

BONE FRACTURES

Causes Of Fractures

Bone fractures are very common in pets and are the result of trauma or an inherent weakness in the bone.

Traumatic fractures comprise the majority of fractures seen by veterinarians. With trauma, healthy bone breaks due to abnormal stresses placed on the bone—such as being hit by a vehicle, being kicked or stepped on, falling from a height, or being shot, etc.

Pathologic fractures describe fractures that occur to bone weakened from a disease process such as cancer or infection. With pathologic fractures, mild trauma or even normal activity such as running down the stairs or jumping off a bed can cause enough force to fracture a leg. This is equivalent to an older person (especially an older woman with osteoporosis) who has a short fall yet ends up with a fractured hip or pelvis.

It is very important to distinguish between traumatic and pathologic fractures before undergoing fracture repair

Types of Fractures- terms veterinarians use to describe fractures which include

- **Open fractures** are those in which the skin is broken and bone is exposed.
- **Closed fractures** are those when the skin is intact.
- **Simple fractures** mean there is only one fracture line (broken in only one place).
- **Comminuted fractures** are those with several bone fragments and fracture lines evident—often the bones are shattered into many small pieces.
- **Displaced fracture** means that the ends of the fracture are no longer in alignment but have shifted due to the pull of the muscle attachments.
- **Physeal or Salter-Harris fractures** are those that involve the growth plate or physis in young growing animals.

Fractures are painful! Owners must be careful handling and moving their pets so they do not get bitten by accident. Even the most gentle loyal pet can bite when they are extremely painful from a fracture. It is best to try to maneuver medium and large sized dogs onto a large sheet or blanket and use it like a stretcher to carry the injured dog. Smaller dogs, cats, and other pets should be placed in a carrier for transport.

All pets with fractures should be examined by a veterinarian who will then either recommend surgical repair, splint or cast application, or strict cage rest depending on the type of fracture, age of the dog, and the owner's financial situation. In most cases, radiographs (X-rays) will be needed to fully evaluate the fracture. Closed but displaced fractures are more likely to become open fractures, for the sharp ends of the fracture fragment can easily puncture through and tear the skin. It is important to try to immobilize closed fractures before they become open fractures.

Signs of a Fracture

- History of trauma
- Limping or non-weight bearing on a leg
- Non-weight bearing hind end (pelvic fracture)
- Swollen painful area or leg
- Uneven shoulders, pelvis, leg length
- Crepitus in area (bone grinding on bone)
- Open wound with bone sticking out

Diagnosis

The veterinarian will perform a thorough examination of the pet, including the bones and joints if the animal will permit. If the patient is mildly lame, he/she should be observed walking to evaluate the location and severity of the lameness (limp). In the majority of cases, the doctor will have to take radiographs of the suspected area to get a full appreciation for the fracture and to eliminate a joint luxation (dislocation) as the cause of lameness. Luxations can present very similar to closed fractures. Additionally radiographs are used by the surgeons to determine the type of fracture repair warranted and to plan the surgical approach as to where to make the surgical incision in order to gain the best exposure of the fracture for the best repair.

Fracture Repair- Medical vs Surgical management

Fracture management is entirely based on the type of fracture, the severity, the duration of the fracture, the age of the animal, the animals intended use, and ultimately, the owner's financial commitment.

- Strict cage or box rest- for minor minimally displaced fractures of the pelvis
- Splints and cast- best used for simple non or minimally displaced fractures of the lower limbs
- Surgical fixation is the best choice for most comminuted, open, or physeal fractures of the limbs, pelvis, scapula (shoulder blade) or vertebrae
- If surgery is not an option, many of the more complicated fractures of the distal limbs (below the elbow or the knee) may heal adequately with a cast or series of splints though there may be a bow or odd angle to the limb.

Types of Surgical Repairs- veterinarians primarily use pins, bone plates, wires, screws, and/or external skeletal fixater units.

- **External skeletal fixaters** are the systems that use pins placed through the bone and are attached to rods outside the leg that run parallel top the fractured leg.
- External skeletal fixaters are commonly used in human surgery to treat severely comminuted or crushed bone fractures.
- External fixaters however require extra care from the owner who must clean the pin- skin interface daily.
- **Bone plates**- are placed internally and hold the fracture together with bone screws.

- With bone plates, the skin is closed over the plate which is not seen except on radiographs.
- **Intermedullary pins (IM pins)**- are small rods that are inserted into the marrow cavity to line up and hold together the ends of the fractured bone.
- **Cerclage wires**- are small wires that are wrapped around the bone and hold fracture fragments in place.
- **K wires**- small wires that "tack on" fracture fragments.

Prognosis

Traumatic fractures-Fair to excellent depending on the type, location, and severity of the fracture for traumatic fractures. Open fractures are always carry a less favorable prognosis than closed fractures due to the risk of infection. Surgical internal fixation of fractures produces the best fracture repair results as compared with splint and cage rest methods.

Pathologic fractures usually heal poorly or not at all. Infected fracture sites heal with proliferative but weak bone and take much longer to heal even with aggressive antibiotic therapy. Fractures secondary to bone cancer will not heal and will not heal.

Prevention

Avoid situations where your animal can be hit by a vehicle. These are always accidents, but keeping your dog leashed around traffic greatly reduces the chance of being struck by an auto.