

Previous newsletters reviewed pulpal diagnoses; the next few will tackle apical diagnoses. Symptomatic irreversible pulpitis will motivate a patient to seek endodontic treatment as will an acute apical abscess. However, both the status of the pulp and apical tissues are necessary for a bona fide endodontic diagnosis that legitimises our treatment recommendations.

The first radiograph above is of teeth in quadrant two with normal apical tissue. The lamina dura are intact and the PDL is uniform for the entirety of the roots. Radiographically apical tissue is not normal if the PDL is unusually wide, the lamina dura is thicker than normal or diffuse.

Compare the radiographic features of several teeth and look for unique features. Large apical lesions are self-evident but critical diagnostic details can be subtle and easily missed if one does not scrutinise pre-op PAs. Examine the entire root surface not just the apices. Do not assume mid-root or furcal abnormalities are pathognomonic for a fracture or periodontal disease. The second and third radiographs above show a furcal defect that is present because of an accessory canal (medicated with Diapex). Endodontic treatment alone will arrest this disease process and the tooth has an excellent long-term prognosis.

The fourth PA above is distorted and undiagnostic. The palatal roots are elongated while the buccal roots are foreshortened. This distortion can result in a healthy PDL to appear abnormally wide at the apex of a palatal root. This is called projection. Conversely it is difficult to glean any valuable information from the distorted images of the buccal roots. Foreshortening and elongation can occur on any tooth. Such distorted images are the result of improper vertical angulation. All endodontic diagnoses require at least one bitewing and two non-distorted PAs.

Most roots are ovoid not round, subsequently no single PA will allow an adequate evaluation of such complex structures. Two PAs are better than one, yet multiple PAs may not be sufficient either. PAs are 2-D representations of 3-D objects. The image of apical tissues on a PA is influenced by the superimposition of anatomical structures and the variability of the thickness, density, and texture of the overlying bone. These variabilities are eliminated with cone beam CT imagery. Although not necessary for every case, CBCT is a powerful diagnostic adjunct.

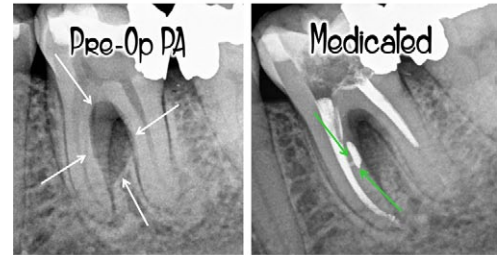
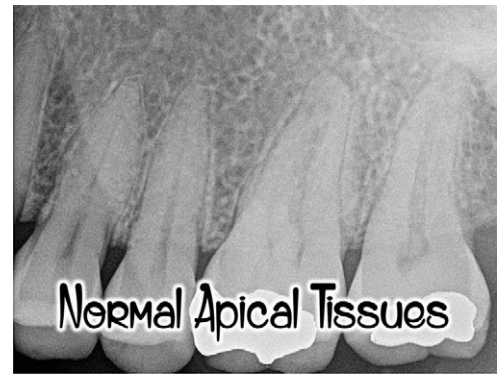
When there is no tenderness to percussion, bite, or palpation the apical tissue is considered normal. Comparative testing with a clear understanding of what is normal for a patient is the first step to attaining a proper diagnosis. Test multiple teeth in a quadrant to determine what the norm is and then see if any one tooth responds uniquely.

Both the clinical and radiographic findings should support the final apical diagnosis. If this is not the case then further investigation is required. Not only is normal good but it is necessary to know what it is in order to spot pathology.

Regards,



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