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Oral Anatomy of the Dog and Cat in Veterinary Dentistry Practice	763
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The study of anatomy is important to accomplish any kind of surgical and medical procedure and to understand the physiology and diseases of animals. It is no different in veterinary dentistry. The study of oral anatomy helps the veterinarian to accomplish any kind of surgical procedure more quickly and with less damage to tissues, especially in cases of major oral surgery. In fact, understanding the anatomy is easier when this knowledge is acquired directly, with surgical application. This article describes the essentials of the oral anatomy of the dog and cat, correlating this knowledge with the dental procedures to be used by veterinarians as a guide.

The Gold Standard of Veterinary Oral Health Care	781
Benjamin Colmery III	

Veterinary dentistry has evolved to the point that consumers now demand and expect the best oral health care possible for their pets. The gold standard is an attainable goal for all veterinary practices that provide oral health care. If the practice chooses to improve its delivery system, the changes should be rewarding.

Juvenile Veterinary Dentistry	789
Fraser A. Hale	

The good news is that most dogs and cats live through their first year of life with no dental or oral problems requiring attention.

For the others, being aware of the potential problems, recognizing them early, and instituting appropriate care in a timely manner can improve the quality of life immediately and avoid more serious problems in the long term.

Management of Periodontal Disease: Understanding the Options

819

Colin E. Harvey

Periodontal disease is the most common disease occurring in domestic dogs and cats, and local severity and the impact on the rest of the body are reasons why all companion animal patients should receive an oral examination every time they are seen. This article provides the background information on how an effective periodontal management program can be tailored for each patient.

Fundamentals of Endodontics

837

Brook A. Niemiec

Endodontic disease is a highly prevalent (>10% of all dogs) and insidiously painful process that can have significant local and systemic effects. The root canal system is a delicate organ and is prone to inflammation, infection, and partial and complete necrosis. Vital pulp therapy must be performed quickly, gently, and meticulously if it is to be effective. The relatively high rate of failure in direct pulp capping makes regular follow-up radiographs of critical importance to ensure patient health. Once a tooth is dead, there are often no obvious clinical signs; therefore, clinicians must be educated in the diagnosis of the disease processes. Once properly educated, the practitioner must remain vigilant for subtle signs of the disease process. Standard root canal therapy is an effective method of removing the inflammation, infection, and associated discomfort of the endodontically diseased tooth while maintaining its function. Endodontic failure most likely remains hidden unless dental radiology is used. Follow-up radiographs at regular intervals throughout the patient's life are critical for ensuring the long-term success of any endodontic therapy.

Fundamentals of Small Animal Orthodontics

869

Thoulton W. Surgeon

The basic principles and concepts that govern the discipline of orthodontics are explored. The movement of teeth is mediated primarily through the periodontal ligament. When the periodontal ligament is stretched, bone apposition occurs. Conversely, in areas of compression, bone resorption occurs. The subject tooth moves in the direction of the force. The orthodontist must be cognizant of the prevailing ethical guidelines and the functional needs of the patient.

Gingivostomatitis

891

Kenneth F. Lyon

Gingivostomatitis (GS) with various patterns of disease may require antiviral therapy, steroids, laser fulguration, immunomodulation drugs, or nonsteroidal anti-inflammatory drugs. The use of cyclosporine as an immunomodulation drug has long-term benefits in reduction of the immunologic events that contribute to GS. Whole-mouth extraction or partial extraction (premolars and molars), with radiographic conformation that all root remnants have been removed, may be the most viable option in nonresponsive and or intractably painful stomatitis in noncompliant cats or dogs. Oral inflammation subsided after extraction without the need for further medication in approximately 70% of the cats from two studies with previous chronic unrelenting oral disease. The combination of immunomodulation with cyclosporine together with laser resection of proliferative tissue should be recommended if extraction of teeth is not desired. Removal of proliferative oral tissues by lasing (carbon dioxide laser) removes the tissue that may be producing tissue antigens and the area where bacteria are sequestered. The use of anti-inflammatory medications is recommended in the management of GS. Therapeutic success is achieved when there is elimination of proliferative tissue and inflammation.

Update on the Etiology of Tooth Resorption in Domestic Cats

913

Alexander M. Reiter, John R. Lewis, and Ayako Okuda

Based on recent findings of increased vitamin D activity in cats with feline odontoclastic resorptive lesions (FORL), the present article provides further clues on the possible etiology of FORL. Microscopic features of FORL and other peculiarities of feline permanent teeth are compared with pathologic findings obtained from experimental studies in other species. Administration of excess vitamin D or vitamin D metabolites in laboratory animals caused changes to dental and periodontal tissues that resemble histopathologic features of teeth from cats with FORL. Chronic excess dietary vitamin D may be the long-sought cause of multiple tooth resorption in domestic cats. It may also provide a basis for future research on idiopathic hypercalcemia and renal disease in the same species.

Radiographic Evaluation and Treatment of Feline Dental Resorptive Lesions

943

Gregg A. DuPont

Many feline resorptive lesions are easily diagnosed by clinical oral examination, whereas others require dental radiographs. Radiographs can reveal the presence of resorption, and often the nature of the resorptive process as well. Removal of affected teeth when they cause discomfort, or of the portion of the tooth causing the discomfort, remains the only treatment that provides long-term resolution. Until we understand the etiology of the inciting causes

and of the factors contributing to the progression of resorptive lesions, reliable prevention cannot be offered.

Simple and Surgical Exodontia

963

Linda J. DeBowes

Preemptive and postoperative pain management is part of patient care when performing extractions. Simple extractions can become complicated when tooth roots are fractured. Adequate lighting, magnification, and surgical techniques are important when performing surgical (complicated) extractions. Radiographs should be taken before extractions and also during the procedure to assist with difficult extractions. Adequate flap design and bone removal are necessary when performing surgical extractions. Complications, including ocular trauma, jaw fracture, and soft tissue trauma, are avoided or minimized with proper patient selection and technique.

Maxillofacial Fracture Repairs

985

Loïc Legendre

Oral trauma remains a common presentation in a small animal practice. Most fractures are the result of vehicular accidents. Among other causes are falls, kicks, gunshots wounds, and encounters with various hard objects ranging from baseball bats and golf clubs to horse hooves and car doors. Next in popularity are dog fights, especially when a large dog and a small dog are involved, and fights with other animals. With cats, falls from various heights are responsible for a large percentage of presentations.

Mandibulectomy and Maxillectomy

1009

Frank J.M. Verstraete

In an animal presented for evaluation of an oral tumor, the extent of the disease is based on the systematic evaluation of the tumor, including diagnostic imaging, and the assessment of regional lymph node involvement and distant metastases. The nature of the disease is determined by an incisional biopsy and histopathologic examination. The choice of treatment and expected outcome are based on the stage and expected biologic behavior, which is well known for many oral tumor types. The various mandibulectomy and maxillectomy techniques have been shown to give good functional and cosmetic results.

Regional Anesthesia and Analgesia for Oral and Dental Procedures

1041

Judy Rochette

Regional anesthesia and analgesia benefit the client, the patient, and the practitioner, and their use is becoming the standard for

care. Familiarity with the processes involved in the generation of pain aids in understanding the benefits of preemptive and multimodal analgesia. Local anesthetic blocks should be a key component of a treatment plan, along with opioids, nonsteroidal anti-inflammatory drugs, *N*-methyl-*D*-aspartate receptor antagonists, and other therapies. Nerve blocks commonly used for dentistry and oral surgery include the infraorbital, maxillary, mental, and mandibular blocks.

Appendix: American Veterinary Dental College Approved Case-Log Abbreviations Steven E. Holmstrom	1059
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