



The “endodontic system” is the hollow root canal area inside a tooth that is filled with sensitive pulp tissue: blood vessels, nerves, and connective tissue. These tissues allow the teeth to grow, mature and respond to stress. The blood supply and nerves enter the teeth through a collection of small holes in the tips of the roots (‘apical delta’) in dogs and cats.

Endodontic disease refers to damage to the dental pulp. Depending on the severity of the insult, the inflammation in the pulp (pulpitis) may be reversible or irreversible. Reversible pulpitis is usually caused by minor trauma, with the tooth surviving the insult. In irreversible pulpitis the tissues swell, preventing blood from entering the root canal; the result is “death” of the tooth. The most common cause of irreversible pulpitis in veterinary patients is fracture of a tooth, exposing the pulp tissue to bacteria in the oral cavity. Eventually the tooth fills with infected material that may then leave the apex of the tooth and subsequently cause disease of the surrounding bone.

Although most fractured or infected teeth are not associated with swelling or drainage, sometimes the infection seeping out of the root tips will cause swelling or drainage through the skin or into the mouth. This most commonly occurs with a fracture of the large upper fourth premolar in dogs, which drains through the skin of the face below the eye. Although antibiotic treatment may temporarily reduce the swelling and discomfort, a cure is not possible until the tooth is effectively treated.

A dental x-ray is the first step to evaluate the fractured tooth, its supporting structure (the periodontium) and surrounding bone. There are several options for dealing with a fractured tooth that has an exposed pulp chamber. The “do nothing” option is not appropriate given that the tooth is infected and painful! If the supporting structures of the tooth are intact (periodontally sound) and the tooth is not fractured below the gum line, one option is root canal therapy. This involves removal of the diseased pulpal tissue. The clean and disinfected root canal is then filled with an inert material to prevent future bacterial contamination. A tooth colored compound is then applied to seal the crown against further infection. Results of root canal treatment are excellent when the procedure is performed well.

If the tooth has moderate to severe periodontal disease, the pet is geriatric, or anesthetic concerns dictate a one-time shorter dental procedure; then extraction of the tooth may make more sense than endodontic treatment.

When immature teeth are fractured, usually in pets less than 18 months of age, a related procedure called vital pulp therapy may be a treatment option. This treatment can help keep the tooth alive, allowing it to become stronger subsequently by laying down new supporting structures (dentin) internally. It is critical to see and treat these cases as soon after fracture as possible. Most veterinary dentists rarely perform this procedure in older patients due to the higher risk of failure when compared to root canal therapy. Teeth treated with vital pulp therapy may require root canal treatment if the vital pulp therapy fails. X-ray follow-up appointments are part of appropriate treatment.