Properly imaging the maxillary fourth premolar
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There is a common mistake that we see on submissions on vetdentaradcom. This newsletter will help you make better images. These images are from the “Dental radiology simplified” poster available at www.dogbeachvet.com.

As described in previous newsletters as well as in numerous texts, the maxillary premolars and molars are exposed with a 45 degree angle in the vertical plane. (Figure 1) All teeth other than the maxillary P4 are imaged best on a straight lateral projection. (Figure 2)

Figures 1 and 2: Straight lateral bisecting angle technique
The PID is positioned 45 degrees from the plate in the vertical plane and parallel in the horizontal plane. This gives an excellent image of the first and second premolars. The straight lateral 45 degree bisecting angle will give a good representation of the mesial roots but they will be overlapped. (Figure 3) In this author’s opinion, this is sufficient for a general practitioner in the vast majority of cases. It is exceedingly rare to see a periapical lucency on only one root of this tooth and periodontal disease can be easily seen on the straight lateral.

Figures 3: Straight lateral bisecting angle technique for the maxillary P4
The PID is positioned 45 degrees from the plate in the vertical plane and parallel in the horizontal plane. This provides a diagnostic image of the fourth premolars, but the mesial roots are overlapped (red arrows).
Therefore, in most cases extra images with a change in the horizontal angle are not necessary. However, our experience at vetdentalrad.com is that practices send proper images of all teeth except the maxillary P4. The reason is that when the position indicator device (PID) is aligned parallel to the maxilla in the region of the P4, the PID is actually pointing distally due to the bulging out of the zygomatic arch. (Figure 4) This is especially true in brachycephalic dogs. This results in an image where the distal root is superimposed on the distal root of the M1. (Figure 5) If the mesial roots have been split with the distal root over the molar, the buccal root is in the middle.

Therefore, it is recommended to image the maxillary fourth premolars with the PID pointed slightly towards the nose. (Figure 6) When the tubehead is in this position, the distal root is well visualized, away from the first molar and the palatal root is in the middle. (Figure 7)

**Figures 4 and 5: Common mistake made when imaging the maxillary P4.**
Due to the zygomatic arch interference the PID is positioned pointing towards the back of the patient in the horizontal plane. This superimposes the distal root over the first molar (red arrow). This is a non-diagnostic image. With this projection, the palatine root is in front (blue arrow) and the buccal is in the middle (yellow arrow).

**Figures 6 and 7: The distal tube shift technique for the maxillary P4.**
The PID is positioned pointing towards the front of the patient in the horizontal plane. This projection provides a clear view of all three roots. The distal root is visualized clear of the first molar (red arrow). With this projection, the buccal root is in front (yellow arrow) and the is in the middle (blue arrow).