

Periodontal Disease: The Most Prevalent Disease in Veterinary Medicine

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Peri-: Prefix meaning around or about
-odont: having to do with tooth
-ium: indicates a biologic structure

If we use this information, it means that periodontal disease is a disorder of structure having to do with the tissues that surround and support the teeth, including the gums, cementum, periodontal ligament and alveolar and supporting bone.

The structures of a tooth:

Enamel: hard white substance covering the crown of a tooth

Dentin: the main boney part of the tooth beneath the enamel and surrounding the pulp chamber and root canals

Gingiva: the gums of the mouth. The gingiva is made up of epithelial tissue that is attached to the bones of the jaw and surrounds and supports the bases of the teeth.

Gingival sulcus: the groove between the surface of the tooth and the epithelium lining the free gingiva.

Free Marginal Gingiva: the portion of the gingiva that surrounds the tooth and is not directly attached to the tooth surface.

Attached Gingiva: the portion that is firm, resilient, and bound to the underlying cementum and alveolar bone.

Cementum: A bonelike substance covering the root of a tooth.

Alveolar bone: The alveolar process is the thickened ridge of bone that contains the tooth sockets on bones that bear teeth.

Periodontal Ligament: the fibrous connective tissue that surrounds the root of a tooth, separating it from and attaching it to the alveolar bone, and serving to hold the tooth in its socket.

Furcation: the space between two roots

Periodontal disease is the most prevalent medical condition affecting our dogs and cats. As a matter of fact, it is suggested that most pets over the age of three years of age are experiencing some level of periodontal disease.

Bacteria in the mouth form a thin, slimy film on the teeth, otherwise known as *biofilm*. When that biofilm covers the teeth, it is called *plaque*. If the plaque is not removed, the minerals in the saliva join with the plaque and harden into a substance called *tartar* or *calculus*. The bacteria secrete toxins and that sets off an inflammatory response. This is the primary cause of periodontal disease.

There are stages of periodontal disease:

Normal: Clinically normal. No inflammation evident

Stage 1 PD (periodontal disease): Gingivitis without any attachment loss

Stage 2 PD: Early periodontal disease. There is less than a 25% attachment loss and/or a stage 1 furcation involvement.

Stage 3 PD: Moderate periodontitis: There is a 25-50% attachment loss and/or a stage 2 furcation involvement.

Stage 4 PD: Advanced periodontitis. There is a greater than 50% attachment loss and/or a stage 3 furcation involvement.

Periodontal disease is much more than just an aesthetic issue for pets and their owners, although

the odor may be the client complaint necessitating the visit. Periodontal disease can lead to oral discomfort, as well as tooth loss. It has also been strongly documented in human medicine a link between periodontal disease and numerous problems such as an increased risk of stroke, myocardial infarction, atherosclerosis and difficulty regulating diabetes due to the inflammation. It has also been suggested that people over 60 years of age may suffer from delayed memory as well. We now have studies in dogs showing a correlation between periodontal disease and microscopic changes in heart, liver and kidney tissue.

The periodontal patient needs first to have a thorough assessment, cleaning, and charting to determine the degree and severity of the disease process. Radiographs are also needed to determine if there are any teeth endodontically challenged secondary to the periodontal disease. A critical piece of the puzzle is determining the ability and willingness of the owner to provide care at home. Although there are treatments available, if the owner is not willing to provide meticulous home care, severely affected teeth should be extracted.

In the event you have an owner that is motivated to do home care, treatment options are:

Root planing and subgingival curettage: When periodontal pockets have been identified, it is imperative that the plaque and calculus be removed from the root surface. Ultrasonic and sonic hand pieces can be used to hasten the work, since our veterinary patients are under general anesthesia. The scalers vibrate at a frequency that breaks down bacterial cell membranes. This does hold a therapeutic advantage. However, the tips do not provide the same horizontal flat surface as hand instruments do. Therefore, it is recommended to follow ultrasonic pocket treatment with engaging the curette with the root surface and pull with a downward motion in a cross-hatch fashion.

The goal of root planing is to scale the root. Since the cementum is softer, it is more affected by tartar build up and inflammatory by-products. So, root planing removes the roughened cementum, impregnated with toxins.

Care needs to be taken not to be overly aggressive in planing. Cementum itself does contain substances that augment attachment.

The pocket itself needs to be treated as well. A curette is used to debride the diseased tissue from the pocket, leaving a healthier tissue bed for healing and reattachment.

Perioceutics: These are products that are employed to provide a medicant to the disease periodontal pocket.

Doxirobe Gel (Zoetis): This is a doxycycline polymer preparation that comes as a two-syringe system. The polymer syringe mates with the antibiotic syringe. The plungers are depressed in a back and forth motion 100 times. A blunt cannula is attached and can be bent to whatever angle is most appropriate. The gel is introduced into the treated periodontal pocket (greater than 3mm deep). A few drops of water on the gel and the matrix harden. A plastic filling instrument or titanium covered beaver tail instrument is used to pack the material into the pocket. This will remain in place for 2-3 weeks. Another advantage of Doxycycline is that it has an anticollagenase effect. This aids in tissue reattachment.

Clindoral (TriLogic Pharma): This is a preloaded syringe system that comes ready to use. Attach the blunt cannula and with the head of the pet upright, instill the Clindoral filling the pocket. Hold the head in the same position for 1-3 minutes for complete gelation. An instrument can be used to pack the material. The material slowly resorbs over a 7-10 day period.

Consil and Osteoallograph: Guided Tissue Regeneration. Both products are synthetic bone graft materials. This is a more advanced procedure and referral to a dental specialist may be indicated if your veterinarian is not familiar with this product. This is a material that is most effective for areas where there has been vertical bone loss. This procedure is a surgical procedure necessitating a surgical flap. Care must be taken to rule out any oral nasal fistulae or antral nasal fistulae. Otherwise, these materials will migrate into the sinuses and will be very irritating for the patient.

Systemic antibiotic use: When providing periodontal therapy, these sites are considered “open and draining”. Treatment by combining scaling and extraction is not an indication for systemic antibiotic treatment. There are, however, some specific indications for adding a systemic antibiotic:

- When local tissue is severely infected and periodontal therapy required surgery to expose bone or if teeth were extracted from severely infected bone.
- Osteomyelitis
- CUPS (chronic ulcerative paradental syndrome): mucosal immunopathy
- Prevention of bacteremia in specific cases
 - Patients with clinically evident cardiac disease
 - Patients with clinically evident renal or hepatic disease

- Patients with prostheses; ocular, total hip replacements, patients with anterior cruciate repairs using nonabsorbable material
- Patients with splenectomies
- Patients with clean surgical procedures with severe periodontal disease
- Chemotherapy patients
- Patients with concurrent auto-immune disease

Home care: When periodontal therapy is provided, it is critical to provide explicit home care instructions:

- List all dispensed medications and when should the client begin the medications
- When may the patient eat next and what may they eat?
- When may the client resume or begin tooth brushing?
- When is their recheck appointment?
- When do you want to schedule the next dentistry? This is influenced by the client, the size and breed of patient, the budget of the client, etc.

Periodontal disease is the most common condition in our companion pet population. Prevention is the gold standard and that includes owners brushing their pet's teeth...daily. Probably one of the most important activities the technician plays is in educating the client on how to maintain a healthy mouth.