

## Normograde Pinning for Feline Humeral Fractures

Humeral fractures in cats commonly occur in the distal diaphysis. Extreme care must be taken when directing an IM pin through the distal humerus; incorrectly placed pins can result in poor stabilization of the distal fragment and/or cause serious damage to periarticular structures of the elbow. This study evaluated normograde and retrograde introduction of IM pins. Twenty-four thoracic cat cadaver limbs were allocated to 1 of 3 groups: in group 1, diaphyseal osteotomies were created in the humerus; in group 2, metaphyseal osteotomies were created in limbs; in group 3, the humerus was left intact. In groups 1 and 2 (retrograde technique), a 1.5-mm IM pin was introduced via the fracture site, directed toward the medial epicondyle, and driven distally until exiting the skin caudal to the flexed elbow. The pin was then retracted until it was even with the fracture line and the fracture was reduced. The pin was advanced until it

exited the proximal humerus. In group 3 (normograde technique), a 1-mm guide hole was predrilled into the medial epicondyle and a 1.5-mm IM pin advanced through the guide hole until it exited the proximal humerus. Normograde pinning spared muscles, nerves, and articular cartilage from damage; retrograde technique was associated with a high incidence of damage to vital structures of the elbow. Normograde IM pinning of the distal fragment in humeral fractures can be safe in cats, but retrograde pinning is not recommended.

### ■ Commentary

Distal humeral fractures are more challenging when working with small feline bones. During retrograde 1.6-mm pin placement (from the fracture site to the medial epicondyle), 7 out of 16 pins damaged the joint surface, 2 went through the ulnar nerve, and 13 damaged the flexor

muscles. Normograde placement was accomplished by drilling a pilot hole from the medial epicondyle area into the medullary canal and then sliding a beveled pin proximally by hand. This method avoided any damage to the elbow joint or surrounding important structures and exited the humerus in the greater tubercle cranial to the shoulder joint.

The results affirmed the difficulty in safely placing an IM pin starting at the fracture. There is simply not enough room in the medial epicondyle of the cat for the pin to exit without risk of complication.—*Jonathan Miller, DVM, MS, DACVS*

### ■ ■ Source

Normograde and retrograde pinning of the distal fragment in feline humeral fractures. Cohen L, Israeli I, Levi S, et al. *VET SURG* 41:604-610, 2012.

## Interpreting Allergen Testing in Healthy Dogs

Allergens responsible for causing a flare-up have typically been identified by allergen-specific IgE serology or intradermal testing (IDT). Both have shown positive results in healthy animals, making results difficult to interpret. The appropriate threshold concentration of allergens (ie, the highest concentration that does not cause an irritant reaction) may not induce a reaction in >10% of healthy dogs in laboratory settings. Studies have determined thresholds for house dust and forage mites, but testing was done using only 1 allergen provider and 1 batch on healthy dogs in heterogeneous living environments.

In this study, the variability between skin test reactions in healthy beagles using established concentrations for house and forage mite allergens was investigated using allergen extracts from different suppliers and different batches from the same

supplier. Two statistically significant groups of dogs were identified: 1 with positive serology and intradermal reactions at the prespecified threshold mite allergen concentration and 1 with negative serology and intradermal reactions. Seven of 17 dogs showed positive intradermal reactions. This was a considerably higher number of positive results than expected. Allergy testing in healthy, privately-owned dogs may be difficult to interpret because pets are kept in heterogeneous environments where mites are known to proliferate. Increasing house dust or forage mite allergens may reduce false negative results without increasing false-positive irritant reactions or subclinical sensitizations.

### ■ Commentary

There is wide variability in interpreting IDT and serologic testing in healthy dogs. Applying these data into the clinical envi-

ronment is limited; correlating positive results, response to treatment, and supposed exposure in a pet dog is ultimately important. Caution must be used when interpreting positive results with irritant reactions, as this made clear that subtle changes in allergen concentration can affect results. Future studies correlating mite numbers in the environment with positive serologic and IDT reactions may be useful in interpreting true IgE sensitization with irritant reactions, as well as truly negative results.—*Heather Troyer, DVM, DABVP, CVA*

### ■ ■ Source

Intradermal and serologic testing for mites in healthy beagle dogs. Koebrich S, Nett-Mettler C, Wilhelm S, Favrot C. *VET DERMATOL* 23:192-e39, 2012.