

Permanent Mandibular Molars

Mandibular First Molar

Principal Identifying Features

1. Five cusps: two buccal, two lingual and one distal.
2. The buccal surface is inclined lingually, with the presence of two buccal developmental grooves.
3. The crown is wider mesio-distally than bucco-lingually.
4. The occlusal surface is rectangular in shape.
5. There are two well developed roots: one mesial and one distal.

Buccal Aspect

1. The mesial contact area is at the junction between the occlusal and middle thirds.
2. The distal contact area is a little lower than the mesial contact area.
3. The cervical line is curving regularly apically.



4. There are two buccal developmental grooves acting as lines of division between the cusps: (a) The mesiobuccal developmental groove: separating between the mesiobuccal cusp and distobuccal cusp, and (b) The distobuccal developmental groove: separating between the distobuccal cusp and distal cusp. The mesiobuccal developmental groove is shorter than the distobuccal one.
5. The mesiobuccal, distobuccal and distal cusps are clearly visible, and the mesiolingual and distolingual cusps tips can be seen.
6. The mesiobuccal cusp is slightly wider than the distobuccal cusp, and they make together 80% of the mesiodistal width of the crown, while the distal cusp makes the rest 20%.
7. The buccal cusps are flat occlusally, while the distal cusp is rounded.
8. The bifurcation area is about 3mm below the cervical line.

Lingual Aspect

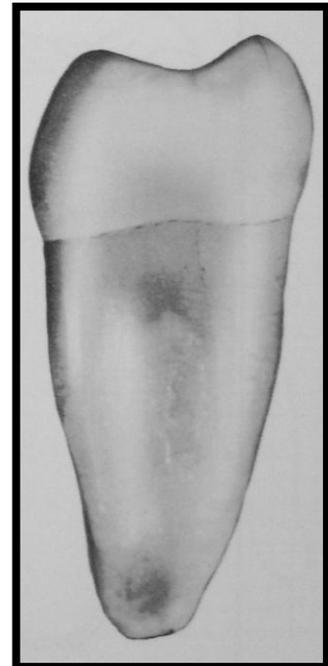
1. From the lingual aspect, three cusps can be seen: the mesiolingual cusp, the distolingual cusp and the lingual portion of the distal cusp. The mesiolingual cusp is the widest mesio-distally and has the highest cusp tip, while the distal cusp has the lowest cusp tip.
2. The two lingual cusps are pointed and form an obtuse angle at their cusps tips.



3. The lingual developmental groove extends downwards for about one third of the crown length, and it acts as a line of division between the two lingual cusps.

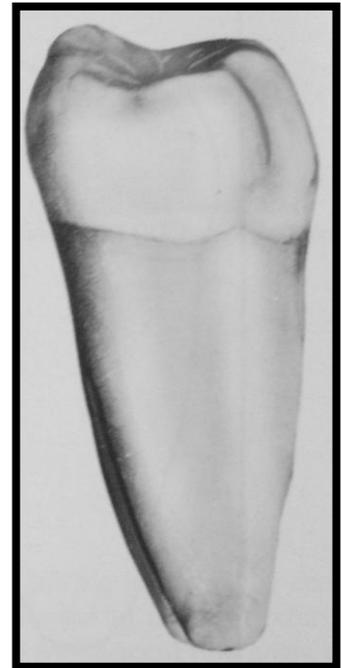
Mesial Aspect

1. The crown is rhomboidal with a lingual tilt of the buccal outline.
2. The buccal outline of the crown is convex from the cervical line up to the junction between the cervical and middle thirds forming the “buccal cervical ridge”, then the buccal outline straightens up 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, and higher lingually than buccally.
5. The buccal cusp is flat and the lingual cusp is sharp with greater cusp height.
6. The mesial marginal ridge is located about 1 mm below the level of the cusps tips.



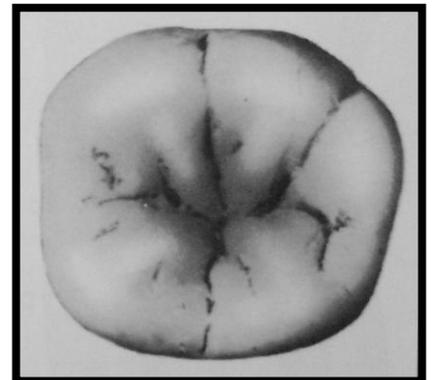
Distal Aspect

1. The crown is shorter distally than mesially, so most of the occlusal surface can be seen from the distal aspect.
2. The distal cusp is located buccal to the center bucco-lingually.
3. The distal marginal ridge is short and curves cervically to form an obtuse angle.
4. The cervical line is irregular.
5. The distal root is narrower bucco-lingually than the mesial root.



Occlusal Aspect

1. The occlusal outline is rectangular in shape, and it is larger mesio-distally than bucco-lingually by 1 mm.
2. The bucco-lingual measurement of the crown is greater on the mesial side than on the distal, and the mesio-distal measurement of the crown is greater on the buccal side than on the lingual.
3. There are five cusps: the mesiobuccal cusp (the largest), then the mesiolingual and the distolingual cusps, then the distobuccal cusp, and 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 centrally placed on the occlusal surface. It is a concave area bounded by the distal slope of the mesiobuccal cusp, both mesial and distal slopes 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) Minor fossae: (i) Mesial triangular fossa: located distal to the mesial marginal ridge. (ii) Distal triangular fossa: located mesial to the distal marginal ridge.

6. 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 the mesiobuccal and distobuccal cusps.

(C) Distobuccal developmental groove: passes from its junction with the central groove in a distobuccal direction separating the distobuccal and distal cusps.

(D) Lingual developmental groove: is an irregular groove passes lingually in between the cusps' ridges of the mesiolingual and distolingual cusps.

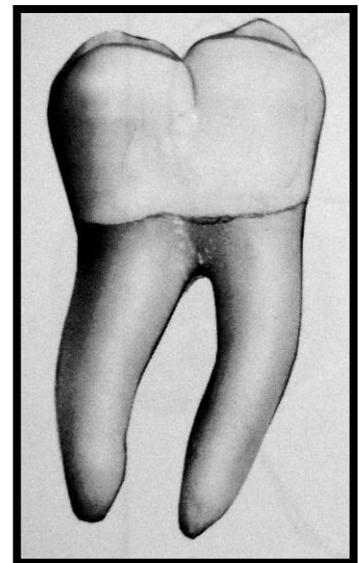
Mandibular Second Molar

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 buccolingually, but they are not as broad as those of the first molar, nor are they as widely separated.

Buccal Aspect

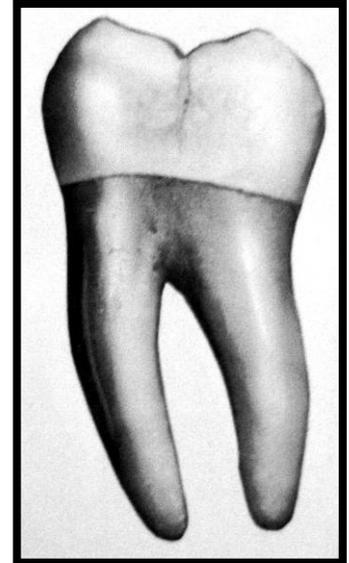
1. The crown is shorter cervico-occlusally and narrower mesiodistally than that of the first molar.
2. There is only one developmental groove, the buccal developmental groove, which separates between the mesiobuccal and distobuccal cusps.
3. Both mesiobuccal and distobuccal cusps are nearly equal in their mesio-distal measurements.
4. The cervical line in many instances points sharply to the root bifurcation.
5. The roots are shorter than those of the first molar. They are usually closer together and are parallel to each other. They are inclined



distally forming an acute angle with the occlusal plane than is found on the first molar.

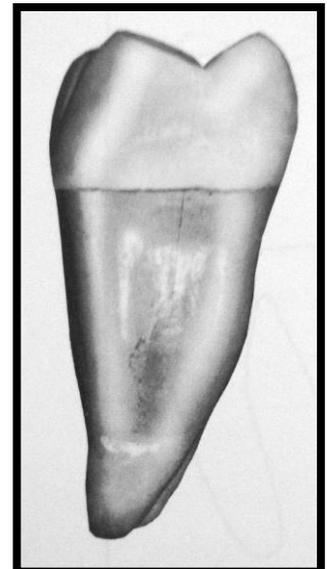
Lingual Aspect

1. The crown and the roots converge lingually but to a slight degree, therefore:
 - A. Little of the mesial and distal surfaces may be seen from this aspect.
 - B. The mesiodistal dimension cervically is greater than that of the first molar.
2. The contact areas are more noticeable from this aspect, and they are slightly more cervically positioned than those of the first molar.



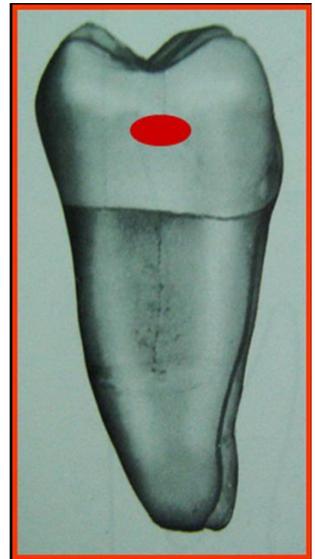
Mesial Aspect

1. The buccal cervical ridge is less pronounced compared to the first molar.
2. The mesial root has a somewhat pointed apex.



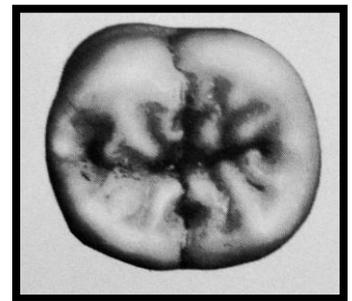
Distal Aspect

1. From this aspect, this tooth is similar in form to the first molar except for the absence of a distal cusp and a distobuccal groove.
2. The contact area is centered on the distal surface bucco-lingually and is centered between the cervical line and the marginal ridge.



Occlusal Aspect

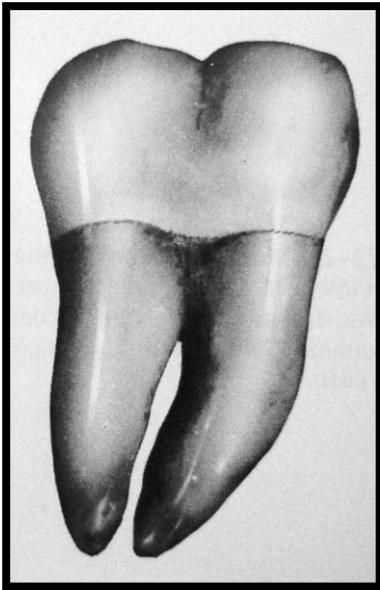
1. The occlusal surface is rectangular in shape.
2. The small distal cusp is not present and there is no distobuccal groove.
3. The buccal and lingual developmental grooves meet the central developmental groove at right angles at the central pit. These grooves form a cross, dividing the occlusal surface into four parts that are nearly equal.
4. Unlike the first molar, the occlusal surface is not smooth but is roughened by many supplemental grooves radiating from the developmental grooves.
5. Many teeth show considerable prominence cervically on the mesiobuccal lobe only.
6. The cusp ridge of the distobuccal cusp lies buccal to the cusp ridge of the mesiobuccal cusp.



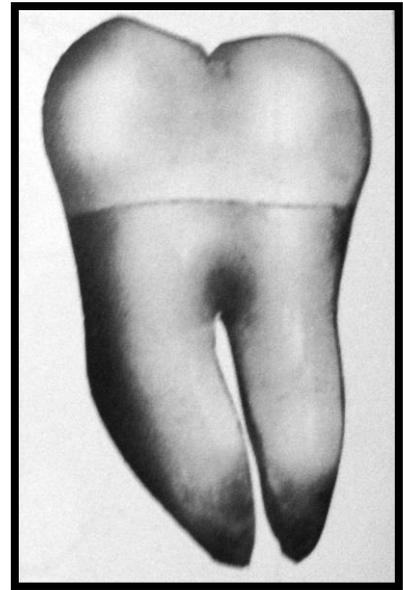
Mandibular Third Molar

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 five or more 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.



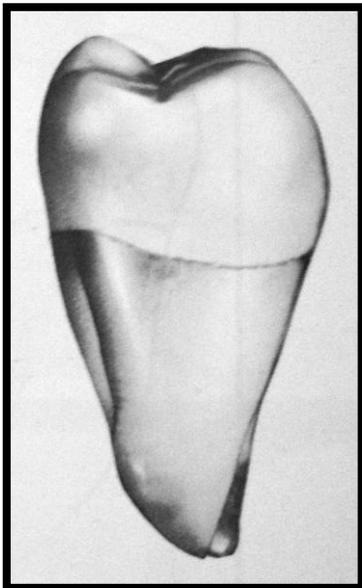
Buccal Aspect



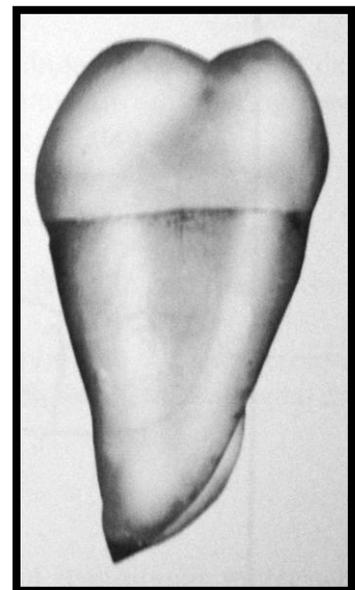
Lingual Aspect



Occlusal Aspect



Distal Aspect



Mesial Aspect