

# Tibial Growth Plate Fractures

## *Surgery Service*



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### Locations

#### **Auburn Hills**

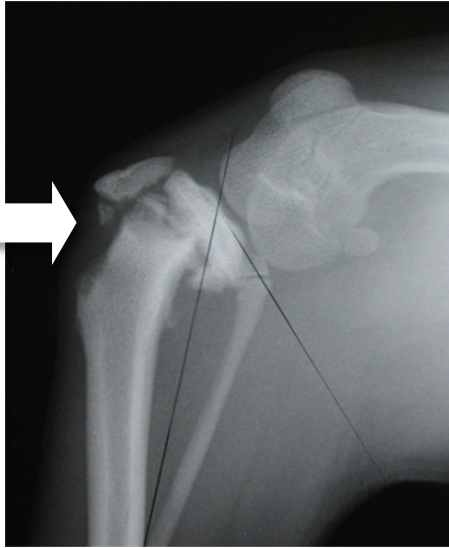
3412 E. Walton Blvd.  
(West of Squirrel Rd.)  
(248) 371-3713

#### **Grand Rapids**

1425 Michigan St. NE  
(East of Fuller Rd.)  
(616) 284-5300

#### **MVS Southfield**

29080 Inkster Rd.  
(North of 12 Mile Rd.)  
(248) 354-6660



### **Anatomy**

The hind limb has two bones between the knee and the ankle joint: the tibia and fibula bones. The tibia is the larger weight-supporting bone, whereas the fibula bone supports minimal weight. Puppies have much softer bones than adults; therefore fractures occur more often in younger dogs. The top and bottom of the tibia bones have a very soft region called the growth plate from which the bone grows. This area is particularly prone to developing a fracture until the growth plate has closed (fused) at 8 to 10 months of age.

### **Cause of fracture**

In small breed dogs, landing on the hind limb from a fall, getting the limb stuck in a hole while running or being stepped on are the most common causes of fracture of the tibia. Overall, growth plate fractures of the tibia bone are much more common in small breed dogs. In large breed dogs, usually substantial trauma is needed, such as being hit by a car.

### **Surgery**

For most fractures of the growth plate of the tibia, one or more pins and sometimes wires are used to repair the fracture. Surgical correction of a fracture of the proximal (top) end of the tibia is essential, as the top of the tibia bone tends to slide downwards. If left unrepaired, the increase in the tibial slope can cause the major stabilizing ligament within the knee called the cranial cruciate ligament to tear with time. In some cases, the bones will also heal in a mal aligned position.

Another growth plate fracture of the tibia involves only the tibial crest (arrow in photo on next page). The quadriceps muscles are attached to this piece of bone via the patellar ligament. The pull on the tibial crest causes this fracture to become displaced, which then displaces the kneecap as well. The result can be a poorly functioning knee as the pull of the quadriceps muscle becomes ineffective. Surgery is recommended with placement of at least one or more pins; frequently a wire is also added for additional support. Conservative management is usually not recommended for these cases, unless the fracture is minimally displaced. In



# Tibial Growth Plate Fractures Continued...

such cases, the pet must be kept in a cage or crate to minimize further displacement of the fracture. Weekly x-rays should be made to make sure that the fracture is not progressively separating.

The second type of growth plate fracture of the tibia is a distal (bottom end) tibial growth plate fracture. This type of fracture is just above the ankle (hock) joint and if left unrepaired frequently results in a bent limb (malalignment) after healing takes place. This type of fracture requires surgery and placement of one or two pins. A cast is usually also applied to the limb for additional support after the surgery for 3 to 5 weeks, depending on the age of the pet.

## Home care

After surgery, you can continue to give your pet a prescribed pain reliever to minimize discomfort. A cast may be placed on the limb for selected fractures and in some cases only a bandage is applied. It's also extremely important to limit your companion's activity and exercise level during the post-operative period. Detailed instructions will be given to you after the surgery. The surgeon will monitor the healing process with at least two follow-up exams. The first is scheduled at two weeks after the surgery. During the second exam, at three to five weeks after the surgery (depending on the age of the pet), radiographs will be made to evaluate the healing process.



## Results

Surgical repair of a fractured tibia offers multiple benefits including a faster recovery, earlier use of the limb after surgery, better chance to return to athletic activity and better range of motion of the joints above and below the fracture. Uncommon complications include infection, shifting of the fractures, breakage of the metal pins or wires and mal alignment of the limb after healing has taken place. Uncommonly, the limb will become twisted as the dog grows due to partial closure of one side of the damaged growth plate.



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# Tibial Growth Plate Fractures Continued...

## Assessment and recommendations

Patient: \_\_\_\_\_ Date: \_\_\_\_\_

### Treatment

- Surgery is recommended by an MVS surgeon
- No surgery is recommended and crate rest is recommended; please return for an assessment to us in \_\_\_\_\_ week(s).

### The following has been prescribed

- No medications or special diet are necessary at this time.
- Pain controlling medication: \_\_\_\_\_
- Nonsteroidal anti-inflammatory medication: \_\_\_\_\_
- Antibiotics: \_\_\_\_\_

### Exercise

- Confine your pet to the house other than very short leash walks necessary for bowel movements and urination
- Restrict exercise to leash walks 10 minutes twice daily
- A cast/bandage has been applied. Twice daily, please check for:
  - Swelling of toes (if there is no swelling the middle two toe nails will touch each other)
  - Cold toes – this may indicate poor circulation
  - Foul odor
  - Discharge seeping through the bandage
  - Increased lameness
  - Excessive licking or chewing at the bandage
  - Please note that a new bandage/cast will feel strange to your pet initially, but he/she will typically get used to it within 12 hours. If your pet continues to be uncomfortable or more lame after the bandage has been changed, please call us.

### Preparation for surgery

- Start fasting your companion at midnight before the surgery; water should not be withheld
- Pepcid AC 10 mg tablets: give \_\_\_\_\_ tablet(s) with water (use a syringe if needed) at 6 AM on the day of surgery

*Composed by Daniel A. Degner, DVM, DACVS  
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