



# Pet Parent's Guide To Dental Health:

How to keep your pet's teeth clean, breath fresh, and mouth healthy



Author  
**Dr. Jodi Reed, DVM**

In 2007 an ambitious young veterinarian traveled from North Carolina to attend my canine dentistry course in Punta Gorda, Florida. Like many of my first-time students, she had little experience with dentistry and oral surgery.

Our first procedure was the extraction of a canine tooth in a dog and like the other students she had some difficulties right out of the gate. Her approach was slow and cautious and although she was one of the last to complete the procedure the outcome was like a work of art!

Her gentle technique left the fragile gum tissue unharmed, the tooth socket smoothed to perfection and her sutures were placed and tied to the level that I, as a specialist in dentistry, took years to perfect. I knew then she had a special talent for dentistry.

That veterinarian's name was Jodi Reed. By the second day, she was the first doctor to finish each procedure and had already signed up for our feline course.

Dr. Jodi has gone on to master dentistry at a level only a handful of veterinarians have been able to achieve in general practice. She is the first veterinarian to complete the rigorous process of training and assessment through the International Veterinary Dentistry Institute Program.

Although she founded and operates Harmony Animal Hospital, a 10 doctor practice in Apex, North Carolina, she works side by side with me 5 days a month helping patients live better, longer, and pain-free lives through the skillful oral surgery she provides to them.

Dr. Jodi has been my co-instructor in IVDI since August 2019, helping train veterinarians from all over the world to become better oral surgeons, so that they too, with dedication and focused work, might one day provide the same care to their patients.

I am proud and honored to think that she now leads a team of arguably the best dentistry team worldwide in general practice today. Joined by Veterinary Dental Practitioners and now IVDI instructors, Jennifer Keaton and Carolyn Lariviere to comprise the Veterinary Dental Center of Atlanta.



**BRETT BECKMAN, DVM, DAVDC, DAAPM**  
**BOARD CERTIFIED VETERINARY DENTIST**  
**IVDI FOUNDER AND ACTING DIRECTOR**



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# Dedication:

This book was written for all the amazing pet parents who love their fur-babies and think of them as an important part of their family. Taking care of these little, and some not-so-little, furry members of our family can be hard, time-consuming, expensive, and at times overwhelming, but oh they are SO WORTH IT. Helping prevent pets from having to live with oral pain, inflammation, and infection is my passion, and helping owners understand that taking care of their pets' mouths is a key part of keeping them happy and healthy for years to come, is my purpose.



**Jodi Reed, DVM**



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# Pet Parent's Guide To Dental Health:

How to help your pets live a longer, healthier, pain-free life with clean teeth, healthy gums, and fresh breath through optimal dental care.

We are told by our dentists that twice yearly check-ups, teeth cleaning, and dental x-rays are highly essential for our own dental and overall health. However, many pet owners often neglect the dental care of their pets, mostly due to a lack of knowledge and understanding of how critically important taking care of their fur-baby's mouth really is to their comfort and longevity.

Decades of research shows that 80 percent of dogs and cats have periodontal disease (a type of dental disease that is the result of infections and inflammation of the gums and bone that surround and support the teeth) by the time they reach three years of age. That's an astonishing amount of dental disease going on inside our pets' mouths, and what's worse, many of these young pets already have irreversible periodontal disease requiring treatment such as tooth extractions (to remove teeth that cannot be saved due to disease and decay) and oral surgery (a surgical procedure performed on the teeth, gums, jaws or other oral structures). Since



prevention is the key to avoiding progressive dental disease, we want to make sure pet owners fully understand what dental disease looks like, how to prevent it, and what treatments may be needed to keep their pets happy and healthy.

The ultimate goal of this book is to provide the most important information regarding proper dental care of dogs and cats so that pet owners, like yourself, can understand why oral health is so important, empowering and guiding owners to take specific action to improve their pets' oral and overall health, as well as their quality of life.

# How Important Is Dental Care for Our Pets?

In short, it is just as important for our pets to receive proper dental care as it is for us. Research shows that animals experience similar types of pain, infection, and oral diseases as we do. Unfortunately, they are often very good at being able to hide these signs from us. It is critically important that our pets' teeth be kept healthy and well-cared for, just as they are for people. Properly caring for your pets' dental and oral health is vital to their longevity and comfort.

Proper dental care will help keep your pet from developing a wide variety of dental health issues, such as periodontal disease, which is the number one cause of oral disease in people and pets. Periodontal disease is caused by the build-up of plaque (a sticky film of harmful bacteria) on the teeth and under the gums. Just as in people, dental problems in your cat or dog can affect them in a number of serious ways, including causing oral infections, heart conditions, kidney and bladder infections, liver disease, and many other systemic problems, which may ultimately lead to a shorter life.

A pet experiencing oral disease (an abnormal condition or disorder that adversely affects any structure in the mouth including the gums, teeth, cheeks, tongue, palate and throat) can be very painful which may make swallowing and chewing food more difficult. If you have ever experienced oral disease, you know it can be excruciatingly painful and debilitating, it is equally as devastating for our pets. Unfortunately, animals often have a much harder time communicating this to us, making recognizing our pets oral pain quite difficult much of the time. As a pet parent, keeping your furry friend's dental and oral health in excellent shape is a great way to help ensure they remain healthy and happy for their entire life.



# What are the signs that my pet may have oral pain and disease?

It is quite common to overlook oral disease in pets, especially as they start to get older. We often assume that if our pets look and act normal, that they are doing great. In addition, we may associate changes in their behavior and routines as just signs of them aging. While aging certainly will be responsible for some behavioral changes, it is extremely important that we are not making incorrect assumptions by ensuring something more serious isn't going on with our pet. By having our pets examined by a veterinarian twice a year, especially older pets, we can begin to assess our fur-babies for possible hidden, less obvious problems. Just like people, as pets age there can be many reasons for behavior changes, ruling out pain and disease is very important to being able to address problems before they become debilitating or untreatable.

## Signs of Oral Pain and Dental Disease in Pets:

- Bad breath
- Difficulty eating
- Picky about what they will eat, averse to hard food or treats
- Decreased or loss of appetite
- Loss of interest in playing with or chewing on toys
- Drooling or excessive salivation
- Pawing at their face and/or mouth
- Open sore on their face that won't heal even with treatment
- Finding teeth that have fallen out
- Blood in or around their mouth
- Objecting to being touched on the head, face or mouth
- Unusual or increased aggression
- Unusual discharge from the eyes or nose
- Swelling on their muzzle or under the eye(s)
- Visible tartar or discolored teeth
- Red, swollen and/or bleeding gums
- Loose or missing teeth
- Lethargy, decreased energy
- Unexplained weight loss

While all of the above symptoms can be signs your pet has oral pain and disease, understand that sometimes there are absolutely no obvious signs or the signs are so subtle that they are easily missed by most owners. **Since animals are incredibly good at hiding pain and weakness, especially cats, it is imperative that we, as pet parents, are monitoring our pets habits closely and are providing them with regular professional medical care to ensure we are not missing disease and pain.**



# What Can I Do To Improve My Pet's Oral Health?

As a pet owner, concerned about your pets' oral health and comfort, there are two components to achieving and maintaining optimal oral health for your pets which include: dental home care for plaque prevention to slow periodontal disease AND a regular professional Complete Oral Health Assessment and Treatment (COHAT). The combination of these two pieces of the dental puzzle are essential to your pets' overall comfort and longevity.

## 1. Dental Home Care: Plaque Prevention to Slow Periodontal Disease

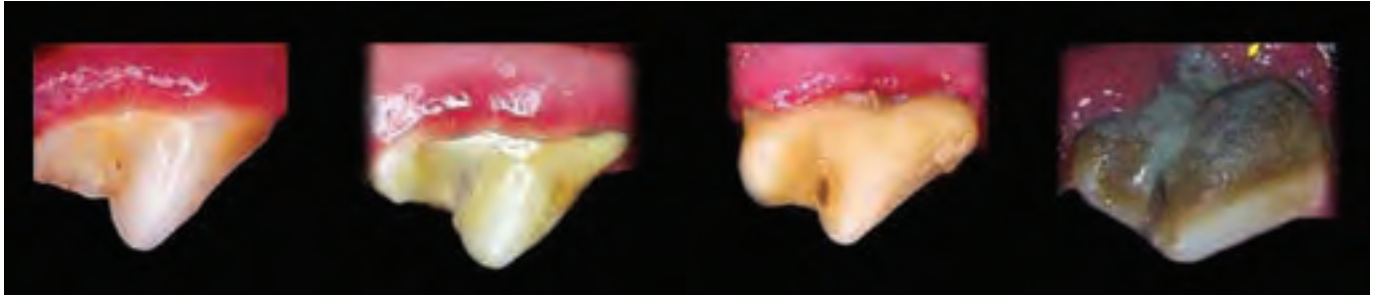
Prevention of the most common oral disease in pets, periodontal disease, depends on daily removal of the dental plaque that forms on teeth and under the gums. Periodontal disease is a very common problem in pets, affecting 80% of all dogs and cats by the time they are 3 years old. While periodontal disease is progressive, it is preventable and, if caught in the early stages, it is reversible. There are other important preventable and unpreventable dental issues that we will discuss later in this book. For now, let's focus on understanding how to recognize, treat and prevent periodontal disease, which all starts with plaque. Just as in humans, plaque, the sticky, pale yellow, creamy film that forms on the teeth, starts building up within minutes after tooth brushing. When plaque combines with the minerals in saliva, bacteria in the mouth, and food it takes only 24 to 48 hours for that plaque to begin to harden into tartar, also known as calculus.

As the tartar is forming, its chemical composition creates a strong bond to the surface of the tooth that makes it very difficult to remove tartar with brushing alone. Specialized tools known as scalers and curettes are needed to successfully remove tartar completely, especially under the gumline and in between crowded teeth. The images below show the scaling of a dogs (left) and cats (right) teeth to remove the tartar.

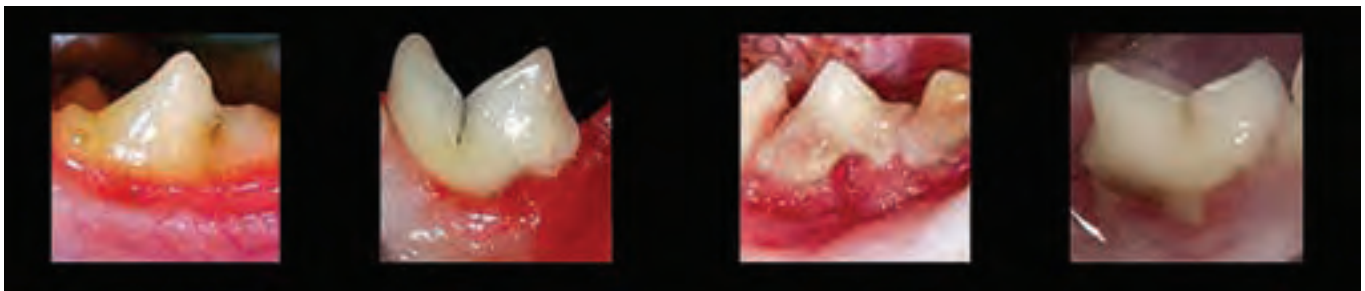




If the tartar is not removed entirely from all areas of the teeth (above and below the gumline), it will continually build-up leading to gingivitis (inflammation of the gums) that causes painful redness, swelling, and bleeding in your pet's mouth. Gingivitis is the first and mildest sign of periodontal disease, the good news is, at this level it can be reversed with a combination of daily at home dental plaque-prevention care and regular professional COHATs (Complete Oral Health Assessment and Treatment) under anesthesia. However, once gingivitis develops, if left untreated, it will eventually lead to more advanced, irreversible periodontal disease.



*Stages of Gingivitis & Periodontal Disease in Dogs*



*Stages of Gingivitis & Periodontal Disease in Cats*

As periodontal disease progresses, it results in major damage to the soft tissue and bone that supports the teeth, called periodontitis (a severe gum infection that leads to tooth loss). Once periodontitis begins, the inflamed, painful gums begin to pull away from the teeth and form spaces called periodontal pockets under the gumline. These pockets trap even more plaque, tartar, food, and bacteria, which all serve to worsen the disease and speed up the destructive process lurking below the gumline. The body's immune system starts to fight the bacteria as the plaque and debris spread below the gingiva (gums). Toxins are released from the bacteria which cause the body's natural response to infection to begin breaking down the bone and connective tissue that hold the teeth in place. This is quite painful and often causes the pet to have significant bad breath, but worse will eventually lead to loss of these affected teeth.



*Dental probing of a dog (left) and cat (right) tooth showing a deep periodontal pocket from bone loss around the tooth secondary to untreated periodontal disease*

Once periodontitis starts, more aggressive treatment is needed, beyond just a professional cleaning of the teeth above and below the gumline. Treatment options will be based on the severity of the periodontitis. In the more mild cases, certain therapies can be performed in an attempt to save these teeth. If the periodontitis is not treated promptly, the disease progresses, leading to destruction of the bone, gums, and tissues that support the teeth. In these more advanced cases, surgical tooth extraction is the only treatment option and without proper treatment, your pet's teeth will begin to fall out on their own, which is a very slow, painful process with serious consequences beyond just oral disease.



*Picture showing two teeth from a dog that fell out on their own due to severe periodontal disease, leaving a painful, infected, open wound in the mouth where the teeth once were.*

As untreated periodontal disease continues to progress, due to lack of proper dental care, it eventually leads to a serious decline in your pet's quality of life due to severe oral pain, infection, and inflammation which causes progressive tooth loss. Severe oral disease also puts pets at higher risk of developing systemic disease (a disease that affects other parts of the body, such as the heart, liver, kidney, and brain), just as it does in people. This is especially true as pets age, since periodontal disease is a progressive process that happens over months to years.

To help address early gingivitis, before it develops into more advanced, irreversible periodontal disease, it is recommended to implement a dental home care plan for all of your pets. Waiting until your pet has painful dental disease, such as red, swollen gums and bad breath, is far too late. If your pet's mouth hurts, when you try to brush their teeth or give dental treats, they will object and may even fight you or nip you in an effort to get you to stop. It is always recommended to have a professional veterinary assessment of your pet's teeth done by a veterinarian prior to starting a dental home care plaque prevention program so you can set yourself and your pet up for the utmost success.



Dental home care does not have to be difficult, time consuming, or expensive, however it does have to be done every day since the primary goal of dental home care is plaque prevention. It's crazy that plaque starts forming within minutes of brushing the teeth and hardens into tartar within as little as 24 hours, therefore successful dental home care has to be done every day, at least once a day. It is also never too early to start taking care of your pets' teeth. In fact, the younger they are, the better, since they are more likely to be accepting of dental home care. Tooth brushing and dental treats should be a bonding experience between you and your pet, that you both look forward to and which is constantly reinforced with praise and rewards. The better and more committed to plaque prevention home care you are for your pets' teeth, the better their oral health will be and the less likely that more painful, costly oral treatments will be needed.

While brushing your pets' teeth is the gold standard for plaque prevention, it is still not 100% effective in eliminating all plaque and tartar, especially in those hard to reach areas in their mouths, such as under the gums and in between teeth. In addition, most pet owners are unable to commit to daily tooth brushing for a myriad of reasons including time constraints, distractions from our busy lives, and some of us have uncooperative pets. Thankfully, there are many other options for dental home care plaque prevention products besides tooth brushing, that are beneficial in reducing plaque and tartar build up. The best place to look for products that have been researched, tested, and proven to work well is to search the VOHC (Veterinary Oral Health Council) website for their approved list of plaque prevention products. Here is a link:

The VOHC website has a summary of categories and a list of approved dental home care products including toothpastes, tooth brushes, dental chews, oral rinses, water additives, and dental diets. It is important to note that human toothpaste should never be used on pets, since the fluoride, when swallowed, can be harmful to your pets. Options for dental home care can also be discussed with your veterinarian so that recommendations can be tailored to your and your pets' needs and preferences



**[www.VOHC.org](http://www.VOHC.org)**

<http://www.vohc.org/>



Although regularly brushing your pets' teeth and/or implementing some form of at home plaque prevention dental care are effective actions you can take to help keep your pets' teeth healthy, your pets will also NEED regular professional Complete Oral Health and Treatment (COHAT) procedures. Utilizing a combination of both dental home care AND professional dental COHATs is the only proven method of optimizing your pets' dental health by preventing, slowing, recognizing, and treating dental and oral diseases.



## **2. Complete Oral Health Assessment and Treatment (COHAT):**

What the heck is a COHAT anyway? A professional COHAT is a procedure performed under general anesthesia by a qualified veterinarian is the second critical component to optimizing your pets' oral health and will dramatically improve their quality of life and longevity. The COHAT acronym was developed by the veterinary dental community and created because the term "dental cleaning" just doesn't even begin to describe what we do for a patient under general anesthesia for the purpose of performing oral health care.

It is important to understand, that despite even the best home care plan to take care of your pets' teeth, professional COHAT's under general anesthesia should always be a regular part of routine pet care. As it was mentioned before, these recommendations are no different from what our dentists tell us. It is common knowledge that human dentists recommend twice daily brushing, daily flossing, AND professional teeth cleaning, x-rays, and oral assessment every 6 months. As veterinary professionals, we understand that the reality of brushing your pets' teeth every day is not possible for most pet parents (especially for cat owners), but the ability to floss your pets' teeth will likely not be comfortable for your pet or safe for your fingers, making regular COHAT's and other veterinary dental services even more crucial and necessary for your pets' optimal oral and overall health. There are six main parts of a COHAT that we will discuss below:

1. Anesthesia: Safety, Monitoring, and Recovery
2. Complete and Thorough Oral Exam
3. Dental X-Rays (Radiographs)
4. The Dental Cleaning: Scaling and Polishing
5. Oral Surgery and Treatments
6. Pain Management

## 1. Anesthesia: Safety, Monitoring, and Recovery

Depending on how cooperative your pet is, your veterinarian should be able to do a basic, limited oral evaluation during their awake pre-anesthesia physical examination. This is done by lifting your pet's lip and gently opening their mouth in an attempt to visualize all the teeth. The awake oral exam may be enough to tell us that your pet has gingivitis, plaque, tartar, and sometimes even allows us to see abnormalities such as broken teeth, tooth decay, discolored teeth, and oral masses. Unfortunately, there are many, many limitations to the awake oral exam, thus in order to thoroughly perform a complete oral exam, even with the most cooperative pet, **general anesthesia is ALWAYS required.**



*Dr. Jodi performing an awake oral exam. Although this kitty is a sweet, cooperative participant in the exam, there are limitations to what can be seen while the patient is awake and only so much any pet will allow if their mouth is painful.*

Complete oral exams require the patient to be completely still, due to the use of sharp instruments, probes, and the need to position their mouths in a wide open position to evaluate all the teeth in the back of their mouths, the inside surfaces of each tooth, back of their throat, and under their tongue. Without anesthesia, the vast majority of abnormalities would be missed and your pet is more likely to suffer from chronic pain and infection. The truth is that a thorough, complete COHAT requires general anesthesia. There are no shortcuts and there is no way around this fact. Anesthetic-free dentals are not supported by the veterinary dental community for many reasons which are discussed in the Common Dental Myths section of this book. For now, we are going to focus on the necessary anesthesia component of a dental COHAT.

It is important to understand that the risk of anesthesia is real, however, the reality is that serious complications are VERY RARE even in senior pets or animals with well-managed chronic conditions. An experienced veterinary dental team will always take every possible precaution with anesthesia to ensure the safety of your pet. General anesthesia is an essential key part of performing a thorough COHAT. It is also, by far, what scares people the most and prevents too many pet owners from allowing their pet to receive life-changing, necessary oral care. Done properly, with training, experience, and utilization of all the recommended monitoring equipment, anesthesia is safe and comfortable for your pet. Given how frightened many pets are at the vet and how terribly uncomfortable even the basic dental assessment and cleaning can be, it is always in a pet's best interest to provide all professional dental care while they are anesthetized.



A well-planned anesthesia protocol uses a combination of oral, injectable, and inhaled medications, that are selected with doses tailored to each pet's specific needs. Using a particular combination of medications allows for improved patient relaxation, maximum patient safety, decreased pain, and lower overall levels of anesthesia and medications.



The anesthesia plan begins in the exam room, during the awake patient physical exam and consultation. It involves a thorough review and discussion of your pet's medical history, current medications and supplements, and any past or current medical issues. It is very important that you discuss any bad experiences any of your pets have had with anesthesia, as well as any fears you may have about the procedure. This allows the veterinary team the opportunity to address all your concerns and helps you to feel as supported as your pet will be during the procedure. Talking through everything together will make the entire experience better all around, because if you're feeling more comfortable, your pet will feel more comfortable too. This will also allow you to go into the dental procedure knowing what to expect and allows the veterinary team to best support you and your pet, helping ensure the best experience possible for everyone.

The safety of anesthesia is also significantly increased with required pre-op blood work to look for any metabolic changes that could alter an anesthetic plan or postpone a procedure. In addition, your veterinarian may also recommend other pre-op tests, such as a chest x-ray or an echocardiogram (ultrasound of the heart) based on your pet's individual medical issues and needs.





The patient's safety is further maximized by placing an IV (intravenous) catheter to have direct access to the patient's vein to administer medications and fluids before, during, and after the procedure. In addition, an endotracheal tube is used for every procedure. This tube is gently placed into the patient's trachea (the patient's airway that connects the mouth/nose to the lungs) to assist breathing and deliver a controlled amount of oxygen and inhaled anesthetic gas to keep your pet comfortably asleep throughout the procedure. This tube also protects your pet's airway by preventing water, debris, and bacteria from getting into their lungs. Since pets' cannot regulate their temperatures while under anesthesia, the use of warming blankets and other heat sources are absolutely necessary. Maintaining a normal body temperature during the procedure greatly improves patient safety and also allows for a much more comfortable, quicker, and smoother recovery.



*Picture showing placement of an IV (intravenous) catheter so that medications and fluids can be administered before, during, and after the procedure. This optimizes patient safety and comfort during the procedure.*

Care will also be taken to monitor all of the patient's vital signs during the procedure and into recovery. Patient monitoring involves several machines, as well as, a well-trained veterinary technician and doctor who are keeping a close watch on the machines while also maintaining a steady close watch on their patient. Advanced patient monitoring includes constant observation of the anesthetized patient's heart rate (how many times the heart is beating per minute), ECG (measures the electrical impulses produced with every heartbeat), respiratory rate (how many times the patient takes a breath per minute), oxygen saturation levels (how much oxygen is being circulated in the patient's blood), carbon dioxide levels (how much of this waste gas is being exhaled to ensure the patient is breathing efficiently and effectively), body temperature (ensuring that the patient stays warm during the procedure), and blood pressure (ensures adequate blood flow of the circulatory system). Having the ability to monitor all of these parameters during the procedure allows for subtle changes to be seen early, thus simple adjustments can be made and appropriate medications can be administered if needed to avoid critical, serious complications.



*Picture of an anesthesia monitor showing all of the patient measurements during a procedure to ensure that they are safe and stable while under general anesthesia.*

Being able to perform oral nerve blocks (a medication to numb the nerves to prevent pain during and after the procedure) provides a unique benefit in anesthesia for the dental patient, because blocking oral pain allows for the a patient to be kept much lighter under anesthesia by using less gas and medications than with other surgical procedures, which dramatically improves patient safety and shortens the recovery period. **Due to the use and benefits of oral nerve blocks, general anesthesia for dentistry is also safe for and able to be performed on pediatric (very young animals), senior (aged animals), and patients that have well managed chronic diseases with great success.** Again, if anesthesia is done well, most patients will be awake, alert, and comfortable within a few minutes of starting the recovery period.

An excellent veterinary dental team will be committed to staying with every patient from induction of anesthesia, throughout the entire procedure, and well into recovery until they are sitting up, awake, comfortable, and safe. In the majority of dental cases, your pet will be able to go home the same afternoon as the procedure. In rare cases, when extensive oral surgery is performed, it may be recommended for your pet to stay overnight to provide additional pain control and monitoring.

*A dental anesthesia patient awake, standing, and comfortable within a few minutes of finishing the dental procedure being closely monitored and cared for during the recovery period.*



## 2. A Complete and Thorough Oral Exam

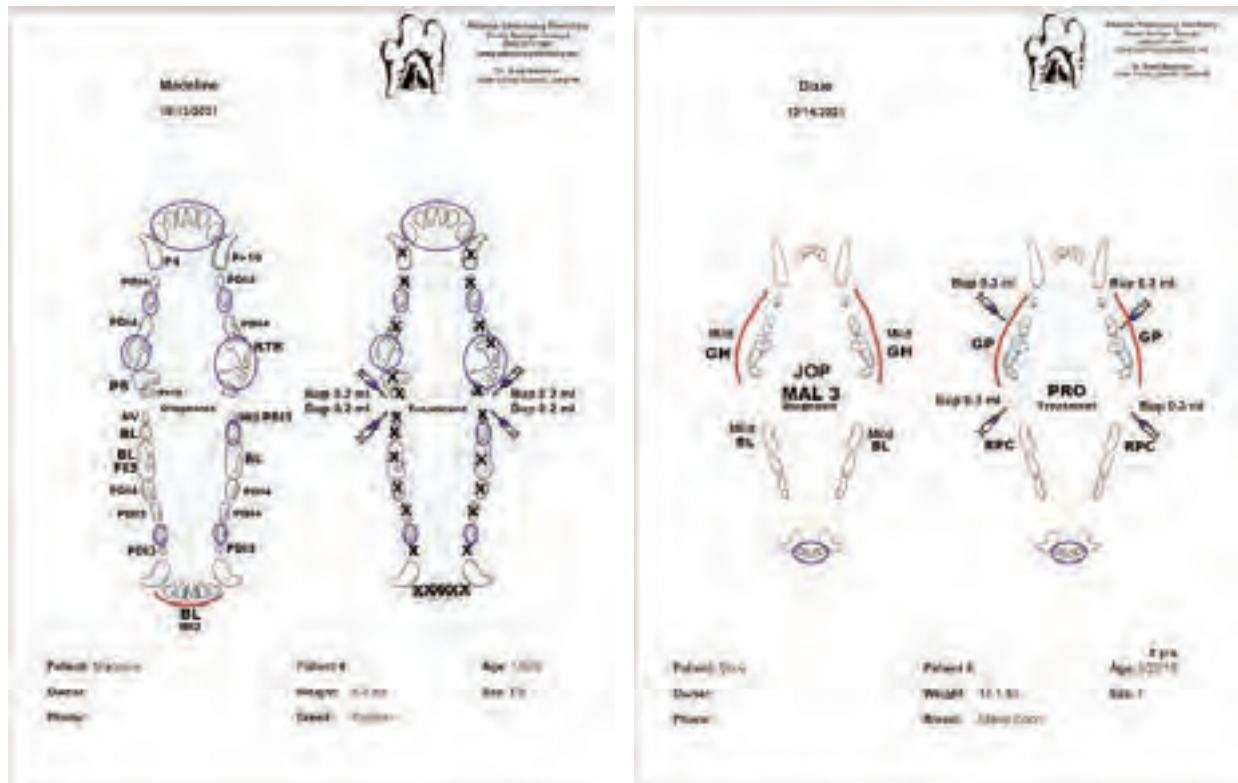
Depending on how cooperative and comfortable your pet is, a veterinarian should be able to do a basic oral exam during a routine visit. This is done by lifting your pet's lip and possibly gently opening their mouth in an attempt to visualize all the teeth and gums.

In an awake patient, we're looking for any obvious signs of discomfort or disease that could be in your pet's mouth. This type of oral exam may be enough to show that your pet has bad breath, gingivitis, plaque, and tartar, as well as, fractured teeth, tooth resorption, oral masses, and other obvious abnormalities which can help determine if your pet is likely going to require additional treatments during a COHAT. However, if your pet is uncooperative or painful, an awake oral exam may not be possible to perform or may be very limited.

Regardless if your pet is cooperative or not for an awake oral exam, these types of exams are still quite limited. Oral exams under anesthesia allow a much more in depth assessment of each individual tooth (there are normally 42 permanent teeth in dogs and 30 permanent teeth in cats), as well as, their gums, lips, cheeks, back of the throat, hard and soft palates, and tongue.

During the oral exam, the veterinarian probes around each individual tooth measuring any periodontal pockets found and checking for other abnormalities such as missing teeth, extra teeth, loose teeth, infected teeth, gingivitis, oral masses, tooth resorption, and much more. All abnormalities found and any treatments performed should always be recorded on a specialized dental chart to show the pet parent what was found and what treatments were done. It also serves as a reference for all future COHATs.





To ensure a proper COHAT is performed and the chart is accurate, we need a complete picture of your pet's oral health while they are under anesthesia. This requires doing both an oral exam, as discussed above, and dental x-rays of every tooth in your pet's mouth, as discussed below. This allows us to identify and assess any abnormalities above and below the gums and make appropriate recommendations for the well-being and care of your pet's oral health.

### 3. Dental X-Rays

While an oral exam is an essential part in diagnosing problems in your pet's mouth, it has the limitation of only being able to evaluate part of your pet's teeth: *the crowns*. The other part of the teeth, *the roots*, live below the gumline within the bone and can only be evaluated with dental x-rays. Think of the tooth as an iceberg that towers out of the water, the same can be said for the crown of the tooth coming out of the gum and bone. The root (which makes up ½ to ⅔ of the rest of the tooth) lives under the gums inside the dense bone where it cannot be seen on oral exam, just like the largest part of the iceberg is under the water where it is not visible from the surface.

Because so much of the tooth cannot be seen with just looking at the teeth on oral exam, the dental x-rays serve to complete a thorough oral exam by showing us what's also going on with the teeth and bone under the gumline. Would you allow your dentist to

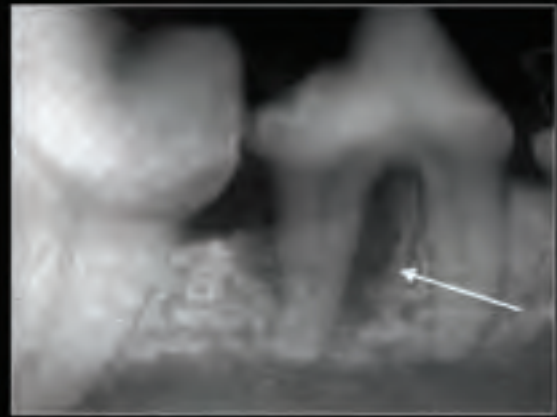
treat anything in your mouth without first fully evaluating everything above and below the gumline to ensure that the treatment plan is appropriate and that they are not missing anything important? I sure wouldn't, nor should we do that to our pets.



**Dental x-rays are critically important since lots of diseases and problems can affect only the tooth roots with no indication of problems on the crowns or gums.** We can find things such as periodontal bone loss around the tooth roots, broken tooth roots, jaw fractures, abscessed (infected) teeth, non-vital (dead) teeth, tooth resorption (breakdown of the tooth structures), tumors (masses or abnormal growths), unexpected extra tooth roots, unerupted teeth that we thought we were missing on an oral exam, and so much more. The reality is that the only way we can confirm if a tooth and the surrounding bone is healthy or if a tooth is truly missing is by doing a complete oral exam AND good quality full mouth dental x-rays during every dental COHAT procedure.



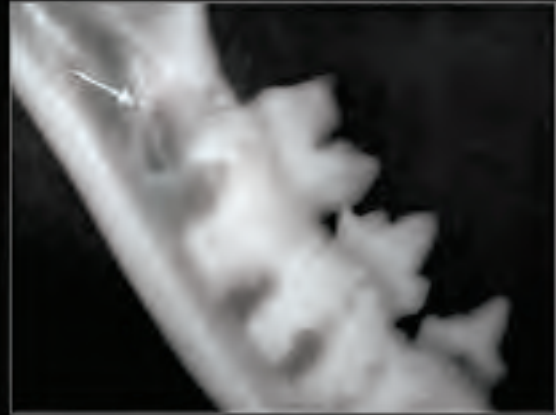
The gum and teeth appear very healthy in this dog, however the periodontal probe shows a 5 millimeter pocket. Normal is 1-3 mm.



X-rays show that the bone has been destroyed around this right mandibular 4th premolar.



This right mandibular first molar tooth in a cat looks perfectly normal.



X-rays show a large cyst destroying the back (distal) root. Left untreated this cyst will progress to destroy additional bone and compromise the jaw.

In addition to being able to find disease and abnormalities under the gums, dental x-rays also help us prepare for proper treatment if it is needed. Once we determine that there is oral disease, the next step is to figure out what we need to do about it. Using the x-rays to guide the treatment plan is crucial. Being able to peek under the gum allows us to see if there are unexpected changes that would alter our approach and recommendations. For example, if we see on x-ray that a diseased tooth has an extra root, it will change the way we have to extract that tooth to ensure all the tooth roots are completely removed. In addition, taking another x-ray after treating the tooth, especially if an extraction was done, is very important to confirm that no root tips or diseased bone was left behind since this can lead to serious pain and infection. In short, full mouth series dental x-rays must be taken for every dental patient and a follow up dental x-ray is a must for any areas where treatment was performed. Doing this combination of x-rays is necessary to ensure no oral disease is missed and that the treatment performed was successful.

#### **4. The Dental Cleaning: Scaling and Polishing**

Now that we have fully assessed the entire mouth and all the teeth, above and below the gum line, the treatment part of the COHAT begins. It starts with a deep, thorough cleaning of all the surfaces of each tooth...remember there are 42 adult teeth in dogs and 30 adult teeth in cats! Care must be taken to make sure all of the plaque and tartar (calculus) are removed from above and below the gumline. Since plaque, tartar, food, hair, and other debris tend to hide really well under the gumline, in between teeth, and within the cracks and natural ridges on the surface of teeth; a detailed cleaning can only be accomplished by a veterinary professional AND it must be done while your pet is under general anesthesia. This ensures the comfort and welfare of your pet and the safety of the veterinary professional.

The cleaning is performed using a combination of an ultrasonic scaler and hand instruments to make sure that no disease-causing debris is left in those hard to see and reach areas. The use of disclosing solution (a liquid applied to the teeth to show if any plaque is still present) after the cleaning can help ensure that all of the plaque and tartar have been properly removed. During the scaling (teeth cleaning) process, small shallow scratches are incidentally etched into the enamel of the teeth by the instruments used to completely clean the tightly adhered tartar off the tooth surface. These microscopic scratches will attract plaque and make it easier for tartar to accumulate on the surface of the teeth; therefore it is necessary to polish every tooth after the cleaning to smooth the surface of the crown. After scaling with any instrument, polishing of the teeth must be performed on every tooth using a slow-speed handpiece and a special type of paste to get the tooth enamel smooth and shiny.



This essential step of polishing after scaling teeth is a very important thing to know for pet owners who think scaling their pets teeth at home or during a non-anesthetic dental cleaning is a good idea. Not only will improperly using a hand scaler result in permanent damage to the pet's teeth which can lead to more serious dental issues; successful polishing and smoothing of the enamel requires an electric slow-speed handpiece followed by thorough rinsing which can be noisy, scary, and uncomfortable for most pets, therefore cannot be done easily or safely while pets are awake...especially for cats!!

While cleaning all the surfaces of every tooth followed by polishing to smooth the enamel of the teeth are really important aspects of the treatment component of a COHAT, it is only part of the process. Should any disease or trauma be discovered while performing the oral exam or assessing the dental x-rays, additional treatment and possibly oral surgery will be needed.

## 5. Oral Surgery and Treatments

Of course no one wants to hear that their pet needs oral surgery or dental treatments beyond just a cleaning; unfortunately it is way more common for pets to need treatments to address oral disease than owners and veterinarians would like. Remember when we discussed that 80% of pets have periodontal disease by the time they are 3 years old? Yep, that means that it is likely the majority of pets will need some type of treatment for periodontal disease by the time they are just 3 years old if early intervention wasn't performed while the pet was even younger. The chances of treatment being recommended dramatically increases if the pet is older than three when they have their first professional dental COHAT, if their owner has not started any type of effective daily dental plaque preventing home care, or if it is a smaller breed dog due to a much, much higher risk of periodontal disease. The important takeaway point is that ALL pets need to have their oral health closely monitored and well-cared for starting from when they are puppies & kittens through their geriatric years.



While treating the effects of periodontal disease is by far the most common type of intervention needed, there are also a vast array of other dental and oral issues that require the need for surgical intervention. Let's explore the different types of treatments that may be needed to treat periodontal disease. As we discussed earlier, periodontal disease is progressive (will continue to worsen if left untreated), therefore if caught in the early stages it is reversible with simple treatments such as closed root planing. Closed



root planing is simply a non-surgical periodontal therapy using a type of sharp hand instrument called a curette to clean the debris (plaque, calculus, food, hair, etc) and inflamed tissue out of a more shallow periodontal pocket (usually under 4-5 mm in depth) with only minimal bone loss seen on the dental x-ray (typically less than 5-10% of the length of the root). Closed root planing for early periodontal disease can help promote reattachment of the gum to the bone, thus reducing or eliminating the periodontal pocket in an effort to help slow progression of periodontal disease and pockets.

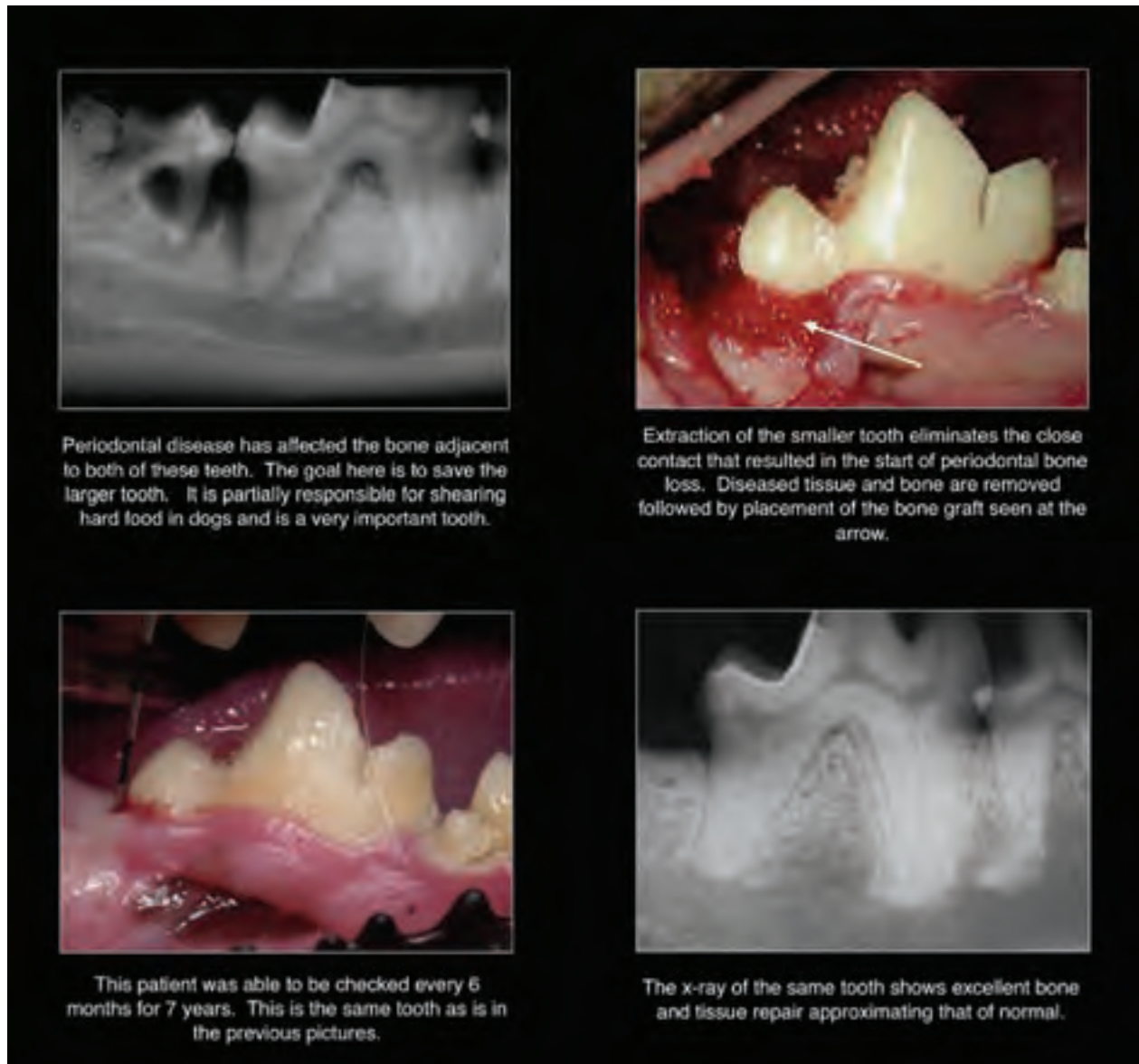


*Picture shows using a curette to perform closed root planing to clean out a periodontal pocket found during the probing portion of the oral exam while the patient is under general anesthesia. This procedure is used to help save a tooth with moderate periodontal disease (bone loss around the tooth root, discovered on x-rays). Root planing would be too painful to perform on an awake patient.*

As periodontal disease progresses to a more moderate mid-stage where the periodontal pockets are deeper (>5 mm) and there is increased bone loss (about 10-25%), the treatment progresses to oral surgery. This tends to be the gray area for management of mid-grade periodontal disease, as there often are several options ranging from open root planing (surgically opening up the gums to have access to the underlying root and bone for a thorough cleaning-out of the debris and inflamed tissue), tissue regeneration with bone graft (application of bone graft to help build back up the bone height to protect the tooth root and further reduce the periodontal pocketing), or extraction of the affected teeth. The type of treatment recommended will depend on two factors: 1. The oral exam and dental x-ray findings (i.e. how bad is the dental disease) and 2. How committed a pet parent is to caring for their pet's teeth.

Once bone loss from periodontal disease has started, it will require a very dedicated pet owner in order to save those teeth. A combination of daily plaque preventing dental home care and more frequent professional dental COHATs (i.e. every 3-6 months) will be the key to maximizing the success of any periodontal therapies performed. Without this

aggressive attention to diseased teeth, the treatments will ultimately fail, requiring tooth extraction. It is important to understand that in some cases, even with the utmost attention and care, the treatments may fail and periodontal disease may progress, requiring extraction of the diseased tooth or teeth. If a client chooses not to commit to the time and financial obligations needed to save moderately diseased teeth, having these teeth extracted is a very reasonable option. Extraction will ensure that the periodontal disease affecting those teeth will not continue to be a source of pain, inflammation and infection in the pet's mouth.



Once periodontal disease advances to the late stages, where there is >25-50% bone loss, the teeth are often mobile, and the periodontal pockets are very deep extending beyond the attached gingiva; it is too late to save these diseased teeth. At this advanced irreversible stage in periodontal disease, it is highly likely the tooth disease is increasing

the patient's risk of a very painful jaw fracture. It is also more likely to be causing systemic effects on other areas of the body such as the kidneys, heart, liver and brain; leaving extraction of these severely diseased teeth as the only possible treatment option. The unfortunate part of this stage is that these pets have been living in agony for months to years. The only good news about this treatment is that extraction completely cures the infection, inflammation, and pain associated with these extremely diseased teeth.



*Picture on top shows severe dental disease with gingivitis (inflamed gums) heavy tartar (brown chunks covering the crowns), and infection (pus draining from around the teeth). The two bottom pictures are the x-rays of these diseased teeth showing severe bone loss (red arrows pointing to the black areas) around the tooth roots. In order to resolve the pain, inflammation and infection all of this dog's teeth needed to be extracted due to the severity of the periodontal disease.*

## 6. Pain Management

The physiology of pain in animals is very similar to that in humans; simply put, animals experience and feel pain similar to the way humans do. However, animals typically do not exhibit pain responses in the same way that humans do or in ways that we can easily recognize as pain. Animals can be stoic and often are very good at hiding their reaction to pain, especially chronic pain. When an animal sustains an acute injury, obvious pain behaviors such as vocalization (e.g. yelping, screaming, whining, groaning), limping, or flinching when touched are easily recognized. Unfortunately, pets with dental pain can be much more difficult to assess because most dental pain tends to be more chronic pain with a slow gradual onset. Dental conditions like fractured teeth can be excruciating, but these patients may not show any obvious signs of pain or may exhibit very subtle changes in behavior, hence too often they suffer in silence. Slight changes in posture, drooling, squinting, staring, hiding, lethargy, and even purring can indicate oral discomfort, but just because you are not seeing obvious signs of dental pain in your pet, doesn't mean it isn't there.

Pain management is one of the most critical components of a comprehensive dental COHAT. Effective pain management before, during, and after a dental procedure significantly improves a pet's overall comfort, safety during anesthesia, as well as, speed and ease of recovery. A great number of positive outcomes are achieved when our pets are comfortable and pain free. During the COHAT procedure, benefits of pain management, specifically regional oral nerve blocks, include the ability to maintain our dental patients at a much lighter plane of anesthesia, significantly reducing the anesthetic risk to your pet and the speed of their recovery from anesthesia. Pain management after the procedure, including medications administered at home, promotes a smooth post-operative recovery for your pet which also increases your comfort and compliance with continued, regular professional COHAT's, which are very necessary to every pet's quality of life and longevity.



Almost all procedures that are used to treat dental conditions can induce varying degrees of pain. It is important to recognize that pain caused by treating dental disease is temporary and will subside as their mouth heals (likely within a few hours to days), while leaving painful disease in your pet's mouth is only going to worsen and will leave them with ongoing, progressive debilitating pain. Dental procedures such as cleaning the teeth with scaling or periodontal treatment with root planing can cause mild to moderate discomfort. More involved procedures, such as surgical extractions, oral mass removals, and treatments for stomatitis can cause moderate to severe pain. All scenarios from mild to severe pain must be addressed appropriately for the overall well-being of the pet.

Your veterinary team will choose a combination of pain medications and therapies to properly control your pet's oral pain before, during, and after the dental procedure. This can include medications, local oral nerve blocks, and therapy lasers. If your pet requires any painful treatments, it is likely that pain medications will be sent home post-dental procedure. These medications should be discussed thoroughly with you, have clearly written instructions on the medication label, and you should be sent home with written discharge instructions that are easy to follow and understand. Always, always get clarification and ask about any questions you have regarding the medications dispensed or discharge instructions given to you by the veterinarian.

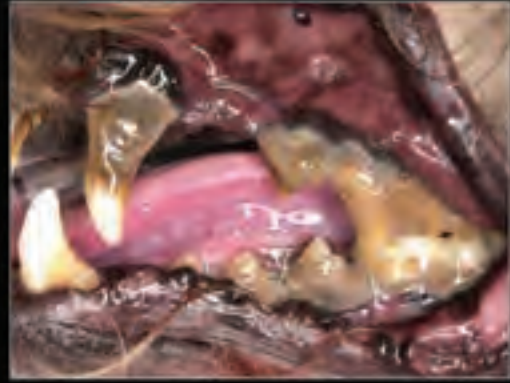
# Common Dog & Cat Dental and Oral Diseases

**1. Periodontal Disease:** Discussed in detail above, periodontal disease is the number one, most common dental disease in pets and people. There are varying progressive stages of periodontal disease (Stage 1 to Stage 4). The stage of periodontal disease can only be determined with a combination of oral exam and dental x-ray findings while the pet is under general anesthesia. All stages of periodontal disease cause some level of discomfort in a pet's mouth. Only in the earlier stages can treatment reverse the effects of the inflammation and infection soon enough to save the affected teeth. The later stages are very painful for pets and almost always result in extraction of some or all of the pet's teeth. Advanced periodontal disease can happen in young dogs and cats, so early attention and proactive care of your pet's teeth are necessary and key to preventing oral pain and tooth loss. The most important take home point of this book is to inform owners that periodontal disease is VERY COMMON and is PREVENTABLE, hence implementing some form of plaque-preventing dental home care AND regular professional dental COHATs starting while your pet is still a puppy or kitten is of the utmost importance to every pet's quality of life and to help them live longer, happier lives.





This patient was rescued from a breeding farm. Severe periodontal disease is present from years of neglect.



Prior to spaying this poor dog the infection in the mouth had to be eliminated. These procedures can NOT be performed at the same time due to risk of infection spreading by the blood to the complicate the spay.



Extracting all of the teeth in this patient was the only way to eliminate the profound periodontal disease that affected the entire mount. Gum flaps allowed all infection to be removed.

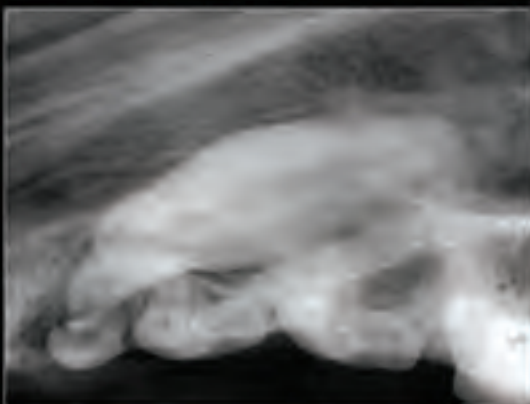
**2. Missing Teeth:** During an oral exam there can be missing teeth, but the only way to know for sure if they are truly missing is with an x-ray. Finding a missing tooth on an oral exam is ALWAYS an indication to take a dental x-ray. If the tooth is actually missing (no tooth seen under the gum line), then it's all good and nothing needs to be done about it. There will be peace of mind knowing that nothing serious or painful is lurking below the gumline where there should be a tooth. It is actually common for many dog breeds to be missing teeth, this is not a problem and in many cases actually benefits the pet by reducing crowding which can lead to periodontal disease. If the tooth is not missing and there is an entire tooth or even just the tooth roots, treatment will likely be required to extract the tooth and/or roots to prevent dentigerous cysts (see below for description), inflammation and/or infection which are likely to be painful. Basically, what is found on the dental x-ray will determine which treatment, if any, needs to be performed if there are abnormalities seen where there are missing teeth.



This 3 year old lab has a swelling adjacent to the left side of the nose (arrow)



The patient is missing its left upper canine tooth. The swelling is seen at the arrows.



The canine tooth is seen here. Since it didn't erupt it has a tendency to form a cyst. The cyst is fluid filled and expands to destroy the bone. The expansion produced the swelling.



Removal eliminates the problem. This cyst destroyed the bone on this side of the nasal cavity. Any missing tooth is a **STRONG** indication for dental x-ray. This is a common problem.

**3. Dentigerous Cyst:** As stated above, a missing tooth or teeth on an oral exam is ALWAYS an indication to perform a dental x-ray, for many reasons. One of the most significant issues with a missing tooth could be an unerupted tooth which can lead to a dentigerous cyst. A dentigerous cyst is a benign (non-cancerous) fluid-filled structure associated with an adult tooth that has failed to erupt through the jaw bone. The failure of the adult tooth to erupt normally can be from a physical barrier such as an overlying baby tooth that prevented the adult tooth from being able to move into place or can be from lack of eruptive forces that is a developmental problem. There is a membrane over the crown of each adult tooth that produces a fluid to keep the tooth protected while it is encased in the jaw bone when they are puppies and kittens, before it erupts. This membrane is shed during the eruption process as the crown pushes out of the bone and gums. If the tooth fails to erupt, the membrane can continue to produce fluid causing pressure around the unerupted tooth which leads to expansion of the fluid eventually causing a severe local destruction of the tooth, surrounding jaw bone, and adjacent teeth. If the cyst goes undetected for many months to years, the destruction can become so severe that a broken jaw can occur. This obviously would be very painful and detrimental to the pet requiring extensive oral surgery to repair.

Unerupted teeth, hence dentigerous cysts, are quite common in small breed dogs, with brachycephalic (smooshy-faced breeds) such as English and French bulldogs, Boston Terriers, and Pugs being over-represented. It would be very unusual, but not impossible for a cat to have a dentigerous cyst. Treatment of a dentigerous cyst is always ideal as a preventative measure. This means performing COHAT with a thorough oral exam and full mouth series of dental x-rays on young animals (especially brachycephalic breeds) is key to finding problems before they become significant. If your pet has any missing adult teeth noted by the time all of their adult teeth have erupted (between 8-12 months old), it is highly recommended to have dental x-rays performed and any unerupted teeth extracted as soon as possible to prevent a dentigerous cyst from forming.

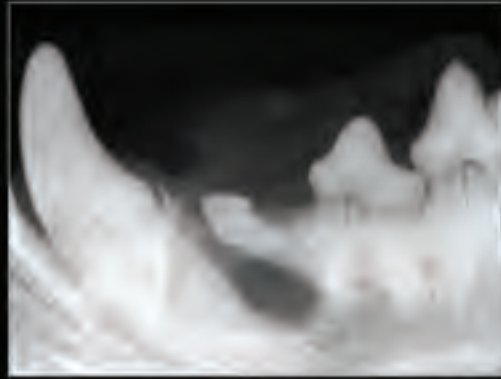
If an unerupted tooth is not extracted before it forms a dentigerous cyst, then more aggressive treatment will be required. Along with extraction of the unerupted tooth, the cyst lining will need to be completely removed surgically and any affected adjacent teeth will also need to be extracted, unfortunately this can include the large mandibular canine teeth. A dentigerous cyst removal procedure can be a complicated surgery if the cyst is large and extensive. It is critically important to remove all of the cyst lining to prevent the cyst fluid from building up again, leading to continued destruction of the surrounding bone and teeth. Once the affected teeth and the dentigerous cyst lining have been surgically removed, it is cured and the body will replace the affected area with bone, making the jaw bone stronger over several months following the surgery.







This patient is missing the first and second premolars (arrows)



X-ray shows an unerupted first premolar and a dark area adjacent to it and the canine tooth. Cysts associated with unerupted teeth are called dentigerous cysts.



The cyst and the tooth have been removed.



Follow-up x-rays showed good bone fill and a healthy canine tooth up to six years post removal.

**4. Tooth Wearing:** Just like people, dog and cat teeth can become worn down. While tooth wearing is very rare in cats, it is actually quite common in dogs, especially for dogs that love to chew certain toys (i.e. tennis balls). While some wearing of the teeth is normal as pets age, this type of wearing isn't as likely to cause problems, however significant wearing can be painful and can lead to numerous other dental problems.

There are two common ways for teeth to become worn down. The first is dental attrition and the other is dental abrasion. Dental attrition occurs when the teeth rub against each other. This most commonly occurs with an abnormal bite, called a malocclusion. A malocclusion occurs when the upper and lower jaws are not aligned properly, hence the teeth will also be misaligned. The misalignment of teeth causes them to wear against

each other every time the pet opens and closes their mouth. Tooth attrition is most often seen on the four canine teeth (the fangs) and the incisors (the small teeth at the front of the mouth between the canine teeth). While tooth grinding in animals is rare, it can lead to tooth attrition of the premolars and molars in the back of the mouth. Dental abrasion is wearing on the teeth caused by other objects (not the pet's own teeth) rubbing against the teeth. Dogs most commonly wear down their teeth from chewing on toys (tennis balls, felt toys, bones, or other abrasive surfaced toys). Allergy dogs who chew on themselves can have significant tooth wearing, mostly the front canines and incisors.

Whether the wearing is from attrition or abrasion, tooth wearing eventually rubs the protective enamel (hard, white protective coating) off the crown, exposing the underlying dentin (semi-hard, yellow colored part of the tooth that has direct communication with the sensitive pulp chamber (nerves and blood vessels). As long as the wear is slow, the dentin can repair itself by laying down tertiary or reparative dentin. This reparative dentin is generally a brown or dark color, causing staining of the teeth, which is more of a cosmetic than painful or problematic issue. In severe cases of tooth wearing, the teeth may actually be worn all the way down to the gum line. Before the reparative dentin is laid down or if the wear outpaces the reparative dentin, the teeth are likely to be sensitive and subject to pain, inflammation, and infection. If the wearing reaches the pulp of the tooth it will become extremely painful, requiring either a root canal therapy or extraction.

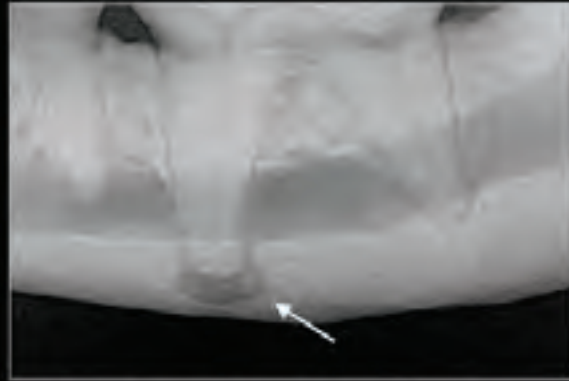
Treatment of worn teeth will be determined by the findings during the thorough oral exam and the dental x-rays. Worn teeth with reparative dentin and no signs of inflammation, infection, or disease on x-rays do not need any treatment, but should continue to be monitored with a minimum of once yearly professional dental COHAT and dental x-rays. Worn teeth that do not yet have reparative dentin and also do not have any signs of disease on dental x-rays, can be treated with bonded sealants to help protect the tooth while the reparative dentin is forming. If there is obvious disease of the tooth on oral exam or on the x-rays, then the only treatment options are root canal therapy or extraction of the damaged teeth.

In order to help prevent tooth wear, know that the sooner you notice signs of wearing, the better chance you have of slowing it down. You can prevent tooth wear caused by attrition (tooth on tooth contact) by having your pet's bite (occlusion) evaluated at all their initial baby visits to the vet and having any malocclusions (misalignment of the teeth) treated by a qualified veterinarian. Tooth wear caused by abrasion can be prevented by restricting the things you give your dog to chew. First and foremost, avoid letting your dog chew on tennis balls or toys with felt. If your dog has allergies, have them treated promptly by your veterinarian and prevent them from chewing on themselves.

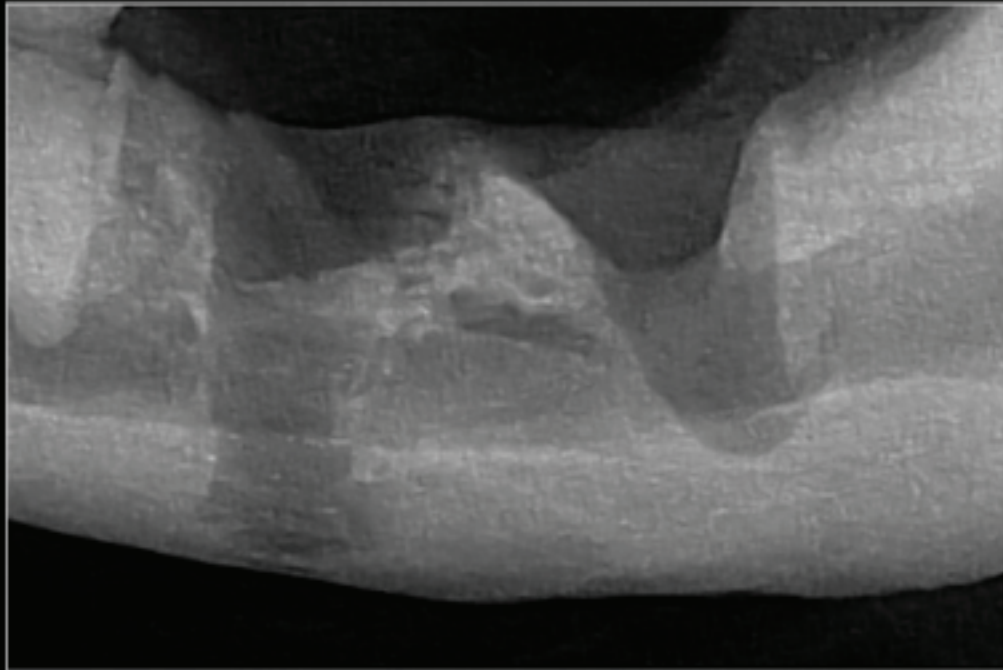




Chronic wear is also present here. This patient chewed rawhide chews much of its life.



The arrow shows the bone destruction indicating the tooth is dead.



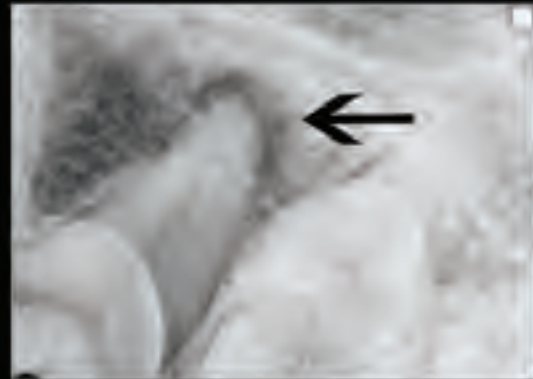
Extraction is an option and was performed here. A root canal is an option as well. The root canal procedure will eliminate the source of the infection in the canal and the bone will eventually heal.

**5. Uncomplicated Fractured Teeth:** When a tooth fracture occurs and it doesn't directly expose the pulp chamber, it is considered to be an uncomplicated tooth fracture. This type of fracture can extend partially through the enamel or completely through the enamel into the underlying dentin. If the enamel is preserved at the fracture site, it is much less likely that this tooth is going to be painful or progress to internal inflammation and/or infection. Should the dentin become exposed due to complete loss of its overlying enamel, the internal pulp (nerves and blood vessels) of the tooth can become infected due to communication of the dentin tubules which have direct access into the pulp chamber.

The only way to see if there is damage to the inside of the tooth or the root is by taking an x-ray of the fractured tooth. If an uncomplicated tooth appears normal on radiographs, then the recommended treatment is to perform an odontoplasty (smoothing of the fractured site) and bonded sealant over the exposed dentin. This is an attempt to help save this tooth from sensitivity to cold, hot, sticky or acidic foods, as well as, protect it from invasion of bacteria into the pulp leading to a painful, dead tooth. If an uncomplicated tooth fracture has abnormal x-rays of the tooth root, then extraction or root canal therapy are the only treatment options.



This pulp has not been open on this tooth. Only dentin is exposed (white arrow). There is a segment of the fractured crown still attached to the gum (black arrow)



The x-ray shows an area around the root tip where the bone has been destroyed. The dentin is full of tubules that allow bacteria to enter the pulp, killing it and the tooth. Any tooth with exposed dentin requires bonding and/or restoration to seal the tubules.



This is a canine tooth with an enamel chip, exposing the dentin.



Prior to treatment and x-ray will indicate whether or not the tooth is still alive. If so restoration will seal the dentin and eliminate potential pulp damage.



In this patient the x-ray shows no changes and the final restoration is shown here. X-rays should be taken again in 6-12 months to determine that the tooth is maturing correctly.

**6. Complicated Fractured Teeth:** The most common causes of fractured teeth that we see are chewing on hard toys and treats such as cow hooves, antlers, hard nylon toys, ice cubes, rocks, and marrow bones. While we understand that many pets love chewing on these toys and some even help reduce periodontal disease by reducing plaque, the risk to their oral health and pain endured with a fractured tooth is not worth the joy they get and there are many other better options for plaque prevention. A good rule of thumb for choosing an appropriate dental chew or toy is that if you can easily make a mark in it with your fingernail, it likely isn't too hard. A complicated tooth fracture occurs when damage to the enamel and dentin is so deep that it causes exposure of the sensitive pulp inside the tooth, also known as pulp exposure. The pulp is where the nerve and blood vessels live inside the tooth. Once the pulp is exposed to the mouth this allows air, saliva, debris, and bacteria to enter the tooth causing it to become inflamed, infected, and painful; ultimately the tooth will die and form a painful tooth root granuloma (mass of granulation tissue, typically produced in response to infection, inflammation) or abscess (a swollen area within body tissue, containing an accumulation of pus).

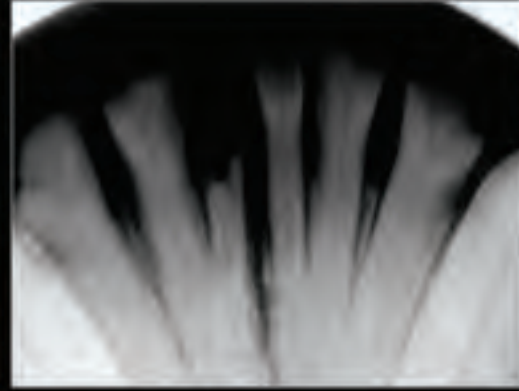
It is always recommended and necessary to treat a complicated fractured tooth with either a root canal or extraction. There are pros and cons to each of these treatment options and there are times when a root canal is not an option for a complicated tooth fracture, thus leaving extraction as the only option. Root canals are used to save fractured or dead teeth, rather than having to extract them. Whether or not a root canal is an appropriate option for your pet's tooth should be discussed with your veterinarian. If root canal therapy is performed, many times the veterinary dentist will recommend placing a crown over the treated tooth to protect it from further trauma and from disrupting the root canal therapy.

For cats, since the pulp extends almost to the tip of the crown, even slight crown tip fractures are likely to be complicated, requiring treatment with a root canal or extraction. Typically, only the canine teeth are candidates for root canal therapy in cats due to the small size of their other teeth. It is important to understand that both cats and dogs do extremely well with tooth extractions. Even if they require many or all of their teeth to be extracted, they will be comfortable and be able to eat with little to no problems, even kibble. Not surprisingly, the jaw bone of dogs and cats is much more dense than ours, so they don't get tooth migration or shifting of the remaining teeth like we do when we have a tooth extracted. There are literally millions of cats and dogs who have had teeth extracted (or that have fallen out due to severe dental disease, which is sad because it is such a painful process) or who are walking around with no teeth at all; that are living happy, comfortable and long lives!





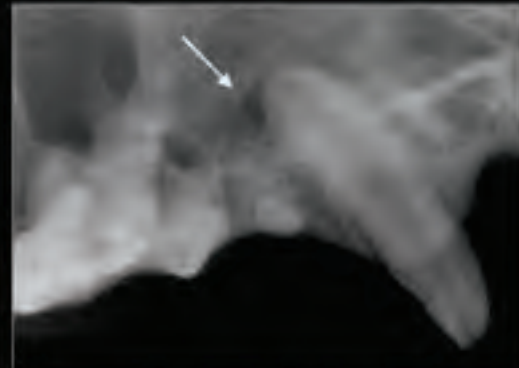
Another case of a missing tooth. The gum appears normal.



X-rays show a root tip present. Left alone these can result in bone loss, pain and infection. Removal is indicated.



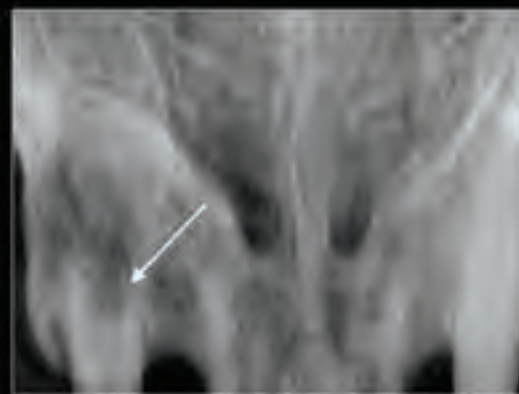
Oral exam shows a fracture of the right maxillary canine tooth.



X-ray shows a large pulp cavity compared to the adjacent teeth. The arrow points to the dark area where the bone has been destroyed exposing the nasal cavity.



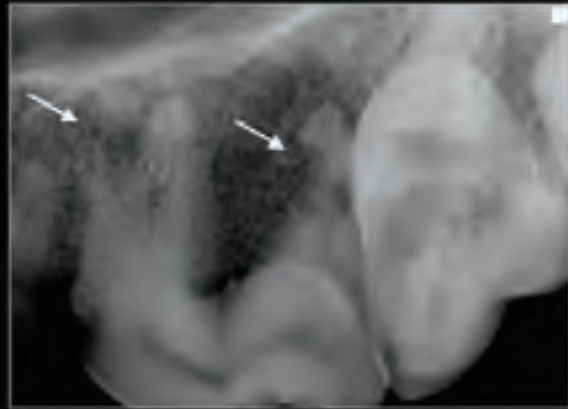
The tooth to the left is fractured and discolored in this elderly cat.



The arrow shows that the the root of the fractured tooth has been almost completely destroyed. Extraction revealed a severe infection with pus. This cat has lived with this for years, indicated by the large pulp cavity compared to the normal canine



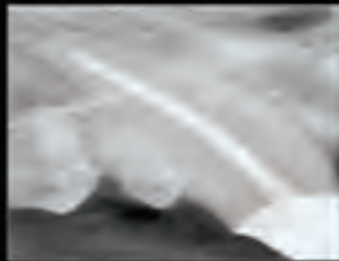
This is an older fracture. The pulp is dark indicating it is dead.



The x-ray shows the severe destruction of the root (arrows). This tooth is not a candidate for a root canal.



This right maxillary canine tooth in a police dog has been fractured. Root canal therapy or extraction are the treatment options in cases like this where the pulp is exposed.



The large teeth including the canines, maxillary 4th premolars and mandibular molars should always be considered for root canal therapy.



Crowns are placed to protect the opening where the fracture occurred so leakage will not result in root canal failure. They are not placed for cosmetic reasons.

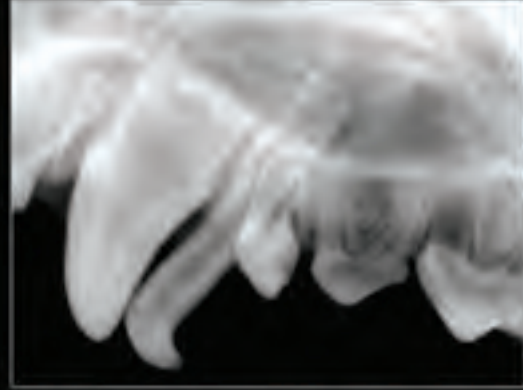
**7. Discolored Teeth:** A discolored tooth can occur when a pet chews on hard objects or from blunt trauma to the mouth. The pulp (contains the nerve and blood vessels of the tooth) of the tooth bleeds and initially stains the dentin pink. Eventually the tooth will become purple or gray. Extensive research has been done on discolored teeth proving that 95% of them have pulpitis (inflammation of the internal tooth nerve and blood vessels) which is very painful and leads to a dead tooth which is more likely to become infected or fractured. It is recommended that all discolored teeth (even partially discolored) are either extracted or treated with root canal therapy to alleviate the pain, inflammation, and possible infection associated with this internal tooth trauma. Even if the x-ray doesn't show abnormalities at that time, these teeth are diseased, painful and require treatment as soon as possible.





Discolored teeth that are stained from the inside of the tooth are generally a result of blunt trauma. These teeth are dead or dying. Root canal therapy or extraction are the options.

**8. Persistent Baby (Deciduous) Teeth:** Dogs and cats, just like people, should lose all of their baby teeth, also known as deciduous teeth. The deciduous teeth in dogs and cats typically fall out on their own between 3-6 months of age. Sometimes, a pet's underlying adult tooth will erupt before the baby tooth has fallen out, which is called a persistent deciduous tooth. If a baby tooth doesn't fall out naturally it can prevent the adult tooth from erupting in its proper position leading to a malocclusion, which is when the upper and lower teeth don't align properly when the mouth is closed. A persistent baby tooth can also lead to painful trauma of the gums, palate, lips and opposing teeth. In addition, it can lead to difficulty chewing and eating. Persistent deciduous teeth can also cause crowding between teeth and contribute to plaque and debris accumulation under the gumline leading to a more rapid onset of periodontal disease, which always requires some form of treatment once it begins. Since many problems can occur from a persistent baby tooth, it is recommended to extract any persistent deciduous teeth as soon as possible if they are causing or will potentially cause problems for the pet to help prevent oral pain, inflammation and infection.



The root of the baby canine has a large pulp cavity and very thin enamel making careful extraction necessary to avoid fracture.

**9. Malocclusion (Abnormal Bite):** Many malocclusions (improper alignment of the upper and lower jaws) are mostly caused by genetics and are considered hereditary, although some are caused by trauma. Some are considered “normal” for the breed. Treatment options may include moving teeth with orthodontics, extracting teeth, or crown shortening with vital pulp therapy. The goal of treating problematic malocclusions is to provide a comfortable and functional bite for our patients with malocclusions. Our intentions are never to provide cosmetic correction. Dogs and cats with malocclusions should absolutely not be bred as they are highly likely to pass the abnormal bite onto their offspring, often getting worse with each generation. This is so important, that many veterinary dentists will not correct malocclusions unless the pet is spayed or neutered.



This young dog has retained baby (deciduous) canine teeth in the lower jaw. They are causing the adult teeth to come in too far inward.



Equally important the baby teeth are digging into the palate when the patient closes its mouth (arrows). Removing the baby teeth early may prevent the adult teeth from causing problems in some patients and immediately eliminates any pain.

**10. Gingival Hyperplasia:** This is a medical condition that occurs when there is inflammation, overgrowth, and thickening of the gums. It can happen in any dog, and even cats, however it is seen more commonly in boxers, bull dogs, great danes, labradors, and collies. While gingival hyperplasia is most often caused by inflammation from bacteria and plaque, it can also occur as a side effect to certain medications such as Cyclosporin and Amlodipine. Gingival hyperplasia causes deep periodontal pockets which in turn traps plaque, tartar, food, hair, and other debris, hastening periodontal disease. If left untreated, gingival hyperplasia will often progress, becoming excessive and unsightly, as well as, leading to severe pain during chewing and difficulty eating.

Treating gingival hyperplasia is performed by surgical excision (removal) of the excessive gum tissue. This goal of the surgery is to return the gums to their normal height, thickness, and contour which can be performed with a surgical blade, specialized burs on a high-speed drill, CO2 surgical laser, or with cautery. It is often a gum disease that will recur over time, however with commitment to plaque control by implementing daily dental home care and scheduling regular professional dental COHAT's every 6-12 months the recurrence can be slowed or prevented. It is also suggested to find alternative medication whenever possible if that is suspected as the primary cause for your pet's gingival hyperplasia.





This patient has gingival hyperplasia as well. X-rays showed no changes. Treatment is indicated.



Before treatment on the patients left side.



The same patient as in the previous picture. Surgical removal of the tissue eliminates the pockets.



After treatment. This will need to be repeated in several years to eliminate the pockets to prevent bone destruction.

**11. Stomatitis:** Stomatitis is a condition that causes severe inflammation in cat's mouths, especially the gingiva and in the back of the mouth. It is thought to affect up to 12% of cats, making it a disease that veterinarians unfortunately see often. While we do not know exactly what causes stomatitis; infectious (bacterial and/or viral), immune-mediated, and inflammatory dental diseases such as periodontal disease and tooth resorption are thought to be involved. At its root cause, stomatitis is believed to be an exaggerated inflammatory response of the immune system to the plaque bacteria. The immune system in turn causes the gums, periodontal structures, and oral cavity to become swollen, red, and VERY painful. It is diagnosed primarily by its characteristic generalized gingival inflammation that extends to the fauces (inside corners in the back of the mouth - called caudal mucositis) on oral exam, however it can be confirmed with a biopsy.

Feline stomatitis can affect cats at any age from just a few months old until well into their senior years. Since these cats are EXTREMELY painful, owners may notice the following symptoms including drooling (sometimes with blood), halitosis (bad breath), decreased or absent appetite, unkempt coat from decreased or absent grooming, lethargy, screaming when they open their mouth to eat or yawn, pawing at their face, averse to being petted on the face or head, or any other sign that their cat is not acting normally.

While there are many proposed medical treatments for feline stomatitis, the first and foremost is to begin pain medication until the gold standard treatment with surgical intervention which involves extraction of all or most of the affected cat's teeth can be performed. "Wait, what??" is a reasonable response from most cat owners who are advised to have all of their, often young, cats teeth removed. As stated above, stomatitis is believed to be a hyper-immune response to plaque bacteria which forms on teeth. We all know how well a cat with no oral pain tolerates tooth brushing, can you imagine how impossible that would be for cats once you add severe oral pain into the mix??

Full mouth extractions may sound aggressive and concerning to cat owners who don't fully understand this disease, however the sooner the oral surgery is performed to remove the cat's teeth, i.e. the source of plaque bacteria, the sooner your cat will be out of pain, eating better, and playing, as well as, the higher chance of a complete cure for this disease. Delaying the oral surgery to try medical management such as steroids, antibiotics, oral rinses, etc will likely unnecessarily add to the overall cost of treating stomatitis, reduce the chances of curing the oral inflammation, as well as, prolong their intense discomfort for longer than is necessary. While partial mouth extractions can be considered in some cases, many stomatitis cats will eventually end up needing full mouth extractions in the future. The determining factors in recommending partial or full mouth extractions is based on the extent and severity of the oral inflammation and disease, as well as, the owner's wish to have a single procedure or two possible procedures.

While every veterinary dentist will agree that full mouth extractions are humane, kind, and necessary to treat stomatitis and offers the best chance of curing the disease, it is important to understand that despite even full mouth extractions, there are about 10-20% of cats that will continue to have refractory stomatitis requiring ongoing medical and/or surgical therapies. Refractory stomatitis is diagnosed when there is still significant oral inflammation persistent 6 months after full mouth extractions. One of the most important considerations when electing for stomatitis related oral surgery is to choose a veterinarian with vast knowledge and clinical experience with stomatitis, such as a board certified veterinary dentist or a general veterinarian who has a strong focus on dentistry.



This procedure requires expertise beyond routine extractions and precision surgical handling of the tissues to optimize outcomes. Since absolutely no tooth roots can be left behind when treating feline stomatitis with surgical full mouth extractions, it is imperative that pre- and post-extraction dental x-rays are ALWAYS performed with these cases.



*A cat with Feline Stomatitis showing the back of the mouth with caudal mucositis (severe inflammation of the oral mucosa at the back of the mouth, especially affecting the inside corners of the mouth). This is an EXTREMELY painful disease in cats. The first line of treatment ALWAYS needs to start with full mouth extractions (removal of every single tooth).*



This cat has severe inflammation surrounding all of the teeth and in the tissue in the back of the mouth. This is feline stomatitis. It is extremely painful. Caudal mouth or full mouth extractions are the only effective treatment.



Extractions should be the recommendation of choice on all cats with stomatitis. Delaying treatment with steroids and other medications prolongs suffering and decreases the prognosis for these poor cats. This is 3 months post extraction and represents a complete cure.

**12. Chronic Ulcerative Paradental Stomatitis (CUPS):** Now called **Canine Chronic Ulcerative Stomatitis (CCUS)** in dogs, has some similar attributes to feline stomatitis, but is actually a very different disease in dogs. Similar to stomatitis in cats this disease causes severe inflammation and pain in the mouth, has very similar clinical signs (halitosis, drooling, decreased appetites, lethargy, yelping

when opening their mouth, etc), and has been linked to an immune-mediated disease that produces an over-reaction to plaque bacteria, but that's about where the overlapping areas of these diseases end. In dogs, CCUS typically affects middle aged to older dogs and generally does not affect the supporting tooth structures (periodontal ligament, bone, and cementum), but rather the tissues close to, or overlying the crowns of the teeth – gingiva plus oral mucosa (inside of the lips), tongue, pharynx etc. There are several other known serious auto-immune diseases that can be found in conjunction with CCUS and other severe diseases that should be ruled out prior to implementing treatment for CCUS, often requiring a medical work up including blood work, biopsy of the abnormal tissue, and other diagnostics. In normal dogs, the soft tissues of the mouth such as mucosa, tongue, and pharynx remain healthy even with severe, chronic periodontal disease. Conversely, we often find that in CCUS cases the teeth are generally periodontally healthy while the other surrounding soft tissues of the mouth are moderately to severely affected.

Once CCUS has been diagnosed, first and foremost pain medications should be implemented and a professional dental COHAT (Complete Oral Health Assessment and Treatment) with full mouth dental x-rays should be scheduled and expected to be performed every 3-6 months based on the individual dog's needs. All diseased teeth should be extracted and thorough, meticulous cleaning of all remaining teeth should be performed. Since diligent, effective plaque reduction is the hallmark of successful treatment, twice daily dental home care will need to be implemented right away. Ideally brushing and/or use of dental wipes, along with regular use of disclosing solution to identify plaque-problem areas will begin immediately after the professional COHAT. Additional plaque-reducing treatments should be used in conjunction with twice daily brushing including VOHC approved products such as rinses, water additives, treats, and/or dental diets. If aggressive, frequent professional dental COHATs *and* daily home dental care does not result in optimal results with excellent control of oral inflammation, oral pain, and other clinical signs, the only permanent solution to resolving CCUS is with full mouth extractions. Unlike in feline stomatitis, with full mouth extractions used to treat CCUS cases it is 100% curative and no further treatments will be needed to control the disease in any of the cases.





This patient has CUPS = chronic ulcerative parodontal stomatitis. The gum and tongue adjacent to all of the teeth is severely ulcerated and very painful.



This is the same patient. The ulcers are very severe. The body's immune system is destroying the tissue contacting the plaque which is on the teeth.

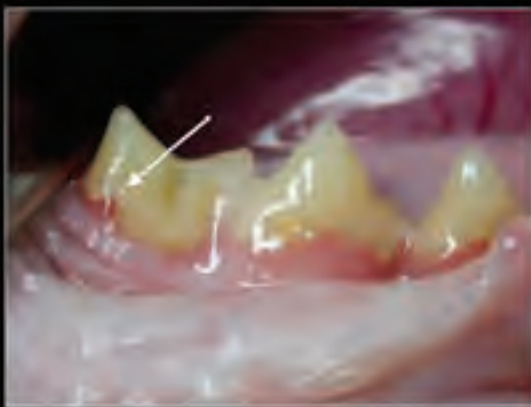


This is the same patient's right upper lip and palate. Full mouth extractions cured this patient eliminating his pain.

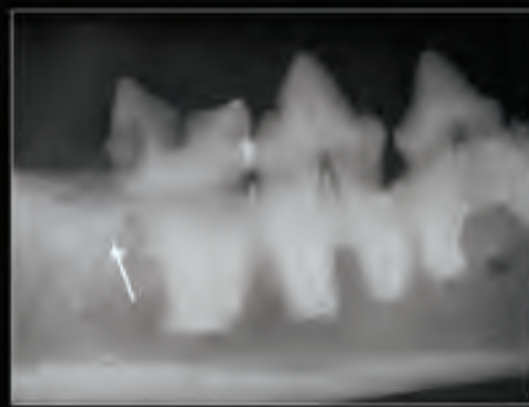


**13. Feline Tooth Resorption:** Previously known as neck lesions, cervical lesions, and feline odontoclastic resorptive lesions (FORL's), tooth resorption affects between 28-67% of cats based on varied studies, making it very common and one of the primary causes for tooth loss in cats. While the exact cause of this condition is unknown, tooth resorption occurs when the body begins breaking down and absorbing the tooth and its supporting structures. This can occur slowly or very rapidly, but ultimately results in complete loss of the entire affected tooth. Cats with tooth resorption show a wide range of clinical symptoms from no signs at all, to severe signs of pain including drooling, halitosis, chattering their jaw when touched or when they eat, vocalizing, pawing at their face, lethargy, decreased or lack of appetite, weight loss, and so many more. Tooth resorption can sometimes be seen on an oral exam, but absolutely requires dental x-rays to appreciate the full extent of the disease and to formulate a proper treatment plan for all of the affected teeth.

Once the tooth resorption affects the neck and/or crown of the tooth it is VERY painful (even if your cat isn't showing signs, these lesions hurt) and requires treatment with a partial or complete extraction of the affected tooth based on the extent of the tooth resorption at the time of extraction. Often it is a progressive disease involving multiple teeth, and in some cases all of the teeth. Once tooth resorption has been identified in a cat's mouth, it's very common for additional lesions to occur over time, thus necessitating ongoing oral care for the remainder of the cat's life, well for as long as they have teeth. Unfortunately, there are no known preventative measures to ward off all types of tooth resorption, however optimizing your cats oral health by treating and preventing periodontal disease, oral inflammation, and oral pain can help reduce the frequency, rate, and extent of certain tooth resorption, as well as, a myriad of other oral diseases.

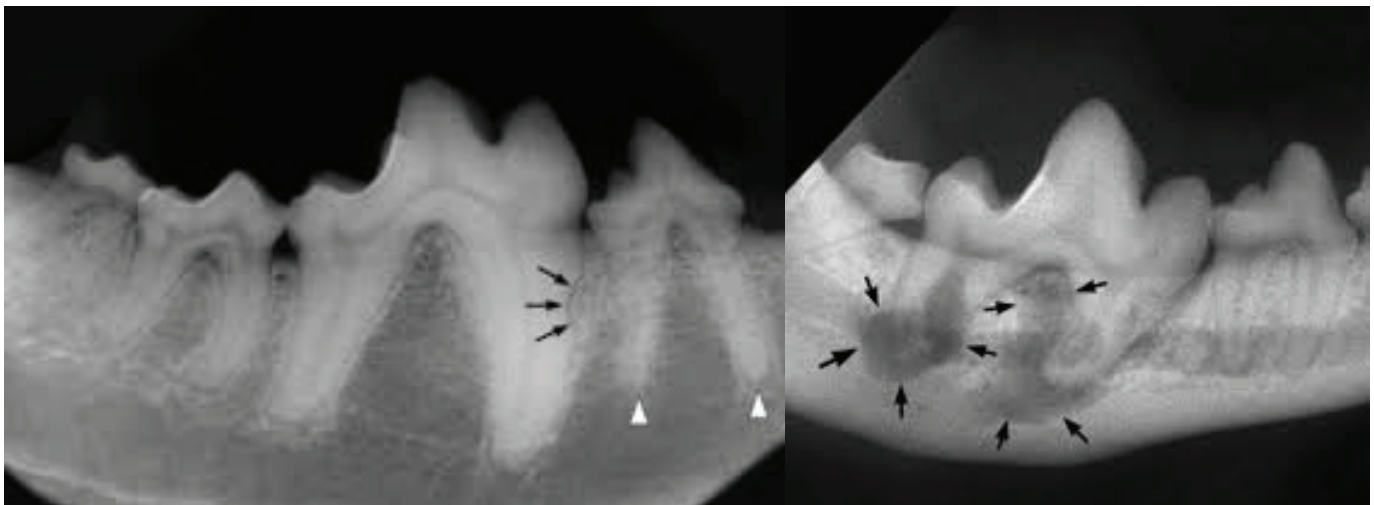


Tooth resorption affects this tooth (arrow). Although cats will very infrequently show signs of pain these lesions are painful. Extraction is the only treatment.



The destruction of the crown and the back root is evident on x-rays. (arrow) The front (mesial) root must be completely extracted. Crown amputation may be performed on the back (distal) root.

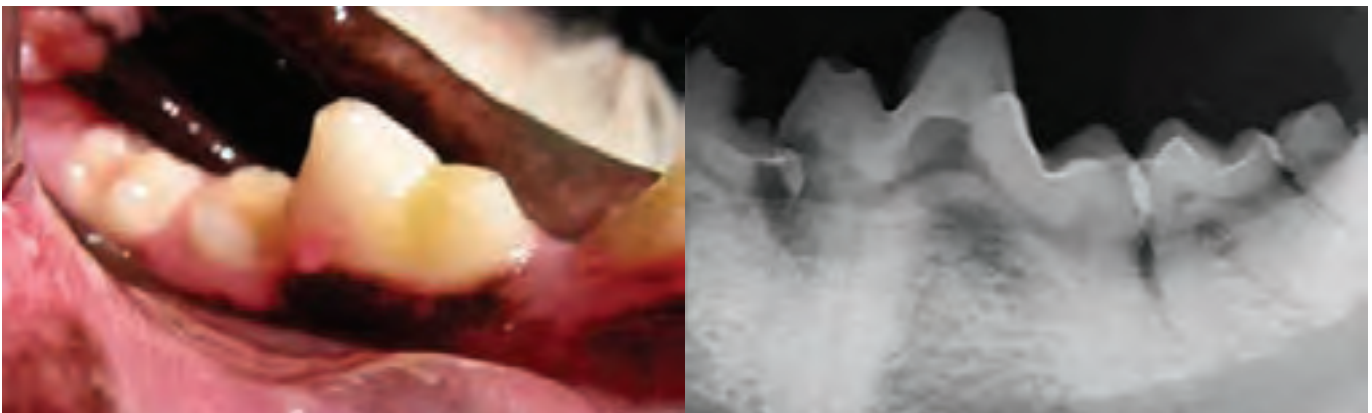
**14. Canine Tooth Resorption:** Tooth resorption in dogs is less common, but similar to feline tooth resorption, with a few differences. Just like in cats, tooth resorption is destruction of the tooth and surrounding supporting structures which is ultimately replaced with bone. It too has an unknown cause, but can cause significant inflammation and becomes very painful once it breaches the neck and/or crown of the tooth. In dogs, these lesions can be internal, external, or both, and can affect the crown and/or the root of the teeth. Also, like cats, there may be absolutely no signs of oral pain or there could be varying signs from subtle to significant symptoms seen by owners. A thorough oral exam under general anesthesia and dental radiographs are also imperative in the diagnosis and formulation of a treatment plan for canine tooth resorption. The classic destruction of the tooth root may be visible as an irregular root, or one that appears on x-ray as being replaced by bone. Some, but not all, forms of tooth resorption in the dog are painful. If the tooth resorption isn't considered to be painful (i.e. not affecting the neck or crown of the tooth), the tooth is otherwise healthy, and the dog is not showing any obvious signs of pain at home or during the oral exam, the tooth can be monitored with regular dental x-rays (i.e. every 6-12 months, sooner if signs of oral pain become apparent). If the tooth is clearly painful, has other abnormal changes, or the dog is already showing signs of pain then the only known successful treatment is with extraction of the tooth or teeth.



*X-Rays showing tooth resorption in a dog: black arrows highlight the abnormal areas of tooth resorption.*



*Picture on the left shows damage to the crown of the tooth seen on an oral exam. The x-ray on the right shows the destruction (black color) of the same tooth and surrounding bone from tooth resorption.*



*Picture on the left shows the other side of the same patients mouth from the pictures above these. There is similar tooth resorption lesions affecting both the right and left mandibular (lower) molars in this dog*

**15. Oral Masses (Tumors):** Oral masses occur when there is an abnormal growth of cells in the mouth. They are unfortunately quite common in pets, with oral masses accounting for 12% in cats and 6% in dogs of all tumors found. Like other masses, oral masses vary in their location, size, significance, aggressiveness, painfulness, and almost every other feature. What is similar between all oral masses is that if there is an abnormal growth in a dog or cat's mouth, it should be biopsied and submitted for histopathology as soon as possible to determine exactly what type of growth it is and if additional treatment is recommended. Oral masses can be benign (typically does not spread, typically thought of as non-cancerous) or malignant (cancerous). Just like in all other areas of the body, malignant oral masses can be locally aggressive by invading into surrounding tissues and some can spread to other areas of the body such as the lymph nodes, lungs, liver, spleen, etc. Like any tumor, early detection is of utmost importance so that treatment can be started and the possibility of curing it can be maximized. Dogs tend to have a higher occurrence of benign vs. malignant oral masses,

but unfortunately cats tend to have more malignant tumors compared to the benign masses.

The most common benign oral growths or tumors in dogs are cysts, gingival hyperplasia, Peripheral Odontogenic Fibromas (POF), and Acanthomatous Ameloblastomas. These can remain slow growing and small or can be fast growing and grow very large causing local destruction to the surrounding gums, teeth, and bone, but none of these tend to spread to other areas of the body. The most common malignant oral tumors in dogs are Melanoma and Squamous Cell Carcinoma, less common are Fibrosarcoma and Osteosarcoma. The most common benign oral masses in cats are typically related to inflammation, while the most common malignant oral tumor in cats by far is a Squamous Cell Sarcoma, followed by much less common Fibrosarcoma.

The reason a particular pet may develop any tumor or cancer, is not well understood, and only a few types of tumors have a known cause. The reality is that the great majority of tumors (benign or malignant) are likely caused by a complex mixture of risk factors including both environmental and genetic, just like in people. Clinical signs of oral masses also vary based on the location of the tumor, size of the tumor, and type of tumor. Some masses produce little to no signs and thus go undetected for long periods of time, others arise and grow rapidly and produce alarming signs such as oral bleeding, severe halitosis (bad breath), deformity of facial structures, anorexia, weight loss, etc.

So what is the best way to know if your pet has an oral mass? The short answer is to look in their mouth frequently, schedule at least twice yearly exams with your veterinarian, and to plan on at least once yearly professional dental COHATs which include a thorough oral exam and full mouth dental x-rays. While this becomes even more important as your pet ages, it is important to understand that even young animals can develop both benign and malignant oral masses, so starting good habits early is one of the most important ways you can help your pets live long, happy lives.

Regardless of the type of tumor found in a pet's mouth, surgical removal is the standard of treatment for the vast majority of oral tumors. Oral surgery can be as varied as the types and features of the masses, from very simple to complex and aggressive removal of the mass. Sometimes additional diagnostics are required to look for signs that the tumor has spread (ie chest and/or abdominal x-rays, ultrasounds) or to see how much the tumor has invaded the surrounding tissue (ie CT scan of the head/neck). Sometimes, if the tumor has invaded the bone, surgical removal may be difficult and it may require removing a portion of the pet's jaw. Although it sounds scary, it is remarkable how well



most pets do after these types of surgery and go on to live normal, pain-free and hopefully cancer-free lives. In some cases, additional therapies may be recommended such as additional surgeries, radiation, and/or chemotherapy. Occasionally, surgical removal is not possible due to the extent, location, or type of tumor, in these cases palliative therapy may be possible to keep your pet comfortable, but ultimately humane euthanasia may be in the best interest of your beloved pet. All of these options should be discussed with you based on your and your pets specific and individual needs.



This patient has a large mass on the lower jaw. It is starting to grow toward the other jaw.



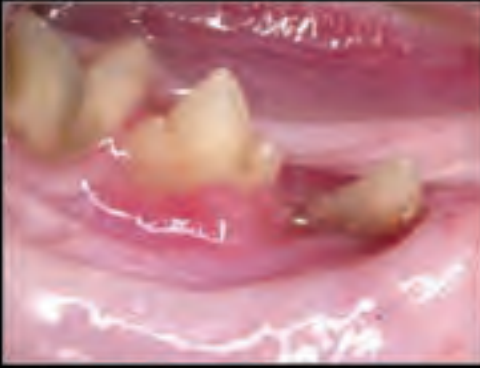
Acanthomatous ameloblastoma was the diagnosis. One centimeter margins into normal tissue are required to eliminate these tumors. Because of its location a large portion of both jaws had to be removed. The immediate post-op appearance is shown here.



This is the patient the next day awaiting discharge. Pain management and atraumatic surgical technique help to ensure a quick recovery.



Another view of the patient on the first post-op day. Some feeding assistance was initially required. This patient learned quickly to turn his head to pick up his food on his own.



These teeth could be mistaken for suffering from periodontal disease or tooth resorption. Without x-rays the real problem would be easily missed.



X-rays show bone production and destruction consistent with aggressive cancer. Squamous cell carcinoma was the diagnosis. This is one reason why dental x-rays are so valuable.

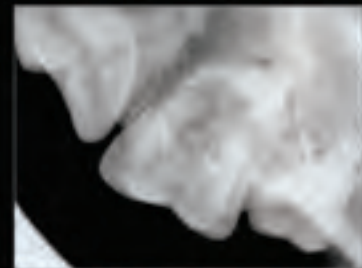
**16. Carious Lesions (Cavities):** While cavities are one of the most common dental diseases affecting human teeth, they are actually quite rare in dogs, and even more so in cats. Caries are caused by decay on the surface of teeth from the release of acids by bacteria in the mouth. There are reports that feeding your dog foods high in sugars such as bananas, carrots, and apples can increase the likelihood of them developing cavities. Caries typically are seen on the flat occlusal surface of the molar teeth in the back of a dog's mouth, and they are often bilateral (found on both sides of the mouth). They often have a brown or black coloration and are sticky when palpated with a dental explorer. Since the vast majority of cavities in dogs occur in back molar teeth, it would be very unlikely that a cavity can be seen on an awake oral exam, especially if it is still in the early stages. If a cavity has not progressed too far and the tooth appears otherwise healthy on oral exam and dental x-rays, it can be treated with a filling. If the cavity has affected the pulp canal or other abnormalities are seen with that tooth, then extraction (or root canal therapy in some cases) is recommended.



Although rare in dogs cavities (caries) do occur. This is a typical appearance of a cavity in the upper 1st molar in a dog.



This demonstrates a cavity preparation for the tooth in the previous photo. Dental x-rays are essential to determine the viability of the tooth prior to consideration for treatment.



The lack of x-ray changes make this an excellent candidate for removal of diseased tissue, cavity prep and restoration.

**17. Cleft Palate:** This is a congenital abnormality that is an opening between the mouth and the nose/nasal cavity. It is a birth defect that happens when the tissues separating the mouth and nose do not grow together properly before the puppy or kitten is born. It can affect the lip, maxillary bone (upper jaw), hard palate (bony portion of the roof of the mouth), and/or soft palate (soft, flexible portion of the back of the roof of the mouth). Purebred dogs and cats have a much higher incidence of cleft palate, with brachycephalic breeds (English and French bulldogs, Boston terriers, pugs) being most commonly affected. Although genetics are considered the primary cause of this birth defect, other contributing causes such as nutritional deficiencies, infections and toxicities that affect the mother during pregnancy may contribute to the formation of cleft palates. Given the strong correlation with this being a heritable disease, the parents of all dogs or kittens born with cleft palates should be spayed/neutered or at the very least should be immediately retired from breeding.

All newborn puppies and kittens should have the roof of their mouth inspected for the presence of a cleft palate. It is often very easy to diagnose just by opening their little mouths and visually inspecting the palate on the roof of their mouth. If there are holes or an opening along the midline (center) of the palate and/or you can see into their nasal passage that is consistent with diagnosis of a cleft palate. Signs of cleft palate are likely to include sneezing and/or snorting during or after they eat since food and saliva will pass into the nose. They may have food or liquid dripping from their noses, cough or gag after eating or drinking, be underweight due to trouble eating and getting enough nutrition, or may have trouble breathing or playing.

When a cleft palate is minor and not associated with significant clinical symptoms, no intervention may be needed, but this is very rarely the case. Often these puppies and kittens have serious enough problems that they pass on their own from malnutrition or aspiration pneumonia (when fluid and/or food gets inhaled into the lungs). In order to survive, most of these pets require intensive supportive care until they are old enough to undergo surgery to correct the defects. In order to support these pets, minimize symptoms, and provide optimal nutrition, often the caregiver will need to learn how to tube feed these youngsters. It is not difficult to learn, but is time intensive and requires a huge commitment and persistence from the caregiver(s).

Once the pet is old enough, typically between 4-6 months of age, surgical correction of the cleft palate can and should be performed. Often this only requires a single surgical procedure; however, in more severe cases it may require multiple separate procedures. Since these cases are complicated and require experience and expertise, it is recommended to seek out a veterinary professional such as a board certified veterinary



dentist, a board certified surgeon, or a general veterinarian with a strong focus on dentistry and oral surgery. Once the cleft palate is properly closed, these pets go on to live happy, comfortable and normal lives.

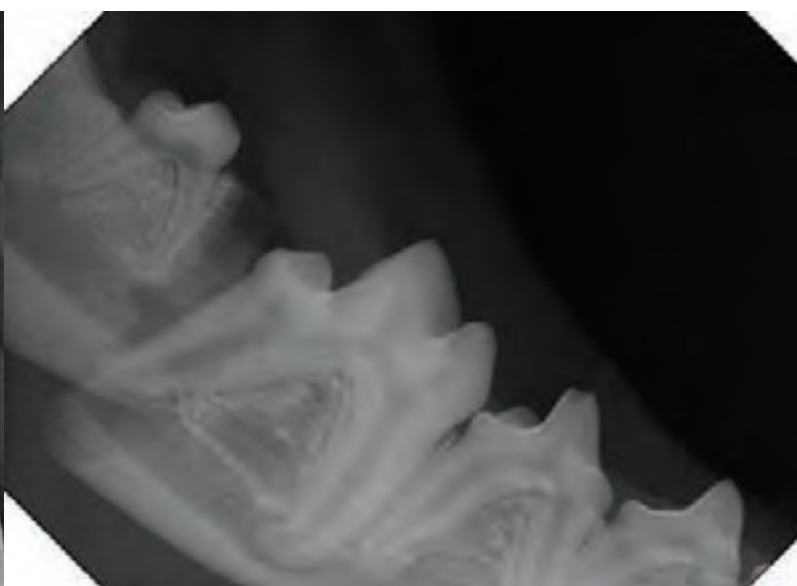


This 16 week old beagle puppy has an opening in the hard and soft palate exposing the nasal cavity. The term for this congenital disorder is a secondary palatal defect.



Surgical repair by a dental specialist will resolve the defect and restore the patient to normal.

**18. Jaw Fractures:** Fractures of the upper and/or lower jaw can be caused by trauma, can be secondary to extensive bone loss from periodontal disease or an oral tumor, or can inadvertently happen during tooth extractions. The location, extent, and cause of the jaw fracture will determine the course of treatment which could be no treatment at all; implementing a non-surgical immobilizing methods such as a muzzle, buttons and suture, acrylic bonding; surgical intervention including wiring, plating; or removal of some or most of the affected jaw.





# Common Myths About Pet Dental Health:

## 1. If my pet has some or all of their teeth extracted, they won't be able to eat:

Whether one tooth is extracted or all the teeth in your pet's mouth are extracted, we promise you they will absolutely 100% be able to eat. In most cases, extraction of a diseased, painful tooth or teeth is recommended to alleviate pain, inflammation, and infection in the pet's mouth; therefore most pets actually eat even better and with more enthusiasm after tooth extractions because the disease has been resolved. Yep, even toothless cats and dogs can eat dry kibble once they recover from the oral surgery!!

## 2. Pets have cleaner mouths than people:

Nope, this is not true at all! Just think of all the gross things animals eat and lick through the course of a day, their mouths are definitely not clean at all. Actually pets and humans have lots of different types of bacteria in their mouths, some are the same and some are different. Just like in the rest of the GI tract, there are good bacteria and bad bacteria. The bad bacteria in any mouth contribute to periodontal disease causing pain, inflammation, and infection in the mouth, hence it is important to keep the bad bacteria to minimal levels. This is done with a combination of daily plaque prevention home care and professional dental assessments and treatments as discussed in this book.

## 3. It's normal for a pet to have bad breath:

Just like it isn't normal for you to have bad breath, it isn't normal for your pet to have bad breath either. Foul odor in your pets mouth is often a sign of inflammation, infection and/or a tumor. All bad breath needs to be investigated with a professional oral exam and x-rays performed under general anesthesia to determine the cause and be able to address any problem areas found. Following up with daily dental home care will be an essential component of keeping your pet's breath fresh after a professional dental procedure.

## 4. Pets don't experience pain:

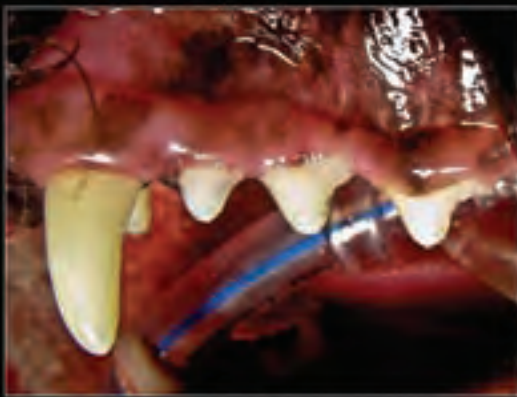
While many pets are excellent at hiding pain, it certainly doesn't mean that they don't experience pain. Much research has been done on this topic, all of it clearly shows that animals experience pain in much the same way as humans, even if it isn't always obvious to us. Often pets don't vocalize or outwardly complain when they hurt, especially if it is chronic pain, as most dental and oral pain is. With regards to a painful mouth, most pets are still hungry and will continue to eat through the discomfort. While decreased appetite, dropping food, refusal to eat hard food or treats can be signs that their mouth is hurting; a hungry pet will continue to eat and live with the pain.



Pets don't know or understand that there is help, so they just keep on keeping on. Sadly, the most common way we determine that a pet was experiencing oral pain is by seeing them have more energy, eating better, playing, and doing things that pet owners hadn't seen in a very long time AFTER their oral disease is found and treated. It's amazing and honestly the best part of our jobs, to have so many pet owners we see that are so thrilled with how fantastic their pet is doing after a dental procedure, convincing them that their poor pet was hurting and thankfully isn't anymore!

### 5. My pets teeth look clean, therefore they don't need to have a cleaning:

While it's great for your pets to have bright white, beautiful looking teeth, it is so much more important that they have healthy, pain-free teeth. It's very important to understand that we shouldn't focus on what your pets' teeth look like, but rather we need to focus on what they feel like. It is amazing how many problems we find during a thorough oral exam and full mouth dental x-rays, which can only be properly performed under general anesthesia, even when the teeth "look clean". Remember that plaque and tartar removal are only a small fraction of what we are addressing during a COHAT (Complete Oral Health Assessment & Treatment). There is so much more to the picture than how much tartar and gingivitis we are seeing in your pets mouth. What's lurking below the gumline is at least equally as important, but honestly in most cases even more important than what we can see on the surface.



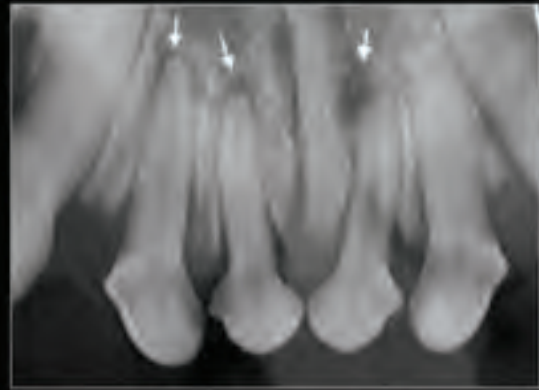
The teeth pictured here look pretty normal.



The arrows show profound bone destruction. Extraction is the treatment of choice for the premolars. Another example of why full mouth x-rays are indicated in all pets.



These incisors look perfectly normal.



X-rays show that 3 of the 4 central most incisors are dead as evidenced by a large pulp cavity and/or bone destruction at the root tip. (arrows)

## 6. All dogs have the same type of dental disease:

COOL FACT: Did you know that dogs hold the world record for being the most diverse land mammal? The largest dogs are a whopping 40 times larger than the smallest dogs!! They also vary dramatically in their coats, colors, behaviors, head shape, and yep even in the types of dental issues they get. For instance, smaller breed dogs, especially those under 15 pounds, are much more likely to have periodontal disease than large and giant breed dogs. Thus requiring much more aggressive preventative measures and more frequent professional maintenance upkeep of their teeth.

Another example of dental differences based on skull type is that brachycephalic (smooshy faced dogs like bulldogs, pugs, boxers, boston terriers) have a predisposition for having extra teeth which leads to crowding and periodontal disease, unerupted teeth which leads to dentigerous cysts, and gingival hyperplasia which is excessive growth of gum tissue causing oral pain, bad breath, and periodontal disease.

It is also a known fact that certain breeds are known for very specific dental problems such as Daschunds with their oronasal fistulas (such severe periodontal disease of their upper canines that it causes so much bone loss around the tooth that a communication between the mouth and sinuses occurs which is very painful and requires immediate extraction and repair of the gums. Also greyhounds are notorious for severe periodontal disease, which certainly can happen in larger breeds, but it is more unusual for larger dogs to get this extent of periodontal disease.

There is also a huge problem with malocclusions (the teeth do not align properly causing damage to the surrounding sensitive soft tissue or to the other teeth) in poodle mixes, such as Labradoodles and Goldendoodles. We see so many of these poodle-mixed puppies with painful, problematic dental bites as early as 8 weeks of age. If it is not addressed right away, these puppies may go on to be head shy, have behavior problems, and are likely to have significant problems with their permanent teeth.

### **7. I've had pets my whole life and none of them ever had dental care and lived long, happy lives:**

Remember that pets hide pain really well, so understand that just because you thought your pet was happy, it doesn't necessarily mean that they were. Veterinary dentistry has only really become studied and researched in the past couple of decades, and oh boy did pets suffer, and unfortunately still do, when they don't receive proper oral care. We know better now, so it is our responsibility to do better by the pets we love.

### **8. My vet should be able to prepare me for exactly what my pet will need during the dental procedure and tell me exactly how much it will cost before I schedule the procedure:**

Of course, all veterinarians who perform high-quality dental procedures would love to tell you that this statement was true, however it couldn't be further from the truth. Unfortunately, the only way to be able to perform a complete assessment of any patient's oral issues is to do a thorough oral exam and full mouth series dental x-rays while the patient is under general anesthesia. This can be frustrating and overwhelming for both the owner and the veterinarian, when unexpected issues are found that need significant treatments and add considerable cost to the bill. For many veterinarians and owners, it is preferable to be able to perform all of the assessment and treatment during the same anesthetic procedure, however sometimes it is in the pet's or owner's best interest to stage procedures into two or more separate sessions.

Some owners are most worried about the risk of anesthesia, therefore want to put their pet and themselves through the stress of a dental procedure as few times as possible. Other owners need to have time to process and ask questions about the veterinarian's oral exam findings and treatment plan, therefore pre-plan to stage the procedure into two separate sessions: assessment during the first session, followed by treatment session at a later date. This allows for a deeper discussion



on treatment options and costs without the added pressure of their pet being under anesthesia during the discussion. Know that neither way is right or wrong, but determining the best situation for you, your pet, and the veterinarian requires thoughtful discussion and planning.



### 9. Pet dentistry is more expensive than my own:

This is actually not true at all. When we look at human medicine, insurance plays a big factor in what we actually pay for the cost of medical treatment. Hence with co-pays and negotiated rates for insurance companies, your out of pocket expense may seem less for your care than for your pets. However, rest assured that the overall cost to provide medical care to your pet is far less than it is for you. In addition, since you are able to follow directions and hold your mouth open, even when it is uncomfortable, most people do not require general anesthesia for routine dental assessments and minor treatments, thus making the cost less expensive than for your pet who will 100% require general anesthesia to perform a thorough oral exam, have x-rays taken, and to provide necessary treatments.

While there can be significant cost to being proactive with your pet's professional dental care, the expense becomes much, much higher once treatments, such as oral surgery, extractions, and periodontal therapy are required. Remember that the longer the interval between professional dental procedures and lack of some

form of daily dental plaque-preventing home care, makes it more likely that problems requiring more costly treatments are found during the dental COHAT.

## **10. Anesthesia is too risky, so non-anesthetic dental cleanings are better:**

While there is always a risk of complications, even serious ones, when performing general anesthesia, please understand that done properly, these risks are minimal and very rare. Reducing these risks can be accomplished by a veterinarian performing a thorough pre-op physical exam; having a discussion about all your pet's medical history, medications, and previous concerns with anesthesia; and running pre-op blood work on all pets as well as, recommending additional pre-op tests for pets with underlying conditions such as heart disease. It is also extremely important for the veterinarian to tailor anesthetic protocols to your pet's specific needs and having all the appropriate monitoring equipment in place and being utilized during every anesthetic procedure.

Even with the low risk of anesthesia, we get that it is still really scary for some pet owners; unfortunately, some of these owners allow fear to let them believe that non-anesthetic dental cleanings are a better, safer choice for their pet. This is not only very wrong, it is actually quite dangerous for pets, way more so than anesthesia is. In reality, anesthesia-free dental cleanings provide absolutely NO BENEFIT to your pets oral or overall health. This is strictly a cosmetic procedure, and remember we don't really care what your pets' teeth look like, we care how they feel and that they are healthy above and below the gumline.

Unfortunately, non-anesthetic pet dental cleanings only involve a very limited oral exam and scraping the plaque and tartar off the crown of the tooth. The real benefit to scaling a pet's teeth comes from being able to scale and clean under the gum where periodontal disease occurs, not just the crown of the tooth. Most awake pets will highly object to a sharp metal scaler being used under their gums, where it really needs to be done. This would even be more painful if the gums and or teeth are inflamed or infected.

Given how scary and painful scaling the teeth can be, just think about what it's like for you when you go to the dentist: many pets will wiggle, squirm, and object to this procedure. When this happens, sometimes excessive force is used to hold the pet still so the awake uncomfortable, frightening procedure can be performed, this is just unnecessary and very traumatic for many pets.



In reality, non-anesthetic dental cleanings are painful, miss the majority of dental and oral problems, and provide a false sense of security for pet owners that their pets teeth are being properly cared for. Please see the link below from the American Veterinary Dental College for additional information on why anesthesia-free dentistry is not recommended for pets.

<https://afd.avdc.org/reasons-not-to-choose-anesthesia-free-pet-dentals/>

### **11. My pet is too old to go under anesthesia:**

Simply put, age is not a disease, nor is it a reason to deny a pet a life-saving or quality of life improving procedure. Again, done well, with proper pre-op preparation, a thorough discussion on the risks vs benefits of the procedure, individualized anesthetic protocols, and excellent monitoring; general anesthesia is just as safe for senior and geriatric patients as it is for younger pets. If you are ever told that your pet cannot or should not have anesthesia simply based on their age alone, seek a second opinion by another veterinary professional who is comfortable and experienced with anesthesia and oral procedures in older pets. Remember, as stated above, AGE IS NOT A DISEASE, but dental inflammation, infection, and pain most definitely are!! If the objective of a professional dental procedure was cosmetic, to have their teeth “look” clean and pretty, it would be silly and unreasonable to perform anesthetic dental procedures on older pets. Since the objective is primarily to alleviate dental disease, pain, and systemic problems that arise from oral disease, the minimal risk of anesthesia far outweighs the greater risk of untreated dental or oral disease in older pets.

### **12. My pet eats only hard kibble and/or my dog chews on hard bones, so they don't need dental care:**

Even if your pet only eats dry, hard kibble, this alone is not enough to keep their teeth healthy and their mouths pain and infection free. We see plenty of pets who eat exclusively dry food with moderate to severe dental disease. Diet alone is most certainly not enough to keep your pets' mouth disease free. Think of it like this, the idea of an owner relying on kibble for dental hygiene is like somebody telling you to only eat dry granola for breakfast instead of brushing your teeth every morning. Also, just like in people, high levels of sugar and simple carbohydrates (found in many commercial pet foods) can also lead to build up of oral bacteria over time, leading to periodontal and other dental diseases.



While hard bones can reduce plaque and tartar, they can also and often do, cause painful broken teeth. Once a tooth is fractured, since it is painful and can lead to tooth death and/or infection, treatment is always required. A good rule of thumb is to not let your pet chew on anything that you cannot make an indentation in with your finger nail. See the VOHC link above, under dental home care options for a list of recommended, tested, and approved safe products to help slow the progression of periodontal disease without adding the risk of a broken tooth.

### **13. If my pet's mouth hurt they would not eat and I would know something was wrong:**

Unfortunately this is not true at all. While pets absolutely experience oral pain, from mild to severe, not all pets express pain in a way that is obvious to us. What is surprising, is that so many times an owner has absolutely no idea that their pet's mouth is hurting, and are skeptical when their veterinarian tells them that their pet needs a professional dental COHAT to address a problem. In almost all cases where a painful dental problem is treated and resolved by the veterinarian, the pet owners see a remarkable improvement in their pet's behavior and are so thankful that they listened to their vet and had their pet's oral health assessed and treated.

### **14. My pet had a professional dental cleaning, now he will never need another one, especially if I commit to daily dental home care:**

Well as much as we wish this were true, it simply is not. Just like our dentist tells us to come in for a cleaning, oral exam, and dental x-rays every 6 months, despite us brushing our teeth twice daily and flossing regularly, our pets too need regular professional dental cleanings, oral evaluations, and dental x-rays. Just like us, some pets have healthier teeth and gums than others, so those pets can have less frequent professional dental care. For all pets with a history of dental disease, it is imperative that more frequent complete assessments and necessary treatments are performed. The interval between professional COHAT's will depend on your pets' oral health, overall health, and previous treatments that were done. The timeframe between recommended dental procedures should be determined by the veterinarian based on your individual pets' needs which can range from every 3 months to every 18-24 months.





## 15. All veterinarians and vet practices are qualified to perform high quality dentistry for my pet:

While all licensed veterinarians are legally allowed to perform anesthesia, dentistry, and oral surgery on pets, unfortunately not all veterinarians or vet practices are qualified, trained or experienced in these dental related skills. This is not to say that vets who do poor dentistry are bad people or are intentionally doing a poor job, that's unlikely to be true. What is the sad truth, is that the vast majority of veterinary schools have very little focus, education, or training in dentistry in their curriculum. This leaves veterinarians to have to figure it out on their own once they get into practice, which is an awful position to be in as the vet, the client and especially for the pet.

In the past decade, there have been a few board certified veterinary dentists who have made it their mission to educate, train, and prepare general practitioner veterinarians how to do excellent, high-quality dentistry for their patients. It is finally becoming a popular area of training post-graduation from vet school, but it is expensive, time consuming, and overwhelming to learn all there is to know and begin practicing high-end veterinary dentistry. Because it is very difficult to know if a veterinarian has had proper training and developed excellent dental and oral surgery skills, here are a few things to ask that can be good indicators of a high-quality general dental practice.

- a. Do they have dental x-ray? This is a MUST, without dental x-rays there will be so much that is missed and they are telling you that they have not invested in proper dental education or equipment. Never, ever allow anyone to anesthetize your pet for the purposes of dentistry if they do not have dental x-rays.
- b. Do they use oral nerve blocks for performing oral treatments? Nerve blocks are an essential treatment for the comfort of your pet and adds increased safety to the anesthetic procedure since it allows for reduced inhaled anesthesia gas during the procedure. If they have not been trained to use oral nerve blocks and are not utilizing them for all painful oral treatments, it is likely that their dental training is minimal and inadequate.
- c. Ask if the doctors and technicians have had dental specific training, individually and as a team. Also ask if there are doctors in the practice that are passionate about dentistry and love it. It's also important to ask if the vet doing your pet's procedure is comfortable performing extractions if they need to be done. Many vets do not like dentistry, again it is a difficult and time-consuming art to learn, if they don't love surgery, it's safe to say they



most likely won't love dentistry either. In most cases, that's not a good thing for them or their patients.

- d. Do they limit the number of dental procedures that they schedule in a day? If a general vet practice, that doesn't focus solely on dentistry and oral surgery, is scheduling more than 2-3 dental procedures per day, it is likely that they are not spending the much needed time to properly assess, diagnose, and treat oral problems. It is much more common for us to find unexpected problems during a COHAT, then it is to see a pet with completely normal oral health. So scheduling only a few dental procedures in a day, allows the veterinarian the much needed time to do a thorough job looking for issues and addressing them. An important note, never, ever schedule your pet for a dental procedure during a Dental Month Special that so many practices offer. While it may seem to save you money, I assure you the overwhelm on the staff from the over scheduling and lack of time to address your pet's oral issues will cost you and your pet way more than you will save.
  
- e. Price is quite variable between practices with regards to dentals, while it would be presumptuous to assume that all lower cost dental practices are doing a poor job, nor is it safe to assume that higher cost practices are doing a fantastic job with dentistry. Knowing how expensive it is to have proper dental equipment, instruments, doctor/staff training, and to cover the cost of doctor/staff time, it can be concerning when the cost is significantly lower than surrounding high-quality general dental practices. It brings into question how are they able to offer such low dental prices and still survive as a practice. Most of the time the adage "you get what you pay for" applies to many things, this can be especially true for veterinary dentistry and oral surgery. To learn more about the quality of dental care being provided by a practice check out their websites, online reviews, ask friends if they have experience with that practice, look for other client testimonials who have had great dental experiences at that practice and simply ask for more information regarding their dental procedures, training, experience, comfort, and love of veterinary dentistry.



I sincerely hope that this book was helpful to educate, inform, and prompt you to take immediate action to improve your pets oral health. There is so much to learn about veterinary dentistry for your fur baby. This book should be a great way to have a solid foundation on what is needed and what to do to get your pet on their way to having a happy, healthy mouth so they can have an even happier, healthier, longer life!!





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APPOINTMENT IS RIGHT  
FOR YOU



Dr. Jodi Reed's expertise in dentistry is arguably unmatched among general practitioners in the Atlanta area.

Take advantage of her years of dental training and experience to ensure that your pet has the best of care.

To find out more about the Veterinary Dental Center of Atlanta and request a consultation with Dr. Jodi.

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