

Periodontal Disease: Diagnosis & Treatment

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Periodontal Disease is one of the most common diseases in our companion animals. In addition to being highly prevalent, this disease is progressive and can impact not only oral health and comfort, but also systemic health. For this reason, finding and diagnosing this disease is imperative as well as making the correct recommendation for treatment to owners.

What is Periodontal Disease?

- Periodontitis: inflammation of the periodontium
 - o Periodontium is the anchoring structure for teeth
 - Gingiva
 - Mucosal lining of maxilla and mandible
 - o Marginal/free, attached and interdental gingiva
 - Alveolar bone
 - Thickened ridge of bone within maxilla and mandible containing teeth – alveolus or ‘socket’
 - Extending to the cementoenamel junction (CEJ)
 - Periodontal Ligament
 - Group of specialized connective tissue fibers anchoring tooth (cementum) to the alveolar bone
 - Cementum
 - Mineralized connective tissue covering the root surface
 - o Serves as anchor of gingiva & PDL fibers
 - o Inciting cause of inflammation/periodontitis = PLAQUE
 - Plaque is a biofilm of NON-plankton bacteria that binds to pellicle
 - Pellicle = glycoprotein of the saliva
 - o Benefit of antibiotics is MINIMAL to none against plaque
 - There is an innate antimicrobial resistance
 - Plankton: 1000 – 1500x more resistant
 - o Calculus: calcified/mineralized plaque; these minerals come from the SALIVA
 - Propagating cycle: plaque → calculus → rough surface → plaque
- Periodontitis: this inflammation if left untreated, leads to destruction of periodontium
 - o With this destruction, loss of anchorage or attachment
 - The HOST mediates this destruction
 - MMPs, Elastase, Cytokines, Prostaglandins
 - o Other contributing factors: genetics, calculus, restorations, malocclusions, orthodontia, exodontia, radiation therapy, gingiva; enlargement, xerostomia, lifestyle, systemic health (ex. Diabetes Mellitus)

Periodontal Disease & Conditions

Gingival Disease; Chronic Periodontitis; Aggressive Periodontitis;

[Periodontitis as manifestation of systemic disease, necrotizing periodontal disease, periodontal abscess, periodontitis associated with endodontic lesions]

** will focus on first three (3), as most common **

Gingival Disease

- Gingivitis: inflammation of the gingiva
- Gingival enlargement: overgrowth of gingiva (hyperplasia vs fibroma vs POF vs neoplasia)
- Gingival recession: receding gingiva OR loss of free and/or attached gingiva

Chronic Periodontitis

- VERY common disease, seen in adults in which the severity of plaque is equivalent to the level of destruction that is slow to moderate in progression and can be both localized or generalized

Aggressive Periodontitis

- MUCH less common disease, seen in young/juvenile patients with rapid attachment loss as severe destruction with only mild plaque that very rapidly progresses and can be both localized or generalized; often familial and sometimes immune dysfunction

Staging of Periodontal Disease

- Stage 0: no gingivitis
- Stage 1: gingivitis alone, no attachment loss
- Stage 2: gingivitis, with <25% attachment loss
- Stage 3: gingivitis, with 25-50% attachment loss
- Stage 4: gingivitis, with >50% attachment loss

Tools for staging of Periodontal Disease

- Imperative to treatment and prognosis
- Oral exam: to determine IF attachment loss
- Intra Oral Radiographs: to QUANTIFY percentage (%) & character of attachment loss

Oral exam: Plaque Index, Calculus Index, Gingival Index, Furcation exposure, Mobility

- Measure 4-8 sites around each tooth in a "walking motion"
 - o Gentle pressure (~20 mmHg) as to not want to create a pocket
 - o Normal periodontal probing: DOG: <3 mm* and CAT:<0.5 mm
 - Keep in mind the size of the patient and size of tooth
 - Vast difference in size in canine patients
 - o Important to differentiate pocket depth vs attachment loss
 - Attachment loss= probing depth + recession – enlargement

Intra Oral Radiographs

- Important to evaluate:
 - Alveolar bone height
 - Bone loss ~ attachment loss, both defined as a percentage of root length (root apex to CEJ)
 - Horizontal bone loss – loss spanning >1 tooth and parallel to occlusal plane
 - Vertical bone loss – angular loss, more localized
 - Pulp chamber
 - Periodontal ligament (PDL)
 - Periapical space

Anesthesia Free Dental “Cleanings”

The mainstay of appropriate dental care cannot be performed in awake patients: radiographs cannot be taken nor can thorough oral exam/charting – which are the MAINSTAY of diagnosing and staging the disease. Additionally, SUB-gingival debridement is not possible, and can be quite dangerous, and polishing is not possible as water/flushing and suction needed to ensure no ingestion or incidental aspiration.

- AAHA, AVMA and AVDC have statements on dental scaling without anesthesia.

Periodontal Treatment

- The foundation is MECHANICAL DEBRIDEMENT; removal of supra- and sub-gingival plaque and calculus
- Determination of stage of disease for EACH tooth is imperative to guiding treatment
 - Thorough oral exam/charting
 - Full mouth intra oral radiographs
 - Treatment/therapy options depend on:
 - Stage of disease
 - Tooth affected
 - Owner commitment
- Equipment is very important!!
 - Visualization is paramount: treating very small “patients” thus need to be able to see them and see them well
 - Appropriate light: overhead and loupes
 - Magnification: loupes
 - Dental mirrors
 - Suction
 - Ultrasonic scaling: larger calculus, can be both supra- and/or subgingival
 - Hand Scaling: less calculus, both supra- & sub-gingival; TACTILE feel
 - Scalers and curettes
 - Polish: prophy paste or pumice: to remove micro etches and smooth enamel
 - Prophy paste can NOT be used IF restorations are to be placed (due to fluoride)

- Techniques for periodontal treatment
 - o Root Planing: removal of plaque & calculus from exposed root surface
 - Insert subgingival curette into sulcus at 0°, advanced towards base of pocket, angulate 45° - 90°, then pull stroke
 - Closed (non-surgical): <5 mm, no flap
 - Open (surgical): >5 mm, flap is required for treatment
 - o Gingival Curettage: removal of inflamed soft tissue along lateral aspect of pocket
 - GOAL (if combined with root planing)= re-attachment
 - This re-attachment is NOT normal/initial attachment tissue, but is a long junctional epithelium
 - o Locally Delivered Antimicrobials
 - NEVER without mechanical debridement
 - Can help improve reattachment with root planing
 - Examples: Doxirobe & Clindoral
 - o Guided Tissue Regeneration: Bone Graft + Membrane
 - Used with significant bone loss, and thus re-attachment with long junctional epithelium is NOT enough
 - Types of bone grafts: autogenous, allografts, xenografts, alloplasts
 - Types of membranes: thin cortical bone vs locally delivered antimicrobials
 - This technique GUIDES which tissue grow/heal into the defect
 - Gingiva wants to heal and down grow into defect first, therefore this needs to be prevented long enough to allow bony healing

DON'T FORGET HOME CARE!!!

- You can do a lot of amazing work, BUT if owner is not committed to home care and maintaining oral hygiene your treatment will NOT be successful!!

- TOOTHBRUSHING is still the GOLD standard
 - o Take the time to demonstrate this, this little step will go a long way!