



Tooth Morphology

PERMANENT MOLARS- Maxillary 1st Molar



CONTENTS

- ▶ Differentiating features between Mandibular and maxillary Molars
- ▶ Chronological features of Maxillary Ist Molar
- ▶ Describe Various aspects of maxillary first molar
- ▶ Enumerate Identifying features of maxillary first molar
- ▶ Enumerate the clinical features of maxillary first molar
- ▶ To carve permanent maxillary first molar



GENERAL FEATURES

- ▶ There are 12 permanent molars-6 maxillary & 6 mandibular, 3 in each quadrant.
- ▶ Assist in mastication & comminution of food
- ▶ Largest & strongest teeth
- ▶ Crowns are wider mesio-distally than cervico-occlusally



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- ▶ Crowns taper (get narrower) from the buccal to the lingual
i.e. the M-D width on buccal half is wider than on the lingual
half (Except Max. Ist molar)
 - ▶ Crowns taper from mesial to distal.



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- ▶ Crowns get shorter from mesial to distal
 - ▶ Proximal contacts on mesial are at or near the junction of occlusal & middle 3rds & distal are more cervical.



First Molars: Maxillary & Mandibular

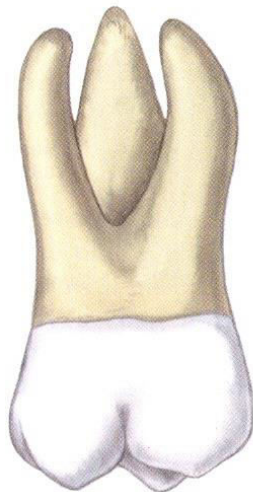
- ▶ Appear in oral cavity at about 6 yrs of age.
- ▶ Mandibular molars precedes the Maxillary.
- ▶ Erupts posterior to 2nd deciduous molar.
- ▶ Located at the centre of the fully developed adult jaw anteroposteriorly.
- ▶ Considered as “Cornerstones” of the dental arches.



Maxillary & Mandibular Molars

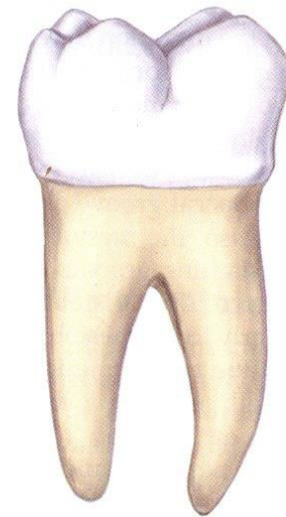
Maxillary Molars

- ▶ Four cusps (*sometimes / supplemental cusp*) & three roots (2 buccal & 1 lingual)

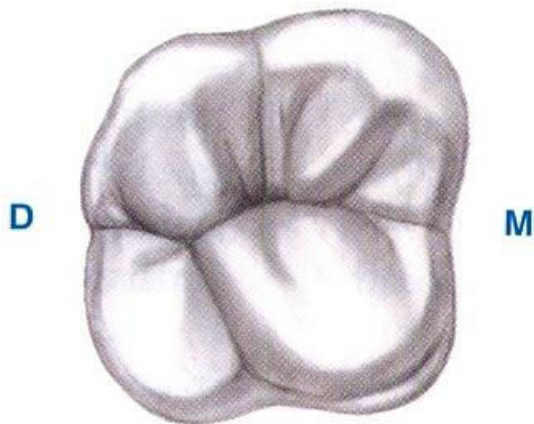


Mandibular Molars

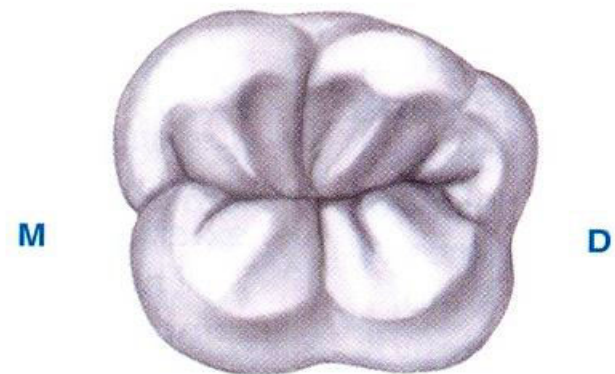
- ▶ Five cusps & two roots (mesial & distal)



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- ▶ Crowns wider faciolingually than mesiodistally



- ▶ Crowns wider mesiodistally than faciolingually



- ▶ Buccal surface of crown relatively vertical & flat on buccal aspect

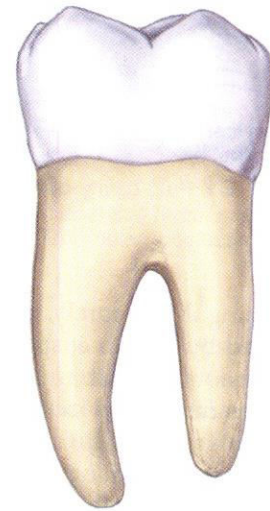
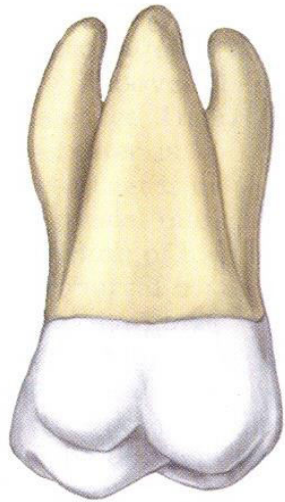


- ▶ Buccal crown surface convex & tipped lingually



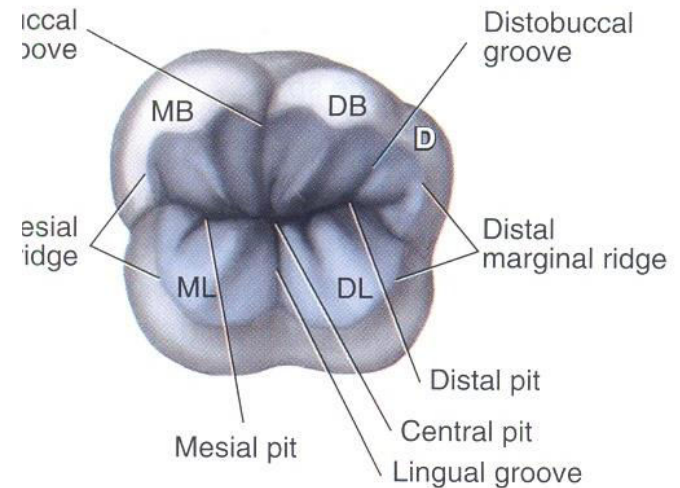
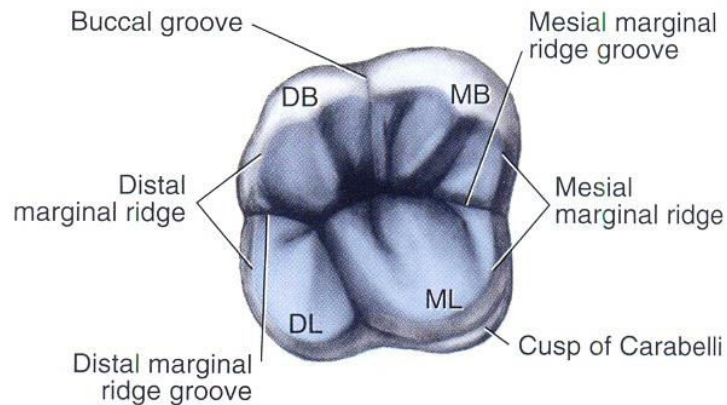
Mesial

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- ▶ Two nearly equal sized lingual cusps
 - ▶ Large & small lingual cusps



- ▶ First molars wider on lingual than buccal

- ▶ First molars taper from buccal to lingual



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- ▶ Cusp of Carabelli on 1st molar
 - ▶ Presence of oblique ridge
 - ▶ Four fossae (2 major & 2 minor)

- ▶ Cusp of Carabelli not present
- ▶ Oblique ridge is not present
- ▶ Three fossae (1 major & 2 minor)



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- ▶ 2nd molar has more taper buccal to lingual than 1st molar
 - ▶ 3rd molar occlusal surface small & often heart shaped

- ▶ 2nd molar has less taper buccal to lingual than 1st molar
- ▶ 3rd molar resembles 1st or 2nd molar



PERMANENT MAXILLARY FIRST MOLAR



CHRONOLOGY

- ▶ First evidence of calcification : at birth
- ▶ Enamel completed : 3-4 yrs
- ▶ Eruption : 6 yrs
- ▶ Root completed: 9-10 yrs



TRAITS:

- ▶ Arch trait : Maxillary
- ▶ Class trait : Molar
- ▶ Set trait : Permanent
- ▶ Type trait : First



BUCCAL ASPECT

- ▶ Crown is trapezoid
- ▶ M-B cusp is broader than D-B cusp, & its mesial slope meets its distal slope at an obtuse angle

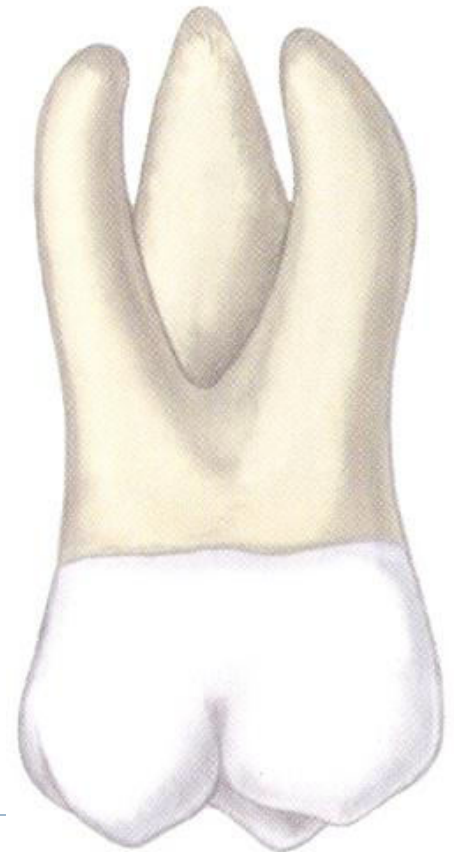


Buccal

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- ▶ The mesial slope of D-B cusp meets its distal slope at approx. a right angle.
 - ▶ The buccal developmental groove is equidistant bet. mesiobuccal & distobuccal line angles.

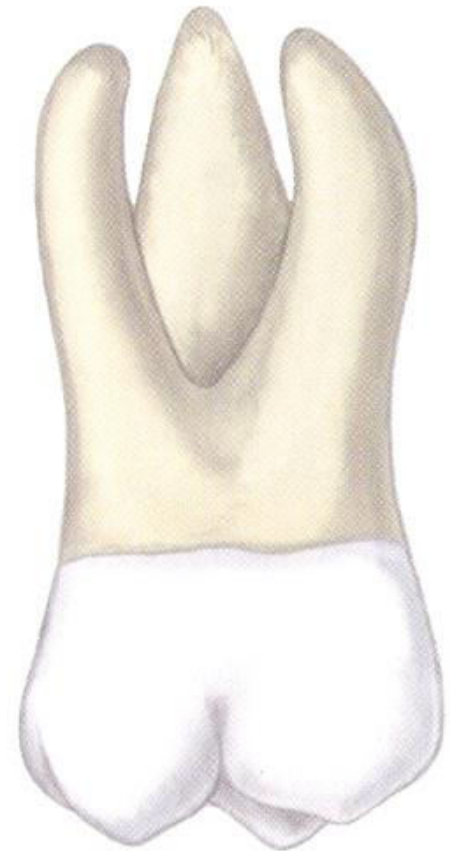


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- ▶ The cervical line of the crown does not have much curvature.
 - ▶ All the 3 roots can be seen. The axis of the roots are inclined distally.
 - ▶ The point of bifurcation of 2 buccal roots is located approx. 4 mm above the cervical line.



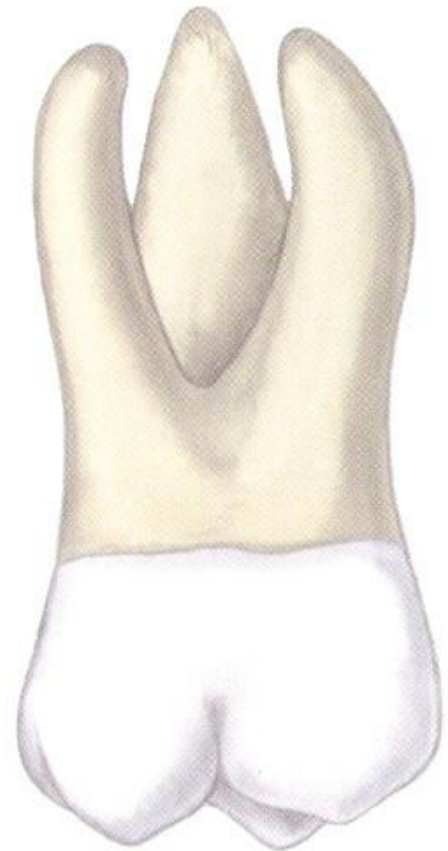
Buccal

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- ▶ Usually the palatal root is longest & 2 buccal roots are approx. equal in length.
 - ▶ Deep developmental groove is seen on the root trunk.



Buccal

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- ▶ On an average the roots are about twice as long as the crown



Buccal

LINGUAL ASPECT

- ▶ As wide as buccal surface M-D & also trapezoidal.
- ▶ Only lingual cusps can be seen.
- ▶ M-L cusp is much larger & longest.



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- ▶ The angle formed by the mesial outline of the crown & mesial slope of M-L cusp is 90° .
 - ▶ Mesial & distal slopes meet to form an obtuse angle.
 - ▶ D-L cusp is spheroidal & smooth.

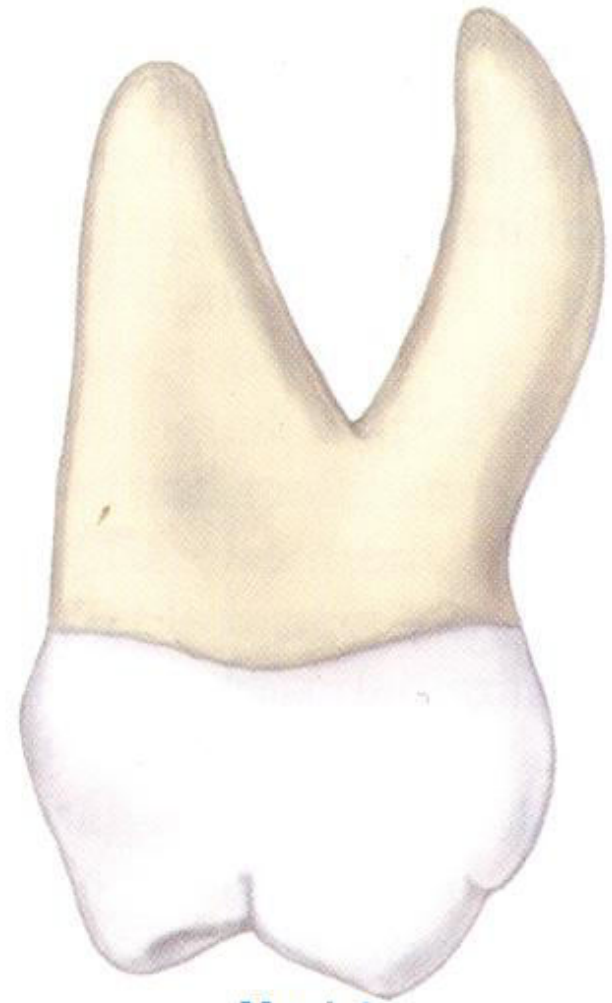


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- ▶ Lingual developmental groove starts approx. in center of this surface, curves sharply to distal & continues on occlusal surface.
 - ▶ Sometimes 5th cusp appears attached to the M-L surface of M-L cusp.
 - ▶ All three roots are visible



MESIAL ASPECT

- ▶ Starting at the cervical line, the outline of the crown makes short arc buccally
- ▶ Cusps seen are : M-B , M-L & 5th cusp (Cusp of Carabelli)

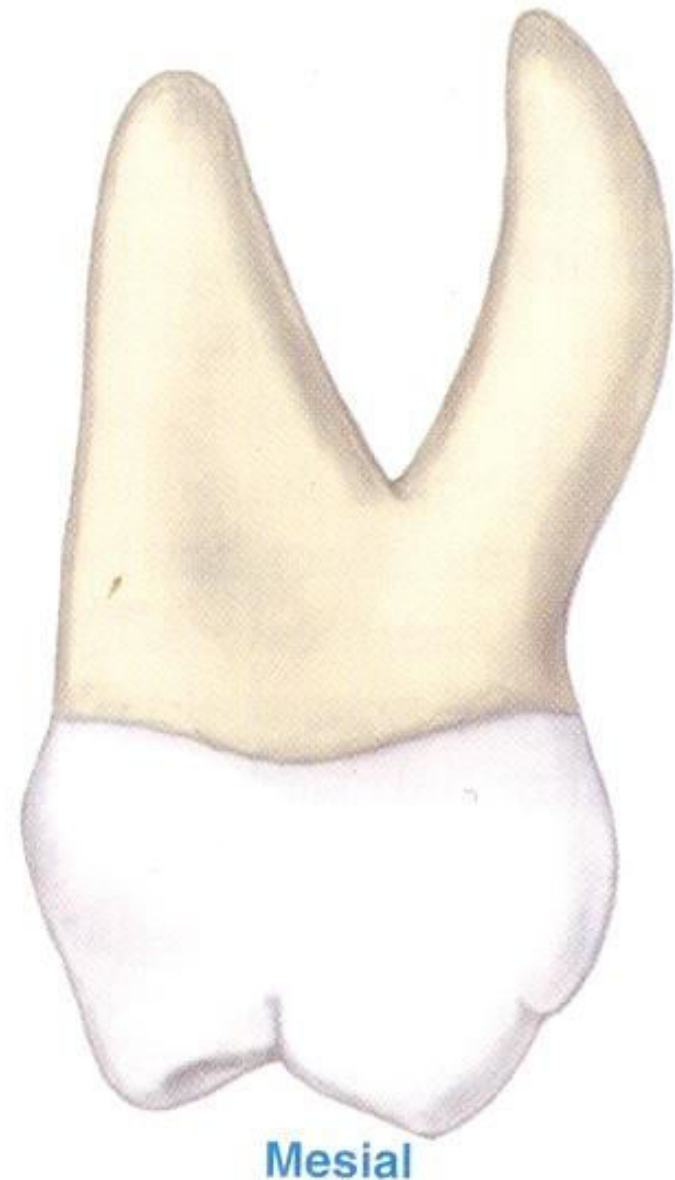


Mesial

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- ▶ Mesial marginal ridge is confluent with M-B & M-L cusp ridges.
 - ▶ Mesial marginal groove usually notches the mesial marginal ridge about midway along its length



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- ▶ M-B root hides the D-B root
 - ▶ Lingual outline of the crown curves outward & lingually approx. to the same extent as on buccal side

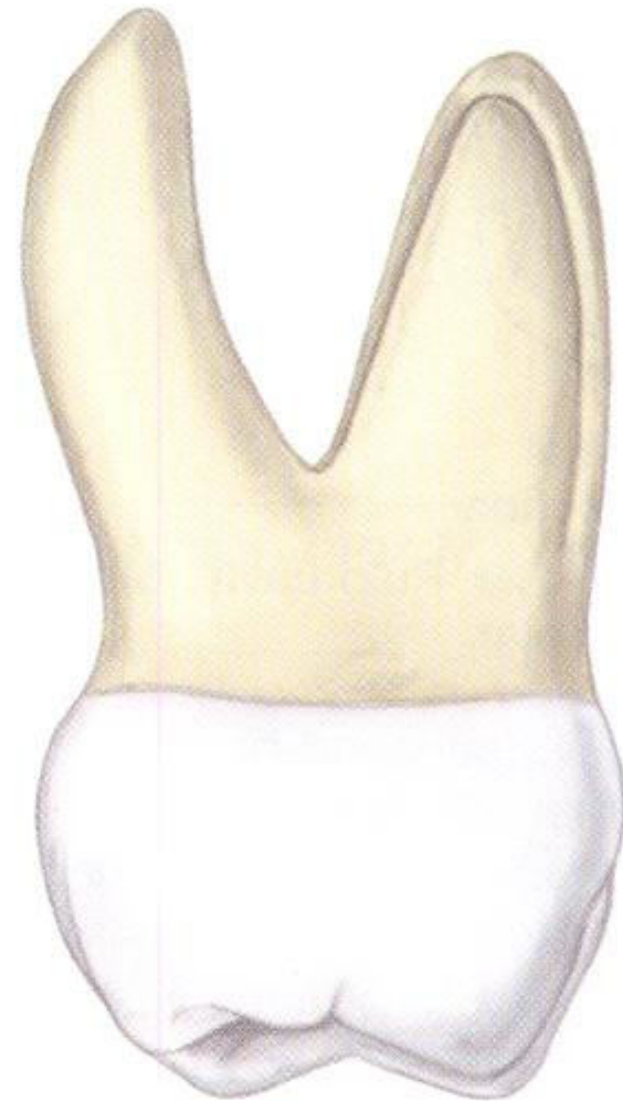


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- ▶ M-B root is broad & flattened on its mesial surface
 - ▶ Lingual root is longer than mesial root



DISTAL ASPECT

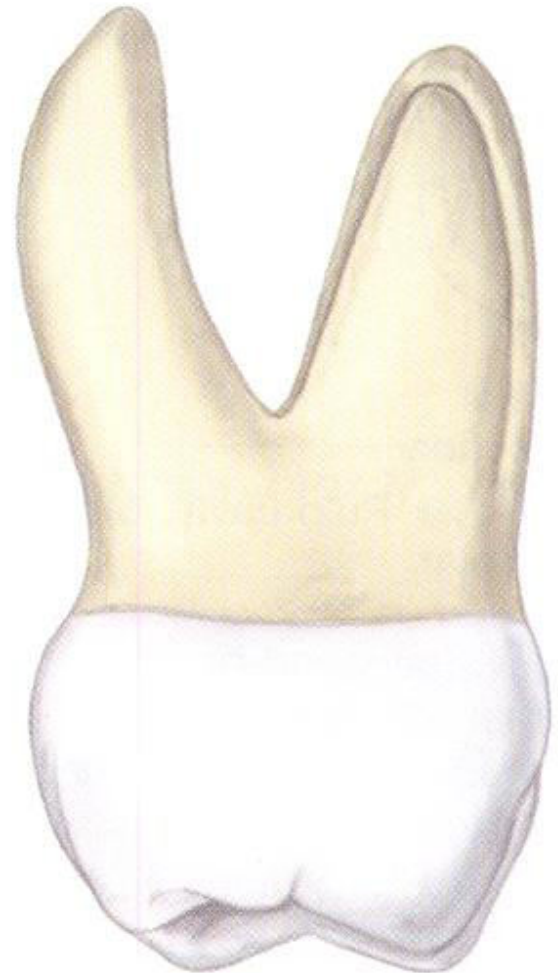
- ▶ Distal marginal ridge dips sharply a cervical direction,exposing triangular ridges on distal portion of occlusal surface.



Distal

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- ▶ Gross outline is similar to mesial.
 - ▶ Cervical line is almost straight across from buccal to lingual.

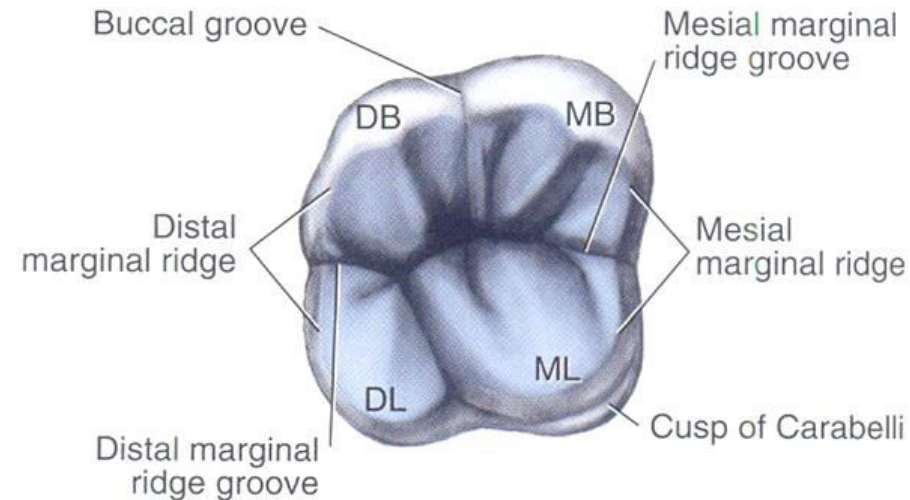
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- ▶ The distal surface of crown is generally convex, with a smooth rounded surface
 - ▶ D-B root is narrower at the base



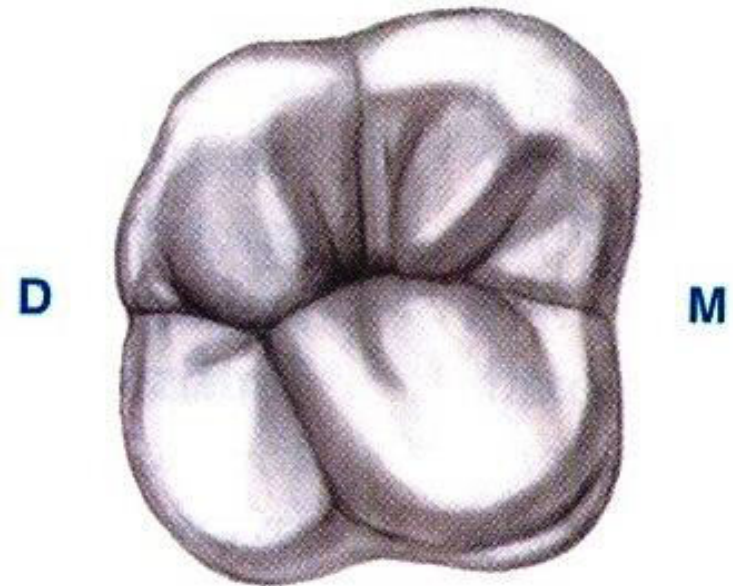
Distal

OCCLUSAL ASPECT

- ▶ It is rhomboidal in shape
- ▶ The 4 cusps are well developed with a small minor or 5th cusp
- ▶ M-L cusp is the largest

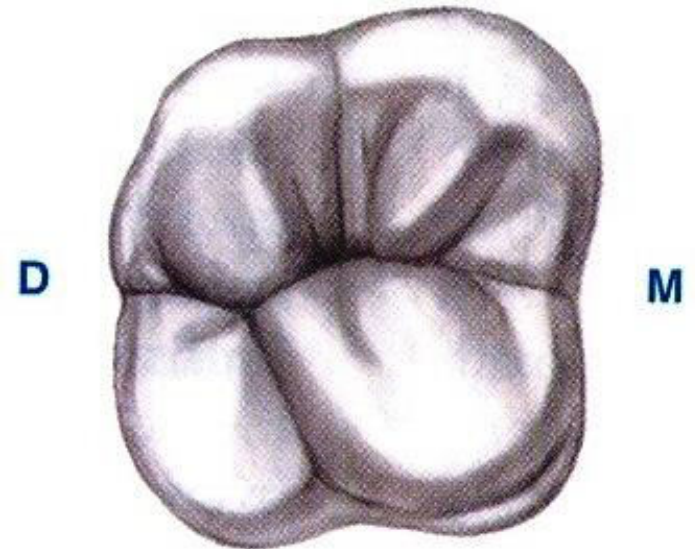


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- ▶ There are 2 major fossae: central & distal
 - ▶ 2 minor fossae : mesial & distal triangular fossa



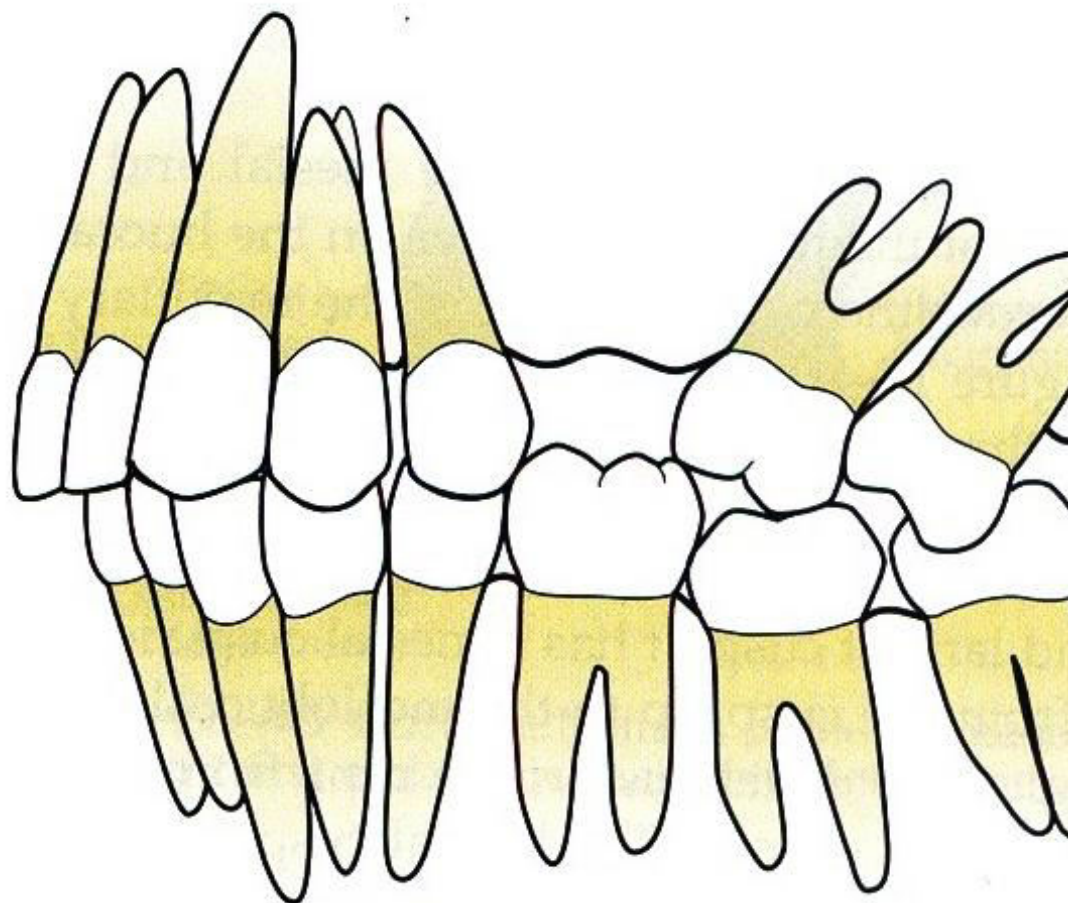
Oblique ridge

- ▶ Oblique ridge crosses the occlusal surface obliquely & is formed by triangular ridge of distobuccal cusp & distal cusp ridge of mesiolingual cusp.



Clinical considerations for Maxillary 1st Molars

- ▶ Important in the development of occlusion.
- ▶ Loss of 1st Molar-
 - **Mesial inclination & drift** of the maxillary 2nd molar into open arch space
 - **Distal inclination & drift** of the maxillary 2nd premolar
 - **Supraeruption** of mandibular 1st molar



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- ▶ Distobuccal surfaces of the permanent 1st molars have increased supragingival tooth deposits such as bacterial plaque, calculus & stain.
 - ▶ This is mainly due to its position in the oral cavity, opposite the duct opening of parotid salivary glands on the inner cheek.



Thank you 😊

