THE PERMANENT MANDIBULAR PREMOLARS

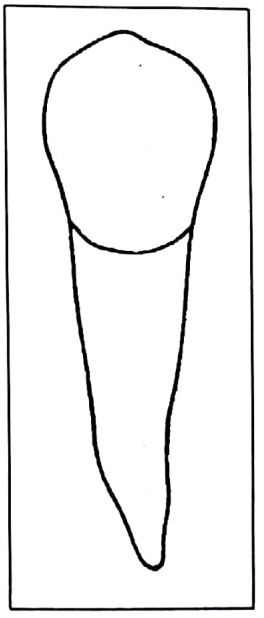
They are four in number two first and two second premolars they are located distal to canine and mesial to first molar. The mandibular first premolars are developed from four lobes, while the mandibular second premolars are developed from five lobes, three buccal and two lingual lobes. Their functions are mastication of food and supplemented to each other during function. They are called bicuspid since they have two cusps.

MANDIBULAR FIRST PREMOLAR

Eruption 10 – 12 years
Root completed 12 – 13 years

It is almost smaller than second premolar, it has a large buccal cusp and nonfunctioning lingual cusp with one single root.

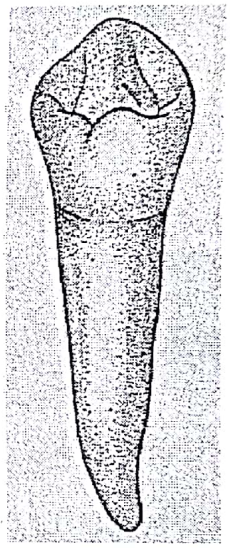
Buccal Aspect:



1. mandibular first premolar has a large, pointed buccal cusp.
2. there is slight concavity in the mesial and distal slop of the buccal cusp.
3. The contact areas are located nearly at the same level they are located slightly above the center of middle third.
4. The mesial out line of crown is straight or slightly concave from the contact area to cervical line.
5. The distal out line of crown is slightly concave from the contact area to cervical line.

6. The measurement mesiodistally at the cervical line is small when compared with the measurement at the contact area.
7. There is a central ridge extended form the cusp tip to cervical line called buccal ridge.
8. The buccal surface of the crown is more convex than maxillary premolars.
9. The cervical line is regular and slightly convex towards the root.
10. The root outline is conical and the apical third in most cases carved distally.

Lingual Aspect:

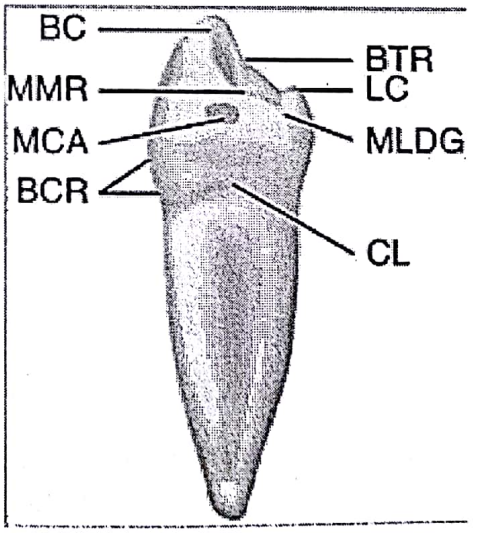


1. The crown and the root tapers lingually because the lingual measurement mesiodistally is less than that buccally so that part of mesial and distal surfaces can be seen.
2. The lingual cusp is short, pointed and poorly developed, so that the occlusal surface slopes toward the lingual in the cervical direction.
3. The cervical portion is narrow and convex with, concavities in evidence between the cervical line and the mesial and distal contact area.
4. A characteristic of this aspect is the mesiolingual developmental groove which separated between the mesial marginal ridge from the lingual cusp and extends into the mesial fossa of the occlusal surface.
5. The root tapers evenly from the cervix to a pointed apex.

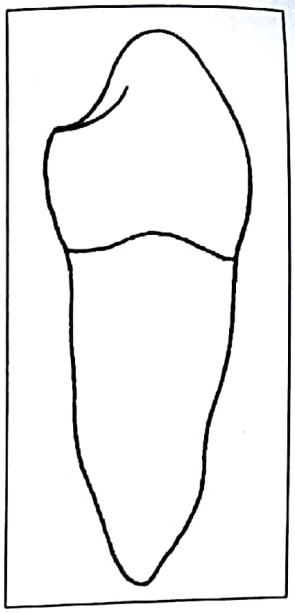
   Developmental depressions in the root may be seen with developmental grooves mesially.

Mesial Aspect:

1- The crown outline is roughly rhomboidal with buccal and lingual outlines is markedly convex.
2- The tip of buccal cusp is on a line with the long axis of the root.
3- The tip of the lingual cusp is on a line with the lingual outline of the root.
4- the buccal ouline of crown from this aspect is curved from the cervical line to the tip of buccal cusp.
5- The lingual outline of crown is less convexity than buccal surface.
6- The distance from the cervical line lingually to the tip of lingual cusp is about two thirds of that from the cervical line buccully to the tip of the buccal cusp.
7- The cervical line on the mesial surface is rather regular and curving occlusally.
8- The root outline is taper ending with a slightly pointed apex. Occasionally a deep developmental groove is seen along the root.



Distal Aspect:



1. The distal marginal ridge is higher than the mesial one.
2. The distal contact area is broader than the mesial contact area.
3. The cervical line is less curved.
4. The surface of the root distally exhibits more convexity than was found mesially, a shallow developmental depression is centered on the root without deep developmental groove.

Occlusal Aspect:

Two form of the occlusal aspect are present which are roughly ***diamond-shaped*** and ***circular*** form, the two form having the following characteristics :-

1- The buccal lobe makes up the major of the tooth crown.

2- The buccal cusp having two cusp ridge which are the mesiobuccal and the distobuccal cusp ridges, the marginal ridges are well developed.

3- The crown converges sharply to the center of the lingual surface.

4- The lingual cusp is small.

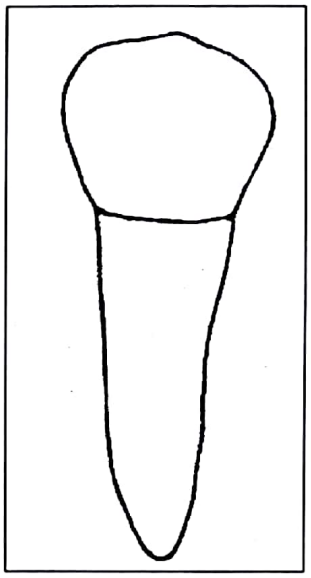
5- The mesial and distal triangle fossa are more directed buccally.

6- The occlusal surface shows a heavy buccal triangular ridge and a small lingual triangular ridge.

MANDIBULAR SECOND PREMOLAR

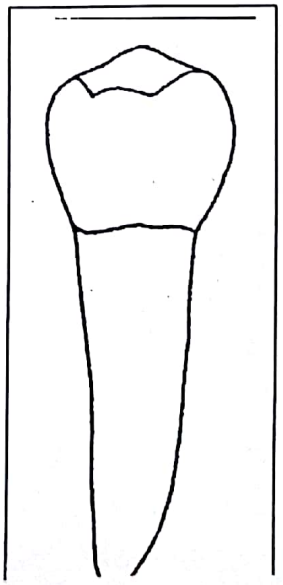
Eruption 11 – 12 years
Root completed 13– 14 years

This tooth resembles the lower four from the buccal aspect only. It has a single root which is larger and longer than that of lower four. This tooth coming in **two form**, the **three-cusp type**, one buccal and two lingual its most often seen, and it appears more angular from the occlusal aspect. The second is the **two-cusp type**, one buccal and one lingual, it appears more rounded from the occlusal aspect.



Buccal Aspect:

1- The buccal cusp is shorter than in lower four.
2- The contact areas are broader and appear to be higher because of the short buccal cusp.
3- the mesio-buccal and disto-buccal cusp ridges (cusp slopes) are less steep, more rounded.
4- The crown is shorter overall and is wider in the cervical third than the mandibular first premolar.
5- The buccul ridge is not well developed.
6- The cervical line is less curved than it does on mandibular first premolars.
7- the root is broader mesiodistally than lower four.
8- the root apex is more blunt.

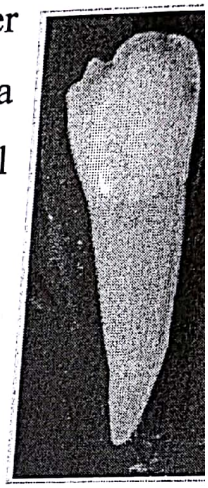


Lingual Aspect:

1- The lingual cusp or cusps are well developed and longer than that of lower four so that less of the occlusal surface can be seen from this aspect.

2- **In the three- cusp type** there are two lingual cusp, the mesiolingual one which are the larger and the longer one of the both and the distolingual one and there is a shorter groove extended occlusolingually between them called lingual groove. The two cusps are not as long as the buccal cusp and are less pointed.

3- **In the two-cusp type** there is one lingual cusp which is smaller than the buccal cusp with no developmental groove, but there is a developmental depression distolingually between the lingual cusp and the distal marginal ridge.



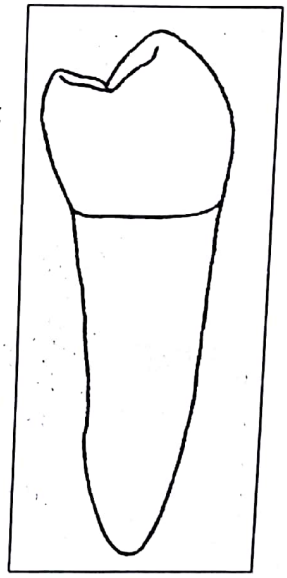
4- there is little lingual convergence of the proximal sides of the crown, so that less of the mesial and distal sides of this tooth may be seen from this aspect than are seen from the lingual aspect of the mandibular first premolar.

5- The lingual portion of the root is smoothly convex for most of its length.

Mesial Aspect:

Lower man.second premolar differs from the man. first premolar from this aspect as follows:-

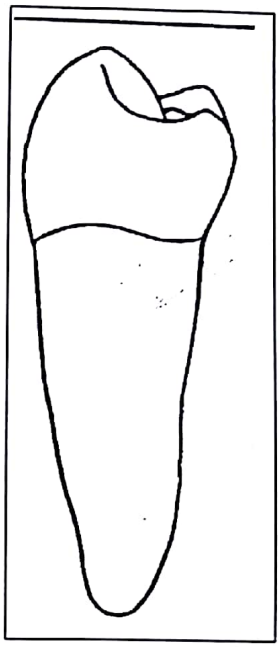
1- The crown and root are wider buccolingually.
2- The buccal cusp is shorter than lower four.
3- The lingual cusp is more developed.
4- There is no mesiolingual developmental groove on the crown portion.



5- The root is longer.

6- The root apex is more blunt.

Distal Aspect:-

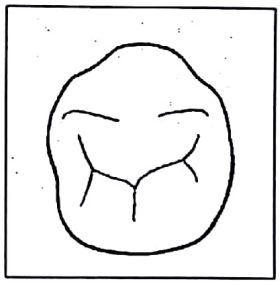


This aspect is similar to the mesial aspect except that most of the occlusal surface can be seen from this aspect since the distal marginal ridge is at lower level than the mesial marginal ridge.

The disto-lingual cusp is usually smaller and shorter than the mesio-lingual cusp (Three-cusp type), so both lingual cusps are seen from this aspect.

Occlusal Aspect:

a - *Three-cusp type:-*



1-the occlusal out line is square in shape.

2-the three cusps are well developed, the buccal cusp is the larger then followed by the mesiolingual cusp and the distolingual cusp which is the smallest. Each cusp has well formed triangular ridge, the three triangular ridges converge toward a central fossa, which has central pit

3- There are three developmental grooves radiate from the central pit and form a Y on the occlusal surface and separate the triangular ridges: the mesial, distal and lingual developmental grooves.

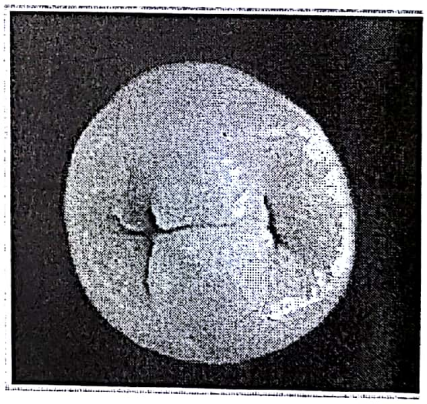
4-The long mesial groove extends in a mesio-buccal direction and ends in the mesial triangular fossa just distal to the mesial marginal ridge.

5-The short distal groove extends in a disto-buccal direction and ends in the distal triangular fossa mesial to the distal marginal ridge.

6- The lingual groove extends lingually between the two lingual cusps to the lingual surface for a short distance. This groove is distal to the center of the crown.

7-Supplemental grooves are often seen. Occasionally, a groove crosses the mesial or distal or both marginal ridges.

***b-Two-cusp type*:-**



1- it is rounded in shape lingual to the buccal cusp ridges

2- the mesiolingual and the distolingual line angles are rounded,

3- there is no central pit, it has the central developmental groove which is end in the center of the mesial and the distal fossa.

4- The triangular ridges of the two cusps form a transverse ridge.

5-The mesial and distal fossae are roughly circular depressions having supplemental grooves radiating from the central groove and it ends at the marginal ridges. Occasionally, a groove crosses the mesial or distal or both marginal ridges.