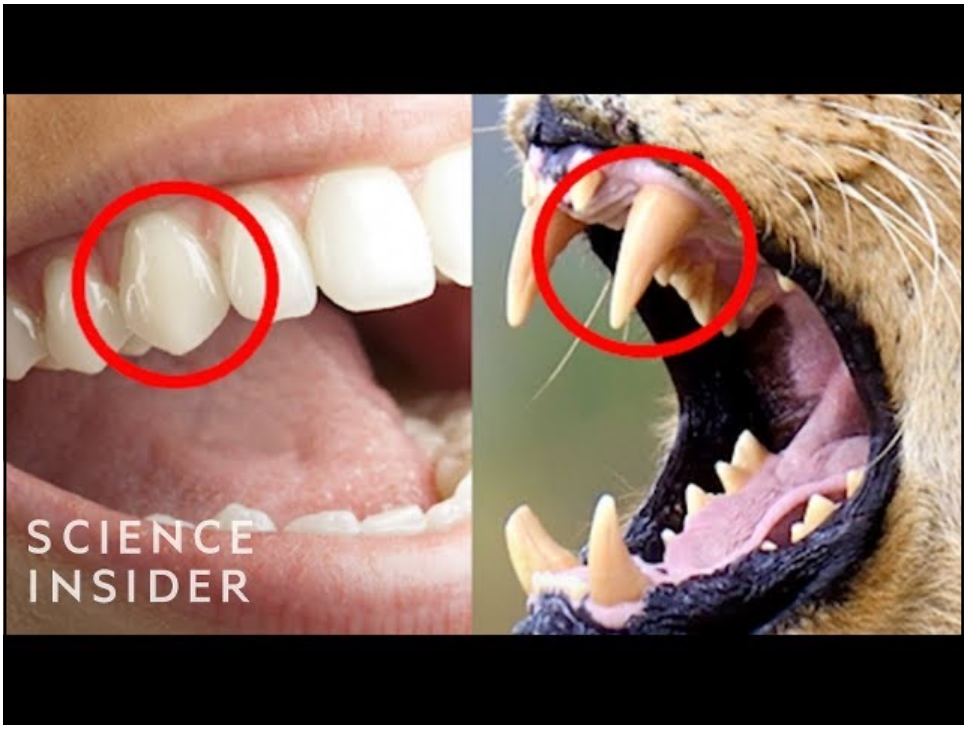

Canine ฟันเขี้ยว
ผศ.ทพ. ธัช อิทธิกุล
DDS (1st Honors), MDSc (Orthodontics)
Australian Orthodontic Board 2004
Diplomate Thai Board of Orthodontics
Diplomate Thai Board of Occlusion & Orofacial pain

1

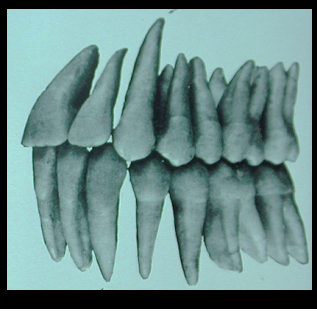

SCIENCE
INSIDER

2

Canine or Cuspid

- *In 1 Q = 1 canine*
- *In 1 month = 4 canines*
- *Crown: single pointed cusp*
- *Function : mastication, speech, esthetics*
- *Long & thick root, and canine eminence >>> most stable teeth*





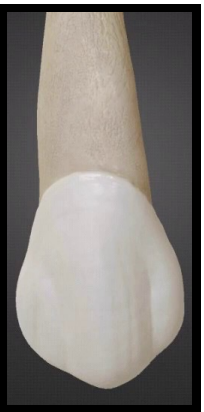
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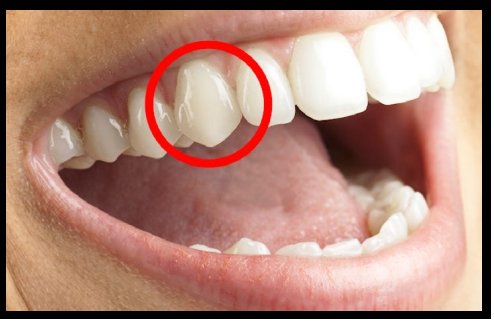
Canine

Cornerstones of dental arch:

- Arch position – angle of mouth support lip and facial muscles, key tooth in occlusion
- Root
- Form (Incisor & bicuspid)
  - labial >> pentagonal
  - proximal >> triangular
  - lingual >> cingulum







4

Maxillary canine

ฟันเขี้ยวแท้บน

- *Evidence of calcification* *4-5 months*
- *Eruption* *11-12 years*
- *Root completed* *13-15 years*
- *Crown length* *10 mm.*
- *Root length* *17 mm.*
- *The longest tooth in the mouth.*

6

Upper Canine vs Central incisor

CROWN

- I-C: same or slightly shorter
- M-D: noticeably narrower
- La-Li: considerably thicker
- Larger *central lobe* (La ridge & Li ridge) & cingulum

ROOT

- Longer & thicker (La-Li)





7

Upper Canine vs Central incisor

The Maxillary Canine

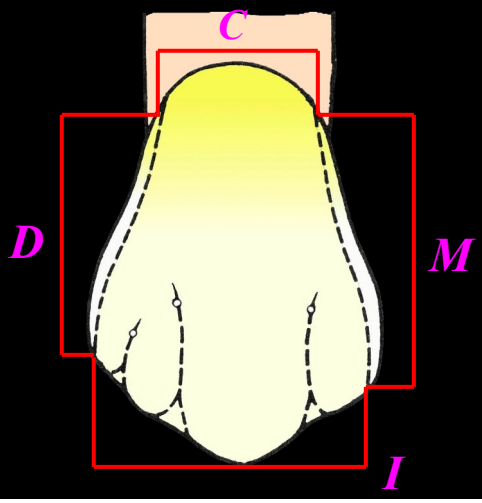
Size and Eruption

Arch	Crown Height (mm)	Mesiodistal Crown Diameter (mm)	Labiolingual Crown Diameter (mm)	Tooth Length (mm)	Age at Eruption (yr)
Maxillary	10.0	7.5	8.0	27.0	11
Central incisors	10.5	8.5	7.0	23.5	7

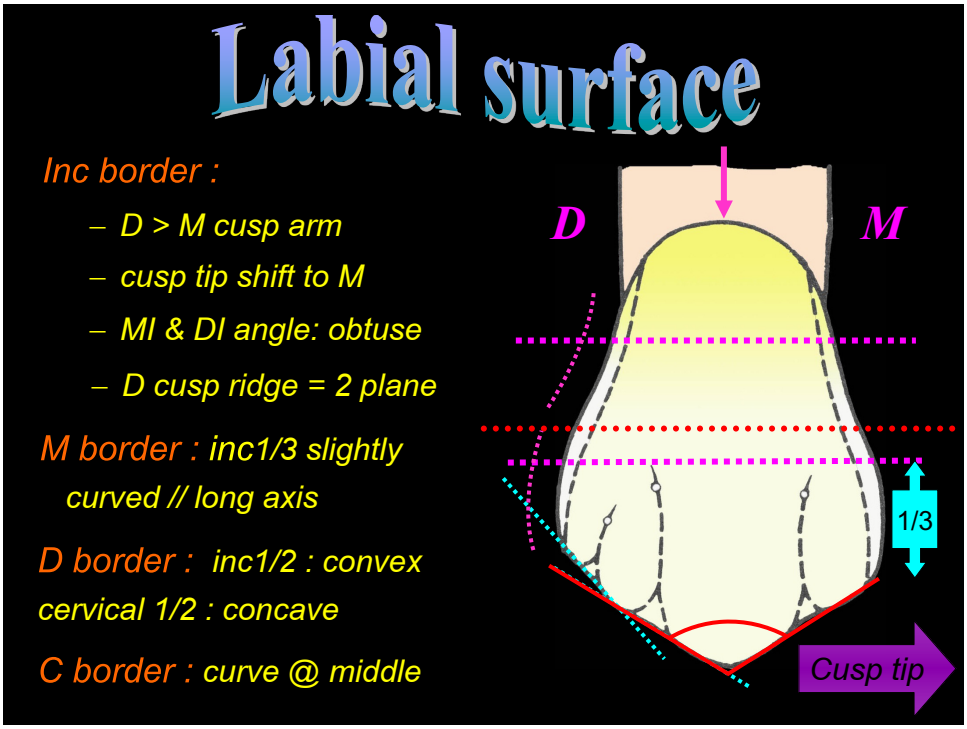
8

Labial surface

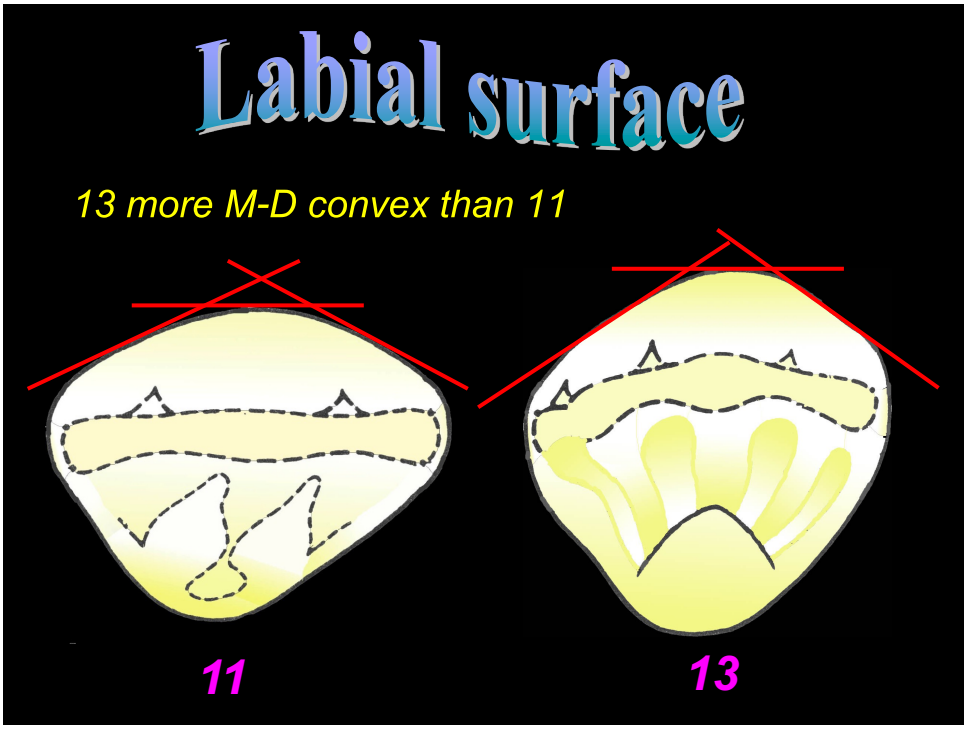
4 borders = Incisal+ Mesial+ Distal+ Cervical



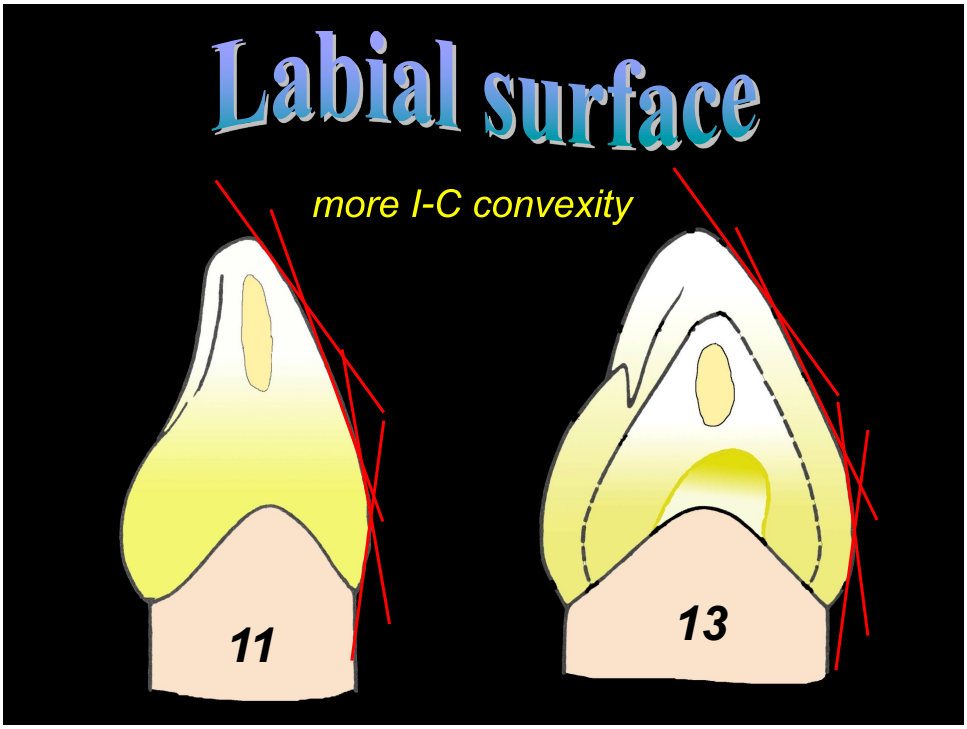
9


Labial surface
Inc border :
– D > M cusp arm
– cusp tip shift to M
– MI & DI angle: obtuse
– D cusp ridge = 2 plane
M border : inc1/3 slightly curved // long axis
D border : inc1/2 : convex
cervical 1/2 : concave
C border : curve @ middle
D
M
1/3
Cusp tip

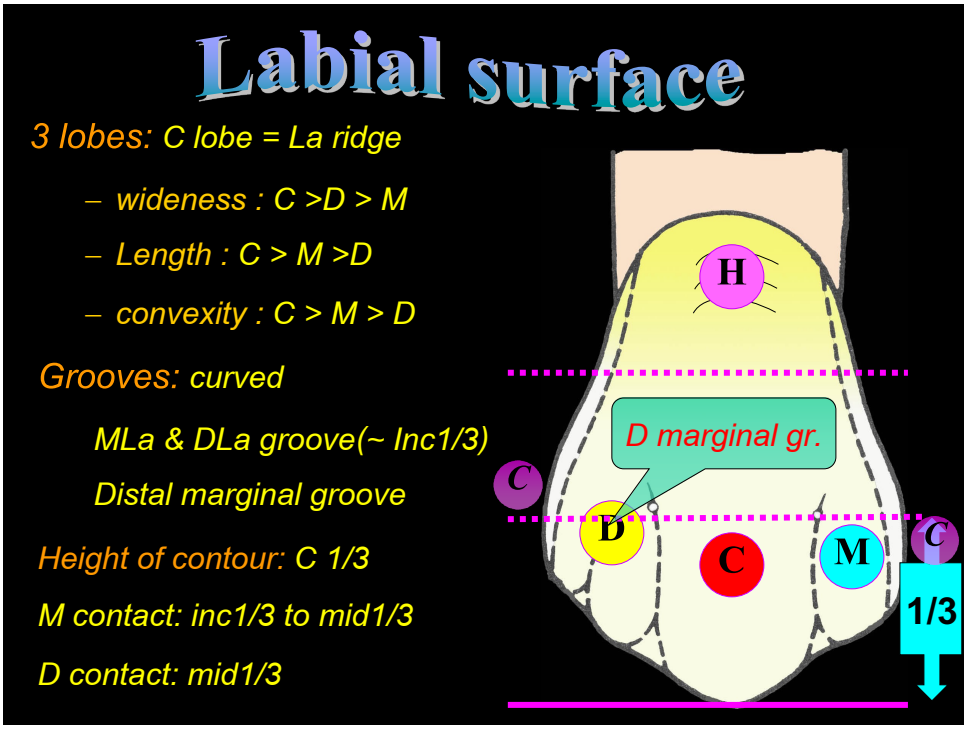
10


Labial surface
13 more M-D convex than 11
11
13

11


Labial surface
more I-C convexity
11
13

12


Labial surface
3 lobes: C lobe = La ridge
– wideness : C >D > M
– Length : C > M >D
– convexity : C > M > D
Grooves: curved
MLa & DLa groove(~ Inc1/3)
Distal marginal groove
Height of contour: C 1/3
M contact: inc1/3 to mid1/3
D contact: mid1/3
H
D marginal gr.
C
D
C
M
C
1/3

13

Lingual surface

M-I angle = well defined

D-I angle = round

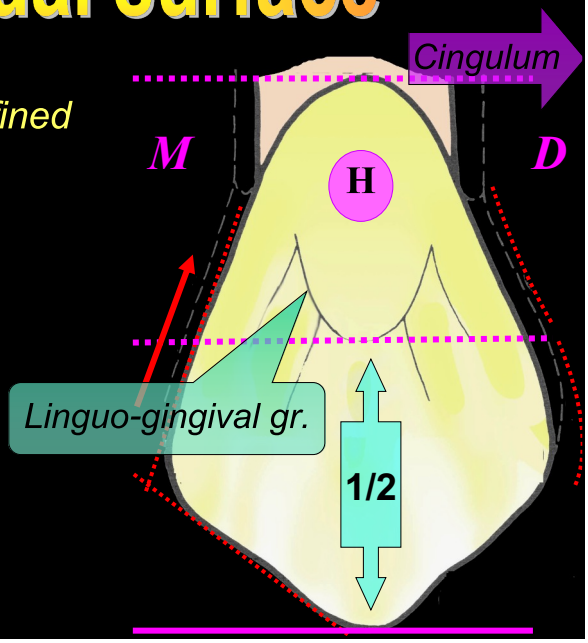
Linguo-gingival gr.

C 1/2 : Inc 1/2

deeper M&D end

Height of contour:

C 1/3 (cingulum)



14

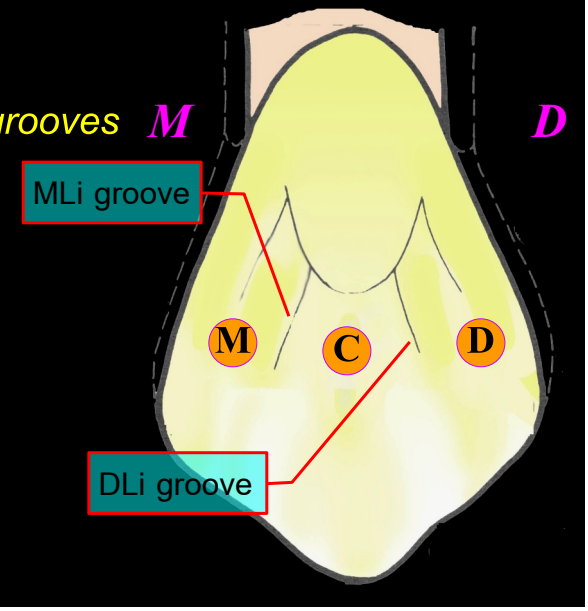
Lingual surface

Inc 1/2 : 3 lobes, 2 grooves

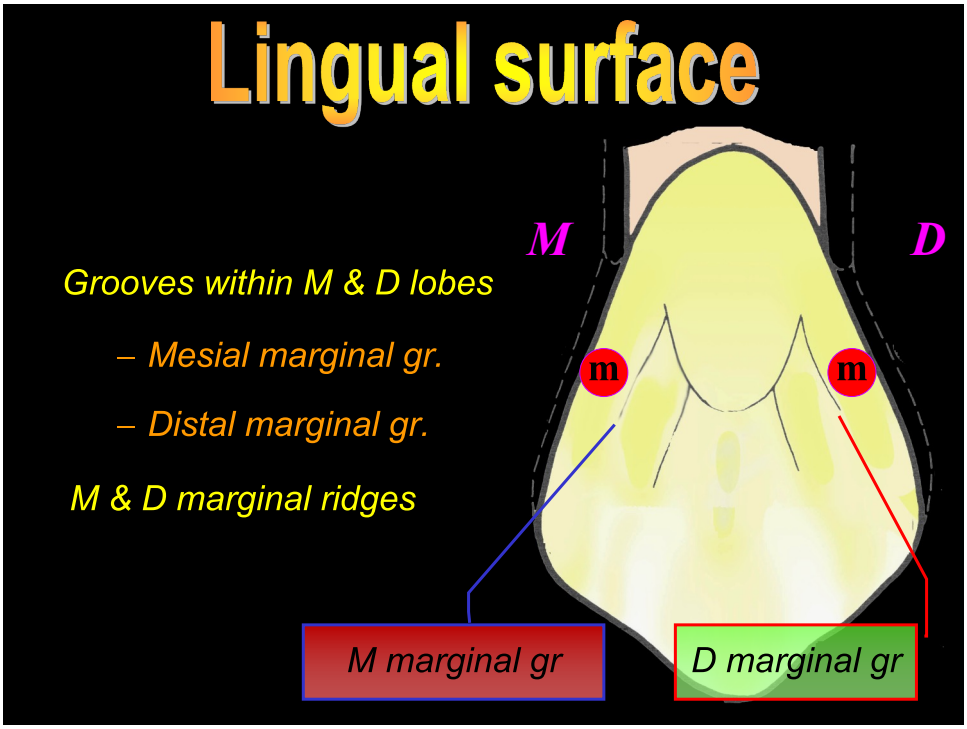
- M, C & D lobes
- C lobe = Li ridge

wideness : C > D > M

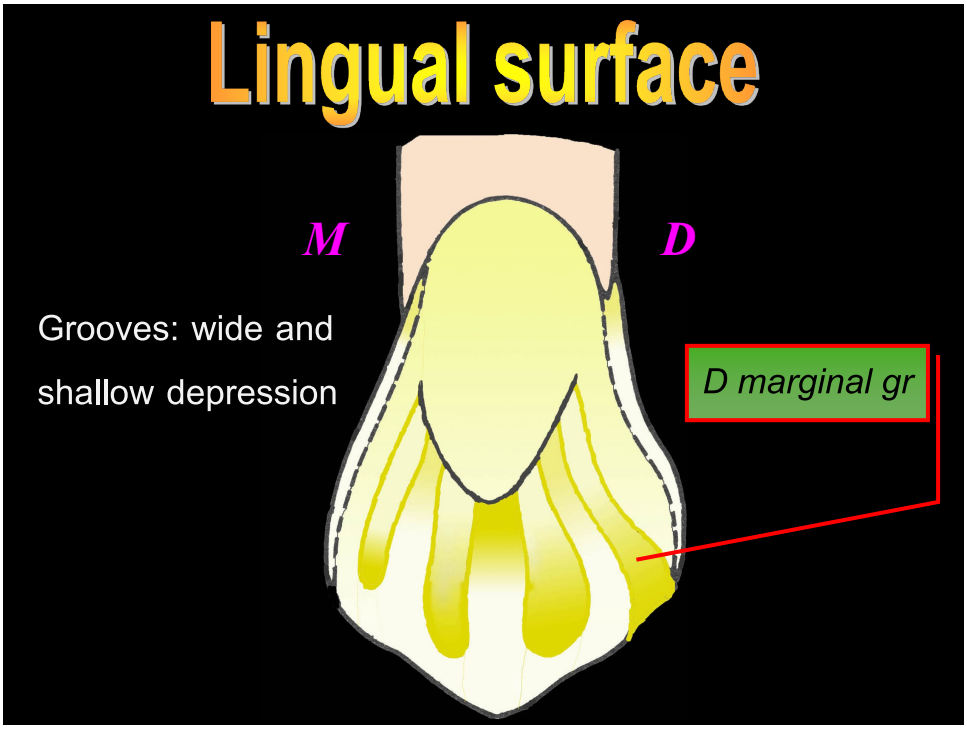
convexity : C > M & D



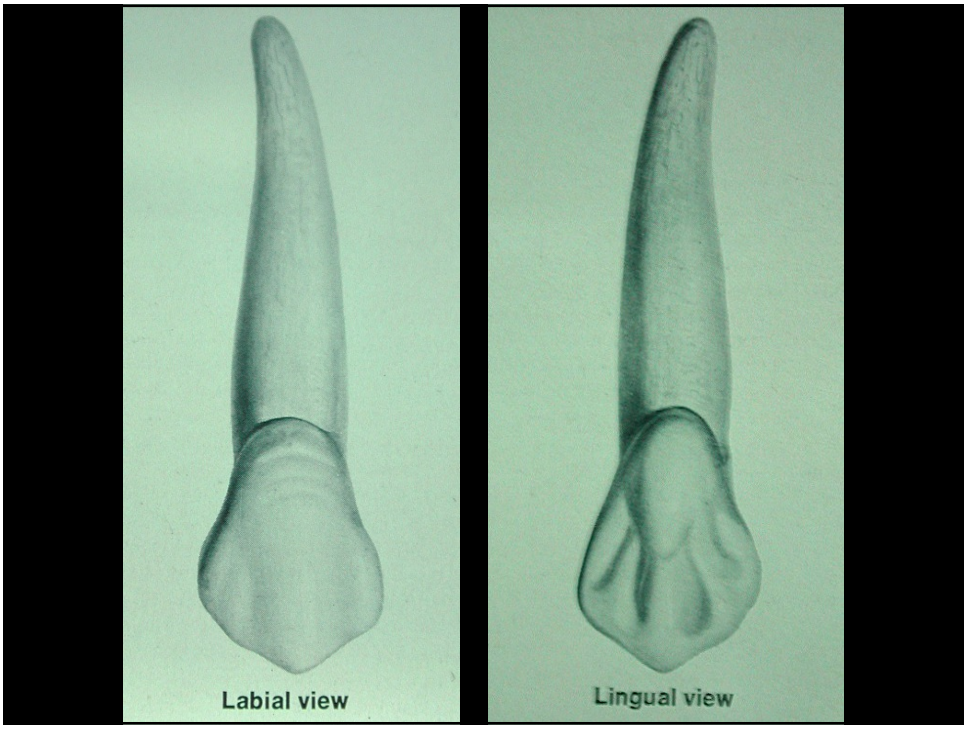
15


Lingual surface
M
D
Grooves within M & D lobes
– Mesial marginal gr.
– Distal marginal gr.
M & D marginal ridges
m
m
M marginal gr
D marginal gr

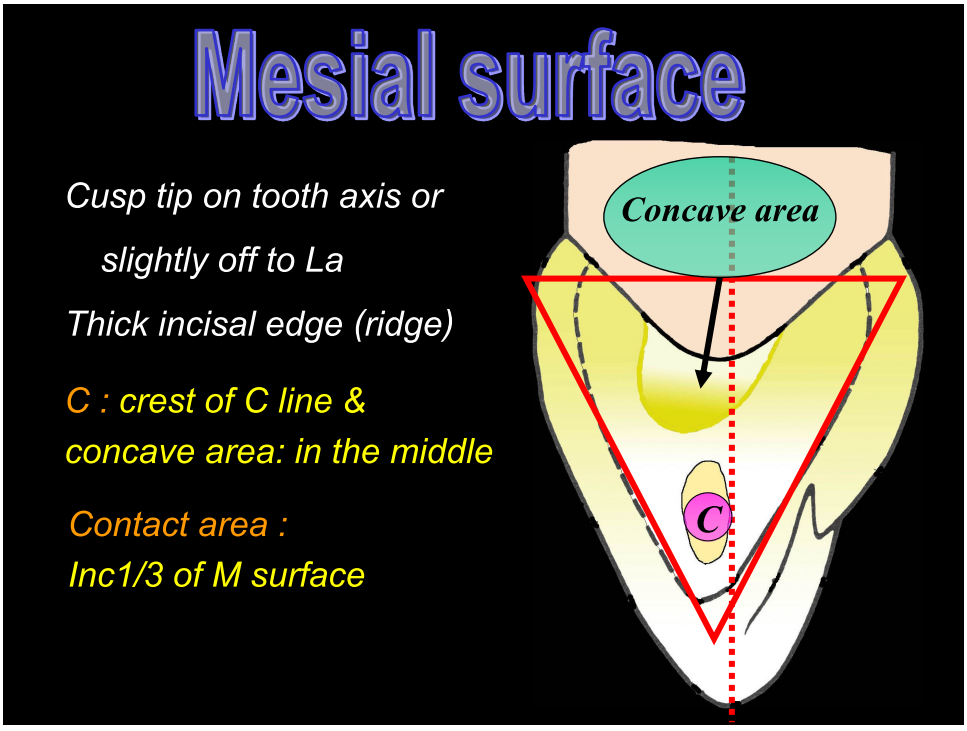
16


Lingual surface
M
D
Grooves: wide and
shallow depression
D marginal gr

17


Labial view
Lingual view

18


Mesial surface
Cusp tip on tooth axis or
slightly off to La
Thick incisal edge (ridge)
C : crest of C line &
concave area: in the middle
Contact area :
Inc1/3 of M surface
Concave area
C

19

Distal surface

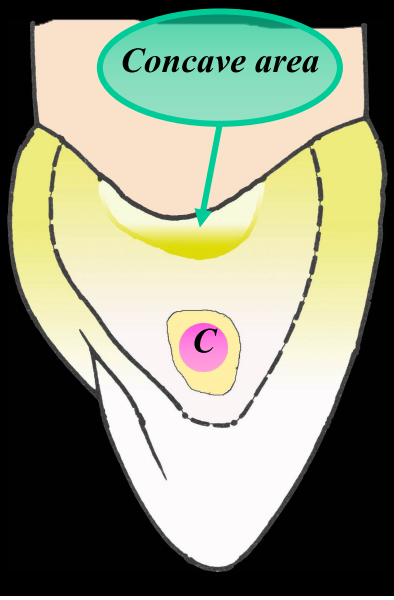
Shorter I-C than M surface

More convex

Smaller concavity

C line: less curve than M surface

Contact area : shorter & wider than M contact, Inc 1/3 of D surface



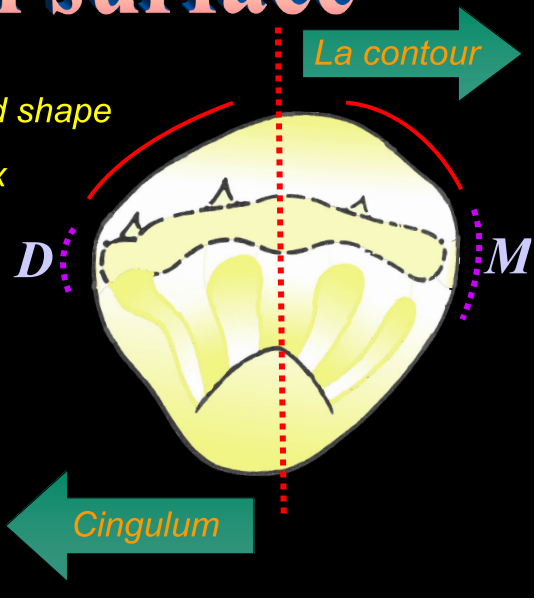
20

Incisal surface

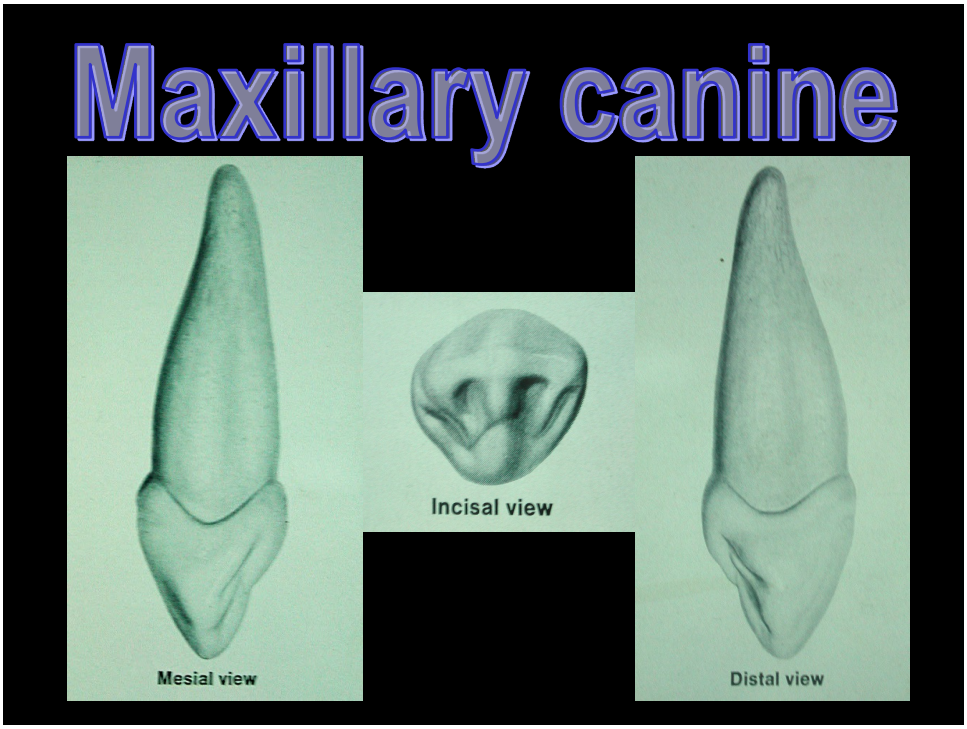
- Asymmetrical diamond shape

  M half thicker & convex

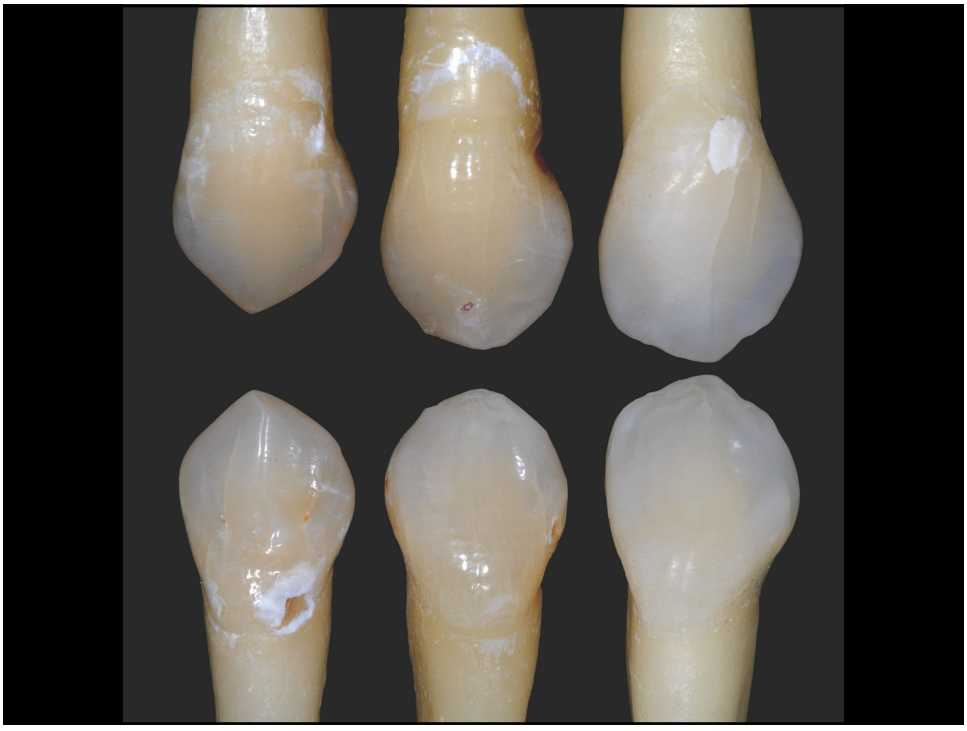
- La : M curve > D
- M : flat, wide La-Li
- D : curve, narrow
- Cingulum : off to D



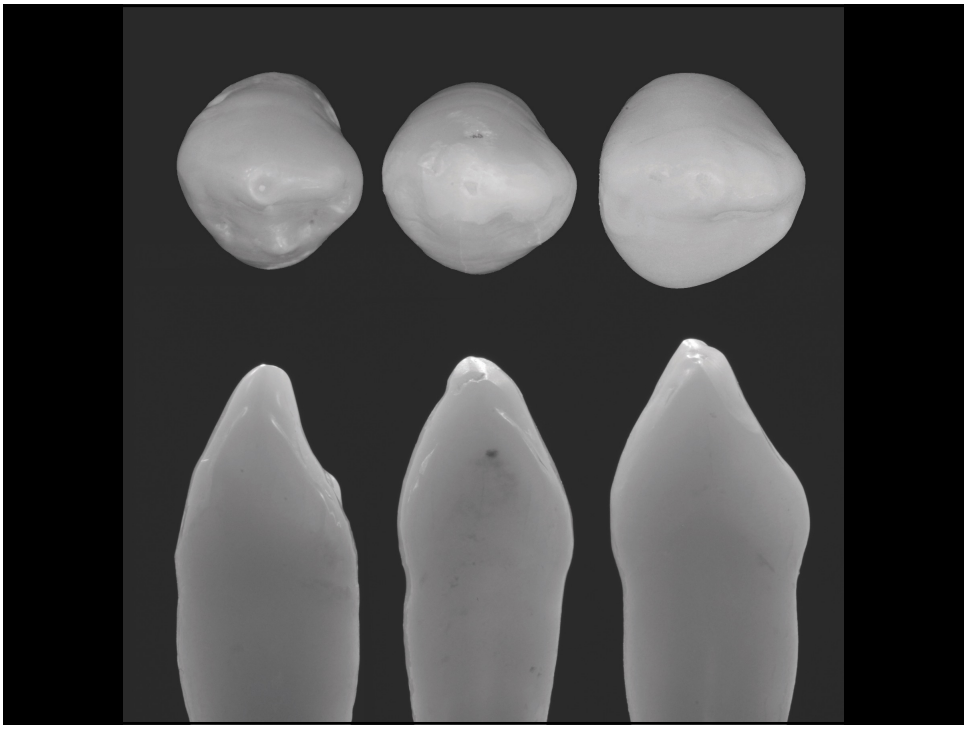
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22



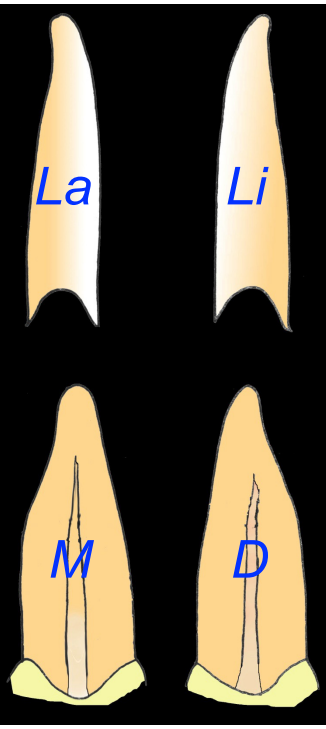
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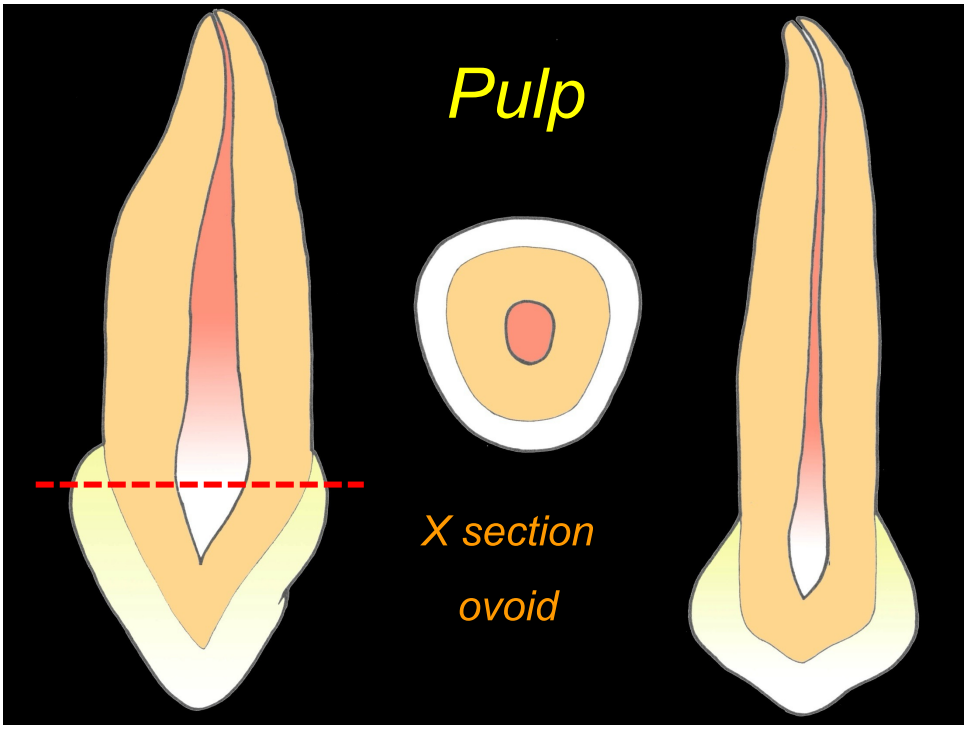
24

Root

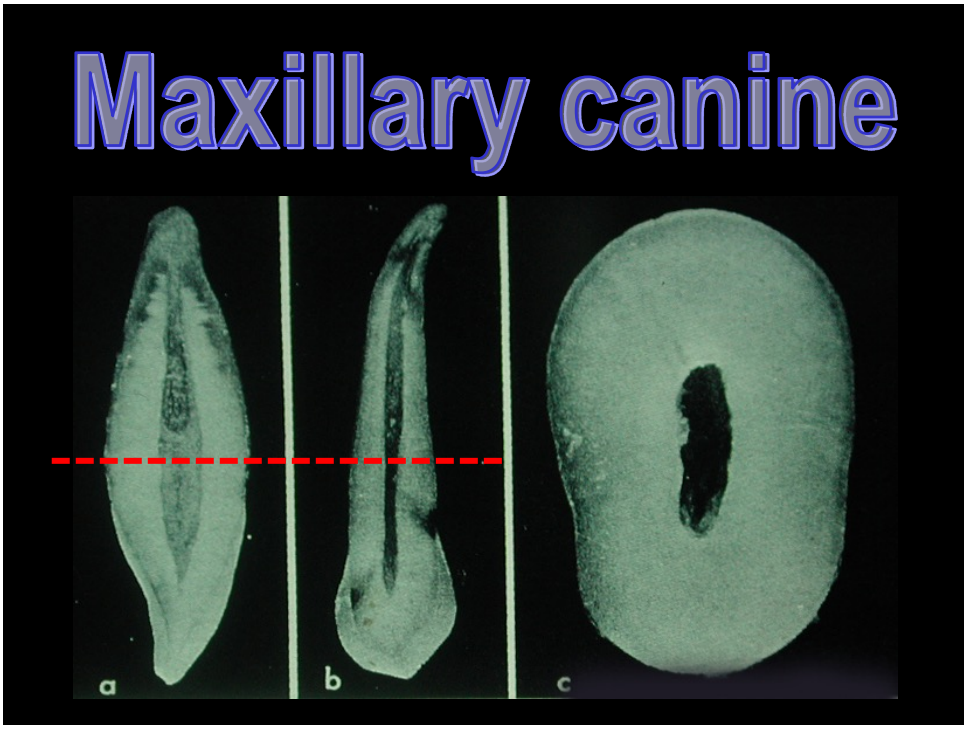
- *Single root*
- *longest & strongest*
- *Wide La-Li, narrow M-D*
- *M & D root surface: flat or proximal concavity*
- *1 pulp horn*
  1 root canal



25



26



27

Maxillary canine

Variation and anomalies:

- *Cusp sharpness & slope*
- *M & D shoulder*
- *Lingual tubercle*
- *Curved root*
- *Impacted or embeded*



28

Maxillary canine

Variation of cusp tip

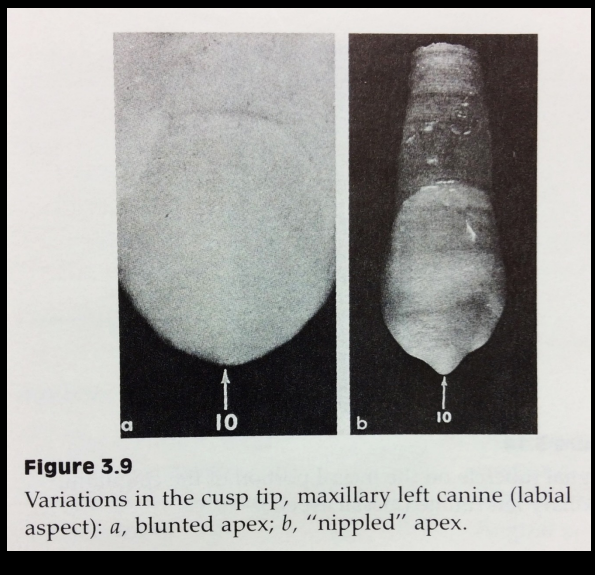


Figure 3.9
Variations in the cusp tip, maxillary left canine (labial aspect): *a*, blunted apex; *b*, "nippled" apex.

29

Maxillary canine



Cusp slope variation; pronounced shoulder or 'style''

30

Maxillary canine

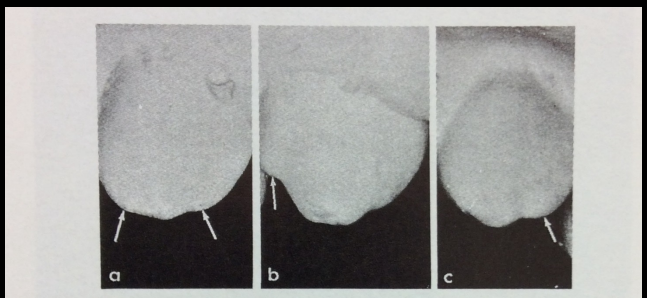
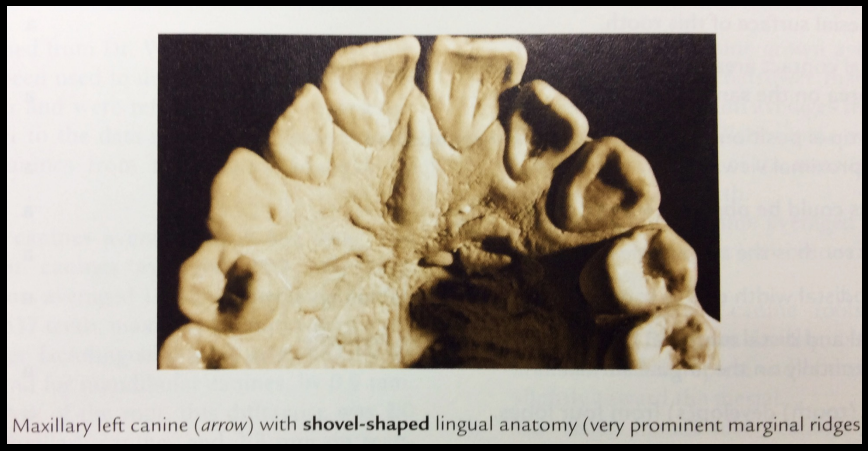


Figure 3.13
Further variations in styles, maxillary left canine (labial view, casts): *a*, strongly uplifted styles, giving incisor-like appearance to the crown (*arrows*); *b*, mesial style situated close to cervix (*arrow*); *c*, distal style situated close to cusp apex (*arrow*).

Cusp slope and styles variation

31

Maxillary canine

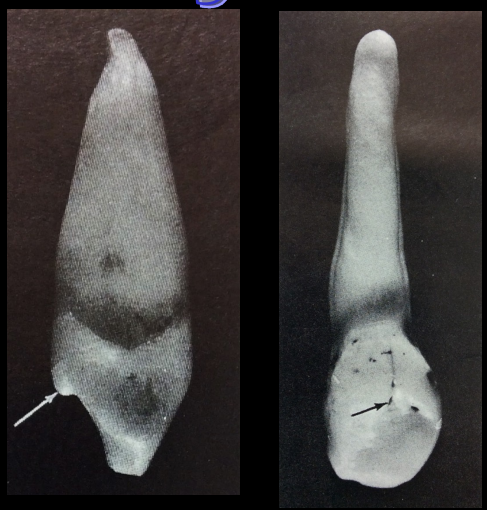


Maxillary left canine (*arrow*) with **shovel-shaped** lingual anatomy (very prominent marginal ridges

Shovel shaped canine

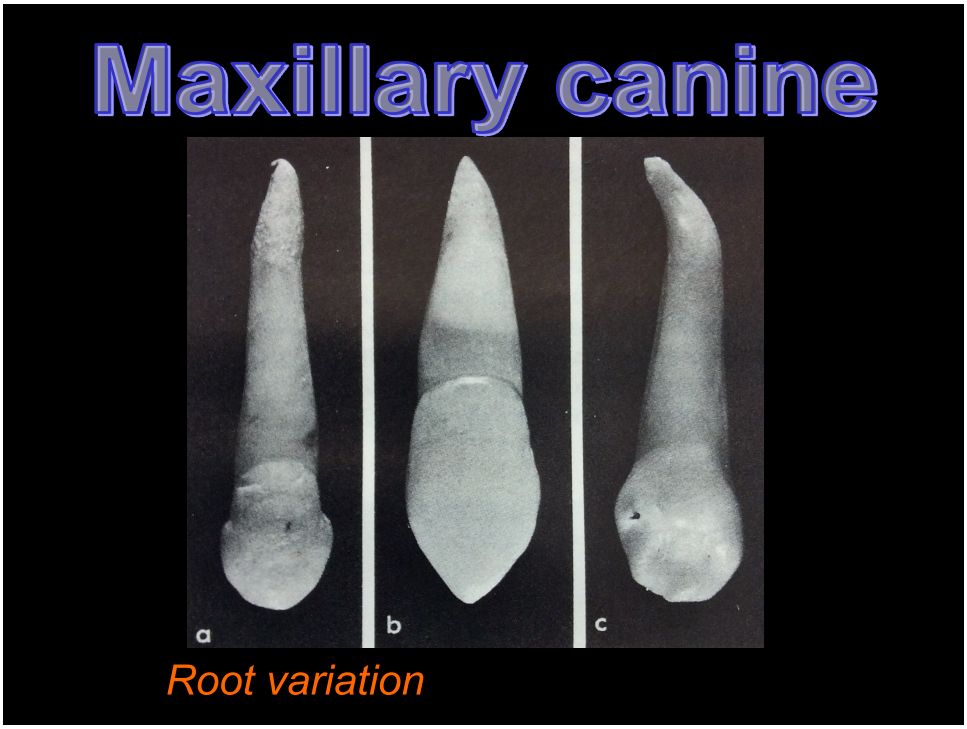
32

Maxillary canine



Tubercle and pit

33



34



35

Mandibular canine

ฟันเขี้ยวแท้ล่าง

- *Evidence of calcification* *4-5 months*
- *Eruption* *9-10 years*
- *Root completed* *12-14 years*
- *Crown length* *11 mm.*
- *Root length* *15 mm.*
- *crown M-D width < max. canine ~ 1 mm.*

37

Mandibular canine

Size and Eruption

Arch	Crown Height (mm)	Mesiodistal Crown Diameter (mm)	Labiolingual Crown Diameter (mm)	Tooth Length (mm)
Mandibular	11.0	7.0	7.5	26.0
Maxillary	10.0	7.5	8.0	27.0

38

Mandibular vs Maxillary canine

- **La surface**: less convex
- **Li surface less develop:**
  - appear smoother;
  - cingulum, lingual ridge, and marginal ridge: less prominent
- **Central lobe less develop:**
  - thinner La-Li
  - cusp lingual to tooth axis
- **Root** slightly shorter (may equal)



39

Labial surface

Inc border : Cusp tip off to M,

D arm: longer, more convex, steeper > M arm

M : M-I angle: well-define obtuse

- straight or slight convex,

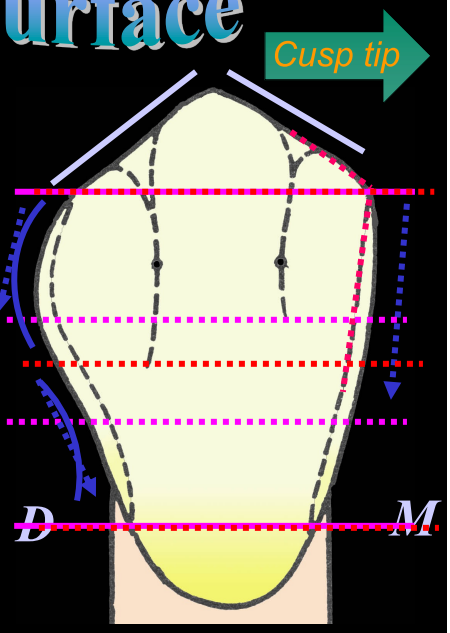
less cervical convergence

D : D-I angle: round obtuse

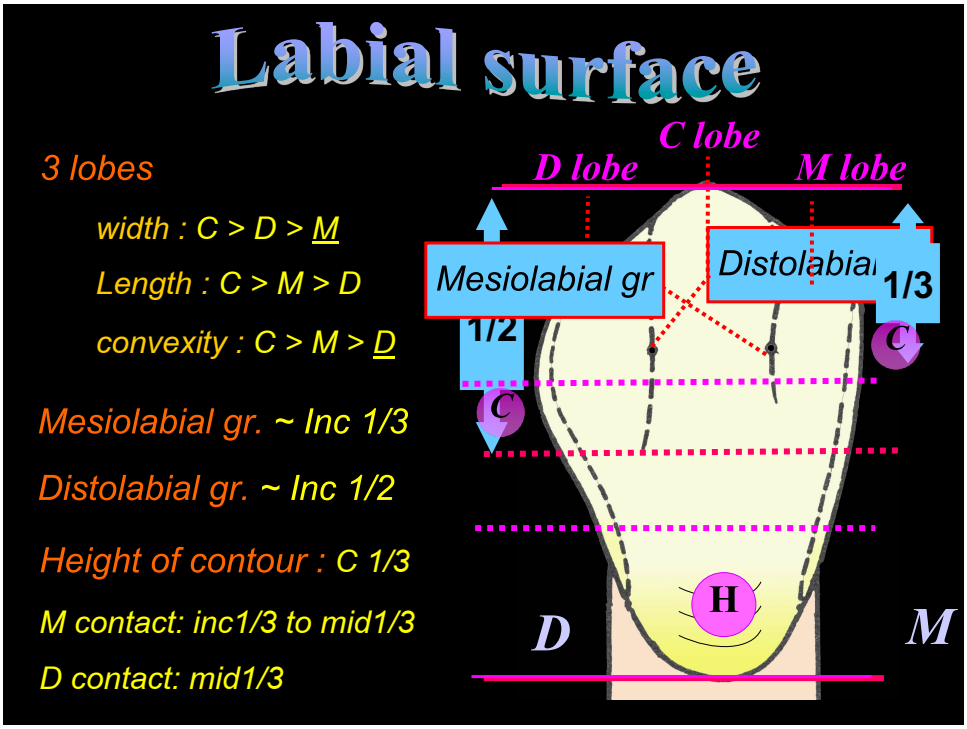
- shorter, Inc 1/3 curve outward,

more cervical convergence

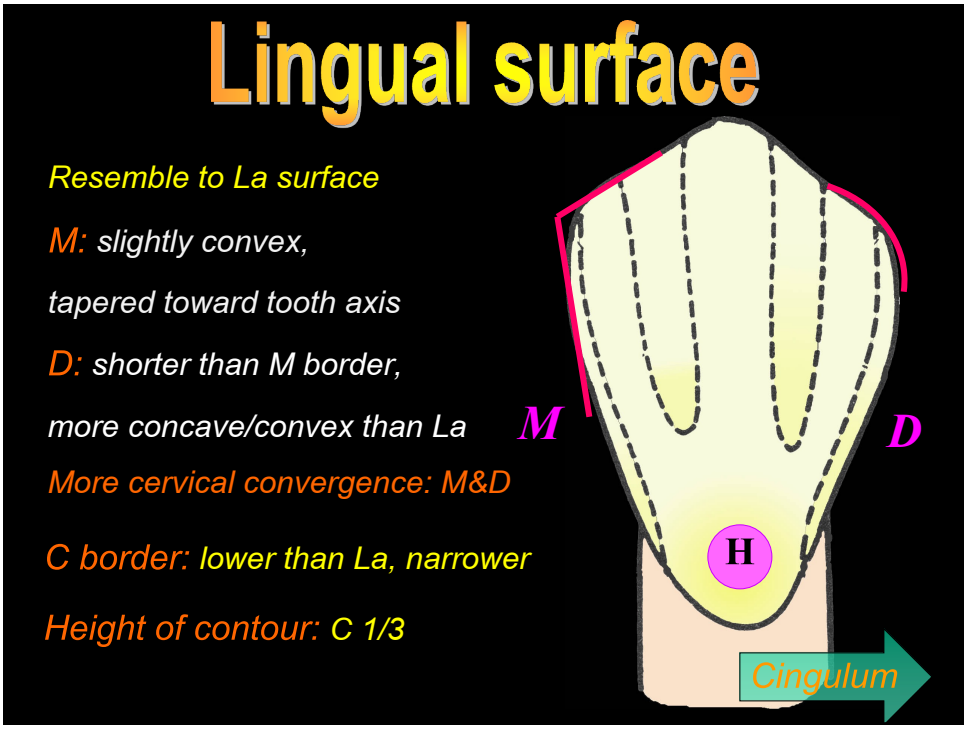
>>> crown tilt distally



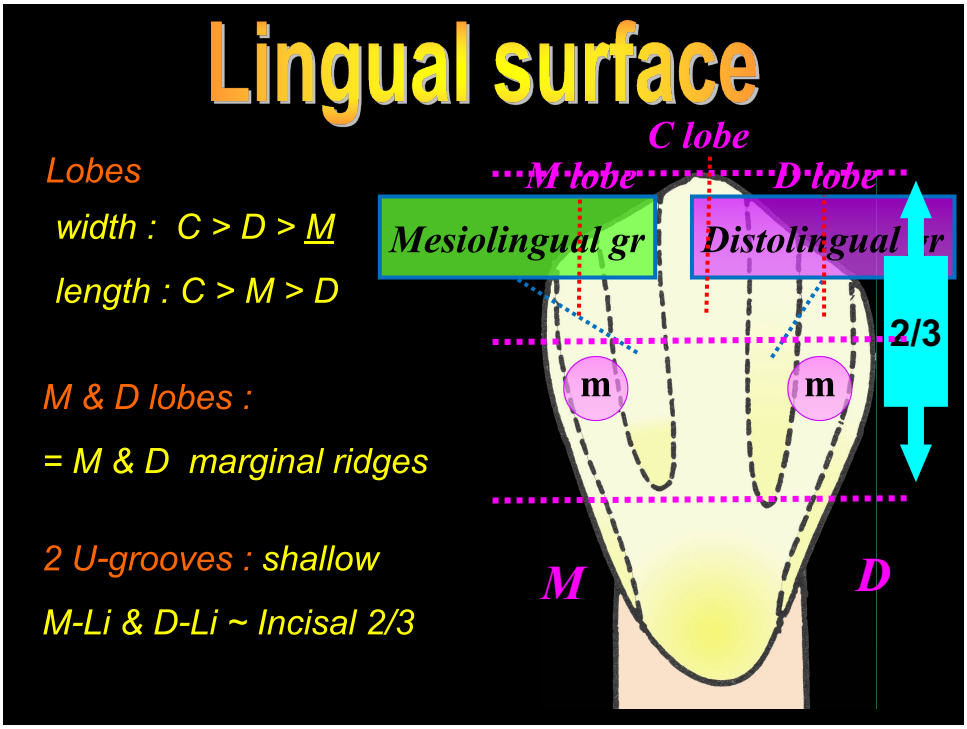
41


Labial surface
3 lobes
width : C > D > M
Length : C > M > D
convexity : C > M > D
Mesiolabial gr. ~ Inc 1/3
Distolabial gr. ~ Inc 1/2
Height of contour : C 1/3
M contact: inc1/3 to mid1/3
D contact: mid1/3
C lobe
D lobe
M lobe
Mesiolabial gr
Distolabial
1/3
1/2
C
C
H
D
M

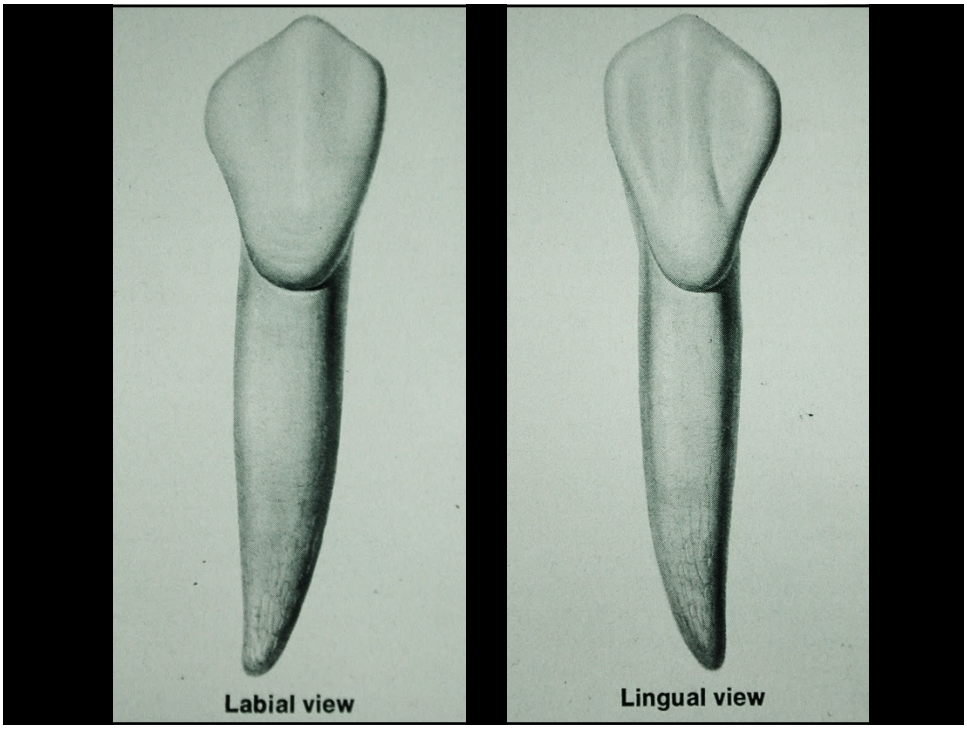
43


Lingual surface
Resemble to La surface
M: slightly convex,
tapered toward tooth axis
D: shorter than M border,
more concave/convex than La
More cervical convergence: M&D
C border: lower than La, narrower
Height of contour: C 1/3
M
D
H
Cingulum

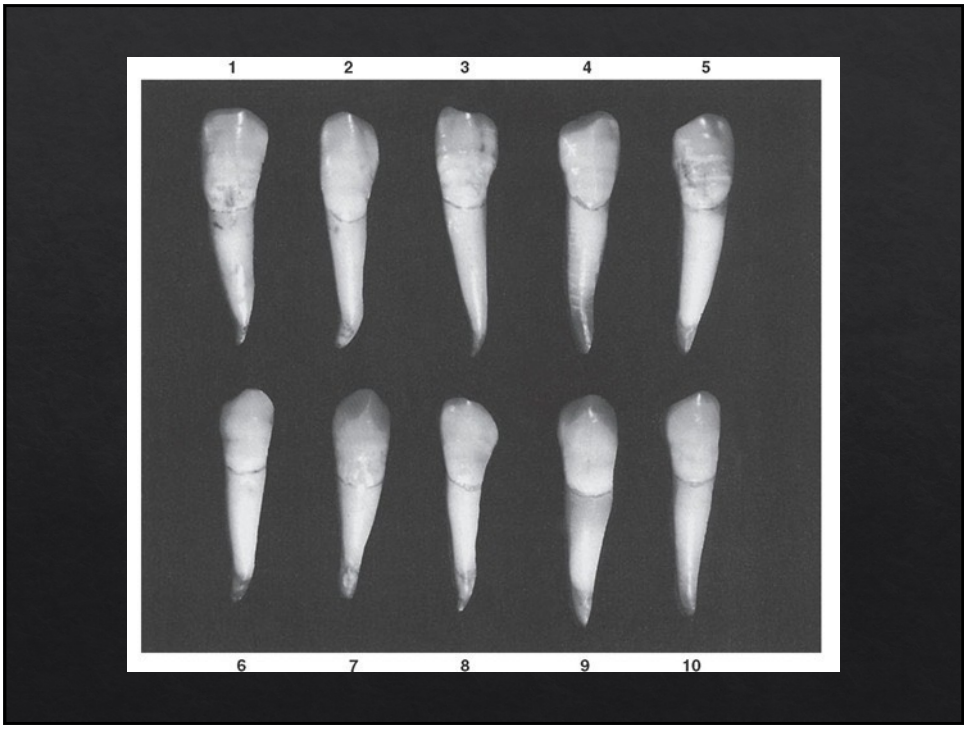
44


Lingual surface
Lobes
width : C > D > M
length : C > M > D
M & D lobes :
= M & D marginal ridges
2 U-grooves : shallow
M-Li & D-Li ~ Incisal 2/3
C lobe
M lobe
D lobe
Mesiolingual gr
Distolingual gr
2/3
m
m
M
D

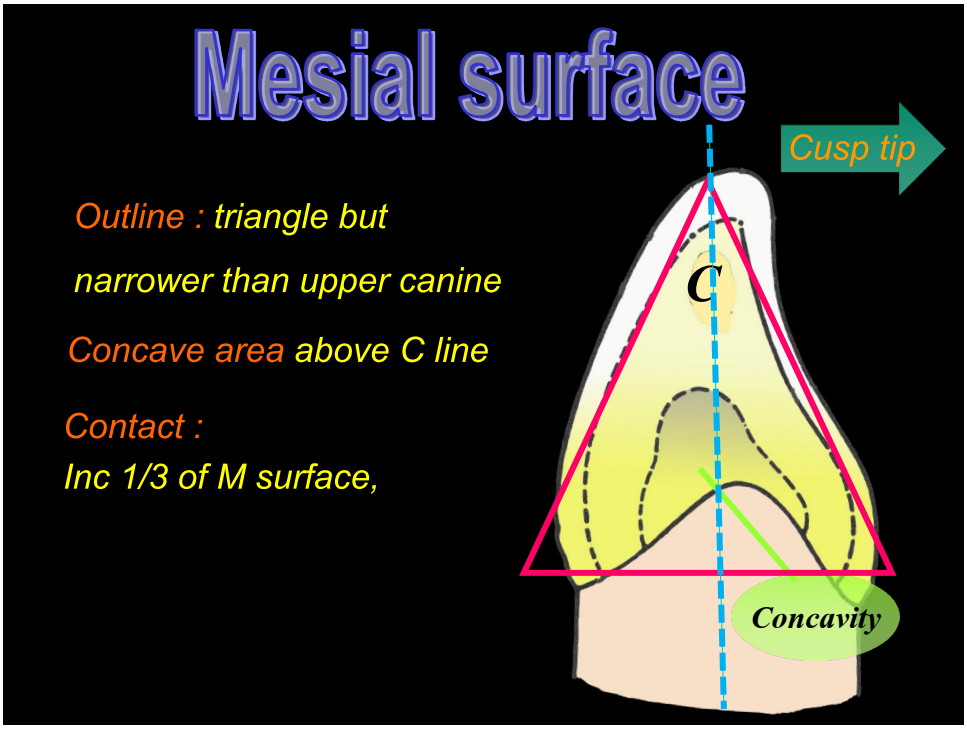
45


Labial view
Lingual view

46


1
2
3
4
5
6
7
8
9
10

47


Mesial surface
Outline : triangle but
narrower than upper canine
Concave area above C line
Contact :
Inc 1/3 of M surface,
Cusp tip
C
Concavity

49

Distal surface

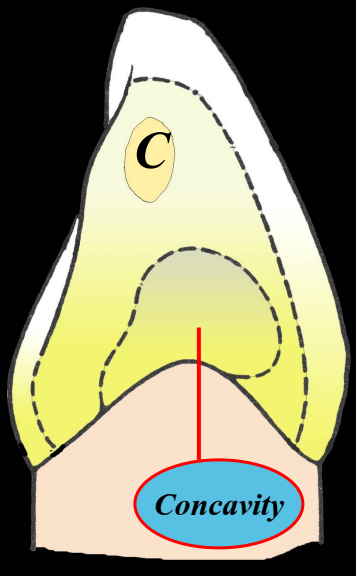
Resemble M surface but shorter I-C

Inc 1/2: more convex

Cer 1/2: more concave

C line: less curve

Contact : Inc 1/3 of D surface



50

Incisal surface

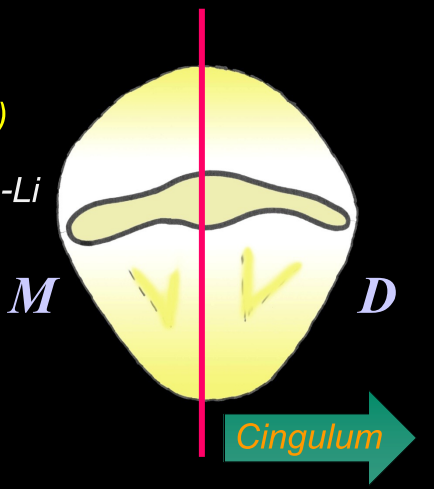
M half ~ D half,
(more symmetrical diamond)

Crown: narrow M-D, thick La-Li

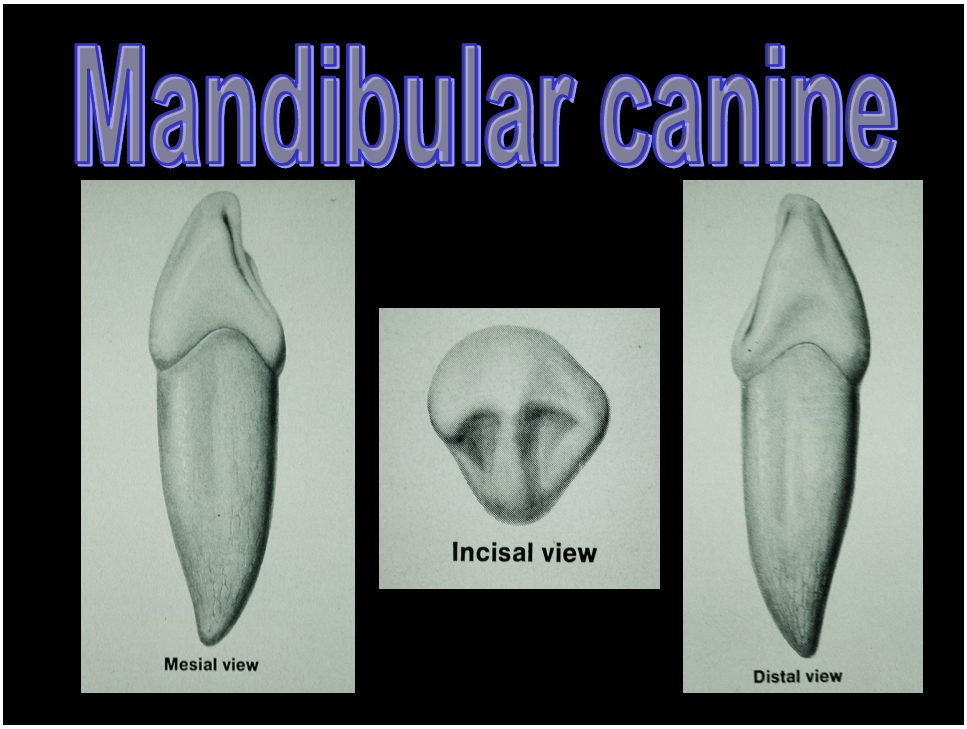
Cingulum off to D

La & Li surface:

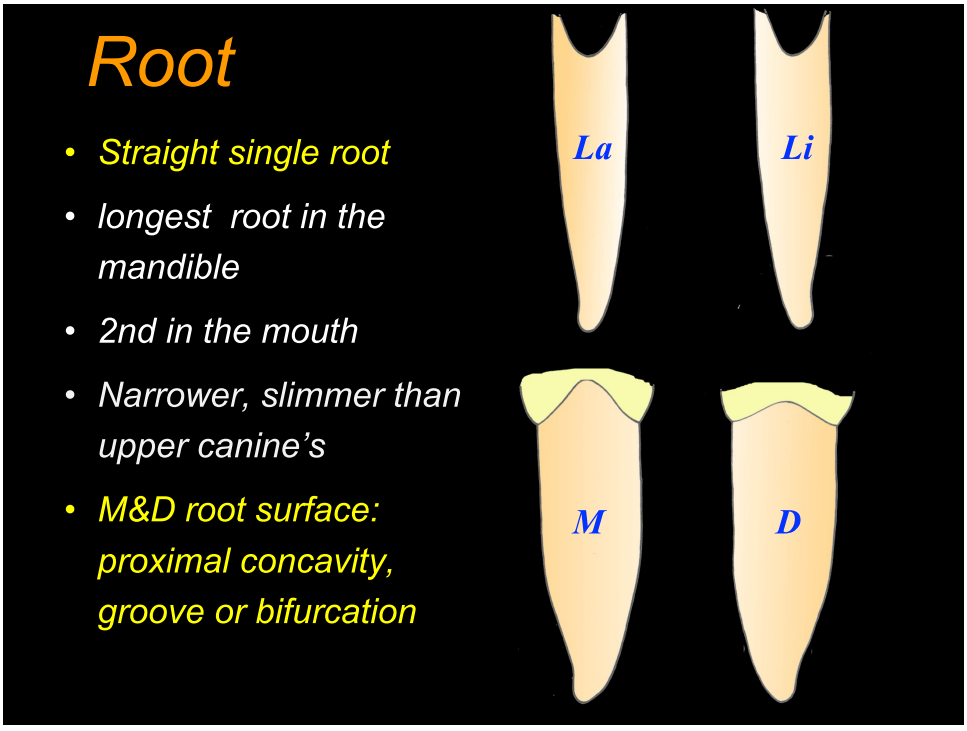
- more M-D convex than maxillary canine



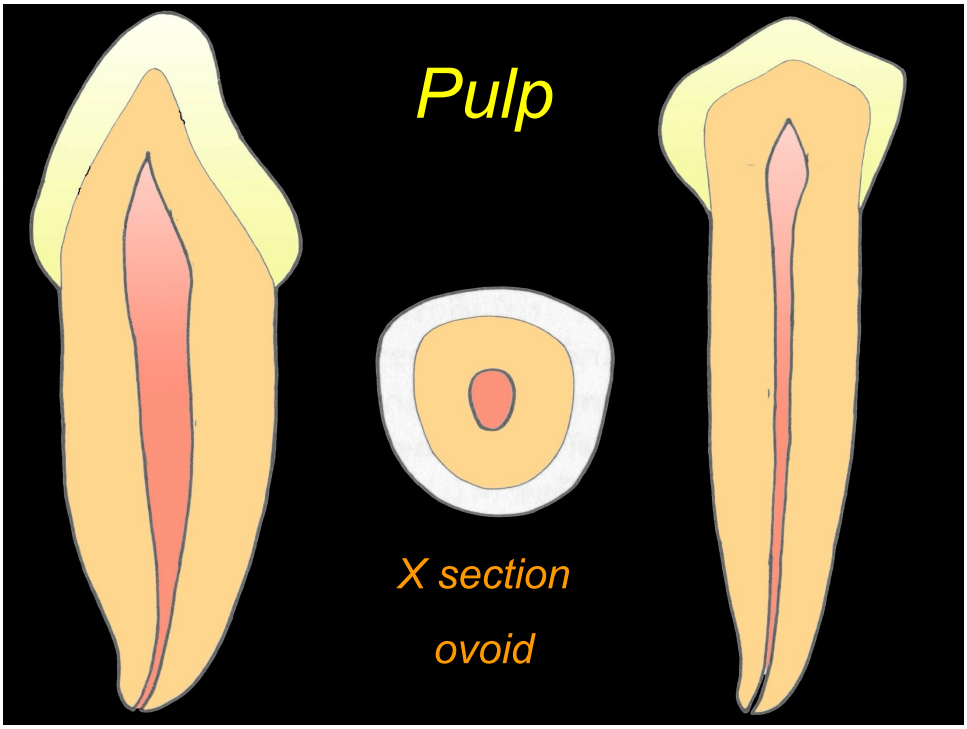
51


Mandibular canine
Mesial view
Incisal view
Distal view

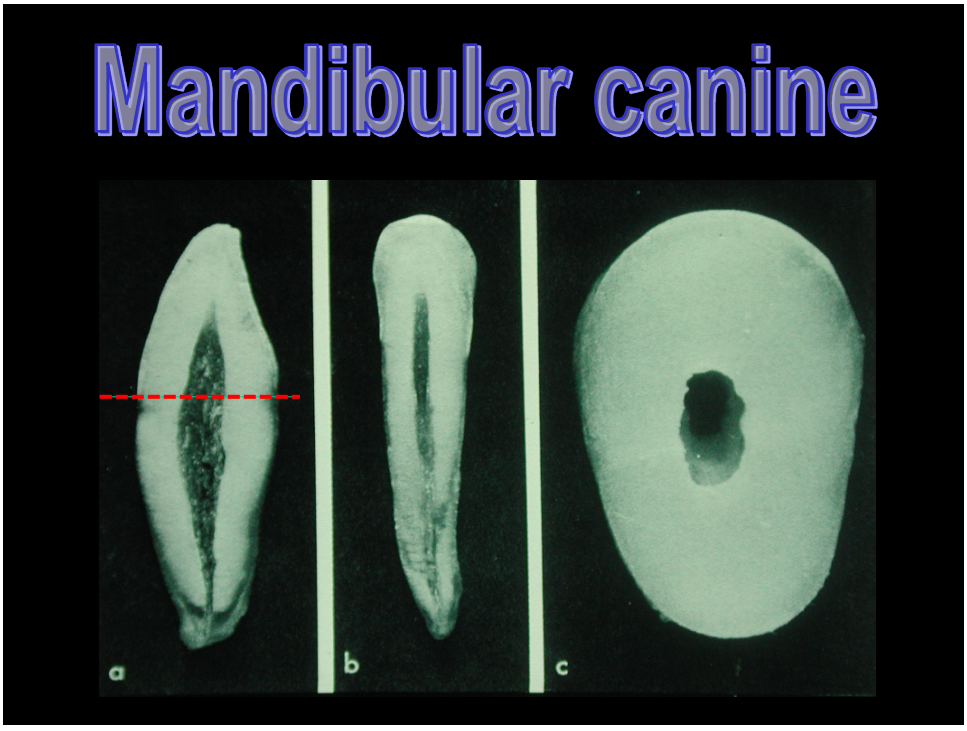
52


Root
Straight single root
longest root in the mandible
2nd in the mouth
Narrower, slimmer than upper canine's
M&D root surface: proximal concavity, groove or bifurcation
La
Li
M
D

53



54



55

Mandibular canine

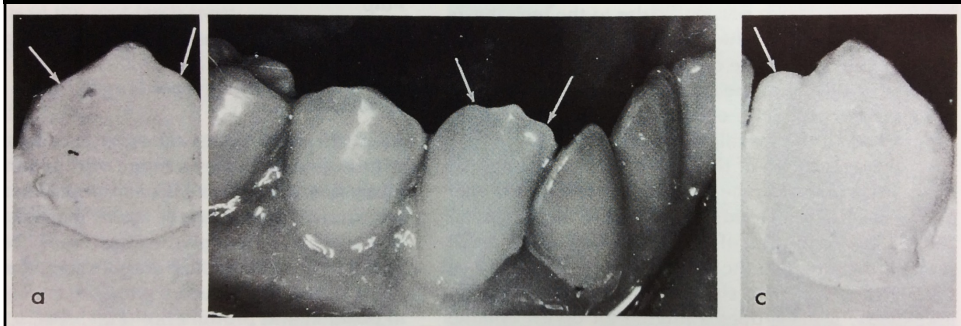


Figure 3.24
Variations in the expressions of style (*arrows*) on the mandibular right canine crowns (labial aspect): *a*, slight styles (cast); *b*, pronounced mesial and distal styles; *c*, exaggerated mesial style (left canine, cast).

Shoulder or style variation

56

Mandibular canine



Distal crown bending / root variation

57



58

Summary

Mandibular Canine—Arch Traits

1. The crown is smaller than the maxillary canine in the same dentition.
2. The mesial and distal margins as seen from the labial aspect tend to be parallel or only slightly convergent toward the cervix.
3. The incisal margin of the crown is confined to the incisal one-fourth or one-fifth of the crown, giving the tooth a long, narrow appearance as compared with the maxillary canine.
4. The entire lingual surface is flatter than in the maxillary canine, with much less prominence of margins, ridges, and cingulum.
5. There are no lingual pits or grooves.
6. The mesial and distal halves of the crown when viewed from the incisal aspect are more symmetrical.
7. The labiolingual diameter of the crown near the cervix is less than in the maxillary canine.

59

Summary

Maxillary Canine—Arch Traits

1. The crown is larger than the mandibular canine in the same dentition.



2. The mesial and distal margins as seen from the labial aspect tend to converge markedly toward the cervix.



3. The incisal margin of the crown occupies at least one-third of the crown height and often as much as one-half.



4. The mesial and distal marginal ridges, the lingual ridge, and the lingual cingulum are more accentuated than in the mandibular canine. This results in deeper lingual fossae.



5. A lingual pit and/or grooves are common features.

6. The labiolingual diameter of the crown near the cervix is greater than in the mandibular canine.



7. There is marked asymmetry of the mesial and distal halves of the crown when viewed from the incisal aspect.



60

Summary

Mandibular Incisors—Arch Traits

1. Narrowest teeth of incisor class



2. Lateral incisor wider than central
3. Marginal ridges and cinguli not prominent



4. Lingual fossa shallow
5. Roots oval in cross-section, much wider labiolingually than mesiodistally



6. Labial surfaces flat



7. Crown wider labiolingually than mesiodistally



Mandibular Incisors—Type Traits

	Central Incisor	Lateral Incisor
Labial aspect	Narrow mesiodistally Bilaterally symmetrical Mesial and distal mammelons equally prominent Mesioincisal and distoincisal angles sharp 90 degrees	Slightly wider than central mesiodistally Asymmetrical Distal mammelon not prominent Distoincisal angle rounded
Incisal aspect	Incisal ridge forms right angle with labiolingual bisecting line	Incisal ridge twisted on crown





61

Summary

Maxillary Incisors—Arch Traits

1. Wider than the corresponding mandibular incisors
2. Central incisor larger than lateral incisor
3. Marginal ridges and cinguli relatively more prominent than in the mandibular incisors
4. Lingual fossae deeper than in mandibular incisors
5. Roots rounded or triangular in cross-section, with equal labiolingual and mesiodistal widths
6. Labial surfaces more rounded as viewed from incisal aspect
7. Crown wider mesiodistally than labiolingually

62

Maxillary Incisors—Type Traits

Crown	Central Incisor	Lateral Incisor
Labial Aspect		
Mesiodistally	Wide	Narrow
Mesioincisal angle	Sharp (90 degrees)	Slightly rounded
Distoincisal angle	Slightly rounded	Distinctly rounded
Mesial profile	Straight	Slightly rounded
Distal profile	Round	Highly rounded
Mesial contact	Incisal third	Junction of incisal and middle thirds
Distal contact	Junction of incisal and middle thirds	Middle third
Labial surface	Relatively flat	Rounded
Lingual Aspect		
Marginal ridges and cingulum	Moderately pronounced	More prominent
Lingual fossa	Moderately deep	Deep
Mesial Aspect		
CEJ	Moderately curved	Less curved
Contact area	within incisal third	Junction of incisal and middle thirds
Cingulum	Moderately convex	Convex
Incisal Aspect		
Outline	Triangular	Ovoid
Labial surface	Slightly convex	Highly convex
Lobes	Visible labially	Slightly visible to absent
Mesio- and distolabial angles	Prominent	Rounded

63



64