AN UPDATE ON PERIODONTAL DISEASE
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In the first Banfield “State of Pet Health 2011 Report” which included 1.2 million dogs and 450,000 cats, dental disease topped the list of the most common medical condition for dogs and cats. Periodontal disease is the most common disease in companion animals. Periodontal disease can be divided into two categories: gingivitis and periodontitis. Gingivitis is confined to gingival tissue, while periodontitis is a more severe form of disease involving loss of bone supporting the tooth. Periodontal disease increases significantly with increasing age, and decreases significantly with increasing body weight and is particularly obvious when comparing toy and small dogs with medium and large dogs. The common clinical presentations of periodontal disease include mobile teeth, periodontal and periapical abscesses with secondary focal swelling, gingival recession and furcation exposure, mild to moderate gingival hemorrhage, and deep periodontal pockets with secondary oronasal fistulas resulting in a secondary chronic rhinitis. Less frequently, severe gingival sulcus hemorrhage, pathologic mandibular fractures, painful contact buccal mucosal ulcers, intranasal tooth migration, and osteomyelitis have been reported. Two abnormalities may complicate the management of feline periodontal disease. These abnormalities include oral inflammatory diseases and resorptive lesions. When periodontal disease is complicated by either of these conditions, exodontia is usually the treatment of choice.

Numerous veterinary dental textbooks1-4 and human clinical periodontology textbooks5 can serve as excellent resources in the identification, classification and treatment planning for animals with periodontal disease. Periodontal disease is divided into four stages. The American Veterinary Dental College website (avdc.org) has a nomenclature tab that practitioners may find useful in reviewing the stages of periodontal disease.

Diagnosis of the various stages of periodontal disease is based on a thorough oral examination, periodontal examination with a periodontal probe, and dental radiography. Animals with gingivitis, the readily reversible form of periodontal disease, have a swollen gingival margin that may bleed after the application of light pressure. Serous or purulent exudate may be produced from the gingival sulcus. Halitosis is commonly present. Periodontal examination with a periodontal probe is normal and radiographically there is no evidence of bone loss around the teeth. Periodontitis in dogs is usually characterized by hyperplasia, gingival recession and pocket formation which progresses to tooth loss if untreated. Severe gingival inflammation with various amounts of calculus and debris are present with periodontitis. Periodontal probing will reveal the presence of periodontal pockets. Dental radiographs will reveal bone loss which is associated with periodontal disease. Bone loss may be horizontal or vertical. Horizontal bone loss is bone loss parallel to the cemento-enamel junction. Vertical bone loss is bone loss parallel to the long axis of the root.

The treatment of periodontal disease includes a variety of techniques including: supragingival and subgingival scaling, root planing, subgingival curettage, polishing, gingivectomy, open-flap curettage and augmentation of boney defects, extraction, oronasal fistula repair, and home care.

Supragingival scaling refers to the removal of dental calculus above the gingival margin. This is most easily accomplished in small animals utilizing power scalers. Prior to ultrasonic scaling the patient’s mouth is lavaged with a 0.12% oral chlorhexidine solution to reduce
external bacterial counts. Gross calculus is gently removed with an extraction forceps by gently closing the forceps across the calculus. A power scaler is used to remove the remaining plaque, calculus, and debris. Adequate water flow is essential when using power scalers to cool the oscillating tip and flush away the debris. The side of a sickle-shaped scaling tip is placed on the tooth surface and moved gently and continuously over the tooth surface. Continuous scaling of any one tooth for more than several seconds must be avoided to prevent pulp tissue injury from excessive heat and potential production of subsequent pulpal necrosis.

Subgingival scaling removes debris that has accumulated below the gingival margin which causes inflammation of the supporting structures of the teeth. Failure to remove subgingival calculus promotes the progression of periodontal disease. Historically subgingival calculus has been removed with a curette. The instrument is inserted with the face of the blade flush against the tooth. When the instrument reaches the bottom of the pocket the working angulation of the instrument, usually 45 degrees, is established. The instrument is then pushed against the tooth and pulled coronally. This process is repeated until all subgingival calculus is removed. Root planing is the smoothing of the root surface using curettes. When the root is adequately planed it should feel smooth and hard like glass. Alternatively specially designed ultrasonic scaling instrumentation with ultrasonic periodontal scaling tips made for subgingival scaling can be used. These tips are designed to be used at a low power setting for delicate root treatment. These tips are more efficient and effective in cleaning the root surface than hand scaling and helps prevent user fatigue.

Subgingival curettage is the removal of diseased soft tissue from the periodontal pocket. While one edge of the curette engages the root surface, the other edge engages the soft tissues of the periodontal pocket. The specially designed periodontal ultrasonic scaling tips can be used for this purpose.

After the removal of all calculus the teeth are polished with a rubber cup placed on a prophylaxis angle attached to a slow-speed handpiece. Prophy paste is placed on the teeth and the cup is rotated over all tooth surfaces at a slow speed. The cup is then pressed gently but firmly at the gingival margin to permit polishing of the root surface adjacent to the crown.

After polishing, the gingival sulcus is irrigated with a 0.12% chlorhexidine solution using a blunted 23-gauge needle and a 12 ml syringe. Irrigation of the gingival sulcus removes loose calculus, prophy paste and debris and reduces the bacterial counts.

Gingivectomy is the removal of gingival pockets by the excision of gingiva. There are several indications for gingivectomy including the following: gingival hypertrophy or hyperplasia, excisional or incisional gingival biopsy, elimination of shallow supraboney pockets with retention of adequate attached gingiva. A gingivectomy is performed by measuring the depth of the periodontal pocket and marking the depth of the pocket with the tip of the periodontal probe by pressing it into the gingiva perpendicular to the tooth to create a bleeding point. This is repeated every few millimeters to mark the pocket depth. A No. 15 blade is used to create a beveled incision starting 1 to 3 mm apical to the bleeding points (depending on the thickness of the gingiva) to produce an anatomically correct gingival margin.

Open-flap curettage is indicated in cases of periodontal disease in which pockets are greater than 5-6 mm deep and do not respond to conservative therapy. The purpose of flap surgery is to reflect soft tissue and gain access to deeper periodontal structures which can then be more thoroughly treated with the benefit of direct visualization. The most common indication in dogs for open-flap curettage and augmentation of periodontal boney defects are deep periodontal defects on the palatal aspect of the maxillary canine teeth. To repair a deep palatal periodontal
defect a flap from the palatal surface of the affected canine tooth is raised four millimeters palatal to the edge of the boney defect. The periodontal pocket is debrided with a curette removing all calculus, granulation tissue, and debris. The area is flushed with 0.12% chlorhexidine solution then saline. A bulk matrix osseous replacement packing material which generally consists of small particulate granules can be placed in the defect in the hopes that they will be incorporated as a matrix into the initial blood clot that is subsequently replaced by supportive tissue, either bone or periodontal ligament, while deterring the ingrowth of gingival epithelium and connective tissue. A bulk matrix osseous replacement packing material available in the veterinary market is Consil (Nutramax Labs). Freeze-dried canine or feline bone may also be used. Osteo Allograft Periomix is freeze-dried natural animal bone preserved using lyophilization to reduce the water content of the tissues and minimize structural changes to proteins. This product provides native growth factors and scaffolding to help promote optimal bone healing. This product can be used in a wide variety of cases to help reverse the bone loss associated with periodontitis including placement in boney pockets, placement in extraction sites and placement at jaw fracture sites to promote bone healing. After placement of the bone graft material into the defect the palatal gingival flap is sutured in place with 5-0 absorbable suture material such as Monocryl or Vicryl Rapide adapting the flap closely to the underlying bone and tooth with as little tension as possible. The treated palatal defect should be reexamined in 6 months. Results are usually excellent with complete elimination of the periodontal pocket in most cases.

Another common site for the development of deep periodontal pockets in dogs is between the mandibular 1st and 2nd molars. If the bone loss is extensive along the mesial root of the 2nd molar and the client is unwilling or unable to provide adequate home care, selective extraction of the 2nd molar with placement of Osteo Allograft™ Periomix in the extraction site and along the distal root of the 1st molar will stimulate new bone formation along this root. Alternatively, if the pocket between the mandibular 1st and 2nd molars is not approaching the apex of the mesial root of the mandibular 2nd molar a flap can be raised around these teeth, the roots can be scaled, root planed, polished and rinsed and the Osteo Allograft™ Periomix can be placed in the defect. Other periodontal pockets can be treated with this regimen. In addition to placement of the Osteo Allograft an additional new product Ossiflex Bone Membranes from VTS can be placed over the Osteo Allograft. The Ossiflex Bone Membranes are thin, flexible sheets made of natural, demineralized cortical bone that can provide guided tissue regeneration. These membranes avoid premature soft tissue in-growth into areas of bone healing, they do not need to be removed, they can be sutured through to hold them in place and they can be cut and curved to fit the area. Ossiflex Bone Membranes can also be use in the repair of oronasal fistulas, cleft palates, craniofacial defects, fracture bridging and mandibular canal protection.

The most common reason for extracting teeth with periodontal disease is Stage IV or severe periodontal disease. In addition, extraction is recommended in those teeth in which the periodontal pocket has reached the apex of at least one root of a multirooted tooth. Animals with Stage III or moderate periodontal disease in which the client is unwilling or unable to provide appropriate periodontal care may be candidates for exodontia rather than advanced periodontal treatment regimens. Also those animals that may not be good candidates for multiple or prolonged anesthetic episodes, or have severe mucogingival disease may benefit from exodontia versus advanced periodontal therapeutic techniques. Owner preference is also important.
Oronasal are most frequently caused by advanced periodontal disease. Signs associated with oronasal fistulas include sneezing and mucopurulent or hemorrhagic nasal discharge. The most common location of oronasal fistulas in the dog is the palatal aspect of the maxillary canine tooth. Any maxillary tooth can cause an oronasal fistula. Teeth affected with Stage IV periodontal disease should be removed and the oronasal fistula should be repaired with a large mucoperiosteal flap with no tension.

Home care following periodontal therapy is an important part of treatment and prevention of periodontal disease. There are several types of home care that can be recommended following periodontal therapy including: antibiotic therapy, administration of analgesics, tooth brushing with dentifrices, chemical plaque control, and dietary/chew toys to reduce plaque and calculus formation. The Veterinary Oral Health Council (VOHC) awards its Seal of Acceptance based on pre-set standards. A complete listing of products that have received this VOHC Seal can be located www.vohc.org.