In dogs weighing less than 3 kg, fractures of the distal third of the radius and ulna are relatively common. In most cases it occurs after jumping or falling from a height (often out of the owners arms). Historically, a complication rate of up to 80-85% has been documented with delayed union, malunion and nonunion being more common than in larger breeds. These fractures pose a challenge due to the small size of the radius. There is little bone overlap at the fracture site and the distal fragment typically involves only 15-37% of the radial length which limits implant selection. Healing is also compromised by the decreased intraosseous blood supply and minimal extraosseus blood supply (due to the small amount of soft tissue covering) seen in toy and small breed dogs.
Affected breeds include Chihuahuas, Miniature Pinschers, Pomeranians, Yorkshire terriers, toy poodles and Italian Greyhounds. Patients are usually 1-2 years of age. There is concern that there is an inherent weakness in the radius and ulna of these breeds, as some patients will be bilaterally affected. The fractures are typically transverse or short oblique.

External coaptation, intramedullary pins, external fixators and bone plates have been used to repair fractures of the radius and ulna. External coaptation is not recommended for toy breed dogs. In one study, 83% of toy patients treated with a cast had a serious complication including malalignment or non-union. Intramedullary pinning is not recommended for radial fractures as there isn’t a good entry point for the pin, the pin cannot counteract rotational forces and the size of the pin is limited by the medullary canal and, therefore, is not strong enough. This is particularly problematic in toy breed dogs as they have little medullary canal. In one study, IM pinning had an 80% complication rate.

Open or closed reduction with internal or external fixation is recommended. Circular external fixators and fixators with PMMA connecting bars have been used successfully. The distal fragment can typically accept 2 pins or wires. External fixators have the advantage of staged removal which allows dynamization of the bone during healing. In addition, the implants do not interfere with the extensor tendons reducing the risk of reduced carpal flexion following surgery. Overall, the outcome is good, however, external fixators are more inconvenient for owners and there is the need for a relatively long period of exercise restriction (19 weeks in one study). Complications include pin loosening causing lameness and possible instability, pin tract infections, malalignment and, rarely, delayed or non-unions.

Open reduction and internal fixation with a mini-plate system is the most common repair. Internal fixation has the benefit of allowing more accurate fracture alignment. The advent of mini plate systems has allowed treatment of very small patients improving surgical outcome. 1.5 and 2.0 DCP are most commonly used. 2.0 DCP are available in 1 and 1.5 mm thicknesses. There are also 1.5/2.0 and 2.0/2.7 veterinary cuttable plates. For very distal fractures, a veterinary mini-T plate can be used allowing for 2 to 3 screws in the distal fragment. The plate is typically placed on the dorsal aspect of the bone, however, in some cases a medial approach may allow for better bone purchase. Due to the small contact surface, perfect alignment is important. Careful plate application is also very important as there is little room for error. Following surgery, exercise is limited to on-leash activity and jumping is not permitted until the bone has healed (typically 8-12 weeks). The advantage of internal fixation with a plate includes early weight-bearing. In one study, early weight-bearing was documented to speed-up revascularization of the fracture site.

Internal fixation has also been used successfully in patients with nonunions. Fibrous tissue is resected from the fracture site, the medullary canal is opened and a cancellous bone graft is placed. Stable fixation is paramount to success. For malunions, a wedge or oblique osteotomy and plate fixation or external fixator are used.
Radial Fx Toy Breeds (continued)

Complications with plate fixation include osteopenia, skin erosions over the plate, thermal conduction, reduced carpal flexion and synostosis between the radius and ulna. Osteopenia and resorption of the ulna can occur due to the strength of the plate relative to the bone, causing stress protection. This has become less common with the smaller and thinner plates now available for our veterinary patients. Nonetheless, osteopenia should be monitored with radiographs following surgery. It is typically transient, however, if there are any concerns, destabilization of the repair may be needed. Removal of all implants are rarely performed due to the risk of fracture through a screw hole. Instead, the repair can be dynamized by removing all screws but the most proximal and distal screws. Cancellous bone graft is placed in the screw holes and exercise is restricted for 4 weeks while the screw holes fill in.

Studies have shown good to excellent results when the mini dynamic compression plates are used in toy and small breed dogs and the risk of non-union or delayed union is no different than with larger patients.

Did you know that scil Vet Novations carries a large variety of orthopedic implants from pins to plates?

We carry three starter kits by Aesculap that will get you going with a great selection of instruments and implants.

The mini fragment plating kit is best suited for cats to small dogs and the small/large kit works well for medium to large sized dogs

The Set Wires and Cerclages kit has a great variety of k-wires and cerclage wires along with applicable instrumentation.

It’s Our Anniversary!
And we’re celebrating all year long!

scil Vet Novations is proud to be celebrating our 10 year anniversary!

So how are we celebrating? With an entire year of promotions for our customers. Look for our up-coming promotion “add up the savings” which will be the perfect time to treat your clinic to the new equipment you’ve been planning for. The best part is, the more you buy, the more you save.

Be sure to check our website and Facebook page all year long to find out how you can join in the celebration.
We recently asked our customers to share with us why they love their Vet abc and Vet abc plus hematology analyzers. Here’s what they had to say:

"The results are so quick and reliable. It's great to be able to offer pre-anesthetic testing the day of surgery for elective procedures and when sick animals are seen we can have the results before the owner has left the building."-Departure Bay Veterinary Hospital

"The scil Vet abc is a simple, user friendly machine. It uses very little sample and processes results in record time. I also appreciate how up-to-date the machine is with industry standards."-Full Circle Vets

"The vet abc is easy to use, and so fast our patients have results in less time than it took to draw the blood! It's fantastic!"-Truro Veterinary Hospital

"There are many reasons. It provides quick accurate results in a timely manner. This in turn gives us confidence to proceed with anesthesia or diagnose an animals illness. In the end it allows us to provide great care to our patience and make there "people" happy."-Fundy veterinarians

"Very easy to install and love the fact that we get results immediately. Very simple maintenance program and Vet Novations staff always very helpful if and when a problem occurs"-Lawrence Vet Clinic

"Reliable results can be obtained from difficult blood samples (i.e. Lipemic or hemolized)"-Leduc Animal Clinic

"Our ABC machine is very dependable with easy to read results. We're very happy that a small sample size is required especially when it needs to be obtained from a fractious cat. The machine is very low maintenance and user-friendly we found technical support very helpful and considerate for the occasional times we have needed assistance."-Westmoreland Animal Clinic

"because we receive rapid accurate results which is especially helpful for critical cases. We love how easy and reliable it is. Its ease-of-use is extremely helpful in training new team members. We also love that the results are easily integrated into our Avimark medical history files for future reference and medical history archiving"-Petroglyph Animal Hospital

"It gives us results rapidly, while the client is waiting, and allows us to formulate a treatment plan on the spot. Those results are also consistently accurate when compared to controls run at outside labs."-Selkirk Vet Hospital