



What Is Periodontal Disease?

Periodontal disease, gum disease and dental disease all refer to the same condition – the most common condition to affect our pets. Periodontal disease is a progressive condition that starts as inflammation of the gingiva, or gum tissue, surrounding each tooth. This inflammation is caused by plaque and dental calculus. When plaque bacteria continually build up on the tooth, they cause inflammation that spreads under the gums and into the bone surrounding the tooth. This causes pain, bone loss and infection of the bone. Progressive bone loss leads to sinus infections, jaw fractures, and tooth loss. The inflammation and infection in the mouth due to periodontal disease has also been related to systemic disease, such as diabetes, kidney disease and liver disease.



Severe periodontal disease in a small dog.

Note the significant plaque and calculus accumulation, red gums, food trapped around the upper premolars with gum recession, and pus formation.

What causes periodontal disease?

Periodontal disease is directly caused by plaque bacteria. Plaque is that fuzzy invisible film that builds up on your teeth when you haven't brushed for a day. Plaque forms on the tooth surface and is composed of saliva, food products, and normal bacteria, as well as pathogenic (bad) bacteria that release inflammatory chemicals. If plaque is left on the tooth for more than 12 hours it can become mineralized (hardened) and is termed dental calculus, also known as tartar. The longer plaque and calculus is left in contact with the gingival tissues surrounding the teeth, the more inflammation they can cause.

Stage 1 Periodontal disease: The first stage of periodontal disease is gingivitis. Gingivitis is a REVERSIBLE inflammation of the soft tissues that surround the crown of a tooth (see tooth anatomy). Gingivitis looks like a red line around the crown of a tooth. Sometimes this tissue may look puffy, and may bleed especially after chewing on toys and after brushing. Gingivitis can be reversed and the gum tissues returned to health if plaque and calculus are removed from along and under the gumline.



Stage 2 Periodontal disease: The second stage of periodontal disease results when gingivitis has progressed, and now the bone supporting the tooth in its socket has become involved. This stage of periodontal disease cannot be recognized without probing, (which can be uncomfortable on awake patients, and dental x-rays. Therefore, this stage requires anesthesia to fully diagnose (for more information, see our webpages on anesthesia). At this stage no more than 25% of the bone supporting any tooth has been lost. This bone loss is permanent, and will progress without proper intervention. Treatment is aimed at cleaning out the pockets that have formed under the gumline. In pockets that are less than 5mm deep this can be done with ultrasonic scalers or hand cures. If a pocket is deeper than 5mm, then periodontal surgery and root planning to expose and clean the affected tooth root surfaces is absolutely vital to prevent progressive disease.

Stage 3 Periodontal disease: This third stage of periodontal disease is reached when 25-50% of the bone supporting the tooth has been destroyed by the inflammation caused by plaque bacteria. A stage 3 tooth may not be savable, depending on the shape of the tooth and the location of the pockets. With multi-rooted teeth, when the area between the roots has become exposed, they cannot be saved, because home care cannot prevent accumulation of plaque between the roots. Sometimes, a stage 3 tooth may also need to be sacrificed in order to save the health of a near-by strategic tooth. If the tooth can be saved, periodontal surgery to clean the root surface, as well as other advanced therapies may be attempted to save the tooth. However, without dedicated daily Home Care (see home care page) and regular professional periodontal treatment, these teeth can still progress to stage 4 disease.



This probe is extending into a 9mm (almost half an inch) pocket on the inside of the upper 1st molar tooth- This extensive pocket is localized to the one side of this tooth, and may be treated with advanced periodontal treatment- Alternatively, it may be best to extract this tooth in order to keep the tooth in front of it healthy and functional.

Stage 4 Periodontal Disease: This is end-stage periodontal disease, where more than 50% of the bone supporting the tooth has been lost. There is no treatment that will keep a Stage 4 tooth healthy, and without extraction, these teeth will cause continued pain, inflammation, and can result in progressive periodontal disease of other teeth. Therefore, if any tooth has stage 4 periodontal disease, we recommend extraction as the only option.



This dental x-ray shows the lower back jaw of a small dog with stage 4 periodontal disease. There is severe bone loss, leading to exposure of 50% or more of the roots of the molars. These teeth unfortunately cannot be treated and should be extracted before more bone loss occurs, potentially risking a jaw fracture.

Periodontal disease can progress slowly or rapidly. It often can be quiet for a time, then rapidly progress over a short time before becoming quiet again. All four stages can be present at one time, and each tooth needs to be x-rayed and probed in order to adequately diagnose and treat each tooth.

Cats can have another manifestation of periodontal disease which can look as though the gum tissue and bone around the tooth are bulging out: this is called Buccal Bone Expansion. They may also have extrusion, or hyper-eruption of their canine teeth that can make these teeth appear longer than they actually are.



Buccal bone expansion in cats is actually a form of periodontal disease. What looks like swelling around the canine teeth on this cat on the left is actually inflammation of the bone. You can see deep pockets on the dental x-rays of these teeth on the right.



Periodontal disease can be arrested with proper treatment, but the key to managing pre-existing periodontal disease and preventing progression is consistent daily home care. Because plaque is invisible, preventive care should be done even though the teeth do not appear “dirty”. (*See home dental care*) Early training and behavior modification to allow thorough daily tooth brushing for plaque removal is the key to success. Additional aids to plaque removal are VOHC (www.vohc.org) approved dental diets such as Hill’s T/D diet and treats such as Greenies.



Frequently Asked Questions:

What are signs of periodontal disease?

Signs that your dog or cat has periodontal disease include: Bad breath; redness and swelling of the gums and tissues around the teeth, build-up of plaque and dental calculus (brown stuff on the teeth); receding gums; loose teeth; bleeding when chewing on toys or after brushing.

My dog or cat has bad breath, why?

Bad breath is most often caused by the bacteria that form plaque, and can be a sign of oral infection and deep periodontal pockets. There are other causes of bad breath, but this is the most common.

Is it normal for my pet to have a loose tooth, or for a tooth to fall out?

If your pet is young and still has deciduous (baby) teeth, these are supposed to fall out, usually by around 6 months of age. It is *never* normal for permanent teeth to become loose or fall out on their own. There may be several reasons for teeth to become loose, including severe periodontal disease, or tooth fractures below the gumline. However, in order to *diagnose and treat* the cause for the tooth becoming loose, your pet needs to be evaluated by a veterinarian and likely undergo general anesthesia to have dental x-rays and any necessary treatment performed.

Will hard kibble improve my pet's dental disease? Will soft food make their dental disease worse?

Though there isn't any definitive information about hard or soft food, in general dogs and cats that eat kibble tend to have better periodontal health. However, this may not be appropriate for every dog or cat, and some pets may refuse to eat either hard or soft food. The most important aspect of maintaining periodontal health is daily brushing, so that even if your pet does eat soft food, their oral health can be very good with regular brushing. If your pet is a good candidate for it, there are formulated diets that have been proven to help prevent plaque build-up, and can be used in addition to brushing to help maintain periodontal health. For more information, see the Veterinary Oral Health Care website (www.VOHC.org).

How many teeth does a dog have?

Adult dogs start with 42 teeth. Puppies have 28 teeth that should be lost before 6 months when the adult teeth should have erupted.

How many teeth does a cat have?

Adult cats start with 30 teeth. Kittens have 26 teeth that should be lost before 6 months when the adult teeth should have erupted.



Are there any treats or chews that can help keep my pet's teeth clean?

Certain dental diets, treats and chews have been evaluated through clinical studies to examine whether they are able to prevent plaque and dental calculus accumulation. The diets that have met standards to reduce plaque or calculus have been approved by the Veterinary Oral Health Council (www.VOHC.org). These diets are meant to be used in conjunction with daily brushing to give your pet the best chance at good oral health.

While there are diets that are approved for reducing the deposits of dental plaque and calculus, there are no restrictions on what foods and chews can claim to improve dental health! For this reason, we recommend reviewing the products given the VOHC seal of approval prior to making any purchases.

Why don't we know exactly what will be done to my pet's mouth prior to anesthesia?

As we discuss in the periodontal disease and treatment page, we cannot fully diagnose or treat periodontal disease without general anesthesia. We can only safely perform dental x-rays and probing around the teeth when our patients are asleep. Since we can't see what is going on under the gumline prior to anesthesia, it can sometimes be difficult to predict exactly which teeth can be saved and which need to be extracted or have other advanced periodontal treatment before they are asleep.

When can a tooth be saved?

An easier question to answer is "what are the criteria for extraction?", as there are many situations where a tooth may be questionable, and it depends on the individual patient whether we choose to treat or extract. The criteria for extraction are: 50% or more loss of supporting bone, exposure of the furcation (the space between two roots of a tooth), or if there is mobility more than 1mm in any direction. If a tooth has signs that the root has died or there is exposure of the pulp (the living part of the tooth), that is also an indication for treatment, which may mean extraction depending on the tooth and the pet.