

WHICH MOOD ARE YOU TODAY?



OBJECTIVES

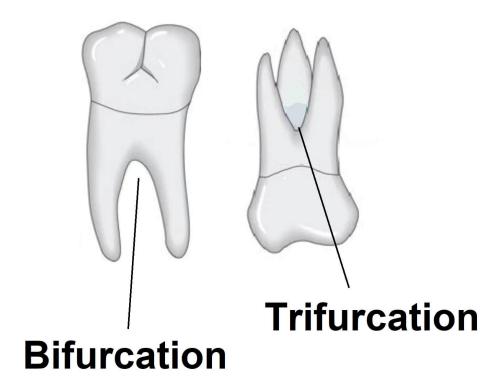
- Describe anatomical and morphological characteristics of maxillary molars.
- Identify anatomical and morphological characteristics of mandibular molars.
- Determine the tooth number by its anatomical and morphological characteristics.
- Distinguish the anatomical differences between maxillary and mandibular
- Recognize the ethical impotence of identifying anatomical landmarks of molars.

THE PERMANENT MAXILLARY MOLARS

THE PERMANENT MAXILLARY MOLARS

- Maxillary molars differ in design from any of the teeth described previously
- Largest and strongest maxillary teeth
- Shorter than premolars
- Trifurcated into three well-developed roots;
 - o 2 buccal and 1 lingual
- Lingual root is the largest





THE PERMANENT MAXILLARY MOLARS

- Four well-formed cusps; two buccal and two lingual.
- It is NOT a succedaneous tooth.
- 1st molars considered the cornerstones of the dental arch.



MAXILLARY 1ST MOLAR

- o The **largest** tooth in maxillary arch
- Four well-developed functioning cusps
- One supplemental cusp (non-functioning)
 - o Cusp of carabelli
- Most to least significant
 - Mesiobuccal, distobuccal, mesiolingual, distolingual
- The crown wider <u>buccolingually</u> than mesiodistally
- Crown relatively short







Lingua



Occlusa



Masis



Distal

MAXILLARY 1ST MOLAR

- Supplemental cusp is found lingual to the mesiolingual cusp; largest well-developed cusp
 - o it has a developmental groove
- o Serves to identify the maxillary 1st molar
- The three roots are well-developed and well separated (they give maximum anchorage against forces)
- The lingual root is the longest (taper and rounded)
- o **Distobuccal root** is the smallest of the three

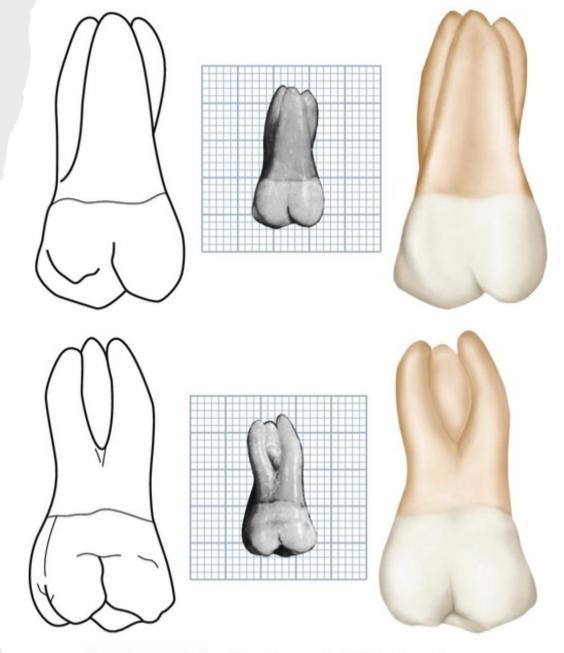
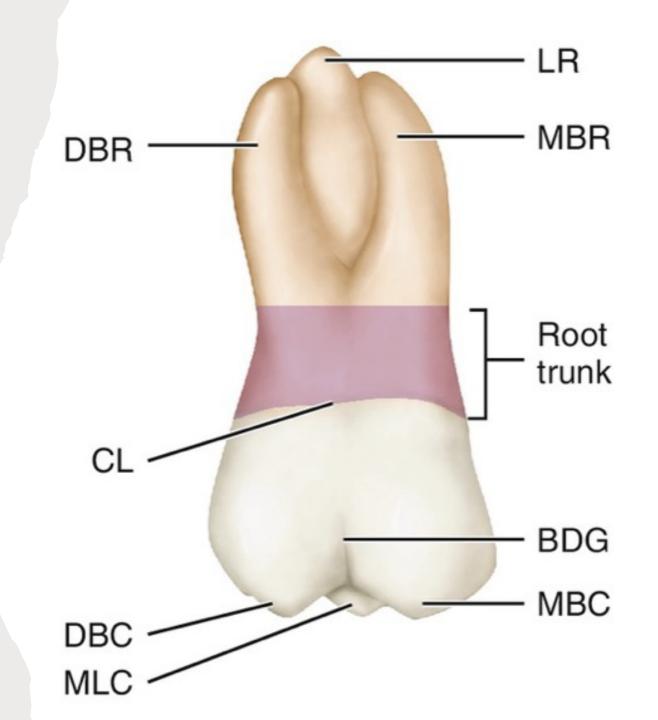


FIGURE 11-4 Maxillary right first molar, buccal aspect. (Grid = 1 sq. mm.)

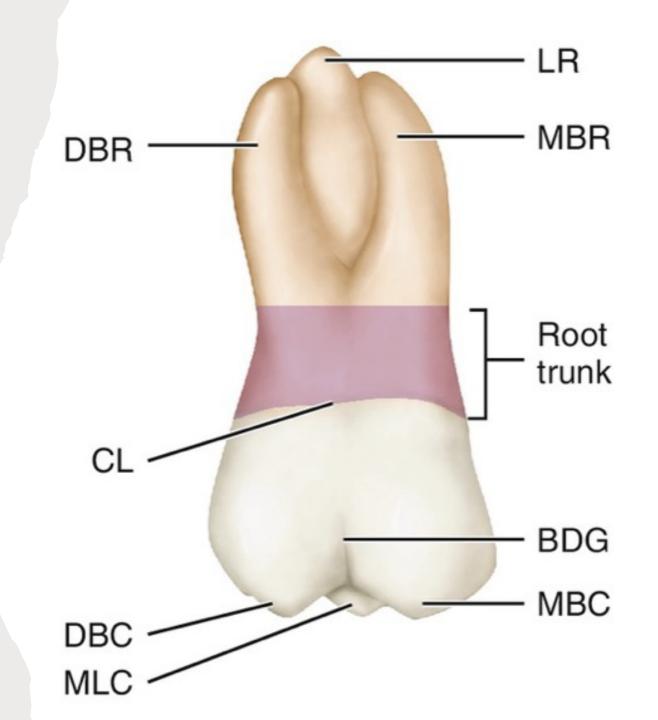
BUCCAL ASPECT

- o Trapezoidal
- Mesiobuccall cusp is wider than the distobuccal
- Distobuccal cusp is sharper
- Buccal developmental groove divides the two buccal cusps
 - o Starts deep then become shallow
- Cervical line is slightly convex toward the roots
- Mesial outline almost straight
- Distal outline is convex



BUCCAL ASPECT

- All three roots can be seen from the buccal aspect
- The mesiobuccal root curves distally
- The distobuccal root is straighter
- The point of bifurcation of the two buccal roots is located approximately
 4 mm above the cervical line
- Deep developmental groove starts at the bifurcation and progress downward
- Root trunk; originate as a single root
 on the base of the crown
- o Roots are **twice as long** as the crown



LINGUAL ASPECT

- Lingual developmental groove curves distally
- From the lingual aspect; you can see only the lingual cusps
- Distolingual cusp is more <u>rounded</u>
- o Fifth cusp attaches to the mesiolingual cusp
 - o Irregular developmental groove
- o Lingual root is **conical**

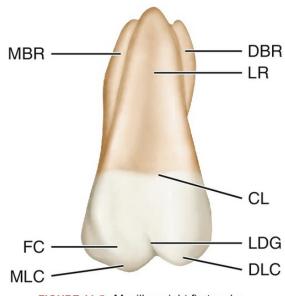
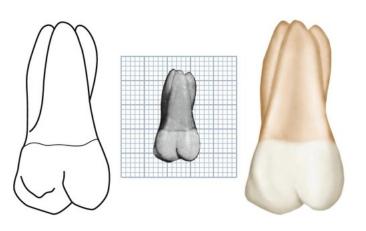


FIGURE 11-5 Maxillary right first molar,



MESIAL ASPECT

- o Buccal; slight convexity
- Only cusps can be seen; mesiobuccal, mesiolingual, and 5th cusp
- The mesiobuccal root hides the <u>distobuccal</u>
 <u>root</u>

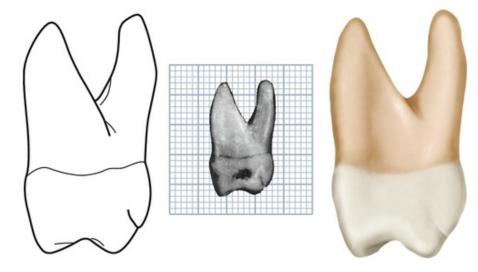
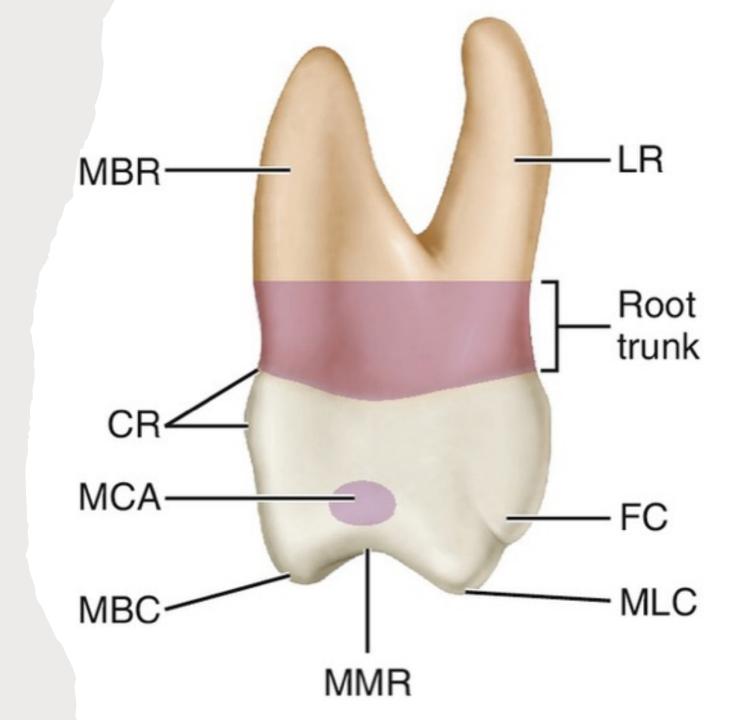


FIGURE 11-7 Maxillary right first molar, mesial aspect. (Grid = 1 sq. mm.)

MESIAL ASPECT

- The mesial contact area is at the junction of middle and occlusal thirds
- A shallow concavity is found above the contact area
- Mesiobuccal root is <u>broad and</u> <u>flattened</u>
- Lingual root is longer and narrower than the mesiobuccal root (banana shaped)



DISTAL ASPECT

- Generally similar to the <u>mesial</u> aspect
- o The cervical line is almost straight
- Concavity from the cervical line continues on the distal surface of the distobuccal root
- NO concavity between the bifurcation and cervical line
- Distal contact area is middle of the middle third

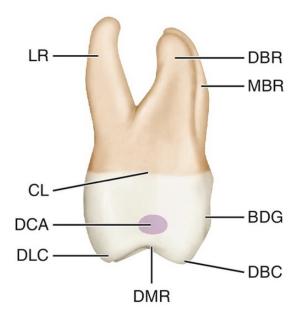
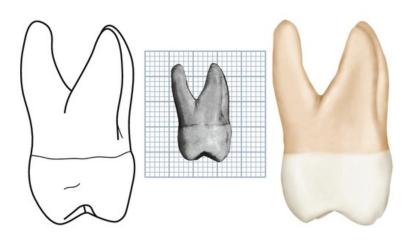
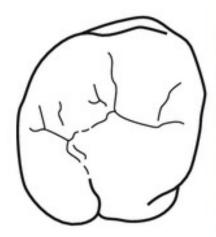
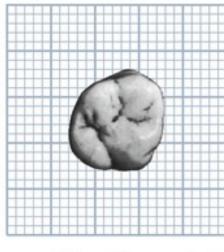


FIGURE 11-9 Maxillary right first molar, distal aspect. *DBR*, Distobuccal root; *MBR*, mesiobuccal root; *BDG*, buccal developmental groove; *DBC*, distobuccal cusp; *DMR*, distal marginal ridge; *DLC*, distolingual cusp; *DCA*, distal contact area; *CL*, cervical line; *LR*, lingual root.



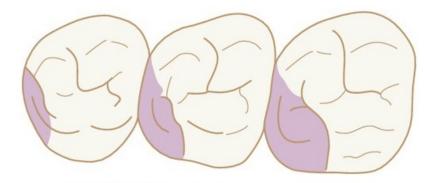
- Wider mesially than distally
- Wider **lingually** than buccally
- o 5th cusp can be indistinct or absent
- Only three cusps can be considered as <u>PRIMARY</u>
 - o mesiolingual and the two buccal cusps





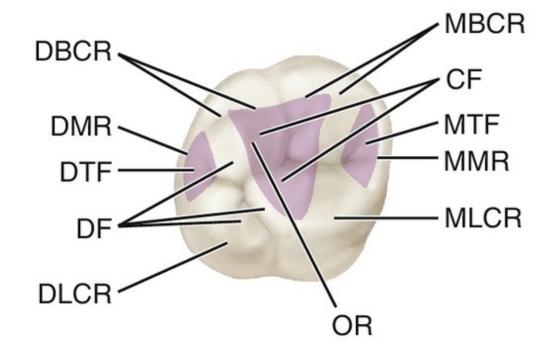


• The **distolingual** cusp become progressively **smaller** on the 2nd and 3rd maxillary molars, often **disappear** as a major cusp



cusp triangle. The distolingual lobe, represented by shaded areas, becomes progressively smaller on maxillary molars, starting with the first molar, which presents the greatest development of the lobe. The plain areas, roughly triangular in outline, represent the maxillary molar

- Two major fossae
 - Central fossa: triangular and mesial to oblique ridge
 - Distal fossa: linear and distal to the oblique ridge
- Two minor fossae
 - o Mesial triangular fossa
 - o Distal triangular fossa



- o **Oblique ridge** (transverse ridge): union of the <u>triangular ridge</u> of the distobuccal cusp and the distal ridge of the mesiolingual cusp forms it
 - o Reduced in height in the center
 - o Crossed by a developmental groove

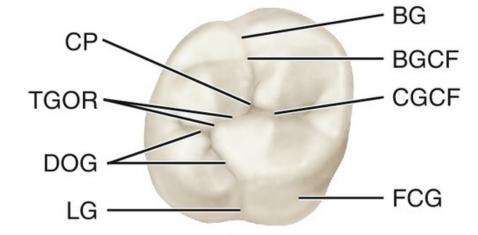


FIGURE 11-2 Maxillary right first molar, occlusal aspect, developmental grooves. *BG*, Buccal groove; *BGCF*, buccal groove of central fossa; *CGCF*, central groove of

- Central developmental pit radiates
 - Buccal developmental groove; continue to buccal surface
 - Central developmental groove
 - o **Transverse groove** of the oblique ridge
 - o **Distal oblique groove** connected with the lingual developmental groove
 - The developmental groove of the 5th cusp joins the lingual groove

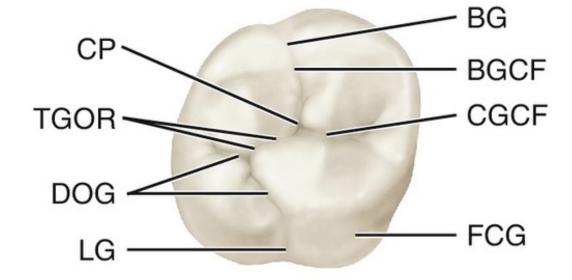


FIGURE 11-2 Maxillary right first molar, occlusal aspect, developmental grooves. BG, Buccal groove; BGCF, buccal groove of central fossa; CGCF, central groove of

MAXILLARY 2ND MOLAR

- The 2nd maxillary molar supplement in function the 1st molar
- o Roots are **longer** than the 1st molar
- The distobucal cusp is **NOT** as large or as well-developed



MAXILLARY 2ND MOLAR

- o Distolingual cusp is smaller
- o NO 5th cusp
- **Shorter** than the 1st molar
- o Two types of 2nd molar
 - o **Type 1**: resembles the 1st molar (most common)
 - o **Type 2**: resembles the 3rd molar (less common)
 - Distolingual cusp is poorly developed (heart-shaped)





Maxillary right 1st molar

Maxillary left 2nd molar

BUCCAL ASPECT

- Narrower **mesiodistally** than the 1st molar
- **Distobuccal cusp** is **SMALLER** allowing part of the distolingual cusp to be seen
- o Roots inclined **distally** MORE than the 1st molar

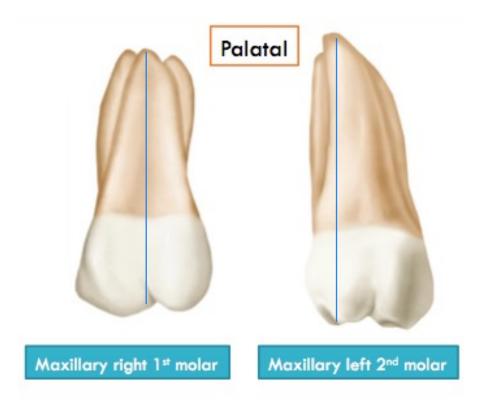


Maxillary right 1st molar



LINGUAL ASPECT

- 2nd molar differs from the 1st molar in the following
 - 1. Distolingual cusp of the crown is smaller
 - **2. Distobuccal cusp** can be seen from this aspect
 - 3. No 5th cusp
 - 4. The apex of the lingual root is in line with the distolingual cusp tip instead of the lingual groove as in the 1st molar



MESIAL ASPECT

 \circ The buccolingual dimension of the 2^{nd} molar is about the same, but the crown length is less



DISTAL ASPECT

- Distobuccal cusp is smaller in the 2nd maxillary molar
- o Can see the **mesiobuccal root**







Maxillary left 2nd molar

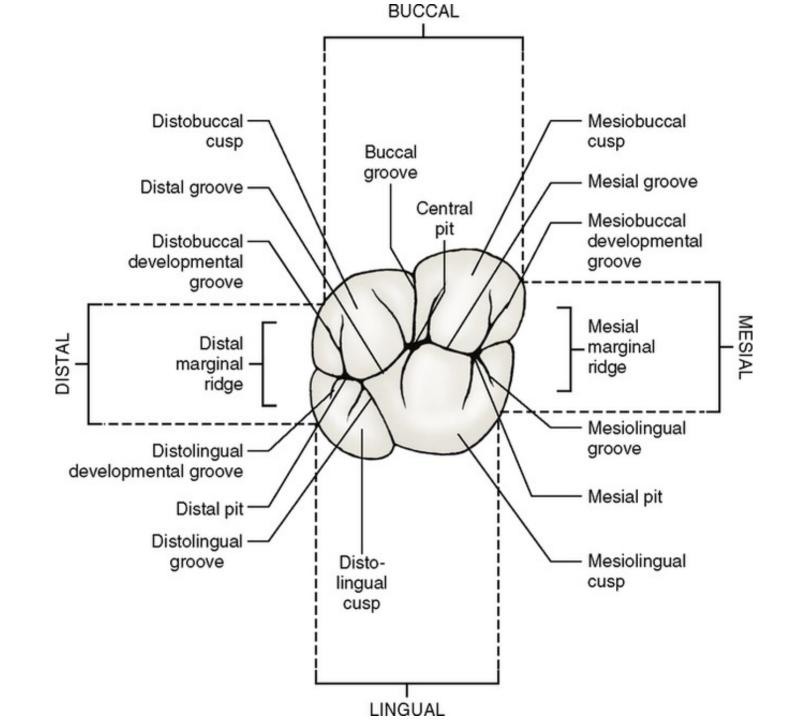
- o Resemble 1st molar (type 1)
- o Mesiodistal diameter is **LESS** than the 1st molar
- o **NO more supplemental grooves** than the 1st molar



Maxillary right 1st molar

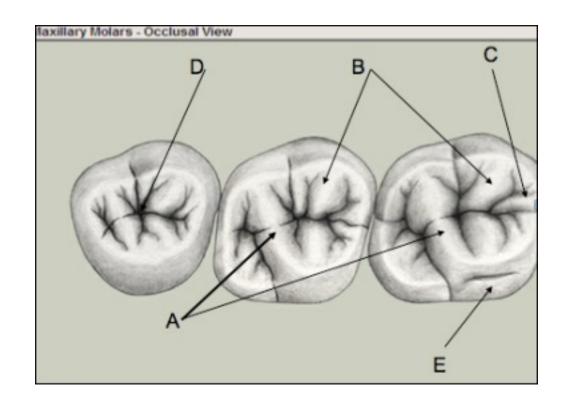


Maxillary right 1st molar



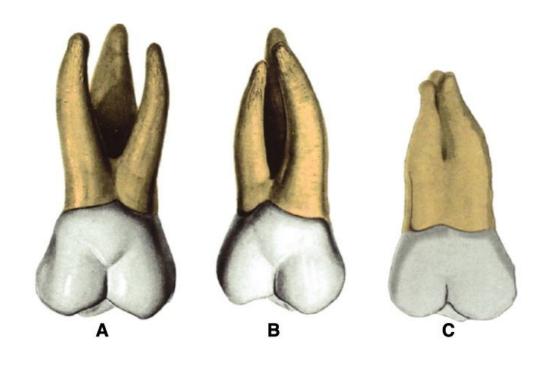
MAXILLARY 3RD MOLAR

- Often appears as a developmental anomaly
- Can be varied in size, contour, and relative position to other teeth
- Supplements the 2nd molar in function and its fundamental design is similar; however, the crown is **smaller**, and the roots are shorter
- Roots have inclination toward fusion



MAXILLARY 3RD MOLAR

- o **Heart-shaped** type of 2nd molar
- The distolingual cusp is very small and poorly developed in most cases, and it may be absent entirely



BUCCAL ASPECT

- Shorter cervico-occlusally than the 2nd molar
- Narrower mesiodistally than the 2nd molar
- Roots are usually fused, functioning as one large root
- o Roots are more toward the **distal**

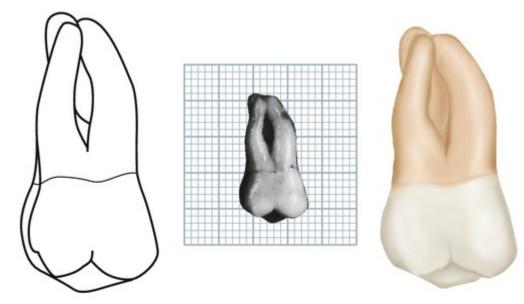


FIGURE 11-28 Maxillary right third molar, buccal aspect. (Grid = 1 sq. mm.)

LINGUAL ASPECT

- o Only **one large** lingual cusp
- o **NO** lingual groove
- Some cases has a poorly developed distolingual cusp with lingual developmental groove

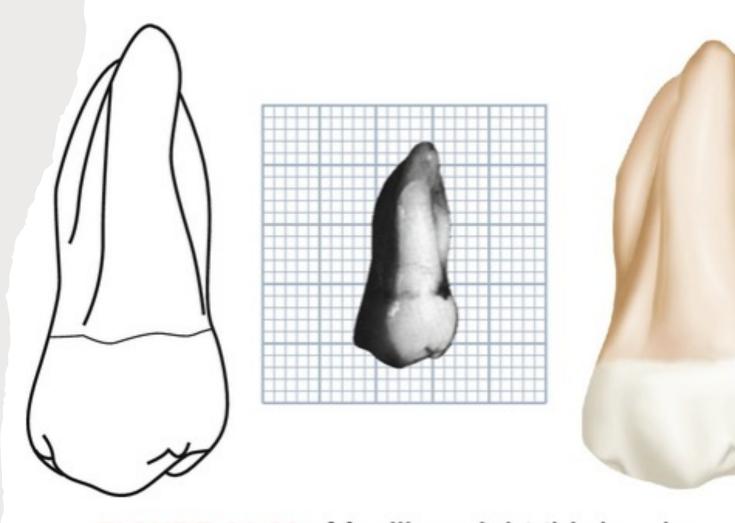


FIGURE 11-29 Maxillary right third molar, lingual aspect. (Grid = 1 sq. mm.)

MESIAL ASPECT

- o Fused roots and a bifurcation
- o Irregular outline

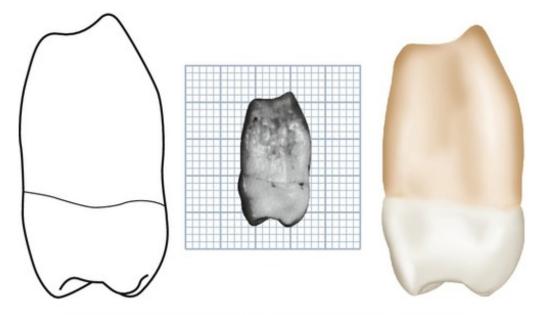


FIGURE 11-30 Maxillary right third molar, mesial aspect. (Grid = 1 sq. mm.)

DISTAL ASPECT

- o More occlusal surface can be seen
- Measurements from the cervical line to marginal ridge is SHORT

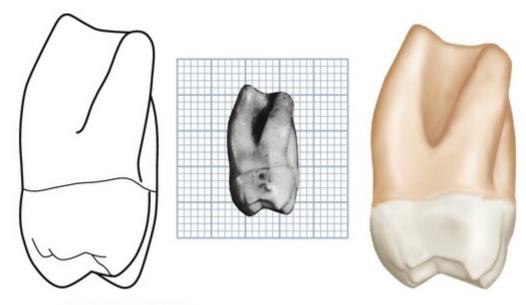
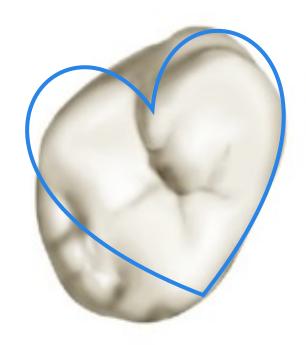


FIGURE 11-31 Maxillary right third molar, distal aspect. (Grid = 1 sq. mm.)

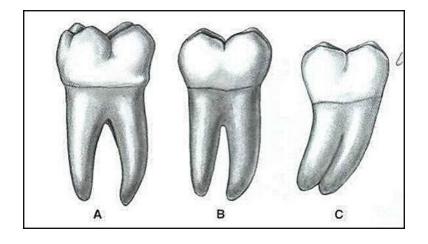
- o **Heart-shaped** outline
- Lingual cusp is large and welldeveloped
- o Little or NO distolingual cusp
- Three functioning cusps (two buccal and one lingual)
- Many supplemental grooves
- **o** Converges lingually



THE PERMANENT MANDIBULAR MOLARS

THE PERMANENT MANDIBULAR MOLARS

- o Resemble each other in **functional** form
- Variation in cusps number, in size, occlusal design and length
- Each mandibular molar has two roots, one mesial and one distal
- o 3rd molars and 2nd molars have fused roots
- o **Shorter** than other mandibular teeth



MANDIBULAR 1ST MOLAR

- Largest tooth among the mandibular teeth
- Five well-developed cusps:
 - o Two buccal, two lingual, one distal
- Two well-developed roots, mesial and distal
 - o Widely separated

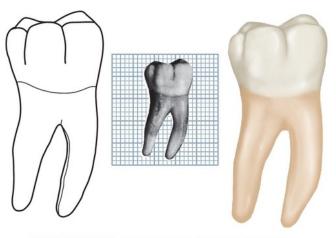
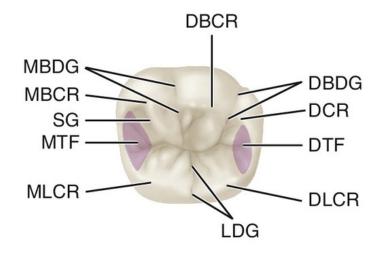
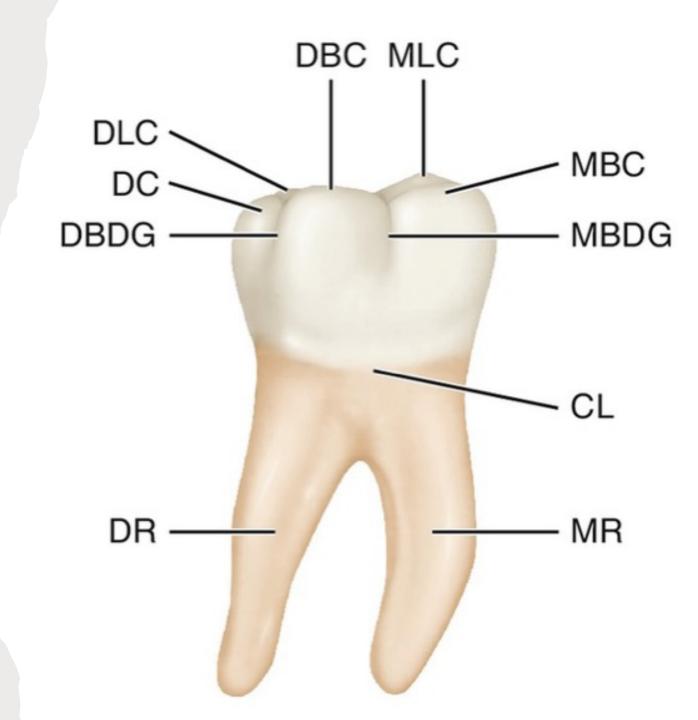


FIGURE 12-4 Mandibular right first molar, buccal aspect. (Grid = 1 sq. mm.)



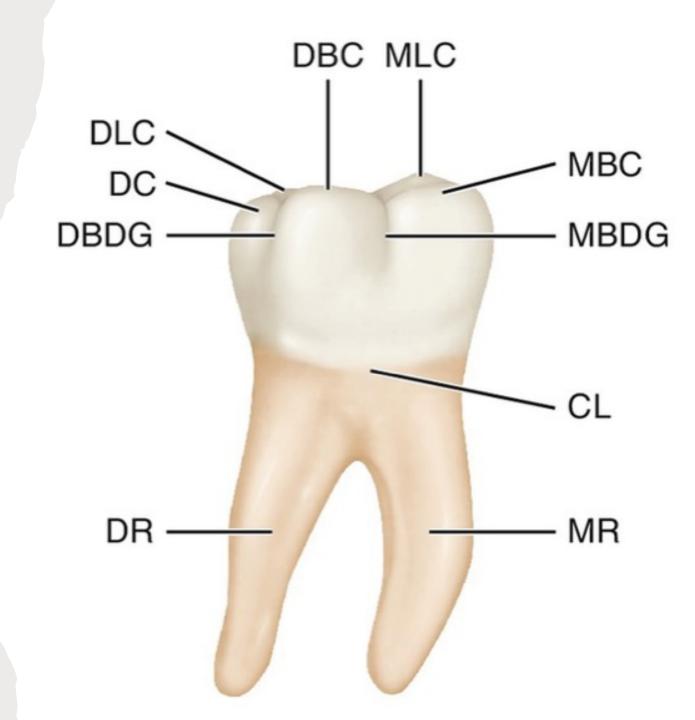
BUCCAL ASPECT

- Mesial root is broad and curved distally
- o Distal root is **pointed distally**
- o All five cusps can be viewed
- Lingual cusps are higher than other cusps
- Mesiobuccal developmental groove
- Distobuccal developmental groove



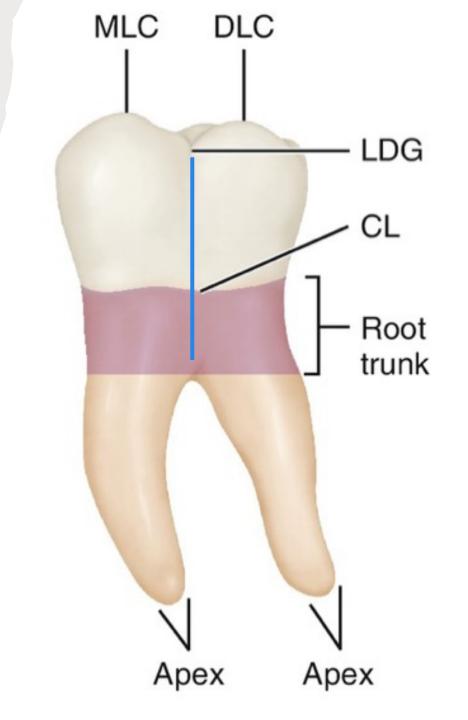
BUCCAL ASPECT

- Mesiobuccal cusp is the widest
- Distal cusp is small and more pointed
- Mesiobuccal developmental groove is mesial to the bifurcation
- o The cervical line is **regular**
- The mesial outline is somewhat concave
- The buccal aspect is generally convex
- Developmental depressions are present on the mesial and distal roots



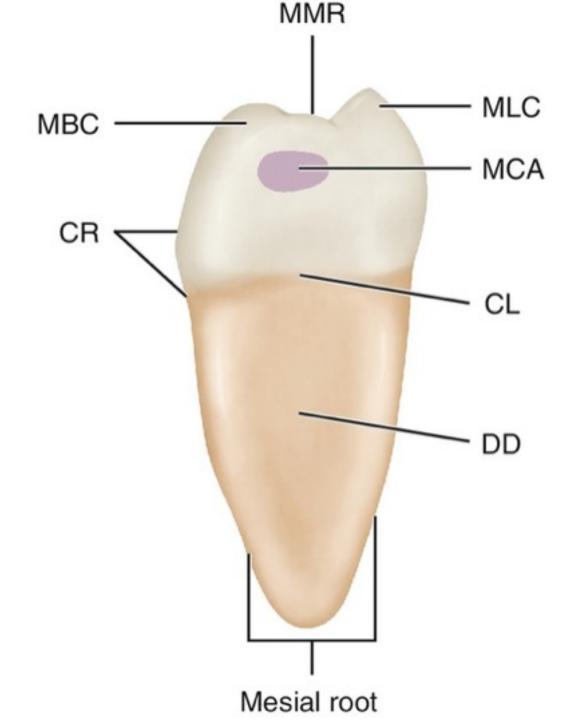
LINGUAL ASPECT

- Two lingual cusps and part of the distal cusp can be seen
- Lingual cusps are pointed
- Mesiolingual is wider
- Lingual developmental groove
- The distal cusp is at lower level than the mesial cusp
- o Irregular cervical line
- Bifurcation groove of the root trunk is almost in line with the lingual developmental groove



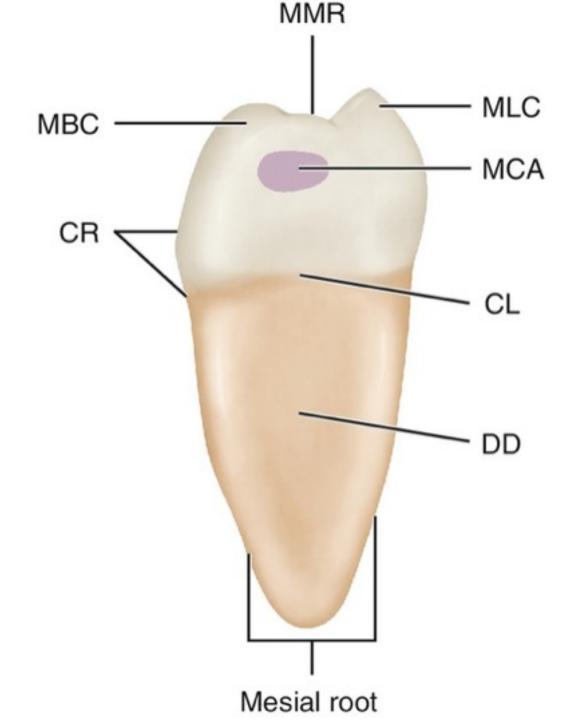
MESIAL ASPECT

- Two cusps and one root ONLY can be seen
 - Mesiobuccal cusp, mesiolingual cusp, mesial root
- Mesial portion is broader, and cusps are higher, can NOT see the distal portion
- o When comparing the mandibular 2nd premolar and 1st molar; the lingual cusp is longer than the buccal cusp in the 1st molar the opposite is true for the 2nd premolar



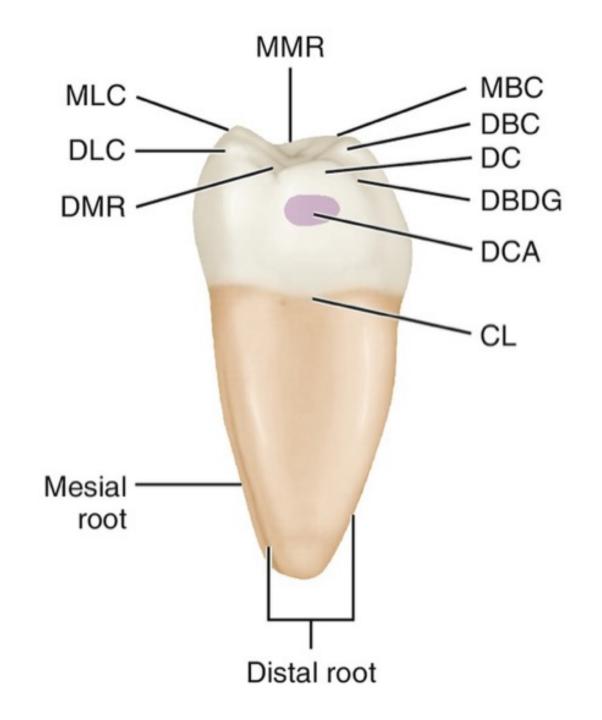
MESIAL ASPECT

- o Buccal cervical ridge
- Above the cervical line the lingual is <u>straighter</u> than the buccal
- Regular cervical line; however,
 higher lingually than buccally
- NO deep developmental depression on the mesial root



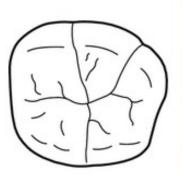
DISTAL ASPECT

- Distal contact area is placed
 below the distal cusp ridge of
 the distal cusp
- DCA is **higher** than the mesial contact area
- Developmental groove crossing the marginal ridge



OCCLUSAL ASPECT

- More mesiodistally than buccolingually. Why?
- Compare to 1st maxillary molar.
- Mesiobuccal is slightly larger of the two lingual cusps
- Distal cusp is the smallest
- Sometimes 4 cusps mandibular 1st molar can be found
- General comparison
 - o Maxillary molars: 3 major cusps
 - o Mandibular molars: 4 major cusps



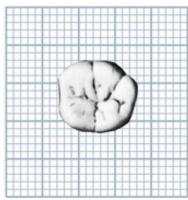




FIGURE 12-11 Mandibular right first molar, occlusal aspect. (Grid = 1 sq. mm.)

OCCLUSAL ASPECT

- o **One** major fossa and **two** minor fossa:
 - o Major: central fossa, circular
 - o Minor: mesial and distal triangular fossae
- o Central, mesial and distal pits
- o Central developmental groove
- Mesiobuccal developmental groove
- o Distobuccal developmental groove
- Lingual developmental groove
- Supplemental grooves

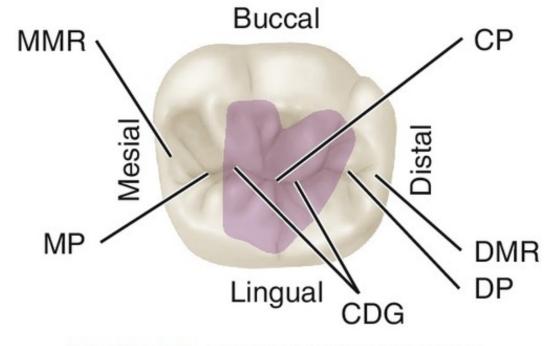
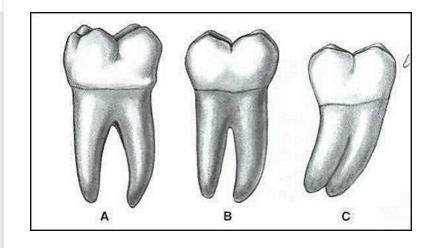


FIGURE 12-2 Mandibular right first molar,

MANDIBULAR 2ND MOLAR

- o 2nd molar is **smaller** than the 1st molar by a fraction of a millimeter in ALL dimensions
- Four well-developed cusps
 - o 2 buccal and 2 lingual
- NO distal cusp nor 5th cusp
- Two well-developed roots (mesial and distal)
- To describe this tooth, direct comparison with 1st mandibular molar



BUCCAL ASPECT

- **Shorter** and narrower than the 1st molar
- o One developmental groove buccally
- o Roots are shorter than the 1st molar
- o Roots inclined distally







Left 2nd mandibular molar

LINGUAL ASPECT

- o Comparing mandibular 2nd to mandibular 1st
 - Lingual converging is less in the 2nd molar







Left 2nd mandibular molar

MESIAL ASPECT

- Cervical ridge is less pronounced in the 2nd molar
- Mesial root is more pointed in the 2nd molar



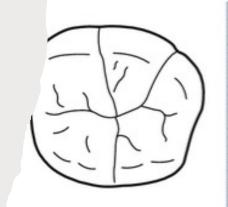
DISTAL ASPECT

- o NO distal cusp
- NO distobuccal groove



OCCLUSAL ASPECT

- NO distal cusp
- NO distobuccal developmental groove
- Buccal and lingual developmental grooves meet the central developmental groove at right angles at the central pit
- These grooves forming a cross;
 dividing the occlusal surface into 4
 equal parts
- Many supplemental grooves radiating from the developmental grooves



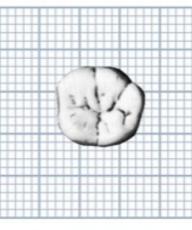
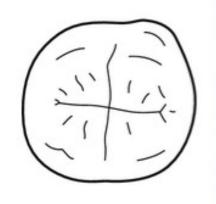




FIGURE 12-11 Mandibular right first molar, occlusal aspect. (Grid = 1 sq. mm.)



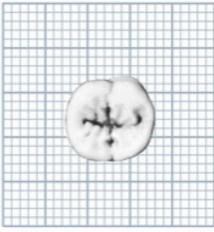




FIGURE 12-22 Mandibular left second molar, occlusal aspect. (Grid = 1 sq. mm.)

Y FISSURE PATTERN + FISSURE PATTERN

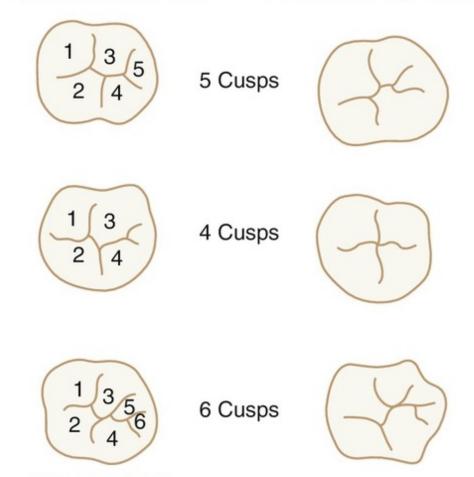


FIGURE 12-27 Mandibular molar patterns in the right lower molar. Y and + fissure

MANDIBULAR 3RD MOLAR

- Presents many anomalies both in form and in position
- o **Crown**: irregular development
- o **Root**: malformed and undersized
- May have 5 or more cusps
- NO normal alignment with other teeth
- Most likely to be **impacted**,
 partially or wholly (due to lack of space)
- Takes a long time to erupt.



BUCCAL ASPECT

- 4 cusps type is the most common
- Buccal cusps are short and rounded
- Two roots are most common (mesial and distal), poorly developed
- o Roots may be separated or fused

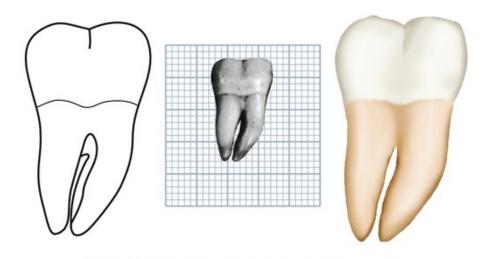


FIGURE 12-29 Mandibular right third molar, buccal aspect. (Grid = 1 sq. mm.)

LINGUAL ASPECT

• Similar to the buccal aspect

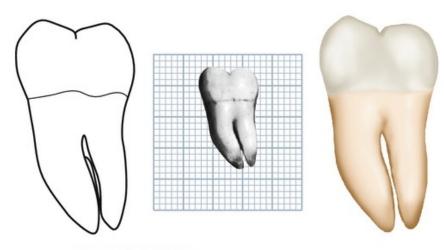


FIGURE 12-30 Mandibular right third molar, lingual aspect. (Grid = 1 sq. mm.)

MESIAL ASPECT

- Resemble mandibular 2nd molar <u>EXCEPT</u> in dimensions
- o Short root and pointed

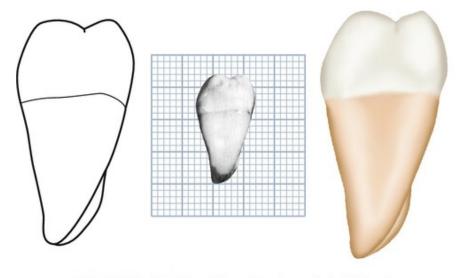


FIGURE 12-31 Mandibular right third molar, mesial aspect. (Grid = 1 sq. mm.)

DISTAL ASPECT

- Resemble mandibular 2nd molar <u>EXCEPT</u> in dimensions
- Distal root is smaller than the mesial root

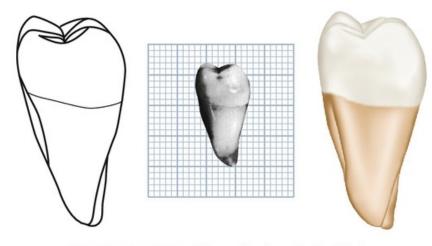


FIGURE 12-32 Mandibular right third molar, distal aspect. (Grid = 1 sq. mm.)

OCCLUSAL ASPECT

- o Similar to 2nd mandibular molar
- o More rounded outline
- Smaller buccolingually compared to 2nd molar

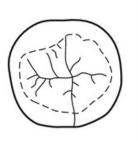






FIGURE 12-33 Mandibular right third molar, occlusal aspect. (Grid = 1 sq. mm.)

WHERE CAN WE APPLY THIS INFORMATION?

- Provides a sound basis for identifying abnormal conditions.
- Dental hygiene standard of care (2016)
 - Accurate dental charting and treatment.
- Forensic dentistry
 - Your teeth are like your fingerprints
 - Teeth appear to be vital pieces of evidence in several such investigations.



SUMMERY

- You have a better understanding of the anatomical and morphological landmarks of both maxillary and mandibular molars.
- Compare and contrast between maxillary and mandibular molars and identify the tooth by recognizing its anatomical characteristics.
- Keep in mind that it is not only to complete a required course but can help fulfill your professional obligation to ensure accurate dental charting. Remember that you have a critical role in recording and documenting efficiently.
- Explore websites listed on our lecture
- Search magazines for current articles in various journals
- Research about forensic dentistry and how our lecture can be used in this filed

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- Primal's 3D Human Anatomy for dental hygiene. Retrieved from https://www.anatomy.tv/titles
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LET DO A RETRIEVAL ACTIVITY SHALL WE!

INSTRUCTIONS

- Open the link https://quizizz.com
- Go to "Enter code"
- Your Quizezz name.

GREAT JOB EVERYONE! THANK YOU