

Future Notes

Hear Metropolitan Veterinary Referral Group Members Presenting at Conferences

May 27, 2006 – Canton All Breed Club, Canton, Ohio – Dr. Foss' topic, "Genetic Eye Exams"

Aug. 17, 2006 – North Carolina Zoo, Asheboro, N.C. – Dr. Riggs' topic, "Compounding Medicine for Avian and Exotic Animals"

Focus On: External Skeletal Fixation

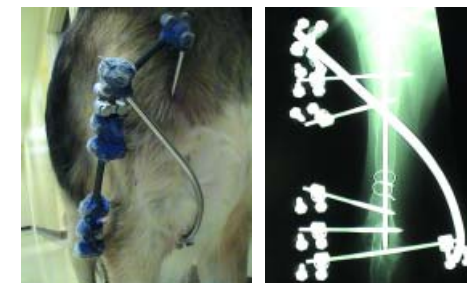
by Mark Daye, DACVS, Veterinary Surgery Services of Northeast Ohio

Recent developments in equipment and clinical application have led to many positive changes in external skeletal fixation. Once used primarily for treating radius/ulna and tibia/fibula fractures, external fixation is now used for a variety of ailments, in various locations of the body and in a number of fixator configurations.

Fracture repair remains the primary reason for using external fixators, but additional indications include coaptation for ligamentous reconstruction/luxations, arthrodesis of painful or unstable joints, correction of deformities and limb-sparing surgery.

Bones currently treated with external fixation include the humerus, femur, tibia, fibula, radius, ulna, vertebrae, pelvic, mandible, carpometacarpal and tarsometatarsal.

Different types of external skeletal fixation are more appropriate for different locations and situations, but all provide the benefit of minimal impact on the healing environment. Their eventual removal following completion of healing is another plus. Current external fixator types include traditional side-bar/clamp, acrylic, flexible, circular, hybrid and hinged.



Traditional side-bar/clamp is the most common form, the most recognizable being the Kirschner-Ehmer apparatus. Continued

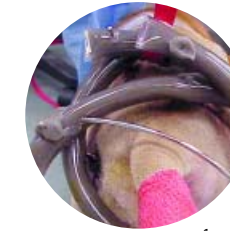
innovation has resulted in many improvements to these systems. The use of carbon fiber and titanium rods has improved stiffness while decreasing overall weight. Revised clamps have simplified application and strengthened the construction. A variety of implant and connector sizes allows fixation to be used on a greater range of pet sizes. One of the most significant innovations has been the use of positive-profile threaded pins and their related application techniques. Pre-drilled positive-profile pins engage the bone more rigidly and resist loosening for longer periods of time than previously possible.

Flexible fixators are rarely used, but are effective for relocation of congenital elbow dislocations or stabilization of coxofemoral luxations. The latter is particularly useful with contralateral hind limb injuries or when an Ehmer sling should be avoided. In general, these fixators consist of transarticular pins connected by some form of elastic material.

Acrylic fixators use traditional pins and either pre-measured



reagents or bulk polymethyl-methacrylate for side-bars. These side-bars are free-molded over pins or injected into flexible tubing in the liquid state. After hardening occurs, fixation is rigid.



Primary advantages of acrylic systems are

minimal cost and inventory requirements as well as custom side-bar production for a variety of unusual locations. Disadvantages include the heat and noxious odors produced during polymerization and the inability to adjust fixation without complete side-bar removal and replacement. The most common use is with mandibular fractures, but application is only limited by creativity.



The best circular fixator systems have extensive components that allow gradual correction of abnormal angulation and limb-length discrepancy

through distraction osteogenesis. The primary disadvantages are cost of equipment and complexity of application.



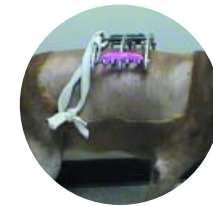
Circular fixators are gaining in popularity. They originated in Siberia with Dr. Ilizarov, who discovered that fine-tensioned intersecting wires connected by an external framework of rings and threaded rods could be used to repair fractures and to generate new bone via distraction. Circular fixators can be used on bones distal to the elbow and stifle. They are ideal for complex limb deformity correction and immediate juxta-articular fractures with minimal bone for implant placement. No other fix-

ation system can compare to the utility of a circular fixator near the joint surface.



Hybrid external skeletal fixators use a single ring with tensioned wires connected to one or more side-bars via standard fixation pins. They combine the advantage of juxta-

articular application of circular fixators with the ease of application of traditional fixators. Hybrid frames also can be applied to the humerus and femur with a single ring at the stifle or elbow level. They are best used for juxta-articular fractures or acute (no distraction) angular limb deformity correction.



A variant of hybrid fixation includes external skeletal fixation of spinal fractures using spinal arches and threaded rods.



Hinged external skeletal fixators are useful primarily when a joint requires ligamentous stabilization without the rigid limitation of normal motion that is typical of traditional transarticular fixators. Primary indications include stifle and hock dislocations with complex ligamentous injuries with or without degloving wounds. A major benefit of hinged fixators is that they retain the joint motion that is critical to cartilage health while also allowing ligament healing and treatment of open wounds.





Specialist Spotlight:

Dog's Eye View: Treatment of Canine Cataracts

by Margaret Foss, DVM, Diplomate ACVO, Veterinary Ophthalmology Services of Northeast Ohio

Cataracts are among the most common causes of vision problems in dogs. All ages and breeds can be affected, but certain breeds are more likely to experience cataracts. Surgery is currently the only treatment option. Metropolitan Veterinary Referral Group is able to provide the services of myself and Dr. Ellen Belknap, of Veterinary Ophthalmology Services of Northeast Ohio back to health.

Causes of Cataracts
In most dogs, cataracts are inherited. Common breeds affected by cataracts include Bichon Frise, Toy Poodles, Cocker Spaniels, Boston Terriers, Labrador Retrievers and Golden Retrievers. Other causes include eye injuries, uveitis and, in rare cases, nutrition. Diabetes is the most common disease associated with cataracts.

Appearance and Progression
The appearance of a cataractous lens varies greatly. There are five stages of cataracts.



A mature cataract.

1. **Incipient - Focal**
2. **Immature - Partial involvement**
3. **Mature - Total involvement**
4. **Hyper mature - Obvious degenerative changes of the lens**
5. **Morgagnian - All of the cortical material has liquefied and the solid nucleus drops ventrally in the lens capsular bag**

The progression of cataracts also varies. Some develop slowly and others, such as those that are secondary to diabetes, can progress rapidly. They can develop in one or both eyes.

Evaluation, Timing and Candidacy
It is never too early to send a patient with cataracts to Metropolitan Veterinary Hospital to be evaluated. If it is too early for surgery, the patient will be carefully monitored until surgery becomes necessary. Prior to considering surgery, the patient's systemic health will be evaluated. The two most common issues to address are diabetes and dental disease. The diabetes should

be well-controlled and the teeth may need to be cleaned. The patient's retinal health also will be evaluated. This involves an electroretinogram (ERG) or, if the retina cannot be evaluated, an ocular ultrasound. Owners will be informed of potential complications related to cataract surgery, the two most serious being glaucoma and retinal detachment.

Cataract Surgery with Artificial Lenses



Dr. Foss (right) performs a phacoemulsification surgery on a cataract patient.

Patients are admitted one day prior to surgery and are monitored closely until the day after surgery. Cataracts are removed by a phacoemulsification technique. A small corneal incision is made and a portion of the anterior lens capsule is removed, allowing the ultrasonic waves of the phacoemulsification machine to break up the cataract with simultaneous irrigation and aspiration of the lens fragments. With the cataract successfully removed, in



Artificial lens implant after cataract surgery.

the majority of cases an intraocular lens (IOL) is implanted. This results in the best visual performance for the dog. The primary possible complication of implanting an IOL is the formation of posterior capsular opacities. This is minimized by use of topical anti-inflammatory agents, which are reduced gradually as dictated by the patient's post-surgical response. Rechecks of the patient are scheduled at one, three, six, 12, and 24 weeks. After six months, yearly examinations are recommended.

By diagnosing and treating the condition early, this is a very successful elective surgery for our canine patients. If you have any questions regarding cataracts or cataract surgery, please call the hospital to speak with us.

Case Study

Alomar and the Pacemaker

by Lori S. Hitchcock, DVM, Diplomate ACVIM (Cardiology), Ohio Veterinary Cardiology

This is the first in an occasional series of case studies that highlight the capabilities of MVRG and our state-of-the-art facility, and demonstrate how our cooperation with other professionals has benefited patients.

On Sunday, March 5, Dr. Dean at WestPark Animal Hospital evaluated Alomar, a five-year-old chocolate Labrador, who had begun experiencing episodes of collapse the previous night. Alomar had been healthy prior to the complaint, with no significant medical history.

Dr. Dean detected a slow and irregular heart-beat with long pauses. An electrocardiogram (ECG) showed third-degree atrioventricular block (third-degree AVB) with an irregular ventricular escape rhythm. Ventricular rate ranged from zero to 50 bpm, with an atrial rate of 140 bpm.

The day before his collapse, Alomar had been crated in an area near a freshly painted basement. However, Animal Poison Control indicated that exposure to paint fumes was not a likely cause of the arrhythmia. Dr. Dean then called MVH.

Dr. Amanda Conkling took Dr. Dean's call and immediately paged me, as I was the cardiologist on call for Ohio Veterinary Cardiology. Dr. Dean was advised to administer atropine or glycopyrrolate and send Alomar over.

Third-degree AVB most commonly occurs due to degeneration of the specialized conducting cells in the AV node. Animals usually present for syncope, though occasionally animals with a stable but slow escape rhythm will develop congestive heart failure. Sudden death is common.

The treatment of choice is a cardiac pacemaker. Pacemaker leads may be implanted either epicardially (lead attached to the outside of the left ventricle) or endocardially (lead positioned on the inside surface of the right ventricle). In dogs, transvenous implantation and endocardial lead placement requiring

fluoroscopy is preferred because it is less invasive with fewer complications.

Alomar suffered three syncopal episodes during the trip from WestPark. He was immediately started on a dopamine drip upon arrival at MVH. Pre-operative work-up included thoracic radiographs, CBC, biochemical profile, echocardiogram and continuous ECG monitoring. Due to moderate elevation of ALT on his blood work, an abdominal ultrasound was performed prior to surgery by Dr. Marcia Carothers of AVIMP. It was found to be within normal limits.

No complicating disease processes were identified, so Alomar was taken to surgery. An epinephrine drip was initiated prior to anesthesia. Alomar was induced with propofol and maintained on a propofol drip and 100 percent oxygen with a local block over the site of the jugular incision. The right jugular vein was isolated, but Alomar developed asystole before the lead could be introduced into the vein. Dr. Susan Simmerson began chest compressions and Dr. Conkling administered bolus epinephrine while I placed the lead with fluoroscopic guidance. Once the lead had



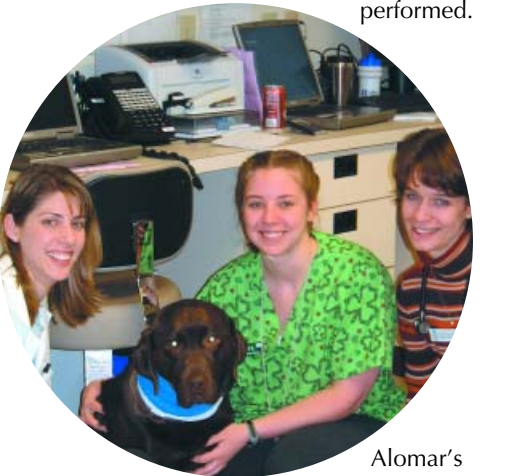
been placed, Alomar's rhythm was controlled by a temporary pacemaker (donated by Medtronics) while a permanent generator was implanted.

Alomar was released two days after surgery. At his recheck one week later, he was doing well and his pacemaker was functioning appropriately.

Alomar's prognosis is excellent. From now on, he will need to wear a harness rather than a neck collar and can never have venipuncture in his right jugular vein. Because of potential interference, he can no longer be contained with an invisible fence. Lead dislodgement is the greatest short-term risk. Infection of the pacemaker is rare, but can be catastrophic.

Any future infection that could result in bacteremia should be treated promptly with appropriate antibiotics.

Pacemaker rechecks are scheduled at suture removal, one month later, and then every three months during the first year. Thereafter, the pacemaker is checked every six months for life. Myocardial failure can occur as a long-term sequela of third-degree AVB, so yearly echocardiograms are performed.



Alomar's pacemaker battery life is estimated at 100 months. When it fails, the permanent generator can be swapped out. Routine veterinary care will continue through Alomar's regular veterinarian, Dr. Bob Litkovitz of Gateway Animal Clinic.

Alomar's case demonstrates how a patient's regular veterinarian, the local emergency clinic, MVH emergency room, and the Metropolitan Veterinary Referral Group can work together for the good of the patient.

Practice Points

North Coast Bird and Exotic Specialties is pleased to announce expanded hours to better serve our referring veterinarians and their clients. Appointments are now being taken Monday through Saturday. As always, we offer 24-hour avian/exotic emergency services seven days per week, overseen by our North Coast staff. We also have expanded our hospitalization and treatment areas to better serve our patients. We offer a full range of diagnostic, medical, surgical, laparoscopic and hospitalization services. To reach the practice, call 1.877.NC.XOTIC (1.877.629.6842) or 330.666.2976.

Akron Veterinary Internal Medicine/Oncology Practice is adding a new internist. Dr. Sarah Perdion is originally from Northeast Ohio and is 1998 graduate of Ohio State University. She completed a small animal internship and is in her third year as a resident at MedVet in Columbus. Her interest areas include hematology, nephrology, gastroenterology and neurology. She will be joining the practice in August.

Just a reminder: the ACVIM annual meeting is May 31 to June 3, 2006. Dr. Gamblin will be staying behind to cover for Dr. Carothers and Dr. Noble. To reach AVIMP, call 330.670.2351.

Northeast Ohio Internal Medicine Associates' Dr. Maren Jennings and Dr. Lynn Turner are board-certified in internal medicine, each with her own special interests. Dr. Jennings emphasizes feline patients with diabetes, hyperthyroidism, intestinal disease, pancreatitis, lymphoma and renal disorders. She also focuses on diagnosis and long-term management of liver disease. Dr. Turner is interested in patients with cancer, blood disorders, endocrinopathies, kidney disease, intestinal disorders, infectious disease and neuromuscular disorders. She can work with your referral dermatologists and ophthalmologists on the systemic manifestations of skin and eye disease. Please call us to discuss your patients that require special procedures such as endoscopy, ultrasound, bone marrow aspirate, spinal tap, contrast procedures and others. The practice can be reached at 330.670.2355.

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