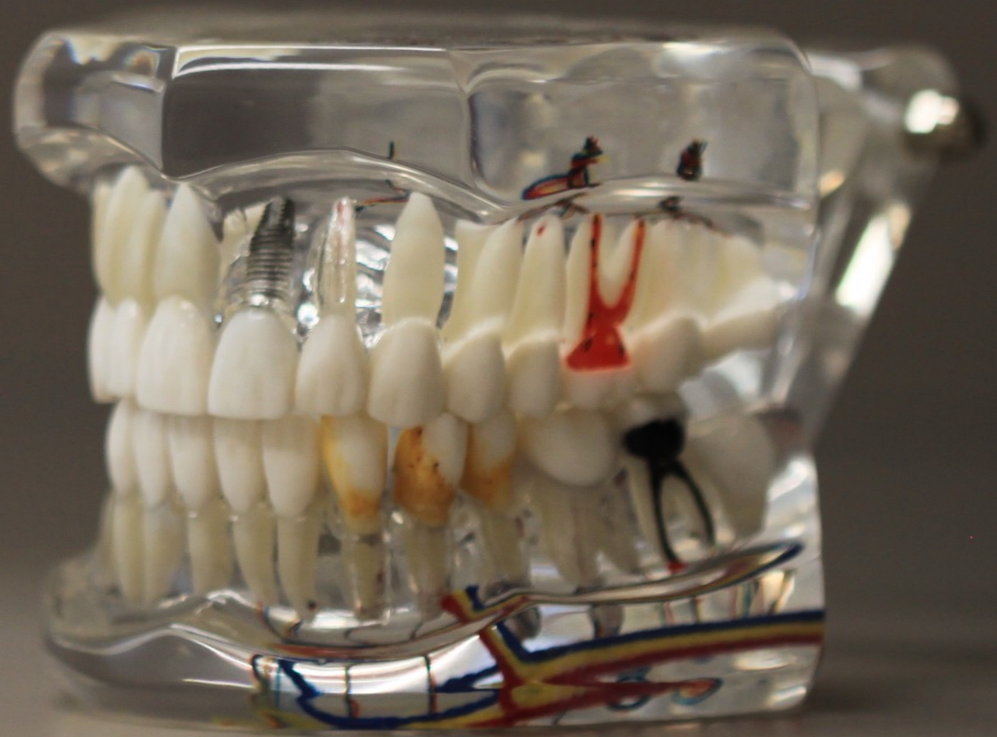
Maxillary molar



Supawadee Jariyasakulroj, DDS, PhD
Department of Masticatory Science
Faculty of Dentistry, Mahidol University

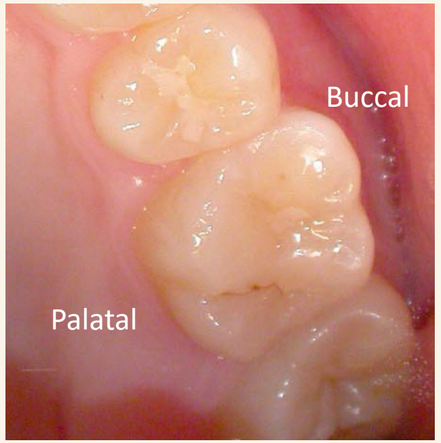
Arch Traits

1. There are generally three roots:

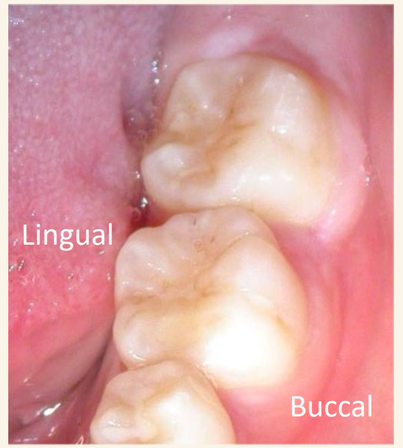
two buccal roots and one lingual root.



Maxillary molar



Mandibular molar

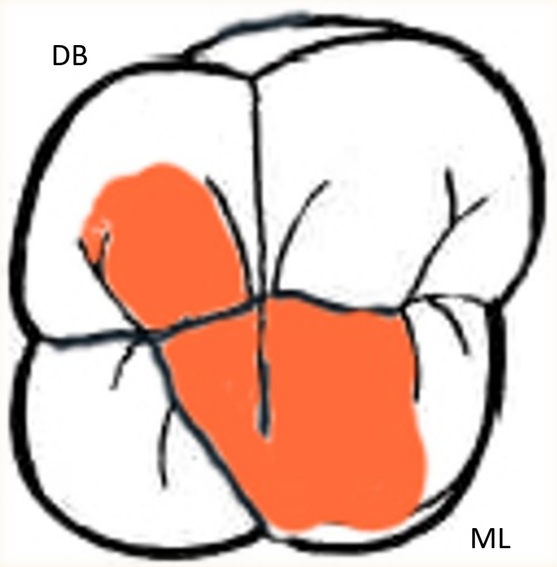


2. The crowns are always broader buccolingually than mesiodistally.

Arch Traits

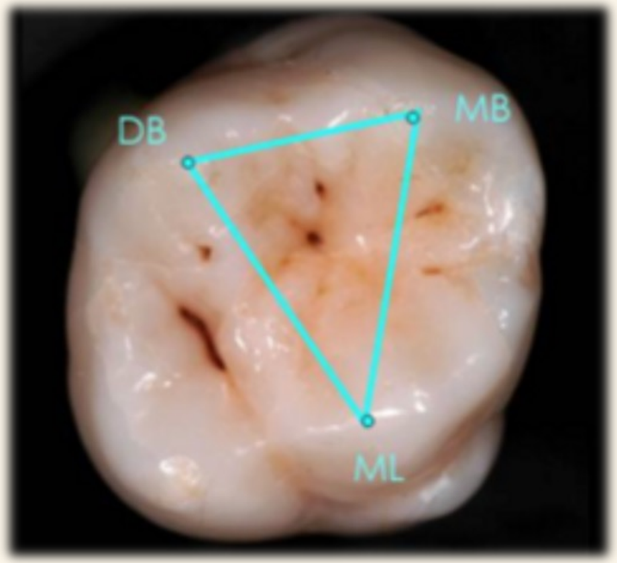
3. Generally, there are **three major cusps** and a fourth of lesser size.

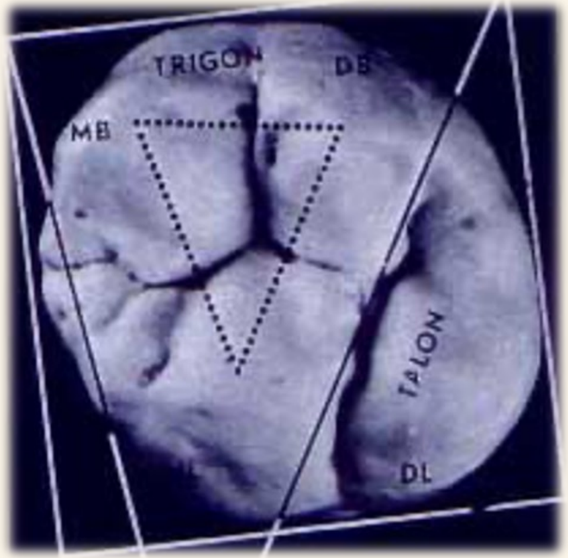
4. The **distobuccal** and **mesiolingual** **cusps** are connected by a ridge (**oblique ridge**).



Arch Traits

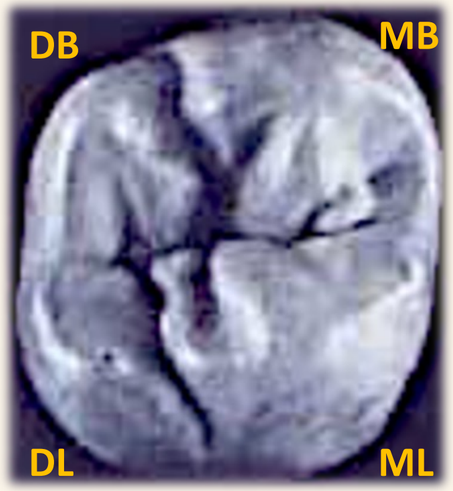
5. The mesiobuccal, distobuccal, and mesiolingual cusps are arranged in a tricuspate-triangular pattern.



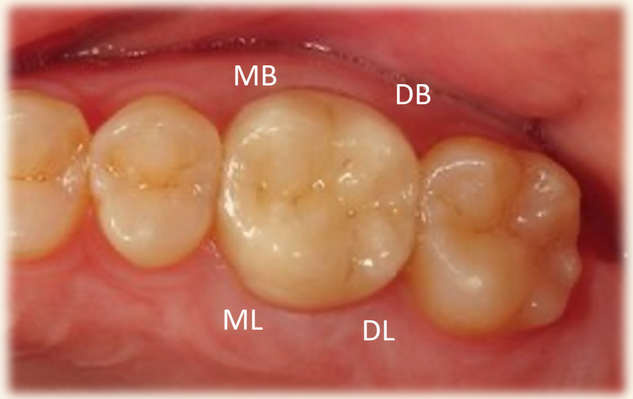


Arch Traits

6. The MB is larger than the DB cusp.

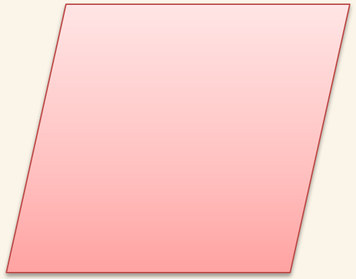


7. The DL cusp is a minor elevation and indeed may be greatly reduced or missing entirely.



Maxillary vs. Mandibular molars

Maxillary molars
3 major cusps, 1 minor cusp
1 supplementary cusp





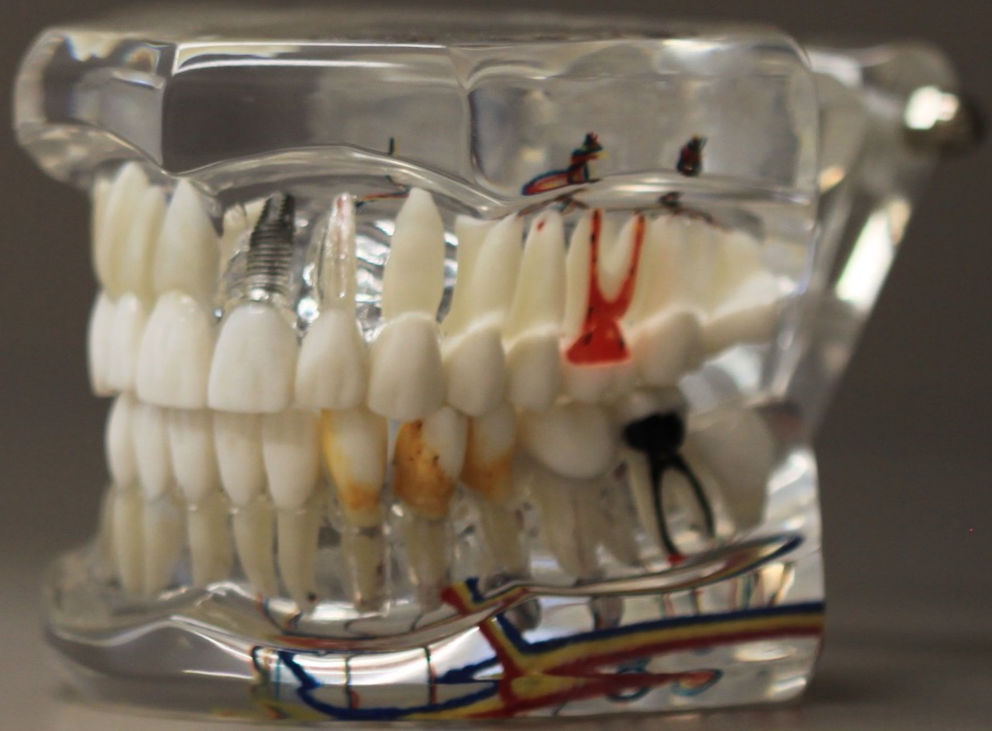
Mandibular molars
4 major cusps
1 minor cusp



Size and Eruption

Maxillary molars	Crown height (mm)	M-D crown diameter (mm)	B-L crown diameter (mm)	Tooth length (mm)	Age at eruption (yr)
First	7.5	10.0	11.0	19.5	6
Second	7.0	9.0	11.0	18.0	12
Third	6.5	8.5	10.0	17.5	18+

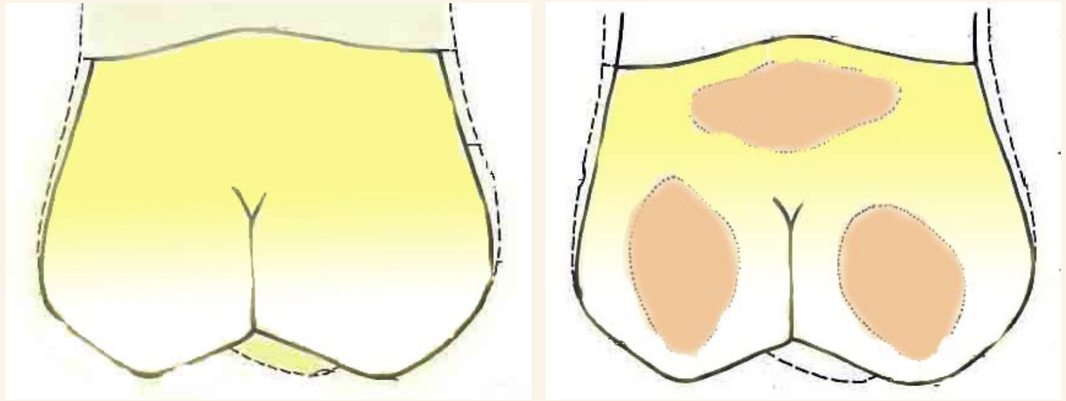
Maxillary First Molar



Maxillary first molar

Buccal aspect

- MB cusp > DB cusp,
- B groove 3 types
- Mesial profile: convex concave
- Distal profile: convex
- Middle: concave
- Height of contour: cervical 1/3

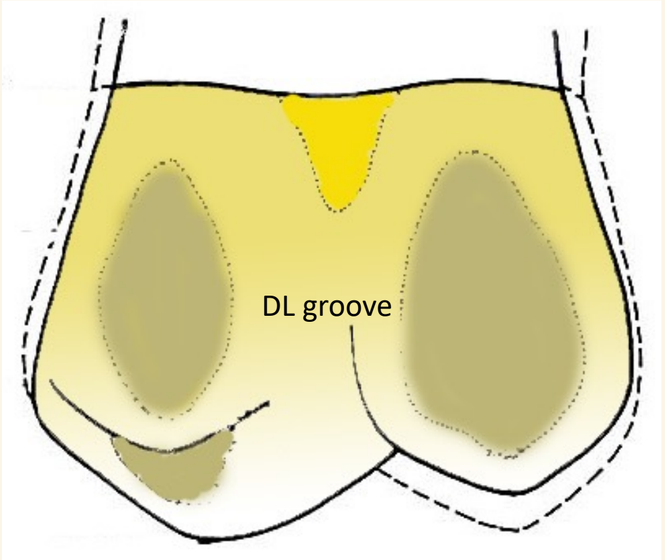




Maxillary first molar

Lingual aspect

- ML: blunt, prominent elevation, fifth cusp
- M profile: convex, cervical flat
- D profile: convex



Maxillary first molar

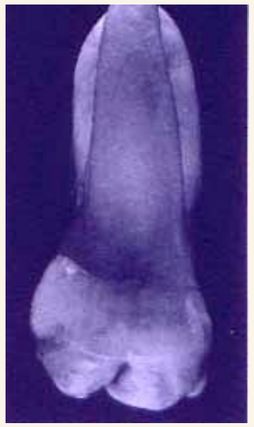
Buccal roots

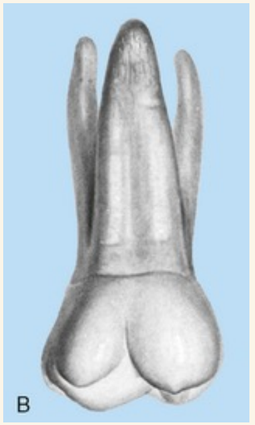
- MB straight
- DB distal inclination
- Plier handle appearance





Lingual root

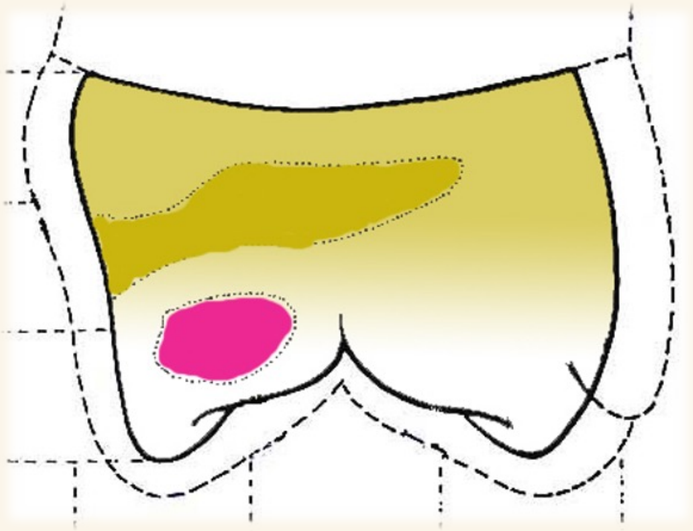




- Taper

Maxillary first molar

Mesial aspect



- Trapezoid
- Buccal: convex at cervical 1/3
- Lingual: convex
- Middle 1/3: concave area
- Mesial marginal ridge: tubercle, supplementary groove (spillway)
- Contact area: junction occ.- mid.

Maxillary first molar

Mesial aspect

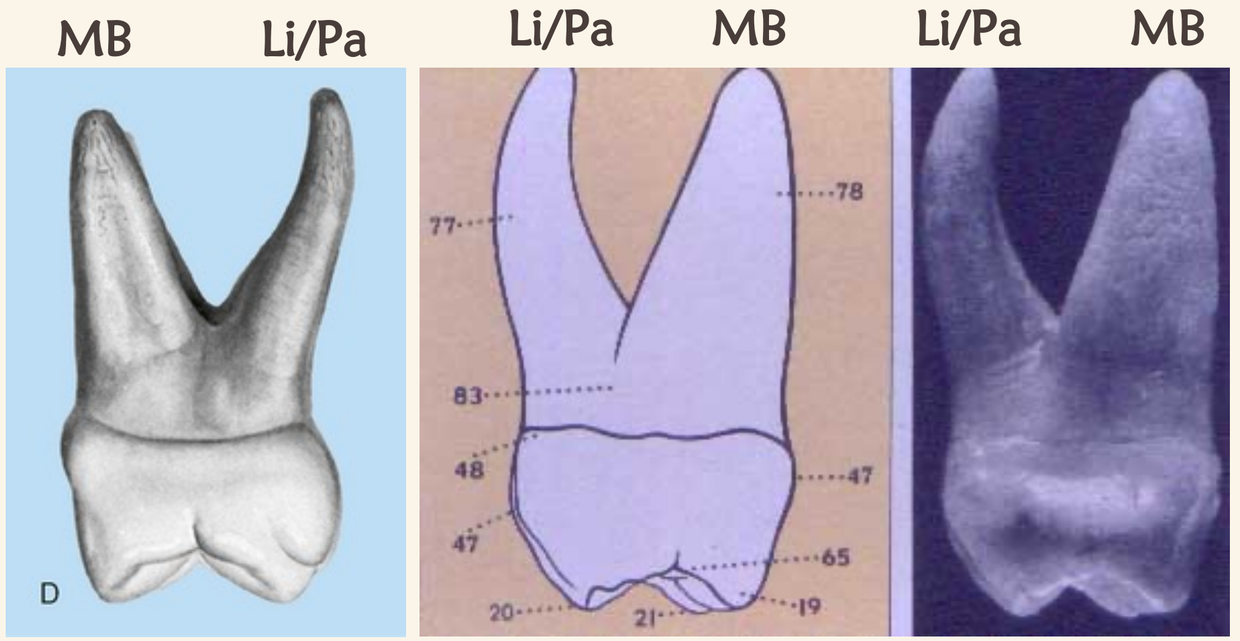
Roots

MB root

- broad, flat buccolingually

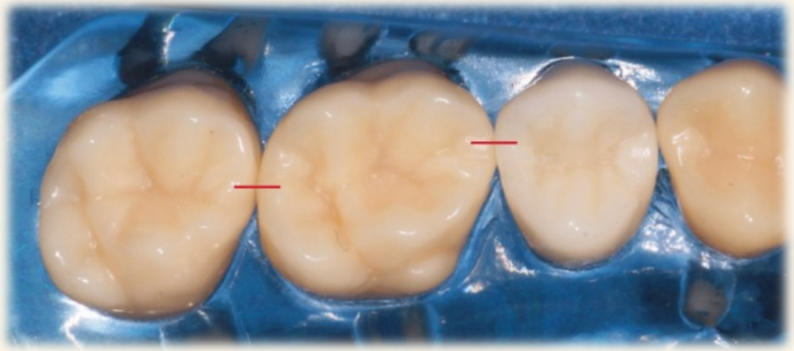
L root: vertebra column

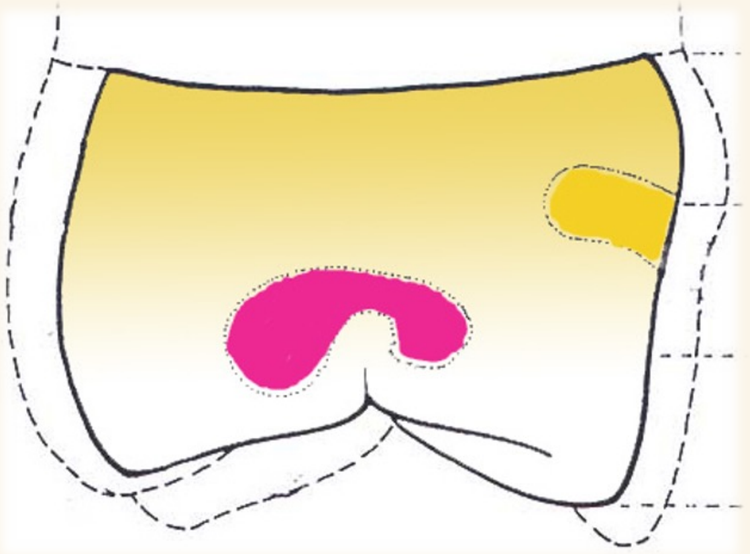
- curve toward the buccal



Distal aspect

- Narrower than M. aspect
- No tubercle
- Contact area: Buccal – Lingual





Maxillary first molar

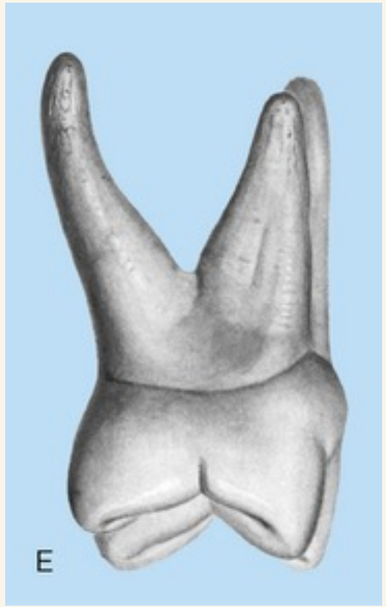
Distal aspect

Roots

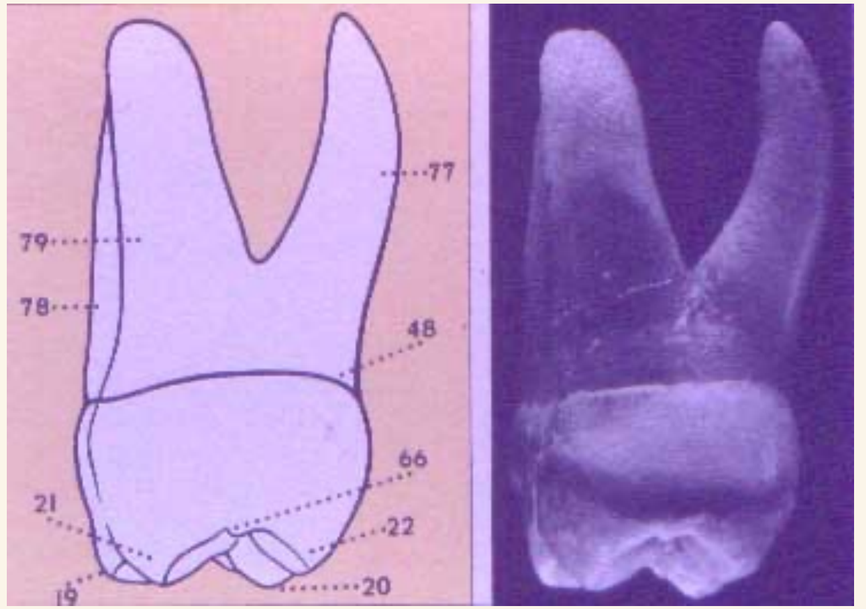
DB root

- Shorter
- Narrower than MB root

L root DB root

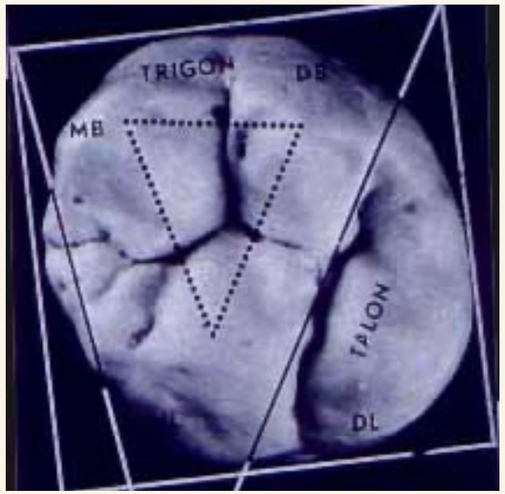


DB root L root



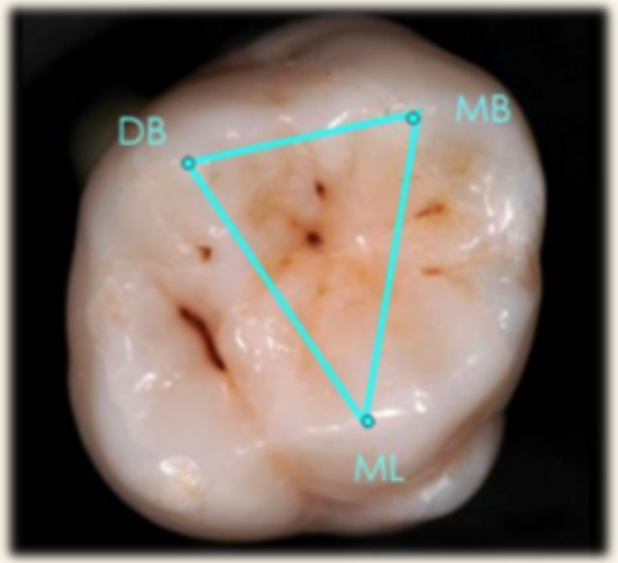
Maxillary first molar

Occlusal aspect



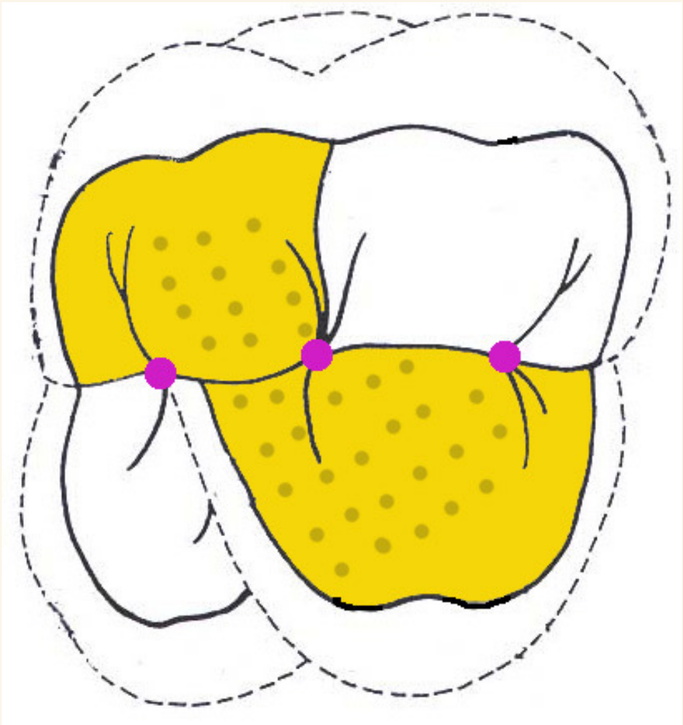


- Square to rhomboidal
- Trigon: MB, DB, ML
- Talon: DL, D mariginal ridge
- 3 pits



Maxillary first molar

Occlusal aspect



3 pits

- M pit: 4 grooves
- Central pit: 3 grooves
- D pit: 5 grooves
- **Oblique ridge**



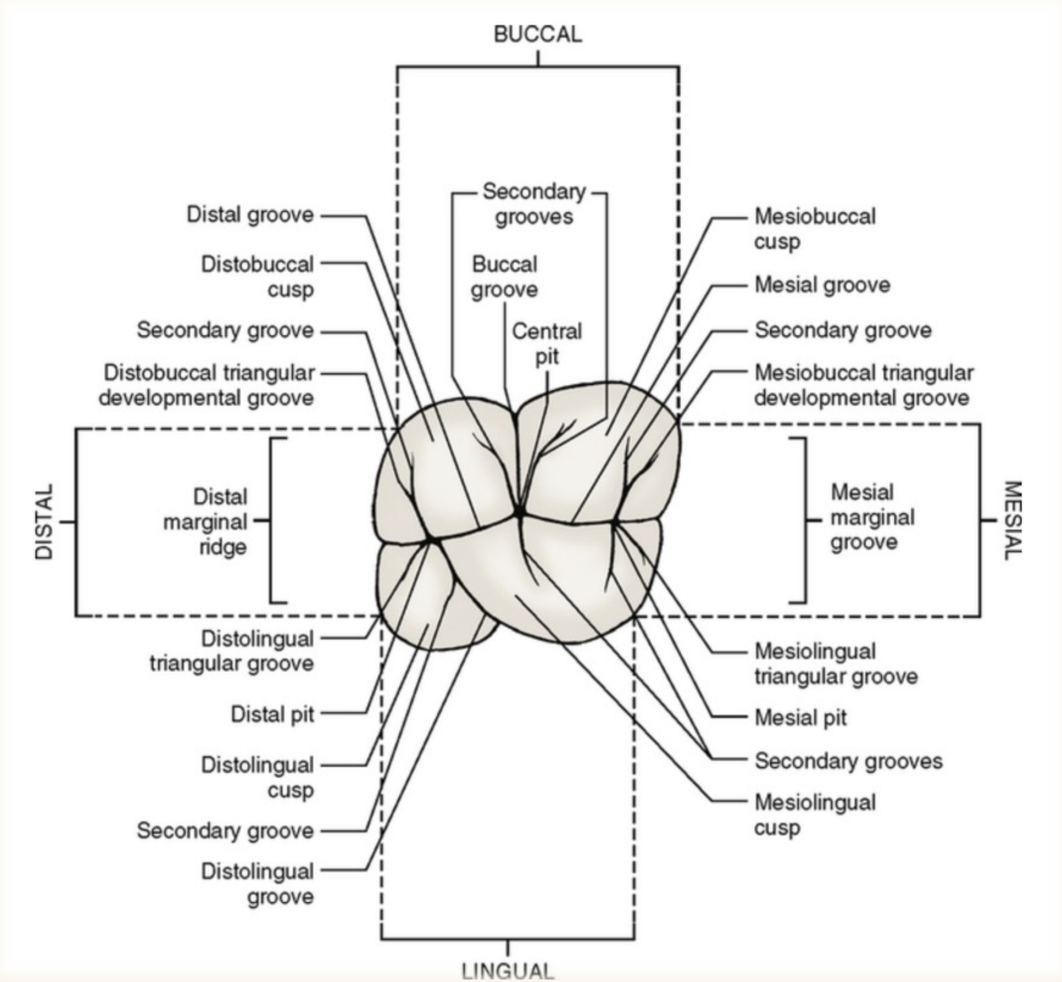
triangular ridge : triangular ridge

triangular ridge : cusp ridge

Maxillary first molar

Occlusal aspect





Maxillary first molar

Pulp cavity



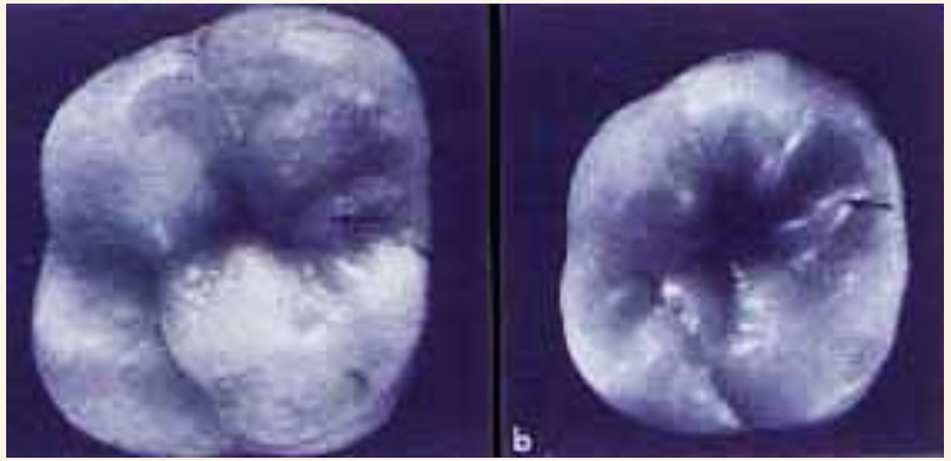
Maxillary first molar

Variation





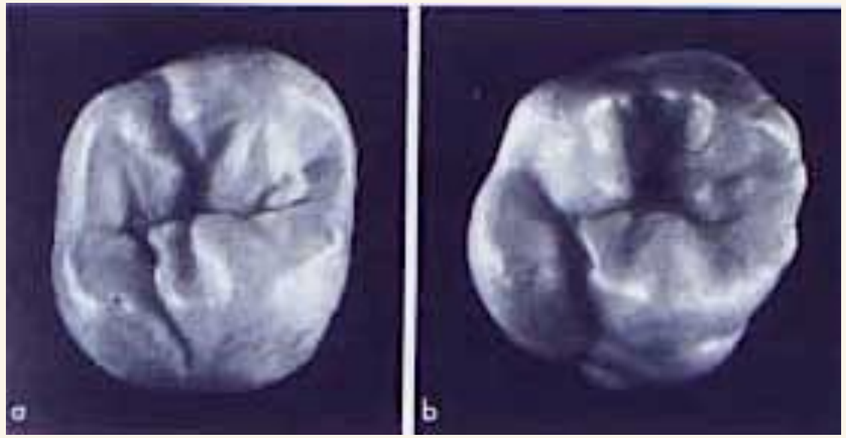
Fifth cusp, Cusp of Carabelli



Transverse ridge

Maxillary first molar

Variation



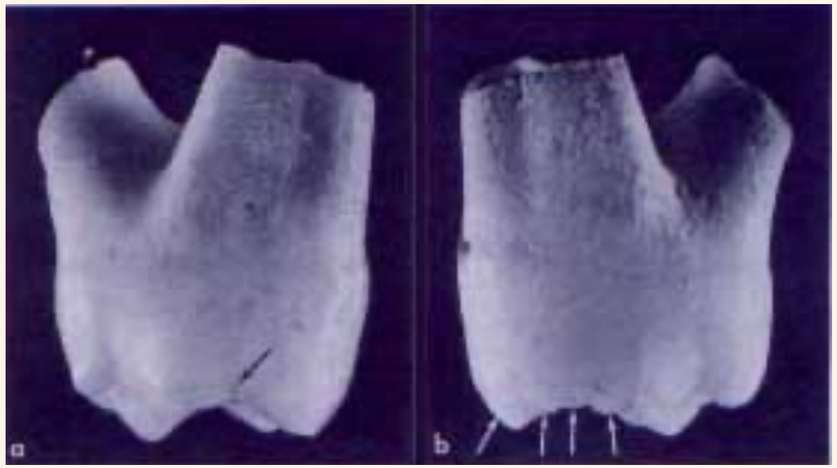
Size of oblique ridge



Form of oblique ridge

Maxillary first molar

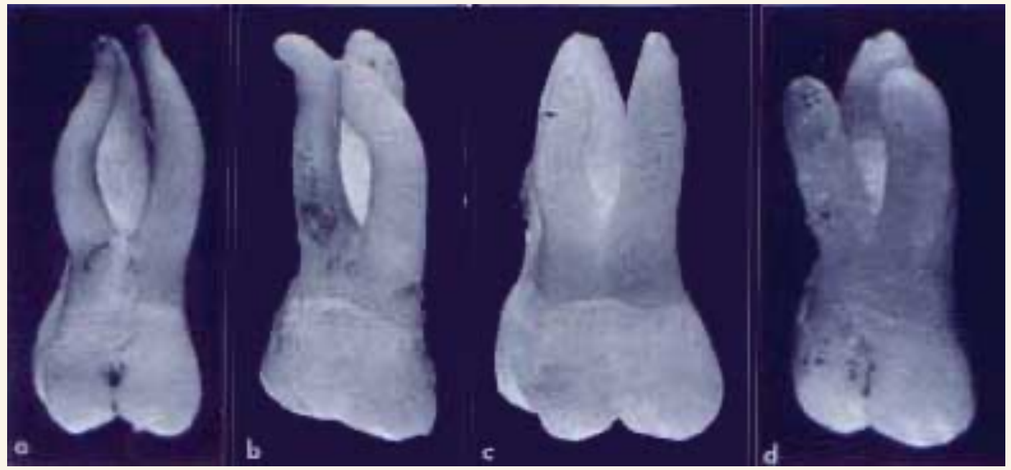
Variation



Mesial marginal ridge

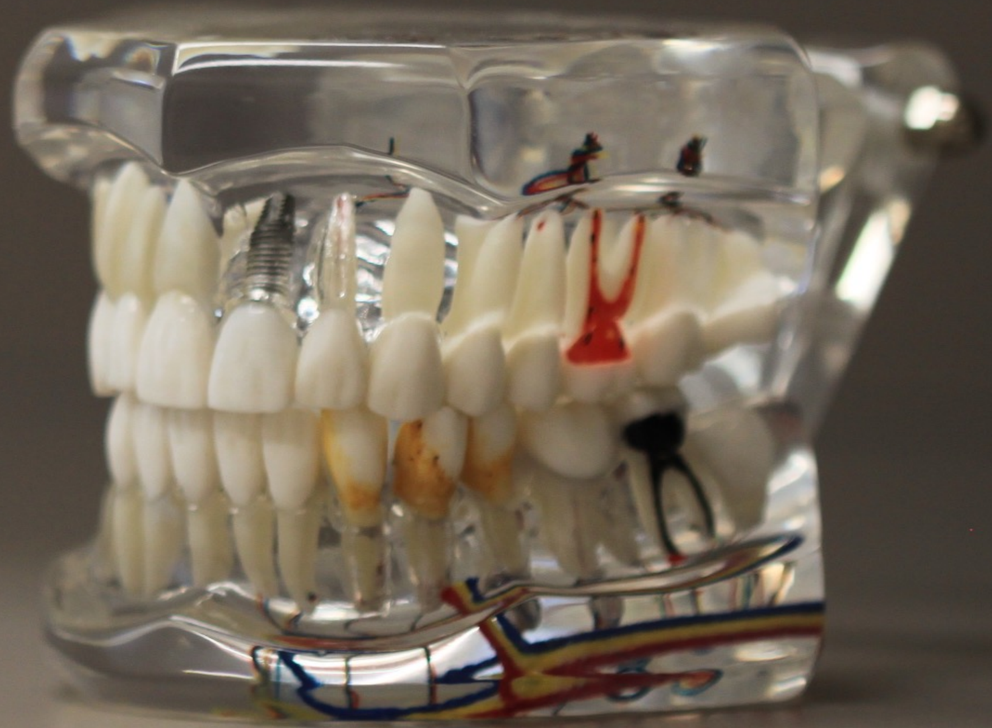


MB cusp ridge



Roots

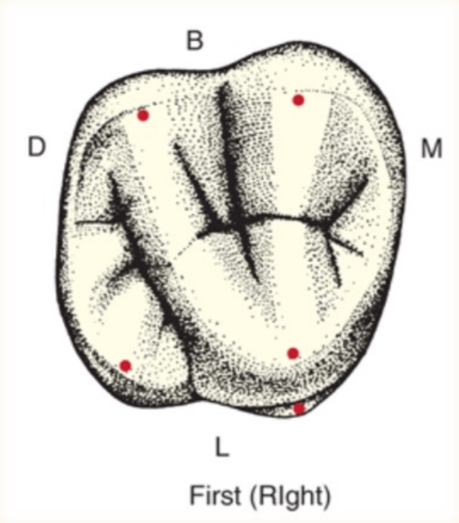
Maxillary Second Molar

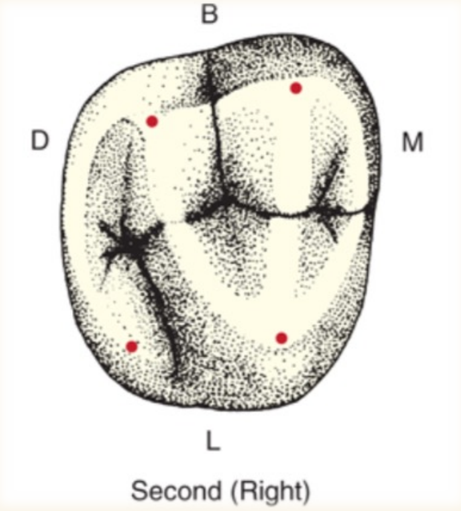


Maxillary second molar

THE DIFFERENCE BETWEEN MAXILLARY 1st MOLAR vs. MAXILLARY 2nd MOLAR

- Smaller, weaker tooth in all aspects than the maxillary first molar



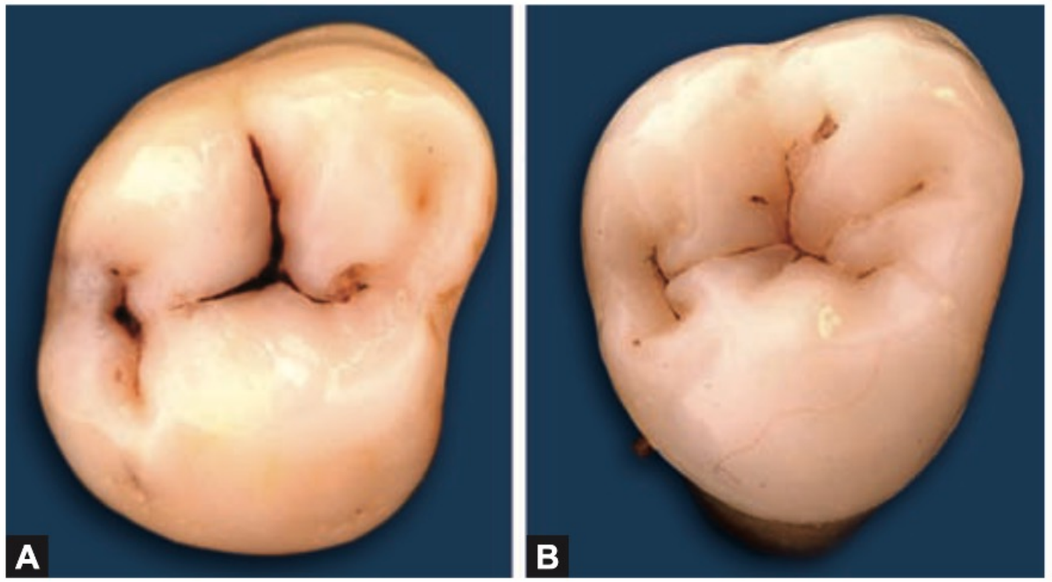


Maxillary second molar

- Two distinct types of crown

FOUR CUSP TYPE

- MB CUSP
- DB CUSP
- ML CUSP
- DL CUSP



Figures 12.16A and B The maxillary 2nd molar are of two forms: (A) 4 cusp/rhomboidal type; (B) 3 cusp type/heart-shaped type

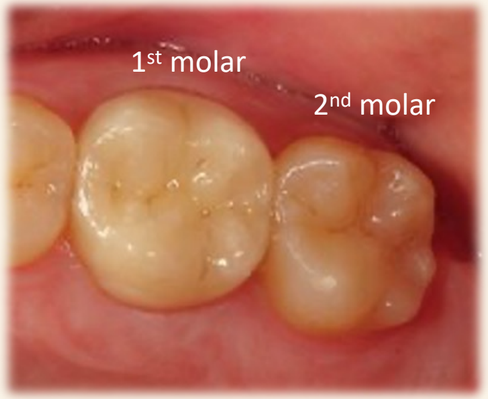
THREE CUSP TYPE

- MB CUSP
- DB CUSP
- LINGUAL CUSP

More rhomboid in form than the maxillary first molar
DL cusp of the four-cusp type maxillary second molar is smaller

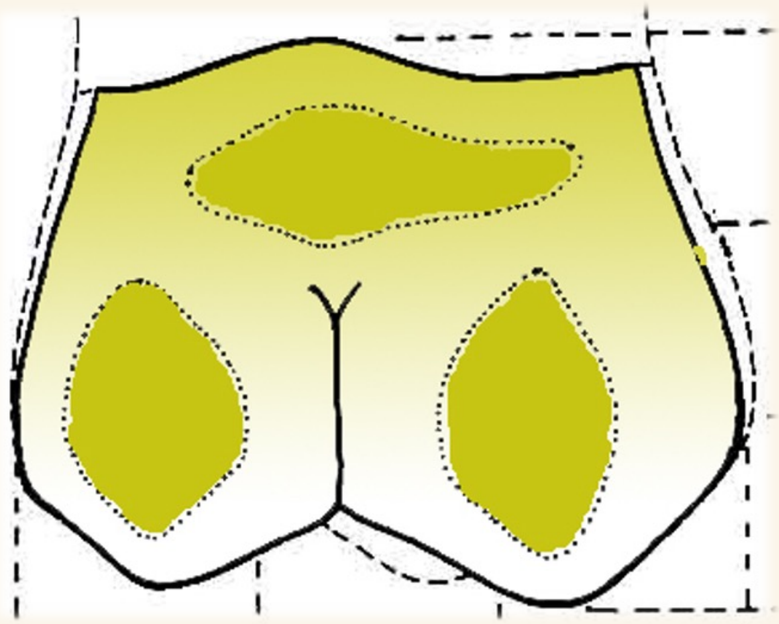
Maxillary second molar

- Cusp of Carabelli is not normally found on the 2nd molar.
- The pits and grooves are more irregular, and more atypical contours are present.
- The roots are more slender, often longer in proportion to the crown, and lie closer together & fused.
- The pulp cavity closely resembles the maxillary 1st molar.

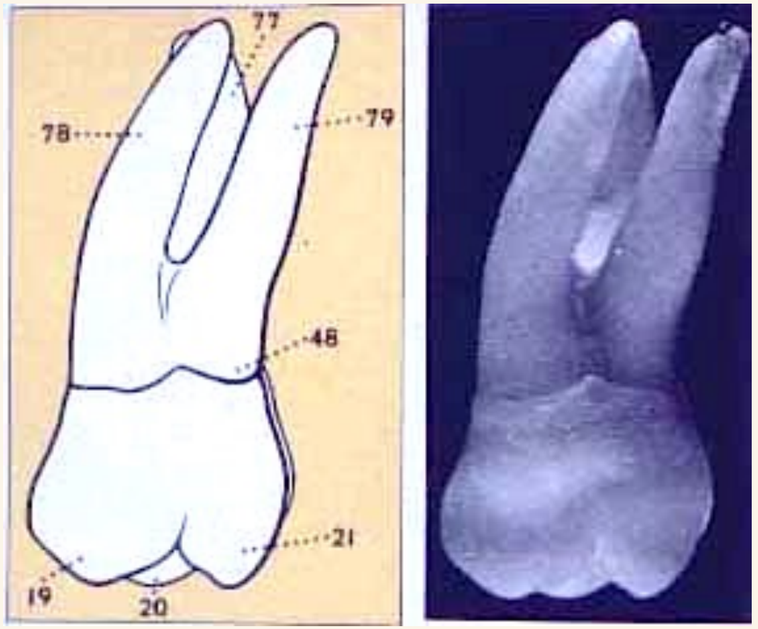


Maxillary second molar

Buccal aspect



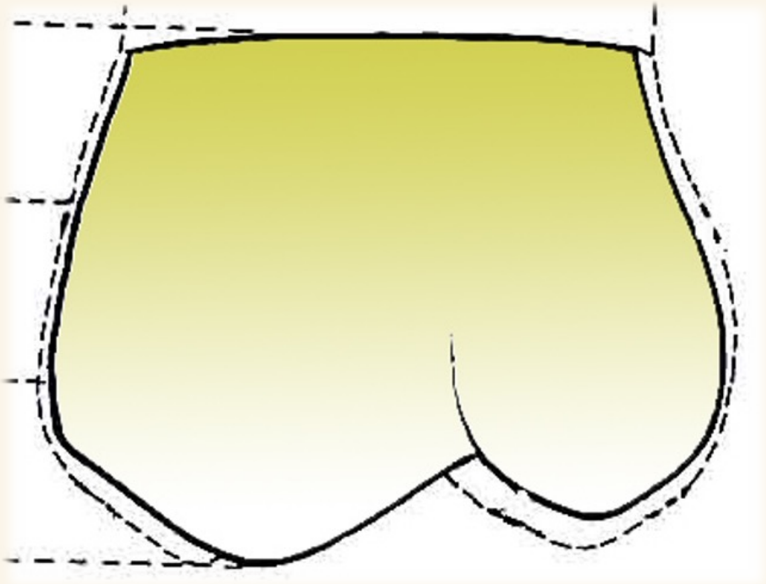
DB cusp: less prominent

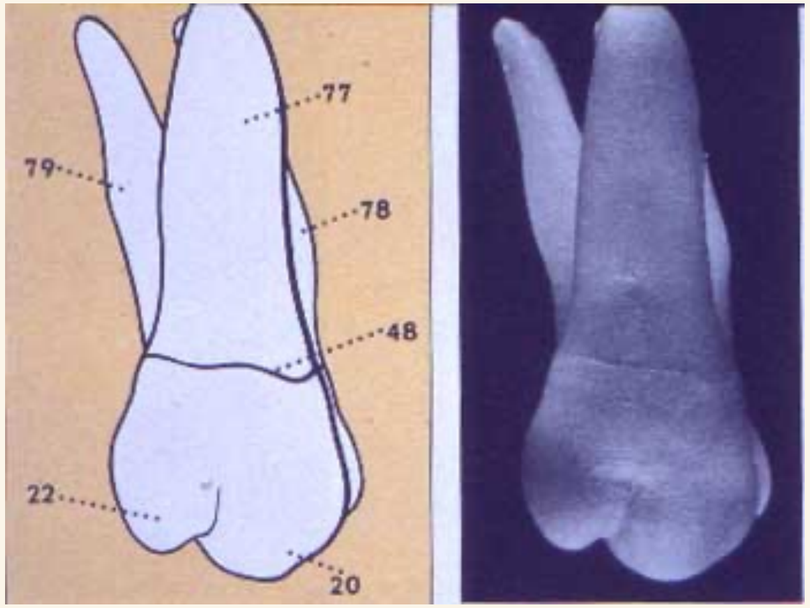


Roots: Distal inclination

Maxillary second molar

Lingual aspect

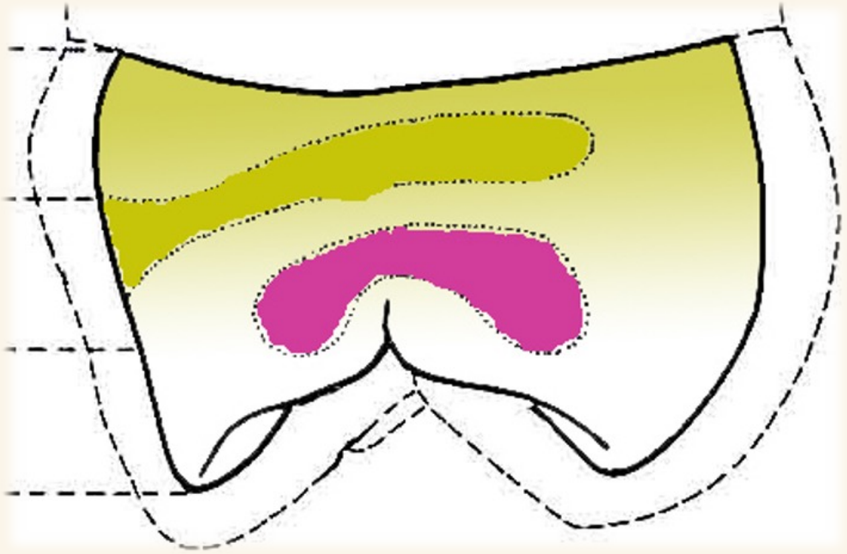


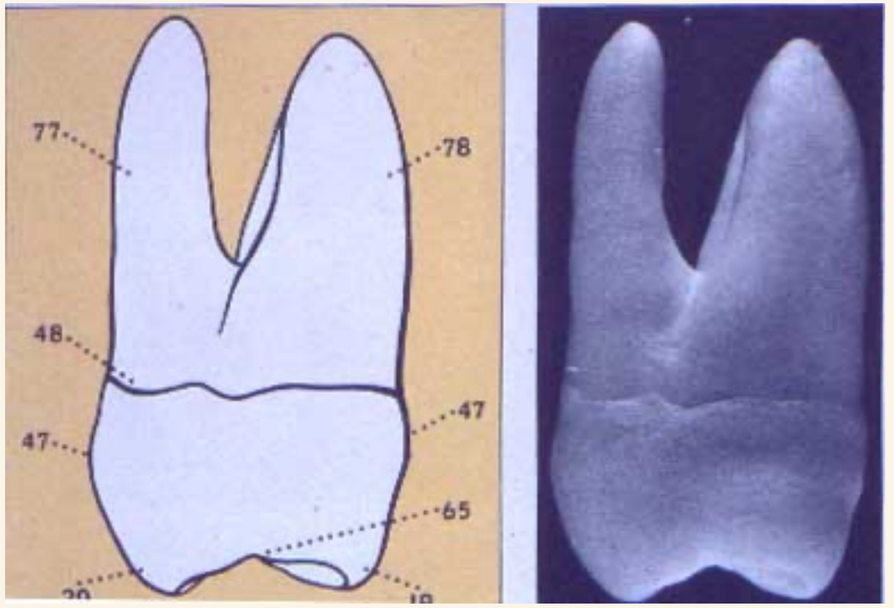


Roots: Distal inclination

Maxillary second molar

Mesial aspect

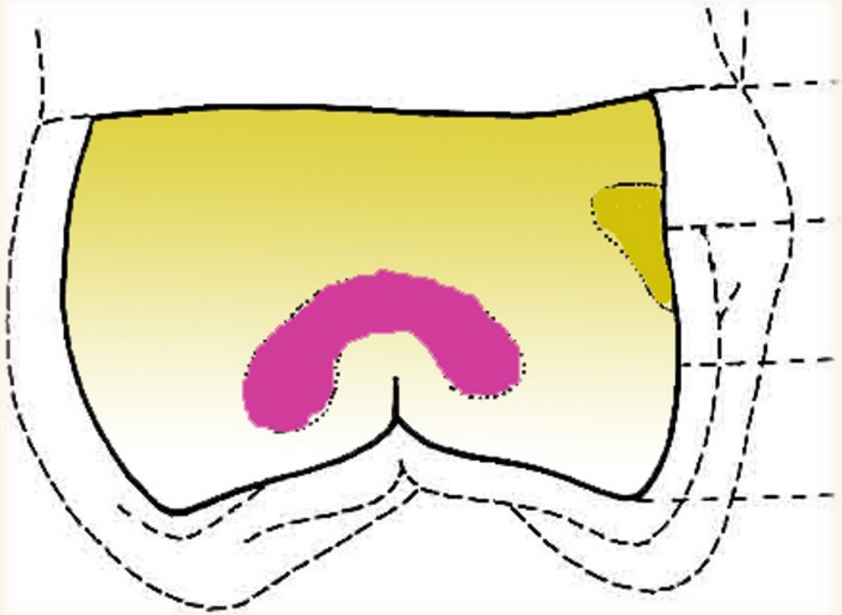


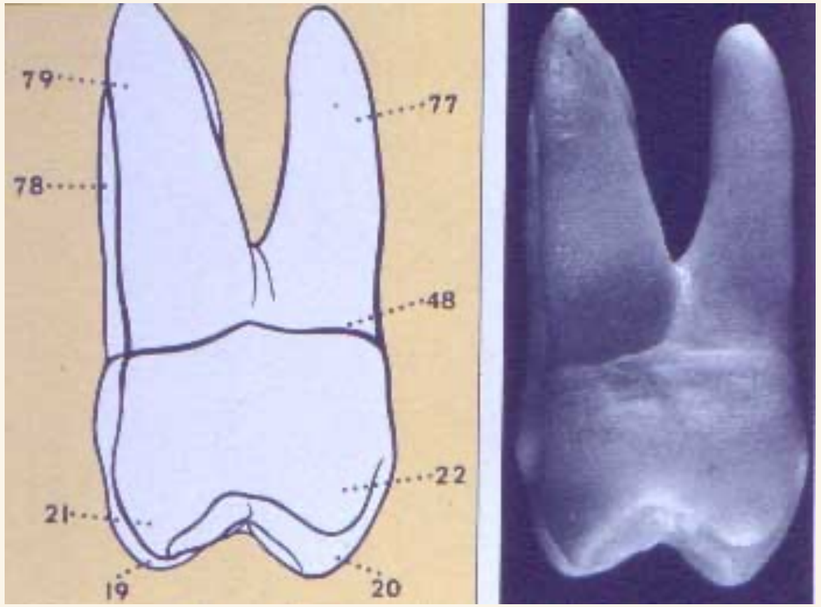


- Concave area
- Contact area: center B-Li, Occ 1/3

Maxillary second molar

Distal aspect

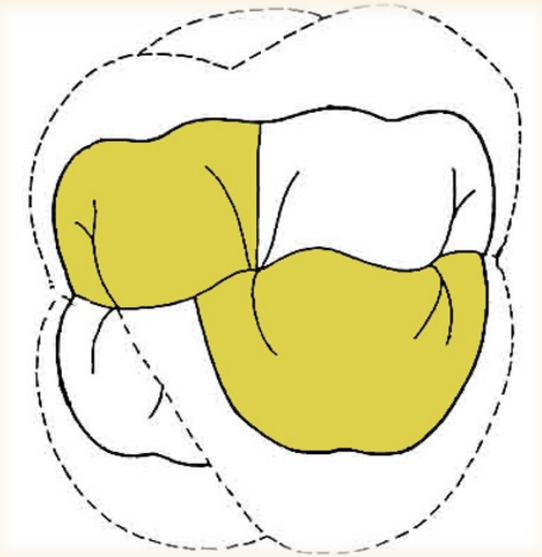




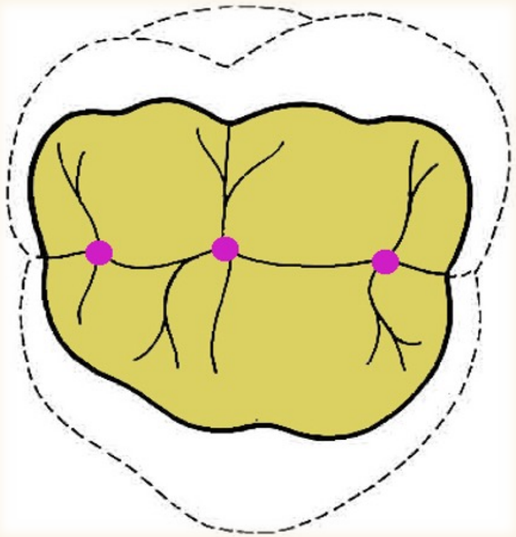
- Contact area: same as mesial

Maxillary second molar

Occlusal aspect



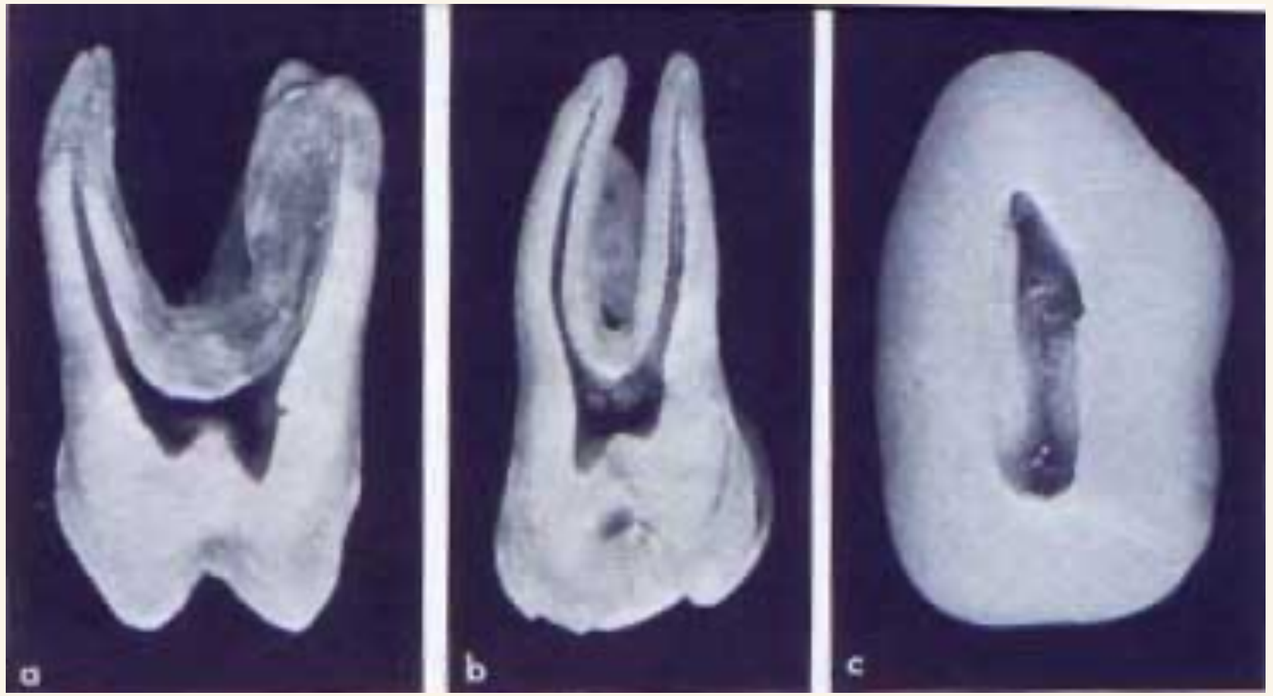
Four cusp type
Maxillary first molar



Three cusp type
No DL cusp

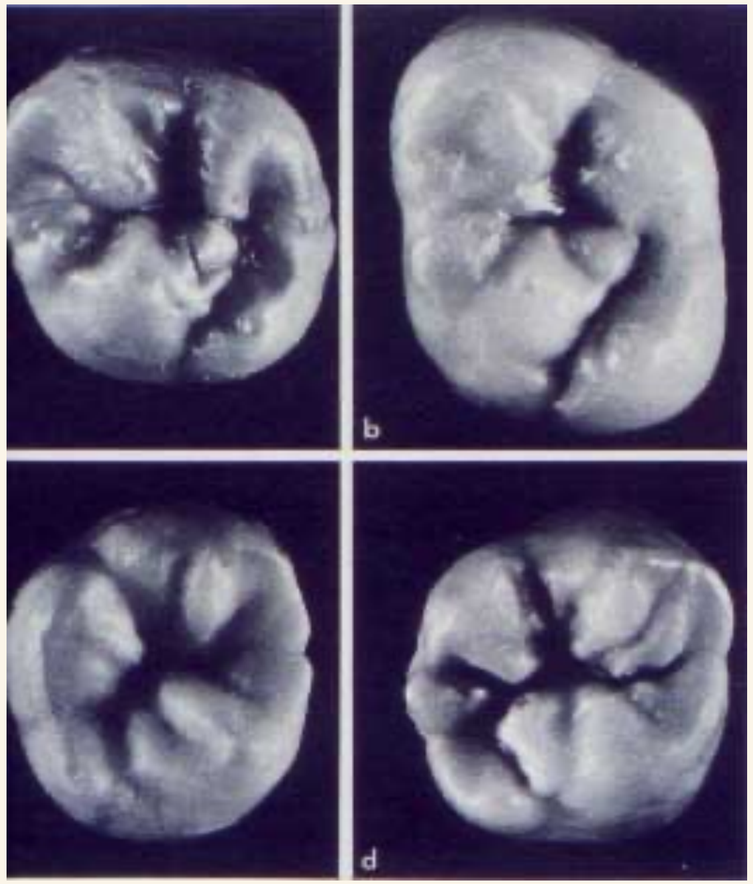
Maxillary second molar

Pulp cavity



Maxillary second molar

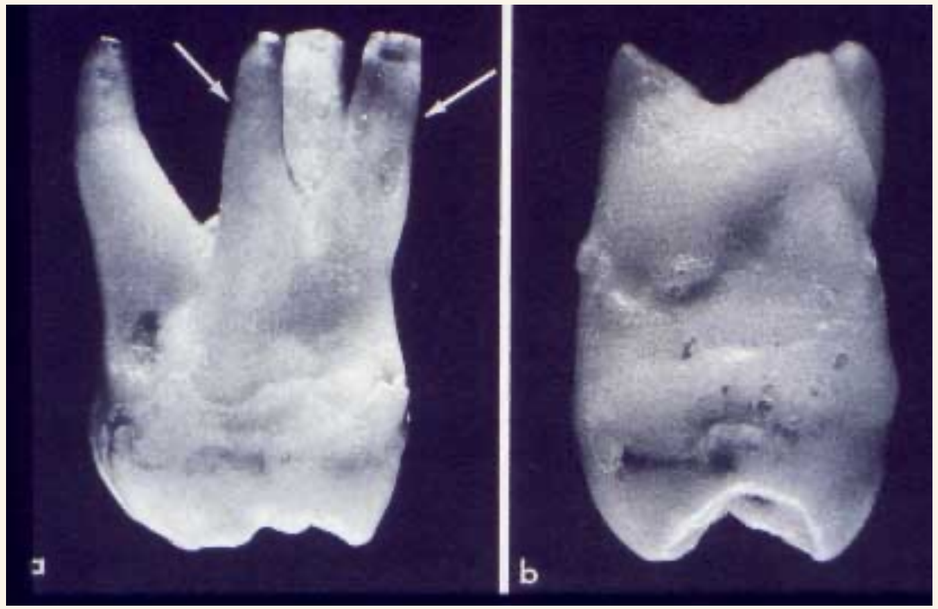
Variation



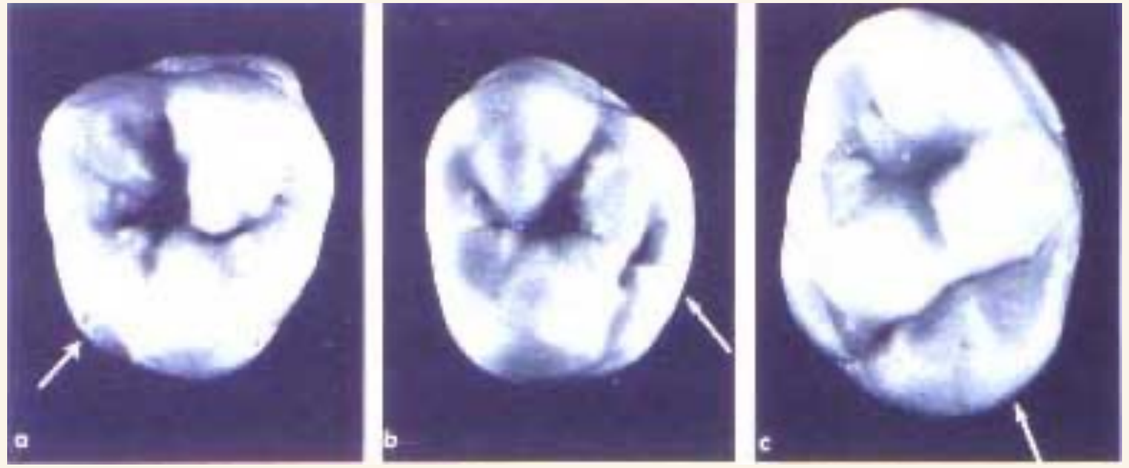
Pits and grooves

Maxillary second molar

Variation

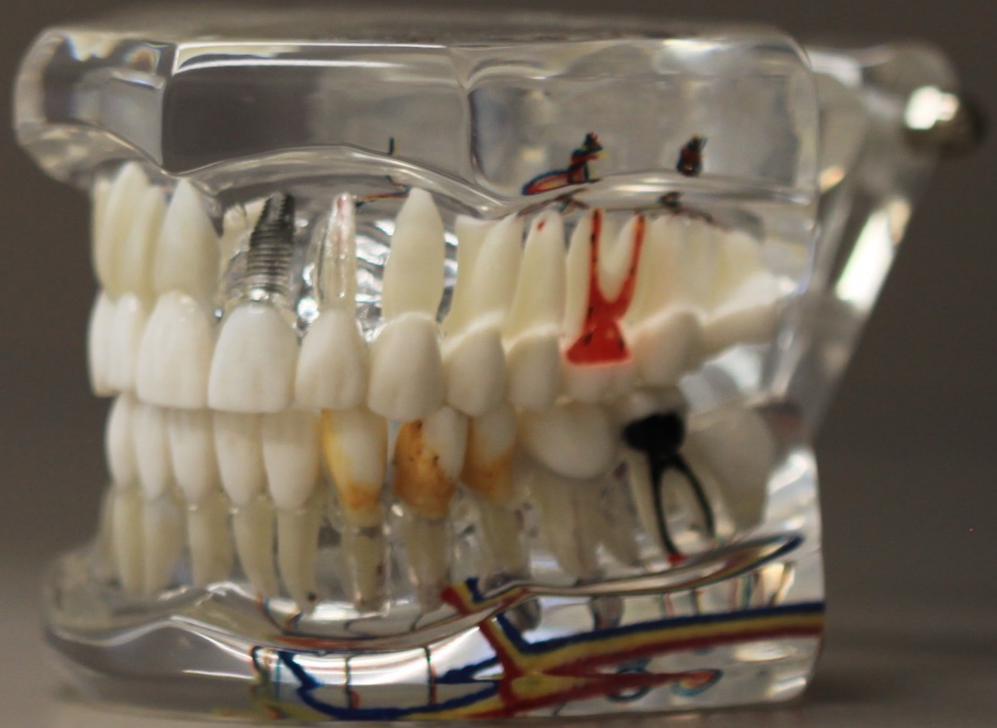


Roots



DL cusp

Maxillary Third Molar



Maxillary third molar



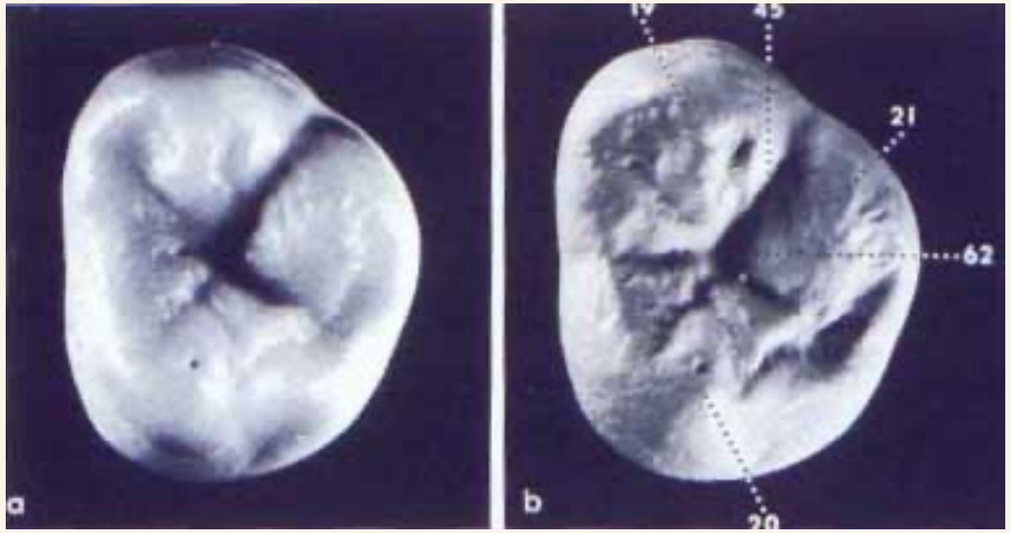
- Variations
- Three or four-cusp type of 2nd molar
- ⬇ M-D width
- Impacted teeth

Maxillary third molar

Crown



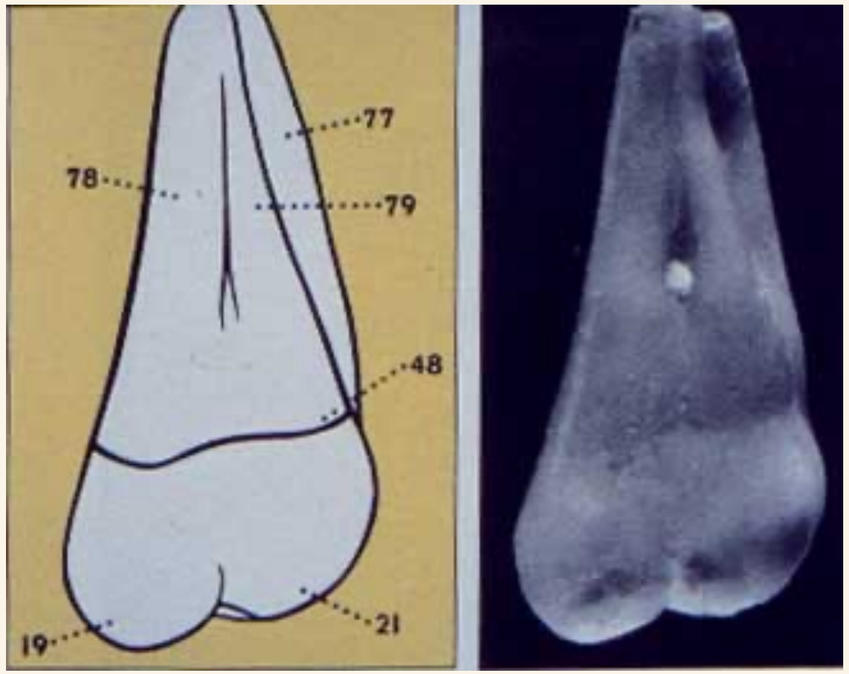
- Heart shape



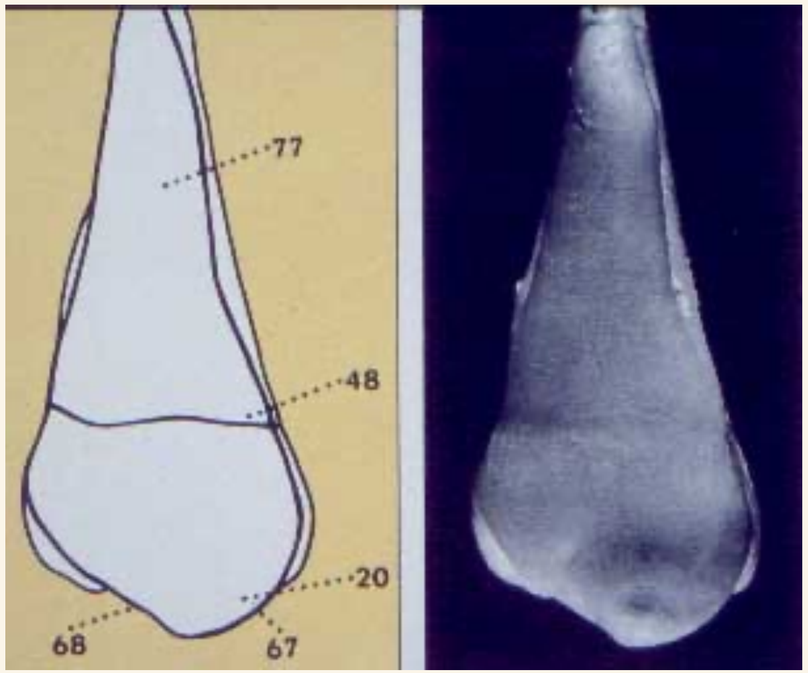
- ⬇ DL cusp

Maxillary third molar

Buccal aspect

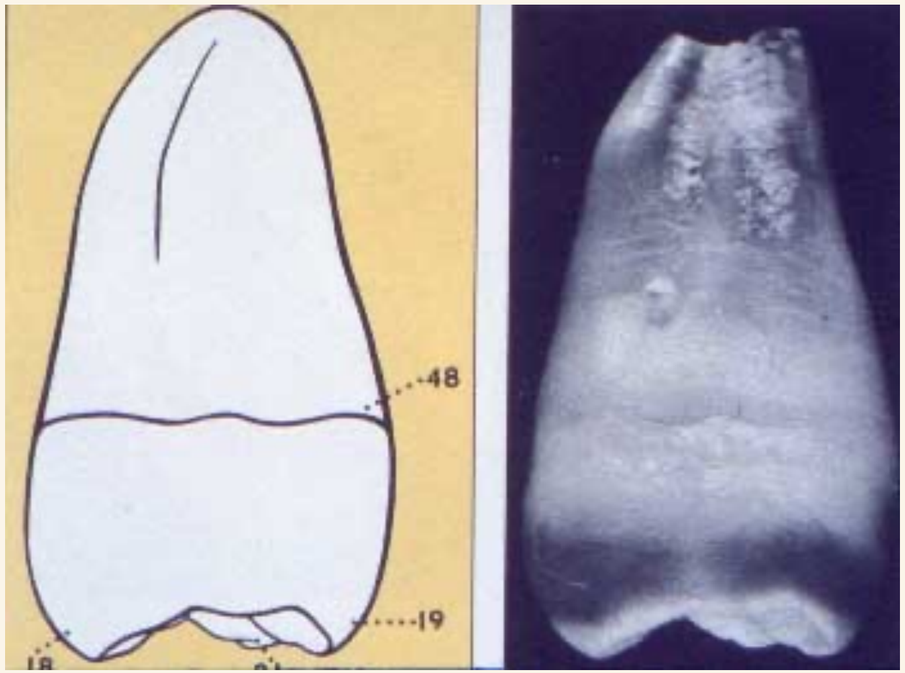


Lingual aspect

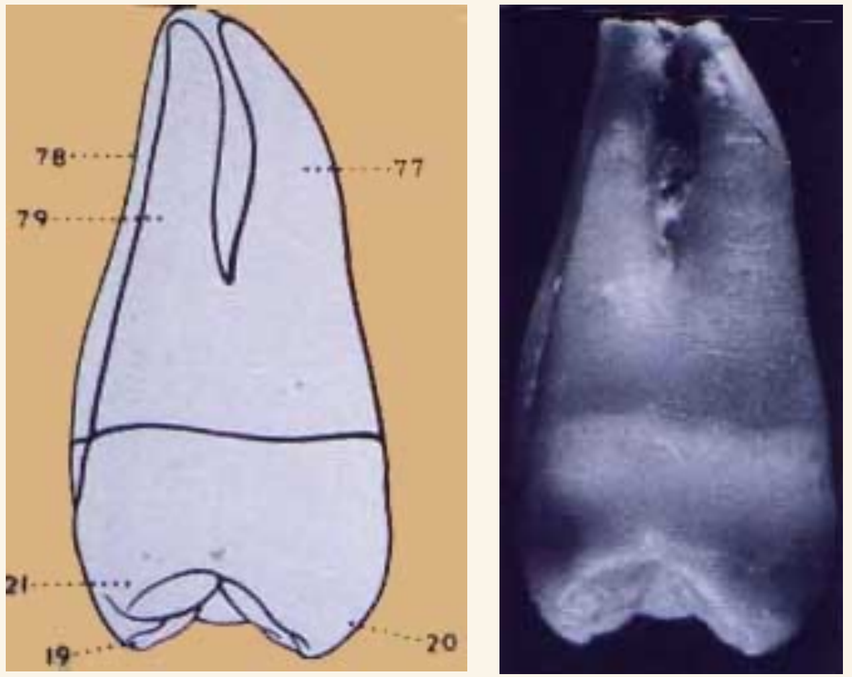


Maxillary third molar

Mesial aspect

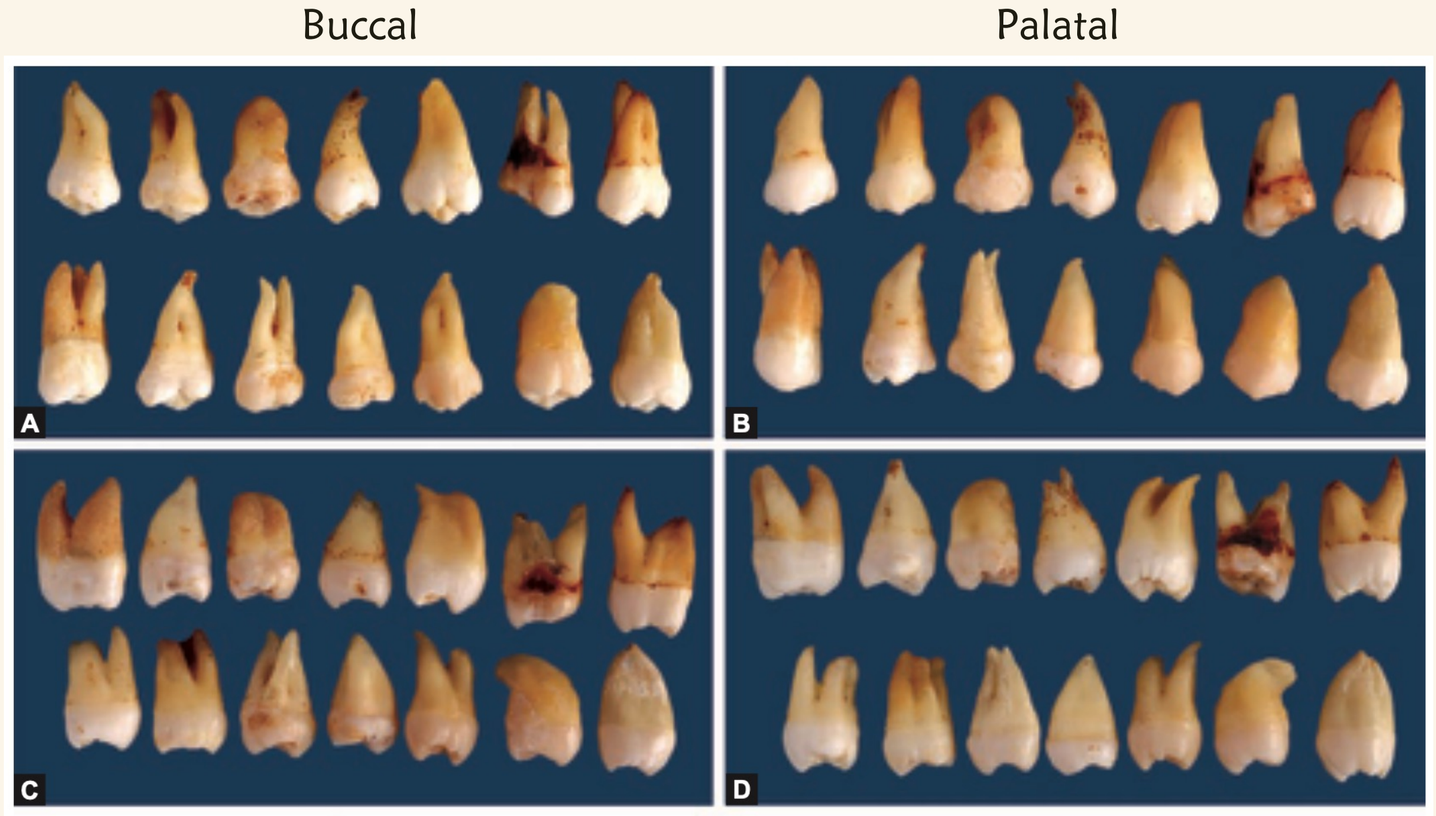


Distal aspect



Maxillary third molar

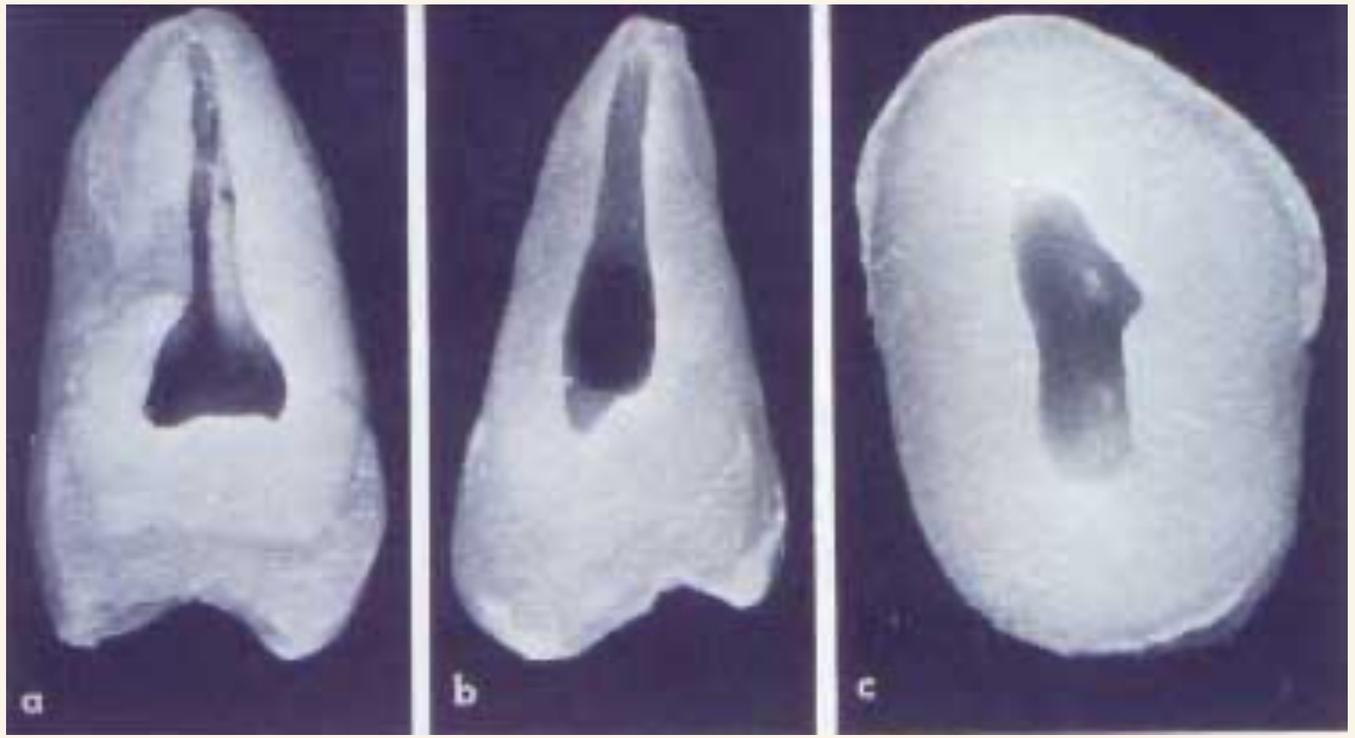
Root



- Various
- 3 roots, fused
- Curve distally
- 4-5 roots

Maxillary third molar

Pulp cavity



Maxillary molar

Aspect	First molar	Second molar	Third molar
Buccal	Widest in M-D MB ~ DB height DB root: curves mesial	M-D MB >> DB height DB root: straight	Smallest in MD width MB >>> DB height All roots: curve distal
Lingual	DL cusp: well form	DL cusp: small	DL: usually missing
Mesial	M marginal ridge tubercles: numerous and pronounced	M marginal ridge tubercles: *less* numerous/pronounced	M marginal ridge tubercles: *absent*
Occlusal	Square-rhomboid	Rhomboid: more pronounced	Triangular/heart shaped

