



Endodontic Disease

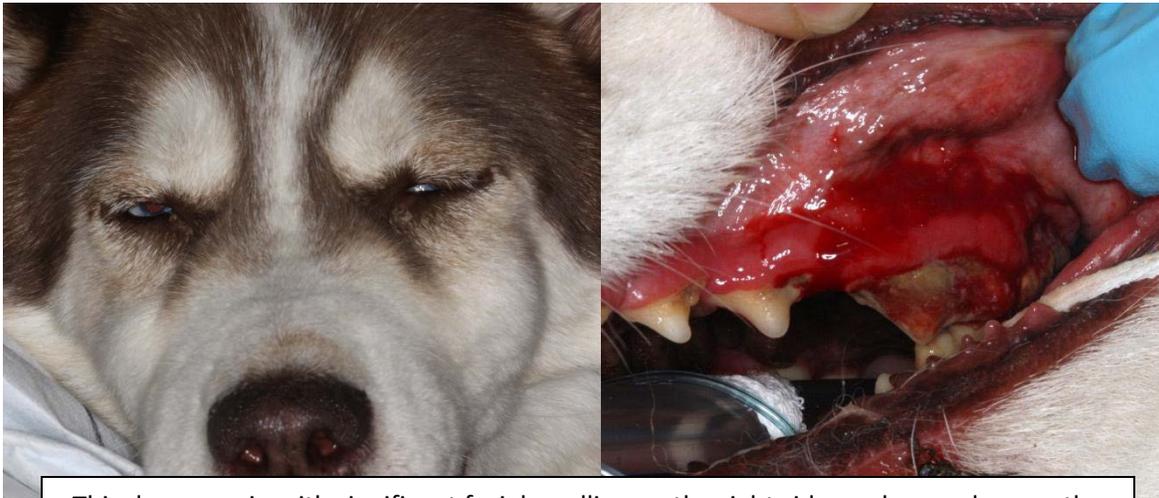
Endodontic Disease refers to infection or inflammation of the pulp of the tooth. (For more information on tooth anatomy, please see our website page. The pulp is the living part of the tooth. It allows the tooth to continue to develop as your pet ages. When the pulp is injured, it may become inflamed (also called pulpitis) which may resolve, or may progress to pulp death (pulp necrosis). When the pulp dies, the tooth dies, and this makes it very susceptible to infection of the tooth roots.

There are two common reasons for the pulp of a tooth to die. The far most common reason is pulp exposure- this is what happens when a tooth breaks. If your pet has broken a tooth, and you can see a pink or black spot in the middle of the tooth, this is like the pulp of the tooth. When the pulp is exposed to the oral environment, it provides a direct line of access for bacteria to infect the root of the tooth. Another reason for pulp exposure is severe wear (if your dog likes to chew on things like tennis balls that can cause rapid wearing of the tooth), or very occasionally from cavities. Another very common reason for a tooth to die is from concussion – that is when you hit the tooth and it causes the tooth to bruise. When a tooth is concussed, the pulp becomes inflamed and this inflammation can progress to cut off the circulation to the tooth resulting in death of the pulp. The tooth may take on a purple or pink hue at first, and may look grey after the tooth has died.



These are examples of broken (on the left) and non-vital (on the right) teeth. The tooth on the left has pulp exposure with dead pulp tissue present in the middle of the tooth. The tooth on the right has undergone pulp death, leading to its pink discoloration.

If a tooth has died (for whatever reason) there are two ways to treat it: extraction (removing the tooth) or performing a root canal. “Keeping an eye on it” is NOT a good option as it will allow your pet’s mouth to be a chronic source of pain and infection until the tooth is treated. Since most of our pets only show very subtle signs of pain, most often by the time we actually detect a problem due to their behavior, the disease is advanced. Extraction may be the best option for certain teeth, for instance for the smaller, less “strategic” teeth. Root canal therapy may not be an option for certain teeth, for instance if the tooth fracture extends under the gumline, or if there is extensive infection of the root on x-rays. However, for the teeth that are involved in eating and maintaining jaw strength (such as the canine teeth, the upper 4th premolar and lower 1st molar teeth), we may want to try to save these teeth.



This dog came in with significant facial swelling on the right side, and on oral exam, the 4th premolar had severe inflammation with pus draining around it. This is classic for a tooth-root abscess. When the tooth was cleaned off, a fracture of the tooth was visible.

If root canal therapy is a possibility, it can be an excellent way of keeping the tooth sound and functional while removing the source of pain and inflammation, and avoiding what can be an invasive surgery in order to remove the entire tooth. There are four key steps in performing a root canal on a tooth:

1. Accessing the pulp- The first step in cleaning out any possible inflammation and infection in the root of a tooth is to be sure that we can actually reach all the way to the tips of the root. Depending on the tooth, this may involve going through the opening of the pulp chamber if the tooth is broken. In many cases, however, we drill an opening in the tooth to make sure that we can completely access the tooth all the way to the very tip of the root.
2. Cleaning out the roots- The second step of root canal therapy is to remove any and all inflamed, infected, or dead tissue until only clean tooth roots are left. This involves using endodontic files to completely clean out the pulp chamber.

3. Filling up the roots - After the canals have been completely cleaned out, sterilized and dried, we will place a filling material that is inert (doesn't cause the tissues to react or become inflamed), and take x-rays to make sure the entire root is filled.
4. Restoration – After the roots have been cleaned and filled completely, we seal off the tooth so that nothing can get into the roots and cause inflammation or infection. The restoration material is a composite (hard plastic-like material) that closely matches the color of the tooth and can be shaped so that the tooth is returned to close-to-normal appearance.
5. Prosthetic Crowns- In certain cases, we may decide that a prosthetic metal crown is important to protect the tooth from further wear or breakage. If that is the case, then we will prepare the crown for a custom made metal crown, as seen in the picture below.



Pictured here are the steps involved in performing a root canal on a canine tooth. We create an access into the pulp chamber, clean out the root canal, fill it with a sterile material, then restoring the tooth. In some cases, we may also decide to place a prosthetic metal crown to prevent further wear or breakage.

Ninety-five percent of root canal therapy in dogs is successful – this means that we get rid of the disease, and the tooth remains healthy and useful in the mouth. This also means that 5% of the time there is a complication – this may be further breakage of the tooth or restoration, leakage of the restoration, or continued inflammation around the root of the tooth. To make sure that the root canal is successful, recheck radiographs are absolutely necessary. The first recheck occurs 6-9 months after the root canal is performed, and then ideally it is recheck annually. This provides the perfect time for your pet to receive professional periodontal therapy in order to maintain periodontal health (for more information on periodontal disease, please see our website).



Pictured here are dental x-rays showing the steps involved in performing a root canal on a canine tooth. We create an access into the pulp chamber, determine how long the chamber is, carefully clean it to as large a file as possible, then fill it with a sterile material and restore the tooth. When we recheck radiographs in 6-9 months, we want to see that the filling, bone around the roots and restoration are all healthy and doing well.