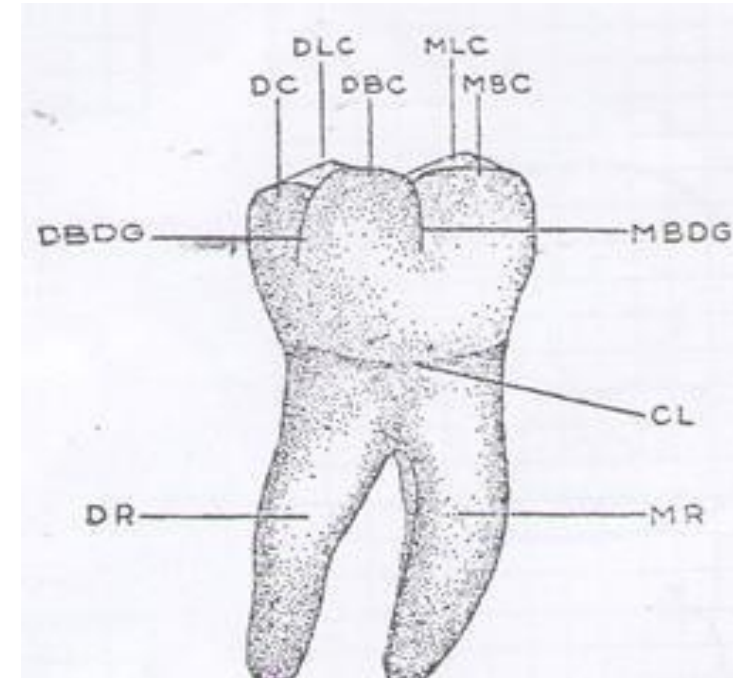
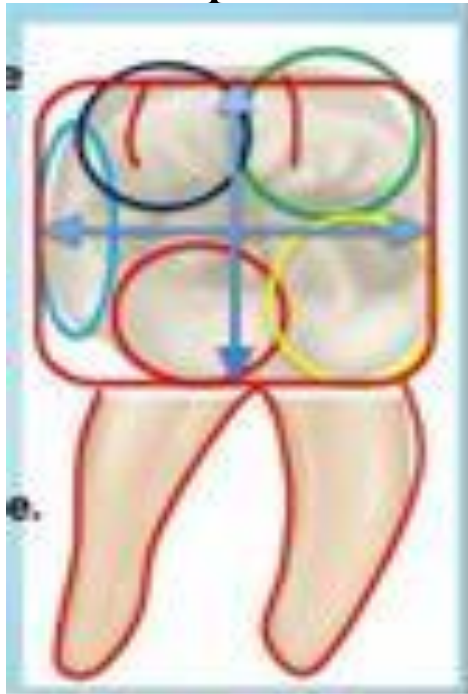


Mandibular First Molars

Lec 7

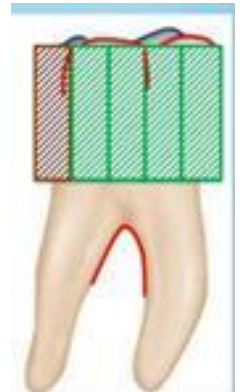
Dr. Dhifaf Kamil

Mandibular first molar is the sixth tooth from the median line in the mandible. It is the **largest tooth in the mandibular arch**. It has five well developed cusps: two buccal cusps and two lingual cusps and distal cusp. The buccal surface is inclined lingually with the presence of two buccal developmental grooves. Normally the tooth has two well-developed roots one mesial root and one distal root.



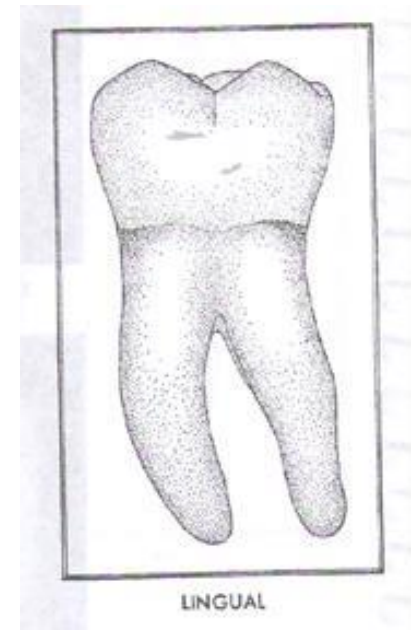
Buccal Aspect

1. The line of the cementoenamel junction on the buccal surface is curving regularly towards the root.
2. The mesial outline of the crown is straight from the cervix to the contact area. The contact area at the junction of occlusal and middle third.
3. The distal outline of the crown is similar to the mesial outline with crest of curvature is lower.
4. The two buccal cusps and the distal cusp is completely outline from this aspect. The two buccal cusps are convex but not pointed (flat occlusally) while the distal cusp is rounded.
5. The two buccal cusps are the same width mesiodistally, making together 80% of the mesiodistal width while the distal cusp is smaller making the reminder 20%.
6. There are two buccal developmental grooves:
 - a. The mesiobuccal developmental groove: separating between the mesiobuccal cusp and distobuccal cusp.
 - b. The distobuccal developmental groove: separating between the distobuccal cusp and distal cusp.
7. The mesiolingual and distolingual cusps tips can be seen from this aspect because they longer.



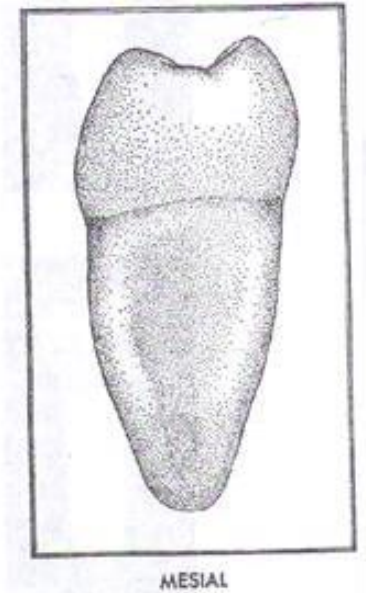
Lingual Aspect

1. The lingual aspect has the same outline but a reverse to the buccal with curve cervical line is uneven, waving line.
2. The two lingual cusps is seen mesiolingual cusp is wider than the distolingual cusp and highest cusp tip. Part of the distal cusp can be seen which is the smallest and lowest cusp tip.
3. The two lingual cusps are pointed.
4. The lingual developmental groove extends downwards for about one third of the crown length acts as a line separates between two lingual cusps.



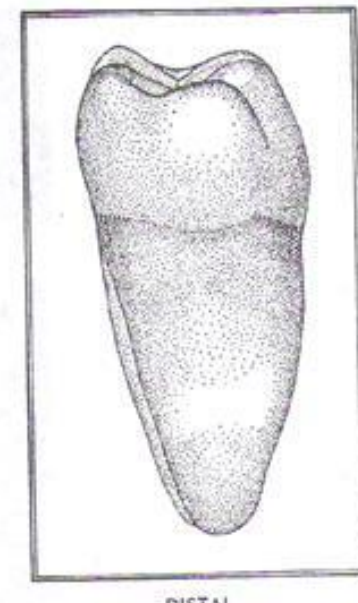
Mesial Aspect

- 1- The cervical line is slightly curved and higher lingually than buccally about 1mm.
- 2- The buccal outline of the crown is convex from cervical line to the crest of curvature which is located at the junction between the cervical and middle third, then the buccal outline straighter to the buccal cusp.
- 3- The lingual outline of the crown is convex to the crest of curvature in the center of middle third.
- 4- The buccal cusp is flat and the lingual cusp is sharp with greater cusp height.



Distal Aspect

- 1- The distal aspect is a reverse outline of that of the mesial.
- 2- The crown is shorter distally than mesially.
- 3- The distal cusp is located buccal to the center buccolingually.
- 4- The distal marginal ridge is short and curves cervically
- 5- The cervical line is irregular.
- 6- The distal root is narrower bucco-lingually than the mesial root



Occlusal Aspect

- 1-The occlusal outline is rectangular in shape. It is larger mesiodistally than buccolingually.
- 2-The bucco-lingual measurement of the crown is greater on the mesial side than on the distal side, and the mesio-distal measurement is greater on the buccal side than on the lingual side.
- 3-Five well-developed cusps** can be seen: the mesiobuccal cusp is the largest, then mesiolingual cusp, then the distolingual cusp. The distobuccal, then the distal cusp (the smallest).
- 4-The distal contact area is located at the distal cusp.
- 5- There are three fossae:** one major and two minor fossae: **a-The major fossa** is the central fossa which is roughly circular in shape and is located in the center of the occlusal surface. It is concave area bounded by the distal slope of the mesiobuccal cusp, both mesial and distal slope of the distobuccal cusp, the mesial slope of the distal cusp, the distal slope of the mesiolingual cusp, and the mesial slope of the distolingual cusp. **b-Mesial triangular fossa** is located distal to the mesial marginal ridge. **C-Distal triangular fossa** is located mesial to the distal marginal ridge.

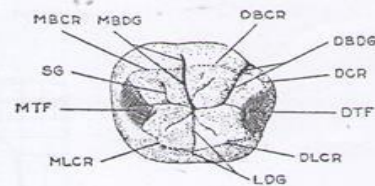
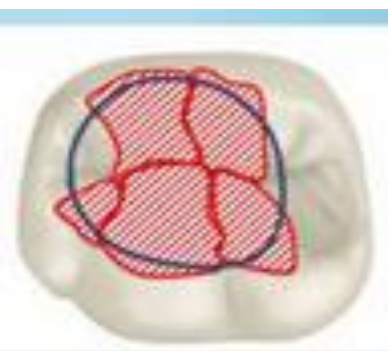
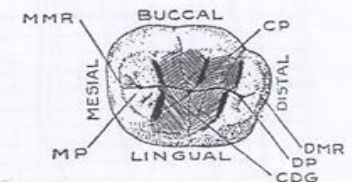


Figure 69. Mandibular first molar—occlusal aspect. *DBCR*, Distobuccal cusp ridge; *DBDG*, distobuccal developmental groove; *DCR*, distal cusp ridge; *DTF*, distal triangular fossa (shaded area); *DLGR*, distolingual cusp ridge; *LDG*, lingual developmental groove; *MLCR*, mesiolingual cusp ridge; *MTF*, mesial triangular fossa (shaded area); *SG*, a supplemental groove; *MBCR*, mesiobuccal cusp ridge; *MBDG*, mesiobuccal developmental groove.

Figure 70. Mandibular first molar—occlusal aspect. Shaded area—central fossa; *CP*, central pit; *DMR*, distal marginal ridge; *DP*, distal pit; *CDG*, central developmental groove; *MP*, mesial pit; *MMR*, mesial marginal ridge.



5- There are four developmental grooves:

A-Central developmental groove: passes from the central pit to the mesial and distal triangular fossae.

B-Mesiobuccal developmental groove: passes from the central pit to the buccal surface between mesiobuccal and distobuccal cusps.

C-Distobuccal developmental groove: passes from the central groove in distal direction between distobuccal and distal cusps.

D-Lingual developmental groove: passes lingually between mesiolingual and distolingual cusps.

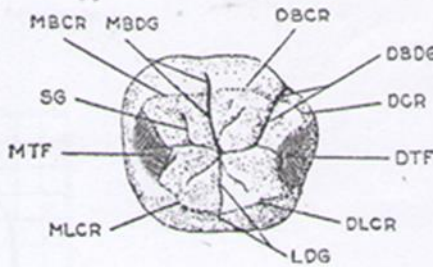
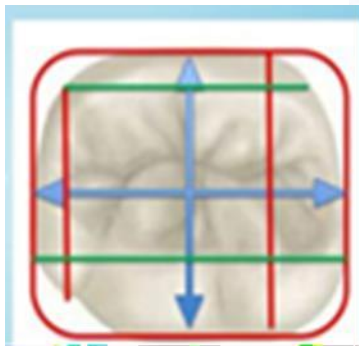
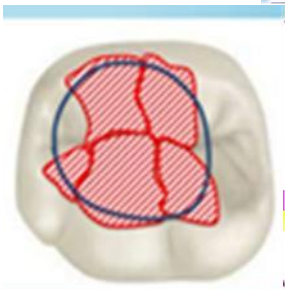
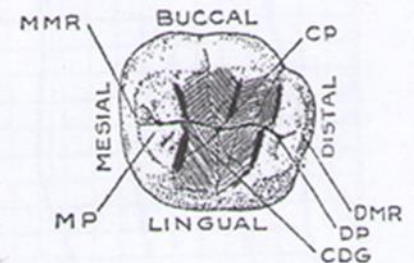


Figure 69. Mandibular first molar—occlusal aspect. *DBCR*, Distobuccal cusp ridge; *DBDG*, distobuccal developmental groove; *DCR*, distal cusp ridge; *DTF*, distal triangular fossa (shaded area); *DLCR*, distolingual cusp ridge; *LDG*, lingual developmental groove; *MLCR*, mesiolingual cusp ridge; *MTF*, mesial triangular fossa (shaded area); *SG*, a supplemental groove; *MBCR*, mesiobuccal cusp ridge; *MBDG*, mesiobuccal developmental groove.

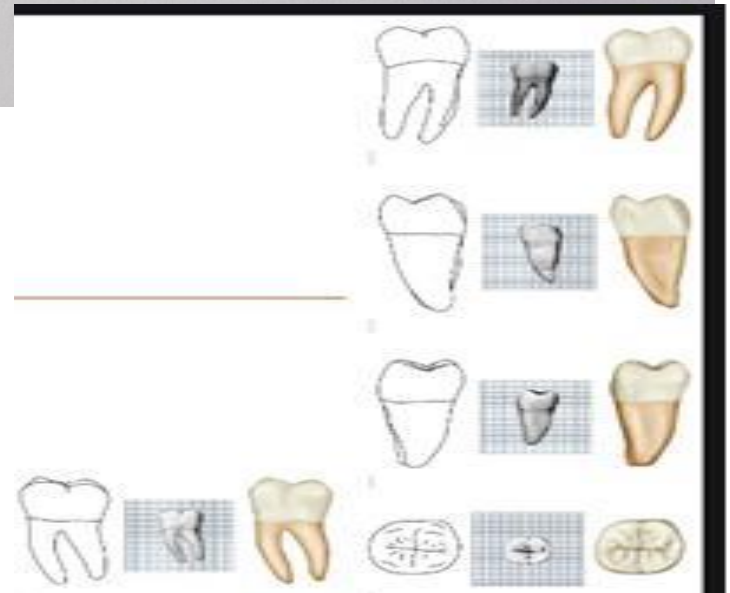
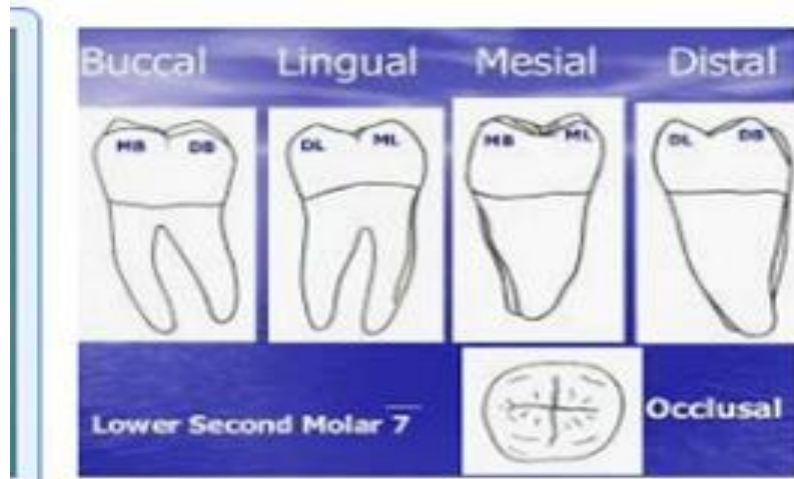
Figure 70. Mandibular first molar—occlusal aspect. Shaded area—central fossa; *CP*, central pit; *DMR*, distal marginal ridge; *DP*, distal pit; *CDG*, central developmental groove; *MP*, mesial pit; *MMR*, mesial marginal ridge.



Mandibular second Molars

Principal Identifying Features

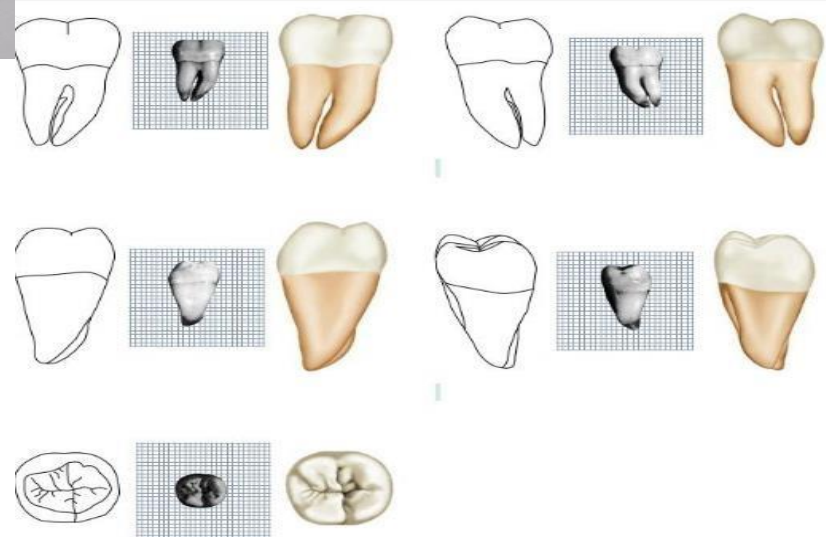
- 1- It is smaller than the first molar in all dimensions.
- 2- It has four well-developed cusps; two buccal and two lingual of nearly equal size.
- 3- There is no distal cusp but the distobuccal cusp is larger than that of the first molar.
- 4- It has two roots; one mesial and one distal. They are broad bucco-lingually, but they are not as broad as those of the first molar, nor are they as widely separated.



Mandibular third Molars

Principal Identifying Features

- 1- This tooth varies considerably in different individuals and present many anomalies both in form and position.
- 2- Generally, this tooth is more similar to the second molar regarding the number of cusps and occlusal form than it does to the first molar. It has a tendency for a more rounded occlusal outline and a smaller bucco-lingual dimension distally.
- 3- The size of the tooth is variable; ranging from large teeth larger than the second molar with **(Four)** cusps to dwarfed (small) teeth.
- 4- Usually there are two short roots, one mesial and one distal. These are usually shorter than the roots of the first or second molars with greater tendency for distal inclination in relation to the occlusal plane.
- Sometimes there are more than two roots or the roots may be fused.
- 5- The tooth could be congenitally missing.



| Characteristic | Mandibular First Molar | Mandibular Second Molar | Mandibular Third Molar |
|-------------------------|---|---|---|
| Number of Roots | 2 (Mesial and Distal roots) | 2 (Mesial and Distal roots) | 1,2 or more (varies among individuals) |
| Number of Cusps | 5 (2 buccal, 2 lingual and distal) | 4 cusps(depending on individual variation) | 4 or 5 (may be incomplete or irregular) |
| Size | Largest in the lower arch | Smaller than the first molar, larger than the third | Smallest of the lower molars or may be missing |
| Shape | Rectangular on the occlusal surface | Square or nearly rectangular | Irregular, may be missing or tilted |
| Developmental Grooves | 4 main grooves (buccal and lingual) | 3 to 4 main grooves (less prominent than the first) | 3 to 4 grooves (may be unclear or incomplete) |
| Crown | Wide with five distinct cusps | Less complex than the first, possibly fewer cusps | May be less distinct in some cases or malformed |
| Location | 6th tooth from the midline in the lower jaw | 7th tooth from the midline (after the first molar) | 8th tooth from the midline (may be missing in some cases) |
| Development and Anatomy | More complex with inclined surfaces and clear grooves | Less complex compared to the first molar | Less developed and often has incomplete or malformed structures |