

Dental Anatomy

Mandibular second premolar

It is the fifth mandibular tooth from the median line, it resembles the mandibular first premolar from the buccal aspect only. Although, the buccal cusp is not as pronounced, the mesiodistal measurement of the crown & its general outline are similar. In other respects the tooth is larger & has better development.

This tooth assumes two common forms. The first form, which occurs most often, is the **three-cusp type**, which appears more angular from the occlusal aspect. The second form is the **two-cusp type**, which appears more rounded from the occlusal aspect.

The two types differ mainly in the occlusal design. The outlines & general appearance from all other aspects are similar.

The single root of the second premolar is larger & longer than that of the first premolar. The root is seldom if ever bifurcated.

To describe the separate aspects of this tooth, direct comparisons are made with mandibular first premolar except for the occlusal aspect

TABLE 10-2 Mandibular Second Premolar

First evidence of calcification	2¼–2½ yr
Enamel completed	6–7 yr
Eruption	11–12 yr
Root completed	13–14 yr

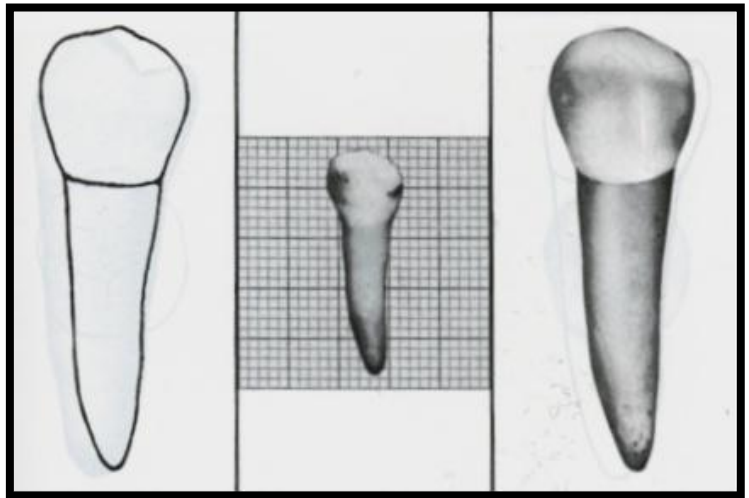
MEASUREMENT TABLE

	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	8.0	14.5	7.0	5.0	8.0	7.0	1.0	0.0

*In millimeters.

Buccal aspect

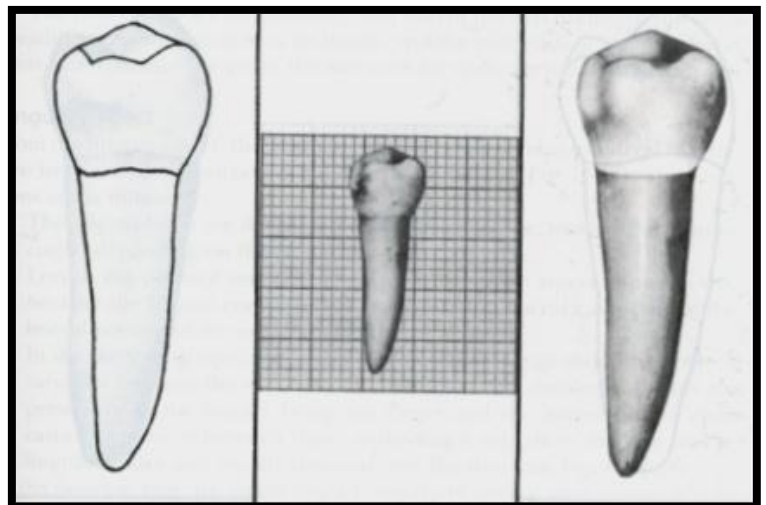
- The buccal cusp is shorter & less pointed than that of the first premolar, with mesiobuccal & distobuccal cusp ridges presenting angulation of less degree.
- The contact areas are broad & appear to be higher because of the short buccal cusp.
- The root is broader mesiodistally & longer than that of the first premolar, & is ends in an apex that is more blunt.



Lingual aspect

From this aspect, the second premolar crown shows considerable variations from the crown portion of the first premolar. These variations are: -

1. The lingual lobes are more developed making the cusp or cusps longer.
2. Less of the occlusal surface may be seen from this aspect. However, since the lingual cusps are slightly shorter than the buccal cusp part of the buccal portion of the occlusal surface may be seen.



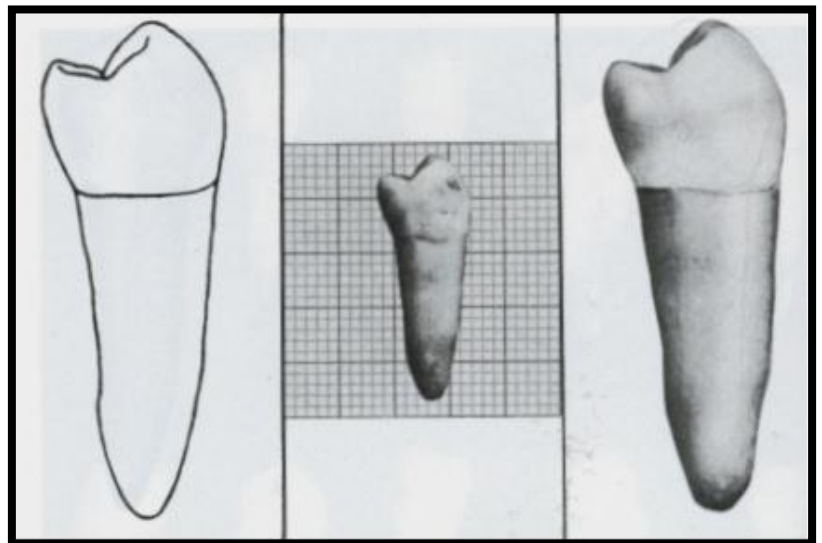
3. A/ in the **three-cusp type**, there are a mesiolingual & a distolingual cusps, the former being the larger & the longer one in most cases. There is a groove between them extending a very short distance on the lingual surface & usually centered over the root.

B/ in the **two-cusp type**, there is single lingual cusp of equal height with the three-cusp type. It has no groove, but it shows a developmental depression distolingually where the lingual cusp ridge joins the distal marginal ridge.

Mesial aspect

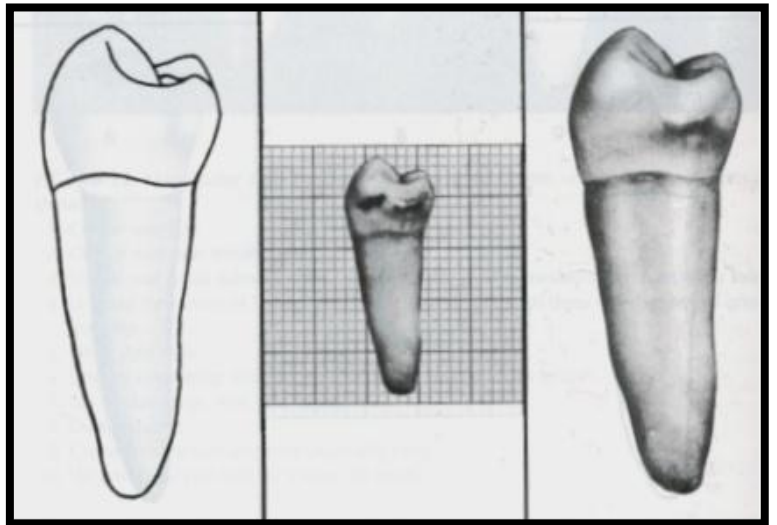
From this aspect, the second premolar differs from the first premolar as follows: -

1. The crown & root are wider buccolingually.
2. The buccal cusp is shorter & it is not so nearly centered over the root trunk.
3. The lingual lobe development is greater.
4. The marginal ridge is higher & it is at right angle to the long axis of the tooth.
5. Less of the occlusal surface may be seen.
6. There is no mesiolingual developmental groove on the crown portion.
7. The root is longer & in most cases slightly convex on the mesial surface.
8. The apex of the root is usually more blunt on the second premolar.



Distal aspect

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



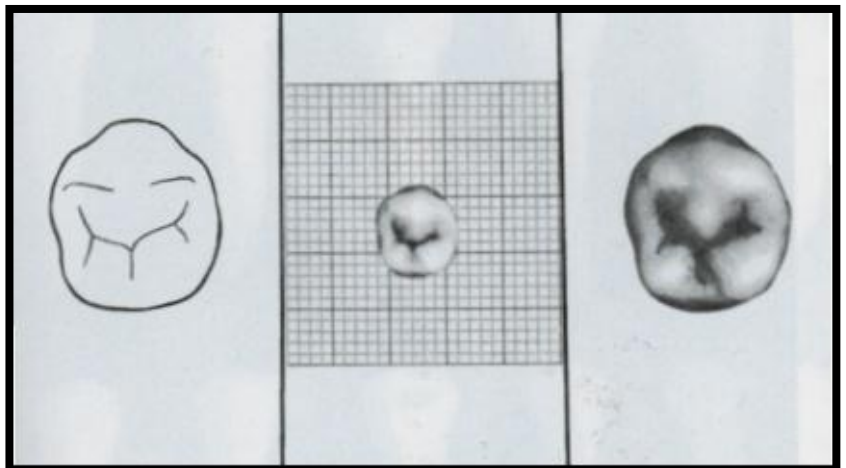
N.B.

The crowns of all posterior teeth are tipped distally to the long axes of the roots. So that when the specimen tooth is held vertically, more of the occlusal surface may be seen from the distal aspect than from the mesial aspect, this is a characteristic possessed by all posterior teeth, mandibular & maxillary.

Occlusal aspect

A/ The three-cusp type (the square type):

1. It appears square lingual to the buccal cusp ridges.
2. The buccal cusp is the largest, the mesiolingual cusp is next, & the distolingual cusp is the smallest.



3. Each cusp has well-formed triangular ridges separated by deep developmental grooves. These grooves converge in a central pit & form a (Y) shape on the occlusal surface. The central pit is located slightly distal to the central point between mesial & distal marginal ridge.
4. Starting at the central pit, the developmental grooves are: -
 - a. Mesial D.G. : travels in a mesiobuccal direction & end in the mesial triangular fossa.
 - b. Distal D.G. : travels in a distobuccal direction & ends in the distal triangular fossa.
 - c. The lingual D.G. : extends lingually between the two lingual cusps & ends on the lingual surface of the crown.
5. Supplemental grooves & depressions are often seen, radiating from the developmental grooves.
6. The point angles are distinct, developmental grooves are often deep.

B/ The two-cusp type (the round type):

1. The outline of the crown is rounded lingual to the buccal cusp ridges.
2. There is one well-developed lingual cusp directly opposite the buccal cusp.
3. The mesiolingual & distolingual line angles are rounded.
4. There is central developmental groove, travels in a mesiodistal direction, it may be straight or crescent-shaped, it ends in mesial & distal fossae, there is supplementary groove radiating from the central groove.
5. Some of these teeth show mesial & distal developmental pits centered in the mesial & distal fossae.
6. There is a developmental depression crossing the distolingual cusp ridge.

END