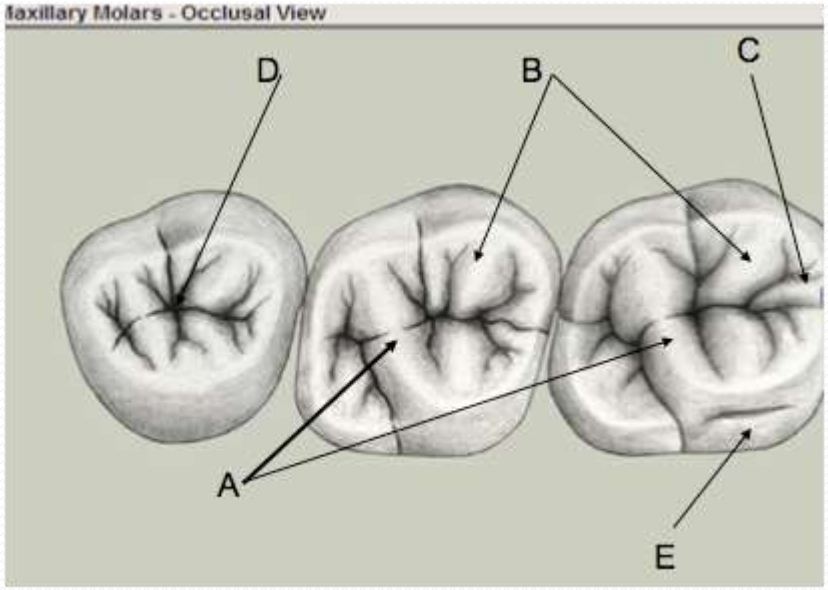

Good Morning!
Have a nice day!!

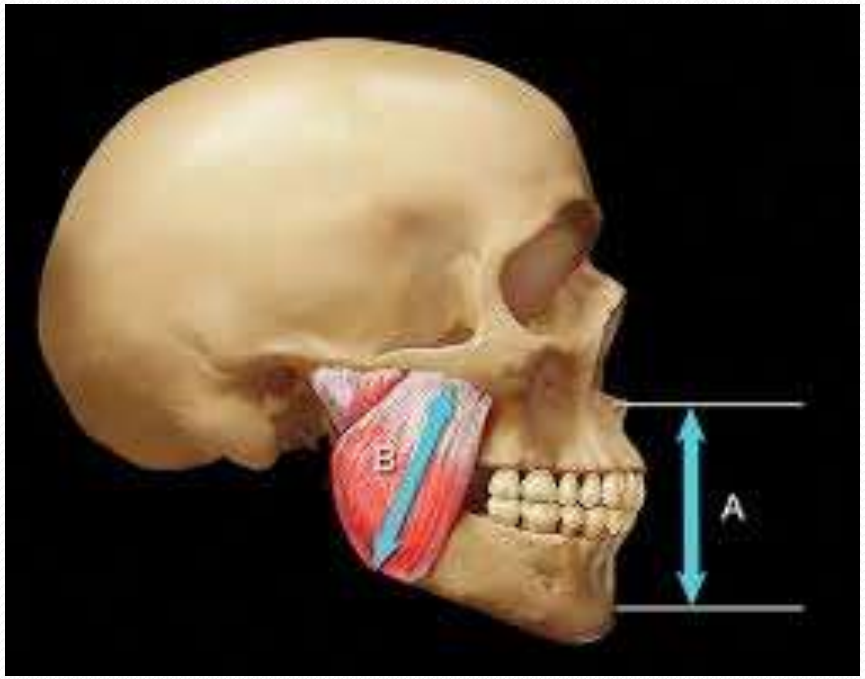
The permanent maxillary molars



- These teeth assist the mandibular molars in performing the major portion of the work in the mastication & comminution of food.
- They are the largest & the strongest maxillary teeth due to both their bulk & their anchorage in the jaws.
- The crowns of the molars may be somewhat shorter than the premolars, but their dimensions are greater in every aspect.
- The root portion may be no longer than the premolars, but it is broader at the base in all directions & is trifurcated into three well-developed roots.

- Generally speaking, the maxillary molars have large crowns with four well-formed cusps, two buccal cusps & two lingual cusps. They have three roots, two buccal & one lingual. The outlines & curvatures of all maxillary molars are similar. Developmental variations will be mentioned under descriptions of the separate molars.
- The permanent molars are not succedaneous since they have no predecessors, they erupt behind the deciduous molars. The main function of molars are:-

  1. mastication or grinding of food.
  2. supporting the muscle of mastication.
  3. establishing the vertical dimension.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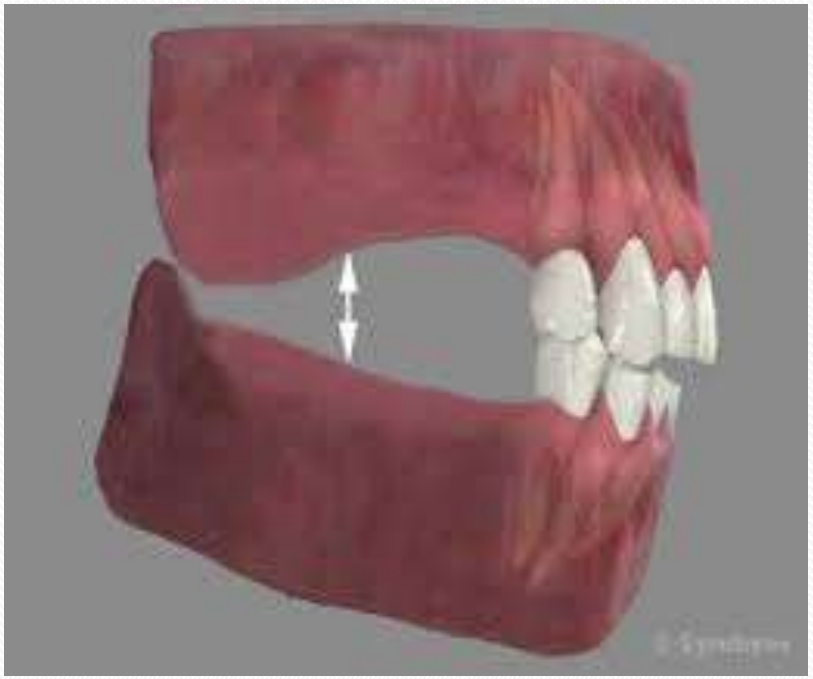
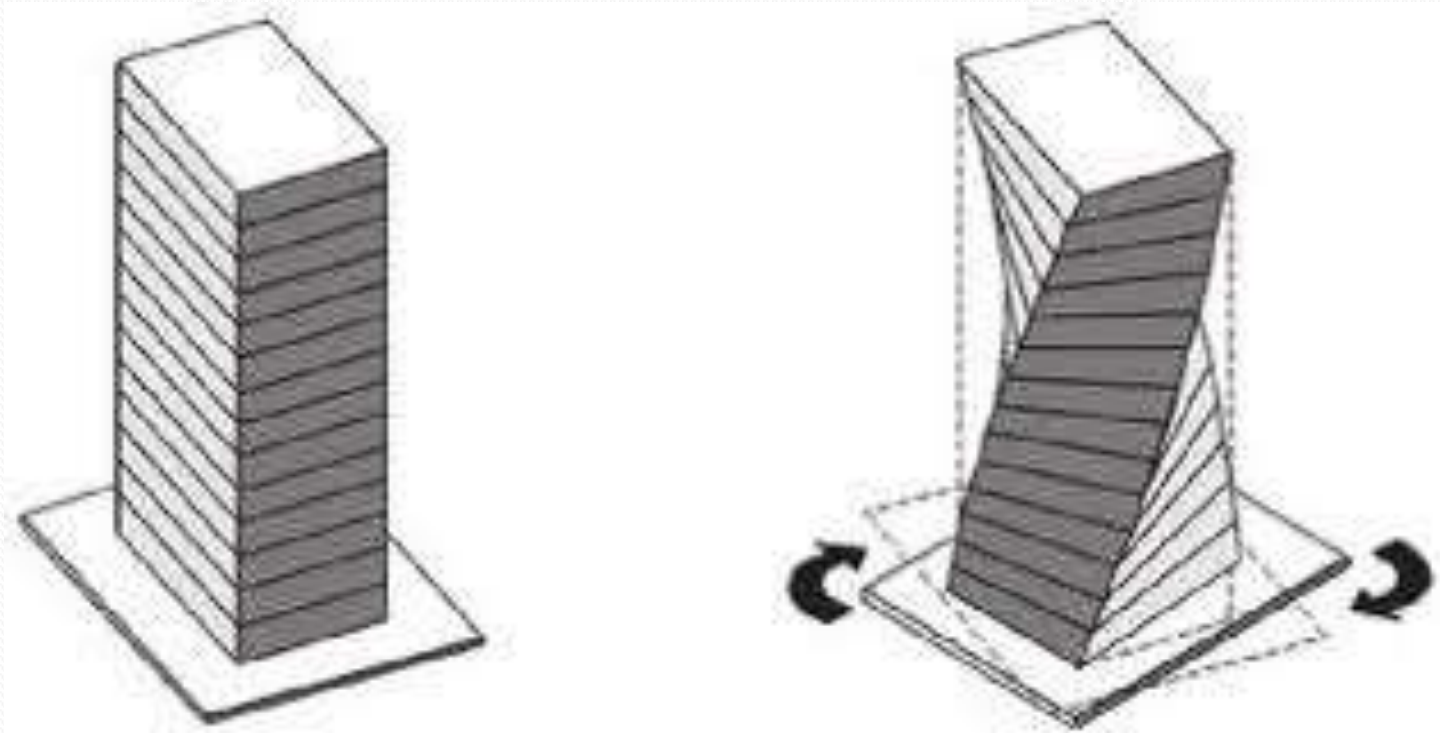
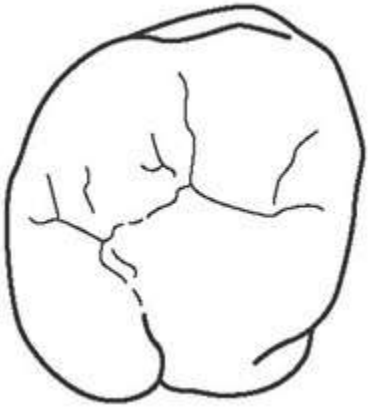
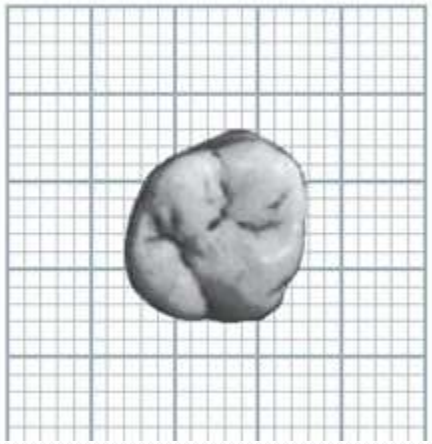


Maxillary first molar:-

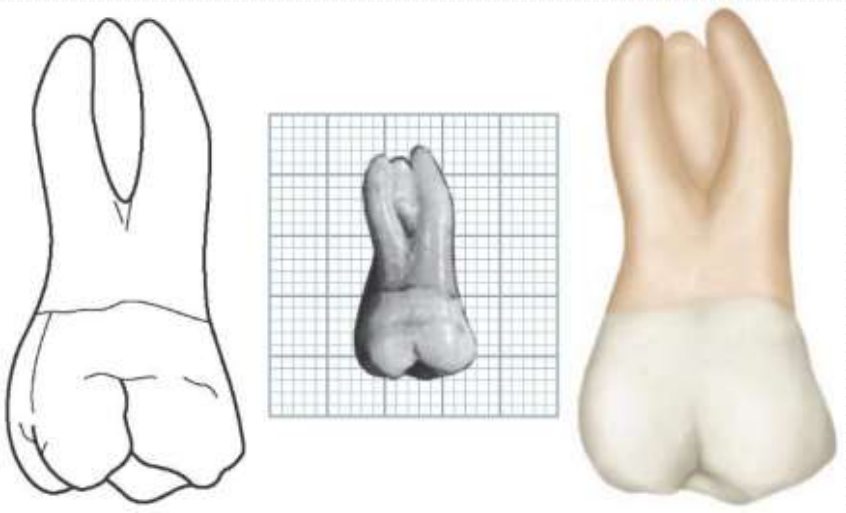
- It is the largest tooth in the maxillary arch. It has four well-developed functioning cusps & one supplemental cusp of little practical use. The four large cusps are mesiobuccal, the distobuccal, the mesiolingual & the distolingual cusps.
- A supplemental cusp is called the cusp or tubercle of carabelli. This cusp is found lingual to the mesiolingual cusp, which is the largest of the well-developed cusp. Usually a developmental groove is formed, leaving a record of cusp development unless it has been erased by frictional wear.
- There are three roots, the mesiobuccal, distobuccal, & lingual. These roots are well separated & well-developed, & their placement gives this tooth maximum anchorage against forces that would tend to unseat it. The lingual root is the longest root, it is tapered & smoothly rounded. The mesiobuccal root is not as long, but it is broader buccolingually so that its resistance to torsion is greater than that of the lingual root. The distobuccal root is the smallest of the three & smoothly rounded.



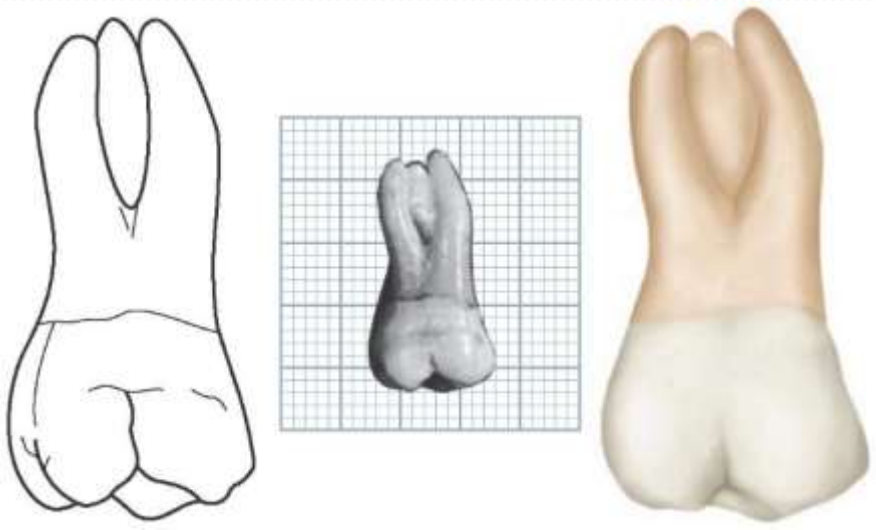




Buccal aspect:

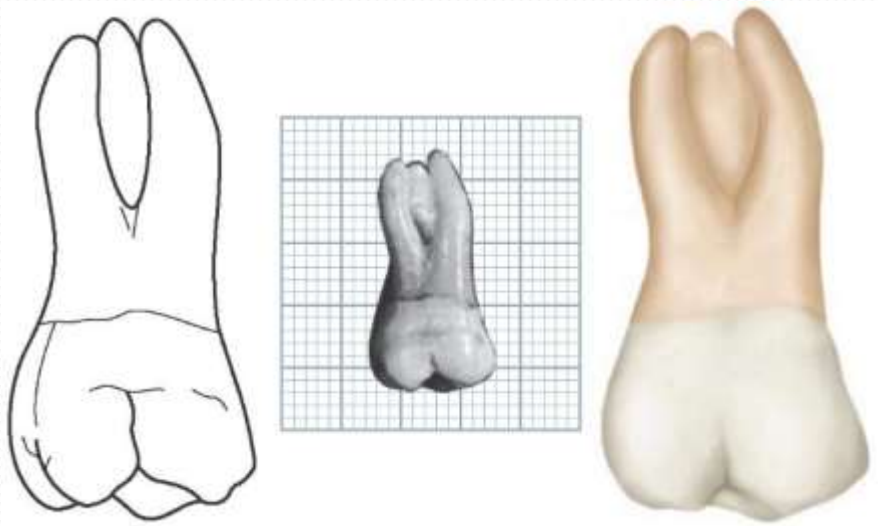
- The crown is roughly trapezoidal, with the shortest uneven side toward cervical line.
- Parts of four cusps are seen from this aspect.
- The mesiobuccal cusp is broader than the distobuccal cusp, & its mesial slope meets its distal slope at an obtuse angle. The mesial slope of the distobuccal cusp meets its distal slope at approximately a right angle. Therefore, the distobuccal cusp is sharper than the mesiobuccal cusp & it is as long or often longer.



- The buccal developmental groove that divides the two buccal cusps is approximately equidistant between the mesiobuccal & distolingual line angles. The groove slants occluso-appically in a line of direction parallel to the long axis of the distobuccal root. It terminates at a point approximately half the distance from its origin occlusally to the cervical line. Lateral to its terminates, there is a dip in the enamel of the crown that is developmental & extends for same distance mesially & distally.
- The mesial outline of the crown follows a nearly straight path downward & mesially, curving occlusally as it reaches the crest of curvature which is approximately at the junction between the occlusal & the middle thirds.

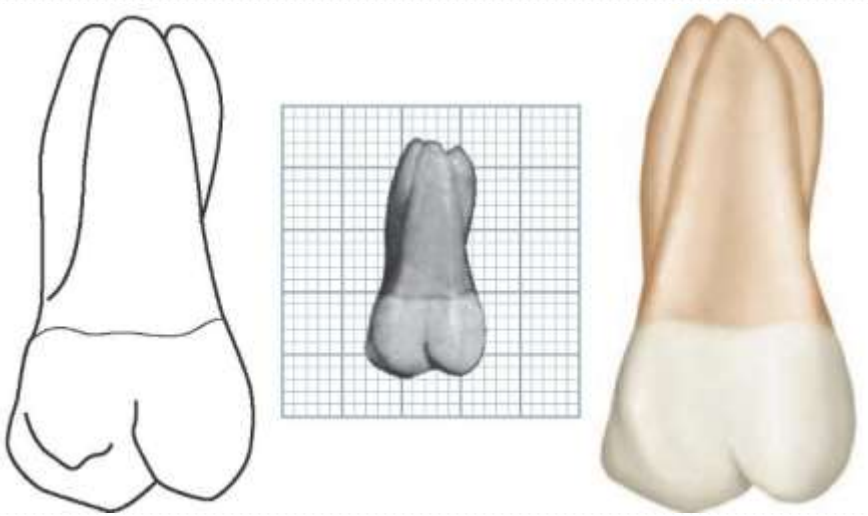


- The distal outline of the crown is convex, the crest of curvature is at the middle of the middle third.
- All three of the roots may be seen from the buccal aspect, the axes of the roots are inclined distally usually the lingual root is the longest & the two buccal roots are nearly equal in length.
- The point of bifurcation of the two buccal roots is located approximately 4mm above the cervical line.
- There is a deep developmental groove buccally on the root trunk of the maxillary first molar, which starts at the bifurcation & progresses downward & terminates in a shallow depression at the cervical line.

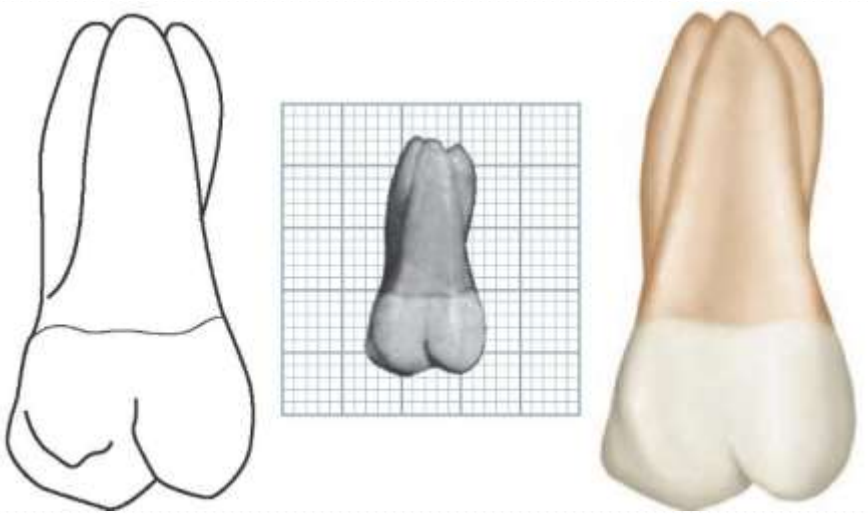


Lingual aspect:

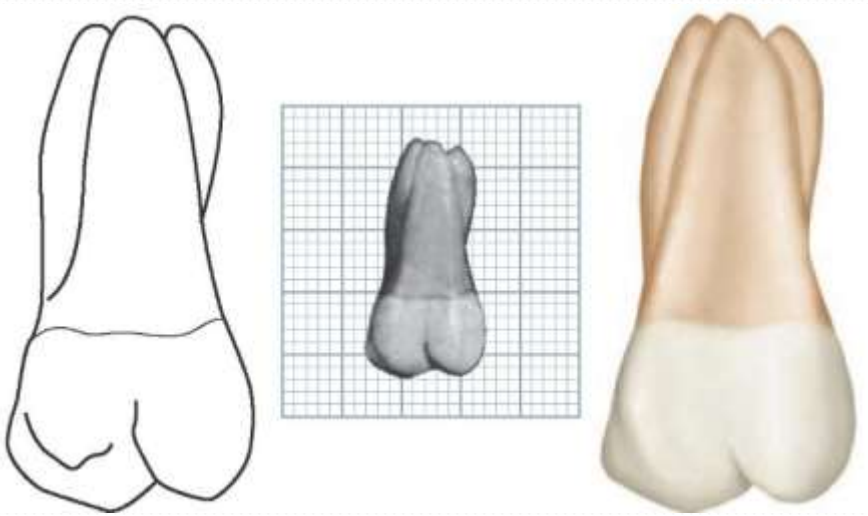
- The mesial & distal outlines of the crown through the contact areas do not differ from that of the buccal aspect. The cusp outlines, however, are different.
- The lingual cusps are the only ones to be seen from the lingual aspect.
- The mesiolingual cusp is much larger, & before occlusal wear it is always the longest cusp the tooth has. Its mesiodistal width is about three fifths of the mesiodistal crown diameter, the distolingual cusp making up the remaining two fifths. The angle formed by the mesial outline of the crown & the mesial slope of the mesiolingual cusp is almost 90 degrees. The junction of the mesial & distal slopes of this cusp is described as obtuse angle.



- The distolingual cusp is so spheroidal & smooth, & semicircular in outline from the point at which it joins the contact area to the lingual groove.
- The line that describes the lingual developmental groove is also confluent with the outline of the distolingual cusp, progressing mesially & cervically, & ending at a point at the approximate center of the lingual surface of the crown.
- A shallow depression extends from the terminus of the lingual groove to the center of the lingual surface of the lingual root at the cervical line & then continues in an apical direction ending at the middle third of this root.

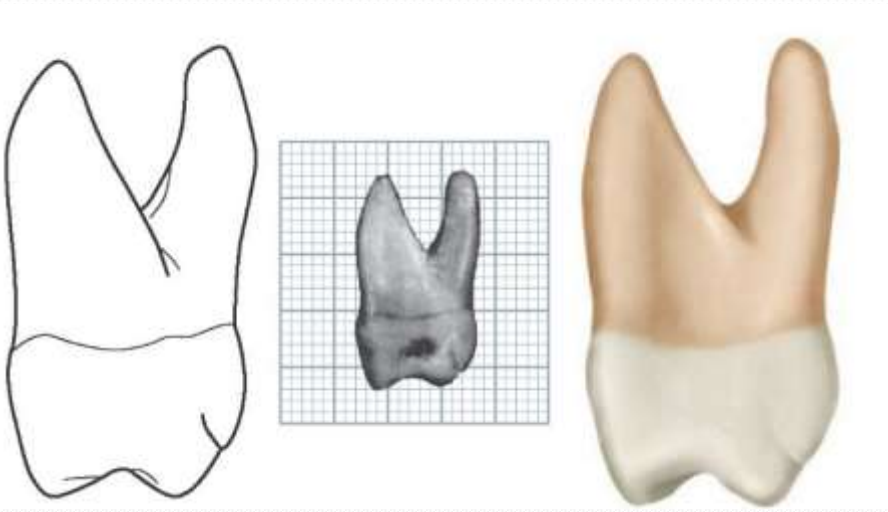


- The fifth cusp appears attached to the mesiolingual surface of the mesiolingual cusp. It is outlined occlusally by an irregular developmental groove. The cusp ridge of the fifth cusp is (1.5-2) mm.
- All of the three roots are visible from the lingual aspect, the large lingual root making up most of the foreground. All of the mesial outline of the mesiobuccal root may be seen & part of its apex. The distal outline of the distobuccal root is seen above its middle third, including its entire apical outline.

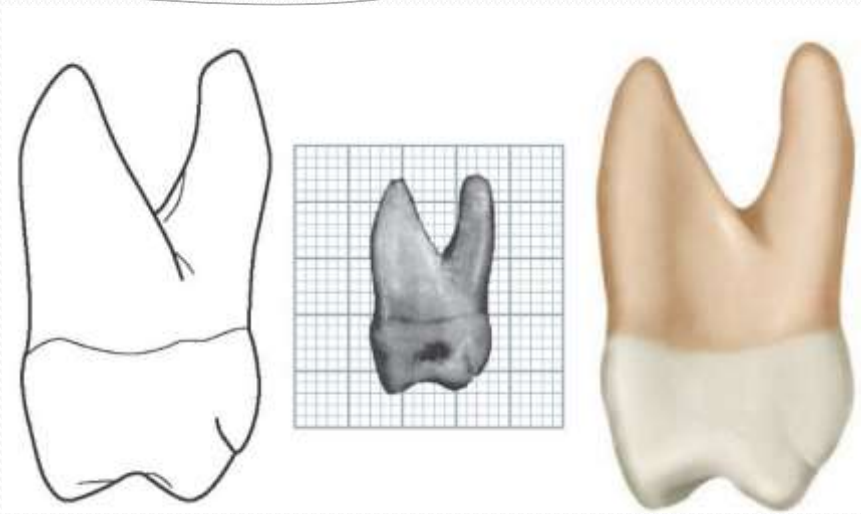


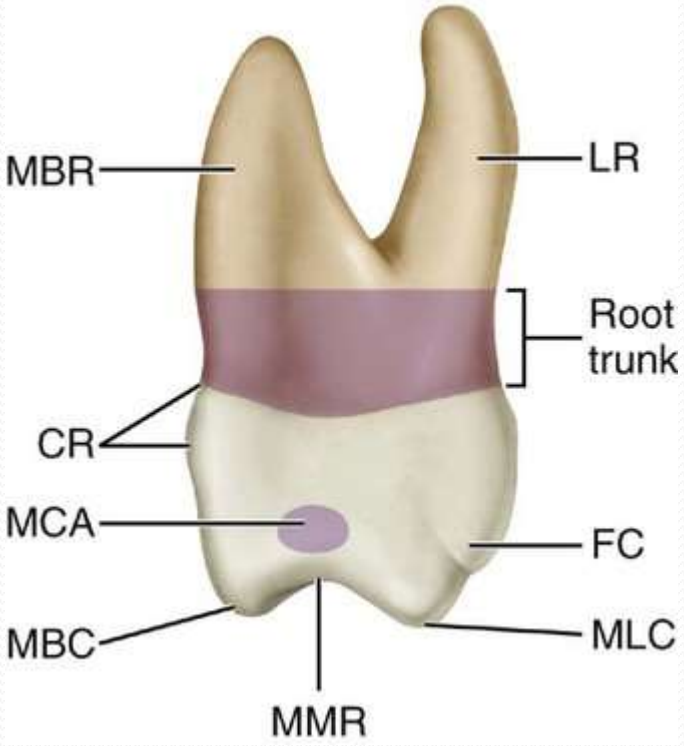
Mesial aspect:

- The buccal outline of the crown, starting at the cervical line, makes a short arc to its crest of curvature within the cervical third of the crown. Then the line describes a shallow concavity immediately occlusal to the crest of curvature. The outline then becomes slightly convex as it progresses downward & inward to end at the tip of the mesiobuccal cusp.
- The lingual outline of the crown curves outward lingually, & its crest of curvature is near the middle third rather than a point within the cervical third, as it is buccally.
- If the fifth cusp is well-developed, the lingual outline dips inward to illustrate it.
- The mesiobuccal, the mesiolingual, & the fifth cusps are the only cusps to be seen from this aspect.

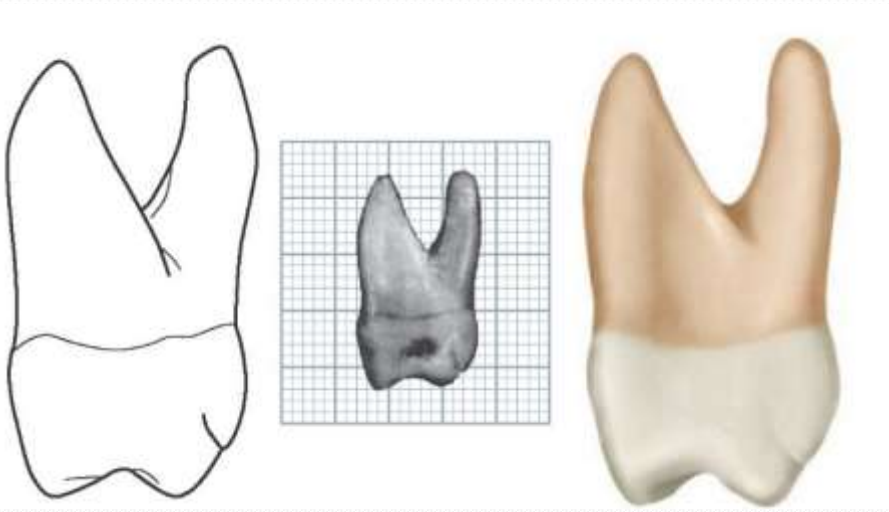


- The mesial marginal ridge, which is confluent with the mesiobuccal & mesiolingual cusps ridges, is irregular, curving cervically about one fifth the crown length & centering its curvature below the center of the crown buccolingually.
- The intercuspal distance is a little more than half the buccolingual dimension of the crown.
- The mesial contact area is somewhat buccal to the center of the crown buccolingually.
- A shallow concavity is usually found just above the contact area on the mesial surface, this concavity may continue to the mesial surface of the root trunk at its cervical third.



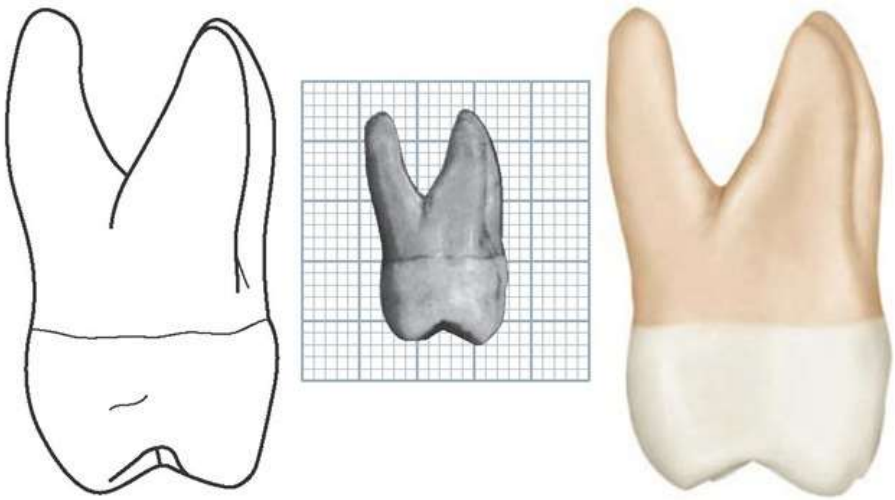


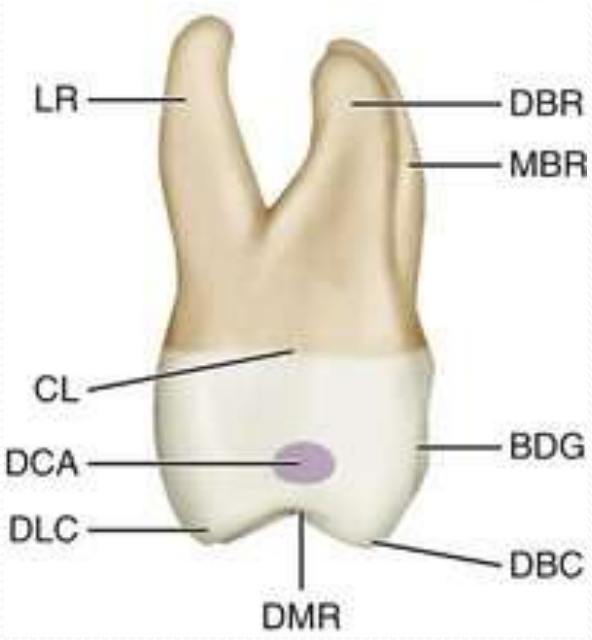
- The mesiobuccal & lingual roots only are seen from this aspect, the distobuccal root is hidden by the mesiobuccal root which is broad & flattened buccolingually.
- The level of bifurcation is a little closer to the cervical line than is found between the roots buccally. A smooth depression extends from the bifurcation occlusally & lingually almost to the cervical line directly above the mesiolingual line angle.
- The lingual root is longer than the mesiobuccal root but is narrower from this aspect.
- The mesiolingual cusp tip is more centered within outlines of the root base than the mesiobuccal cusp tip.



Distal aspect:

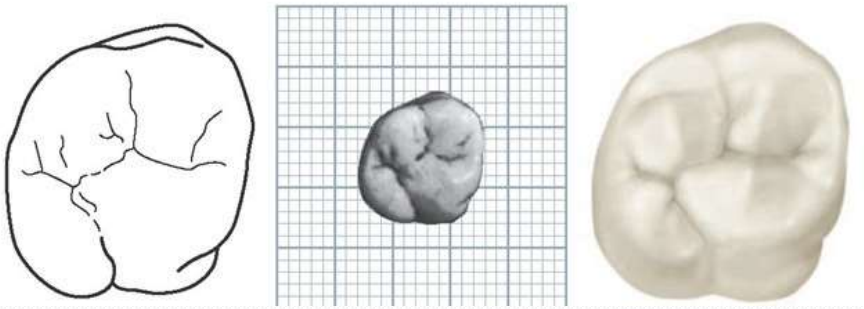
- Because of the slope of the buccal surface distally & the decrease in the buccolingual measurement of the crown distally, most of the buccal surface of the crown may be seen including part of the mesiobuccal cusp.
- The cervical line is nearly straight occasionally it curves apically 0.5mm. (it curves about 1.0mm on the mesial aspect).
- The distal marginal ridge is located more cervically exposing part of the occlusal surface of the crown.
- All of the three roots are visible, the distobuccal root is narrower at its base than either of the others.
- The bifurcation here is more apical than either of the other two areas on this tooth. The area from cervical line to bifurcation is 5mm or more in extent.





Occlusal aspect:

- The outline of the occlusal aspect is somewhat rhomboidal, & the various angles of the rhomboidal figure as follows: acute angles, mesiobuccal & distolingual; & obtuse angles, mesiolingual & distobuccal.
- It is apparent that the buccolingual dimension is greater than the mesiodistal dimension. Also the tooth is wider mesially than distally & wider lingually than buccally.
- The mesiolingual cusp is the largest cusp, it is followed in point of size by the mesiobuccal, distolingual, distobuccal & fifth cusps.
- There is an oblique ridge which is formed by the union of the triangular ridge of the distobuccal cusp & the distal ridge of the mesiolingual cusp.

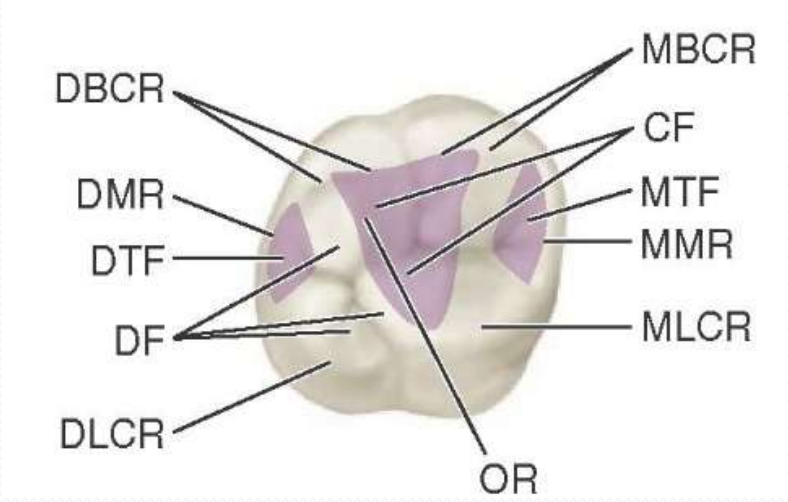


- **There are four fossae: (two major & two minor fossae):**

1. Major fossae:

a. Central fossa: it is roughly triangular & mesial to the oblique ridge. It is a concave area bounded by the distal slope of the mesiobuccal cusp, the mesial slope of the distobuccal cusp, the crest of the oblique ridge, & the crests of the two triangular ridges of the mesiobuccal & mesiolingual cusps.

b. Distal fossa: it is roughly linear & distal to the oblique ridge.



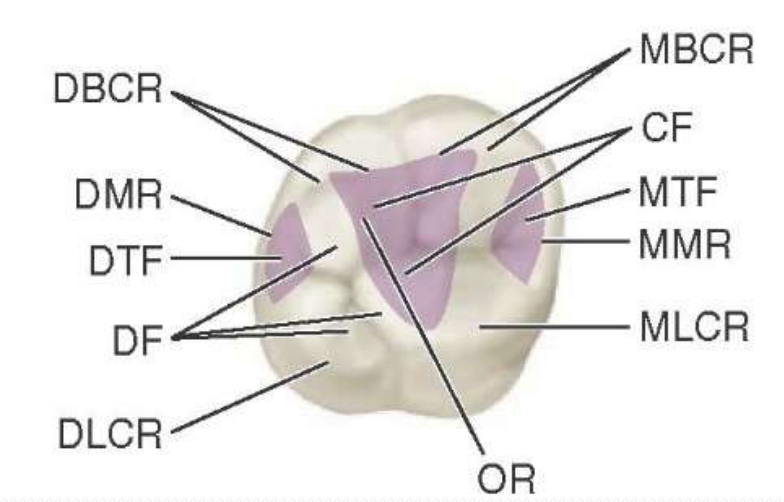
1. Minor fossae:

a. Mesial triangular fossa: it is distal to the mesial marginal ridge.

b. Distal triangular fossa: it is mesial to the distal marginal ridge.

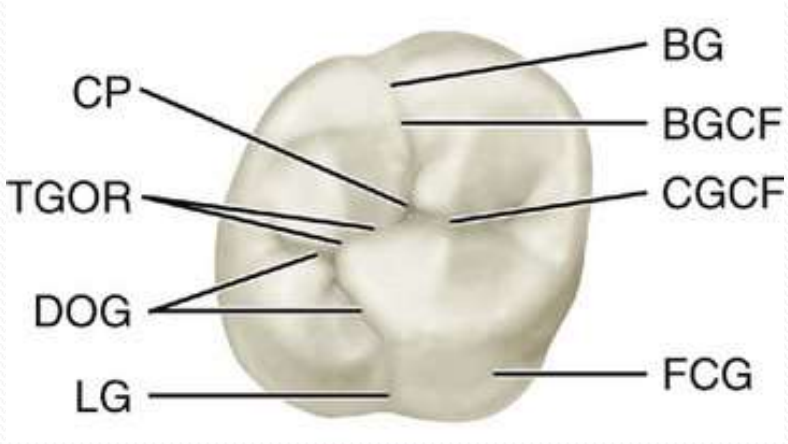
- **There are three developmental pits:-**

1. Central pit: it is located at the deepest portion of the central fossa, from this pit the buccal & the central developmental grooves are radiating, as well as the transverse groove of the oblique ridge.
2. Mesial pit: it is located at the deepest part of mesial triangular fossa.
3. Distal pit: it is located where the distal fossa & distal triangular fossa join.



- **There are six developmental grooves:**

1. central developmental groove: it extends from the central pit to mesial triangular fossa.
2. Buccal developmental groove: it extends from the central pit buccally at the bottom of the buccal sulcus of the central fossa, continuing on to the buccal surface between the buccal cusps.
3. Distal oblique groove: it radiates from the distal triangular fossa & goes obliquely to join the lingual developmental groove.
4. Lingual developmental groove: at the junction of the cusp ridges of mesiolingual & distolingual cusps & terminate on the lingual surface.
5. Transverse groove of the oblique ridge: it radiates from the central pit of the central fossa, crosses the oblique ridge transversely, sometimes joins the distal fossa.
6. Fifth cusp groove: between the fifth cusp & the mesiolingual cusp, it joins the lingual groove near its terminus.

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