

**GROWTH PLATE FRACTURES:**

**When a puppy or kitten bone breaks, it commonly happens at the growth plate.**



**Overview—“I don’t understand what a growth plate fracture is; please help me understand the condition and the treatment.”**

The bones of the legs grow and lengthen from two general locations—the top of the bone and the bottom of the bone. These parts of the bones are called “growth plates”/physes (multiple; *(fi-sees)* or a “growth plate” /physis for just one (*(fi-siss)*). These growth plates stay “open” and producing bone length until a dog or cat (or human for the matter!) stops growing and achieves an appropriate genetic size. Even though they are absolutely necessary for normal bone development, they are in fact weak spots in the bones. Once mature, those weak spots go away, but until that time, we commonly see injured puppies and kittens break their bones in these locations specifically.

Because these fractures are at the end of the bones and involve very small pieces of bone and may involve the joints, it is most common that the fractures are best served by surgical repair and stabilization.

**“Why is this procedure being recommended for my pet?”**

Growth plates prefer to be lined up perfectly; they produce the straightest bones that way. Surgically putting the growth plate fracture back to near normal anatomic position and making it stay that way until healed, will generally result in the best functional and cosmetic leg after a fracture. For the type of growth plate fractures that have a crack right into the joint, it is especially important to get normal anatomic position of the joint to minimize long term arthritis and joint dysfunction.

Surgical stabilization of a growth plate fracture usually involves straight, smooth pins to “tack” the growth plate back to its homebase. It is possible to tack it back too tightly if we use screws with threads; this prevents ongoing growth and premature closure of the plate. Instead the smooth pins allow the growth to slide along the pins and continue making the bone.

**“What options do I have to treat my pet’s injury?”**

The answer to this question depends on both the fracture itself and the age of the patient. If the patient is very young and the fracture is not displaced from its homebase position too much, we may just advise that the limb be re-xrayed in seven days to see if it has changed or moved out of position. If it has not moved, another xray in seven days will confirm the growth plate does not need surgical repair in this young pet. As the patient increases in age, we are less and less likely to recommend this conservative approach because the fracture will stay loose and at risk for moving out of place for too long.

In older puppies and kittens, if the fracture is not too displaced from its homebase position, and if the fracture location is suitable to accept a splint, that may be the best treatment. We generally only need 2-3 weeks of stability to allow these growth plate fractures to heal, and most patients (and their families) can tolerate a splint for that length of time without complications.

With very out-of-place fractures and in some bones, just putting a splint on will not result in a good outcome. Things will technically heal, but they will heal in a bad or non-functional way. In these cases, we recommend surgical pinning. In surgery, we are able to put the pieces back in their homebase position and make them stay there with small metal pins that “tack” things back in place long enough for the growth plate fracture to heal.

**“What postoperative complications do I need to know and understand when considering this surgery?”**

Significant postop complications include migration of the metal pins from their surgical location. Usually this happens after everything is healed, and we can remove them with a simple procedure under brief anesthesia. This is common in these young patients because the bone is very soft, and the metal pins are smooth and can slide out of the soft bone. If a patient is too rambunctious after surgery and moves around too much, this movement of pins can happen before healing is done; this situation requires re-operation to put things back as they were originally.

**“Are there situations when the surgical outcome is not what we hoped it would be?”**

Growth plates do not like to be disturbed in their growth. The cells are fragile and only have a brief window of time to get their work done. Trauma to these cells will cause them to die and growth will stop. Trauma comes in the form of the original injury that created the fracture, surgical trauma of putting the pieces back together, and postop trauma of too much activity on the healing growth plate. When these cells quit growing before they should, we call this “*premature closure of the growth plate*”. In older puppies and kittens, this may not cause any significant problems. In younger patients, premature closure can result in a shorter leg or other problems. There are no simple ways to prevent or treat this when it develops, but more involved surgery procedures can help lengthen legs in some patients.

An asymmetric closure of the growth plate is often more problematic. This is when only a portion of the growth plate closes early, and the other portion keeps growing. A crooked bone results. Since growth plates are at the end of bones near joints, this usually creates joints that grow at odd angles. Again, the younger patients have more of a problem with this outcome because growth is happening for a longer period of time and bigger abnormalities are created. Fixing these abnormalities can be simple or complex, but the KEY is catching them early. *At the first sign of abnormal angles or curvature* (often only one month into the healing process), please alert your veterinarian and surgeon. We can often work with the continued growth to correct these curvatures.

**“How is my pet’s life and lifestyle likely to change after this procedure?”**

Once a growth plate heals, if it is happy and continues to grow, the vast majority of patients never look back. They can expect a normal lifestyle.

**“Are there things I can do to prepare myself, my home and/or my pet for this procedure?”**

After the injury and before the surgery, it is often strongly recommended to have the limb splinted to protect the injured bone pieces from further damage. These small pieces are soft and the important cells of the growth plate are fragile. In bone locations that will accept a splint, your veterinarian will help craft a splint that will work. Often this requires light sedation to achieve, since broken bones hurt and puppies/kittens are always squirmy.

As mentioned before, doing “too much” on these repaired fractures can cause problems. Puppies and kittens will act as if nothing has happened to them within two days! Keeping them less active is very important and may require the use of crates, baby playpens, isolation rooms, or medications to reduce their excitement.

**Outpatient surgery and anesthesia** can be uncomfortable, painful, disorienting, and frustrating experiences for animals; watching your pet work through the early postoperative period and recover from anesthesia and pain medications can be worrisome, scary and frustrating for pet owners. The vast majority of the time this period of difficulty is brief, and *your pet is actually more comfortable and secure at home with you*. Sometimes it doesn't feel like that at two in the morning when your pet is anxious and not consolable, and you are unsure of what to do. You always have the option of transporting your pet to a 24-hour veterinary facility postoperatively. If you do not want to have your pet home in the first few days postoperatively, please advise your primary care veterinary staff. They will provide contact information for a local 24-hour veterinary facility and help get an estimate for the ongoing care.

It is important that you have proper expectations about this procedure; your experience and your pet's outcome will benefit greatly. Please discuss this information with your veterinarian when working through the decision-making process regarding **Growth Plate Fractures**.

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