

Summary oral science

➤➤➤➤➤ Lecture 3 part 3



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Anterior teeth (Canines)

- Human canines are the longest and most stable of teeth in the dental arch.
- corner stones of the dental arch.
- Support the arch and facial musculature
- Only one tooth of this class is present in each quadrant.
- Only teeth in the dentition with a single cusp.
- The canines assist the permanent incisors and premolars in mastication, mainly tearing, seizing, slicing and chewing food
- Maxillary canines are the most commonly impacted teeth after the 3rd molars
- **No type traits**
- **Class traits:**
 - 1.The most stable
 - 2.Longest & thickest roots LL
 - 3.Single conical cusp without occlusal surface
 - 4.slightly darker and more yellow in the color than the incisors.
- **Arch traits:**

Upper longer, taller and wider and thicker

Anterior teeth (Canines)

Chronology	Max. Canine	Man. Canine
First evidence of calcification	4-5 months	4-5 months
Enamel completed	6-7 years	6-7 years
Eruption	11-12 years	9-10 years
Root completed	13-15 years	12-14 years

Size

TABLE 1-1 Measurements of the Teeth: Specifications for Drawing and Carving Teeth of Average Size*

	LENGTH OF CROWN	LENGTH OF ROOT	MESIODISTAL DIAMETER OF CROWN [†]	MESIODISTAL DIAMETER OF CROWN AT CERVIX	LABIO- OR BUCCOLINGUAL DIAMETER OF CROWN	LABIO- OR BUCCOLINGUAL DIAMETER OF CROWN AT CERVIX	CURVATURE OF CERVICAL LINE—MESIAL	CURVATURE OF CERVICAL LINE—DISTAL
Maxillary Teeth								
Central incisor	10.5	13.0	8.5	7.0	7.0	6.0	3.5	2.5
Lateral incisor	9.0	13.0	6.5	5.0	6.0	5.0	3.0	2.0
Canine	10.0	17.0	7.5	5.5	8.0	7.0	2.5	1.5
First premolar	8.5	14.0	7.0	5.0	9.0	8.0	1.0	0.0
Second premolar	8.5	14.0	7.0	5.0	9.0	8.0	1.0	0.0
First molar	7.5	B L	10.0	8.0	11.0	10.0	1.0	0.0
		12 13						
Second molar	7.0	B L	9.0	7.0	11.0	10.0	1.0	0.0
		11 12						
Third molar	6.5	11.0	8.5	6.5	10.0	9.5	1.0	0.0
Mandibular Teeth								
Central incisor	9.0 [‡]	12.5	5.0	3.5	6.0	5.3	3.0	2.0
Lateral incisor	9.5 [‡]	14.0	5.5	4.0	6.5	5.8	3.0	2.0
Canine	11.0	16.0	7.0	5.5	7.5	7.0	2.5	1.0
First premolar	8.5	14.0	7.0	5.0	7.5	6.5	1.0	0.0
Second premolar	8.0	14.5	7.0	5.0	8.0	7.0	1.0	0.0
First molar	7.5	14.0	11.0	9.0	10.5	9.0	1.0	0.0
Second molar	7.0	13.0	10.5	8.0	10.0	9.0	1.0	0.0
Third molar	7.0	11.0	10.0	7.5	9.5	9.0	1.0	0.0

B, Buccal; L, lingual.
^{*}In millimeters. This table has been "proved" by carvings shown in Figures 1-16 and 1-17.
[†]The sum of the mesiodistal diameters, both right and left, which gives the arch length, is maxillary, 128 mm; mandibular, 126 mm.
[‡]Lingual measurement is approximately 0.5 mm longer.

Canines anatomy

	Maxillary	Mandibular
Labial aspect	<ul style="list-style-type: none"> • 1 mm narrower than the central incisor. • M aspect resembles the lateral incisor. • D aspect anticipates the first premolar. • labial surface is smooth, with a well-developed middle lobe extending the full length of the crown cervically from the cusp tip (labial ridge) • Cusp tip is on a line bisecting the tooth MD • Labial surface: Labial ridge, Slight depressions on either sides, but more distally • CEJ is slightly convex • Incisal outline has 2 sloping ridges (Mesial ridge sloping less markedly and shorter) • Mesial HOC is at the jxn between incisal and middle thirds • Distal HOC is at the middle of crown • Mesial outline is slightly convex • Mesial cusp slope might exhibit slight concavity • Distal outline is markedly concave • Distal cusp slope is straight or slightly convex 	<ul style="list-style-type: none"> • crown length is equal or longer by 0.5 to 1 mm • root is usually shorter but sometimes as long as the maxillary canine. • In an individual person, the lower canine is often shorter than that of the upper canine • Cusp is not as long & pointed as in maxillary (arch trait) • MD crown and root is narrower • Mesial HOC is just below MI angle(within the incisal third) so distal cusp ridge is lower • mesial outline is straight while distal is convex, both converge slightly towards the cervix(appear longer than the maxillary) • The cusp tip is in line with the centre of the root MD, as on the maxillary canine • a distinctive feature is the nearly straight outline of the Mesial aspect of the crown and root
Lingual aspect	<ul style="list-style-type: none"> • Crown & root narrower lingually • Distinct mesial and distal Well-elevated marginal ridges (arch trait) • Accentuated well-developed cingulum - slightly concave at midpoint (arch trait) • Pronounced lingual ridge (arch trait) extending from the cusp tip to the cingulum, dividing the lingual surface into mesial and distal lingual fossae. • A lingual pit and/or developmental grooves 	<ul style="list-style-type: none"> • Marginal ridges, lingual ridge (if present) & cingulum are less prominent • ML & DL fossae are shallower • The lingual surface is smooth and regular. • Pits or grooves are rare • Root narrower lingually (little more than half the width labially) • Distinct longitudinal depressions extends down proximal surfaces



Canines anatomy


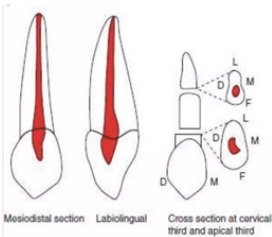

	Maxillary	Mandibular
Mesial aspect	<ul style="list-style-type: none"> • triangular outline. resemble the incisors, but thicker especially the cingulum and cervical third. • Cusp tip labial to a line bisecting the tooth LL • HOCs are just cervical to the junction between cervical and middle thirds • From HOC labially the outline is straight toward cusp tip • Lingual outline starts cervically convex then slightly concave then convex again • Thick incisal ridge LL (arch trait) • Root is wide with a slight longitudinal concavity and blunt apex 	<ul style="list-style-type: none"> • M and D aspects present a triangular outline. • LL diameter of crown and root is usually a fraction of a millimeter less than in the maxillary • Cusp tip with long axis of the tooth • Cervical third is narrower than in the maxillary • HOCs are just above CL • labial outline is convex • Root tip more pointed than in the maxillary • CL curves more toward the incisal portion than in the maxillary • Mesial developmental depression is more pronounced than in The maxillary • incisal portion of the crown is thinner LL, which allows the cusp to appear more pointed and the cusp ridge to appear more slender.
Distal aspect	<ul style="list-style-type: none"> • Deeper and longer longitudinal concavity on the root • Less curvature for CEJ 	<ul style="list-style-type: none"> • Similar to mesial • CL curves less toward the incisal portion than in the maxillary canine.



Canines anatomy

	Maxillary	Mandibular
Incisal aspect	<ul style="list-style-type: none"> • thicker LL than MD. • tip of the cusp is displaced labially to the central long axis. • Asymmetry: Distal half has a concavity on the labial outline while Mesial part of the labial outline is convex 	<ul style="list-style-type: none"> • MD dimension is clearly less than the LL • M & D halves are more nearly symmetrical • Lingual outline is less round • Less bulky appearance of the incisal edge • The cusp tip and Mesial cusp ridge are more likely to be inclined in a lingual direction
Root	<ul style="list-style-type: none"> • Single root, conical, narrow labially, longest root of all teeth • LL thickness is greater than that of incisors. • narrower mesiodistally and wider labiolingually. • Similar to the crown, the root also exhibits lingual convergence. (this is true for all teeth but one, look at your Nissen jaw and guess!) • The labial and lingual surfaces are smoothly convex. • The mesial and distal surfaces are flattened and exhibit developmental depressions for major part of the root. • Developmental depression on the distal surface is deeper. These developmental depressions help to reinforce anchorage in alveolar bone. • Apical third of the root usually shows distal curvature. • Apex of the root is relatively blunt. • The cross-section of the root at cervix is oval 	<ul style="list-style-type: none"> • Root is conical with blunted apex • Mesial inclination from cervix to apex • Crown appears tilted distally in relation to root long axis • Mandibular canine root differs from the max in the following ways. <ol style="list-style-type: none"> 1. Number: Usually single, but bifurcated root is a common variation than the maxillary canine root (On occasion, the root is bifurcated near its tip. The double root may, or may not be accompanied by deep depressions in the root) 2. Size : It is shorter by 1 to 2 mm 3. Form : The root is thinner mesiodistally and its lingual surface is more narrower than that of maxillary canine. The developmental depression is more deeper on mesial surface of the root. 4. Apex : Mandibular canine has a more pointed root tip 5. Curvature: The root is usually straight and sometimes shows mesial curvature At its apical third

Canines anatomy

	Maxillary	Mandibular
Variations	<ul style="list-style-type: none"> tubercle on the cingulum. Lingual pits Very long crown or long root Short crown or root 	<ul style="list-style-type: none"> Bifurcation of the root long root short root.
Pulp anatomy	 <ul style="list-style-type: none"> Double convex lens shape in LL section, widest near cervix Narrow in MD section 	 <ul style="list-style-type: none"> Similar to maxillary canines
Identification	<p>from incisors:</p> <ul style="list-style-type: none"> long crown with a single cusp and a large cingulum crown is pentagonal, narrower at cervix and wider at contact areas. <p>Right and Left:</p> <ul style="list-style-type: none"> D surface is fuller and more convex than M M contact point is at the jxn of the incisal and middle thirds Distal contact is more cervical at the middle of crown D cusp slope is longer than the mesial. Root apex often show a distal curvature. Developmental depression of the root is deeper on the distal surface 	<p>Mand vs Max</p> <ul style="list-style-type: none"> The mandibular permanent canine has a long and narrow crown with a sharp cusp The labial ridge and cingulum are less prominent The distal cusp slope is longer than the mesial The crown appears to be tilted distally on the root base The root is long and narrow When viewed proximally, the cusp tip is lingual to the root axis line <p>Right and left</p> <ul style="list-style-type: none"> The distal cusp slope is longer Developmental depression on the mesial surface of the root is deeper Labially the mesial outline is straight and distal outline is rounded



Canines anatomy

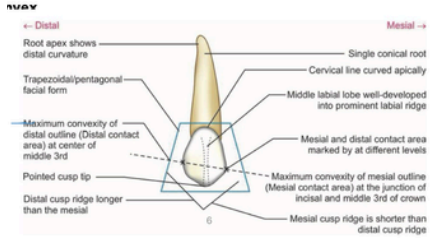
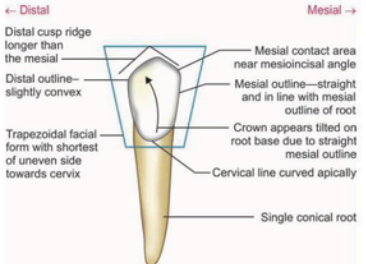
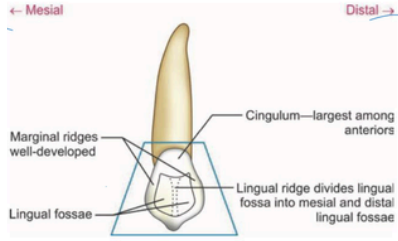
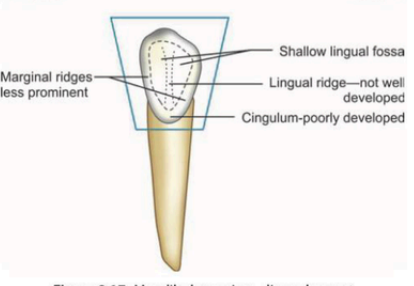
	Maxillary	Mandibular
Labial aspect	 <p>← Distal → Mesial →</p> <ul style="list-style-type: none"> Root apex shows distal curvature Trapezoidal/pentagonal facial form Maximum convexity of distal outline (Distal contact area) at center of middle 3rd Pointed cusp tip Distal cusp ridge longer than the mesial Single conical root Cervical line curved apically Middle labial lobe well-developed into prominent labial ridge Mesial and distal contact area marked by at different levels Maximum convexity of mesial outline (Mesial contact area) at the junction of incisal and middle 3rd of crown Mesial cusp ridge is shorter than distal cusp ridge 	 <p>← Distal → Mesial →</p> <ul style="list-style-type: none"> Distal cusp ridge longer than the mesial Distal outline—slightly convex Trapezoidal facial form with shortest of uneven side towards cervix Mesial contact area near mesioincisal angle Mesial outline—straight and in line with mesial outline of root Crown appears tilted on root base due to straight mesial outline Cervical line curved apically Single conical root
Lingual aspect	 <p>← Mesial → Distal →</p> <ul style="list-style-type: none"> Marginal ridges well-developed Lingual fossae Cingulum—largest among anteriors Lingual ridge divides lingual fossa into mesial and distal lingual fossae 	 <p>← Mesial → Distal →</p> <ul style="list-style-type: none"> Marginal ridges less prominent Shallow lingual fossa Lingual ridge—not well developed Cingulum—poorly developed

Figure 9.6 Maxillary canine—lingual aspect

Figure 9.17 Mandibular canine—lingual aspect

Canines anatomy

	Maxillary	Mandibular
Mesial aspect	<p>Figure 9.7 Maxillary canine—mesial aspect</p>	<p>Figure 9.18 Mandibular canine—mesial aspect</p>
Distal aspect	<p>Figure 9.8 Maxillary canine—distal aspect</p>	<p>Figure 9.19 Mandibular canine—distal aspect</p>
Incisal aspect	<p>Figure 9.19 Maxillary canine—incisal aspect</p>	<p>Figure 9.20 Mandibular canine—incisal aspect</p>

Contact area location:

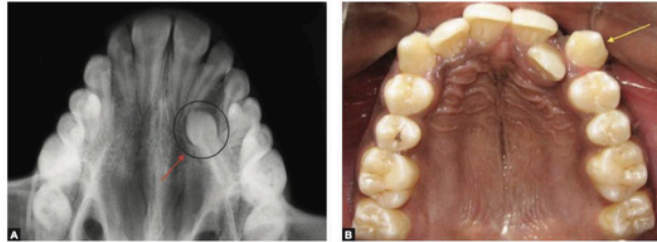
- Mesial and distal
- labial and lingual

Developmental anomalies

- **Developmental anomalies of maxillary canines:**

- **Ectopic eruption**

- **Transposition**



Figures 9.12A and B (A) Occlusal radiograph showing impacted maxillary canine; (B) Labially erupted upper canines causing malocclusion

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- **Impaction (not developed)**



Figure 9.11 Transposition of maxillary canine and 1st premolar

- **Developmental anomalies of mandibular canines:**

Read the article

- <https://pmc.ncbi.nlm.nih.gov/articles/PMC6448493/>

