

AAHA Dental Care Guidelines for Dogs and Cats

The purpose of this document is to provide guidelines for the practice of companion animal dentistry for the veterinary profession. Dental care is necessary to provide optimum health and quality of life. Diseases of the oral cavity, if left untreated, are often painful and can contribute to other local or systemic diseases. This paper includes guidelines for materials and equipment, dental cleaning and evaluation, client communication, and pet home care.

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Introduction

Dental care is necessary to provide optimum health and quality of life. Diseases of the oral cavity, if left untreated, are often painful and can contribute to other local or systemic diseases. The purpose of this document is to provide guidelines for the practice of companion animal dentistry. A list of definitions to enhance the understanding of this article is provided in Table 1.

The veterinarian is obligated to practice within the scope of his or her education, training, and experience. It is imperative that the dental-care team remains current with regard to oral care, operative procedures, materials, equipment, and products. The team members must attain appropriate continuing education through courses such as those offered by the American Animal Hospital Association, the American Veterinary Medical Association, and the annual Veterinary Dental Forum, as well as by reading appropriate journals (e.g., the *Journal of Veterinary Dentistry*) and books.¹⁻⁵

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In the winter of 2004-2005, AAHA gathered together a team of six professionals with a variety of interests, backgrounds, and specialties. Their goal was to create for veterinarians and their teams a concise, useful document about dental care.

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Table 1

Definitions that Pertain to Dental Guidelines*

Term	Definition
Dental chart	A written and graphical representation of the mouth, with adequate space to indicate pathology and procedures; see Table 6 for included items
Dental prophylaxis	A procedure that includes oral hygiene care, as well as techniques to prevent disease and to remove plaque and calculus from the teeth above and beneath the gumline before periodontitis has occurred
Dentistry	The evaluation, diagnosis, prevention, or treatment of abnormalities of the oral cavity, maxillofacial area, and/or associated structures; nonsurgical, surgical, or related procedures may be included
Endodontics	The treatment and therapy of diseases of the pulp canal system
Exodontia (extraction)	A surgical procedure whereby a tooth is removed
Gingivitis	Inflammation of the gingiva without loss of the supporting structure(s) that may or may not be visible to the eye
Oral surgery	The surgical invasion and manipulation of hard and soft tissue to improve/restore oral health and comfort
Orthodontics	The evaluation and treatment of malpositioned teeth for the purposes of improving occlusion and patient comfort and enhancing the quality of life
Periodontal disease	The disease process that begins with gingivitis and progresses to periodontitis when left untreated
Periodontitis	A destructive process involving the loss of supportive structures of the teeth, including the periodontium, gingiva, periodontal ligament, cementum, and/or alveolus
Periodontal surgery	The surgical treatment of periodontal disease
Periodontal therapy	The treatment of the tooth-supporting structures where periodontal disease exists; the nonsurgical removal of plaque, calculus, and debris in pockets, and the local application of antimicrobials
Pocket	A pathological space between supporting structures and the tooth, extending apically from the normal site of the gingival epithelial attachment

* Some of these definitions were derived from descriptions in *Holmstrom SE, Frost-Fitch P, Eisner ER. Veterinary Dental Techniques for the Small Animal Practitioner. 3rd ed. Philadelphia: WB Saunders, 2004.*

Materials, Instruments, and Equipment

Facility Requirements

Dental procedures cause aerosolization of bacteria and particulate matter. Use of a dedicated space, separate from the sterile surgical suite and preferably in a low-traffic area, is recommended for nonsterile dental procedures.

Appropriate ventilation and anesthetic scavenging systems must also be utilized. Low-heat, high-intensity lighting and magnification are required to adequately and safely visualize the oral cavity and its structures. The operating table must allow for drainage and be constructed of impervious, cleanable material. Aspiration of water and debris by the patient must be prevented through endotracheal intubation,

Table 2**Materials Needed for the Practice of Dentistry****Materials Necessary for Dental Cleaning**

Antiseptic rinse
 Prophy paste/pumice
 Prophy angle and cups*
 Fluoride
 Sealant
 Needles and syringes
 Intraoral radiographic or digital film in multiple sizes
 Measures to prevent hypothermia (e.g., towels, blankets, circulating water blanket, hot air blanket, etc.)
 Gauze and sponges

Additional Materials Necessary for Periodontal Therapy and/or Surgery

Locally applied antimicrobial agent
 Suture material (4-0 and smaller)
 Bone augmentation material
 Hemostatic agents (if desired)
 Local anesthetic drugs

* Disposable items are for one-time use.

suction, and packing the posterior oral cavity with gauze. Proper positioning of the patient and/or use of an inclined table can also help prevent aspiration.

Recommended materials, instruments, and equipment for performing dental procedures are listed in Tables 2 through 4. Consult the references for recommendations and information on ordering equipment.¹⁻⁵

Operator Protection

Pathogens and debris such as calculus, tooth fragments, and prophy paste can be aerosolized during a dental procedure. Irrigating the oral cavity with a 0.12% chlorhexidine solution decreases bacterial aerosolization.⁶ The safety of the operator must be ensured during dental procedures by using radiographic, oral, respiratory, skin, eye, and ear protective devices [Table 5]. Ergonomic considerations include proper seating, fatigue mats for standing, and proper positioning of the patient and materials to minimize both immediate and chronic operator injuries. Provide the operator with instruction on proper instrument handling techniques.

Assessment**History and Physical Examination**

The history must include the prior home care delivered by the client, diet, access to treats and chews, chewing habits, current and previous dental care and procedures, prior and current diseases (including allergies), and medications or supplements currently administered. Perform a complete physical examination (of all body systems) based on the

Table 3**Instruments to Include in the Dental Surgical Pack***

Scalers
 Curettes
 Probes/explorer
 Sharpening materials
 Scalpel
 Extraction equipment (e.g., periosteal elevators, luxators, periodontal elevators, extraction forceps, root tip picks, root tip forceps)
 Thumb forceps
 Hemostats
 Mayo and Metzenbaum scissors
 Needle holders
 Mouth mirror
 Head/eye loupes or other methods of magnification

* Instruments must be sterilized by accepted techniques prior to use for each animal.

Table 4**Equipment for Performing Dental Procedures**

Necessary Equipment	Optional Equipment
Equipment to expose and process intraoral dental films	Suction
A high- and low-speed delivery system for air and water	Fiberoptic light source
Equipment for sterilizing instruments	
Low- and high-speed hand pieces (minimum two of each)	
Burrs	
Powered scaler (ultrasonic, subsonic, or piezoelectric)	

species, age, health status, and temperament of the animal. If the patient is presented for a complaint not related to dentistry, give due consideration to the primary complaint and establish priorities if multiple procedures are indicated.

Assessment by Life Stage

Focus on age-related dental conditions and common abnormalities in the dog and cat. From birth to 9 months of age, evaluate the patient for problems related to the deciduous teeth, missing or extra teeth, swellings, and oral development. From 5 months through 2 years, evaluate the patient for problems related to developmental anomalies, permanent dentition, and the accumulation of plaque and calculus. Periodontal disease may begin at this time, especially in small-breed dogs and cats. The onset and severity of periodontal disease varies widely with breed, diet, and home care. In a small-breed dog without home care, periodontal disease can start as early as 9 months of age. In a large-breed dog, it may not start until years later. Most small dogs have periodontal disease by 3 years of age.⁷⁻¹⁰ From 2 years of age and onward, evaluate the progression of periodontal disease as well as the existence and adequacy of home dental care. Continue to evaluate for progressive periodontal disease and oral tumors in pets as they age.

Oral/Dental Examination in the Conscious Patient

Record all findings in the medical record [Table 6]. Evaluate the head and oral cavity visually and by palpation. Abnormal signs to look for include pain; halitosis; drooling; dysphagia; asymmetrical, discolored, fractured, or mobile teeth; inflammation and bleeding; and changes in the range of motion or pain in the temporomandibular joint. Areas to evaluate include the eyes, lymph nodes, nose, lips, teeth, mucous membranes, gingiva, vestibule (i.e., area between gum tissue and cheeks), palatal and lingual surfaces of the mouth, dorsal and ventral aspects of the tongue, tonsils, and salivary ducts. Note all abnormalities such as oral tumors, ulcers, or wounds.

The oral examination performed on an awake patient allows the practitioner to design a preliminary treatment plan. Only when the patient has been anesthetized can a complete and thorough oral examination and precise treatment plan be formulated.

Recommendations and Client Education

Discuss the findings of the initial examination, as well as further diagnostic and/or therapeutic plans with the client. These plans will vary depending on the patient, the initial findings, and on the client's ability to proceed with the recommendation(s). When an anesthetic examination or procedure is not planned in a healthy patient, discuss wellness and preventive dental care. Discuss diet, gingival exercise

Table 5**Minimum Protective Devices to be Used During Dental Procedures**

Cap
Hair bonnet
Mask
Goggles, surgical spectacles, or face shield
Smock
Surgical gloves
Earplugs
Dosimeter
Protection from radiation (e.g., lead shield)

Table 6**Items to Include in the Dental Chart and/or Medical Record**

Signalment

Physical examination, medical and dental history findings

Oral examination findings

Anesthesia and surgery monitoring log and surgical findings

Any dental, oral, or other disease currently present in the animal

Abnormal probing depths, tooth by tooth

Dentition chart, with specific abnormalities noted, such as discolored, worn, missing, malpositioned, or fracture teeth; supernumerary teeth; soft-tissue masses

Current and future treatment plan, addressing all abnormalities found, initial decisions, decision-making algorithm, and changes based on subsequent findings

Any recommendations declined by the client

Prognosis

(e.g., chewing), and which treats are appropriate from a dental perspective. To keep the pet functional and comfortable, educate the client about plaque prevention and daily oral health maintenance, including how and when to perform oral hygiene (e.g., brushing the teeth and/or the use of oral rinses).

If additional procedures are to be performed, discuss the treatment plan, including how decisions will be made and what future steps are possible based on further evaluations. The next diagnostic step consists of a thorough oral examination and dental cleaning under general anesthesia. Perform this cleaning and evaluation when abnormalities are noted, or at least on an annual basis starting at 1 year of age for cats and small-breed dogs and at 2 years of age for large-breed dogs. Details on the recommended frequency of examinations are discussed under follow-up care, below.

Dental Cleaning and Evaluation

Use well-monitored inhalation anesthesia with cuffed intubation when performing dental cleanings. These techniques increase safety, reduce stress, decrease the chances of adverse sequelae (e.g., inhalation pneumonia), and they are essential for thorough and efficient evaluation and treatment. Attempting to perform procedures on an awake patient that is struggling or is under sedation/injectable anesthesia reduces the ability to make an accurate diagnosis, does not allow adequate treatment, and increases stress and risks to the patient.¹¹

Prior to Anesthesia

Preoperative evaluation includes a preanesthetic physical examination. It is crucial to follow the most up-to-date rec-

ommendations for preoperative laboratory testing based on the patient's life stage and any existing disease.¹² Preoperative care includes intravenous catheterization, fluid therapy, preemptive pain management, and antibiotics when indicated.

Anesthesia

During anesthesia, one trained person is dedicated to the monitoring and recording of vital parameters, such as body temperature, heart rate and rhythm, respiration, oxygen saturation via pulse oximetry, systemic blood pressure, and end-tidal carbon dioxide levels. Intravenous fluid therapy is essential for circulatory maintenance. Customize the type and rate of fluids administered according to the patient's needs. Prevention of hypothermia is essential, because the patient may become wet, and dental procedures can be lengthy. Provide safe immobilization of the head.

If oral surgery is planned, institution of intraoral, local anesthesia is warranted in conjunction with the general anesthesia to decrease the amount of general anesthetic needed and to reduce the amount of systemic pain medication required postoperatively. Local anesthetic blocks can last up to 8 hours.^{4,13,14}

Dental Procedures

The words "prophy," "prophylaxis," and "dental" are often misused in veterinary medicine. A dental prophylaxis [Table 1] is performed on a patient with an essentially healthy mouth or with mild gingivitis. Its intent is to prevent periodontitis. Patients with existing disease undergo dental treatment, not prophylaxis. Dental procedures must be performed by a licensed veterinarian and/or a credentialed

technician in accordance with state or provincial practice acts. During such procedures, use a consistent method to record findings in the medical record [Table 6].

Positioning and safety of the patient is important. Manually stabilize the head and neck when forces are being applied in the mouth. Avoid using mouth gags, as they may cause myalgia, neuralgia, and/or trauma to the temporomandibular joint. If a mouth gag is necessary, do not fully open the mouth or overextend the temporomandibular joint. Disconnect the endotracheal tube when repositioning the patient to prevent trauma to the trachea.

Essential Steps for Dental Cleaning

The essential steps for a dental cleaning and treatment of periodontal disease are as follows:

1. Perform an oral evaluation, as described above, for the conscious patient.
2. Radiograph the entire mouth using intraoral or digital radiographic systems. Standard views of the skull are inadequate when evaluating dental pathology. Take oral survey films at the initial examination and periodically thereafter. Take specific or localized radiographs when oral pathology is discovered.^{1,4} Radiographs are necessary for accurate evaluation and diagnosis. In one published report, intraoral radiographs revealed clinically important pathology in 27.8% of dogs and 41.7% of cats when no abnormal findings were noted on the initial examination.¹⁵ In patients with abnormal findings, radiography revealed additional pathology in 50% of dogs and 53.9% of cats.¹⁵
3. Scale the teeth using a hand scaler or powered device. Do not use a rotary scaler, which excessively roughens the tooth enamel.¹⁶
4. Polish the teeth using a low-speed hand piece with prophylactic paste that is measured and loaded on a prophylactic cup for each patient, to avoid cross contamination.
5. Perform subgingival irrigation to remove debris and polishing paste and to inspect the crown and subgingival areas.
6. Apply anti-plaque substances, such as fluoride and/or sealants.

Additional Steps for Periodontal Disease and Other Conditions

7. Evaluate for abnormal periodontal pocket depths using a periodontal probe. The depth that is considered abnormal varies among teeth and with the size of the dog or cat.^{1,2,4}
8. Perform periodontal therapy [Table 1] as determined by radiographs and probing.
9. Administer perioperative antibiotics when indicated, either parenterally or locally.^{17,18}
10. Perform periodontal surgery to remove deep debris, eliminate pockets, and/or extract teeth.

11. Biopsy all abnormal masses (visualized grossly or on radiographs) and submit samples for histopathology.
12. Take postoperative radiographs to evaluate the treatment applied.
13. Recommend to the client that the pet be referred to a specialist when the practitioner does not have the skills, knowledge, equipment, or facilities to perform a given procedure or treatment.

Postoperative Management

Maintain an open airway via intubation until the animal is swallowing and is in sternal recumbency. Maintain body temperature and continue intravenous fluid support as needed. Continuously monitor and record vital signs until the patient is awake. Continue pain management while the pet is in the hospital and upon discharge.^{12,19}

Client Education and Follow-Up

Postoperative Communication

Client communication is fundamental to ongoing dental care. At the time of discharge, discuss operative procedures and existing or potential complications (e.g., bleeding, coughing, dehiscence, infection, neurological signs, halitosis, vomiting, diarrhea, anorexia, and/or signs of pain). Discuss immediate postoperative home care, including medications and their side effects. Provide antibiotics and medication for inflammation and pain only as indicated.^{17,18} Discuss any change in diet that might be necessary, such as a change to soft or premoistened food or to a prescription diet. Provide individualized oral and written instructions at the time of discharge. Establish an appointment for a follow-up examination and further discussion.

Home Care

Home care is vital for disease control. Telephone the client the day after the procedure to inquire about the pet's condition, to determine the client's ability to implement the medication and home care plan, and to answer questions and address the client's concerns. The home care plan includes the frequency, duration, and method of rinsing and brushing; applying sealants; and the use of special foods (e.g., dental diets) and dental chews. Some of these details might best be left for discussion with the client at the first postoperative follow-up evaluation. Because the Veterinary Oral Health Council (VOHC; www.vohc.org) was formed to certify the efficacy of oral products, the dental team is encouraged to recommend VOHC-certified products.

Progress or Follow-up Evaluations

With each follow-up examination and telephone communication, repeat the home care instructions and recommendations to the client. Set the number and timing of regular follow-up visits based on the disease severity. Although few studies have been performed in dogs and cats, extrapolation from the human literature and guidelines about aging in dogs and cats leads to the following recommendations.²⁰

At a minimum, evaluate animals with a healthy mouth at least annually. Examinations every 6 months can help ensure optimal home care. Evaluate pets with gingivitis at least every 6 months and those with periodontitis at least every 3 to 6 months. Advanced periodontal disease requires monthly examinations until the disease is controlled. During subsequent examinations, evaluate client compliance, revise the treatment plan as needed, and redefine the prognosis.

Pets can live longer, healthier lives if oral health care is managed and maintained. All members of the veterinary team must strive to increase the quality of dental care delivered. Clients must be given options for the optimal care and treatment available for their pets. Dentistry is becoming more specialized, and referral to a specialist is recommended if the necessary expertise and equipment is unavailable at the regular veterinarian's office.

Conclusion

This document is intended as a guideline only. Evidence-based support for specific recommendations has been cited whenever possible and appropriate. Other recommendations are based on practical clinical experience and a consensus of expert opinion. Further research is needed to document some of these recommendations. Because each case is different, veterinarians must base their decisions and actions on the best available scientific evidence, in conjunction with their own expertise, knowledge, and experience.

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