

# PERMANENT MANDIBULAR PREMOLARS



# Introduction :



- These are 4 in number ; 2 in each side.
- They're present DISTAL to lower canine and MESIAL to the lower molars.



# MANDIBULAR FIRST PREMOLARS



- Tooth Number
- Dimensions
- Chronology
- Relation
- Surface Anatomy
- Buccal Aspect
- Lingual Aspect
- Mesial Aspect
- Distal Aspect
- Occlusal Aspect



# Mandibular 1<sup>st</sup> Premolar



TOOTH NUMBER :-

	<b>Mand 1<sup>st</sup> premolar RIGHT</b>	<b>Mand 1<sup>st</sup> premolar LEFT</b>
Universal System	28	21
FDI System	44	34

# MANDIBULAR 1<sup>ST</sup> PREMOLAR



- DIMENSIONS {in mm}:
  - > Length of crown = 8.5
  - > Length of Root = 14.0
  - > Mesiodistal diameter of crown = 7.0
  - > Mesiodistal diameter of crown = 5.0  
at cervix

# MANDIBULAR 1<sup>ST</sup> PREMOLAR



- CHRONOLOGY :-

- > 1<sup>st</sup> evidence of calcification = 1 3/4 – 2 years
- > Enamel completion = 5-6 years
- > Age of Eruption = 10- 12 years
- > Root Completion = 12-13 years

# MANDIBULAR 1<sup>ST</sup> PREMOLAR



- RELATIONS :

The lower 1<sup>st</sup> premolar makes contact **mesially** with the distal surface of the lower canine and **distally** with the mesial surface of the 2<sup>nd</sup> premolar.

# MANDIBULAR 1<sup>ST</sup> PREMOLAR



- SURFACE ANATOMY :

## Mandibular First Premolar



Buccal



Lingual



Mesial



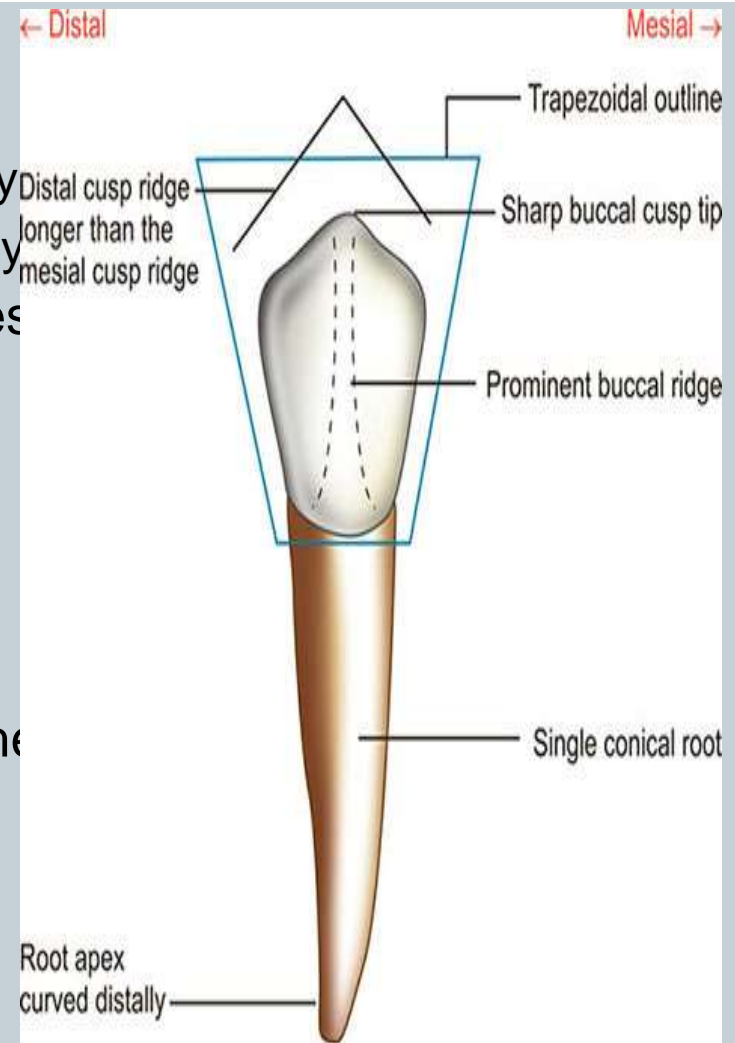
Distal

# MANDIBULAR 1<sup>ST</sup> PREMOLAR



## BUCCAL ASPECT :

- Trapezoid in shape : short side – cervically  
long side – occlusally
- Mesial outline is slightly concave till the mesial contact area.
- The distal outline is slightly concave till the distal contact area.
- The mesial slope is shorter than the distal slope.
- The buccal cuspal tip is slightly mesial to the Midline.





- Presence of Buccal ridge .
- Presence of Cervical ridge .
- Two developmental grooves mesial and distal to the buccal ridge.

### ***THE ROOT :***

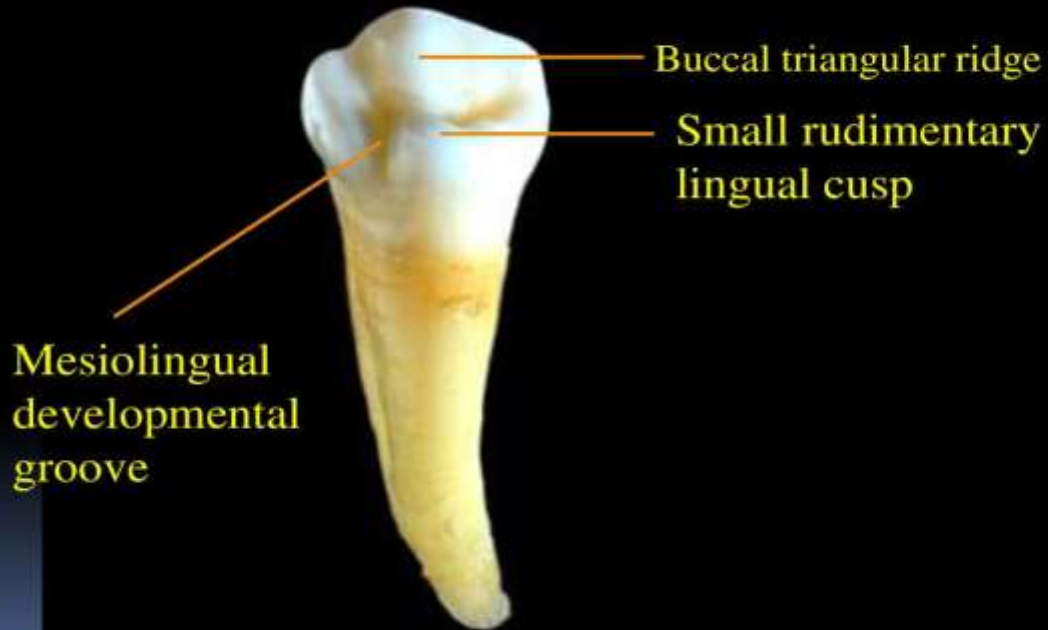
- The root is cone shaped with distal inclination of the apical 3<sup>rd</sup>.
- The root is shorter than that of Canines.

# MANDIBULAR 1<sup>ST</sup> PREMOLAR



## LINGUAL ASPECT:

### MANDIBULAR 1<sup>ST</sup> PREMOLAR-LINGUAL ASPECT





- Lingual cusp is  $2/3^{\text{rd}}$  of the buccal cusp.
- The short lingual slope can be called *well developed cingulum*.
- The mesial and distal triangular fossae can be seen
- Cervical line is slightly convex or even straight.

- A characteristic feature of the Lingual surface is the **Mesiolingual developmental groove**



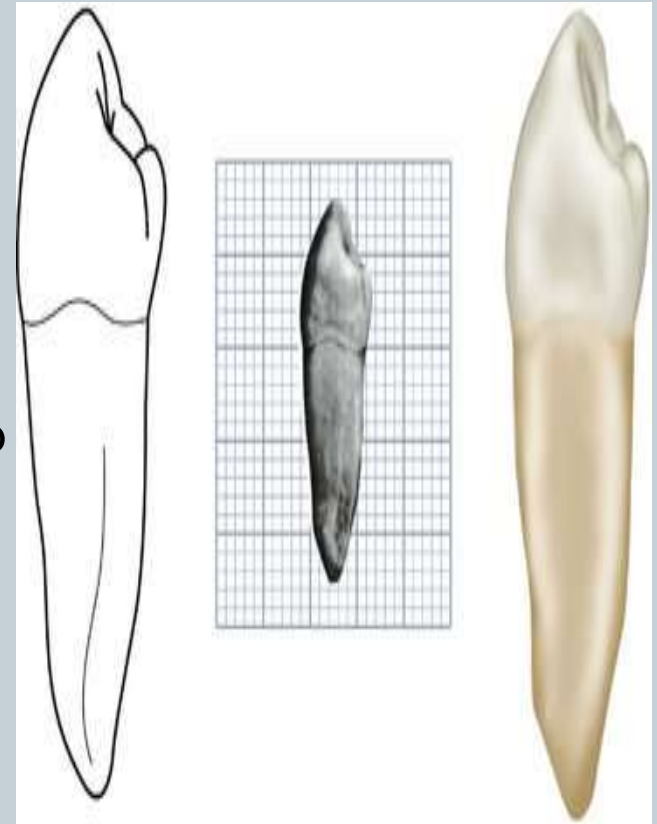
# MANDIBULAR 1<sup>ST</sup> PREMOLAR

## MESIAL ASPECT:

- It is Rhomboid in shape due to lingual inclination.
- The buccal outline is convex from Cervical line to the cusp tip.
- The lingual outline is convex.
- The lingual cusp is 2/3<sup>rd</sup> of buccal cusp.
- The mesial marginal ridge is sloping lingually.
- The contact area is in line with the buccal cusp Tip.

## THE ROOT :

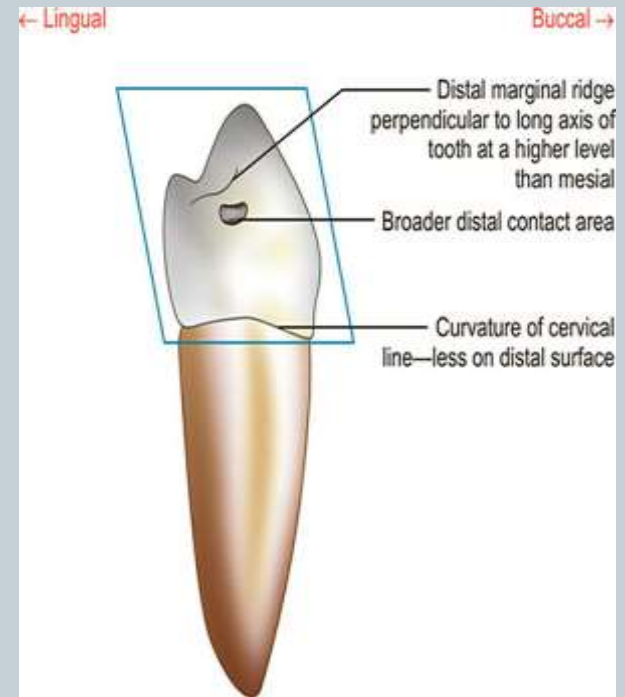
- It tapers to pointed apex and has Deep developmental groove.



# MANDIBULAR 1<sup>ST</sup> PREMOLAR

## DISTAL ASPECT:

- Similar to mesial aspect but differs in:
- The **distal marginal ridge** is straight and
  - (i) Perpendicular to long axis of the tooth
  - (ii) No developmental groove
  - (iii) The contact area is more cervical  
And broader
  - (iv) The distal cervical line is more curved.

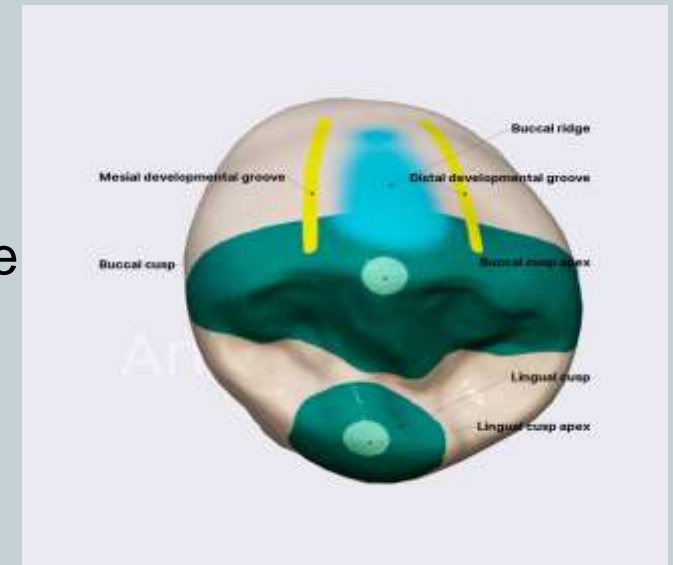


# MANDIBULAR 1<sup>ST</sup> PREMOLAR



## OCCLUSAL ASPECT:

- It is diamond or round shaped.
- The occlusal surface tapers lingually.
- The buccal cusp has large triangular fossa.
- The small lingual cusp has small triangular ridge.
- The buccal and lingual triangular ridges are connected by transverse ridge.
- Mesial and Distal triangular fossae.
- Central developmental groove may cross the Transverse ridge.





# MANDIBULAR 2<sup>ND</sup> PREMOLAR



TOOTH NUMBER :

	Mandibular 2 <sup>nd</sup> premolar RIGHT	Mandibular 2 <sup>nd</sup> premolar LEFT
Universal System	29	20
FDI system	35	45

# MANDIBULAR 2<sup>ND</sup> PREMOLAR



Dimensions {in mm} :

- > Length of crown = 8.0
- > Length of root = 14.5
- > mesiodistal diameter of crown = 7.0
- > mesiodistal diameter of crown = 5.0

At cervix

# MANDIBULAR 2<sup>ND</sup> MOLAR



- Chronology :

-> 1<sup>st</sup> evidence of calcification = 2 ¼ - 2 ½

-> Enamel completion = 6-7 years

-> Age of eruption = 11-12 years

-> Root completion = 13-14 years

# MANDIBULAR 2<sup>ND</sup> PREMOLAR



- SURFACE ANATOMY :

## Mandibular Second Premolar



Buccal



Lingual



Mesial



Distal



- Presence of cervical ridge.
- Presence of buccal ridge.
- Two developmental grooves mesial and distal to the buccal ridge.

### THE ROOT:

The root is cone shaped with rare distal inclination of the apical 3<sup>rd</sup>.



## SURFACE ANATOMY :

- Presence of cervical ridge.
- Presence of buccal ridge.
- Two **developmental grooves** mesial and distal to the buccal ridge

## THE ROOT:

The root is cone shaped with rare distal inclination of the apical 3<sup>rd</sup>.

# MANDIBULAR 2<sup>ND</sup> PREMOLAR



## BUCCAL ASPECT :

### ➔ Comparison with mandibular 1 st premolar:-

- The buccal cusp is **shorter & less pointed**
- The contact areas are broad & appear to be **higher because of the short buccal cusp.**
- The root is **broader mesiodistally & longer** than that of the first premolar
- The mesial slope is **shorter** than the distal slope.



# MANDIBULAR 2<sup>ND</sup> PREMOLAR



## LINGUAL ASPECT:

### Comparison with mandibular 1<sup>st</sup> premolar:

- the lingual cusp or cusps **longer**.
- Less of the occlusal surface may be seen from this aspect.
- **A/ in the three -cusp type**, there are a mesiolingual & a distolingual cusps.
- Mesiolingual cusp is the larger & the longer one in most cases
- **B/ in the two-cusp type**, there is **single lingual** cusp of equal height with the three-cusp type.
- has no groove, but it shows a developmental depression distolingually.

# MANDIBULAR 2<sup>ND</sup> PREMOLAR



## MESIAL ASPECT :

### ➔ Comparison with mandibular 1 st premolar:

- The crown & root are wider buccolingually.
- The buccal cusp is shorter & it is not so nearly centered over the root trunk.
- The marginal ridge is higher & it is at right angle to the long axis of the tooth.
- Less of the occlusal surface may be seen.
- There is no mesiolingual developmental groove.
- The root is longer & slightly convex on the mesial surface.
- The apex of the root is usually more blunt.

# MANDIBULAR 2<sup>ND</sup> PREMOLAR



## DISTAL ASPECT:

### Comparison with mandibular 1 st premolar :

- All of the three cusps may be seen from this aspect.
- More of the occlusal surface may be seen, since the distal marginal ridge is **at a lower level** than the mesial marginal ridge.

# MANDIBULAR 2<sup>ND</sup> PREMOLAR

## OCCLUSAL ASPECT:

### 1 ] THREE CUSPAL TYPE:

- The geometrical outline is Square.
- It has **one buccal** cusp and two Lingual cusps.
- Every cusp has triangular ridge.
- Y shaped developmental groove separating the cusps.
- There is central fossa & central pit.
- Mesial & distal **triangular fossae**.



## 2] TWO CUSPAL TYPE:

- The geometrical outline is **round**.
- There is lingual convergence.
- There is **one buccal** & **one lingual** Cusp.
- The central developmental groove may be **H** or **U** shaped.
- The mesial and distal fossae are round.



