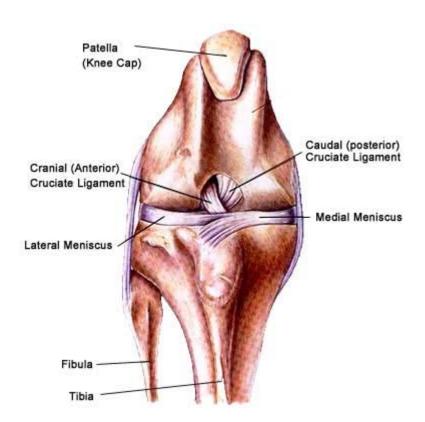
Cranial Cruciate Ligament Rupture in Dogs

The cruciate ligaments are tough fibrous bands that connect the distal femur (thigh bone) to the proximal tibia (shin bone). Two cruciate ligaments, the cranial (anterior) and the posterior cruciate ligaments, are found in the knee joint of dogs and cats (and most other domestic animals). These ligaments work like a hinge joint in the knee and are responsible for providing anterior-posterior stability to the knee joint.

Normal Knee Joint of a Dog

Rupture of the cranial cruciate ligament is rare in cats. It occurs frequently in overweight, middleand older-aged dogs. Certain dog breeds appear to be predisposed to cranial cruciate ligament rupture. Most commonly, the cocker spaniel and rottweiler are affected. The miniature and toy poodle, Lhasa apso, bichon frise, golden retriever, Labrador retriever, German shepherd and mastiff seem to be predisposed as well.

The normal knee joint works as a hinge, keeping the knee stable as it bends. Tearing of the cranial cruciate ligament causes instability of the knee joint and it ceases to function properly. Most cranial cruciate ligament tears in dogs occur gradually, resulting in a low-level lameness that may or nay not improve over time. After the ligament tears, inflammation occurs within the joint. Continued use and weight bearing by the dog often causes the ligament to rupture completely. Dogs that rupture one cruciate ligament have about a fifty percent chance of rupturing the other.



Normal Knee Joint of a Dog

Rupture of the cranial cruciate ligament in dogs can also occur acutely. Similar to cranial cruciate ligament rupture in humans, resulting from athletic injuries to the knee, dogs can tear this ligament by jumping up to catch a ball or Frisbee or by jumping out of a truck or off a porch.

Symptoms of Cranial Cruciate Ligament Rupture

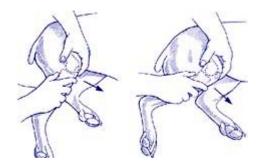
Symptoms usually include a history of acute rear leg lameness. The lameness can be mild, resolve, and then appear again. Some dogs are completely non-weight bearing on the affected leg.

Knee joint pain is usually a common symptom of cranial cruciate ligament rupture. The pain may be unapparent until someone accidentally manipulates the dog's leg. A nip or bite from a normally friendly dog is a good indication that he or she is in pain. The knee may appear and feel swollen and may sound crunchy when put through a series of flexion-extension manipulations.

Diagnosis of Cranial Cruciate Ligament Rupture

Diagnosis of cranial cruciate ligament rupture is usually made by a positive cranial drawer sign. In this test, the dog's knee is slightly bent and anterior pressure is applied to the distal femur while posterior pressure is applied to the proximal tibia. Sliding of the distal femur over the proximal tibia (positive drawer sign) indicates cranial cruciate ligament rupture. Often, with a chronic injury, the cranial drawer sign is less effective due some joint stabilization resulting from a build-up of scar tissue in the joint capsule.

A ruptured anterior cruciate ligament is not always an obvious condition. Careful manipulation and palpation of the knee is required for obtaining an accurate diagnosis. Often, heavy sedation or general anesthesia is required to conduct this examination



Veterinarian Testing for Signs of Cranial Cruciate Ligament Rupture

If left untreated, a torn anterior cruciate ligament can lead to degenerative joint disease (degenerative arthritis) of the knee. Approximately forty to fifty percent of ruptured anterior cruciate ligaments lead to injuries of the meniscus. A torn meniscus is often felt as a "click" when the knee joint is flexed and extended.

Surgery is the treatment of choice for a ruptured anterior cruciate ligament. Providing that arthritis has not significantly developed, most dogs have a good chance of recovering normal or almost normal function of the knee joint after surgery. Some small dogs; however, show signs of improvement with just rest and limited exercise.

Prognosis after surgery depends on several factors. Obese dogs tend to recover more slowly than dogs in good athletic condition. The longer the interval between injury to the knee and surgery, the more guarded the prognosis. This is due to scar tissue formation and arthritis.

Treatment Methods

Two treatments exist for CCR, surgical and non-surgical. Dogs weighing less than thirty pounds often do well without surgery. A period of six to eight weeks of strict rest is required. If the animal does not improve during this period, surgery is usually recommended.

Dogs weighing over 30 pounds are candidates for surgery. The principal of the surgery is to stabilize the femur on the tibia. There are two categories of surgery for repairing torn cranial cruciate ligaments - Intracapsular Stabilization and Extracapsular Stabilization.

Intracapsular stabilization method requires replacing the torn ligament with a natural or synthetic graft. Extracapsular stabilization does not involve replacing the torn ligament. Extracapsular stabilization is performed outside the joint and restores the function of the cruciate ligament rather than replacing the damaged ligament. Over the years, extracapsular stabilization has become the preferred method for repairing cranial cruciate ligament rupture in dogs.

Currently there are 3 extracapsular stabilization techniques that are commonly performed - Lateral Suture Technique, Fibular Head Transposition and Tibial Plateau Leveling Osteotomy (TPLO). Below are brief descriptions of each.

Lateral Suture Technique

Used on dogs weighing up to 70 pounds, this technique involves passing a suture around the knee joint in a configuration that restores the normal position of the femur on the tibia. The drawback with this technique is that the implant may rupture, leading to a thickening of tissue around the knee and development of arthritis.

Fibular Head Transposition

Fibular head transposition is an extracapsular repair technique that uses the lateral collateral ligament to stabilize the knee joint. After cranial transposition of the fibular head, the orientation of the lateral collateral ligament is redirected to resemble that of the cranial cruciate ligament. The surgical procedure involves cutting the attachments of the fibular head to the tibia and moving it forward to a point that the drawer sign has been eliminated.

<u>Tibial Plateau Leveling Osteotomy (TPLO)</u>

Tibial Plateau Leveling Osteotomy (TPLO) is based on the premise that any kind of replacement for the cruciate can never be as good as the original. Instead of trying to replace the damaged ligament, this technique changes the anatomy of the knee joint by eliminating the slope in the tibial plateau. The procedure requires the surgeon to cut the tibia and rotate it so it is level to the tibia plateau. The cut section of bone is then secured to the rest of the tibia by a custom plate and screws. Healing of the bone takes about two months and the result is a stable joint. This procedure is recommended for large dogs and can also be performed on small dogs. The outcome of this surgery generally yields excellent results.

Prevention

It is often very difficult to prevent tearing of the cranial cruciate ligament; however, there are some factors that can decrease its likelihood. Obesity is a predisposing factor and overweight dogs are more likely to be affected than lean and fit dogs. A good, regular exercise regime is just as important for dogs as it is for people and reduces the likelihood of joint, muscle and bone injuries.

Ruptured anterior cruciate ligament is a common injury of the dog's knee joint. Once diagnosed, your veterinarian will recommend the treatment that is best for your pet.

Copyright 2010 - VetNetwork