

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Mandibular permanent 1ST Molar



No. of surfaces:

It has five surfaces



BUCCAL



LINGUAL



MESIAL



DISTAL

No. of roots:

It has 2 roots

OCCLUSAL

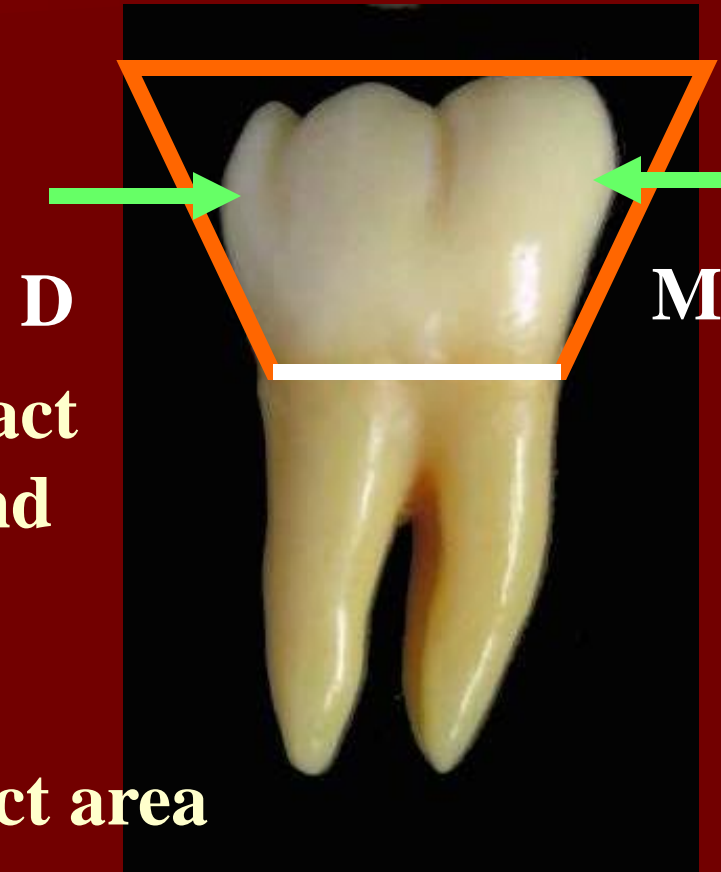


BUCCAL ASPECT

The geometric outline: Trapezoidal with small uneven side present cervically.

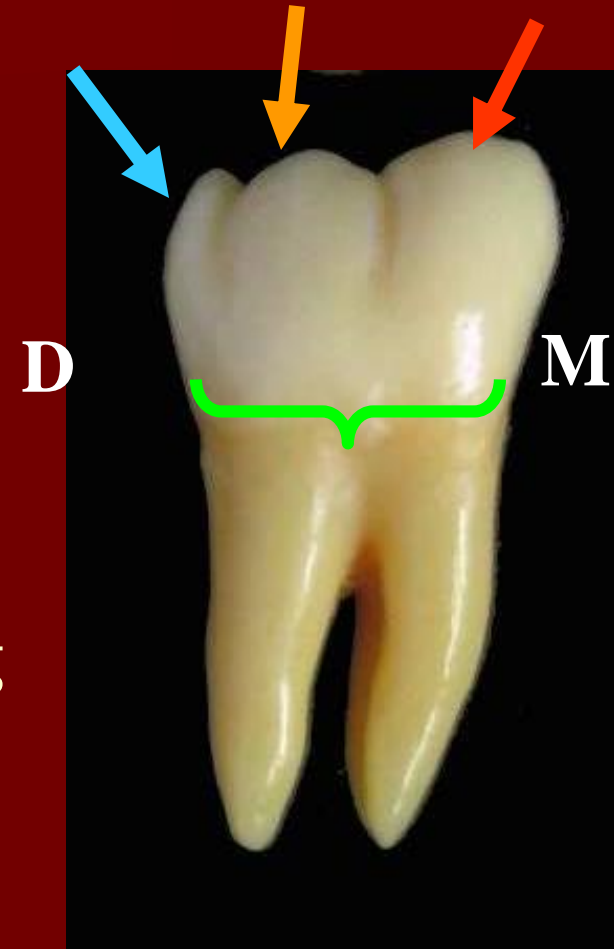
Mesial outline: concave till the contact area at the junction of the occlusal and middle 1/3.

Distal outline: straight till the contact area beneath the distal cusp ridge.



Occlusal outline: formed by 3 cusps,
MB, DB, D

Cervical outline: straight with dipping
into the root bifurcation

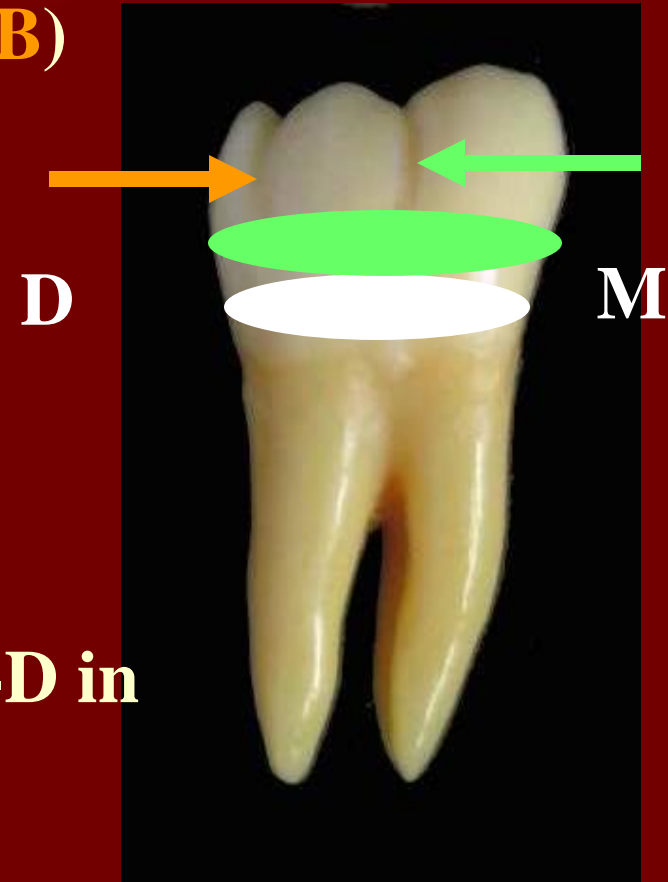


Anatomical landmarks:

* 2 Developmental grooves (**MB**, **DB**)

* Cervical ridge at the cervical 1/3

* Developmental depression run M-D in the middle 1/3



The Roots:

- * The roots twice the length of the crown.
- * The axis of the roots are inclined **distally**
- * Root trunk: **3 mm.**
- * Deep developmental groove extend on the root trunk.



LINGUAL ASPECT

* Lingual convergence

Mesial outline: Straight till the contact area at the junction of the occlusal and middle 1/3

Distal outline: Convex till the contact area beneath the distal cusp ridge

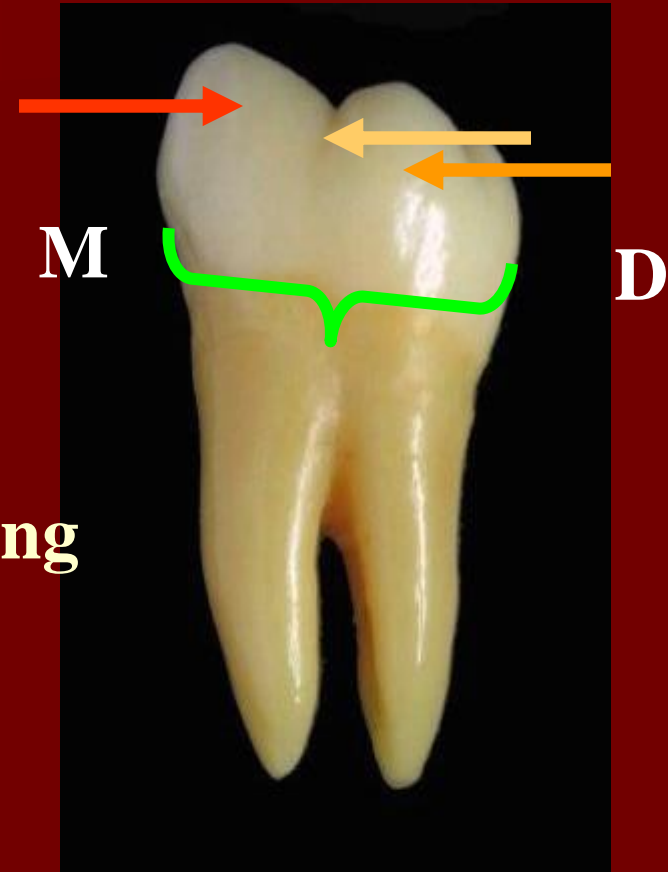


Occlusal outline: formed by 2 lingual cusps, **ML**, **DL** of nearly equal width

Cervical outline: Irregular with dipping into the root bifurcation

Anatomical landmarks:

Lingual Developmental groove





The root trunk appears longer on the ling. surface due to:

- * the occlusal position of cervical line**
- * Lingual conversion**

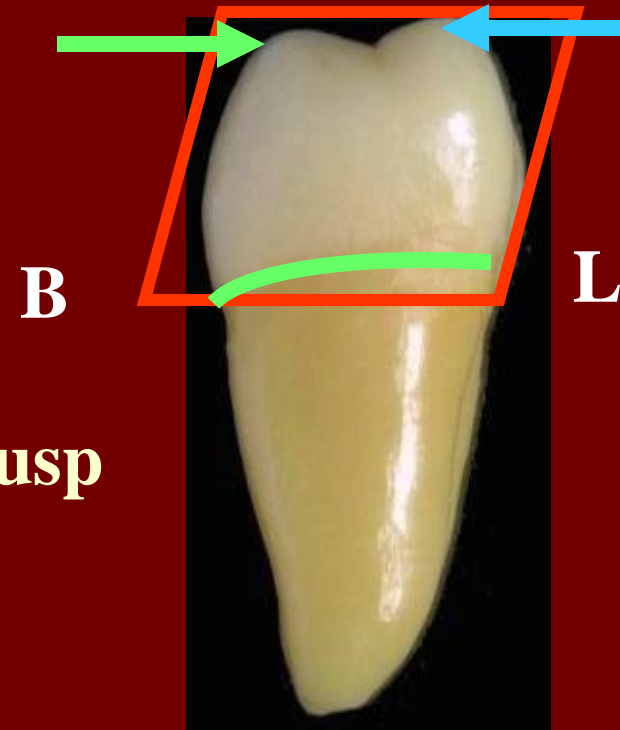
MESIAL ASPECT

The geometric outline: Rhomboid and inclined lingually.

Notes:

1- **ML** cusp is more pointed than **MB** cusp (because it is out of occlusion)

2- The cervical line slants occlusally from the buccal to the lingual side.

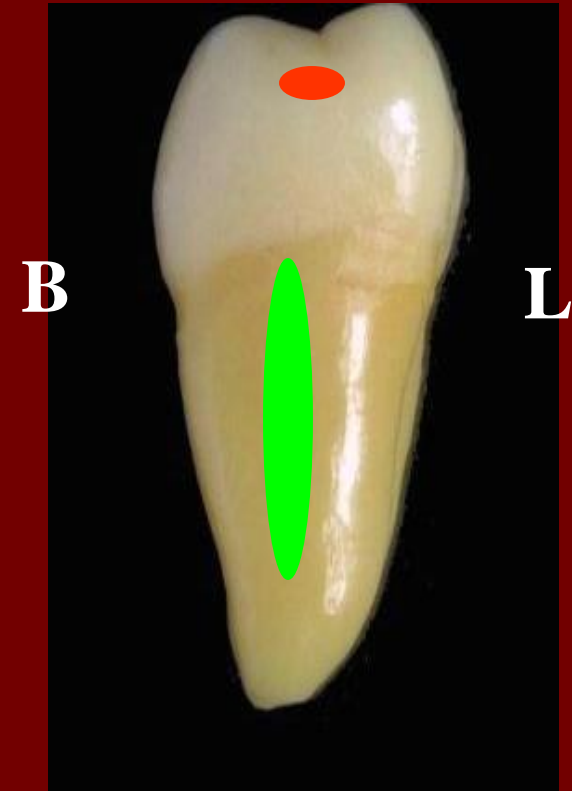


MESIAL ASPECT

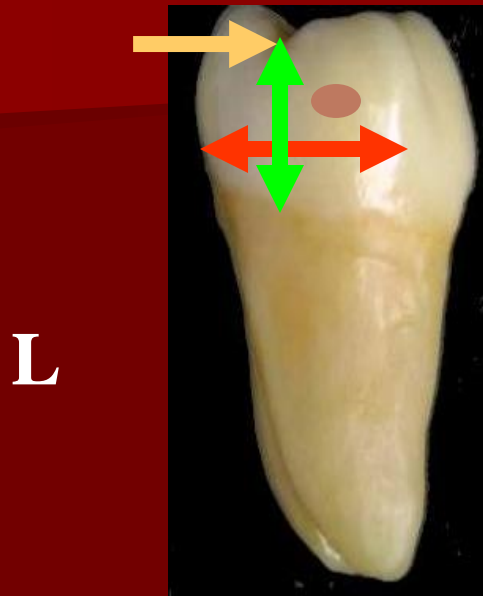
Anatomical landmarks:

*Contact area centered B-L below the crest of marginal ridge

*Deep developmental depression on the mesial surface of the root.



DISTAL ASPECT



L

B

MESIAL ASPECT



L

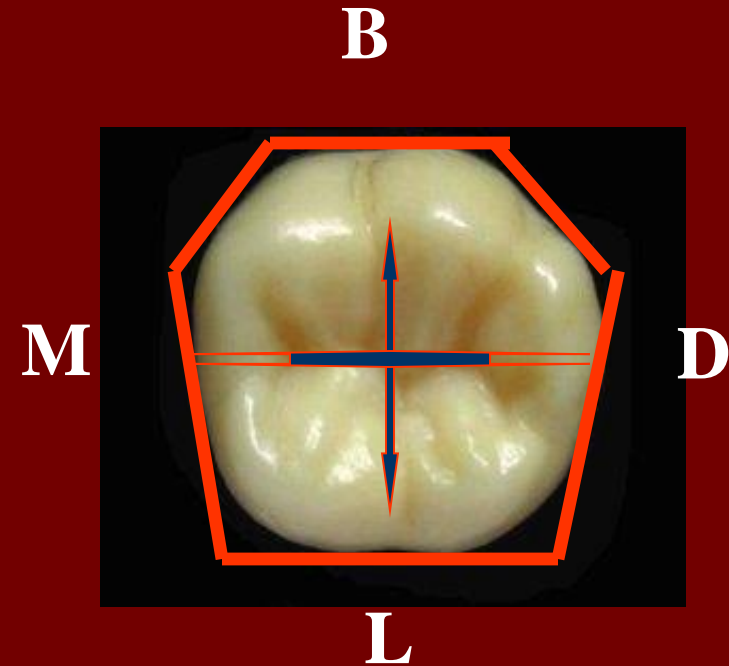
- *The crown is shorter distally
- *There is a distal conversion
- *DMR is U- shape, shorter and more cervically than MMR
- *Distal contact area located below the distal cusp

OCCLUSAL ASPECT

The geometric outline: Hexagonal

* The crown measurements
is larger MD than BL .

* The crown converge lingually
and distally

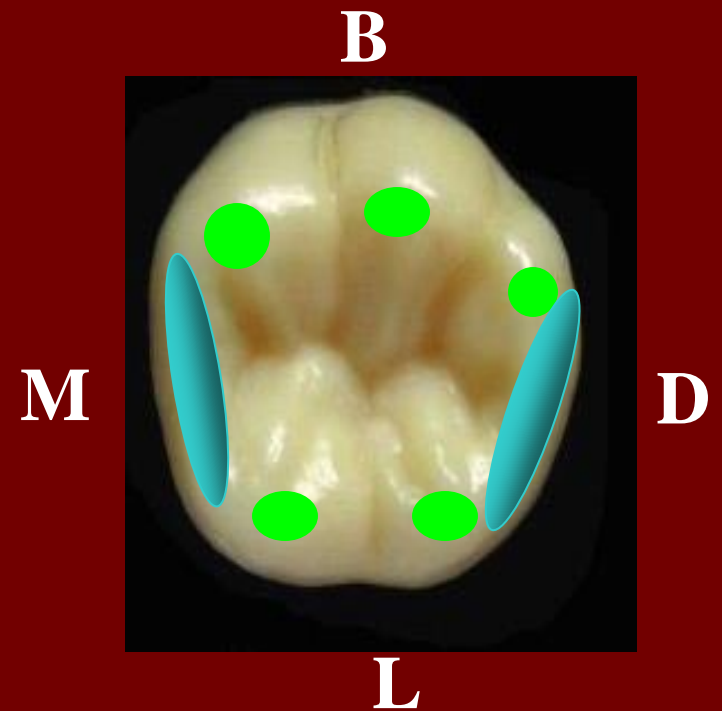


Anatomical landmarks:

Elevations:

***5 cusps with 5 triangular ridges**

*** MMR and DMR**



Anatomical landmarks:

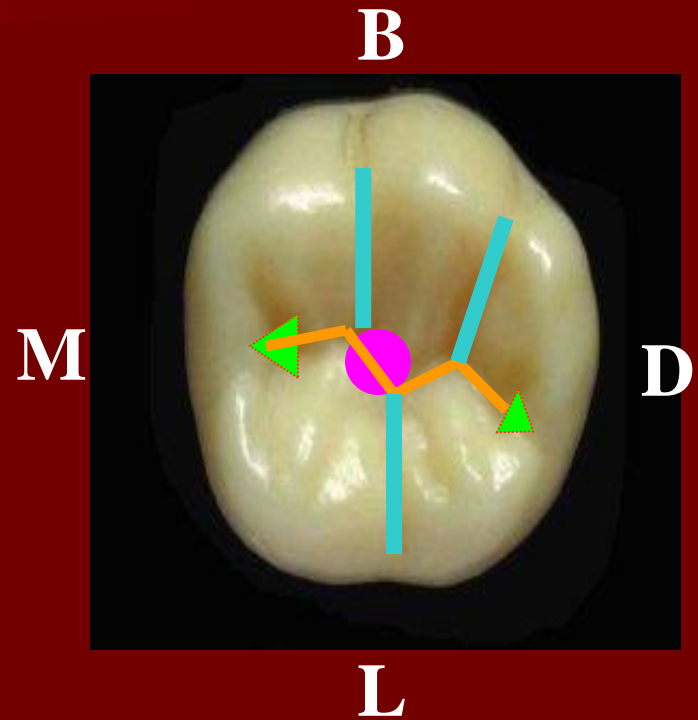
Depressions:

- *1 major central fossae + pit
- *2 Minor fossae (mesial and distal triangular fossae)

*Developmental grooves :

Central groove is **zigzag** in its MD coarse.

MB groove , DB and L groove

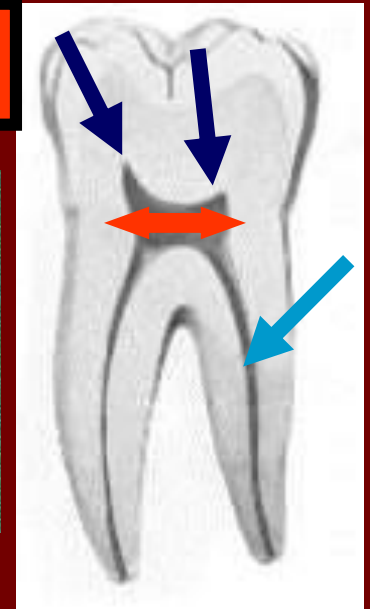


☺ Pulp cavity

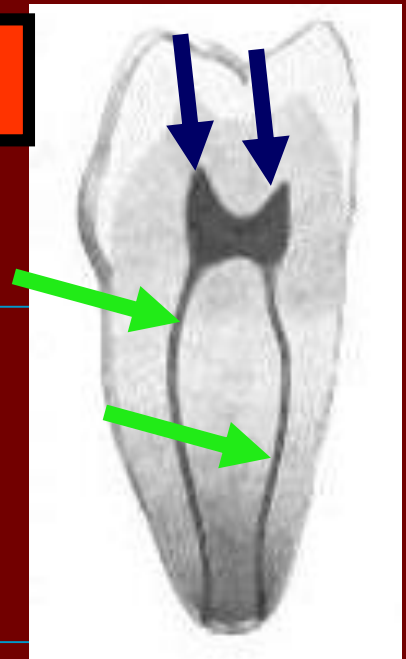
▶ Pulp Chamber:

- The pulp chamber is broad MD.
- It is almost rectangular in shape.
- There is a **pulp horn** beneath each cusp

Buccal view



Mesial view



▶ Root Canals:

- 3 main root canals.
- M** root has **2 root canals** while **D** root has **1** root canal.



Note:

The two mesial root canals appear in x – ray overlapping each other.



Abnormalities you may find:

- 1- Three or four roots.
- 2- Four root canals.

Enumerate the names of the following elevations and depression?

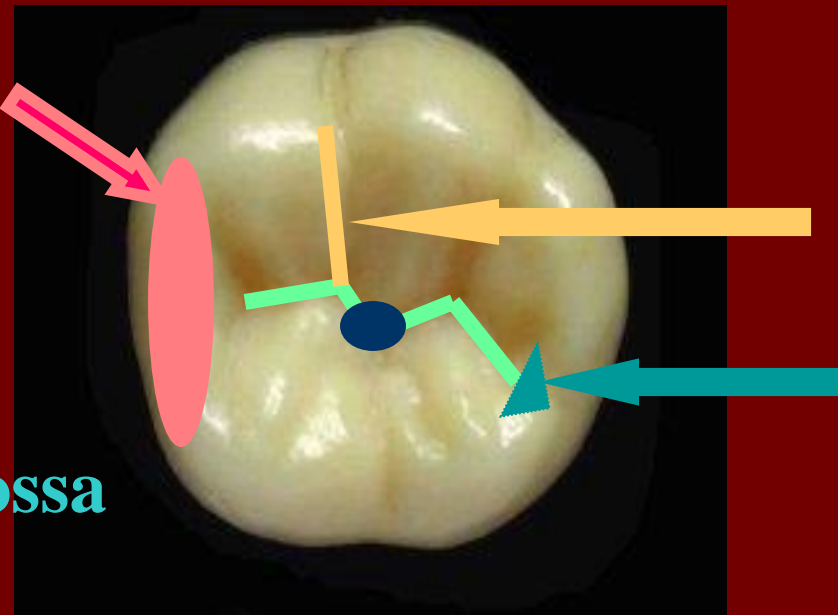
1-Central groove

2-MMR

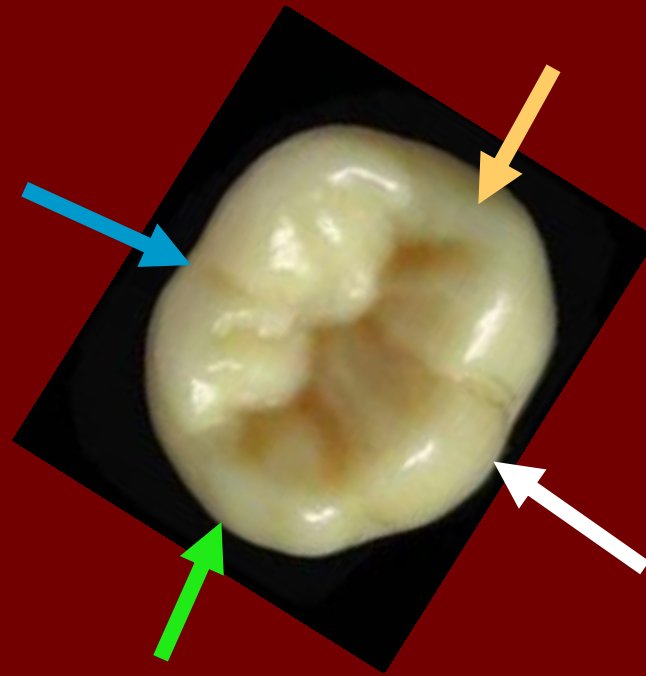
3-Central fossa

4-Distal triangular fossa

5-Mesio-buccal groove



Label the different surfaces:



Buccal surface

Lingual surface

Mesial surface

Distal surface

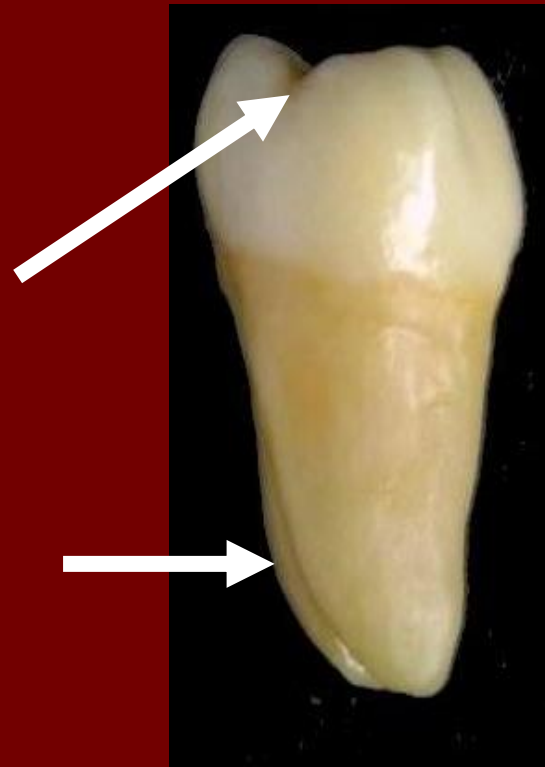
What is this?



What is this?



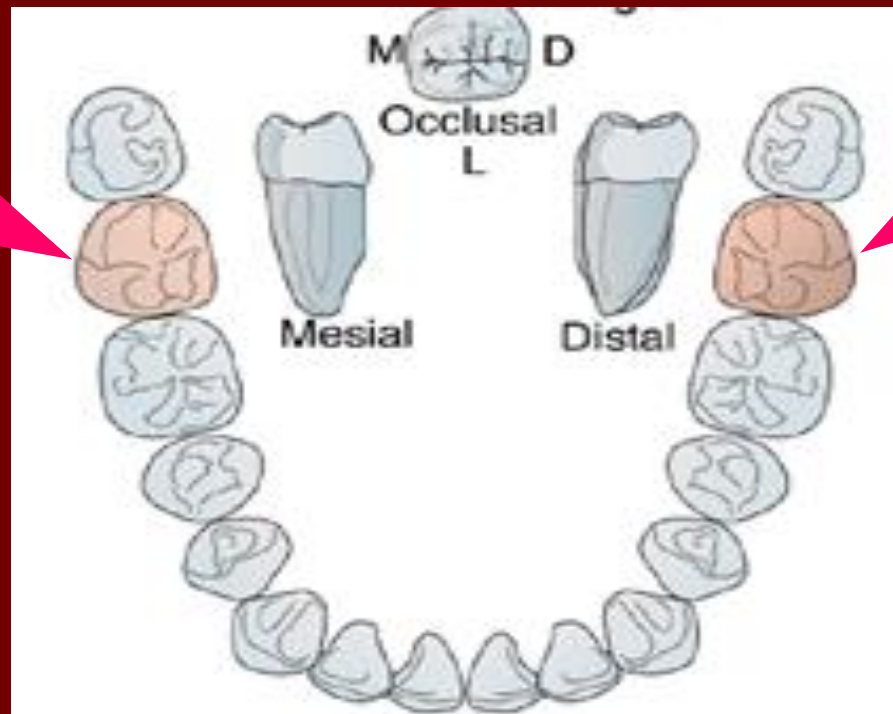
What is this?



What is this?



Mandibular permanent 2nd Molar



Mandibular second molars

No. of surfaces:

It has five surfaces



BUCCAL



LINGUAL



MESIAL



DISTAL

No. of roots:

It has 2 roots

OCCLUSAL





Buccal Aspect



*3BC: MBC>DBC>DC

2BCs... MBC is wider than DBC

*There are 2 DG buccally:
 MBDG....bet.MBC &DBC,
 DBDG.....bet.DBC&DC

*There is one BDG...bet. MBC, DBC
end in M1/3
end in pit

* There are 2 roots:
 MR & DR

Rootsare closer
nearly //
more pointed

6



Lingual Aspect

There is ling. conv.

7



*2LC (ML&DL)....equal width

*LDG.....bet.MLC & DLC

*There is deep developmental depression on root trunk

**** Only in lower 6 Roots appear longer lingually due to:**

- 1- High cervical line
- 2- Narrow root trunk

*2LC (ML&DL)...MLC wider than DLC

*LDG.....bet.MLC&DLC
end in occ.1/3
never pitted

*There is a developmental depression short root trunk

Mesial Aspect



MLC...is longer,more
Pointed than MBC

MMR...is long
...concave

MCA....at the junction of
O&M 1/3s

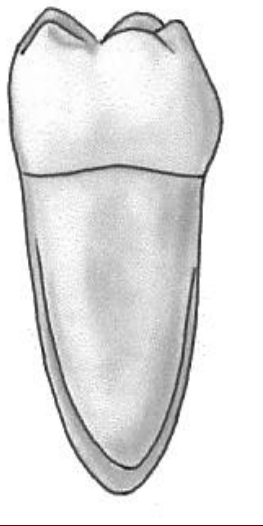
occlusal surface is (more
constricted B-L)

MMR..... crossed by MRG

MMR... not always crossed
by MRG

Root:
MR...broad
....has blunt apex
....has deep depression
....may divided into B &L Rs

Root:
MR...broad
....has deep depression



Distal Aspect

Root:

DR compared with MR
DR.....less broad

..shorter

..more pointed apex

..may have shallow
Depression

MR can be seen from distal aspect



Cr.....shorter

.....narrower due to D. conv.

* There is no DC & DBDG

DLC.....longer & more pointed than
DBC

DMR....short, u shaped
.....more cervically than MMR.
.....may be crossed by MRG.



OCCLUSAL ASPECT

*Cr. conv. L & D
B>L, M>D



*Geometric outline.....
*Hexagonal
Or * Pentagonal

*M-D > B-L

*MBC>ML&DL>DBC>DC

*Geometric outline.....
*Rectangular

*M-D > B-L

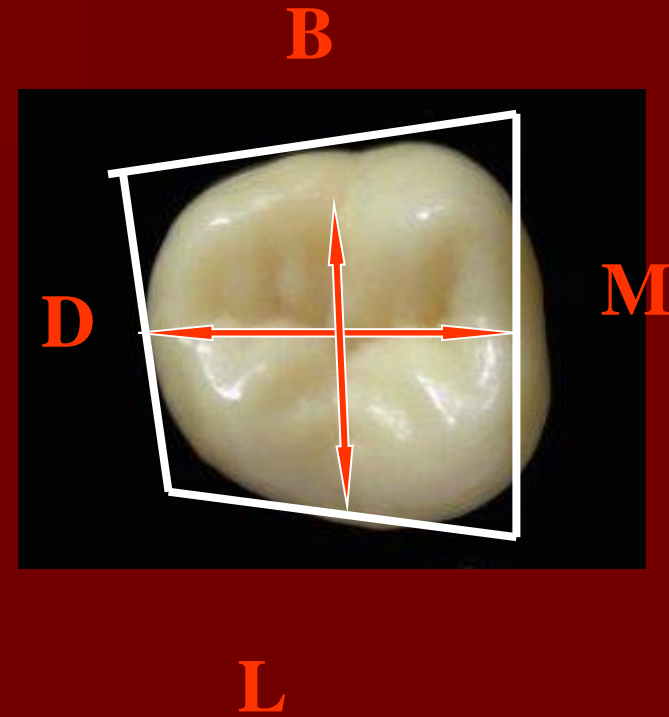
*4 cusps are nearly equal
But:
MBC & MLC are wider
than DBC & DLC
respectively

OCCLUSAL ASPECT of lower 7

The geometric outline: **Rectangular.**

Note:

- * **Disto-Lingual convergence.**
- * **Mesio-Distally is larger than bucco -
lingually.**



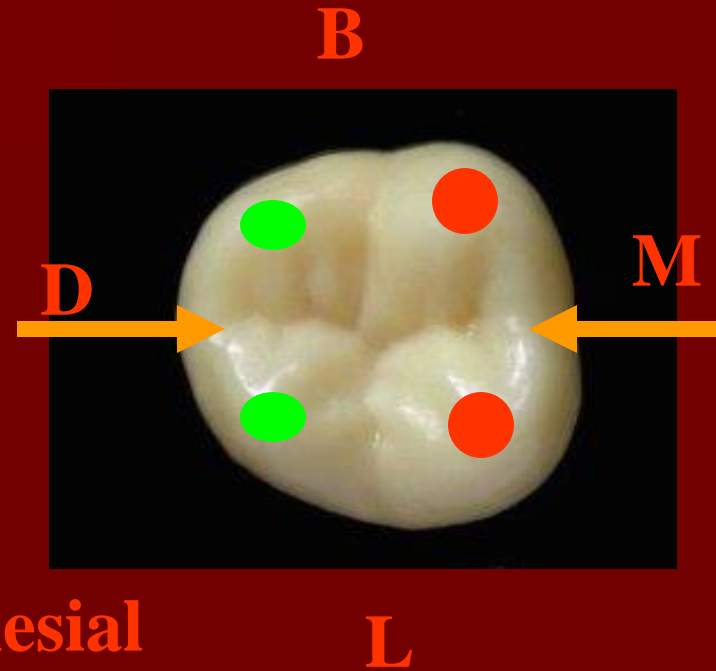
OCCLUSAL ASPECT

Anatomical landmarks:

Elevations:

*4 cusps with 4 triangular ridges (**mesial cusps** are larger than **distal cusps**).

* Mesial and distal marginal ridge.



Depression:

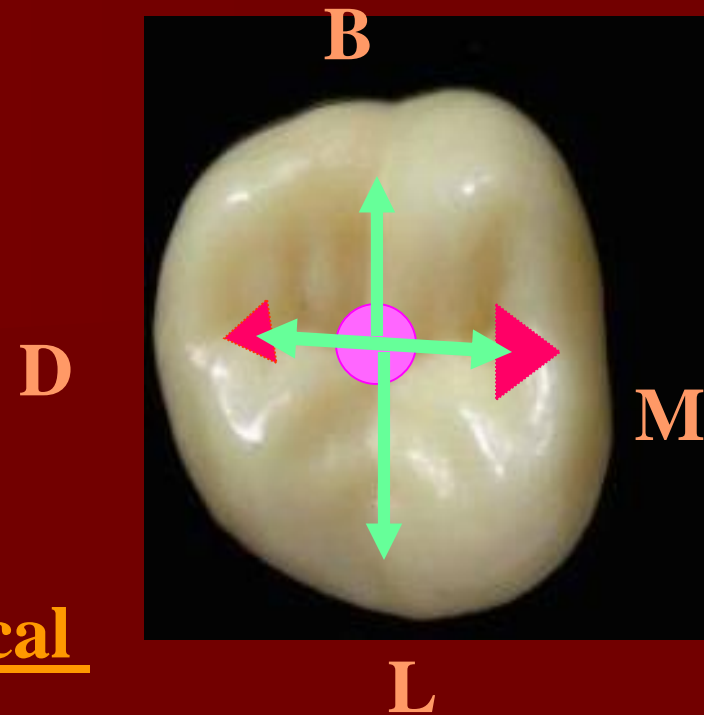
- *1 major central fossae with central pit

- *2 Minor fossae (mesial and distal triangular fossae)

- *Developmental grooves: form a typical Cross pattern

- * supplemental grooves radiate from developmental grooves

Note : All grooves provide important escape ways for food during mastication





Elevations:

5TR for each cusp
2MRs.....MMR , DMR

Depressions:

*3 Fossae(1major , 2 minor)

Major fossa.....Central F.

Minor fossae...MTF, DTF.

*3 pits in each fossae

*Grooves:

CDG.....**Zigzag** in its M-D
coarse.

MBDG.....bet. MBC&DBC

DBDG.....bet. DBC &DC

LDG.....bet. MLC&DLC

*Numerous supplemental
grooves



Elevations:

4TR for each cusp
2MRs.....MMR , DMR

Depressions:

*3 Fossae(1major , 2 minor)

Major fossa.....Central F.

Minor fossae...MTF, DTF.

*3 pits in each fossae

*Grooves:

CDG...meet BDG & LDG

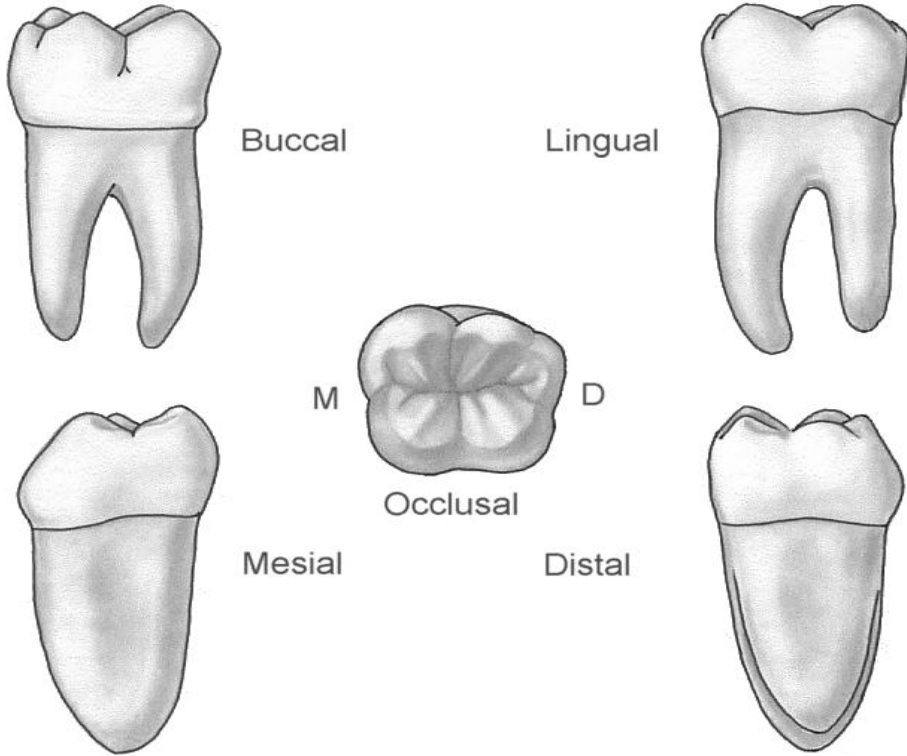
At right angle , at central
pit forming **cross shaped**

BDG.....bet. MBC&DBC

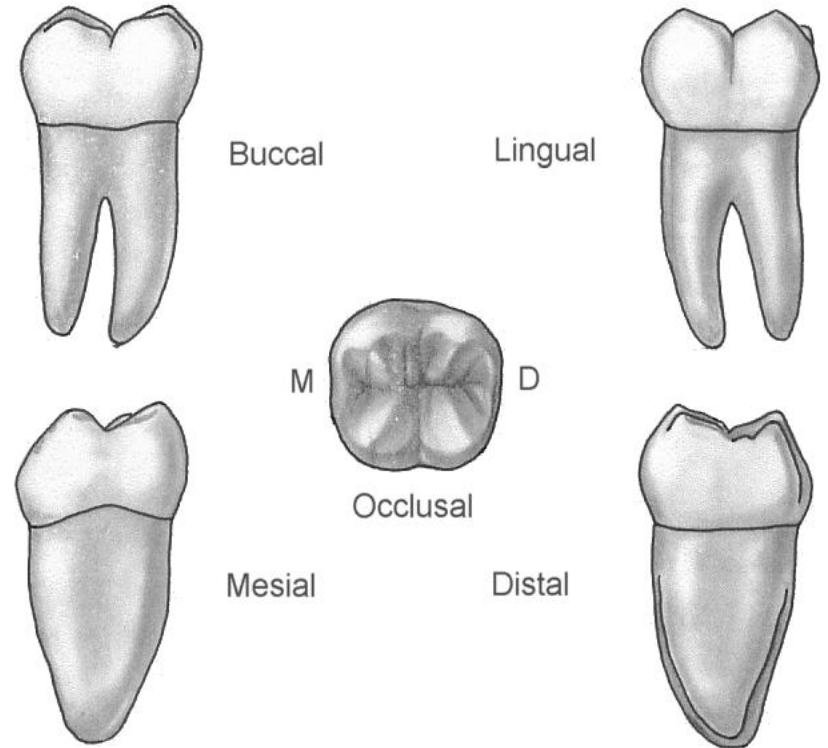
LDG.....bet. MLC&DLC

Numerous supplemental
grooves

Lower 6



Lower 7



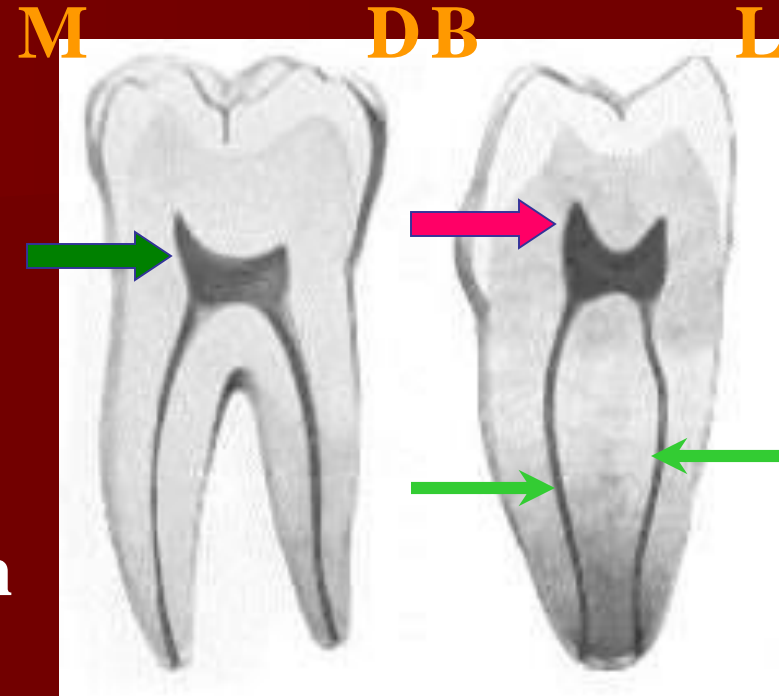
😊 Pulp cavity

Pulp Chamber:

- ▶ Bucco-Lingually, the pulp chamber is square
- ▶ Mesio-Distally, the pulp chamber is rectangular
- There is pulp horn beneath each cusp

Root Canals:

- 3 main root canals.
- M root usually has 2 root canals while D root has 1 root canal



☺ Pulp cavity

Note:

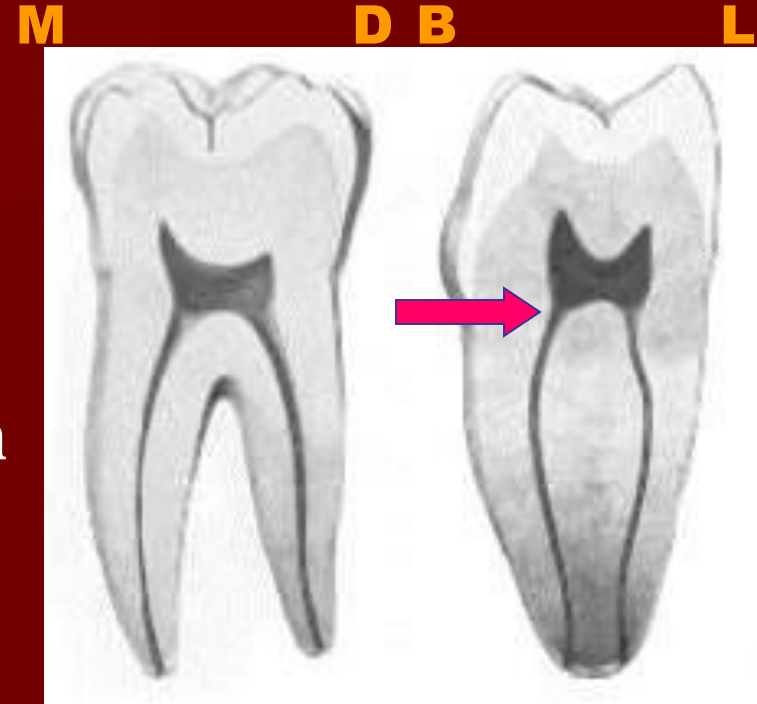
Cervical cross section:

Triangular due to small dimension distally

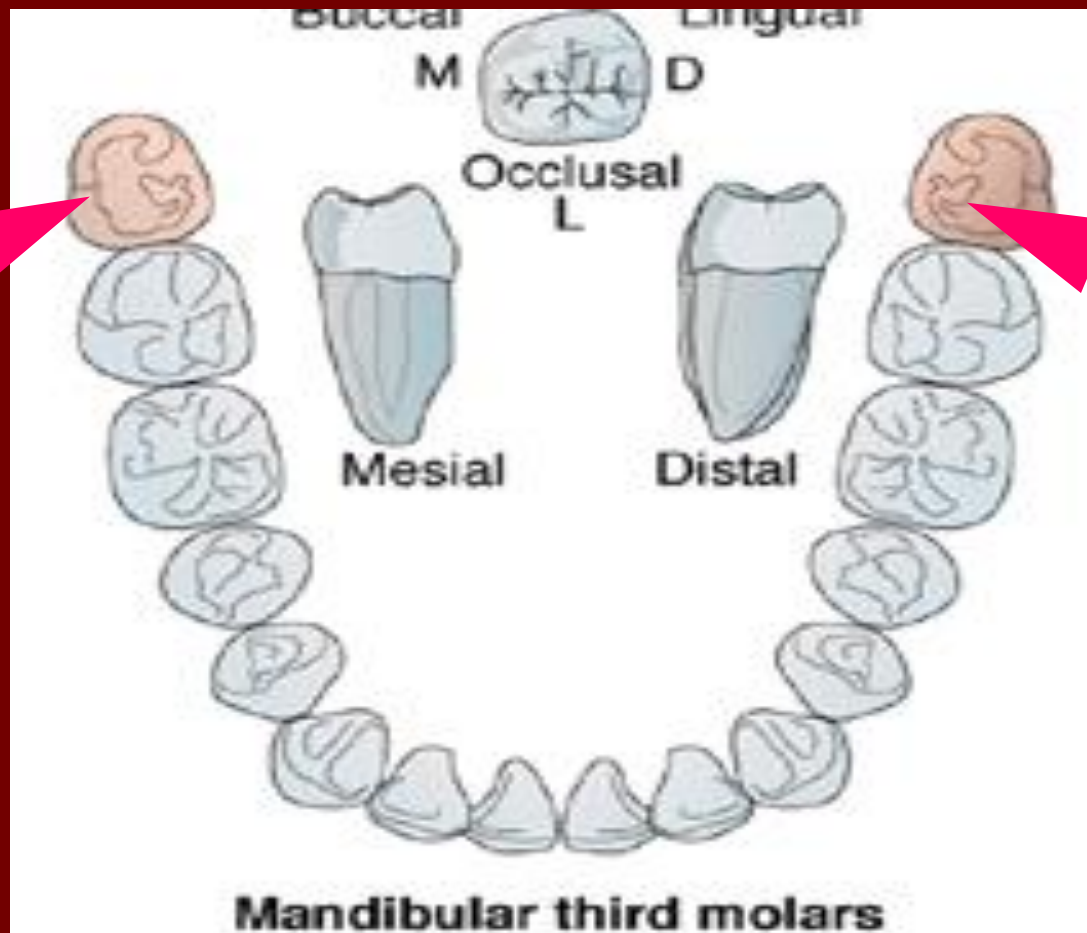
Mid root section:

*M root is kidney shape with 2 small canals

*D root is oval with 1 large rounded canal



Mandibular permanent 3rd Molar



No. of surfaces:

It has five surfaces

BUCCAL



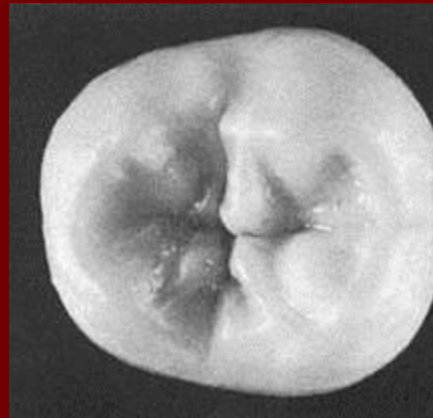
LINGUAL



MESIAL



OCCLUSAL



DISTAL



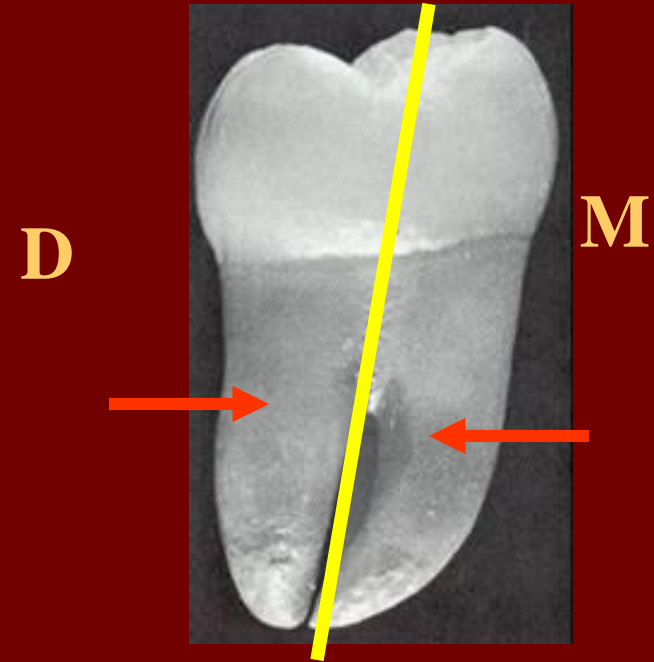
BUCCAL ASPECT

*The 3rd molar is either 4 or 5 cusp type

*The buccal surface is convex

* 2 Short roots (M and D) may be fused in all or part of their length

*The roots are more inclined distally than 1st and 2nd molars



MESIAL ASPECT

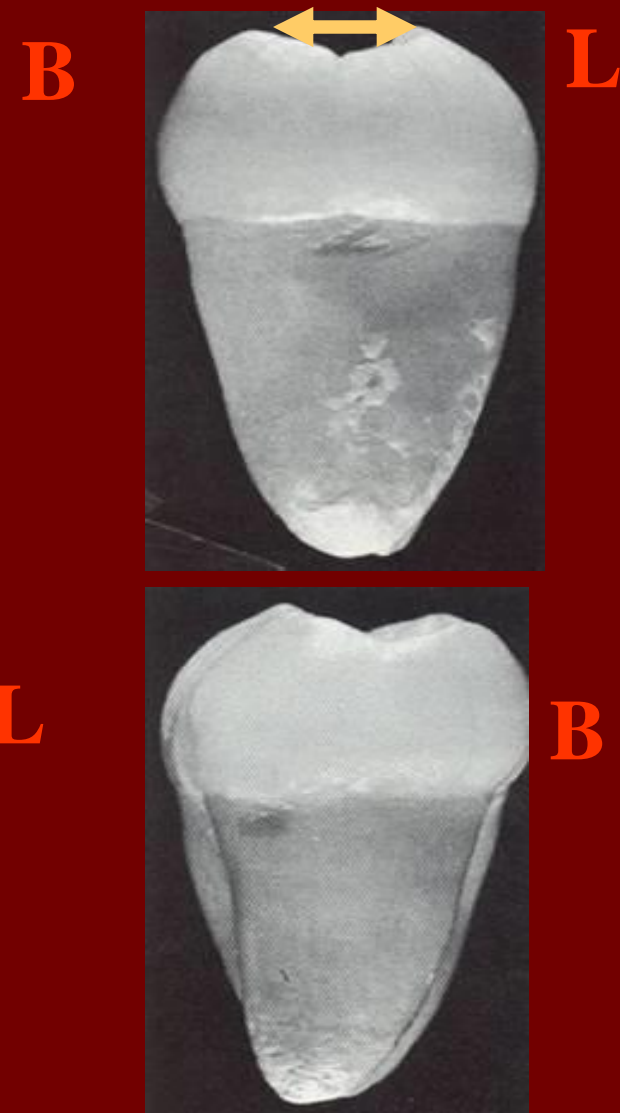
The buccal cusp tips are closer to the lingual cusp tips giving a small occlusal table

DISTAL ASPECT

There is a distal conversion

Distal root is narrower than mesial root, so both roots are seen

NO..... DCA

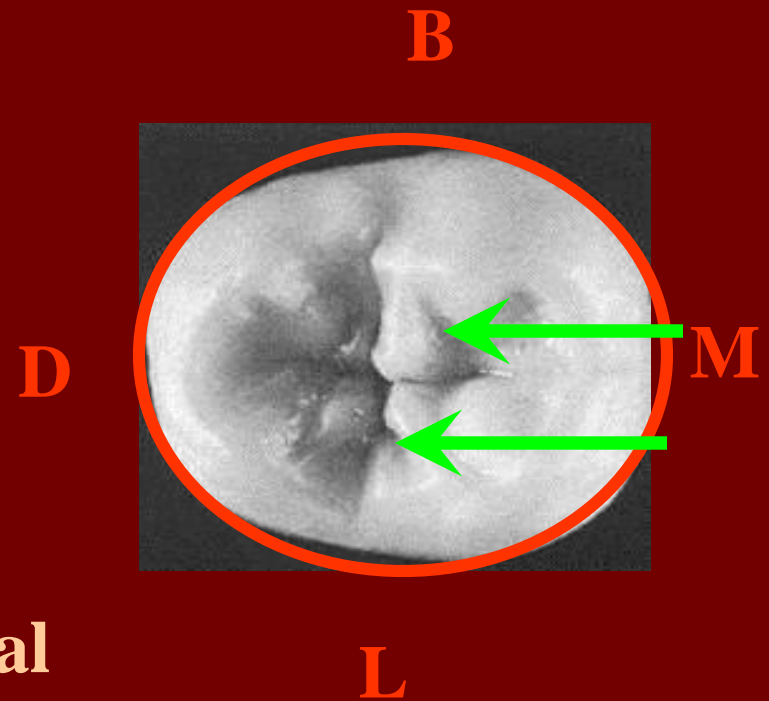


OCCLUSAL ASPECT

The geometric outline:

Rectangular or oval

There are numerous supplemental grooves and pits give a wrinkled appearance



Note

1-The 3rd molar is showed multiple variation in the size and shape.

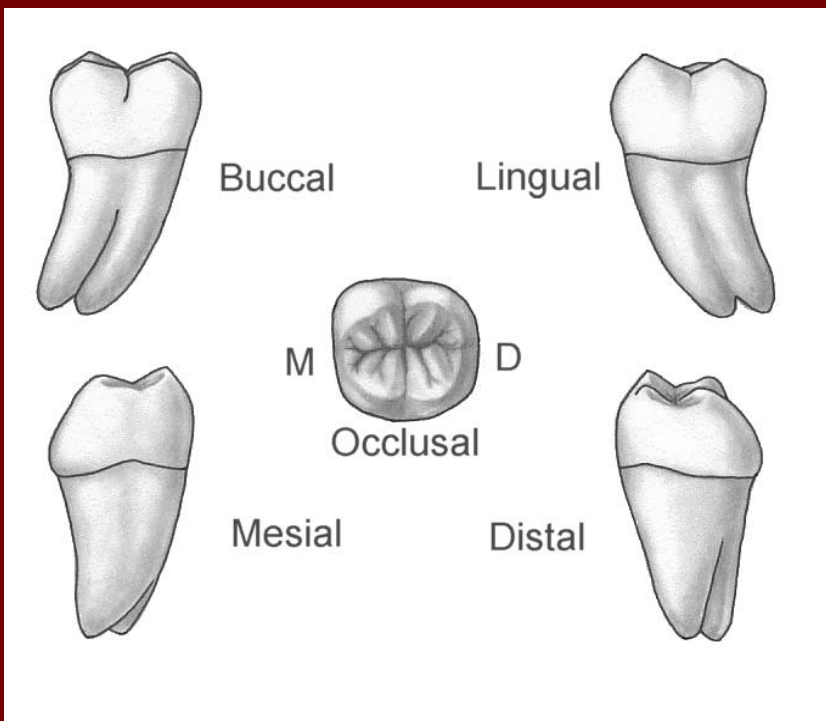
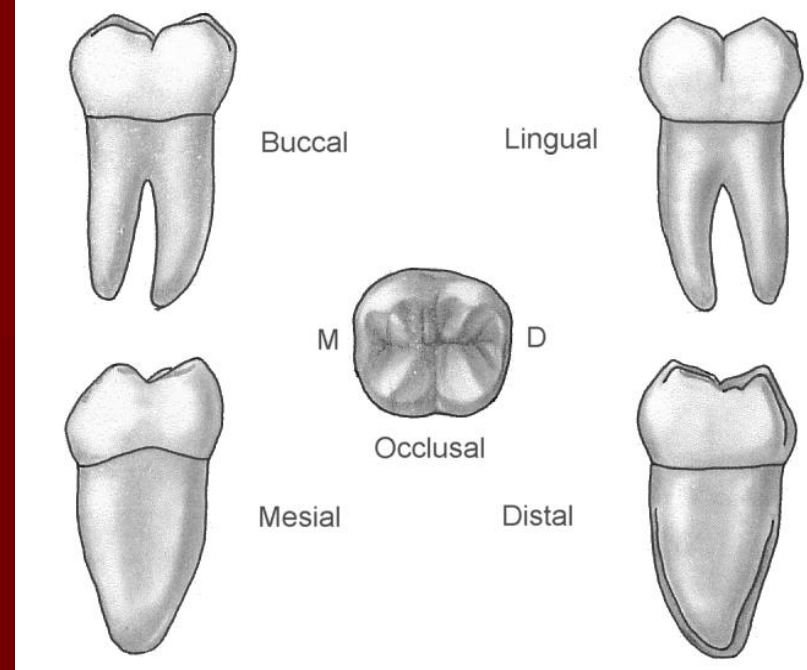
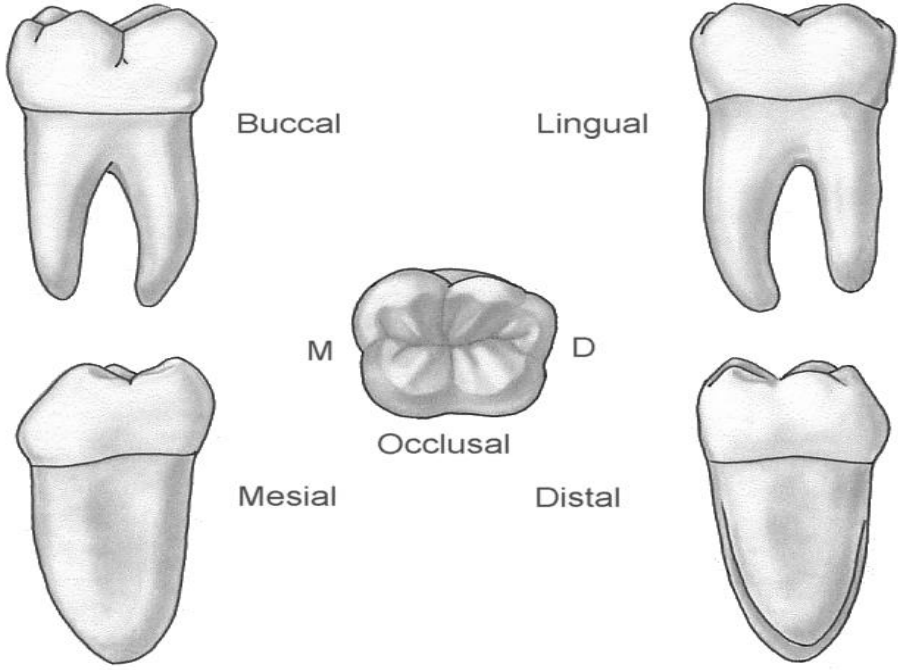
2- The pulp cavity also showed great variation in the size and shape

3- The pulp chamber of 8 is larger than other molars because it is younger than other molars by 9-11 years



Summary

Comparison between lower molars







Occ. Surf.
lower 7



MMR $\overline{7}$



DL cusp $\overline{7}$



CDG 7



BDG 7



$M\Delta F\bar{7}$

Eruption

