

The Oral Examination and Common Pathology

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It is important to be able to identify oral pathology and anomalies. It is equally important to record the pathology on dental charts correctly. A thorough dental examination includes both conscious and anesthetized examinations as well as charting disease processes, pathology and anomalies, and treatment plans.

When evaluating the periodontium, a periodontal probe, a dental explorer, and a dental mirror are used. The following indices should be evaluated for each tooth; gingivitis, periodontal probe depth, gingival recession, furcation involvement, mobility and periodontal attachment levels.

The amount of plaque observed on the teeth, cleaning should record the pathology on dental charts correctly. Because, is the soft, gelatinous matrix of bacteria and bacterial by-products that lead to gingival irritation and gingivitis, it may be necessary to use a disclosing agent to visualize.

Calculus (tartar) is calcified plaque. The amount of calculus should be recorded as light, moderate, or heavy. Calculus can only be removed by either hand scaling or power scalers.

Gingivitis Index (GI):

The gingival index (GI) is a measurement of gingival health. The assessments of gingival changes are scored using the following criteria.

- 0 - normal healthy gingiva
- 1 - moderate inflammation, moderate redness, not bleeding on probing, edema
- 2 - moderate inflammation, moderate to severe redness, edema, bleeding upon probing
- 3 - severe inflammation, severe redness, edema, ulceration, spontaneous bleeding

Each tooth is given the most severe score.

Probe Depth (PD):

Probe depth (PD) is a measure of the depth the periodontal pockets often found in periodontal disease. The probe depth is measured at multiple sites of the tooth. A periodontal probe with millimeter markings is gently placed between the free gingiva and the tooth surface and carefully advanced until soft tissue resistance is felt. The tip of the probe should be parallel to the long axis of the tooth. The pocket depth is recorded as the distance in mm from the free gingival margin to the bottom of the pocket. The probe may be glided or walked along the tooth to measure the varying pocket depths. A normal gingival sulcus depth is 1-3 mm in dogs and 0.5 to 1mm in cats. Measurements in excess of these values should be recorded in the appropriate location on the dental chart.

Gingival Recession:

Gingival recession is also measured with the periodontal probe. It is the distance from the cementoenamel junction to the margin of the free gingiva. At sites with gingival recession, the probe depth may be normal despite the loss of alveolar bone. Areas of gingival recession should be noted on the dental chart.

Furcation Index (FI):

The furcation index (FI) measures the loss of bone support in multi-rooted teeth. A periodontal probe is placed perpendicular to the long axis of the tooth and slid along the free marginal groove to the furcation site. The following criteria are used to assign a numerical score.

- 0 - no loss of bone support
- 1 - horizontal loss of supporting tissues not exceeding one-third of the width of the tooth

- 2 - horizontal loss of supporting tissues exceeding one-third of the width of the tooth but not encompassing the total width of the furcation area.
- 3 - horizontal through and through the loss of supporting tissue.

A furcation index of 1-3 should be noted on the dental chart.

Mobility Index (MI):

The mobility index (MI) measures the loss of bone support by indicating the amount of movement of the tooth. The length of the periodontal probe is placed on the buccal surface of the crown of the tooth, and gentle pressure is applied to the tooth. The following criteria are used to assign a numerical score.

- 0 - no mobility
- 1 - perceptible mobility but less than 1 mm buccolingually
- 2 - definite mobility between 1-2 mm
- 3 - gross mobility exceeding 2 mm buccolingually and/or vertical mobility

A mobility index of 1-3 should be noted on the dental chart.

Periodontal Attachment Level (PAL):

This measurement is similar to the Probe depth measurement. In the PAL, the pocket depth is measured from the base or apex of the pocket to the cemento-enamel junction. This is a more accurate assessment of tissue loss in periodontitis. PAL can be directly measured, or it can be calculated as the sum of PD plus gingival recession.

Probe depth (aka – pocket depth): is an important part of charting. This loss of attachment is created by the progression of periodontal disease and, therefore a vital piece of information. A healthy tooth has a probe depth of 1-3 mm in dogs and 1 mm or less in cats. Any probe depth greater than this should be recorded on the chart. The probe should be walked around all sides of the tooth to ensure all pockets are recorded.

Furcation Exposure:

In multi-rooted teeth, the area where the roots meet is referred to as the furcation. The bone loss caused by the periodontal disease often affects this area early in the disease process. The presence of furcation involvement should be evaluated and recorded as Grade 0 – 3 depending upon the amount of involvement.

Stage of Periodontal Disease:

The stages of periodontal disease can be used to help price your periodontal therapies but also need to be recorded so that the progression of the disease can be determined. These stages are determined by either measuring clinical attachment level or radiographically.

- Stage 1 -Gingivitis only with attachment loss.
- Stage 2 - Less than 25% attachment loss. Grade 1 furcations present.
- Stage 3 - 25 to 50% attachment loss. Grade 2 furcations present
- Stage 4 - Over 50 % attachment loss. Grade 3 furcations present.

Tooth Resorption (TR):

Tooth resorption can be difficult to classify. There are five stages of TR's that are determined by the amount of crown involved in the lesion.

- Stage 1
 - Lesions extend only into the cementum. This stage occurs only subgingivally. – Very difficult to detect
- Stage 2

- Lesions progress through the cementum into the dentin of the root or crown, but the pulp is not exposed. Hyperplastic gingiva may cover these defects.
- Stage 3
 - Lesions progress into the pulp chamber. Bleeding on probing and spontaneous fractures of the crown may occur.
- Stage 4
 - Lesions destroy a significant amount of the crown.
- Stage 5
 - Lesions have significant root replacement resorption with the healing of the gingiva. There will not be any clinically apparent tooth tissue.

In addition to the stages of TR's, they can be classified based on the radiographic appearance of the periodontal ligament space:

- Type 1 – Lesions are caused by inflammation. The root appears normal, and the periodontal ligament space is still observable.
- Type 2 – The affected tooth is ankylosed to the alveolus. This type of lesion is not associated with periodontal disease

This condition commonly is associated with the maxillary canines of cats. It produces a pronounced bulging appearance of the osseous tissue at the upper canines. Suspicious tissue should be biopsied, but in most cases, this condition is the result of chronic inflammation. Periodontal pockets may be present, and the teeth should be treated appropriately. There may be sufficient inflammation and loss of attachment to warrant extraction.

Maxillary Canine Extrusion:

In conjunction with chronic alveolar osteitis or alone, cats can have a unique response where the maxillary canine teeth appear to extrude. The teeth appear longer than normal and have an increased amount of gingival extrusion. The extruded teeth may also cause trauma to the lower lip. If the tooth is not mobile, does not have periodontal pockets or radiographic signs of excessive bone loss, they can be saved. It may be necessary to blunt the tips of these canines to minimize lip trauma.

Stomatitis:

Gingivostomatitis is a chronic, painful condition that can be very difficult to diagnose and treat. Multiple tests are needed to rule out other problems. Make sure the animal is FeLV/FIV negative; you may want to consider calicivirus. Most treatments are ineffective; to date, the best treatment is a complete dental extraction, including the removal of all dentin. This treatment is usually effective in about 80% of the cases.

Discolored Teeth:

Discolored teeth should be thoroughly evaluated to determine if the discoloration is due to extrinsic or intrinsic staining. Extrinsic staining comes from accumulations on the surface. Intrinsic stains are secondary to endogenous factors that discolor the underlying dentin. Transillumination with a fiberoptic light can assist in distinguishing between vital and necrotic pulp. Radiographs of affected teeth can be very useful in identifying pathology associated with discolored teeth.

Malocclusions:

As stated earlier, malocclusions need to be charted. Any variation from the standard occlusion is considered malocclusion. A normal occlusion is called a scissor-incisor bite. The lower canine teeth fit evenly between the upper canine and the third incisor. Premolars are in a pinking-shears configuration where the cusps of the mandibular premolars point the direction of the interdental spaces of the maxillary premolars with the cusps overlapping in a horizontal plane. There are four classifications of malocclusions:

- Class 1
 - Neutroclusion -The jaws are in perfect proportion with each other with the malposition of one or more teeth. i.e., Wrybite, anterior crossbite
- Class 2
 - Overbite – Mandibular distoclusion
- Class 3
 - Underbite, Mandibular mesioclusion

Along with malocclusion, tooth crowding, rotated, supernumerary, or missing teeth and attrition or the wear of teeth due to an improper bite is important to record. Retained deciduous teeth also need to be noted.

Fractured, Missing & Extracted Teeth:

Fractured, missing, extracted teeth should also be recorded on the chart. Fractured teeth and the type of fracture are critical to record.

It is important to remember that an uncomplicated fraction does not involve pulp exposure, (UCF) while in a complicated fracture, (CCF) there will be pulp exposure. When charting a fractured tooth, document the classification of the fracture and draw the level of the fracture on the corresponding tooth on the buccal view on the chart.

A complicated root fracture may present with a dark brown spot where the pulp is exposed. An explorer can be used to determine if the pulp chamber is still open. The tooth will lay down the tertiary (brown) dentin to protect the tooth; however, this can trap bacteria in the pulp and lead to pulp death and endodontic disease. All fractured teeth should be radiographed to determine if the endodontic disease is present. If a tooth with the endodontic disease is left untreated, the animal will be painful and may develop a fistula or draining tract. The use of antibiotics alone may reduce the swelling, but will not treat the endodontic disease.

Oral and Gingival Masses:

Oral masses need to be drawn onto the chart and noted. This includes epuli and gingival hyperplasia. Epulides arise from the periodontal ligament. This is important to note these in order to have a record of the mass and be able to note changes in future examinations as well as gingivectomies or the removal of excess gingival tissues.

Gum-Chewers lesions are caused by self-inflicted trauma as a result of the animal chewing on the inside of the cheek to the tongue. These lesions cause the proliferative, granulomatous hyperplasia to occur. The lesions can be mild to serious that involve large amounts of tissue than can cause regular hemorrhages and be painful.

All surfaces of the tongue should be observed and even palpated. Sublingual tissues should be examined for abnormalities or foreign bodies. Inflammation of the tongue or glossitis can be present due to viral infections, immune-mediated problems such as LPS or auto-immune, and toxicity from irritative substances or objects. Lesions of unknown origin should be biopsied for further diagnostic workup.

Squamous Cell Carcinoma is the most common malignancy in the oral cavity of cats, followed by fibrosarcoma and melanoma. In dogs, the three most common tumors are melanomas, fibrosarcomas, and squamous cell carcinomas. The only way to confirm the diagnosis is by biopsy.

Oronasal Fistulas(ONF):

In maxillary teeth, the width of the alveolar bone between the teeth and nasal cavity or sinus can often be very thin, especially in long, narrow-nosed dogs such as dachshunds. These fistulas can go undetected because they are most commonly located on the palatal surface of the canines. Oronasal fistulas require surgical repair.

Previous dental treatments such as; restorative, pulp capping, root canals, and orthodontic appliances should be recorded as well as procedures performed the day of the charting such as open or closed root planing.

The importance of radiographs is another lecture; however, it is necessary to document problems found on these x-rays. Bone loss retained root tips, and periapical lesions are just a few. These lesions can lead to draining tracts and oronasal fistulas. These fistulas are tracts that are formed by the infection and usually are visual externally by a wound on the muzzle below the eye.

The pathology listed in this text is some of the most common oral pathologies you will encounter.

References: Available upon request