Preface
Walter C. Renberg

Pathophysiology and Management of Arthritis
Walter C. Renberg

This article primarily reviews the pathophysiology, diagnosis, and therapy of osteoarthritis but also briefly discusses immune-mediated arthritides. Given the frequency of occurrence of arthritis in veterinary patients, it is crucial that clinicians be aware of the mechanisms of the disease and be comfortable with diagnosis and treatment. Unfortunately, there is a great deal of information still to be learned in regards to management of these cases. Because of the rapid and continuing research gains, it behooves clinicians to maintain a current awareness of the related literature.

Infections of the Skeletal System
Loretta J. Bubenik

Infections of the skeletal system are caused by a variety of organisms and generally occur through two routes, direct inoculation or hematogenous spread. Treatment requires long-term antimicrobial therapy with or without surgery to remove devitalized bone, inflammatory debris, foreign material, and necrotic tissue. This article reviews the causative agents, common diagnostics, and nuances of antimicrobial therapy commonly used to treat infection. It also reviews the major classifications of skeletal infections (hematogenous bone infections, bone infection from exogenous sources, and septic arthritis), with details covering pathophysiology, clinical presentation, treatment, and prognosis.

Developmental Orthopedic Disease
Jennifer Demko and Ron McLaughlin

Developmental orthopedic diseases are a common cause of pain and lameness in young dogs. Most occur in large-breed dogs with rapid growth rates. This article reviews the signalment, etiology and pathogenesis, clinical signs, diagnosis, treatment, and prognosis for many of the common developmental orthopedic diseases, including hypertrophic osteodystrophy, panosteitis, osteochondrosis, Legg-Calvé-Perthes disease, hip dysplasia, elbow dysplasia, and pes verus.
Management of Fractures in Small Animals 1137
James K. Roush

Fracture repair in small animals has arrived at a crossroads because of advances in fracture repair and client demands. Research into bone healing and repair techniques, collective professional experience, economics, and client demands are obligating veterinarians to greater expertise in the actual act of repairing fractures. The influx of surgery specialists into burgeoning private practices has improved access to specialty service beyond what the limited number of academic practices could previously provide and has raised the local standard of practice for orthopedic surgery at the same time. The necessity to deal with the preoperative and postoperative management of traumatized small animals by the general practitioner has not changed, however. Treatment of the small animal patient with a fractured bone does involve accurate definition of the fracture, selection of an appropriate method of fracture fixation from the variety of devices available, and correct application of the fixation. Far more than these, however, it involves assessment and treatment of the traumatized patient as a whole, including preanesthetic evaluation of critical body systems, preoperative preparation of the patient and client, and postoperative management of the repaired fracture and patient.

Common Malignant Musculoskeletal Neoplasms of Dogs and Cats 1155
Ruthanne Chun

Malignancies of the musculoskeletal system in dogs and cats can be categorized as either primary or metastatic within the bony or soft structures that comprise the musculoskeletal system. By far, the most common tumor that affects the musculoskeletal system in dogs is osteosarcoma. The most common tumors that affect the musculoskeletal system in cats are injection site sarcomas. These tumors are locally infiltrative; whereas up to 25% metastasize, most animals die from our inability to control local disease. The aim of this article is to provide a brief review of the biologic behavior of and treatment recommendations for common tumors of the musculoskeletal system, excluding the oral and nasal cavities.

Traumatic Luxations of the Appendicular Skeleton 1169
Jude T. Bordelon, H. Fulton Reaugh, and Mark C. Rochat

Traumatic luxation of joints of the appendicular skeleton is common. Timely and accurate identification of the luxation is essential to restoring normal function. Physical examination and radiographic assessment are commonly utilized for accurate identification and categorization. Conservative and surgical techniques are employed for treatment of luxations solely and in combination. Selection of appropriate reparative techniques is dependent on the joint injured as well as on other joint- and injury-specific factors.
Healing, Diagnosis, Repair, and Rehabilitation of Tendon Conditions 1195
Maria A. Fahie

Management of tendon conditions can be frustrating due to difficulty with diagnosis, choice of treatment or repair technique, prolonged tissue healing, and potential for permanent compromise of limb function after surgery. This article reviews tendon healing and reported tendon conditions, focusing on bicipital tenosynovitis and common calcaneal tendon injuries. Surgical management options, research in enhancement of tendon healing, and postoperative rehabilitation are also reviewed.

Total Joint Replacement in the Dog 1213
Michael G. Conzemius and Jennifer Vandervoort

Total joint replacement has evolved over the past 50 years from a concept that was first attempted in people suffering from osteoarthritis to a commonly applied practice in veterinary medicine. Although many questions have been answered, several controversies still exist, with many implant and technical options being explored. Currently, total hip and elbow replacement are commercially available options viable for use in dogs. These options are detailed in this article. Joint replacement for other canine joints (ie, knee, hock, shoulder) that develop osteoarthritis likely will be developed in the near future.

Emerging Causes of Canine Lameness 1233
Mark C. Rochat

Most orthopedic conditions that affect dogs are well described established conditions. Often, the current literature is focused on refinements in diagnosis, treatment, and management of these conditions. Improvement in worldwide reporting of emerging conditions offers veterinarians a greater awareness of new conditions as they occur. This article compiles into a single source what has been reported for five newly described disorders.

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