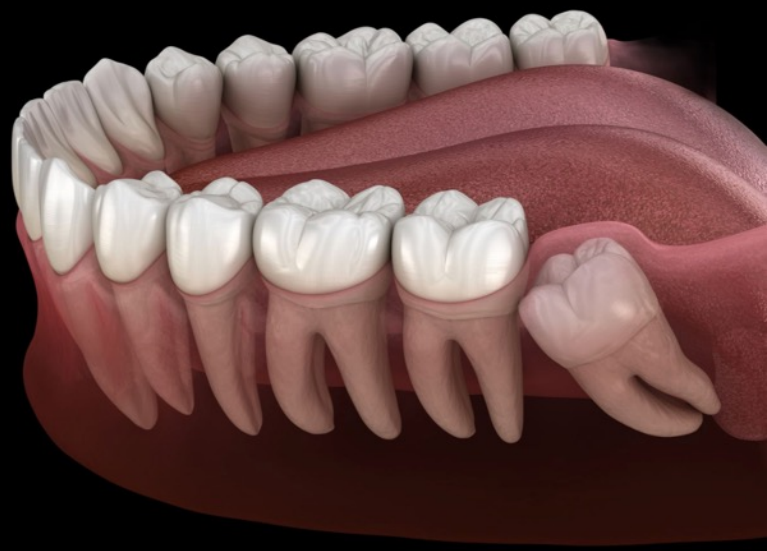
Mandibular Molar



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Mandibular Molar

- Larger than any other mandibular teeth
- The first, second, and third mandibular molars



- **Longer M-D than B-L**
- **Two roots**
  - one mesial and one distal
  - third molars and some second molars may show a fusion of these roots.

Mandibular First Molar

- The biggest and strongest teeth in the mandible
- The first permanent teeth erupt in the oral cavity
- Eruption age : 6 years



Mandibular First Molar

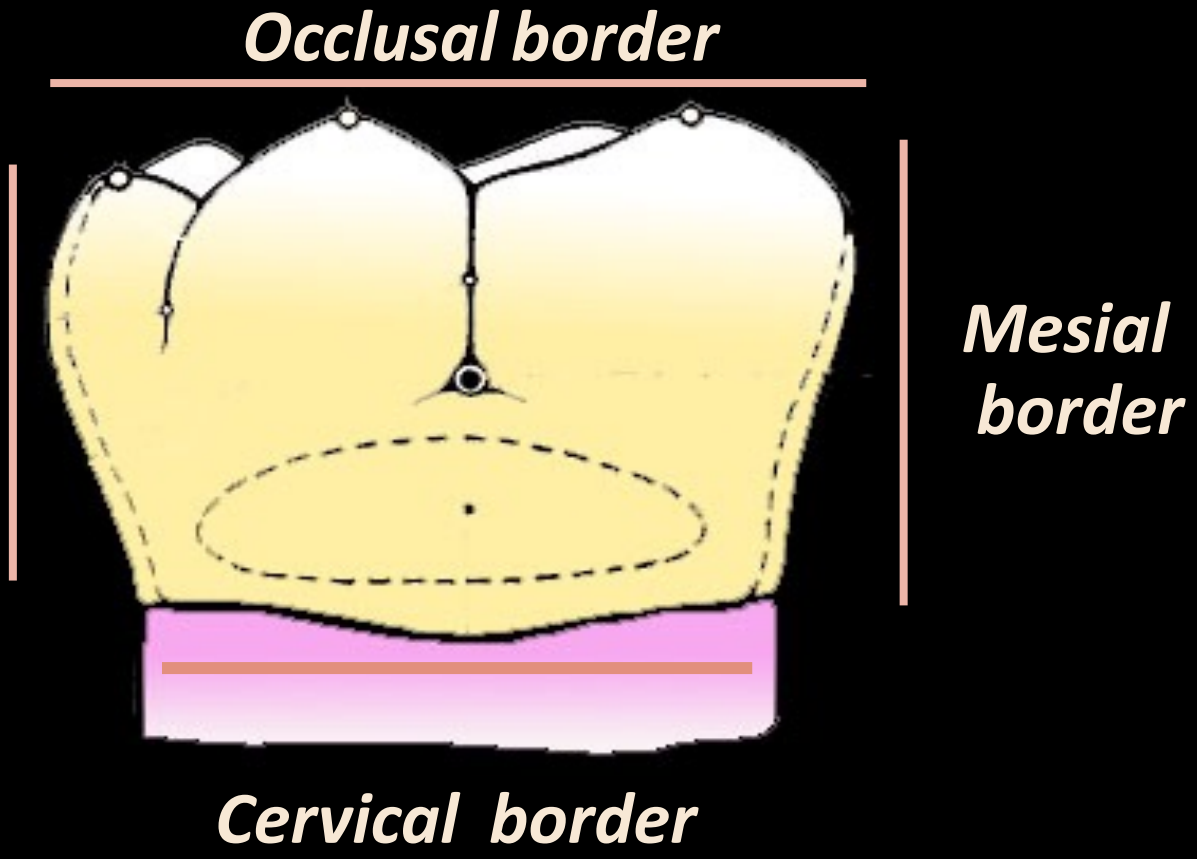
- 5 cusps, 2 roots
- wider in M-D axis than B-L axis
- short in O-C axis





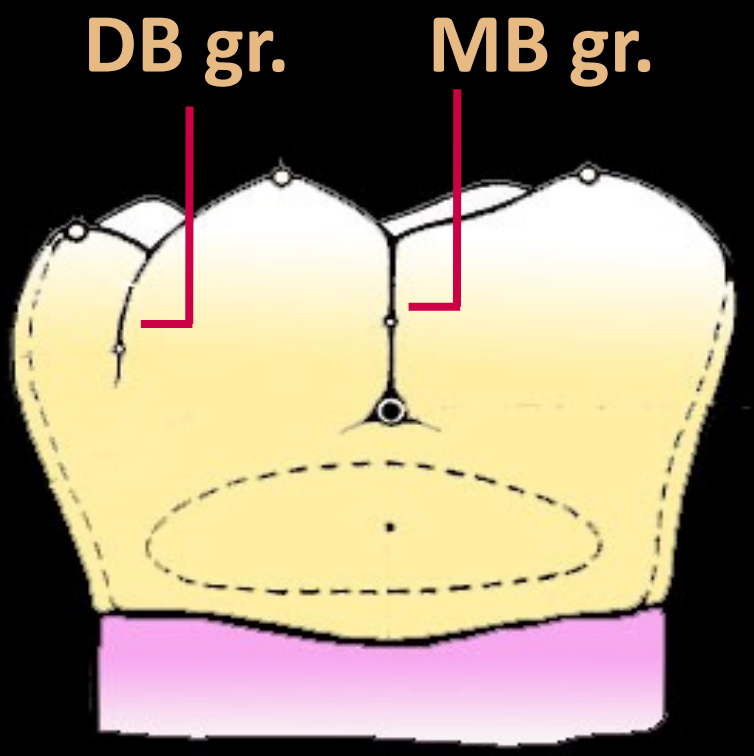
Mandibular First Molar: Buccal surface

- outline: trapezoid



Mandibular First Molar: Buccal surface

- Occlusal border is divided into 3 parts .
  - MB groove
  - DB groove
- Longest portion
  - mesial portion



Mandibular First Molar: Buccal surface

DB cusp

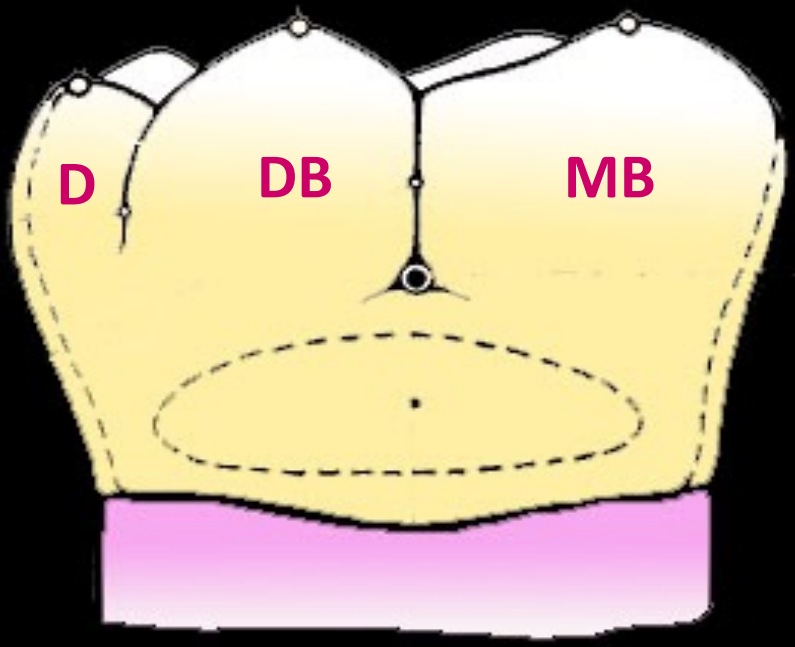
- sharper and slightly longer than MB

D cusp

- smallest and shortest
  - *D cusp tip*
    - sharp
    - disto-bucco-occlusal point angle
    - DB line angle

MB cusp

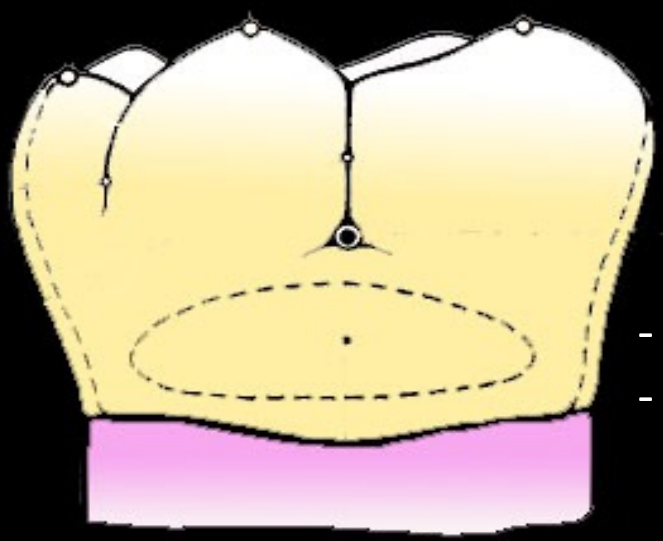
- largest but blunt



Mandibular First Molar: Buccal surface

D border

- convex in the O portion
- straight or concave in the G portion



M border

- convex in the O portion
- concave in the G portion

C border

- irregularly curved
- concavity toward the O and slightly tip toward the bifurcation

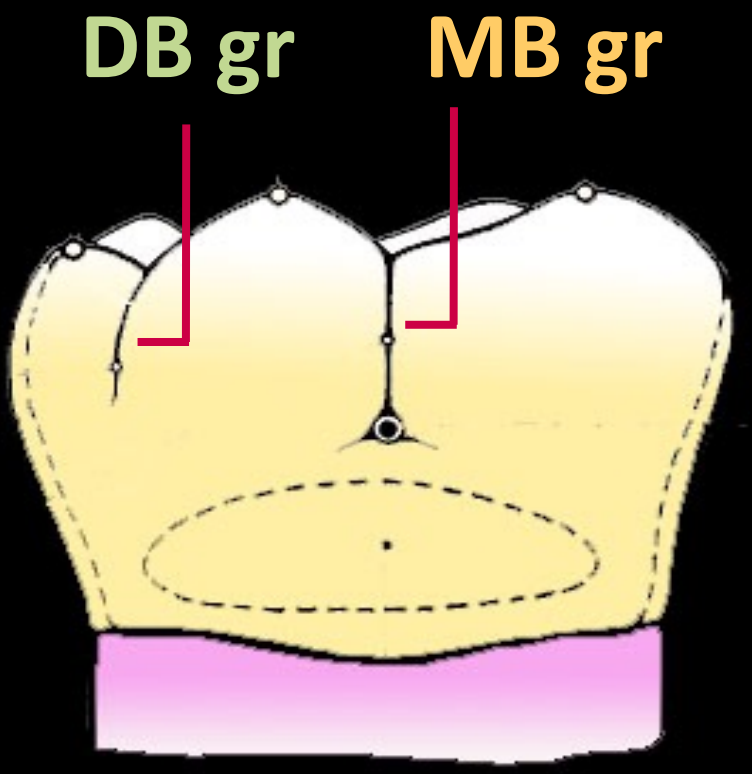
Mandibular First Molar: Buccal surface

MB groove

- extends 1 / 2
- may end in 3 different ways
  - bifurcate for a short distance
  - end in a pit
  - end as a single groove

DB groove

- extends 1 /3



Mandibular First Molar: Buccal surface

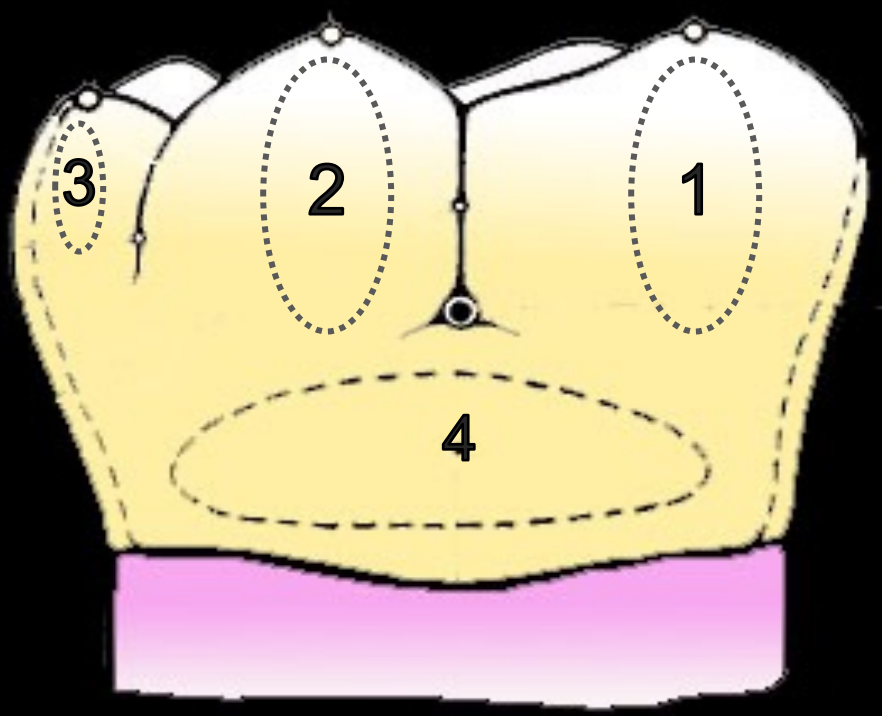
1. B ridge of MB cusp

- widest ridge
- convex in all directions

2. B ridge of DB cusp

- narrower than the MB ridge
- more prominent and more convex

4 buccal ridges

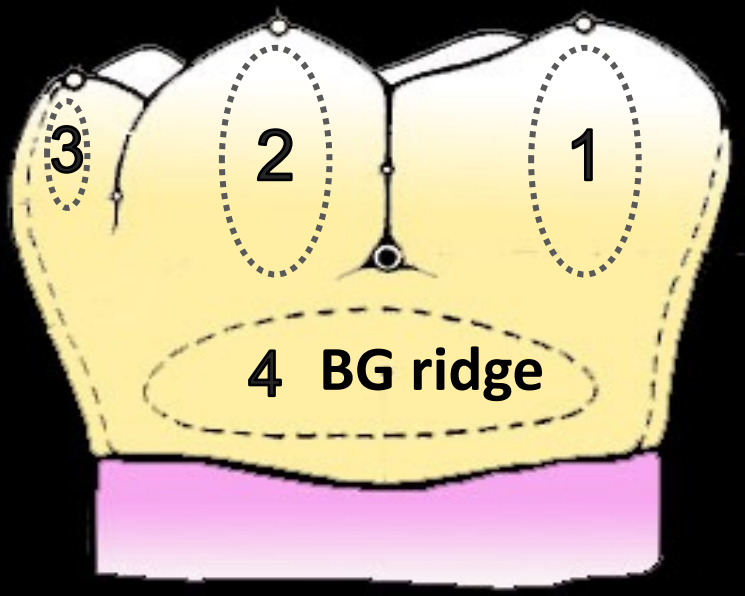


Mandibular First Molar: Buccal surface

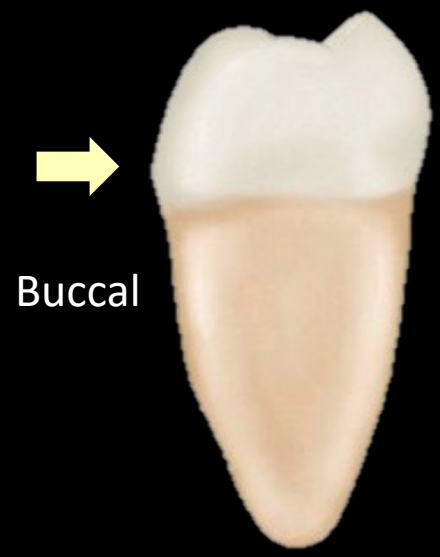
4 buccal ridges

3. B ridge of D cusp
- forms the DB line angle
- convex in all directions

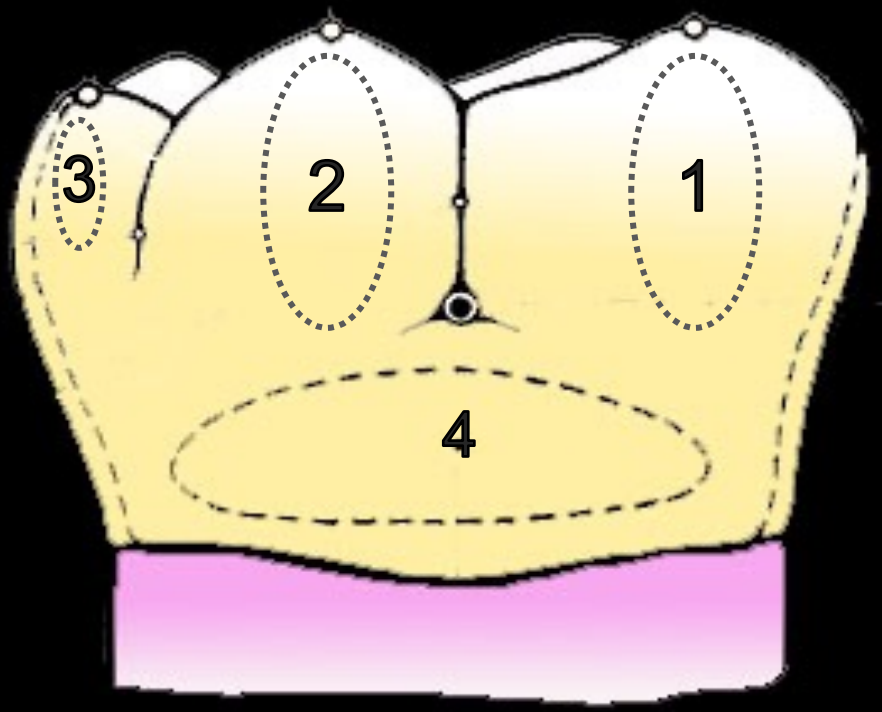
4. BG ridge
- cervical 1/3
- prominent in the M portion



Mandibular First Molar: Buccal surface

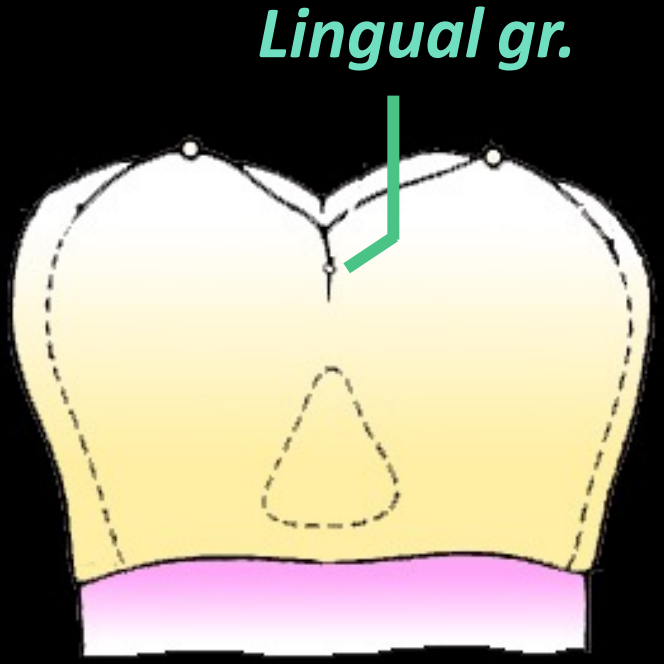


Height of contour
cervical 1/3



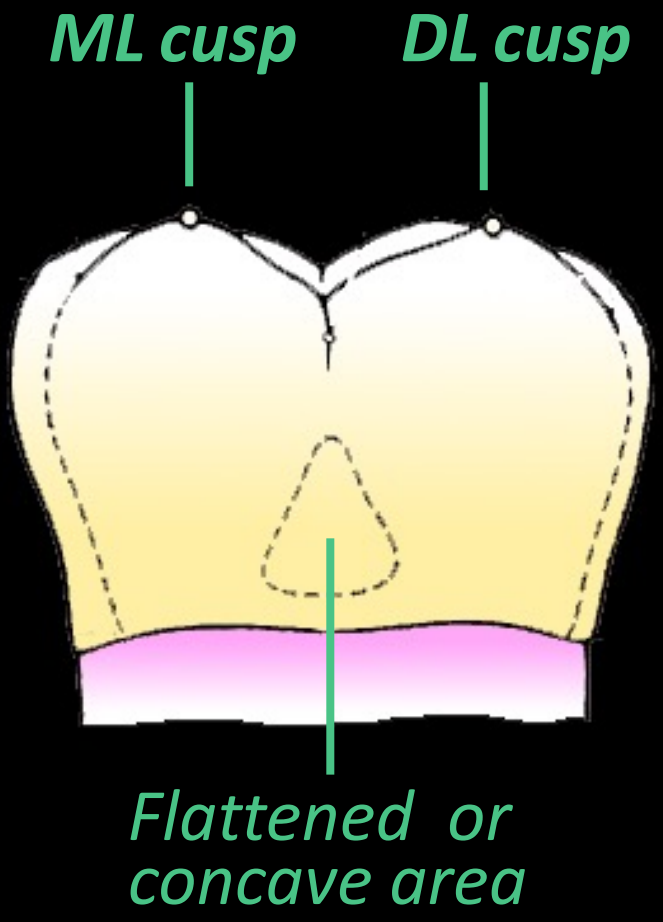
Mandibular First Molar: Lingual surface

- Lingual outline is **smaller** than the buccal surface



- Lingual groove
  - extends from the O border for a short distance toward the cervical line
  - ML and DL cusps

Mandibular First Molar: Lingual surface

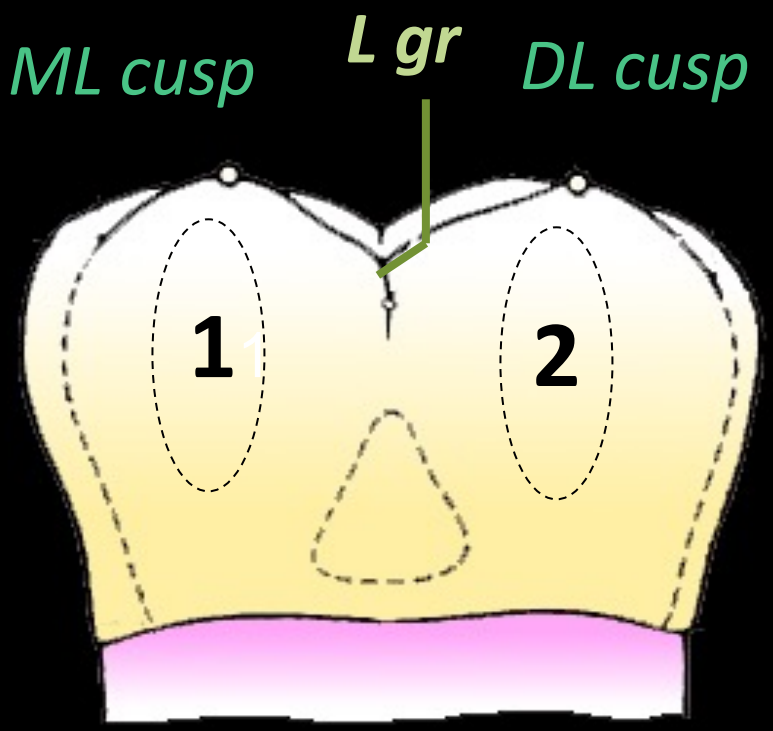


M border
- convex in the O portion
- concave in the G portion

D border
- convex in the O 2/3
- slightly concave in the C1/3

Cervical border
- shorter than the O border
- straight

Mandibular First Molar: Lingual surface

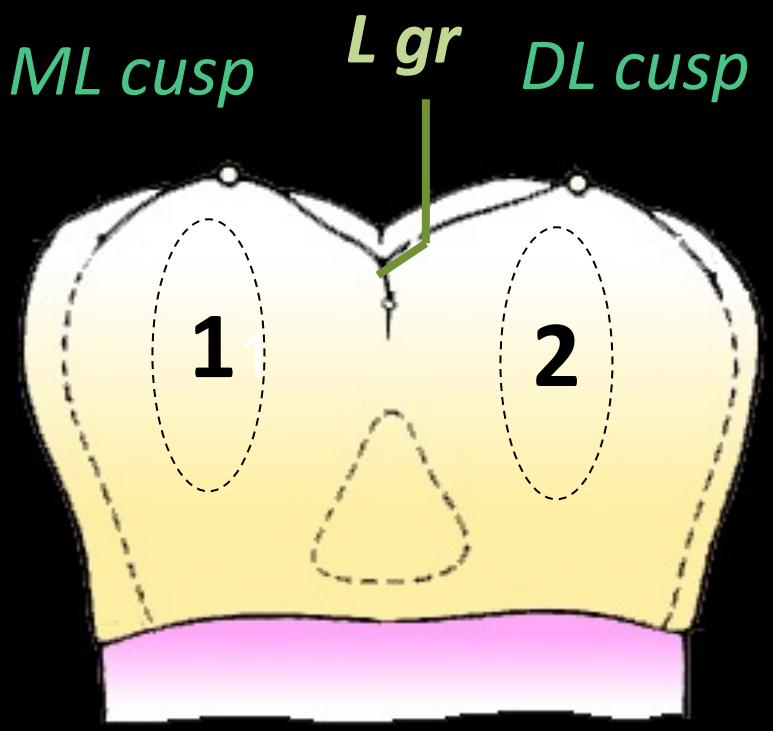


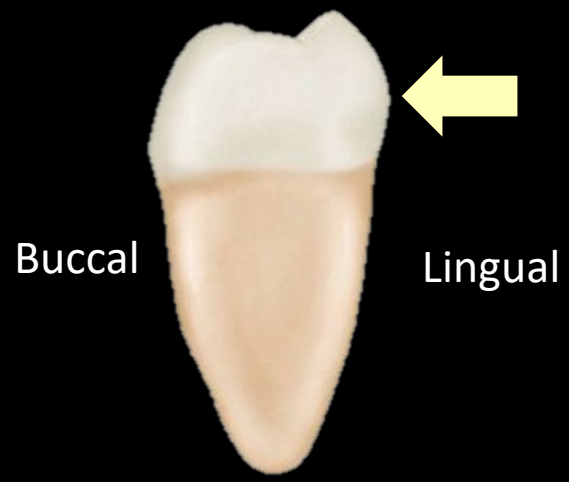
2 lingual ridges

1. L ridge of ML cusp
   – smoothly convex
2. L ridge of DL cusp
   – same width as the ML ridge

A small triangular-shaped concavity

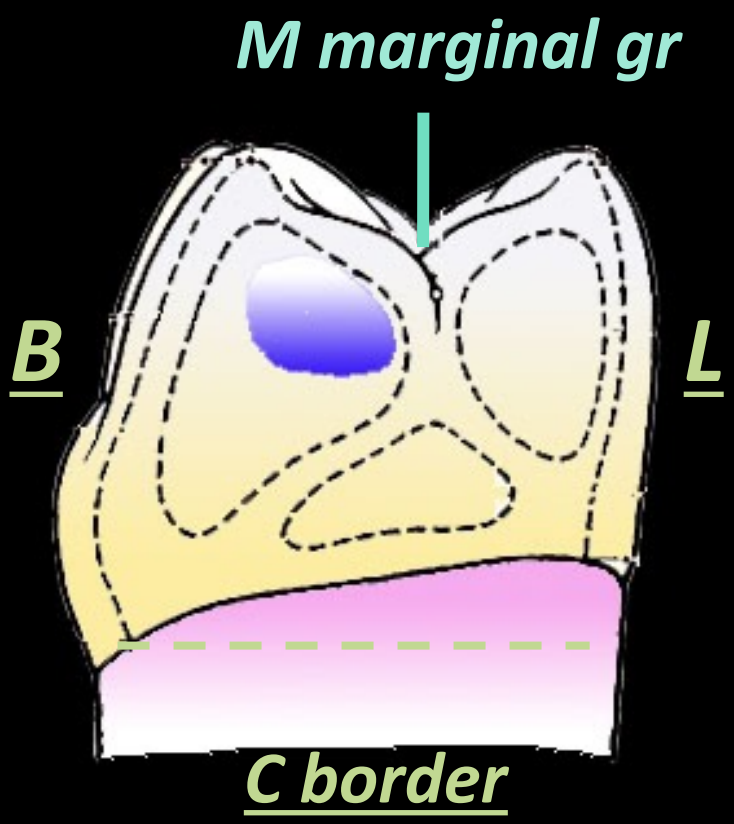
Mandibular First Molar: Lingual surface





Height of contour
Junction btw Occlusal 1/3 - Middle 1/3

Mandibular First Molar: Mesial surface



outline : rhomboid

O border : M marginal groove

B border

- convex in the O portion
- more convex at C 1/3

L border

- convex
- slight concavity at C 1/3

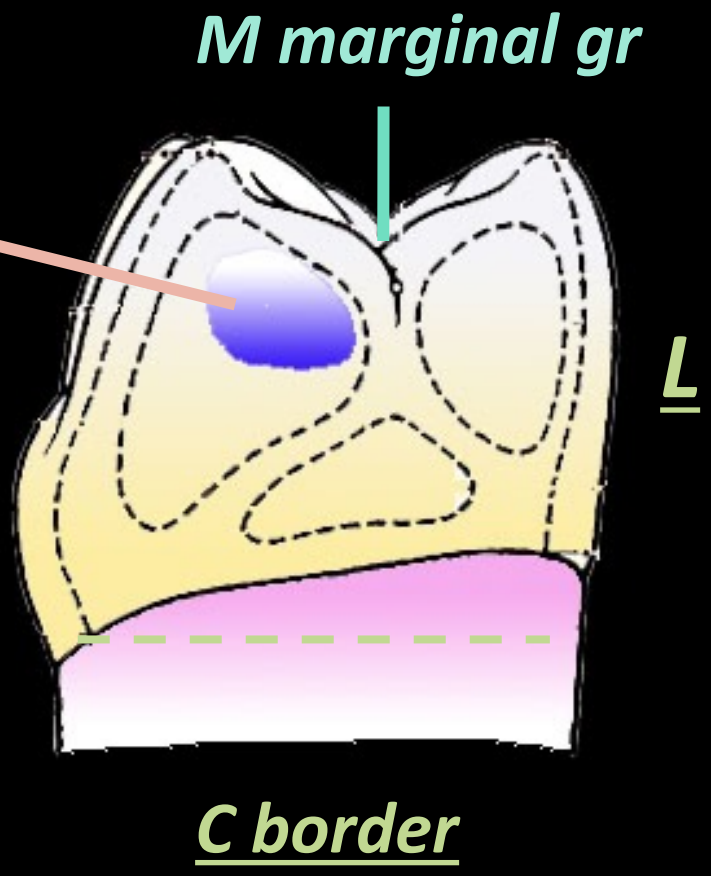
C border

- slight convexity toward the O

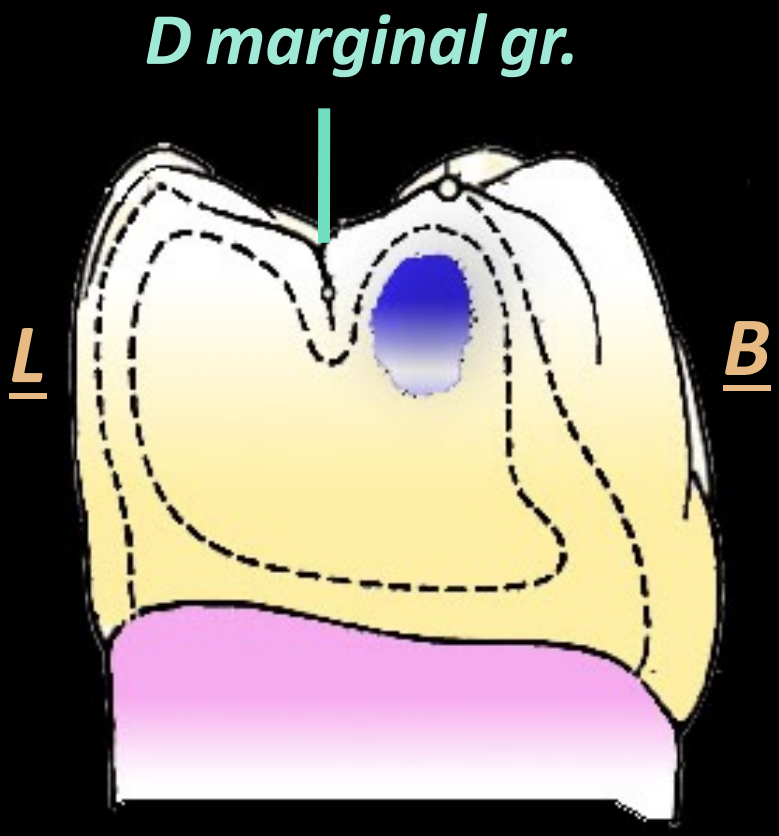
Mandibular First Molar: Mesial surface

Contact area

- occlusal 1/3
- buccal half



Mandibular First Molar: Distal surface



O border

- D marginal groove

B border

- 2 convexities: O and C portions
- separated by concavity

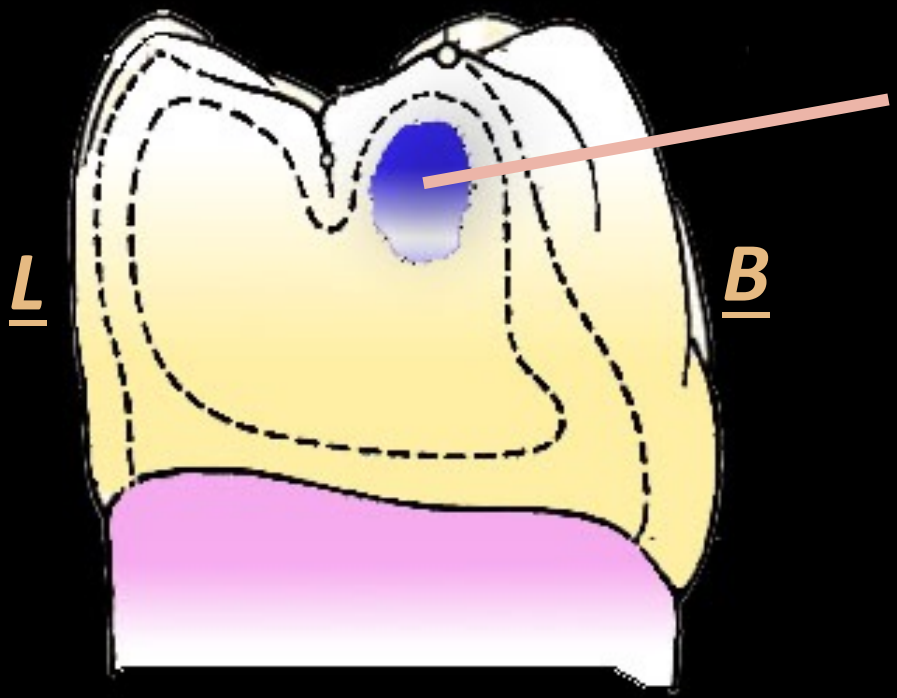
L border

- convex in the O portion
- concave in the C portion

C border

- straight

Mandibular First Molar: Distal surface



Contact area

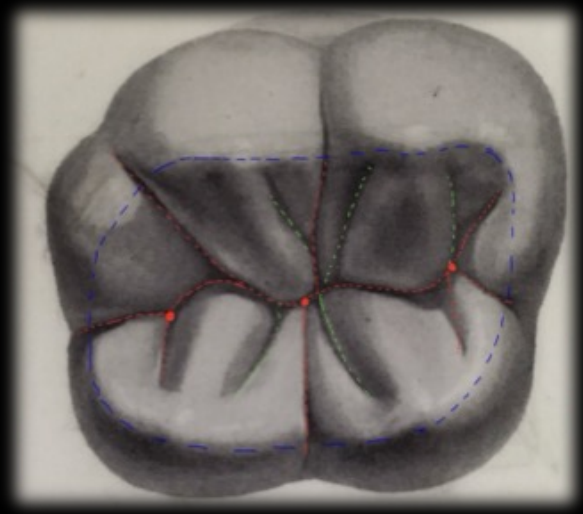
- occlusal 1/3
- buccal half

Mandibular First Molar: Occlusal surface

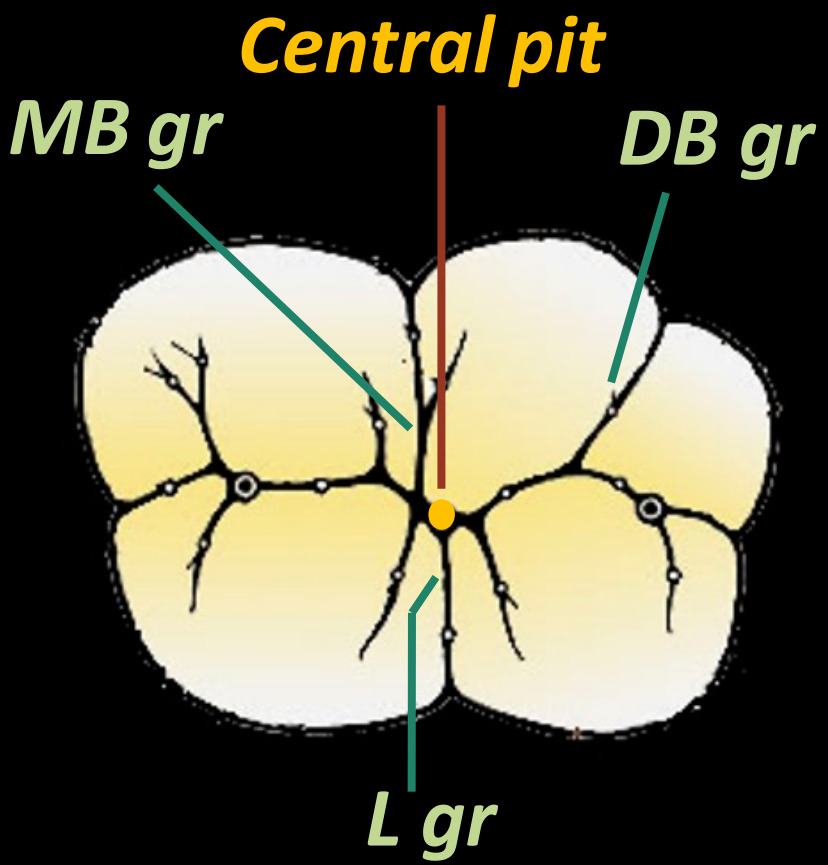
Outline

- pentagon
- longer M-D than B-L





Mandibular First Molar: Occlusal surface



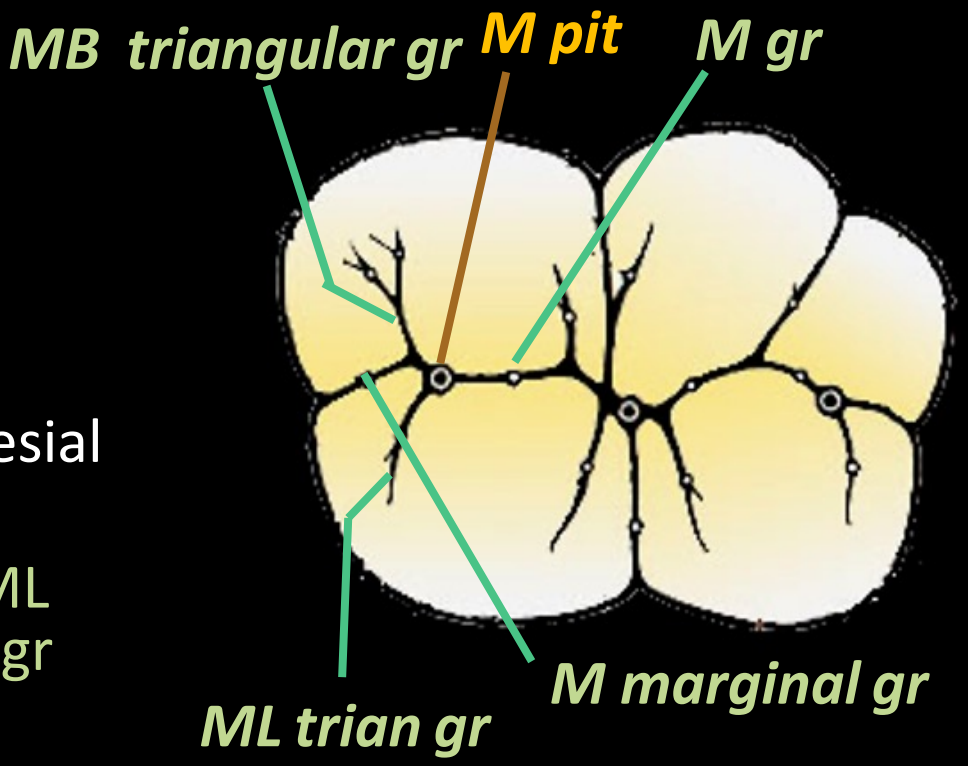
Central pit

- halfway from M-D
- > 1/2 (B-L)
- MB gr + DB gr + L gr
  (primary grooves: Y)

Mandibular First Molar: Occlusal surface

Mesial pit

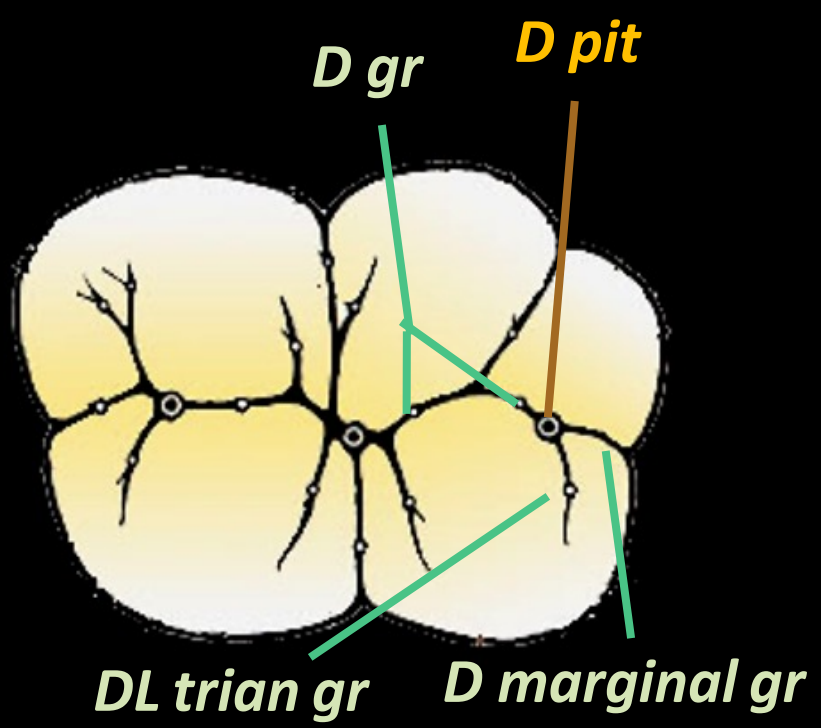
- halfway from B-L
- short distance from the mesial border
- M gr + MB triangular gr + ML triangular gr + M marginal gr



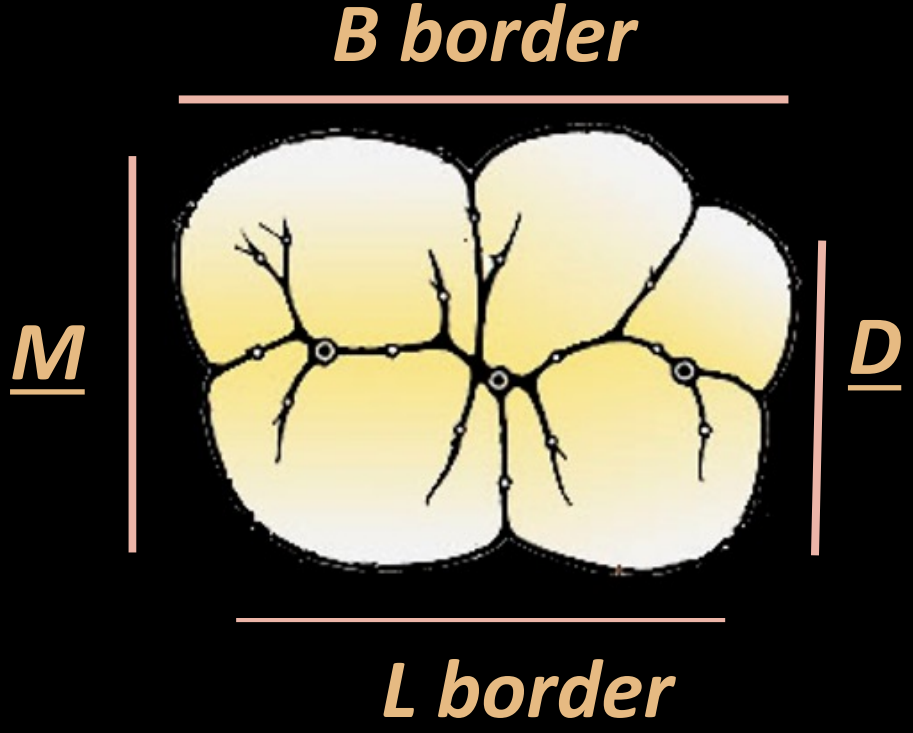
Mandibular First Molar: Occlusal surface

Distal pit

- halfway from B-L
- short distance from the distal border
- D gr + DL triangular gr + D marginal gr



Mandibular First Molar: Occlusal surface



B border

MB portion

- convex , the longest

DB portion

- more convex , 2nd in length

D portion

- very short, with a slightly convexity

M border

- Mesial marginal gr

D border

- Distal marginal gr

L border

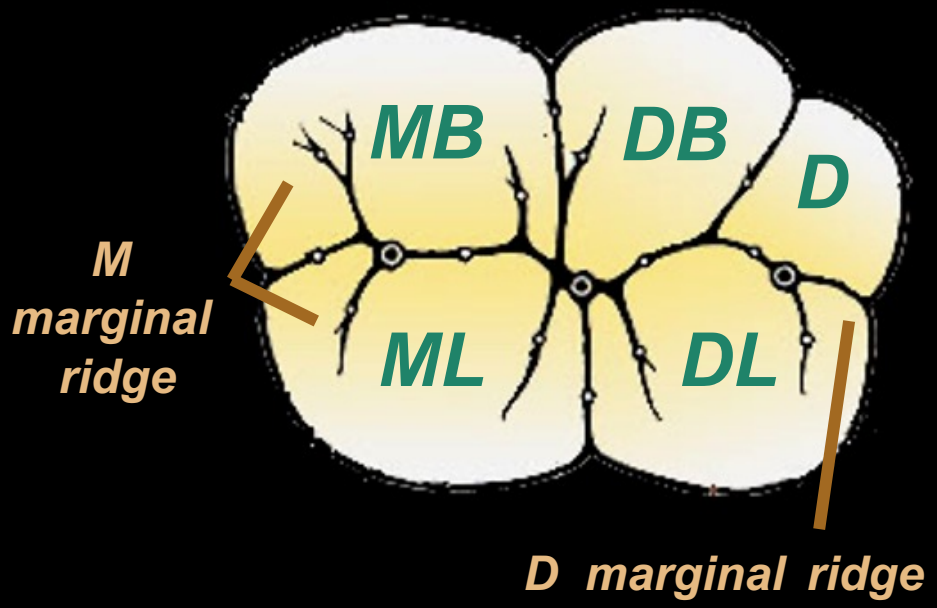
- L groove
- Both portions of the border are convex
- M portion is longer than the D portion

Mandibular First Molar: Occlusal surface

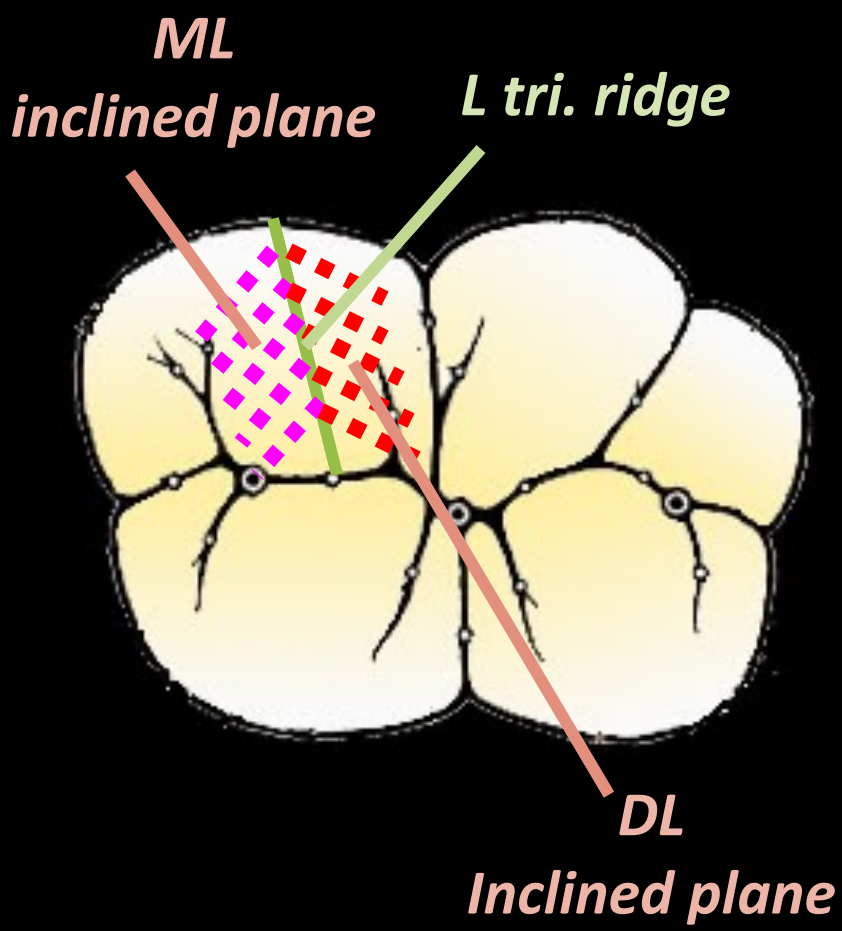
Occ surface; 5 cusps

1. MB cusp (biggest)
2. DB cusp
3. D cusp
4. ML cusp
5. DL cusp

- ❑ M&D marginal ridges



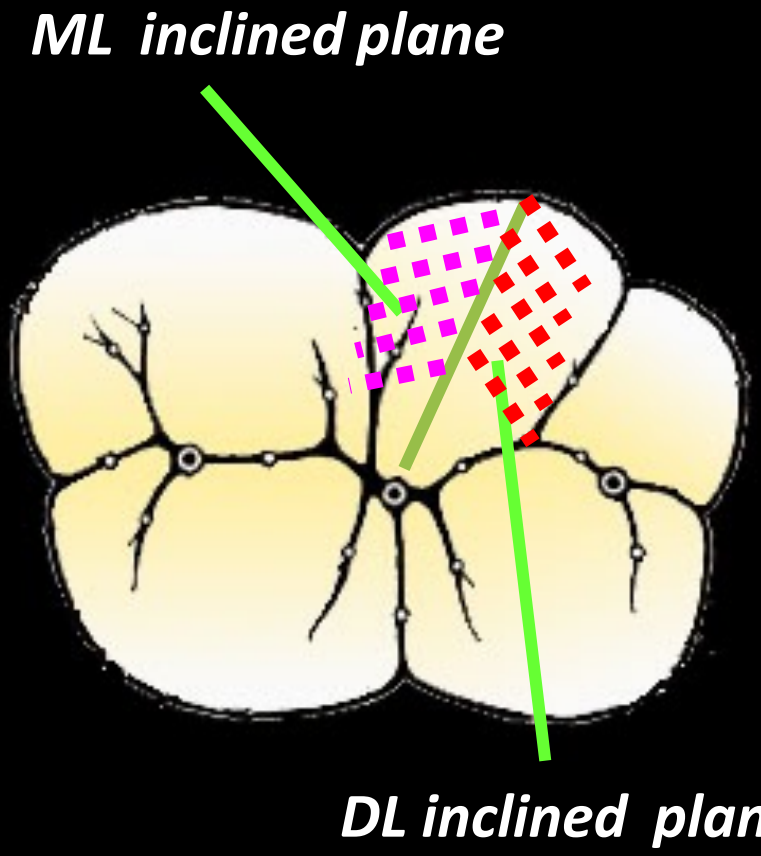
Mandibular First Molar: Occlusal surface



MB cusp

- The MB cusp – is the largest and rather blunt and rounded
- L tri. ridge from cusp to M groove
  - ML inclined plane of MB cusp
  - DL inclined plane of MB cusp

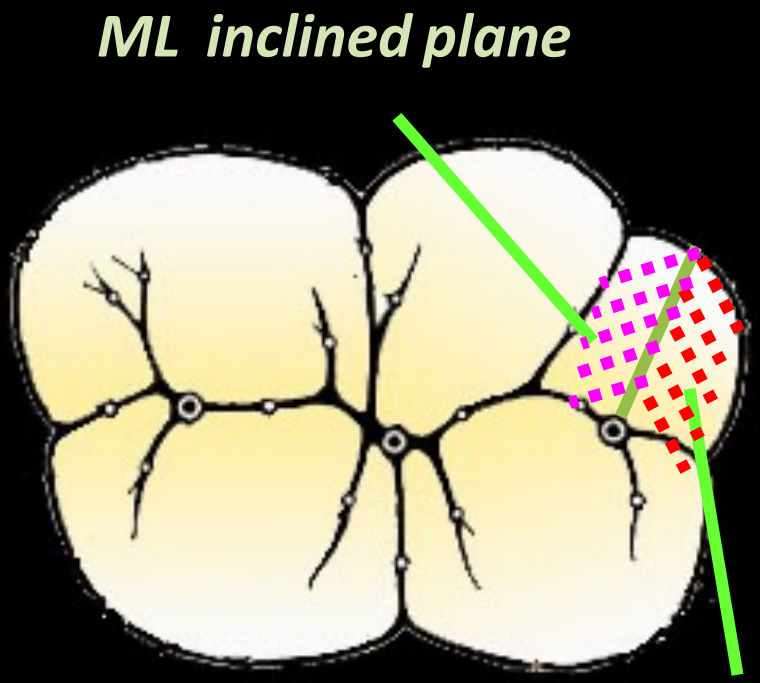
Mandibular First Molar: Occlusal surface



DB cusp

- The DB cusp is smaller but sharper than the MB cusp
- L tri. ridge from cusp to central pit
  - ML inclined plane of DB cusp
  - DL inclined plane of DB cusp

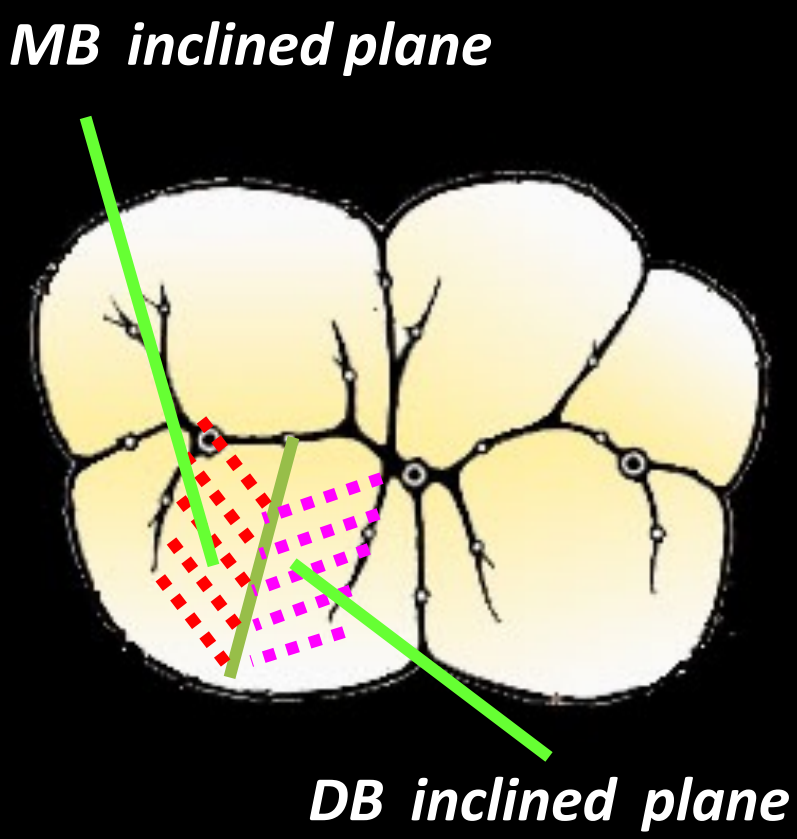
Mandibular First Molar: Occlusal surface



D cusp

- The D cusp – is the smallest
- DB line angle
- L tri. ridge from cusp to D pit
  - ML inclined plane of D cusp
  - DL inclined plane of D cusp

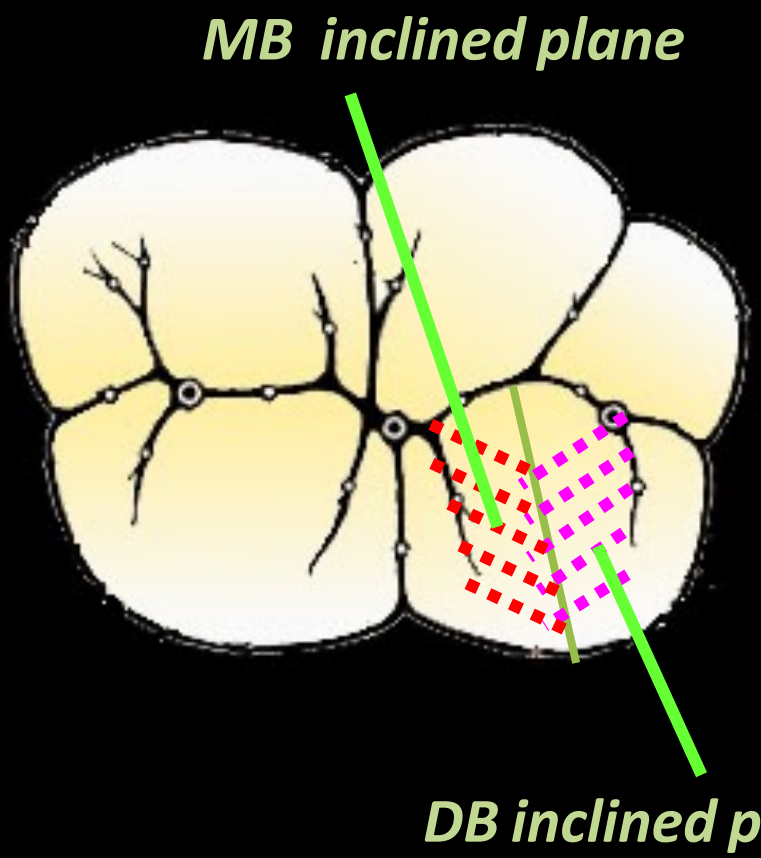
Mandibular First Molar: Occlusal surface



ML cusp

- The ML cusp is a large cusp and sharper than the B cusp
- B tri. ridge from cusp to M gr.
  - MB inclined plane of ML cusp
  - DB inclined plane of ML cusp

Mandibular First Molar: Occlusal surface



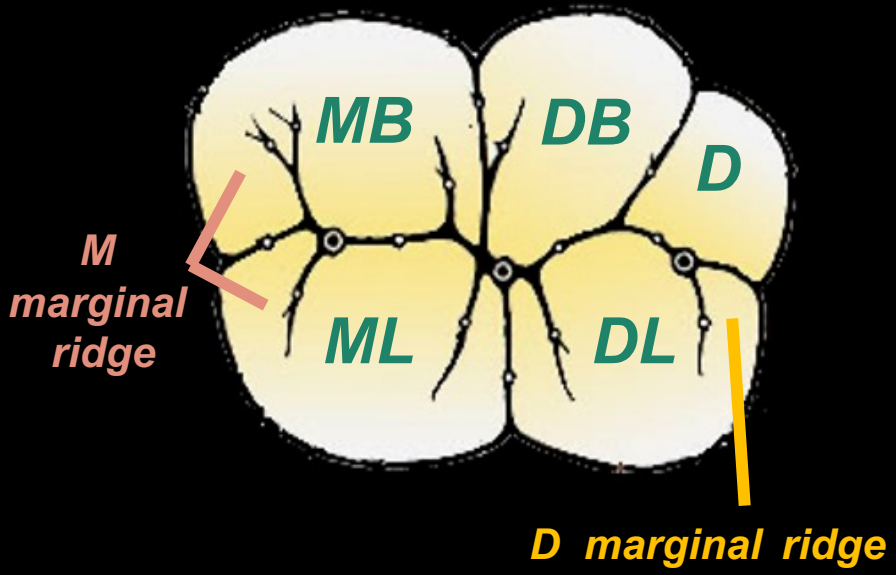
DL cusp

- The DL cusp – is quite sharp, slightly smaller than ML cusp
- B tri. ridge from cusp to D+DB groove
  - MB inclined plane of DL cusp
  - DB inclined plane of DL cusp

Mandibular First Molar: Occlusal surface

M marginal ridge

- extends from the MBO angle to the MLO angle
- crossed by the M marginal groove which divides it into 2 equal parts

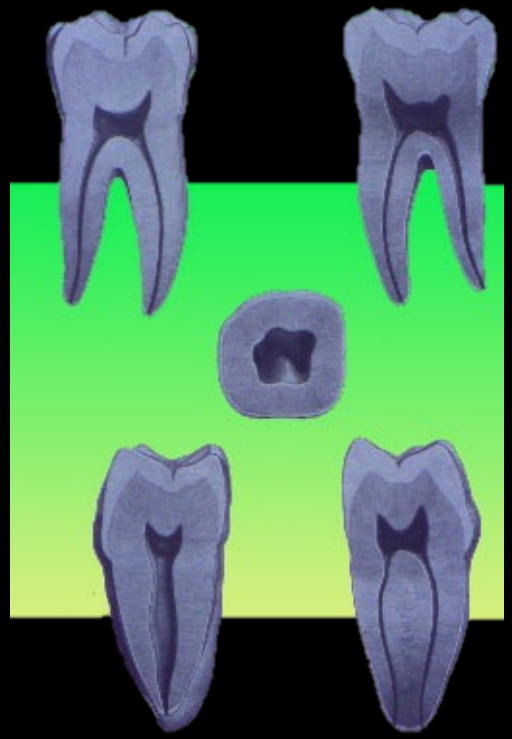


D marginal ridge

- extends from the D marginal groove to the DLO angle
- short in comparison with the M marginal ridges

Mandibular First Molar: Roots

- mesial & distal roots
- pulp chamber (5 pulp horns)
- 3 pulp canals
  - 2 canals in mesial branch
    (MB &ML pulp canals)
  - 1 canal in distal branch
    (D canal)



Mandibular Second Molar

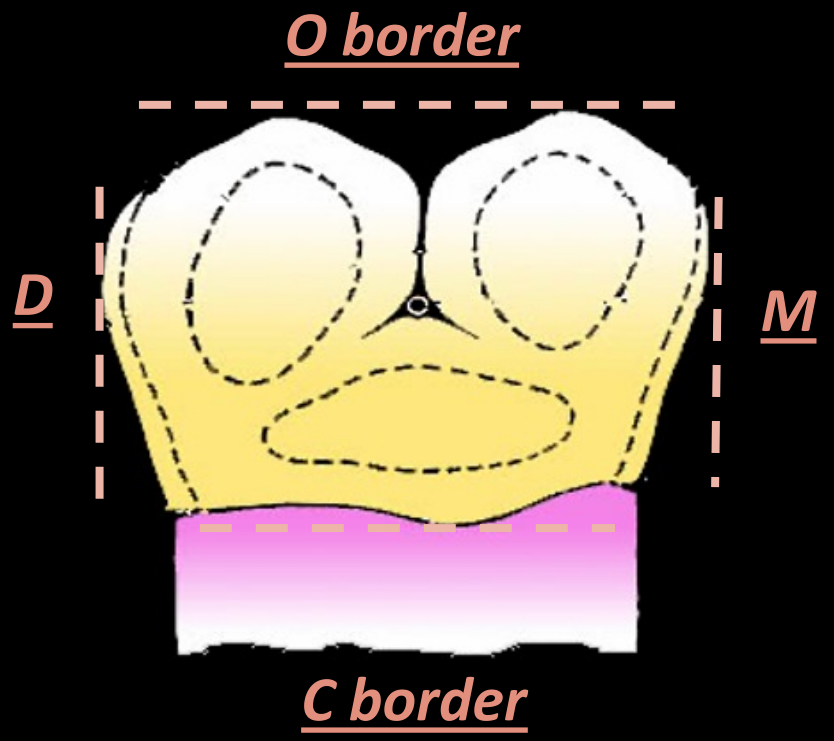
- lower 12-year molar
- The 7th teeth from the midline
- eruption age : 12 years
- similar to 36, 46 but **smaller**

  and more simple in form
- **4 cusps**
- **NO** DB groove and distal cusp



Mandibular Second Molar: Buccal surface

- outline –trapezoid
- The buccal surface presents 4 borders.



Mandibular Second Molar: Buccal surface

O border

- divided into 2 equal portion by the B gr,
- MB and DB cusps are about equal in the height and width

M border

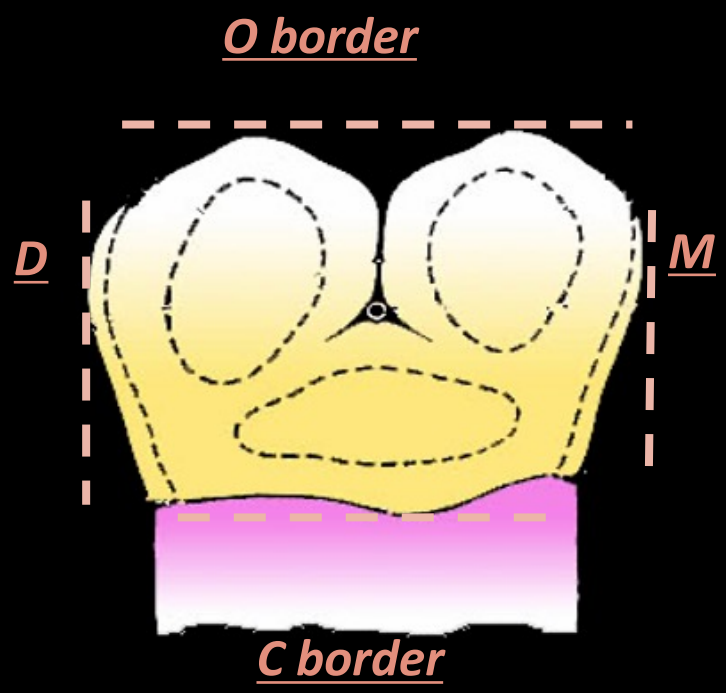
- convex in the O portion
- concave in the C portion

D border

- convex in the O portion with the convexity decreasing as the cervix approached

C border

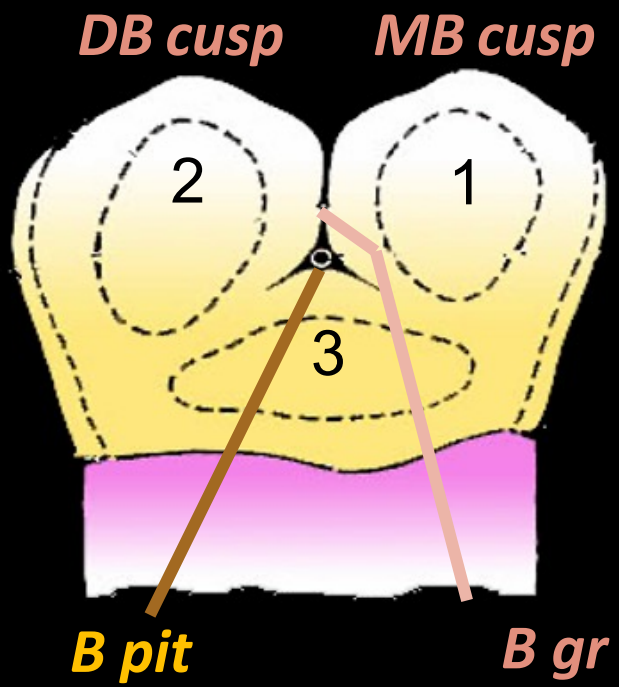
- curved with concavity toward the bifurcation



Mandibular Second Molar: Buccal surface

B groove

- 1/2 the distance (occ-cervical)
- end in 3 different ways
  - bifurcate
  - end in a pit
  - end as a single groove



Mandibular Second Molar: Buccal surface

B ridges

1. B ridge of MB cusp

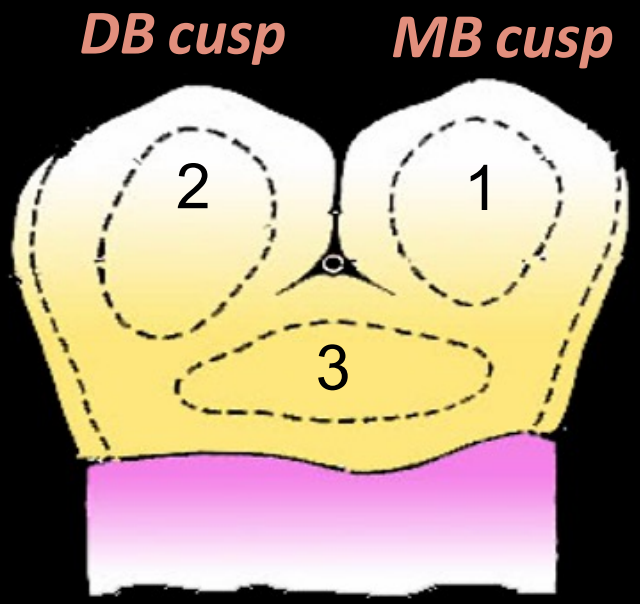
2. B ridge of DB cusp

- 2/3 of the distance toward the cervical line
- more prominent on the O portion and less prominent in the G portion

3. BG ridge

- cervical 1/3
- more prominent in the M half > D half

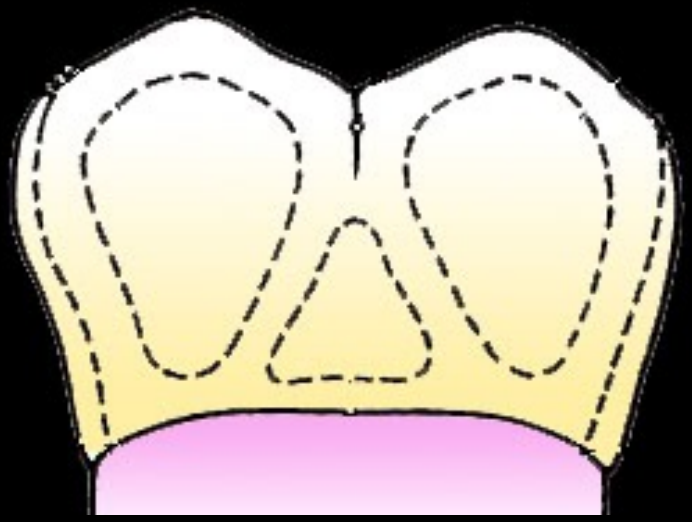
Height of contour
cervical 1/3



Mandibular Second Molar: Lingual surface

The outline is a **trapezoid**

but smaller than the 1st molar.



Mandibular Second Molar: Lingual surface

Occlusal border

- lingual groove extends 1/3
- ML cusp is usually longer than the DL cusps

M border

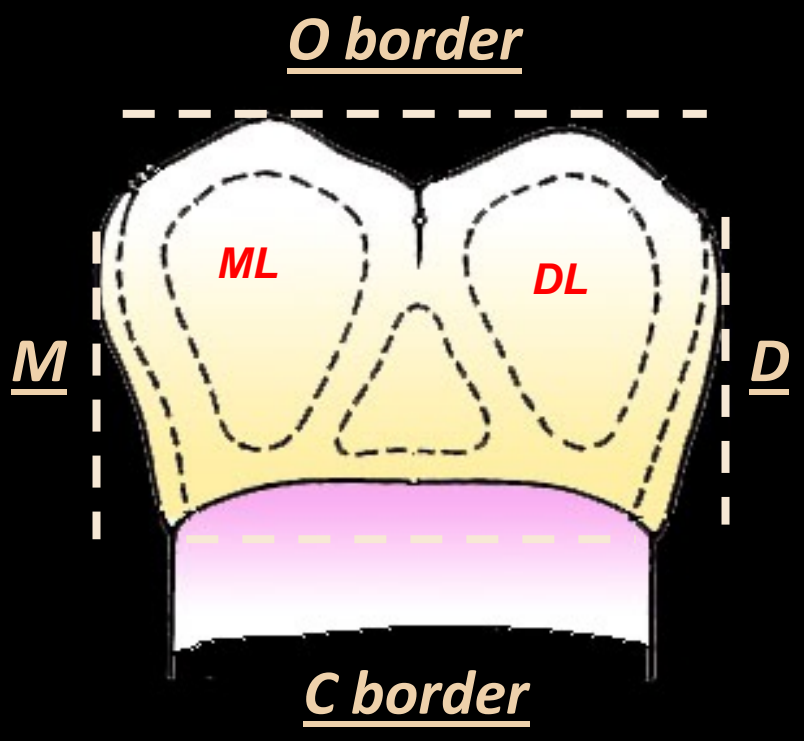
- convex in the O portion
- concave in the G portion

Distal border

- convex

Cervical border

- slightly curved, with the convexity toward the O



Mandibular Second Molar: Lingual surface

2 buccal ridges

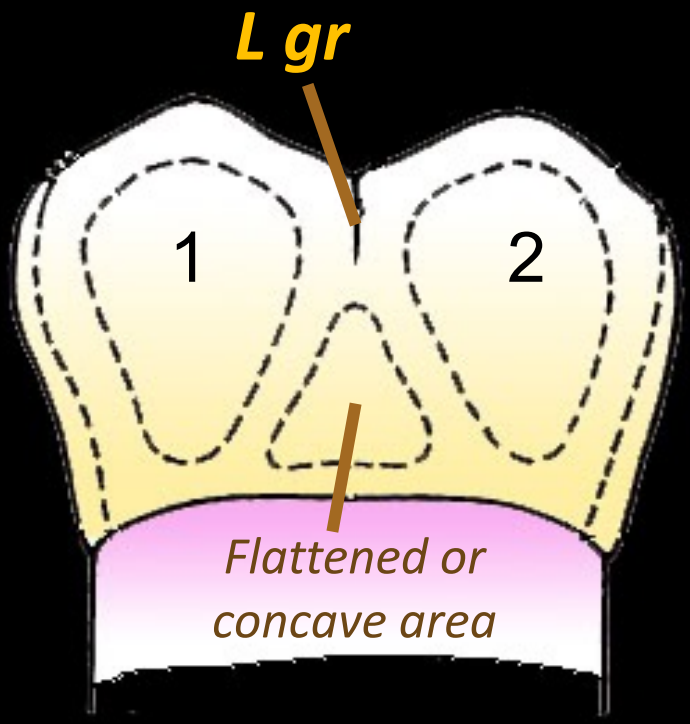
1. L ridge of ML cusp

- convex M-D , while in the O-G direction it is convex in the O portion but becomes flattened or concave in the G portion

2. L ridge of DL cusp

- same width as the ML ridge

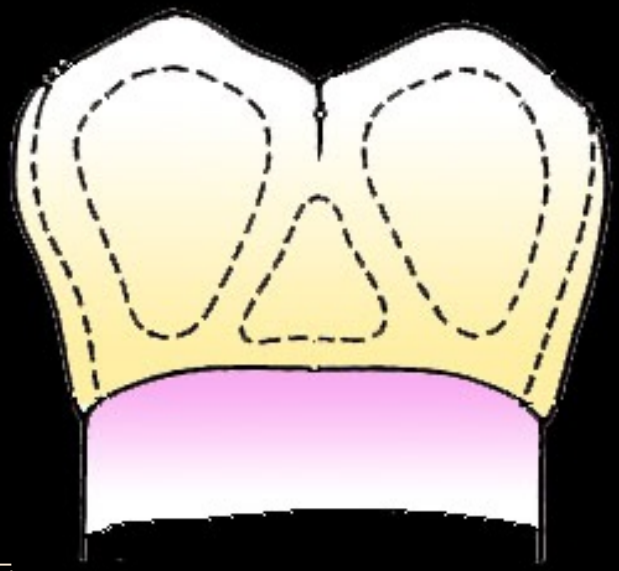
A triangular-shaped concave or flattened area



Mandibular Second Molar: Lingual surface



Distal



Height of contour
Junction between
Occlusal 1/3 and Middle 1/3

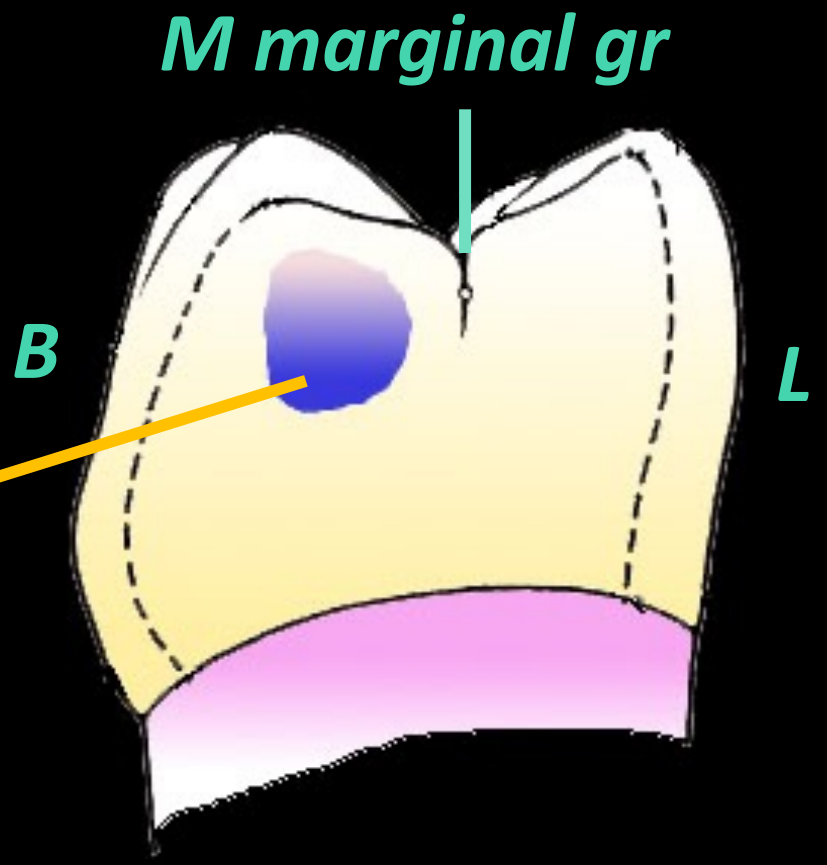
Mandibular Second Molar: Mesial surface

outline - rhomboid

O border - M marginal groove

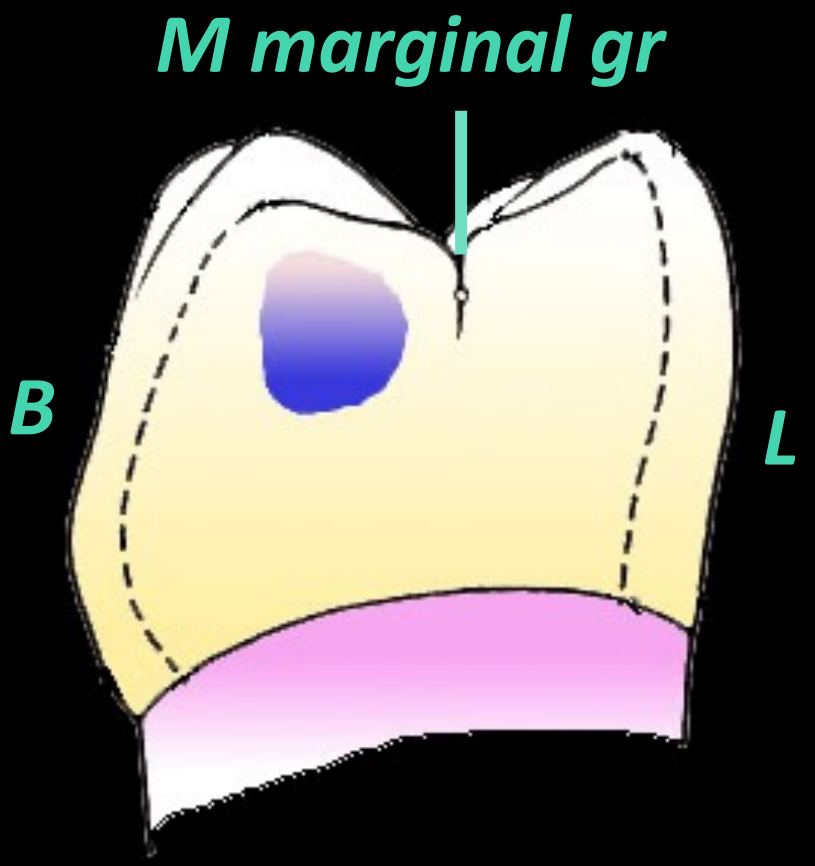
contact area

- occlusal 1/3
- buccal half



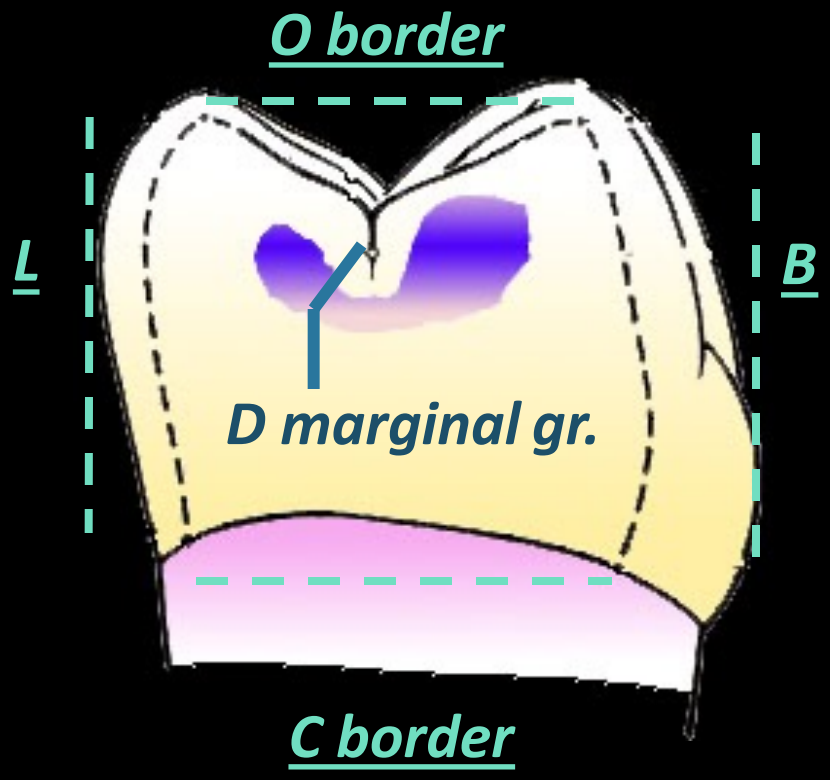
Mandibular Second Molar: Mesial surface

- The B border – convex in the O and C portion
- The L border – is convex in the O portion and flattened or concave in the C portion
- The C border – is a slight convexity toward the O



Mandibular Second Molar: Distal surface

- O border
  - D marginal groove (1/2 B-Li)
- B border
  - convex in the O and C portion
- L border
  - convex in the O portion and flattened or concave in the C portion
- C border
  - slightly curved, with the convexity toward the O



Mandibular Second Molar: Distal surface

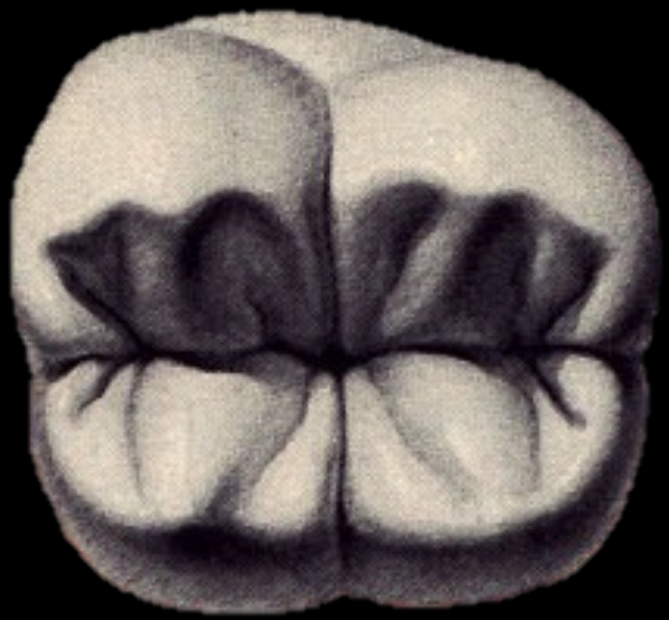
contact area

- occlusal 1/3
- toward the buccal



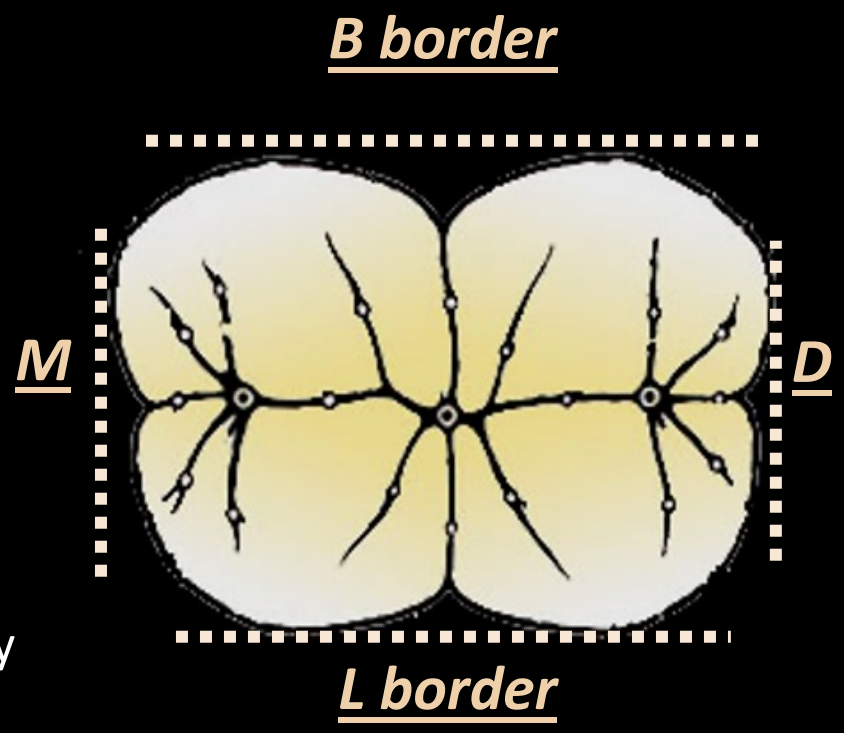
Mandibular Second Molar: Occlusal surface

The outline is a **rectangle** and **long in M-D** width



Mandibular Second Molar: Occlusal surface

- B border : divided into 2 parts by B groove
- M border : separated by the M marginal gr
- D border : is shorter than the M border and is separated by D marginal gr
- L border: is shorter than the B border and is divided into 2 parts by L groove. Both portions of the border are equal in length and both quite convex

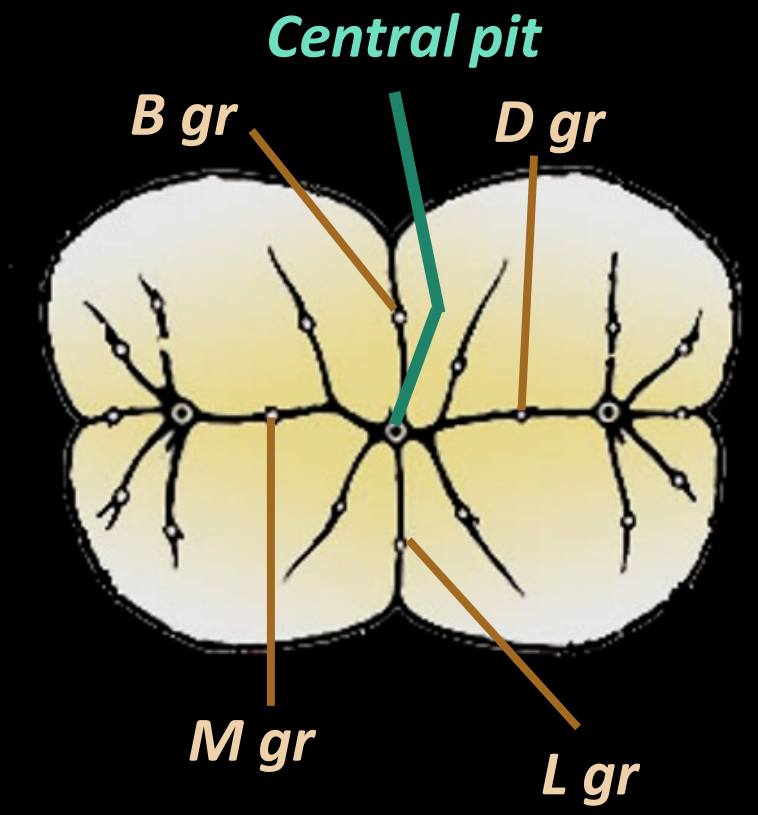


Mandibular Second Molar: Occlusal surface

Central pit

- center
- B gr + L gr + M gr + D gr

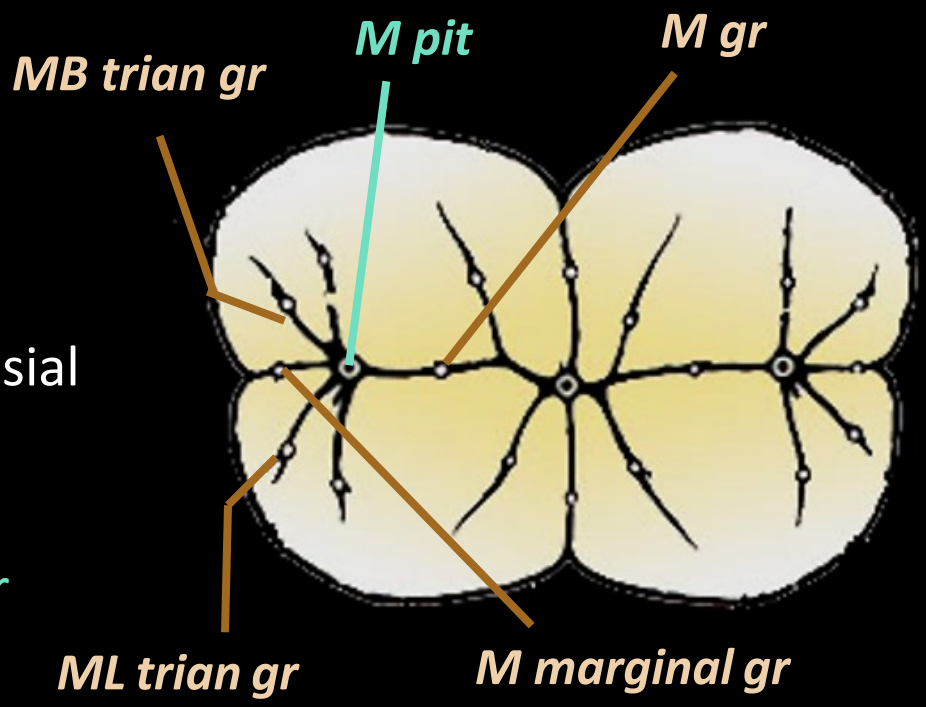
  (primary grooves: +)



Mandibular Second Molar: Occlusal surface

Mesial pit

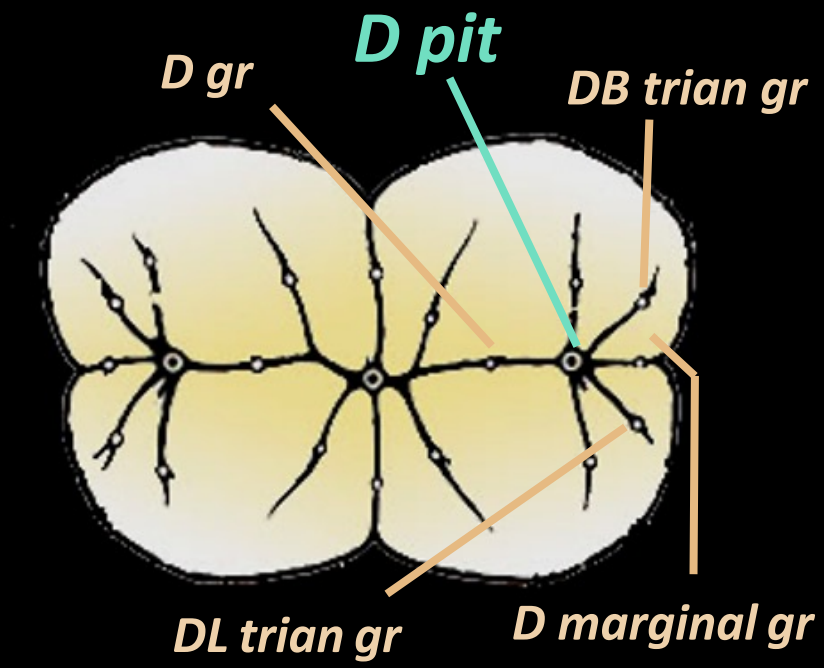
- halfway from B-L
- short distance from the mesial border
- M gr+MB triangular gr+ML triangular gr+M marginal gr



Mandibular Second Molar: Occlusal surface

Distal pit

- halfway from B-L
- short distance from the distal border
- D gr+DB triangular gr+ DL triangular gr +D marginal gr

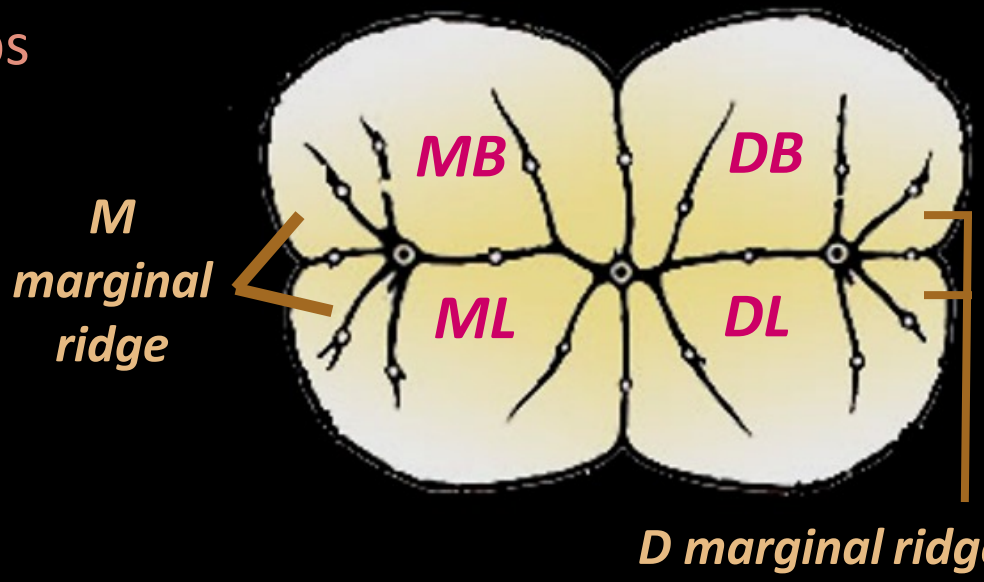


Mandibular Second Molar: Occlusal surface

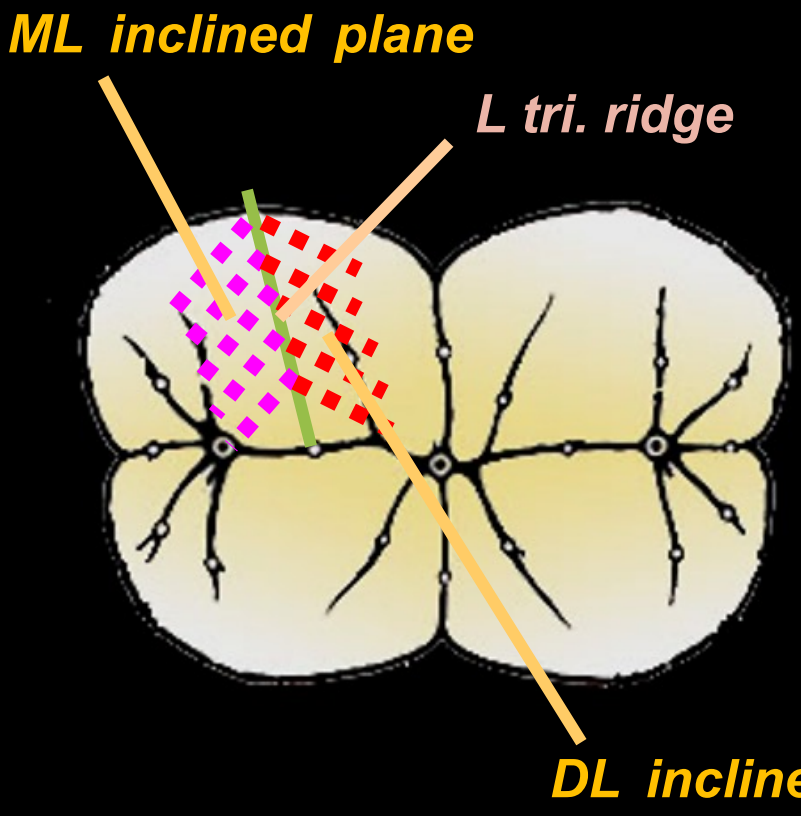
Occlusal surface ; 4 cusps

1. MB cusp
2. DB cusp
3. ML cusp
4. DL cusp

- M&D marginal ridges



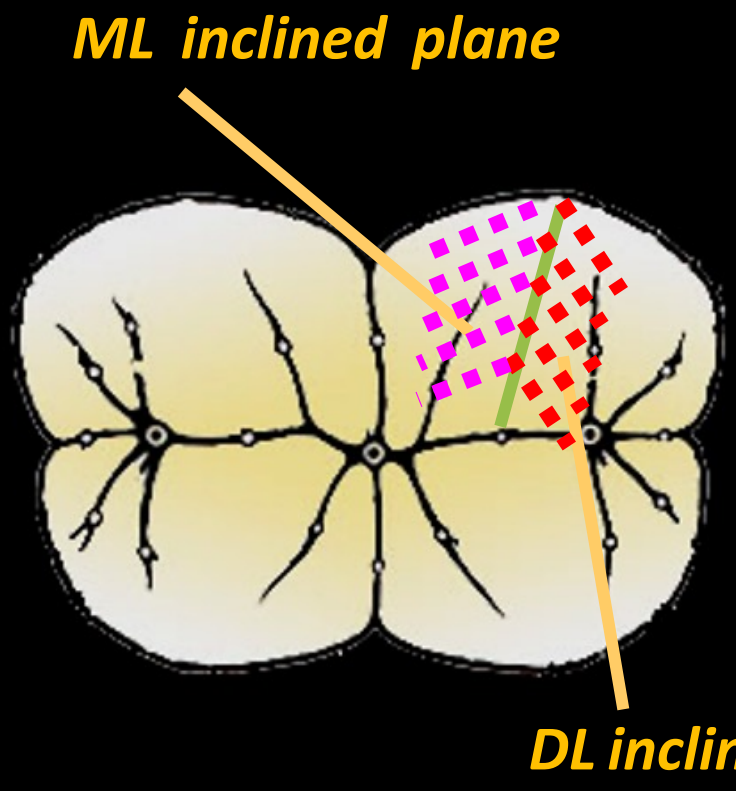
Mandibular Second Molar: Occlusal surface



MB cusp

- L tri. ridge from cusp to M gr
  - ML inclined plane of MB cusp
  - DL inclined plane of MB cusp

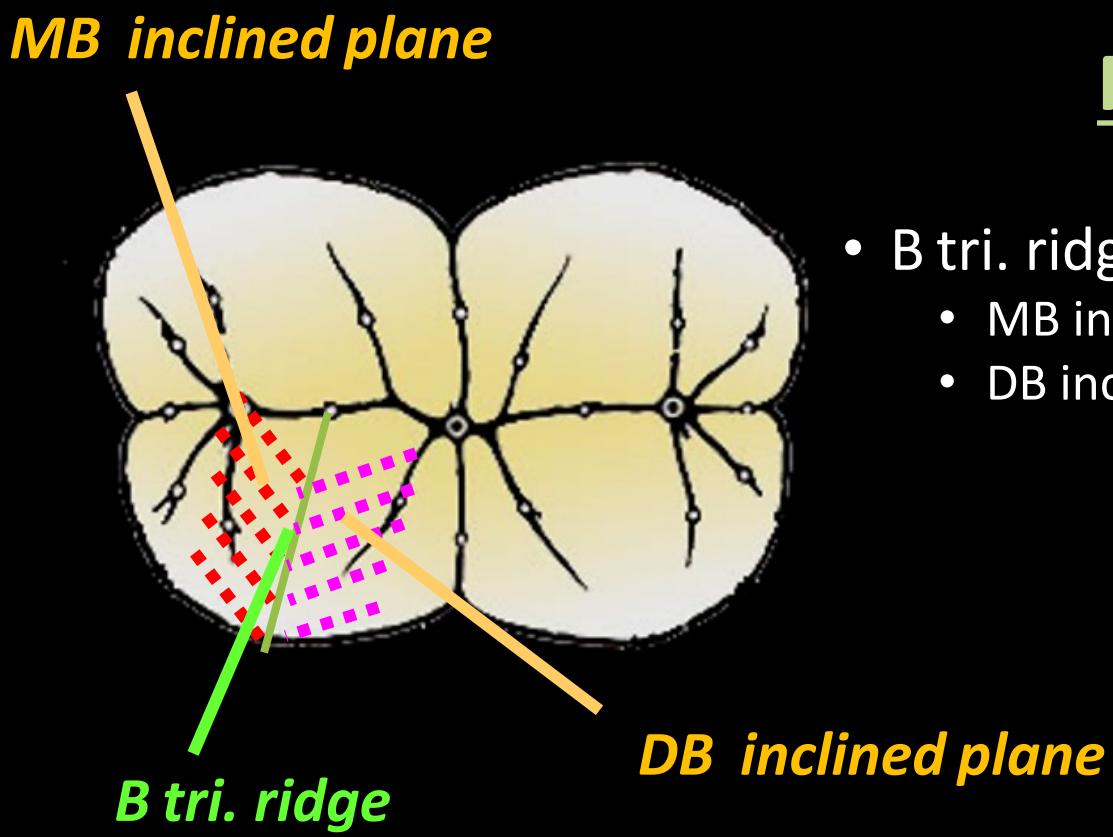
Mandibular Second Molar: Occlusal surface



DB cusp

- L tri. ridge from cusp to D gr
  - ML inclined plane of DB cusp
  - DL inclined plane of DB cusp

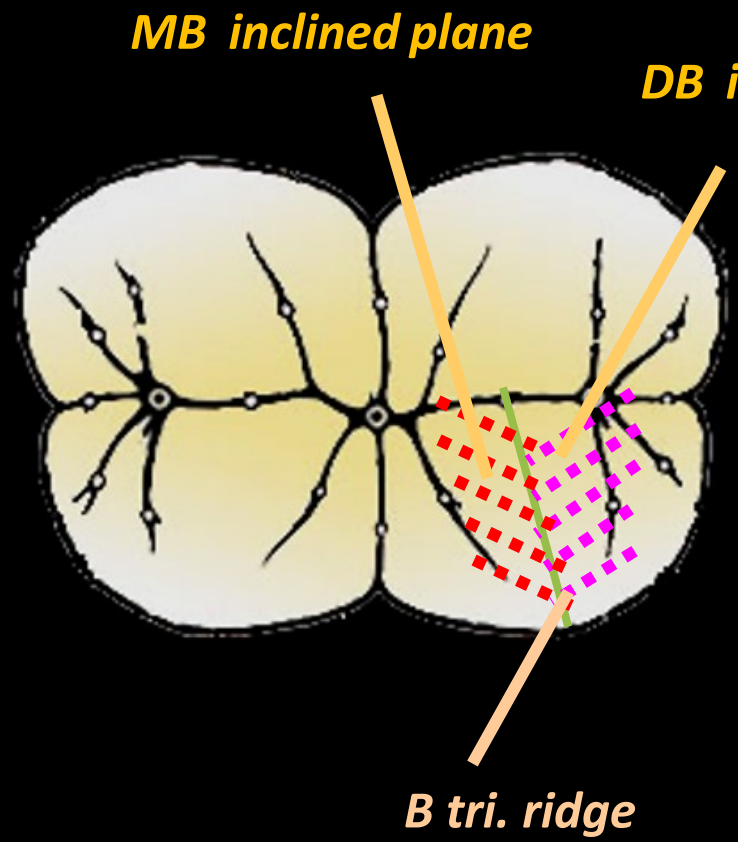
Mandibular Second Molar: Occlusal surface



ML cusp

- B tri. ridge from cusp to M gr.
  - MB inclined plane of ML cusp
  - DB inclined plane of ML cusp

Mandibular Second Molar: Occlusal surface



DL cusp

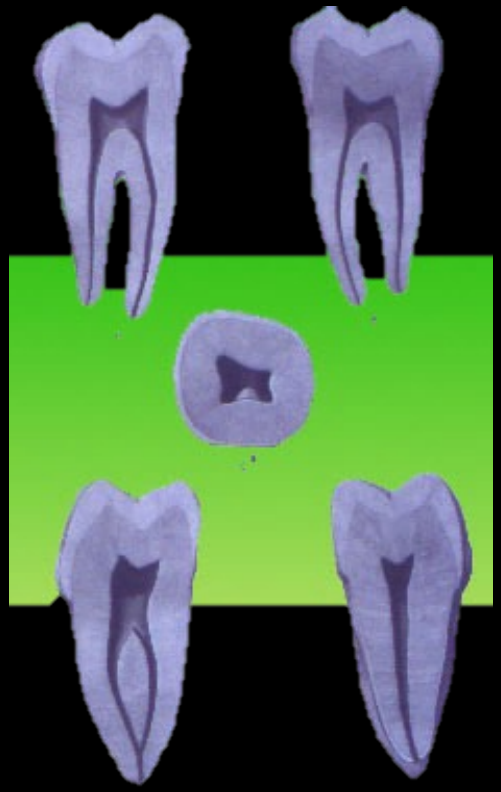
- B tri. ridge from cusp to D gr.
  - MB inclined plane of DL cusp
  - DB inclined plane of DL cusp

Mandibular Second Molar: Roots

- Mesial and distal roots
- Pulp chamber
  - pulp chamber (4 pulp horns) 3 pulp canals
- 2 canals in mesial branch

  (MB &ML pulp canals)
- 1 canal in distal branch

  (D canal)



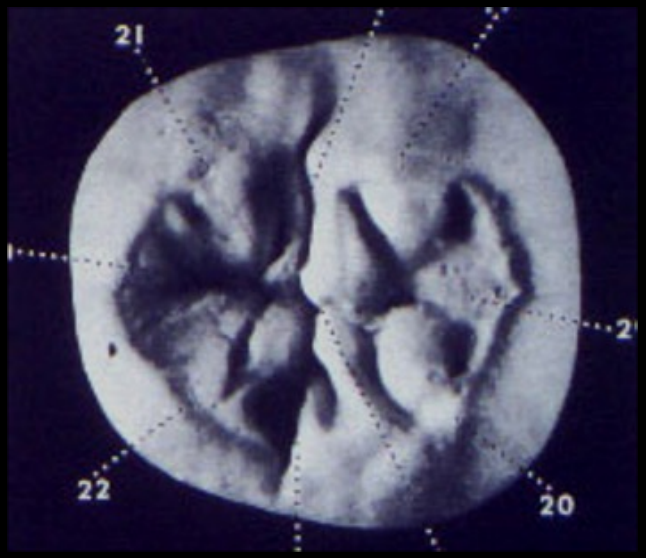
Mandibular Third Molar

- The last teeth from the midline
- **wisdom tooth**
- mal-position & mal-formation
- eruption age : 18 years
- 4 cusps type is found more frequently than 5 cusps type.



Mandibular Third Molar

- occlusal outline : **ovoid**
- **M-D > B-Li**
- mesial cusps > distal cusps
- irregular groove pattern
- roots : short & fused



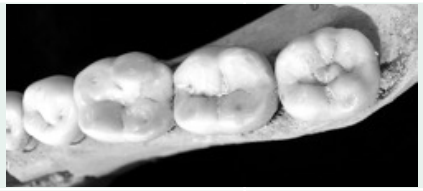


Mandibular Third Molar





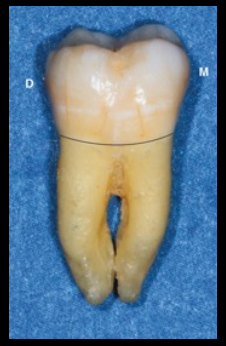
Mandibular molars

Aspect	1st molar	2nd molar	3rd molar
Buccal	widest crown 3 cusps 2 B gr. 4 B ridges	2nd 2 cusps 1 B gr. 3 B ridges	smallest
			
Occlusal outline M&D profiles converging primary gr.	pentagonal straight lingually Y	rectangular curved no +	ovoid highly curved no irregular

Difference btw Mand. & Max. molars

- crown : MD>BL
- 4-5 cusps, ML cusp ~ DL cusps
- occlusal outline: rectangular or pentagonal
- 2 roots (M & D roots)

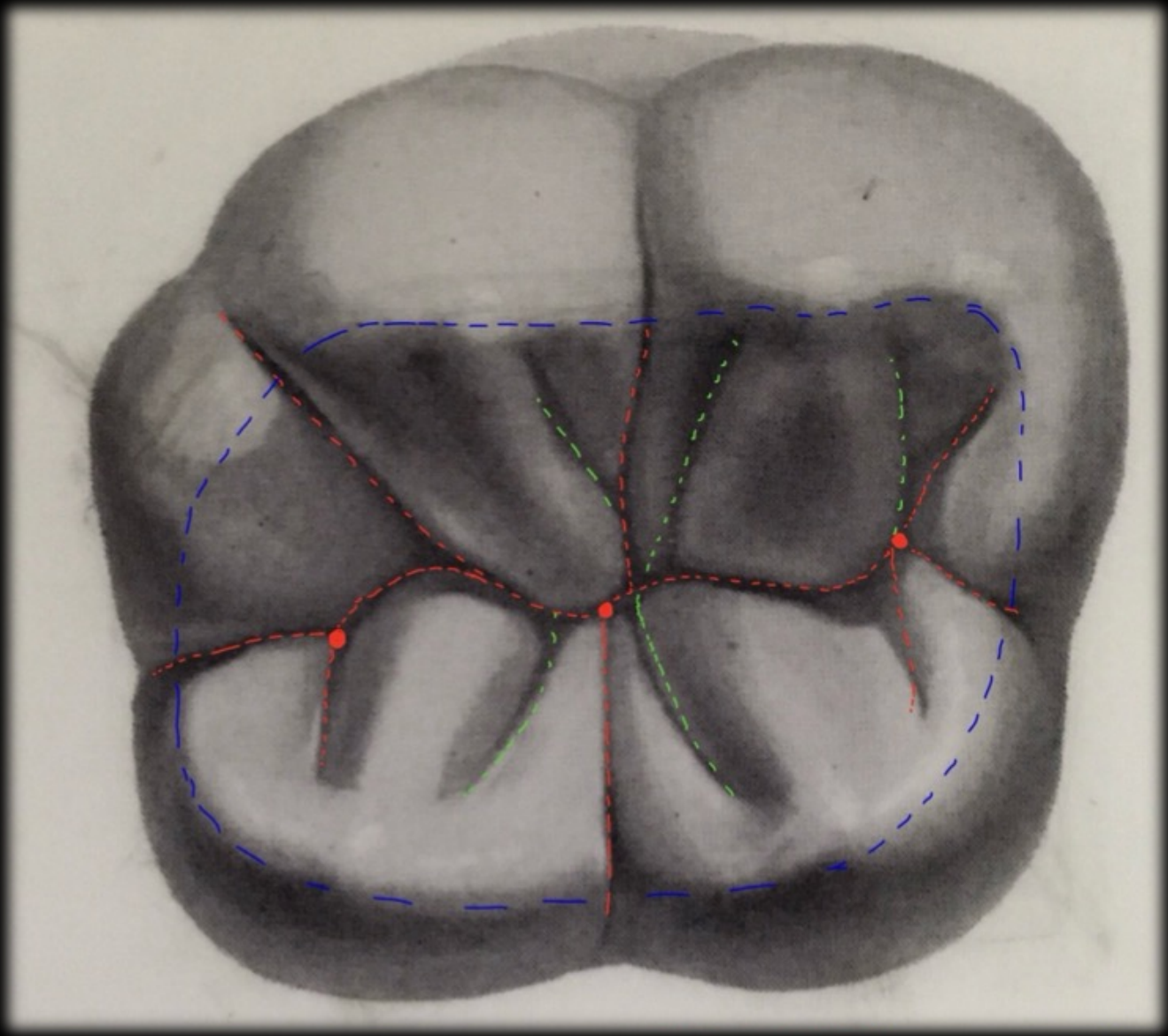


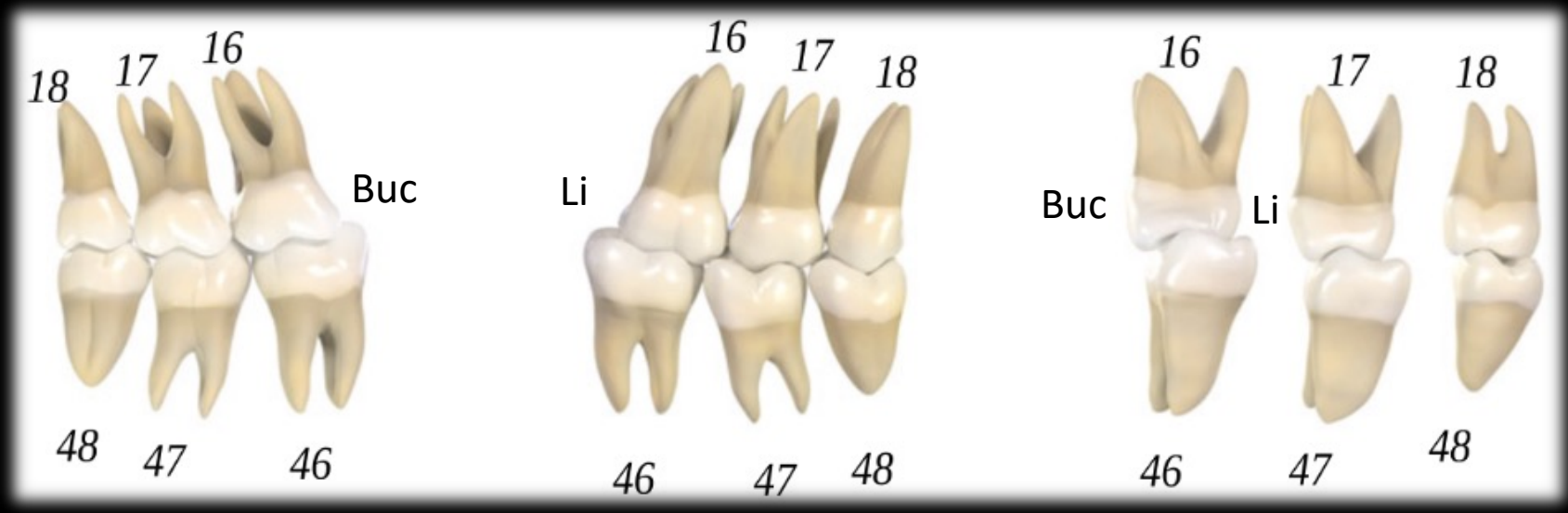











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