

Is Your Pet Undergoing This Painful Tooth Remodeling Process?

It's linked to tooth fractures and is quite painful - although many pets are experts at hiding it from their humans. Keep an eye open for these symptoms, because this is far more common than you'd think.

Analysis by [Dr. Karen Shaw Becker](#)

STORY AT-A-GLANCE

- Tooth resorption is a painful, progressive condition that occurs in dogs, and more commonly, cats
- Tooth resorption is the gradual destruction of a tooth or teeth caused by cells called odontoclasts; the process usually starts on the outside of a tooth at the gum line
- Symptoms can include drooling, bleed from the mouth and difficulty eating; it may not be obvious that your pet is also in pain
- Recommended treatment of tooth resorption involves complete extraction of the affected tooth, all fragments and all root structures
- Prevention tips include home dental care, twice-yearly veterinary exams for pets diagnosed with the condition and careful management of dietary vitamin D intake

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Tooth resorption is also sometimes called feline odontoclastic resorptive lesions (FORLs), because it was originally thought to affect only cats. The condition is also sometimes referred to, inaccurately, as cavities.

Tooth resorption is the most common oral disease in kitties. Estimates are that about 30 to 40 percent of healthy adult cats, and from 60 to 80 percent of kitties who visit the veterinarian for treatment of dental disease have the condition. Tooth resorption is less common in dogs, but it seems to be on the increase.

Feline tooth resorption was documented as early as the 1920s, but it has increased significantly in domestic cats since the 1960s. This timing would seem to point to the potential involvement of highly supplemented processed food (dietary involvement), vaccination (environmental impact) and/or spay/neuter practices (metabolic involvement) in the development of the disease.

The exact cause of resorptive lesions is unknown. It is thought that perhaps the inflammation caused by plaque stimulates odontoclast cells that erode tooth enamel. Other possible causes include **autoimmune disease**, viral infections, a problem with calcium metabolism or changes in pH in the mouth.¹

What Tooth Resorption Is and What to Look For

Resorption is the process by which a structure loses substance and is eventually remodeled. Tooth resorption is the gradual destruction of a tooth or teeth caused by cells called odontoclasts. The process usually starts on the outside of a tooth at the gum line, and is most common in premolars in the lower jaw, but can occur in any tooth.

If the resorption is obvious, it can look as if gum tissue has grown over or into the tooth. It can also appear as if there's a hole in the tooth, which is why the condition is sometimes thought to be a cavity, but cavities are actually very rare in companion animals. Less visible resorptions are found using magnification devices and lighting in an anesthetized pet. Resorptions under the gum line are diagnosed through dental x-rays.

Tooth resorption is a painful condition, however, many pets show no obvious signs of discomfort unless and until a lesion is actually touched. Sometimes an affected pet will drool excessively, bleed from the mouth, have difficulty eating or muscle spasms or trembling of the jaw. Occasionally there can also be vomiting of unchewed food, behavior changes and bad breath. Most often, however, it's an observant pet parent or veterinarian who notices a problem and ultimately arrives at the diagnosis of tooth resorption.

The Process of Tooth Resorption

Tooth resorption is a progressive disease that typically erodes the surface layer of the root called the cementum first, and then attacks the dentin, which is the hard tissue just below the enamel of the tooth. From there it moves into the center of the tooth and the pulp, which is full of living connective tissue and cells.

The resorption process continues into the fluid-filled dentinal tubules, tiny channels that spread outward through the dentin to the cementum. Finally, the enamel is resorbed, which can cause the tooth to fracture and/or remodel into a lump on the gum line. Resorbed cementum and dentin is replaced with hard, bone-like tissue. There are five stages of tooth resorption:

- **Stage 1** — Mild dental hard tissue loss, either cementum alone or cementum and enamel. In this stage, a defect in the tooth's enamel is all that is usually noted. There is little to no sensitivity because the resorption has not yet reached the dentin.
- **Stage 2** — Moderate dental hard tissue loss including cementum or cementum and enamel, and loss of dentin that has not yet reached the pulp cavity.
- **Stage 3** — Deep dental hard tissue loss including cementum or cementum and enamel, and loss of dentin that extends to the pulp chamber. At this third stage of disease, most of the tooth is still viable.
- **Stage 4** — Extensive dental hard tissue loss and most of the tooth has lost its integrity. A significant amount of the tooth's hard structure has been destroyed. Stage 4 has three sub-categories: 4a (crown and root of tooth are equally affected), 4b (crown is more severely affected than the root) and 4c (root is more severely affected than the crown).
- **Stage 5** — Only remnants of the tooth remain, covered by gum tissue. The majority of the tooth has been resorbed, leaving only a raised area on the gum.

Treating Tooth Resorption

Dental x-rays are the first step in treating patients with tooth resorption. They're critically important to visualize lesions under the gum line and fractured tooth fragments, as well as to help determine the best treatment approach.

Complete extraction of the tooth undergoing resorption, all fragments and all root structure is the recommended treatment for the condition unless the resorption has reached stage 5 and no inflammation is present. However, extraction can be a tricky procedure to perform because affected teeth are usually quite fragile and often fracture and splinter during removal.

In addition, often the roots are significantly resorbed and replaced by bone, which requires a surgical approach to extraction. Occasionally the roots are completely replaced by bone, in which case a technique called crown amputation may be used, in which the tooth's crown (which sits above the gum line) is removed and the area is smoothed and sutured.²

This allows the body to continue resorbing the roots and is a much less invasive procedure than surgical extraction, but it can only be performed in advanced cases where no root structure remains.

Filling resorptive lesions is not recommended because the condition continues to progress under the filling. Within about six months, the filling falls out due to ongoing tooth loss, and extraction is necessary anyway. There's absolutely no reason to put your pet through this when the end result is the same.

Many cats with tooth resorption also have feline stomatitis. In these pets, it's extremely important to remove all remnants of the tooth structure to prevent further immune system stimulation and painful oral inflammation.

Not every veterinary practice is equipped to deal with tooth resorptions. Dental x-ray and adequate surgical magnification equipment is necessary, as is proper training. If your pet is diagnosed with tooth resorption, you should insure your vet's office is properly equipped and staffed to treat the disease. If not, you should request a referral to a specialist.

Preventing Tooth Resorption in Your Pet

As I mentioned earlier, the cause of tooth resorption is still a mystery, and until more is known, it's difficult to give advice on what steps pet parents should take to help prevent the condition. We do know that once a tooth resorption has been identified in your pet's mouth, unfortunately, it's very common for additional teeth to develop the problem.

If your cat or dog has been diagnosed with tooth resorption, I recommend twice yearly dental checkups to screen for additional lesions. I also recommend you do regular mouth checks at home, paying special attention to your pet's teeth and gums. A study published several years ago on the prevalence and risk factors for feline tooth resorption reported the following observations:

*"Compared with cats without oral lesions, cats with oral lesions were more likely to be older, female, taking medications, drinking city ([versus] well) water, and playing less often with toys. In addition, cats without oral lesions were more likely to have owners who cleaned their teeth daily or twice a week and to be fed diets with higher magnesium, calcium, phosphorus, and potassium contents."*³

The potential for tooth resorption is an excellent reason to develop the habit of brushing your pet's teeth. In addition, feeding your cat or dog a nutritionally balanced, fresh food diet will also help prevent dental disease. When your pet gnaws on raw meat, it acts as both a toothbrush and floss.

Water quality is important. Cats don't consume large amounts of water like dogs do. If the small amount of water they consume is contaminated with fluoride and/or chlorine or other chemicals, it can significantly impact the body over time. Providing filtered, pure drinking water to your pet is very important for overall health.

I also encourage making your pet's meals at home because it gives you total control over the nutrients, such as vitamin D and other important nutrients, in her diet. AAFCO sets minimum nutrient requirements for some vitamins and minerals, but does not set OPTIMAL requirements, which means the amounts of synthetic nutrients (some of which can cause detrimental changes in the body) can be inappropriate for long term feeding.

There are often excessive amounts of vitamin D and vitamin D metabolites in commercial pet food, and studies show that cats with tooth resorption have a significantly higher serum concentration of 25-hydroxyvitamin D (25OHD) than cats without lesions. In addition, studies on laboratory animals show that excess dietary vitamin D and vitamin D metabolites cause changes to dental and gum tissue that in many ways resemble the changes seen in cats with tooth resorption.

Kitties with tooth resorption also had significantly lower urine specific gravity, which is a marker for a number of disorders including hyperthyroidism, diabetes and kidney disease. Studies have shown excessive amounts of vitamin D and its metabolites are associated with soft tissue mineralization and renal disease.

Unfortunately, the risk of painful mouth conditions, including tooth resorption, is dramatically increased for older dogs and cats. This means that for your senior or geriatric pet, proper dental care is critically important.

Sources and References

¹ Pet Education.com

² [Veterinary Dental Specialists & Oral Surgery](#).

³ [Journal of the American Veterinary Medical Association, 1998 Feb 1;212\(3\):392-5](#)
