

The Permanent Mandibular Molars

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- The mandibular molars are larger than any other mandibular teeth.
- They are three in number on each side of the mandible: the first, second, and third mandibular molars.
- They resemble each other in functional form,
- But variations in the number of cusps and some variation in size, occlusal design, and the relative lengths and positions of the roots.

- Each mandibular molar has two roots, one mesial and one distal.
- Third molars and some second molars may show a fusion of these roots.
- All mandibular molars have crowns that are roughly quadrilateral, being somewhat longer mesiodistally than buccolingually.
- Maxillary molar crowns have their widest measurement buccolingually.

- The mandibular molars perform the major portion of the work of the lower jaw in mastication and in the comminution of food.
- They are the largest and strongest mandibular teeth, both because of their bulk and because of their anchorage.

- The crowns of the molars are shorter cervico-occlusally than those of the teeth anterior to them, but their dimensions are greater in every other respect.
- The root portions are not as long as those of some of the other mandibular teeth, but the combined measurements of the multiple roots, with their broad bifurcated root trunks, result in superior anchorage and greater efficiency.

First evidence of calcification	At birth
Enamel completed	2½-3 yr
Eruption	6-7 yr
Root completed	9-10 yr

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	14.0	11.0	9.0	10.5	9.0	1.0	0.0

*In millimeters.

MANDIBULAR FIRST MOLAR

□ Principal identifying features :

- 1) Five cusps: 2 buccal, 2 lingual, and one distal.
- 2) The buccal surface is bulky (lingually inclined) with two dev. grooves.
- 3) The crown is wider mesiodistally than buccolingually.
- 4) Occlusal outline is rectangular in shape.
- 5) Two well developed roots, one mesial, and one distal

DISTAL



MESIAL

Buccal

D
I
S
T
A
L

M
E
S
I
A
L

Disto-Lingual
Mesio-Lingual
Disto-Buccal
Mesio-Buccal
Distal

DISTAL ROOT

MESIAL ROOT

Buccal



D
I
S
T
A
L

Disto-buccal developmental groove
Mesio-Buccal developmental groove
Disto-Buccal
Mesio-Buccal

Distal



Buccal

M
E
S
I
A
L

OCCLUSAL

**D
I
S
T
A
L**



Buccal

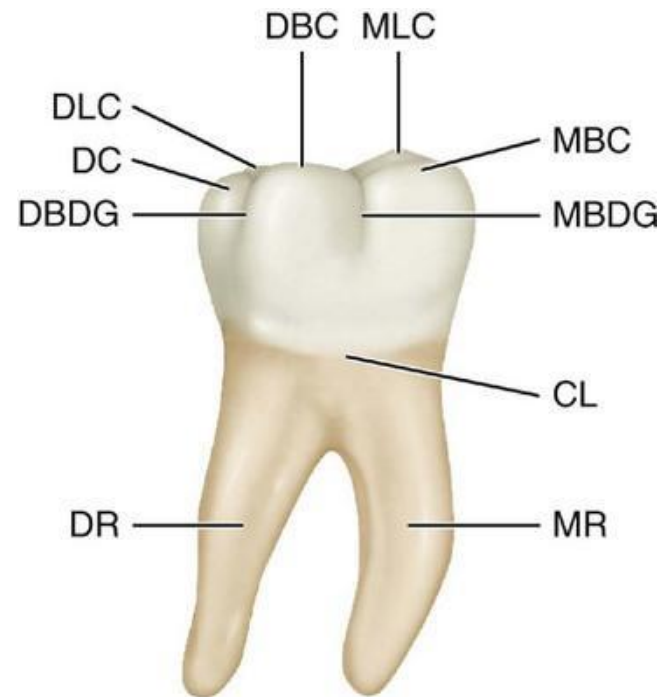
CERVICAL LINE

**M
E
S
I
A
L**

APICAL

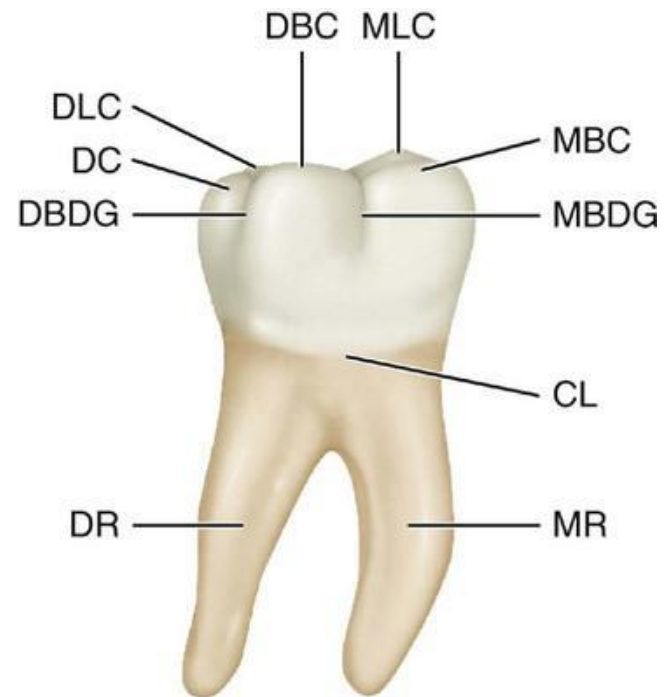
Buccal aspect

- 1- There are 2 developmental grooves between the cusps acting as lines of division between the buccal cusps. The mesiobuccal developmental groove is shorter than the distobuccal d.g
- 2- The mesial contact area is at the junction of the occlusal and the middle thirds.
- 3- The distal contact area is a little lower than the mesial contact area.
- 4- The cervical line is regular, curving apically



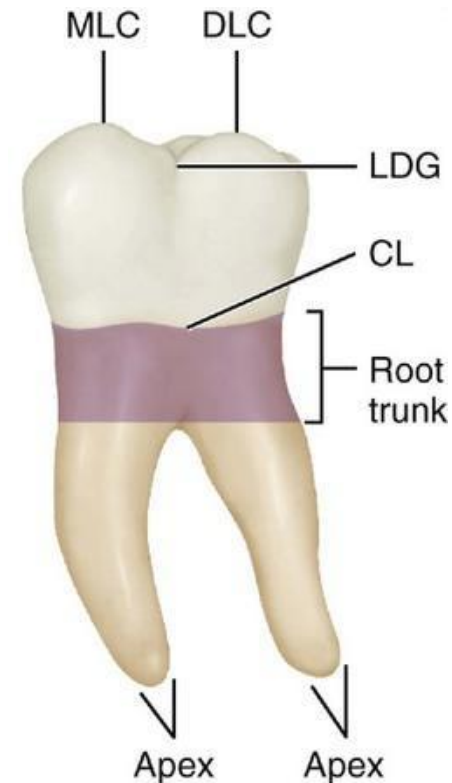
Buccal aspect

- 5- The mesiobuccal, distobuccal, and distal cusps are clearly visible, and the mesiolingual, and distolingual cusp's tips are seen.
- 6- The mesiobuccal cusp is slightly wider than the distobuccal cusp, together making 80% of the mesiodistal width. The distal cusp makes the rest 20%.
- 7- The buccal cusps are flat occlusally, the distal cusp is rounded.
- 8- The point of bifurcation of the 2 roots about 3mm below the cervical line.



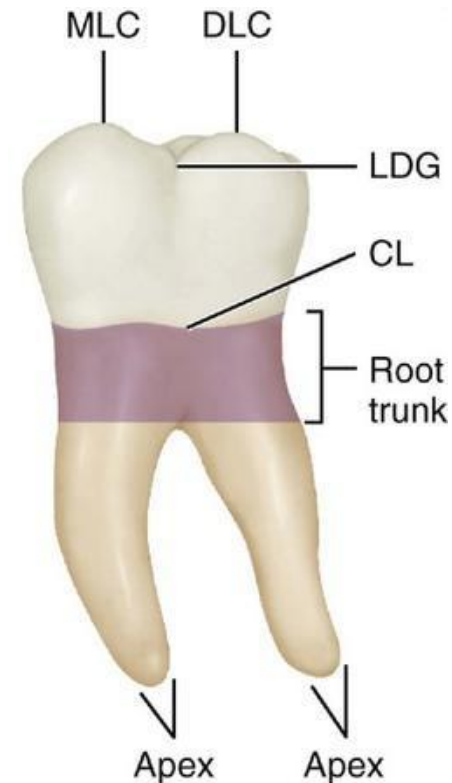
Lingual aspect

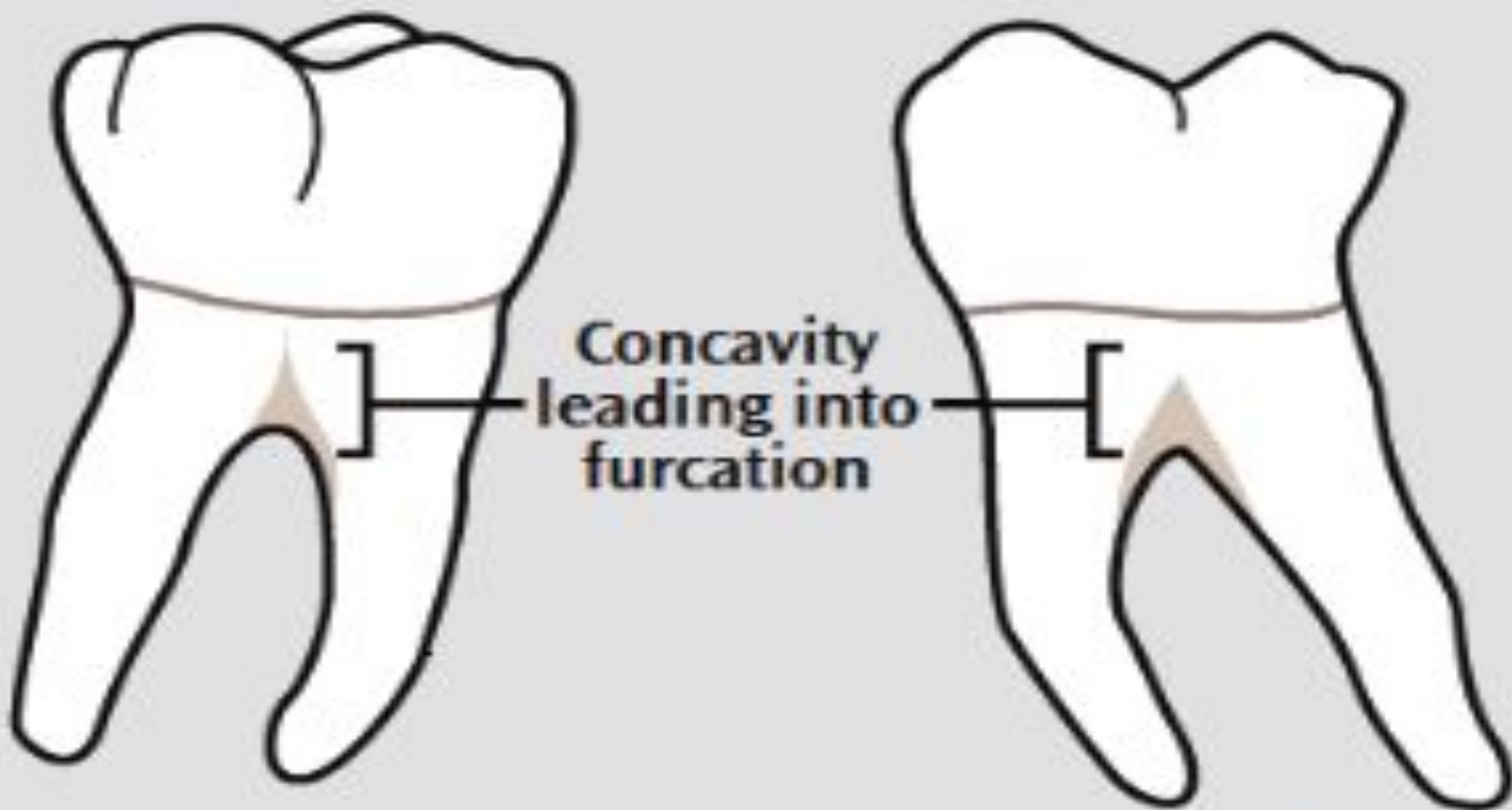
- 1- Three cusps seen (mesiolingual, distolingual, and lingual portion of the distal cusp). Mesiolingual cusp is the widest mesiodistally and has the highest cusp tip and the distal cusp is the lowest.
- 2- The 2 lingual cusps are pointed, and form obtuse angles at their cusp tips.
- 3- The lingual developmental groove extends downward for about a 1/3 of the crown length, and acts as a line of division between the lingual cusps



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Concavity
leading into
furcation

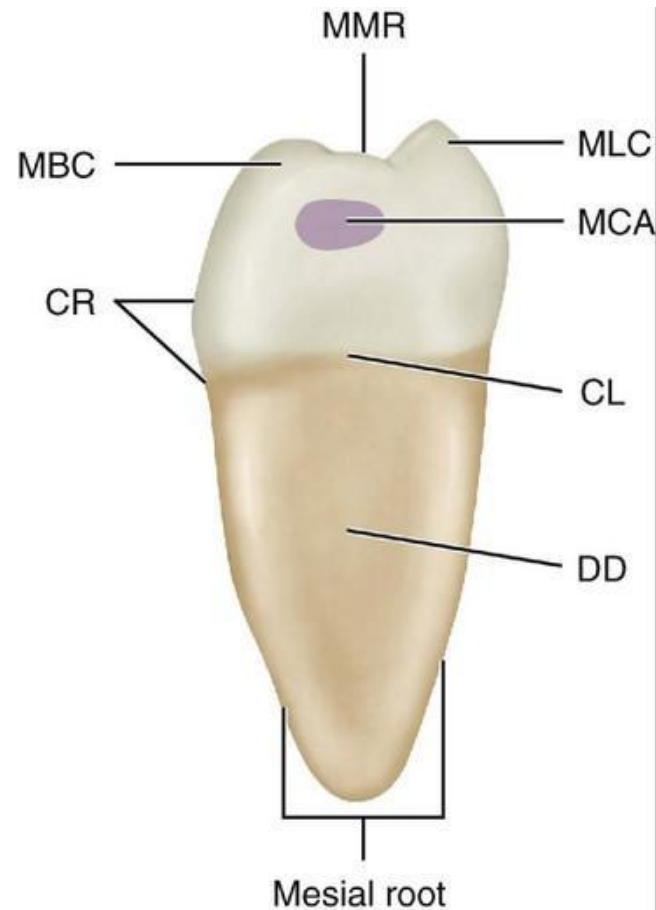
Facial

Lingual

Mandibular First Molar

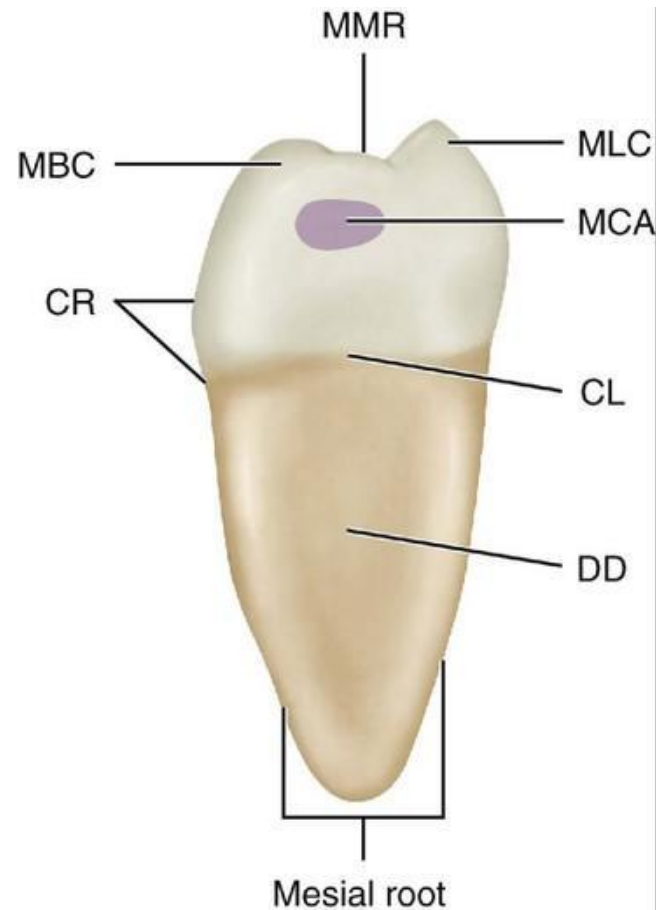
Mesial aspect

- 1- The crown is rhomboidal with a lingual tilt of the buccal outline.
- 2- The buccal outline of the crown is convex at the junction of the cervical and middle thirds (buccal cervical ridge), then the outline straightens to the buccal cusp tip.
- 3- The lingual outline is less convex, with the crest of curvature at the center of the middle third.
- 4- The cervical line is irregular, higher lingually than buccally



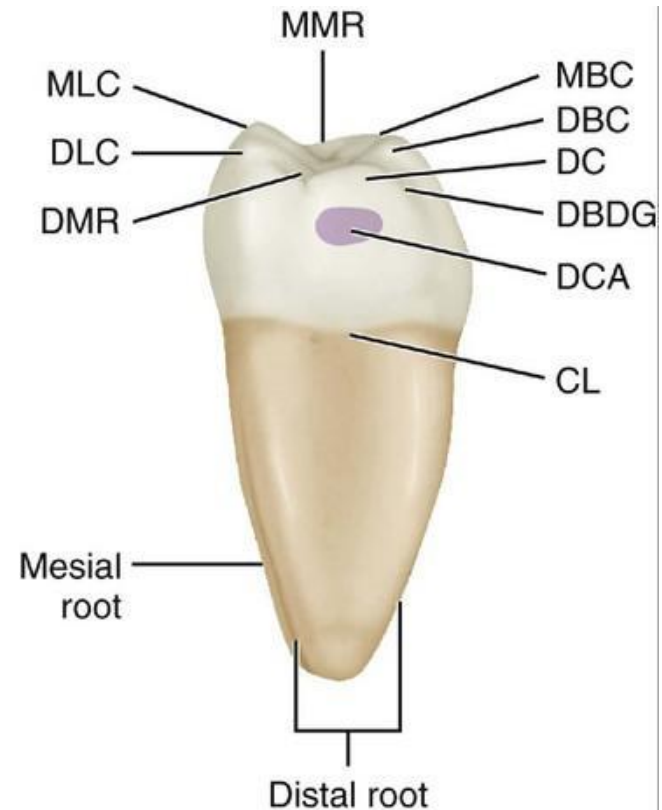
Mesial aspect

- 5- The buccal cusp is flat, and the lingual cusp is sharp, with greater cusp height.
- 6- The mesial marginal ridge is located 1mm below the level of the cusp tips.

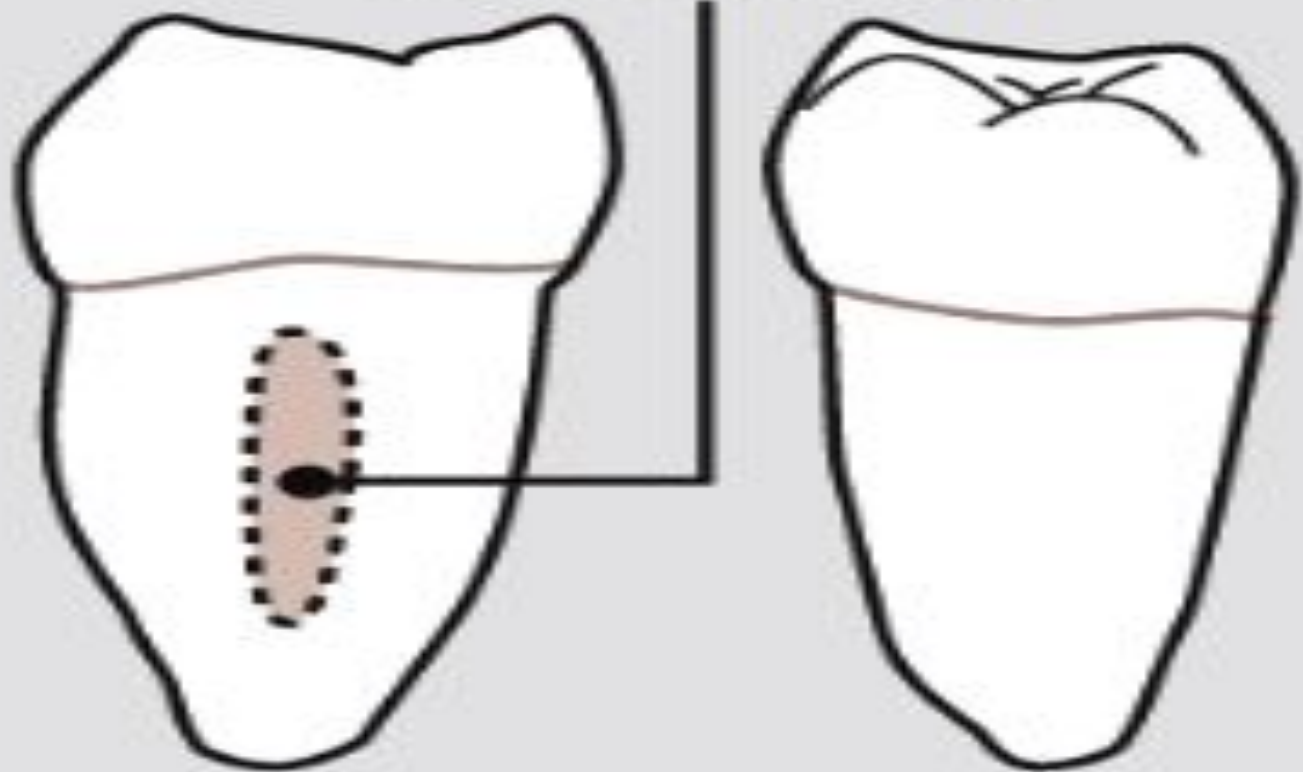


Distal aspect

- 1- Because the crown is shorter distally, than mesially, most of the buccal, lingual, and occlusal surfaces can be seen from the distal aspect.
- 2- Distal cusp is located buccal to tooth long axis.
- 3- Distal marginal ridge is short and curves cervically to form obtuse angle.
- 4- The cervical line is irregular.
- 5- Distal root is narrower than mesial root.



Slight concavity



Mesial

Distal

Mandibular First Molar

Occlusal aspect

- 1- The crown is rectangular in shape, mesiodistally longer by 1mm than buccolingually.
- 2- Buccolingual measurement of the crown is greater on mesial than on distal.
- The mesiodistal measurement is greater on buccal than on lingual.



Occlusal

Occlusal aspect

- 3- More of the buccal surface of the crown can be seen than of the lingual surface.
- 4- There are 5 cusps, mesiobuccal (largest), then mesiolingual and distolingual, then distobuccal, then the distal cusp.



Occlusal

Occlusal aspect

- 5- The distal contact area is on the distal cusp.
- 6- There are 4 dev. grooves:
 - a) Central d.g. (centrally)
 - b) Mesiobuccal d.g. divides the mesiobuccal and distobuccal cusp.
 - c) Distobuccal d.g. It divides the distobuccal and distal cusp.
 - d) Lingual d.g. It divides the mesiolingual and distolingual cusp.



Occlusal

Occlusal aspect

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Occlusal

Occlusal aspect

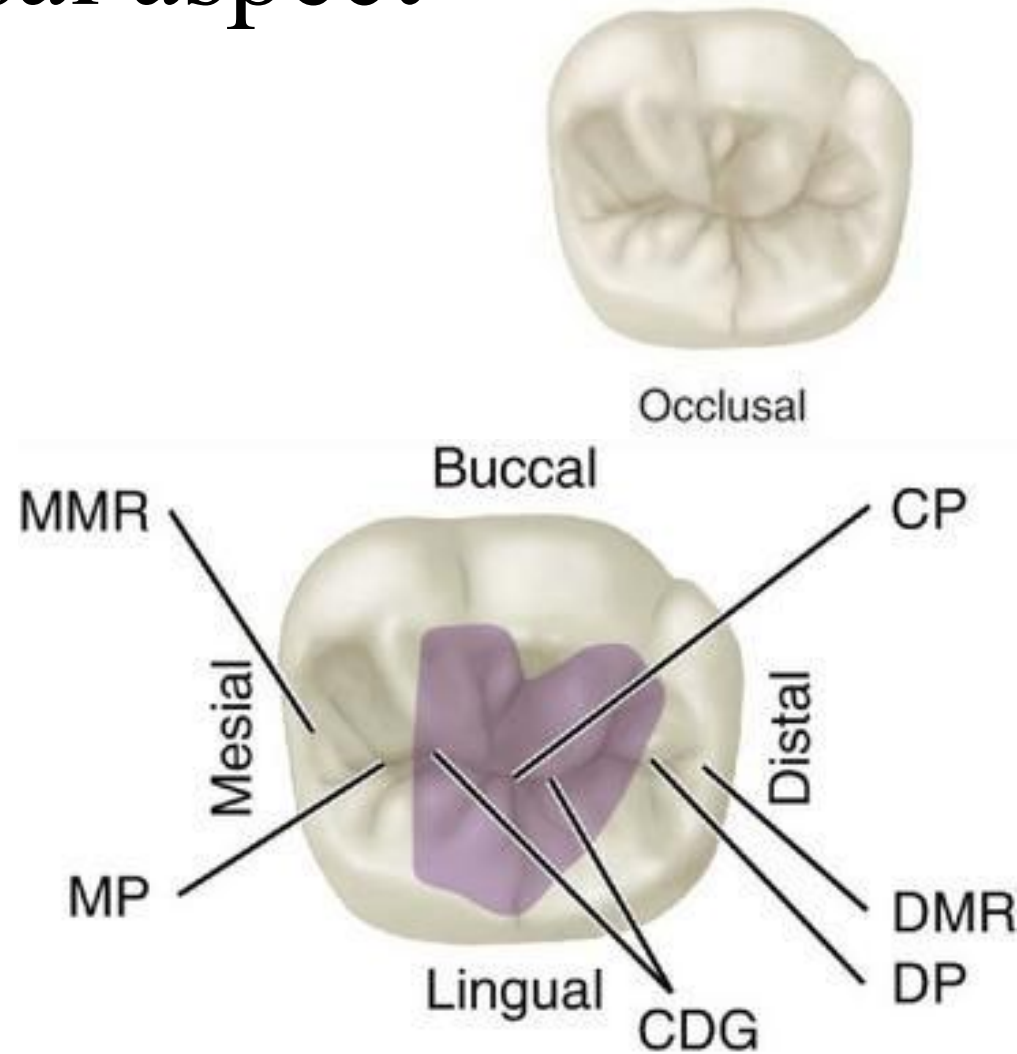
□ There are 3 fossae:

a) Central fossa.

- **Roughly circular**

- **Bounded by:**

- Distal slope of mesiobuccal cusp,
- Both mesial and distal slopes of distobuccal cusp,
- Mesial slope of the distal cusp,
- Distal slope of mesiolingual cusp,
- Mesial slope of the distolingual cusp.



Occlusal aspect

- **b) Mesial Δ fossa.** It is distal to the mesial marginal ridge.
- **c) Distal Δ fossa.** It is mesial to the distal marginal ridge.

□ 8- There are 3 pits:

- **a) Central pit.**
In the center of the central fossa.
- **b) Mesial pit.**
In the mesial Δ fossa.
- **c) Distal pit.**
In the distal Δ fossa



Occlusal

