

Published research

Peter H. Laverty
BVSc, MRCVS, MACVSc

Cooper, M. A., P. H. Laverty, et al. (2005). "Bilateral flexor tendon contracture following onychectomy in 2 cats." *Can Vet J* 46(3): 244-6.0008 Two cats presented with bilateral flexor tendon contracture following onychectomy. This previously unreported complication proved to be painful and debilitating. Deep digital flexor tenectomy successfully resolved the problem. Twelve months after surgery, the first cat remains free of complications. The second cat recovered full limb function, but died of unrelated causes.

Laverty, P. H., A. Leskovar, et al. (2004). "A preliminary study of intravenous surfactants in paraplegic dogs: polymer therapy in canine clinical SCI." *J Neurotrauma* 21(12): 1767-77.0897-7151 Hydrophilic polymers, both surfactants and triblock polymers, are known to seal defects in cell membranes. In previous experiments using laboratory animals, we have exploited this capability using polyethylene glycol (PEG) to repair spinal axons after severe, standardized spinal cord injury (SCI) in guinea pigs. Similar studies were conducted using a related co-polymer Poloxamer 188 (P 188). Here we carried out initial investigations of an intravenous application of PEG or P 188 (3500 Daltons, 30% w/w in saline; 2 mL/kg I.V. and 2 mL/kg body weight or 300 mL P 188 per kg, respectively) to neurologically complete cases of paraplegia in dogs. Our aim was to first determine if this is a clinically safe procedure in cases of severe naturally occurring SCI in dogs. Secondly, we wanted to obtain preliminary evidence if this therapy could be of clinical benefit when compared to a larger number of similar, but historical, control cases. Strict entry criteria permitted recruitment of only neurologically complete paraplegic dogs into this study. Animals were treated by a combination of conventional and experimental techniques within approximately 72 h of admission for spinal trauma secondary to acute, explosive disk herniation. Outcome measures consisted of measurements of voluntary ambulation, deep and superficial pain perception, conscious proprioception in hindlimbs, and evoked potentials (somatosensory evoked potentials [SSEP]). We determined that polymer injection is a safe adjunct to the conventional management of severe neurological injury in dogs. We did not observe any unacceptable clinical response to polymer injection; there were no deaths, nor any other problem arising from, or associated with, the procedures. Outcome measures over the 6-8-week trial were improved by polymer injection when compared to historical cases. This recovery was unexpectedly rapid compared to these comparator groups. The results of this pilot trial provides evidence consistent with the notion that the injection of inorganic polymers in acute neurotrauma may be a simple and useful intervention during the acute phase of the injury.

McNicholas, W. T., Jr., B. E. Wilkens, Blevins, W. E., Snyder, P. W., McCabe, G. P. Applewhite, A. A., Laverty, P. H., Breur, G. J. (2002). "Spontaneous femoral capital physeal fractures in adult cats: 26 cases (1996-2001)." *J Am Vet Med Assoc* 221(12): 1731-6.

OBJECTIVE: To determine clinical, radiographic, and histologic abnormalities in adult cats > 1 year old with spontaneous (ie, nontraumatic) femoral capital physeal fractures. **DESIGN:** Retrospective study. **ANIMALS:** 26 cats. **PROCEDURE:** Medical records of cats > 1 year old with femoral capital physeal fractures and no history of trauma were examined. **RESULTS:** Mean +/- SD age of the cats was 22.5 +/- 6.5 months. Twenty-five cats were neutered males. Mean weight of the cats was significantly greater than mean weight of a group of age- and sex-matched control cats. Of 16 cats for which age at the time of neutering was known, 14 had been neutered before 6 months of age. Nine cats had bilateral fractures. Severity of femoral neck osteolysis and sclerosis increased with increased duration of clinical signs. The contralateral femoral capital physis, distal femoral physes, and proximal tibial physes were radiographically open in 13 of 18, 19 of 24, and 24 of 24 cats, respectively. Histologically, the epiphysis contained normal articular cartilage and bone, but attached growth plate cartilage lacked the normal columnar arrangement of chondrocytes. **CONCLUSIONS AND CLINICAL RELEVANCE:** Results suggested that adult cats with spontaneous femoral capital physeal fractures were most likely to be heavier, neutered males with delayed physeal closure.

Laverty PH, Johnson AL, et al. (2002). "Simple and multiple fractures of the radius treated with an external fixator." *Vet Comp Orthop Traumatol* 15: 97-103.

The medical records of 56 dogs with diaphyseal fractures of the radius and ulna treated with Type Ib or Type II external skeletal fixation were reviewed. The patients were referred to the College of Veterinary Medicine University of Illinois or the Purdue University School of Veterinary Medicine during the period from 1983 to 1999. There were thirty-two "simple" fractures and twenty-four multiple fractures. Twenty-four Type II frames and eight Type Ib frames were used to treat the "simple" fractures. Twenty Type II frames and four Type Ib frames were used to treat the multiple fractures.

Eight of the thirty-two dogs with "simple" fractures and twelve of the twenty-four dogs with multiple fractures were admitted with open fractures. Open fractures were associated with a significantly longer time to fracture "bridging". Open reduction was used more frequently for the treatment of dogs with "simple" fractures. Open reduction resulted in greater bone contact at the fracture site. Contact at the fracture site resulted in a shorter time to removal of the external fixation.

Clinical union was achieved in fifty of fifty-six fractures (89%), with a mean time to removal of the fixation of 14.2 weeks. Significant difference, in the mean time to fracture "bridging" or the mean time to fixator removal, were not found between the "simple" and multiple fracture groups. Complications occurred in 25% (14/56) of fractures. Complications of fracture healing occurred in 18% (9/56) of fracture repairs, and fracture related complications occurred in 9%.

Peter H. Laverty, Ann L. Johnson, James P. Toombs and David J. Schaeffer (2001). Simple and multiple fractures of the radius treated with an External Fixator. Comparison of healing of 'simple' fractures and multiple fractures of the radius treated with external skeletal fixation in dogs: 56 cases (1983–1999). From the Department of Veterinary Clinical Sciences (Laverty, Toombs), School of Veterinary Medicine, Purdue University, 1248 Lynn Hall, West Lafayette, Indiana 47907-1248, USA and Departments of Veterinary Clinical Medicine (Johnson) and Veterinary Biosciences (Schaeffer), College of Veterinary Medicine, University of Illinois, 2001 South Lincoln, Urbana, IL 61802, USA.

The healing of 'simple' and multiple diaphyseal fractures of the radius and ulna in dogs, treated with external fixation, is evaluated. The application of a Type Ib or Type II External Fixator is an effective method of treating diaphyseal radial fractures. Clinical union was achieved in 50 of the 56 fractures, with a mean time-to-removal of the fixator of 14.2 weeks. Significant difference in the mean time-to-fracture bridging or the mean time-to-fixator removal were not found, between the 'simple' and multiple fracture groups. Open reduction is indicated if contact between major segments can be achieved. Open radial fractures take longer to heal. Fewer complications of fracture healing can be expected in dogs weighing more than 5 kg. The complications occurred more frequently in dogs weighing under 5 kg. There was not any difference between the "simple" and multiple fracture groups, with respect to the type or frequency of complications experienced. Open fractures took longer to heal than closed fractures. Higher complication rate as the distance of the pins from the fracture site increased- increased strain at the fracture site. Dogs <5kg took longer to heal.

The results of this study indicate that stabilization, with an External Fixator, is an appropriate treatment for both "simple" and multiple diaphyseal fractures of the radius and ulna.

Laverty PH and McClure SR (2002). "Initial experience with extracorporeal shock wave therapy in six dogs- part I." Vet Comp Orthop Traumatol 15: 177-183.

Extracorporeal shock wave therapy (ESWT) may be an effective treatment modality for delayed or chronic non-union fractures. ESWT is a non-invasive technique that avoids the potential morbidity and mortality associated with traditional surgical procedures, and its use does not preclude subsequent surgical treatment. This case series demonstrates the feasibility, versatility and safety of treating dogs with ESWT.

Laverty, P. H. and S. K. Salisbury (2002). "Surgical management of true patent urachus in a cat." J Small Anim Pract 43(5): 227-9. A five-week-old kitten presented with clinical signs consistent with a patent urachus. The urachal anomaly was revealed by exploratory celiotomy and surgically excised without complications. Follow-up radiographic evaluation confirmed the complete removal of the urachal anomaly. Twenty-five months after surgery the cat remained healthy and without problems.