



Preventing Unwanted Mesial Root Tip on Mandibular First Premolars

When orthodontists review progress panoramic radiographs, they often find that the mandibular first premolar requires bracket repositioning—usually due to unwanted mesial root tipping (A). Mesial root angulation is not a naturally occurring eruption phenomenon; rather, it occurs because of errant bracket placement during initial bonding.

The most likely reason for incorrect positioning is the mandibular first premolar's unique dental anatomy. With all other teeth, the mesial marginal ridge is located more occlusally than the distal marginal ridge, and the mesial contact area is located more occlusally than the distal contact area. The mandibular first premolar is the exception; its mesial marginal ridge and mesial contact area are both located more gingivally. Therefore, if the orthodontist attempts to raise the mesial marginal ridge and mesial contact area in initial bonding, the bracket will have an improper mesial root activation (B).

Consider the following bonding strategies of Dr. Brandon Scheer and Dr. Robert Pickron.

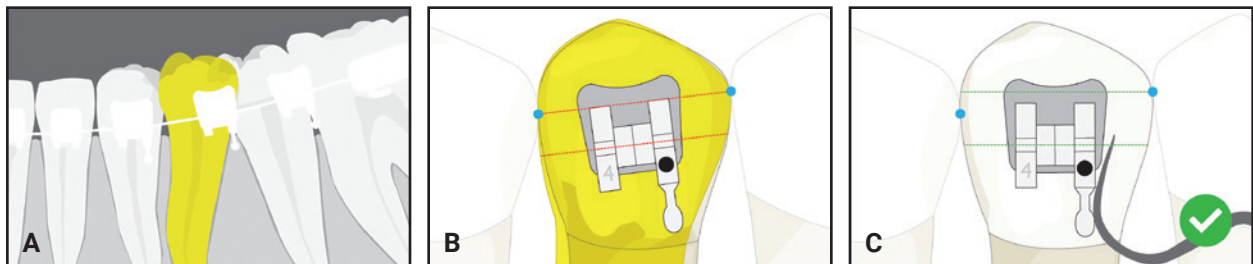
Dr. Scheer: “The mesial third of the mandibular first premolar is like a spare part that doesn't seem to fit the rest of the tooth. I have had luck by visually ignoring the mesial third and using the middle and distal third to guide the bracket into position.”¹

Dr. Pickron: “Bicuspid typically are not tipped mesially or distally, so the bracket should be placed level with the molar and the occlusion.”²

We advocate a simple method: place the mandibular first premolar bracket in a standard premolar orientation, then add 5-10° of distal root tip before light curing (C). That helps make the bracket slot level with the occlusion and accounts for the visual incongruity caused by the mesial anatomy.

Anecdotally, this bonding error seems to occur more often with the mandibular left first premolar than with the right first premolar, probably because of visual parallax issues from a right-handed operator seated at the 11:00 position. We recommend that the operators move to a 1:00 position while bonding the left bracket. The use of an intraoral mirror and a panoramic radiograph should also be considered.

Some contend that the mandibular first premolar's mesial root tip is partly attributable to distortion on the panoramic radiograph. In fact, a panoramic radiograph can exaggerate the tooth's mesial root tip by more than 5°.³ Therefore, the radiographic information should be combined with an intraoral clinical assessment to produce the best results when bonding a mandibular first premolar bracket.



REFERENCES

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