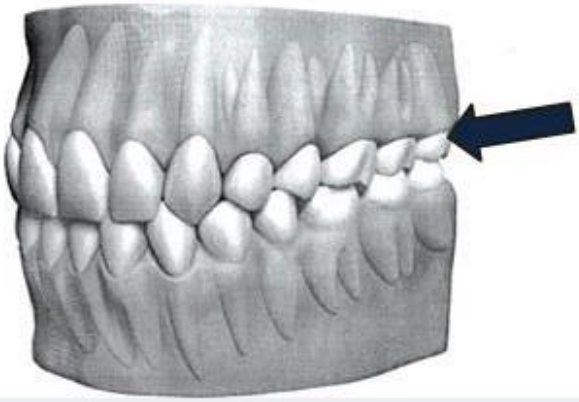




MAXILLARY MOLARS (occlusal)

Maxillary third molar:

Maxillary third molar is the eighth tooth from the median line in the maxilla.



MEASUREMENT TABLE

	CERVICOINCISAL 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	6	11	8.5	6.5	10	9.5	1	0

- **Principal identifying features of maxillary third molars:**

1.It is the smallest maxillary molars.
2.The occlusal outline is triangular,
The distolingual cusp is very small.
And poorly developed and may be absent
3.The roots are shorter and fused.
4. The mesiolingual cusp is the largest cusp

5. It has many variations:

a. The most common heart shaped type with three cusp.
b. The four cusp type has rhomboidal in shape
c. One cusp type has peg shape.
d. Congenitally missing.

Maxillary Molars Comparison

Feature	First Molar	Second Molar	Third Molar (Wisdom Tooth)
Position	6th tooth from midline	7th tooth from midline	8th tooth from midline
Size	Largest maxillary tooth	Smaller than first molar	Smallest (variable size)
Cusps	4 major + 1 minor (Cusp of Carabelli)	4 cusps (usually no Cusp of Carabelli)	3-4 cusps, highly variable or may be 1
Cusp of Carabelli	Present on mesiolingual cusp	Rare or absent	Usually absent
Root Number	3 (2 buccal, 1 lingual)	3 (closer together, may fuse)	Usually 3, often fused
Root Divergence	Widely spread	Less spread than first molar	Often fused and curved
Occlusal Shape	Rhomboidal	Nearly rhomboidal	Heart-shaped or irregular
Oblique Ridge	Prominent (mesiolingual to distobuccal cusp)	Present but less pronounced	Often absent
Function	Grinding food, strong mastication support	Grinding food	Variable (often not fully functional)
Eruption Age	6–7 years	12–13 years	17–21 years