Here at Veterinary Dental Specialties and Oral Surgery we have seen several cases where veterinarians have recommended extraction of teeth with slight widening of the periodontal ligament. Periapical rarefaction is a classic sign of endodontic disease (dead and infected teeth), however a slight widening of the periodontal ligament can certainly be normal. This is especially true on canines (particularly maxillary) and mandibular teeth that’s apex ends in the mandibular canal. This newsletter will demonstrate the difference between normal anatomy and pathologic changes. Remember that (almost) instant help with interpretation is available at www.vetdentalrad.com.

In a normal healthy tooth, the periodontal ligament should be of uniform width around the tooth. (Figures 1 a & b) A widened and/or uneven area at the apex of the root is generally diagnostic for endodontic disease. (Figures 2 a & b)

However, a slight widening of the periodontal ligament at the apex of the teeth can be normal. In canine teeth (especially the maxillary) this is a well-known finding and called the “chevron effect”. (Figures 3 a & b) This widening of the periodontal ligament is also commonly seen in teeth who’s apex ends in the mandibular canal, especially the lower first molar. (Figures 4 a & b)
Figure 3: Chevon effect on canines (a) maxillary right and (b) mandibular (red arrows).
In (a) the blue arrows point to the endodontic system of the canine and the white the relatively similar ones on the second and third premolars.

Figure 4: Mild periodontal ligament widening of the left first molar (a) and fourth premolar (b).
These apices of both these teeth end within the mandibular canine.

These changes may appear to be a periapical lesion, but they can be differentiated from pathology because: 1) it is very smooth and regular; and 2) it is v-shaped (following the apex of the tooth) as opposed to irregular and round. (Figures 5)

Figure 5: Periapical lucency on the left maxillary canine (204) (red arrows)
Note that the endodontic system (blue arrows) of this tooth is much larger than the second premolar (white arrow).
This is another indication of non-vitality.

If there are any questions as to if the lesion is real or not, and the tooth is normal otherwise (not discolored or has a fracture with direct pulp exposure), perform the following tests.
1) Compare the tooth to the contralateral; in general, these changes are bilateral
2) Evaluate the width of the affected tooth with surrounding and contralateral teeth (the size should be similar)
3) Transillumination: a vial tooth will let light pass through, while a non-vital one will tend to attenuate it.

If all of the above tests are normal, the tooth is likely vital and no treatment is necessary. If the tooth is deemed to be non-vital, extraction or root canal therapy is recommended.