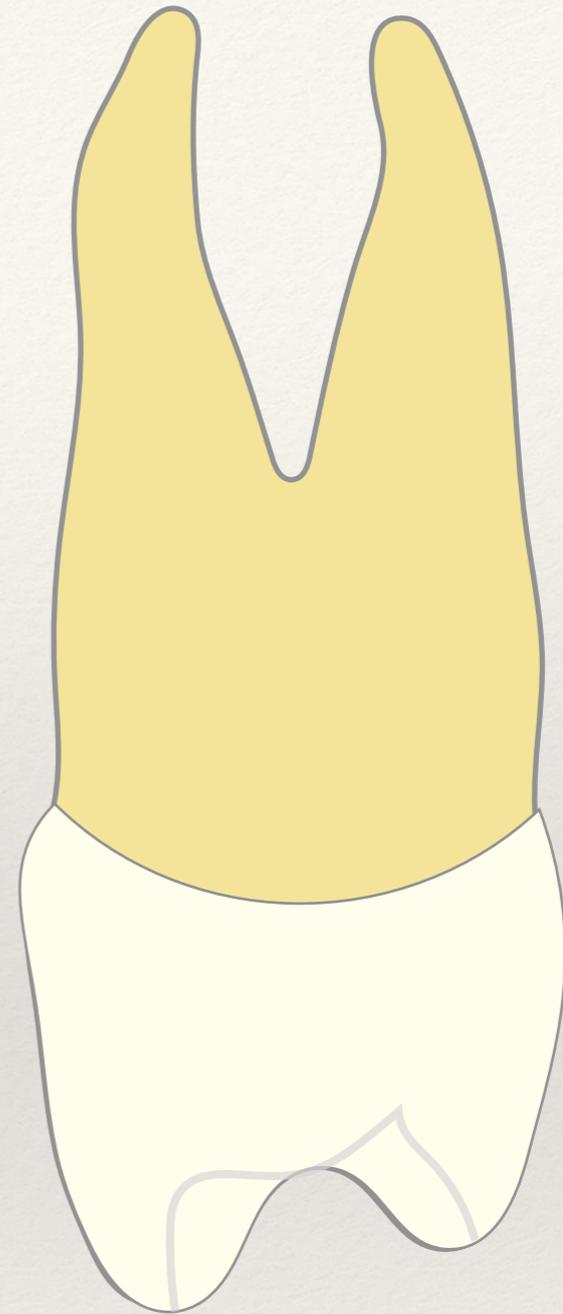

Maxillary premolars

2025

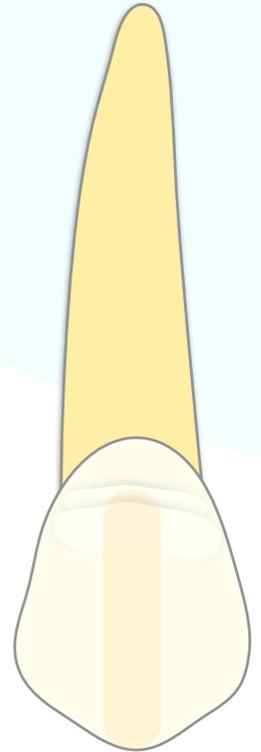


Maxillary Premolars

* General knowledge: *المركز المركزي لثلاث مولات يقبل طولها*

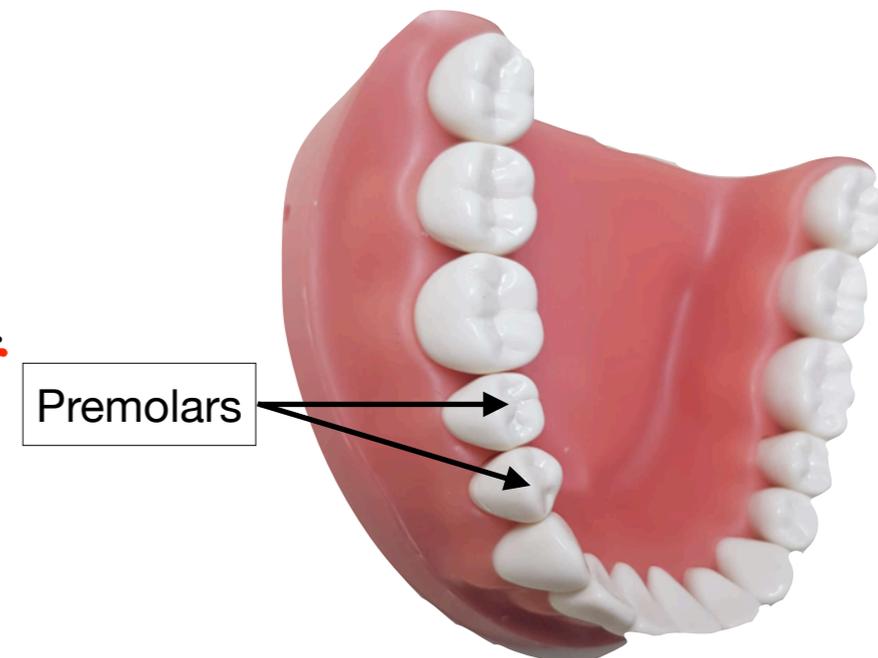
* General knowledge:

- Each quadrant of the maxilla has 1st and 2nd premolars.
- The first premolar is distal to canine, then the second premolar is behind the first.
- Premolars are succedaneous teeth that replace the primary 1st and 2nd deciduous molars.
- The crowns of the premolars are shorter than the crowns of the anterior teeth.
- The buccal surface of the premolars contain buccal ridge in the center of the crown.

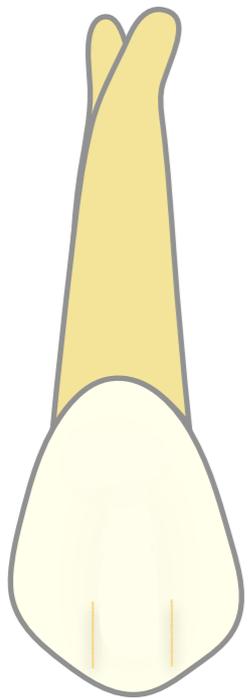


* Functions of Premolars: *ضواحيك*

- The first premolar help the canine in tearing of food. *تمزيق*
- Premolars work with the molars in the chewing and grinding of food. *طحن صغف*
- Also, premolars play an important role of smile and speech.
- Premolars also support the corners of the mouth and cheek.



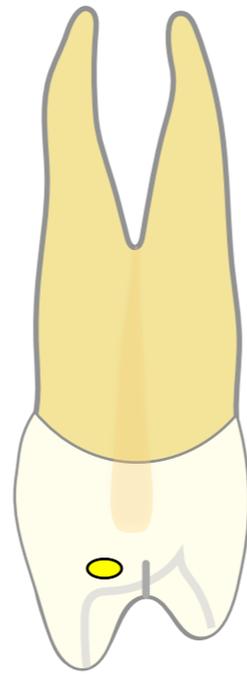
Maxillary first premolar



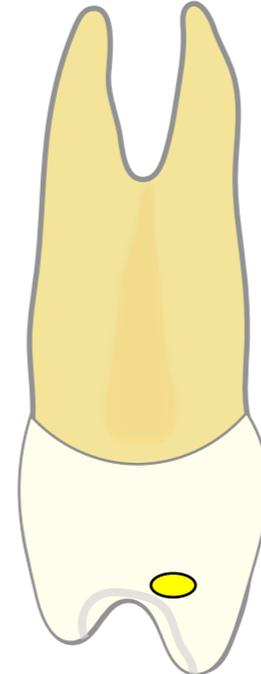
Buccal



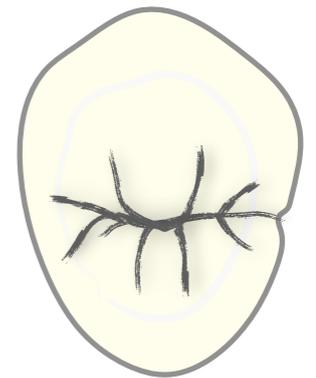
Lingual



Mesial



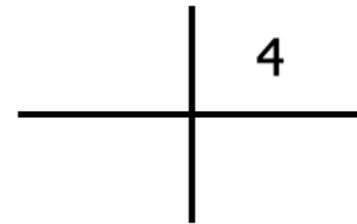
Distal



Occlusal

Maxillary First Premolar

Chronology	
Begin Of Dental Organ	7 M.I.U.
Begin Of Calcification	1.5 - 1.45 Years
Crown Completed	5-6 Years.
Eruption	10 Years.
Root Completed	13 Years.

Numbering system	
Maxillary right 1st premolar	Maxillary left 1st premolar
	
# 5	# 12
1 4	2 4

2081
2081

Buccal Aspect

* Geometrical Shape: Trapezoid.

Short side is the cervical side and long side is the occlusal.

* Mesial outline:

• Slightly concave from cervical line to contact area.

mca
• Mesial contact area is located at the middle third.

* Distal outline:

• Straight or slightly concave till the contact area.

• Distal contact area is located more occlusal than mesial.

* Occlusal outline:

• One cusp seen from buccal aspect termed buccal cusp.

• The buccal cusp contain sharp cusp tip and two slopes.

• Mesial slope is longer than the distal slope.

* Note:

mca
In canine, mesial slope is shorter than distal slope.



Surface Anatomy

Crown elevations on buccal surface

1. Cervical ridge.
2. Buccal ridge.

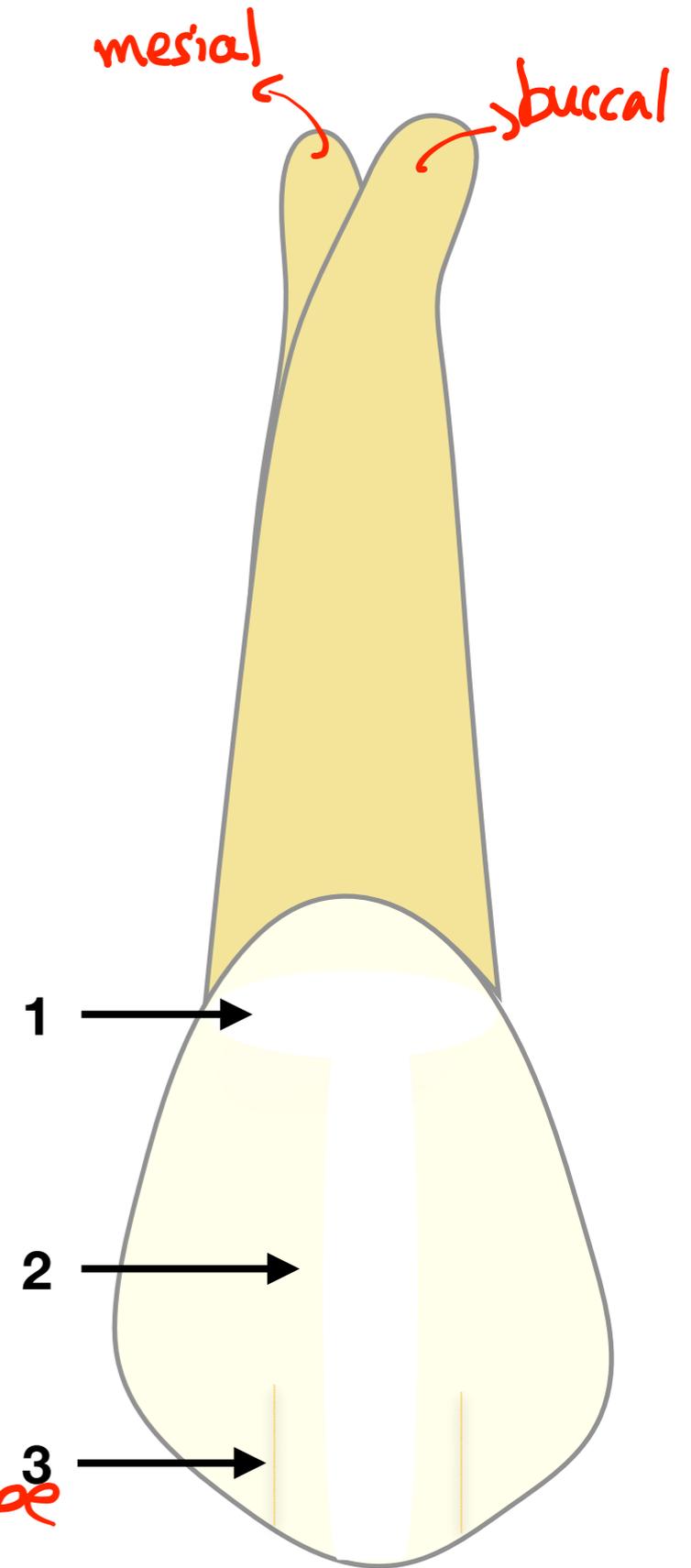
Crown depressions on buccal surface:

3. Mesial and distal developmental depression.

Roots

- Buccal root seen from buccal aspect with sharp apex.
→ towards distal
- Also, part of lingual (palatal) root can be seen.
towards mesial
- Similar to that of the canine but shorter.
- The root inclined distally at the apical 3rd.

*buccal cusp → 3 lobes
lingual cusp → 1 lobe*



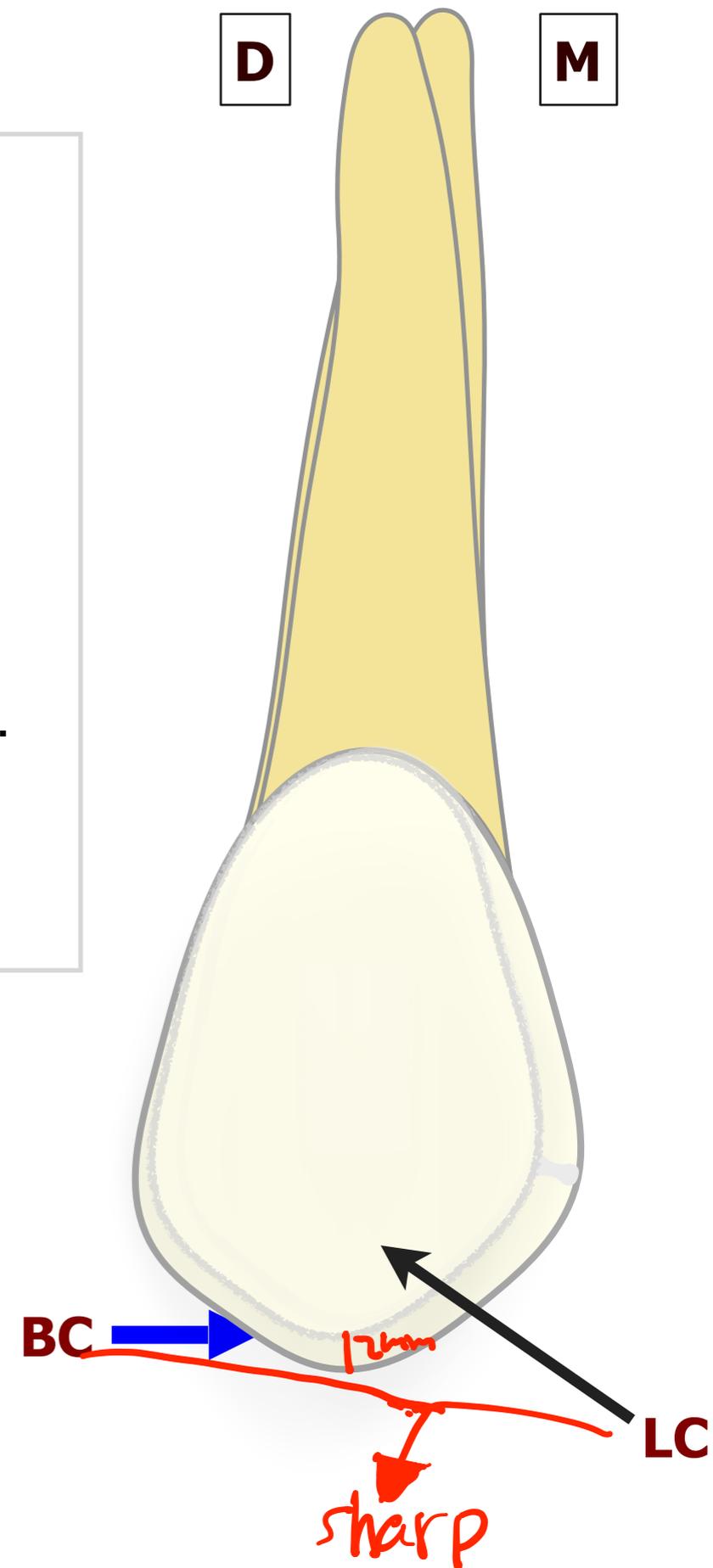
Lingual Aspect

Similar to the buccal aspect.

- ▶ Maxillary first premolar converge Lingually.
- ▶ The lingual surface is spheroid.
- ▶ ^{mca} The lingual cusp is shorter than buccal cusp by 2mm.

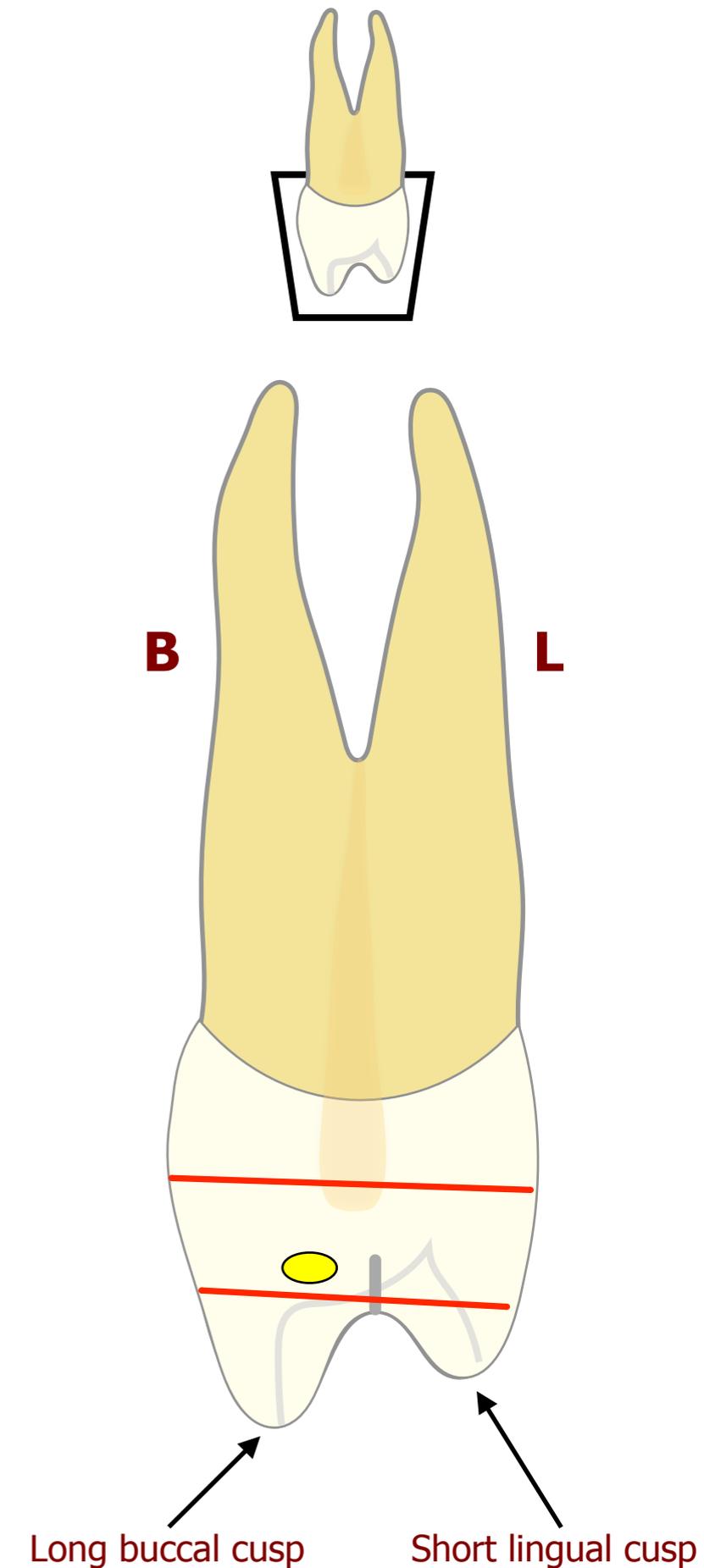
**** So ****

- ▶ Both buccal and lingual cusps are seen from lingual aspect.
- ▶ Both cusps have sharp cusp tip.
- ▶ Cervical line is slightly convex toward the root. 



Mesial Aspect

- ❑ **Geometric Shape:** Trapezoid in shape.
 - The Short side is the occlusal and long side is the cervical.
- ❑ **Buccal outline:**
 - Convex with the maximum convexity at cervical 3rd.
- ❑ **Lingual outline:**
 - Convex with the maximum convexity at the middle 3rd.
- ❑ **Occlusal outline:**
 - Both cusps are seen (buccal and lingual cusps).
 - Lingual cusp is shorter than buccal cusp by 2 mm.
 - The mesial marginal ridge present at junction of occlusal and middle thirds.
- ❑ **Contact area:**
 - Located at the middle third related to the buccal cusp.
 - Contact area is located more buccally.
- ❑ **Cervical line:** Convex toward the crown.*



□ Mesial Surface Anatomy:

mca
Mesial marginal developmental groove = MDG: 

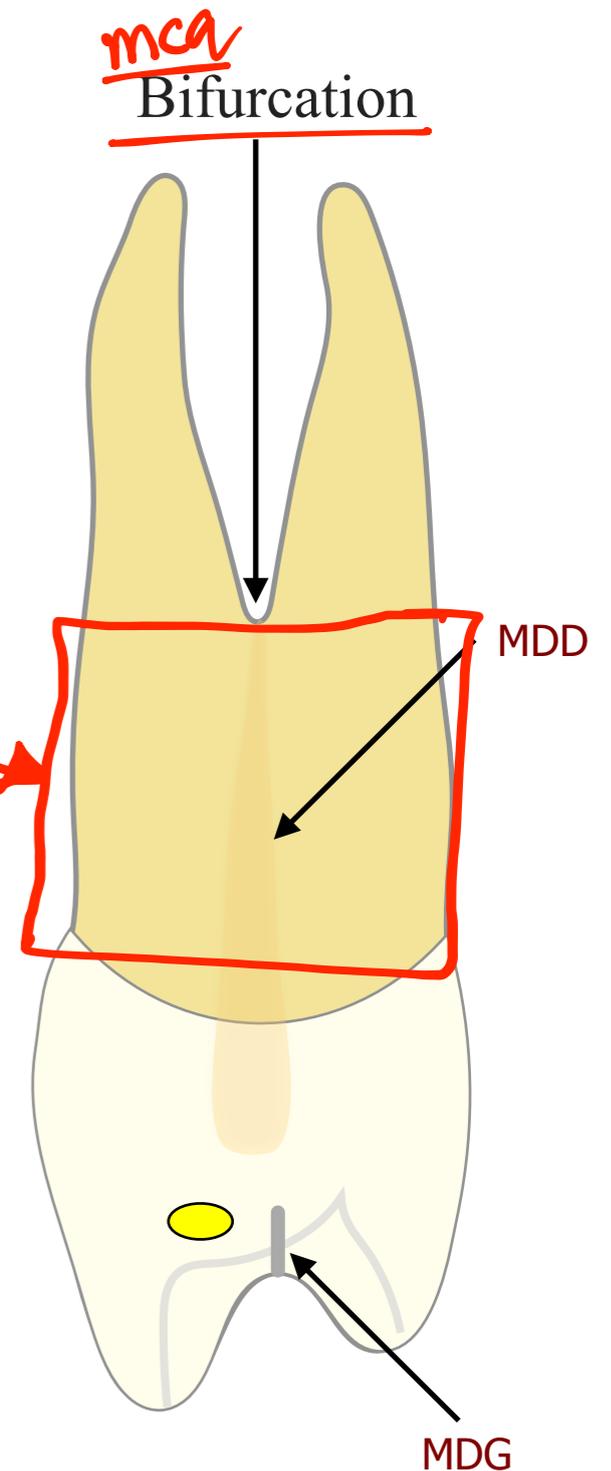
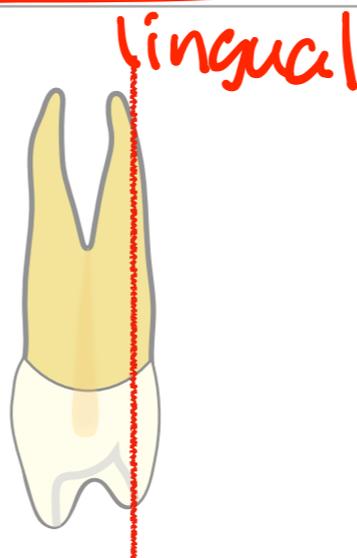
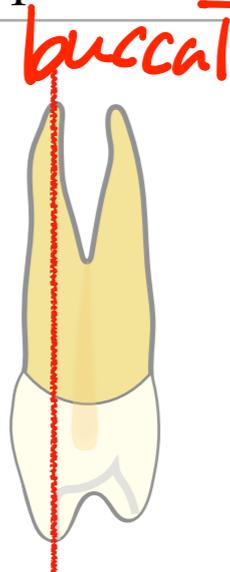
Begin at occlusal surface mesial to triangular fossa and crosses the mesial marginal ridge to fade on the mesial surface at middle 3rd.

Mesial developmental depression = MDD:

Found above contact area and continue on the root surface.

□ Root

- Maxillary first premolar contain two roots in 80% and one root in 20%.
- The roots are distributed as one buccal and one lingual.
- Root Trunk is the part of the root from cervical part to furcation area.
- Bifurcation of the root present at the middle of the root length.
- The buccal cusp tip is in one line with the center of the buccal root.
- The lingual cusp tip is in one line with the lingual border of the lingual root.

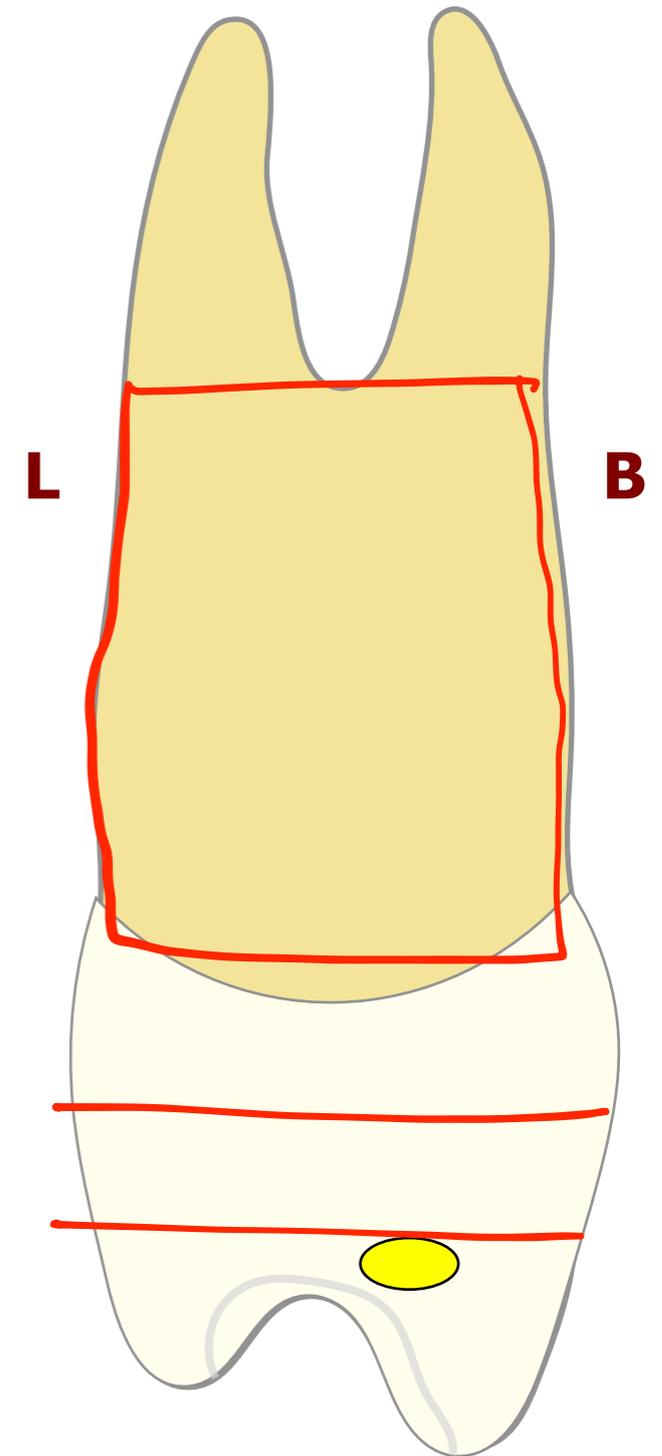


Distal Aspect

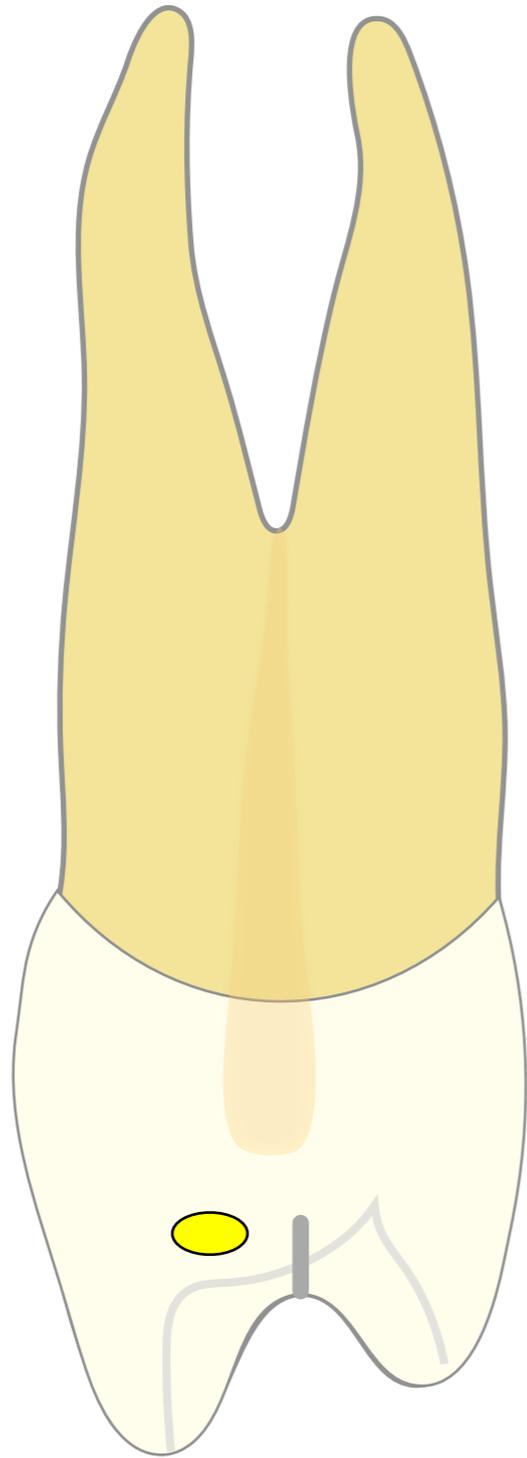
The distal aspect is differs from the mesial aspect in the following:

1. No developmental groove crossing the distal marginal ridge.
2. No developmental depression on the crown or root.
3. The contact area is broader and located at occlusal third.
أعريف *at buccal cusp*
4. Cervical line is less curved.
5. Root trunk is longer than in the mesial side.
6. The bifurcation present at apical third.

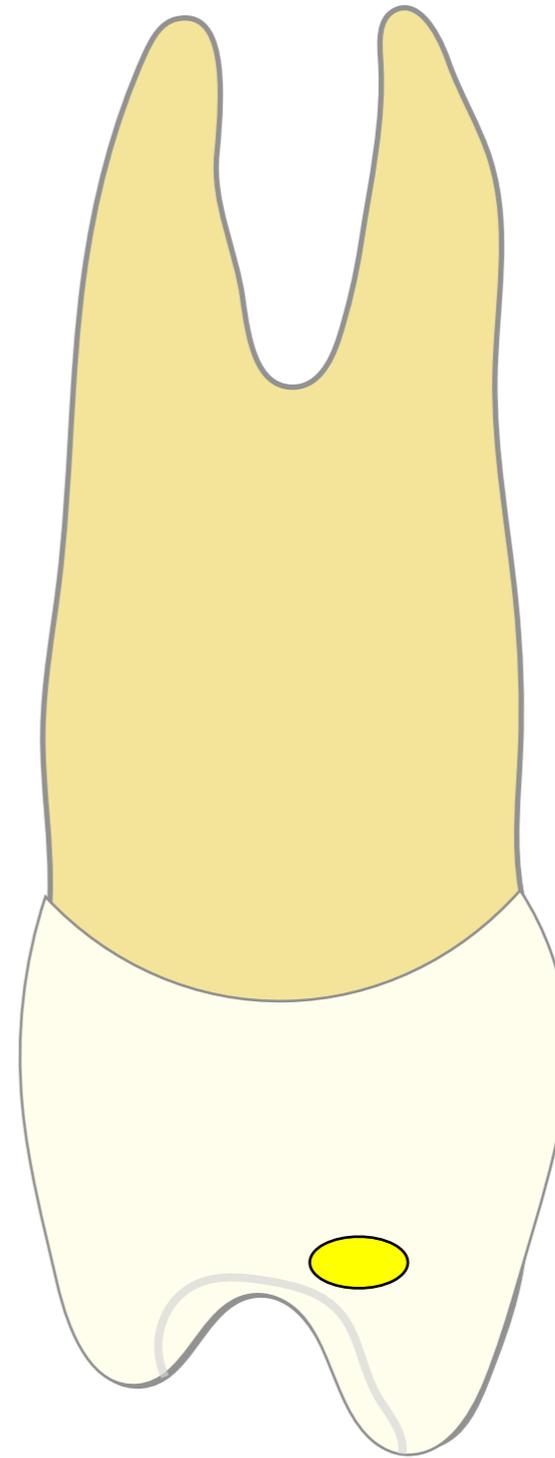
mca contact area located?
more buccally



Mesial Aspect



Distal Aspect



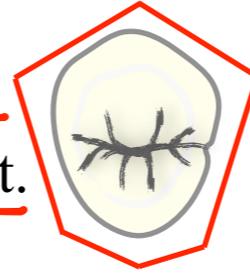
Occlusal Aspect

لا يوجد Central fossa لأنه لا يتم تكوينه فيه cusp 3
على الأقل وهو في بس 2.

Geometrical outline:

- Hexagonal in shape.
- Buccolingual is longer than mesiodistal measurement.

diameter

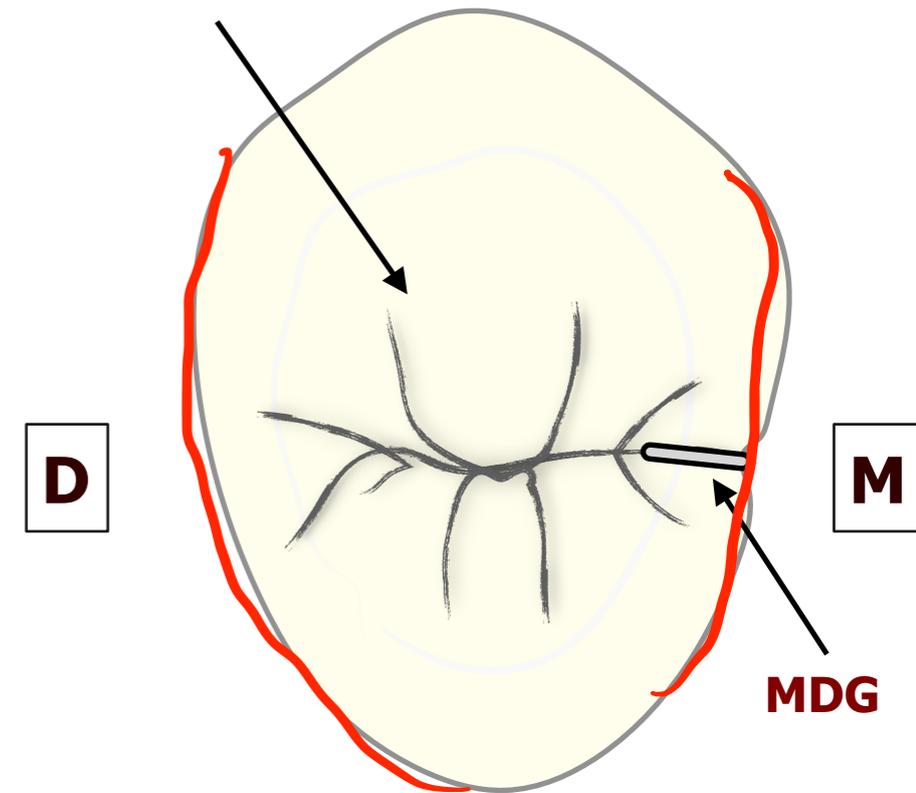


Crown Elevations:

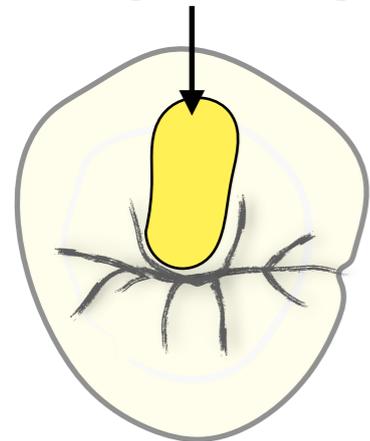
- Buccal and Lingual cusps.
- Wide distal marginal ridge.
- Mesial marginal ridge is crossed by MDG.
- Transverse ridge from buccal and lingual cusps.

Crown Depressions:

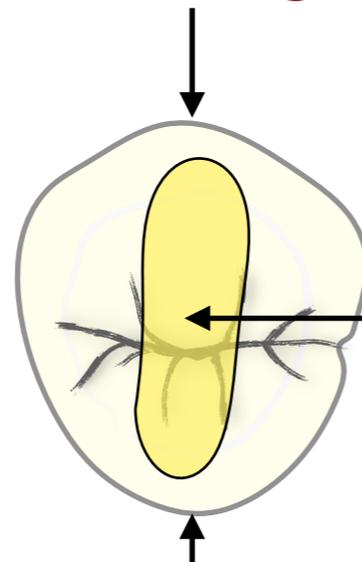
- Central developmental groove.
- Distal and mesial triangular fossa.
- Distal and mesial developmental pit.
- Mesial marginal developmental groove (MDG).



Triangular ridge

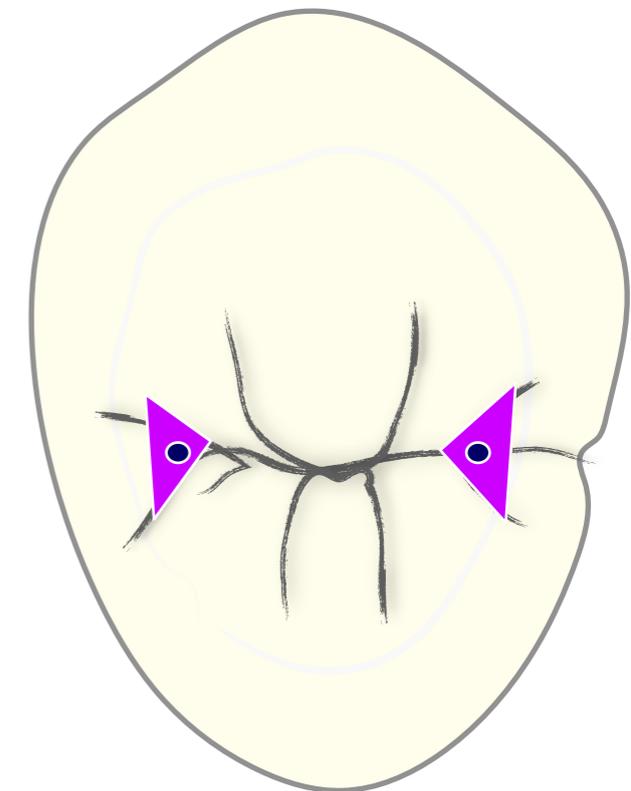


Buccal ridge

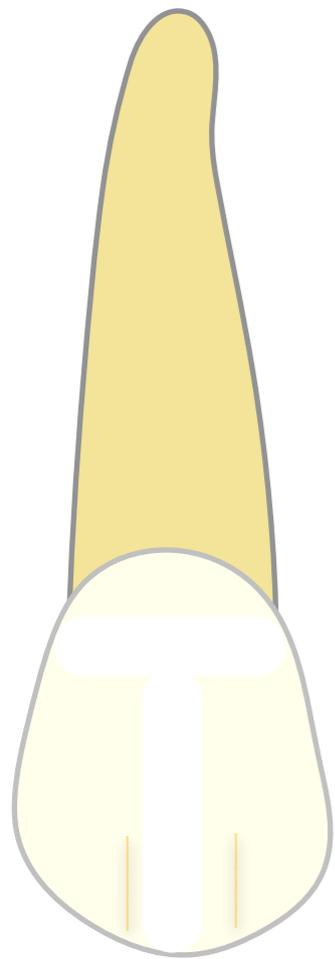


Transverse ridge

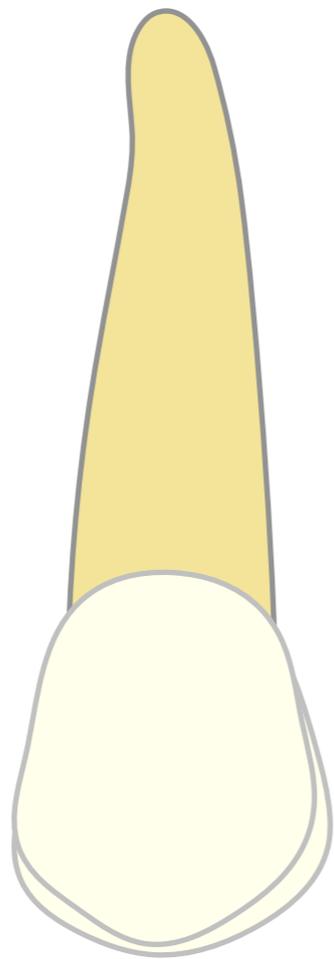
Lingual ridge



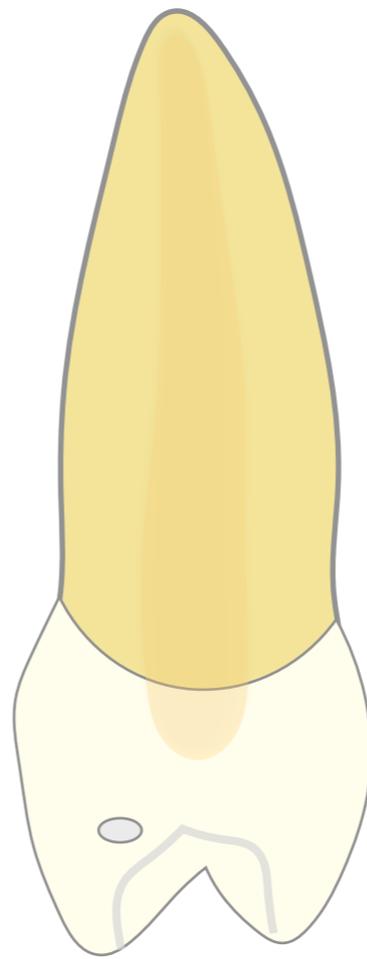
Maxillary second premolar



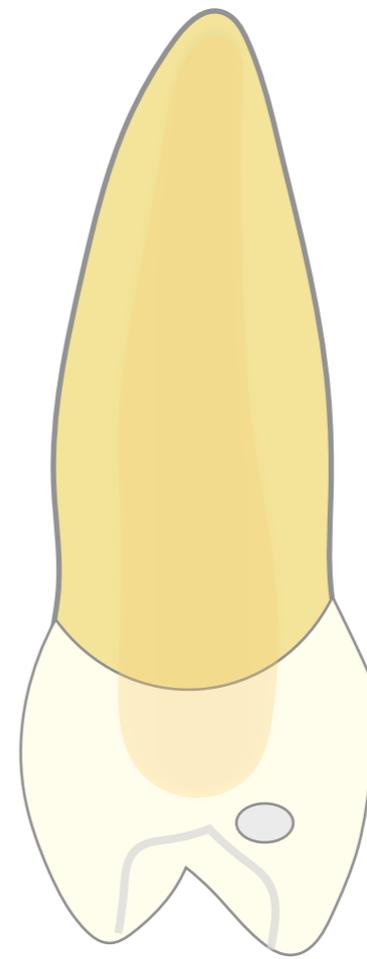
Buccal



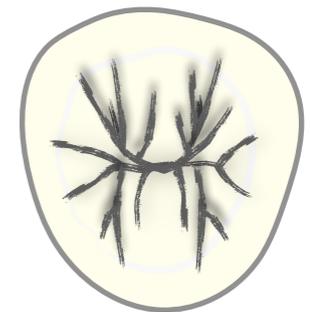
Lingual



Mesial



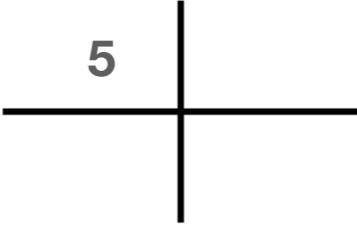
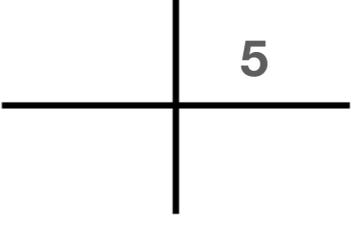
Distal



Occlusal

Maxillary Second Premolar

Chronology	
Begin Of Dental Organ	8 M.I.U.
Begin Of Calcification	2 - 2.25 Years
Crown Completed	6-7 Years.
Eruption	10 Years.
Root Completed	13 Years.

Numbering system	
Maxillary right 1st premolar	Maxillary left 1st premolar
	
# 4	# 13
1 5	2 5

2001

Buccal Aspect

* Geometrical Shape: Trapezoid.

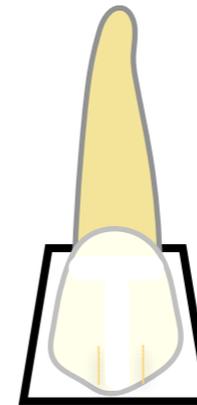
Short side is the cervical side and long side is the occlusal.

* Mesial outline:

- Slightly concave from cervical line to contact area.
- Mesial contact area is located at the junction between occlusal 1/3 and middle 1/3.

* Distal outline:

- Straight or slightly concave till the contact area.
- Distal contact area is located at the middle third.
- Distal contact area is located more cervical than mesial.



* Occlusal outline:

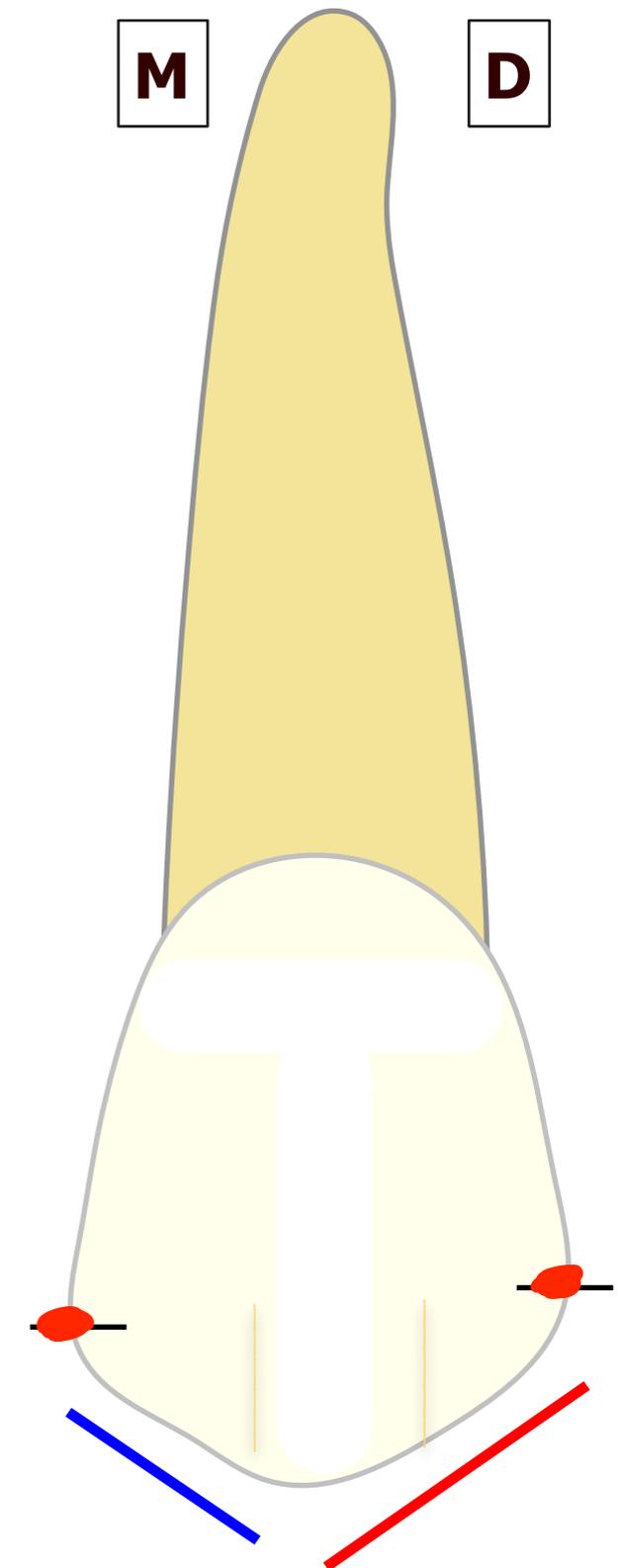
- One cusp seen from buccal aspect termed buccal cusp.
- The buccal cusp contains blunt cusp tip and two slopes.
- Mesial slope is shorter than distal slope.

Crown elevations and depressions on buccal surface:

- Cervical ridge and Buccal ridge are less prominent.
- Mesial and distal developmental depression.

Root:

- One root only with blunt apex slightly tilted toward distal.



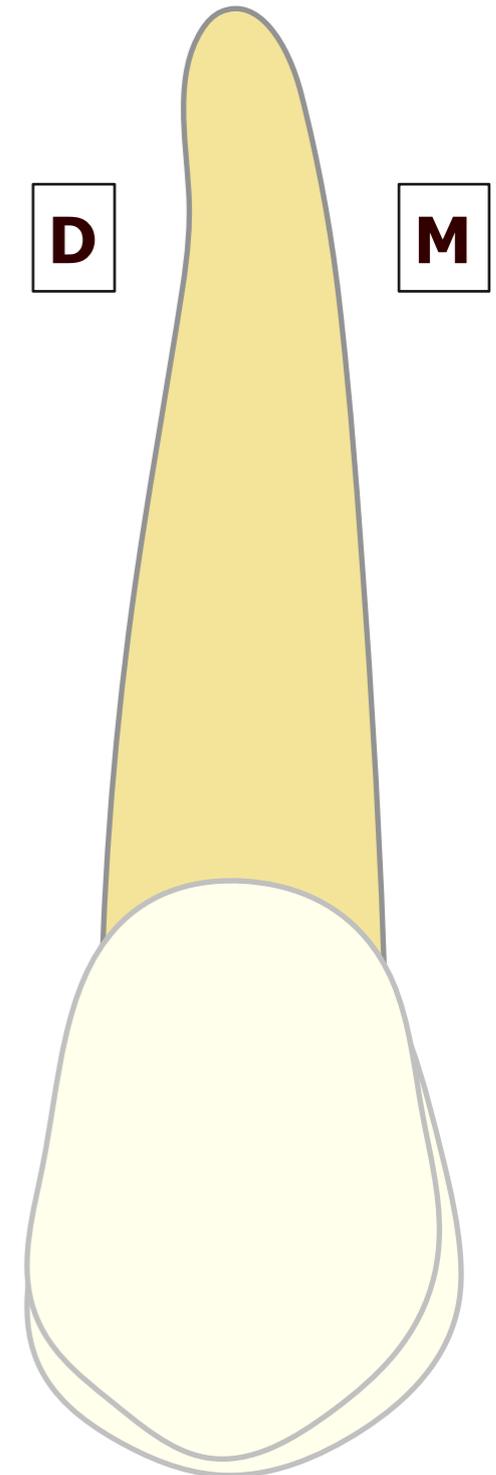
Lingual Aspect

Lingual aspect of maxillary second premolar is similar to that of the first premolar, but

Differs in:

- Lingual cusp is longer than that of upper 1st premolar.
- Both buccal and lingual cusps are nearly equal.
- One blunt root.

ال first يكون sharp

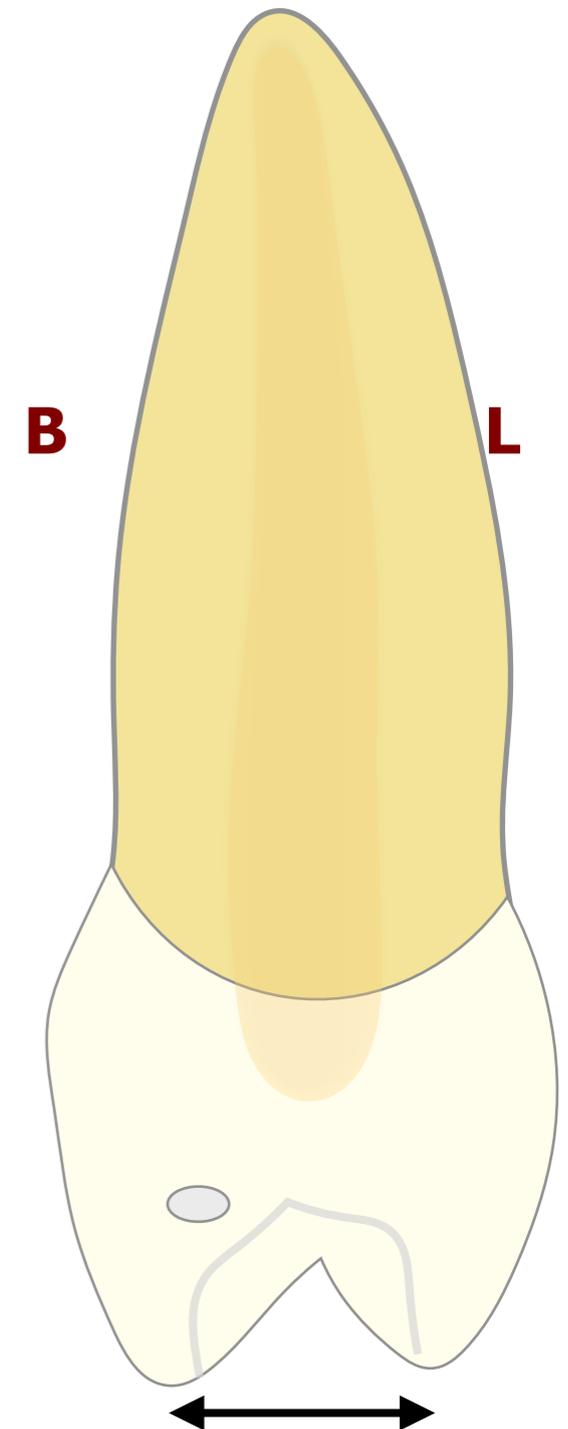
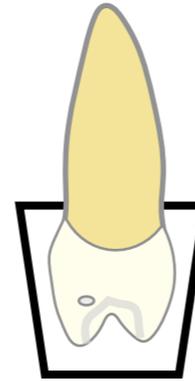


Mesial Aspect

- ❑ **Geometric Shape:** Trapezoid in shape.
 - The Short side is the occlusal and long side is the cervical.
- ❑ **Buccal outline:**
 - Convex with the maximum convexity at cervical 3rd.
- ❑ **Lingual outline:**
 - Convex with the maximum convexity at the middle 3rd.
- ❑ **Occlusal outline:**
 - Two cusps are seen (buccal and lingual cusps).
 - Both buccal and lingual cusps tips are nearly at the same level.
 - There is wide distance between the buccal and lingual cusps more than in first premolar.
sulcus ←→
- ❑ **Contact area:**
 - Located at the junction between occlusal 1/3 and middle 1/3.
 - Contact area is located more buccally.
- ❑ **Cervical line:** Convex toward the crown.
func: prevent rotation of the tooth
- ❑ **Mesial developmental depression = MDD:**

Found above contact area and continue on the root surface.

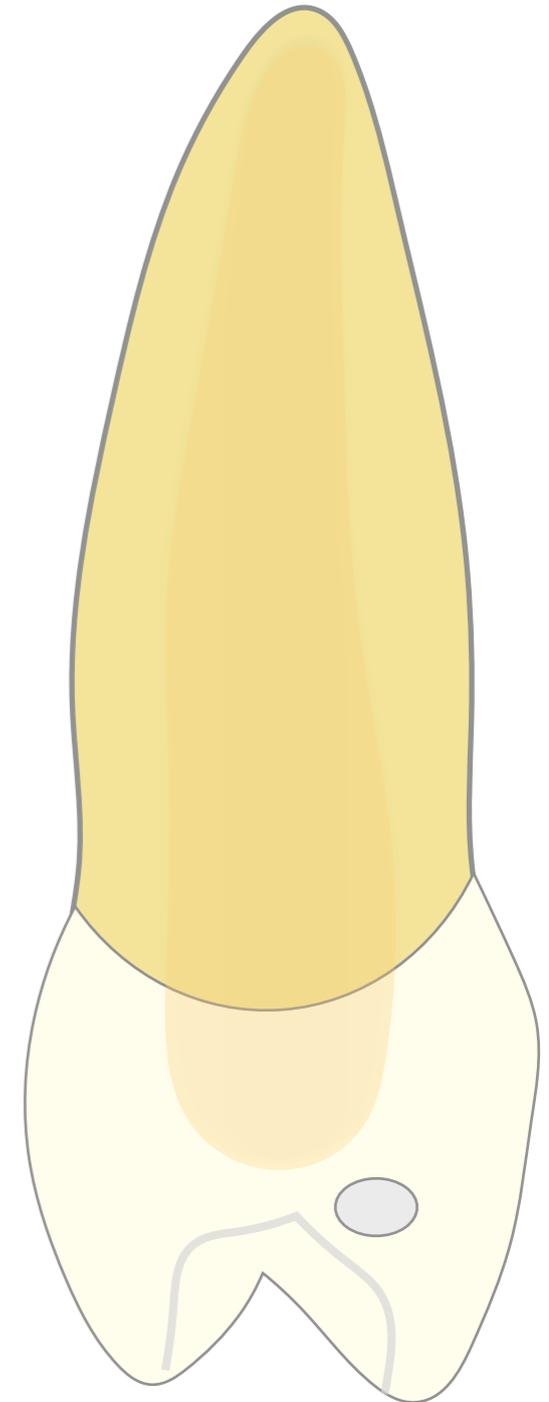
- ❑ **One root only.**



Distal Aspect

❑ Differs from mesial aspect in:

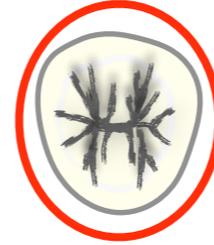
- Distal developmental depression is more deep.
- Contact area is more cervical than in mesial.
- Contact area is more wide than in the mesial.
- Cervical line is less curved



Occlusal Aspect

□ Geometrical outline:

- Oval or round in shape.

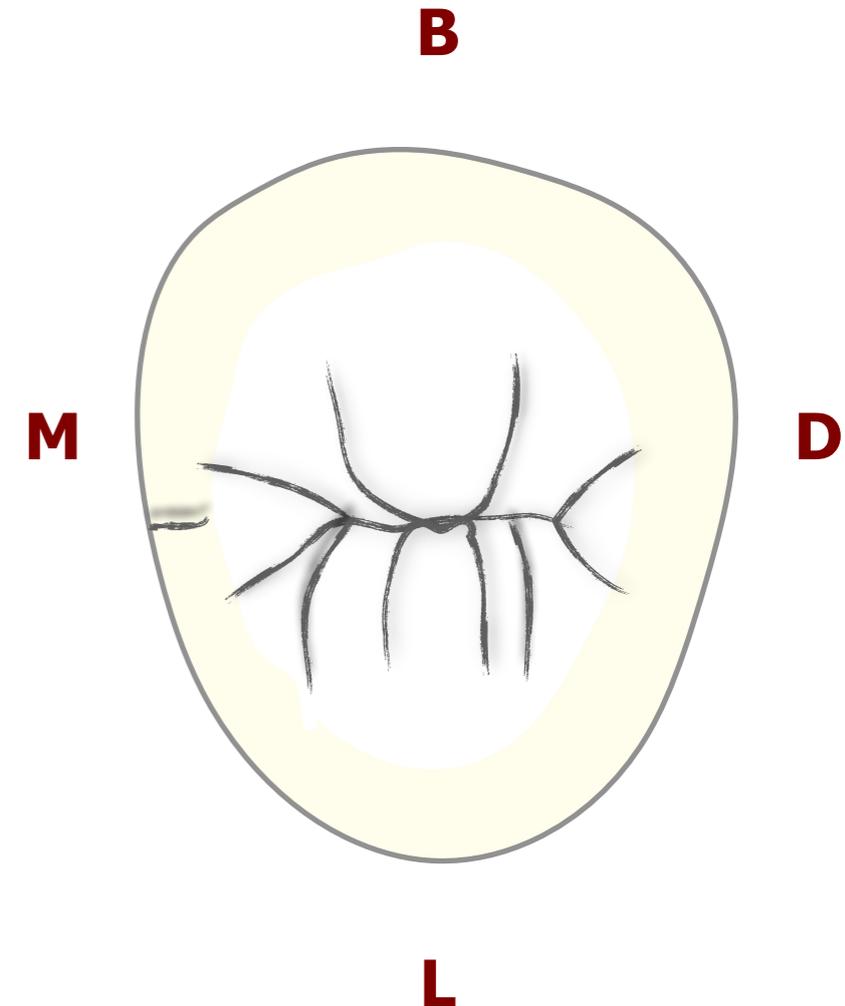


□ Crown Elevations:

1. Buccal and Lingual cusps.
2. There is great distance between the buccal and lingual cusps.
3. ~~Mesial and distal marginal ridge is crossed by MDG.~~
4. Transverse ridge from buccal and lingual cusps.

□ Crown Depressions:

1. Short central developmental groove.
2. Distal and mesial triangular fossa.
3. Distal and mesial developmental pit.
4. ^{mca} Multiple supplemental groove give the appearance of shrinkled
that increase the risk to become carious.





CA: Contact Area

Maxillary first premolar

- ① 80% 2 roots and 20% 1 root
- ② Mesial CA → at middle 1/3
- ③ Distal CA → more occlusal
- ④ buccal cusp is longer than lingual cusp
- ⑤ sharp apex
- ⑥ lingual cusp is shorter
- ⑦ occlusal aspect → hexagonal
- ⑧ buccal and lingual cusps are more prominent
- ⑨ no supplemental groove in occlusal aspect

Maxillary second premolar

- ① root only
- Mesial CA → junction between middle and occlusal 1/3
- Distal CA → at middle 1/3
- buccal and lingual cusps nearly equal
- blunt apex
- lingual cusp is longer
- occlusal aspect → oval or round
- buccal and lingual cusps are less prominent
- multiple supplemental grooves give appearance of shrinkled that increase the risk to become carious