Femur Fracture Fixators

Unilateral external skeletal fixation (ESF) is a technique used to stabilize bone segments or joints with half pins inserted through the skin and secured to an external frame. ESF is a less invasive technique than plate or pin fixation and can be adjusted or reinforced postoperatively. The semicircular ESF system enables multiplane half-pin insertions. This article reports the outcome of 18 femoral fracture repairs in 16 dogs using the unilateral semicircular ESF system. The dogs were 2 months to 10 years of age and fracture configurations were oblique, comminuted, or transverse. Eight dogs had complications after fixator application. Pin tract drainage during healing was the most common complication and typically responded to improved cleaning of the pin–skin interface and administration of oral antibiotics. Three dogs had mild to severe periosteal reactions that gradually resolved after fixator removal. Eight dogs used their limbs immediately after awakening from anesthesia. In the other 8 dogs, time to first use ranged from 1 to 4 days. One fracture failed to achieve union and a plate was used to revise and stabilize it, with clinical success 4 months later. Functional outcome was excellent in 13 femurs, good in 4, and poor in the 1 case in which nonunion occurred. The authors conclude that the unilateral semicircular ESF is a viable option for femoral fracture repair in dogs.

Commentary: This article describes the use of a novel carbon-fiber curved arch to secure external fixator pins in the treatment of canine femoral fractures. An open approach was used to align the bone, and then negative-profile pins were inserted from the lateral to medial aspects of the femur. An open approach is counter to biologic fixation, but the authors documented rapid return to weight bearing following surgery, perhaps made possible by avoiding the penetration of muscle masses by the pins. If this device is used in a closed fashion, avoidance of the sciatic nerve would be imperative. Use of linear external fixators on the femur has always been challenging due to the inability to apply pins from the medial side as well as the large muscle mass. The described system allows better 3-dimensional planes of pin placement as compared with standard linear external fixator systems. —*Jonathan Miller, DVM, MS, Diplomate ACVS*

Management of femoral fractures in dogs with unilateral semicircular external skeletal fixators. Yardimci C, Ozak A, Nisbet HO. ***VET SURG*** 40:379-387, 2011.

Cross-Immunoprotection from CPV Vaccines

Canine parvovirus-2 (CPV-2) emerged in the late 1970s as a highly contagious and potentially lethal viral pathogen in dogs. CPV-2a and CPV-2b appeared subsequently as antigenic variants. A third variant (CPV-2c) recently emerged in Italy and has become widely distributed in Europe, Australia, North America, and South America. Most modified-live vaccines contain the CPV-2 and CPV-2b strains and therefore may be less protective against new variants. This study evaluated the genetic variability of CPV virus collected from the fecal samples of 37 vaccinated puppies in Brazil that presented with enteric illness from 1995 through 2009. Puppies had previously received either multivalent CPV-2 vaccine (n = 20), CPV-2b vaccine (n = 3), or unknown CPV vaccine (n = 14). Polymerase chain reaction (PCR) and hemagglutination/hemagglutination inhibition (HA/HI) tests were used to confirm infection and differentiate among parvoviral

types. Viral DNA was extracted from samples, and 2 regions of the *VP2* gene were amplified by PCR. PCR amplicons were directly sequenced and aligned for phylogenetic analysis. From 1995 to 2006, only CPV-2a strains were detected. From 2007 to 2009, both CPV-2a and CPV-2b strains were identified, with the majority (14/19) classified as CPV-2b strains. All CPV-2a strains evaluated in this study demonstrated a nonsynonymous mutation at amino acid residue 297 (Ser → Ala). A synonymous substitution at amino acid residue 574 (A → G substitution in nucleotide 5408) was identified in 15 of 37 samples, 14 of which were in CPV-2a strains and 1 of which was in a CPV-2b strain. No CPV-2c strains were identified.

Commentary: The nonsynonymous mutations detected in CPV-2a strains in this study were not clearly supportive of documented changes in CPV antigenicity; however, such changes may indicate altered viral antigenic properties secondary to vaccine-induced and other adaptive pressures. This study did reveal significant temporal diversity and apparent evolution of circulating viruses in this parvoviral population over time. Vaccines may need to undergo periodic reformulation to accommodate dynamic viral strains.—*Indu Mani, DVM, DSc*

Monitoring of canine parvovirus (CPV) strains detected in vaccinated puppies in Brazil. Castro TX, Costa EM, Leite JP, et al. ***RES VET SCI*** 90:336-340, 2011.

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