

Maxillary 1st Premolar

Presented by:

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Premolars

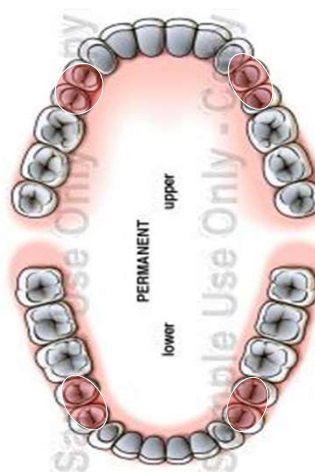
There are four maxillary and four mandibular premolars:

Upper 1st premolar: FDI 14, 24

Lower 1st premolar: FDI 34, 44

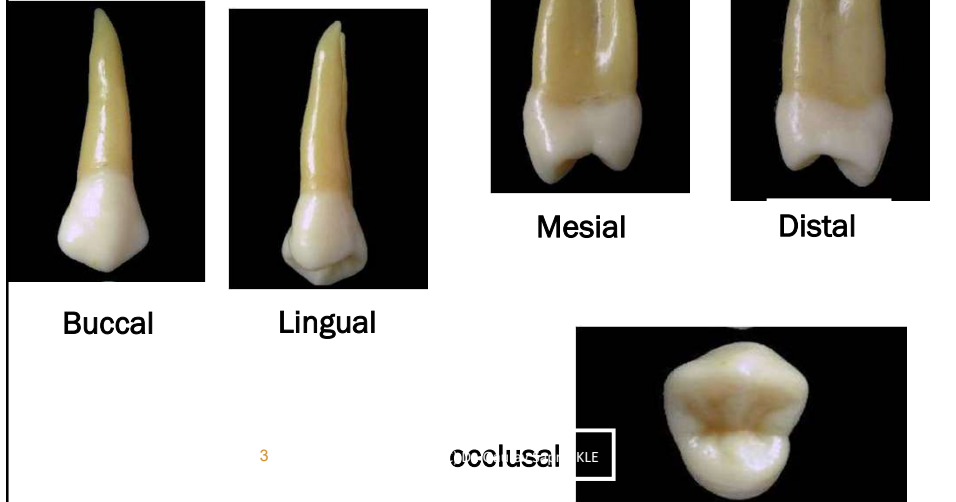
Upper 2nd premolar: FDI 15,25

Lower 2nd premolar: FDI 35,45



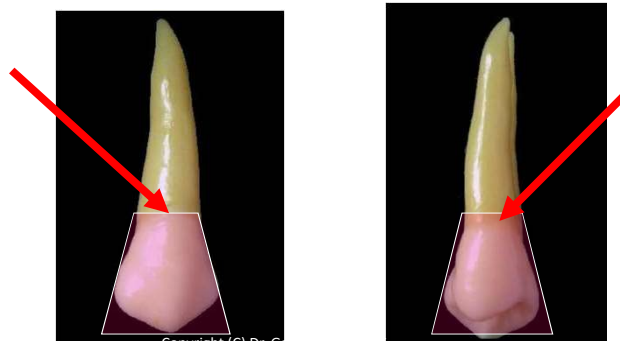
Maxillary first premolar

It has 5 surfaces:



Geometric outline of the crown

Buccal and lingual surfaces have trapezoid outline .The smallest uneven side cervically.



BUCCAL ASPECT

Buccal Outlines

Mesial outline is nearly concave.

Distal outline is nearly straight.

Mesial cusp slope is nearly straight and longer.

The distal cusp slope is slightly convex and shorter.

Contact areas:

Mesially is at the middle third while distally it is occlusally positioned which is an exception from other permanent posterior teeth.

Cervical line: is convex root wise.



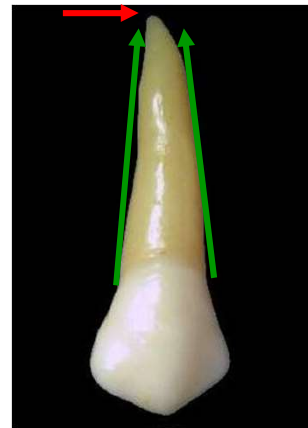
B cusp pointed and long

Outline and surface anatomy of the root

The M and D outline of the root tapers to a pointed apex that is slightly curved distally.

If it has two roots, the lingual root is hidden behind the buccal root as it's **shorter and narrower** than the buccal root.

The surface of the root is convex and smooth



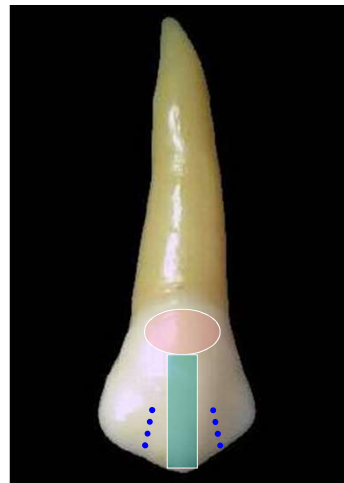
Surface anatomy of the crown

Elevations:

- The buccal surface is convex with the maximum convexity at the cervical 1/3 .
- The middle lobe is prominent buccally forming the **BUCCAL ridge**.

Depressions:

Shallow depressions are present mesial and distal to the Buccal ridge (M&D developmental depressions)



LINGUAL ASPECT

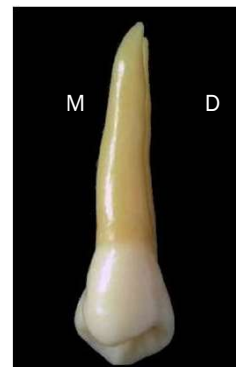
Lingual outline and surface anatomy of the crown

M and D outlines are convex.

- **The lingual cusp is shorter by 1 mm than the buccal cusp**
- **The D slope of the lingual cusp is longer than the M slope**

Cervical line: is convex root wise.

The lingual surface is convex with the maximum convexity at the middle 1/3

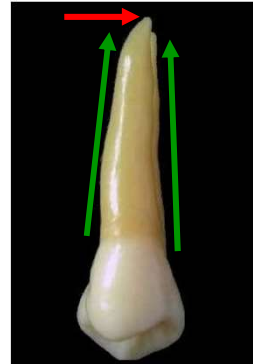


Outline and surface anatomy of the root

The M and D outlines of the root taper to a pointed apex that is curved distally.

Two roots, the lingual root appears shorter and narrower than the buccal root.

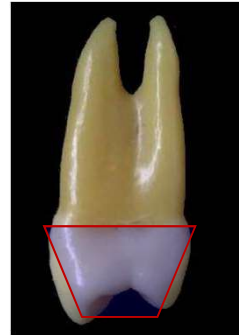
The surface of the root is convex and smooth



MESIAL ASPECT

Geometric outline of the mesial aspect

Trapezoid in shape



Buccal outline is convex with the height of contour (maximum convexity) at the cervical 1/3.

Lingual outline is evenly convex with the height of contour (maximum convexity) at middle third.

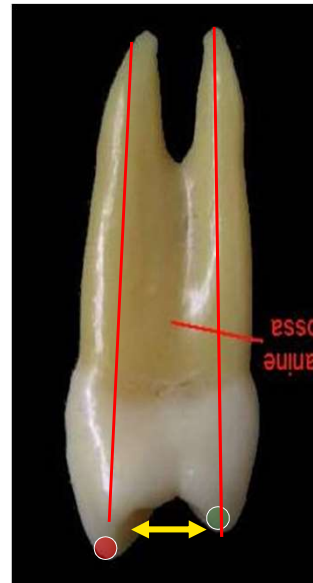
Cervical line is regular in outline and curvature is less occlusally i.e. 1mm.

Buccal cusp is longer than **Lingual** cusp by 1mm.

Wide occlusal table.

Buccal cusp tip is not in line with the center of Buccal root.

Lingual cusp tip is in one line with the lingual outline of the **L** root

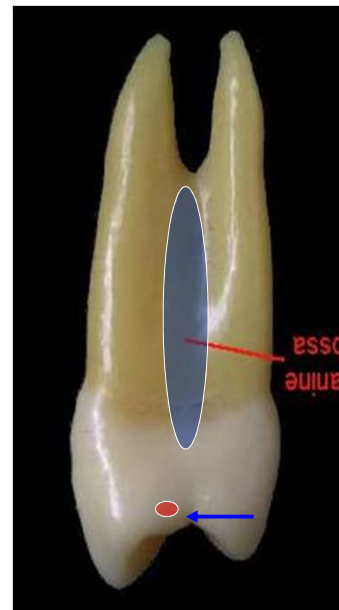


Contact area:

At the middle third and slightly buccal to the midline (BL dimension)

Mesial developmental groove is crossing MMR and located lingual to the contact area.

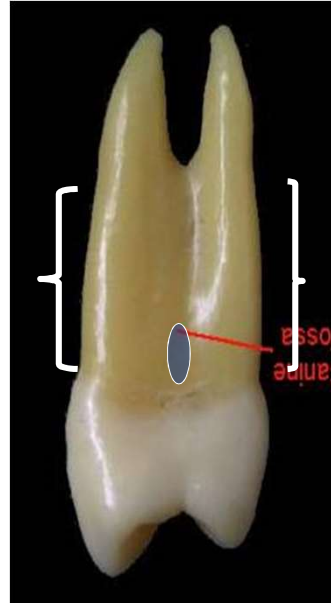
Mesial Developmental depression in the crown and continues with that between the roots (canine fossa).



In case of two roots (80%).

Root trunk is about half the root length.

Surface is smooth and convex except deep developmental depression below bifurcation.



DISTAL ASPECT



Curvature of cervical line is less as compare to mesial surface it is almost flat.

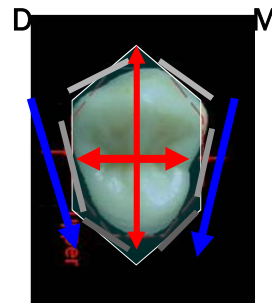
Developmental grooves are less evident.

Root trunk is flattened with no outstanding developmental signs.

Geometric outline of the occlusal aspect

It is hexagonal in shape

- 2 equal buccal sides (MB, DB)
- *The crown is wider buccally than lingually.*



Surface anatomy of occlusal aspect:

Elevations:

B triangular ridge.

L triangular ridge.

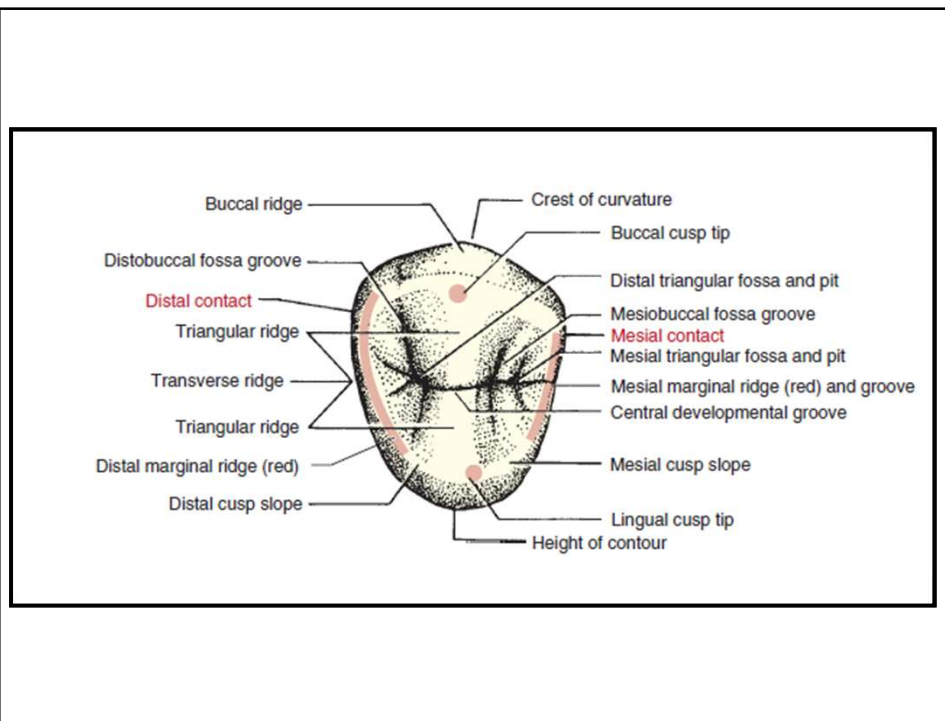
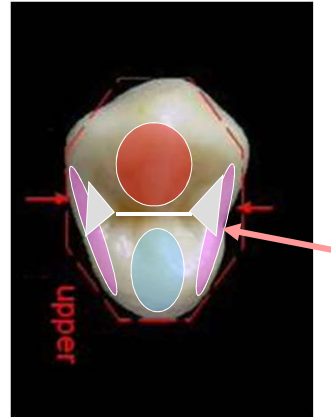
M & D marginal ridges

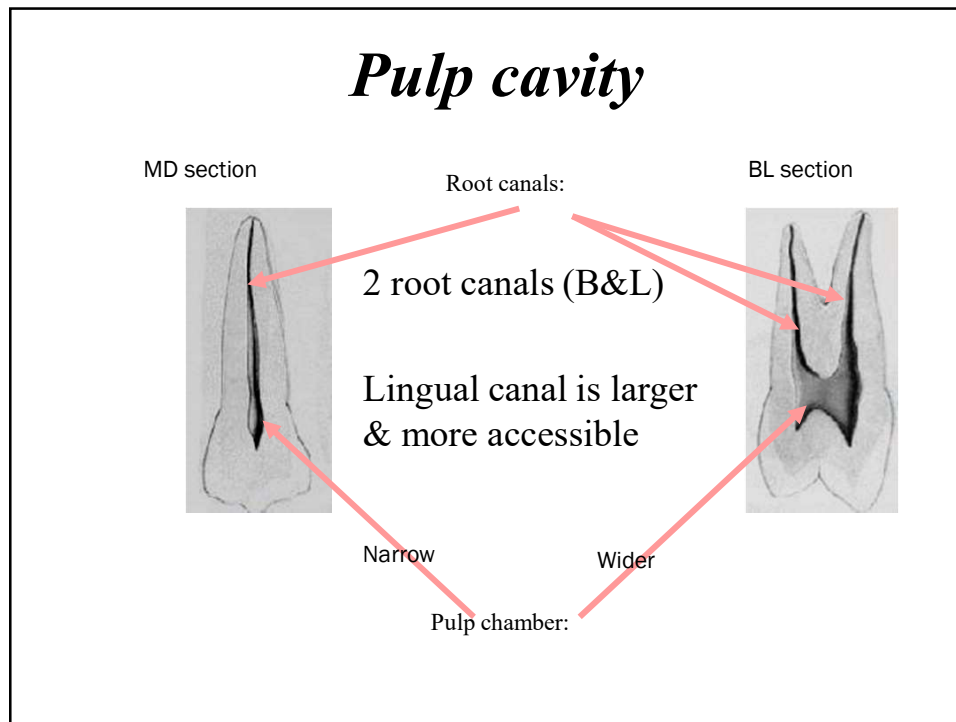
Depressions:

Central developmental groove

M and **D** triangular fossae.

M marginal developmental groove.





First evidence of calcification	1½-1¾ yr
Enamel completed	5-6 yr
Eruption	10-11 yr
Root completed	12-13 yr

MEASUREMENT TABLE

CERVICO-OCCLUSAL 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
8.5	14.0	7.0	5.0	9.0	8.0	1.0	0.0

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MAXILLARY SECOND PREMOLARS

Maxillary 2nd Premolars

- The maxillary 2nd premolar has two cusps (facial & lingual) of nearly equal size and height
- Shorter mesial cuspal ridges
- This tooth typically has one root with 2 pulp canals.

- The facial ridge is not as prominent as that of the maxillary 1st premolar.
- When compared to the maxillary 1st premolar, this tooth will usually present with more supplemental occlusal anatomy.

Chronology

Maxillary first premolar

- First evidence of calcification:1.5-1.75yr
- Enamel completed:5-6yr
- Eruption:10-11yr
- Root completed:12-13yr

Maxillary second premolar

- First evidence of calcification:
• 2-1.25yr
- Enamel completed:6-7yr
- Eruption:10-12yr
- Root completed:12-14yr

Maxillary second premolar

It has 5 surfaces:



Buccal



Lingual



Mesial



Distal

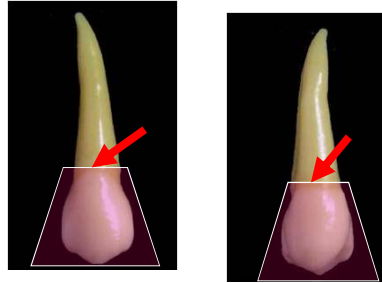
occlusal



Geometric outline of the crown

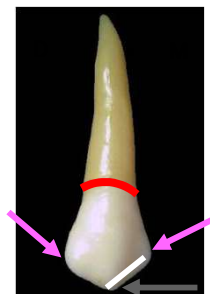
- Buccal and lingual surfaces have trapezoid outline.

The smallest of the uneven sides is cervically.



Facial Outlines and surface anatomy of the crown

Maxillary
1st
Premolar

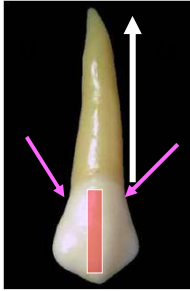
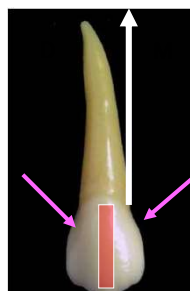


Buccal cusp is long and pointed
Mesial slope is longer than
Distal slope
Mesial contact area is in Middle
1/3 while distal is more occlusal.
Cervical line curved root wise.



Maxillary
2nd
Premolar





Buccal cusp is short and less
pointed
Mesial slope is shorter
Mesial contact A is in Occlusal 1/3
while distal is more cervical.
Cervical line less curved.

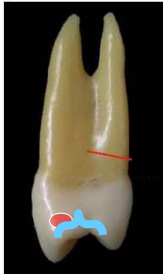

<p>Maxillary <u>1st</u> Premolar</p>		<p>Maxillary <u>2nd</u> Premolar</p>	
<p>Prominent Buccal ridge</p>	<p>Less prominent Buccal ridge</p>	<p>Narrow cervical portion.</p>	<p>Wider cervical portion.</p>
<p>Short root.</p>	<p>Longer root.</p>		

Lingual outline and surface anatomy of the crown

<p>Maxillary <u>1st</u> Premolar</p>		<p>Maxillary <u>2nd</u> Premolar</p>	
<p>The Lingual cusp is shorter by 1 mm than the Buccal cusp.</p>	<p>The Lingual and Buccal cusps are nearly of same height.</p>	<p>80% has 2 roots with Lingual root is shorter than the Buccal root and its apex is pointed.</p>	<p>Mostly Single rooted In case of two roots the Lingual root is shorter and its apex is more blunt.</p>

Mesial aspect

<p><u>Maxillary</u> <u>1st</u> <u>Premolar</u></p>  <p>Buccal cusp is longer than Lingual cusp by 1mm</p> <p>The occlusal table is wide.</p> <p>Mesial Developmental Groove and canine fossa.</p>	<p><u>Maxillary</u> <u>2nd</u> <u>Premolar</u></p>  <p>The cusps are nearly at the same level.</p> <p>The occlusal table is narrow.</p> <p>The crown surface is smooth and convex while the root has shallow developmental depression.</p>
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<p><u>4</u></p>  <p>Mesial Marginal Ridge is at the junction of Middle 1/3 & Occlusal 1/3</p>	<p><u>5</u></p>  <p>MMR positioned more occlusal.</p>
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Contact area:

<p>At the middle third and slightly buccal to the midline .</p>	<p>At the occlusal third and slightly buccal to the midline.</p>
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Distal aspect

4



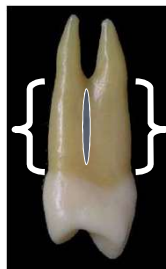
Distal Marginal Ridge more occlusal than MMR
 Contact area occlusally positioned and more buccal than MCA.
 Smooth and convex surface except for a small flat area cervical to contact area.

5



DMR more cervical than MMR
 Contact Area cervically positioned and more buccal than MCA.
 Smooth and convex surface.

4



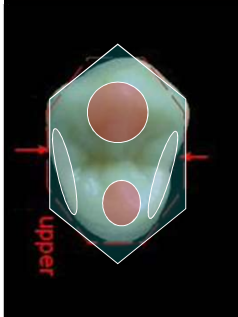
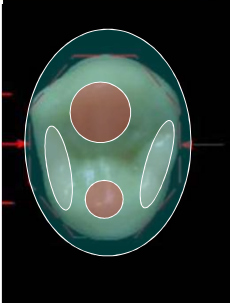
Root trunk is long as the bifurcation is near apical 1/3
 Surface is smooth and convex except shallower Dev. Depression on the root trunk than mesially.

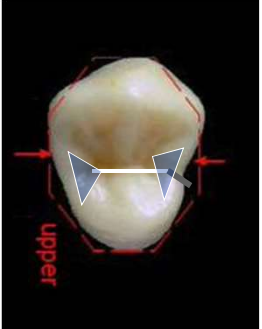
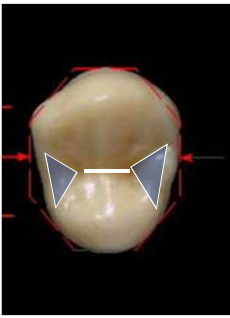
5



One root and if 2 the bifurcation will be more apically.
 Surface is smooth and convex except deeper DD in the middle of the root than mesially.

Occlusal aspect

<p>4</p>  <p><i>It's hexagonal</i></p>	<p>5</p>  <p><i>It's oval</i></p>
<p>B & L triangular ridges. M & D marginal ridges</p>	<p>B & L triangular ridges. Thicker M & D MRs</p>

<p>4</p>  <p>Long Central DG</p>	<p>5</p>  <p>Shorter Central DG.</p>
<p>M developmental groove</p>	<p>Not present.</p>
<p>M and D triangular fossae.</p>	<p>M and D triangular fossae.</p>

	First evidence of calcification	2-2½ yr						
	Enamel completed	6-7 yr						
	Eruption	10-12 yr						
	Root completed	12-14 yr						
MEASUREMENT TABLE								
	CERVICO- OCCLUSAL 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
Dimensions* suggested for carving technique	8.5	14.0	7.0	5.0	9.0	8.0	1.0	0.0

THANKS