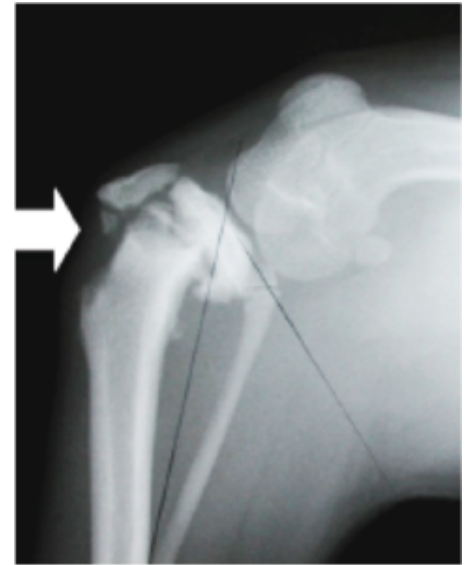


Tibial Growth Plate Fractures

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 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 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 malaligned position.



Another growth plate fracture of the tibia involves only the tibial crest (arrow in photo). 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 such cases, the pet must be kept in a cage or crate to minimize further displacement of the fracture.



The third 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 three to five weeks, depending on the age of the pet.

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 malalignment 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.