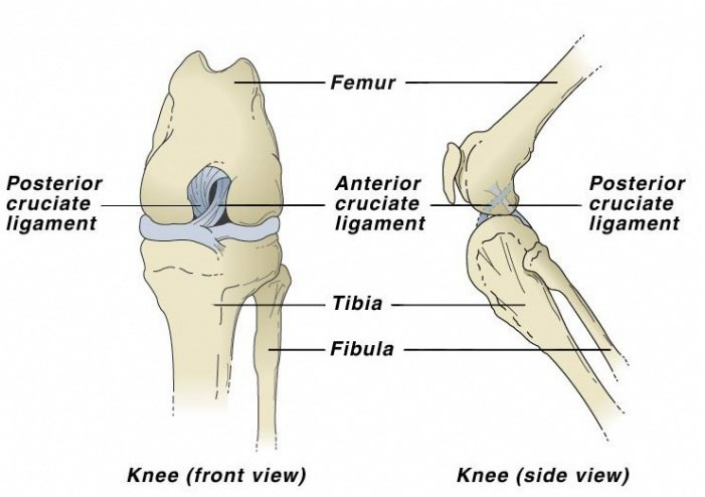
Cruciate Ligament Disease

Nicklin Way VETERINARY SURGERY

Introduction

There are two bands of fibrous tissue called the *cruciate ligaments* in each knee joint. They join the femur and tibia (the thigh bone and shine bone) together so that the knee works as a hinged joint. They are called cruciate ligaments because they "cross over" inside the knee joint. The cranial (anterior) cruciate ligament (interior) serves to limit the forwards movement of the tibia (the shin bone) relative to the femur (the thigh bone). It also serves to limit hyperextension (over straightening) of the knee and internal rotation (turning in) of the tibia.

The cranial cruciate ligament is very commonly injured in dogs and this causes instability of the knee and may lead to other problems such as meniscal (cartilage) injury and osteoarthritis. It is rare for the caudal cruciate ligament to be injured.



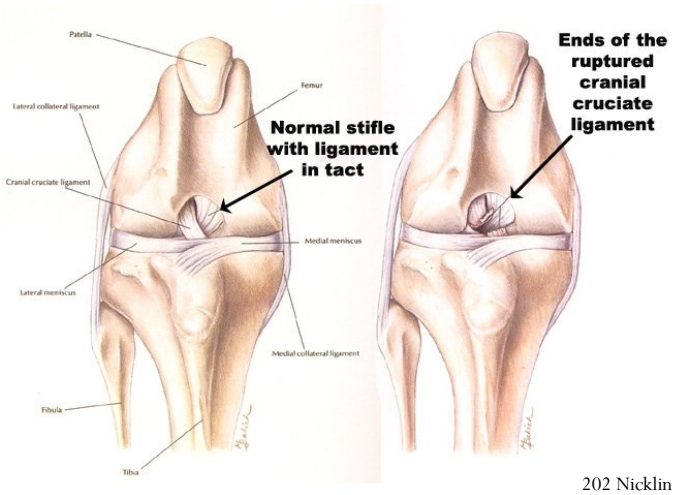
What sort of dogs are affected?

Although in people, cruciate ligament rupture usually occurs during sports injuries, for example, by skiers, soccer and rugby players, the situation in dogs is quite different. The cruciate ligament seems to weaken gradually in dogs, particularly in some larger breeds, and this means that the cruciate ligament may eventually rupture even during normal activity. Some large breed dogs can suffer cruciate ligament rupture from quite an early age (1-3 years) and often in both knees.

Certain breeds are predisposed (Labradors, Rottweilers, Boxers, Mastiffs and Staffordshire Bull Terriers) but any breed of dog can be affected. Obesity also increases the risk of cruciate ligament rupture as more weight causes increased pressure on all the joints and their ligaments

What causes cruciate ligament rupture?

There are numerous causes of cruciate ligament injury. Some dogs appear to suffer a type of early onset arthritis that erodes and weakens the ligaments within their joints prematurely. Others have poor conformation that puts undue strain on their cruciate ligaments. Examples would be Staffordshire Bull Terriers with bowed and externally rotated legs, and most large breed dogs with steep slopes at the top of their shin bones (called the tibial plateau angle). Other dogs have perfectly healthy ligaments and accidentally put tremendous strain on them while running at the beach or jumping for a ball at the park.



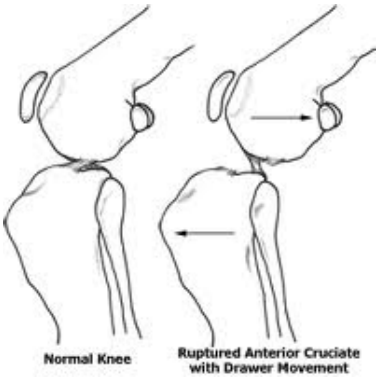
What are the signs of this condition?

Rupture of the cruciate ligament may occur suddenly or gradually, and this can be reflected in the appearance of the signs, which include lameness and stiffness of the knee. Full rupture of the cruciate ligament causes instability of the knee and this may lead to joint swelling and wasting (atrophy) of the muscles of the hindlimb, particularly the quadriceps muscle group. Dogs with cruciate ligament rupture often prefer to sit with the affected limb straightened out in front of them rather than tucked up; this is because they do not like to flex the knee.

How are these conditions diagnosed?

Diagnosis of cranial cruciate ligament rupture is based on manipulation of the knee joint (cranial draw test). This usually performed under general anaesthesia as it can be difficult to overcome muscle tone in a conscious patient and sometimes the instability is very subtle. Xrays are also useful. Although the ligament itself cannot be seen on xray, the assessment of arthritic change and elimination of other problems is important.

Once the cruciate ligament is ruptured, about 40-60% of knees will also develop injury to one of the cartilages of the knee. Osteoarthritis will develop in all knees with cruciate rupture, but may not cause problems for many months or years.



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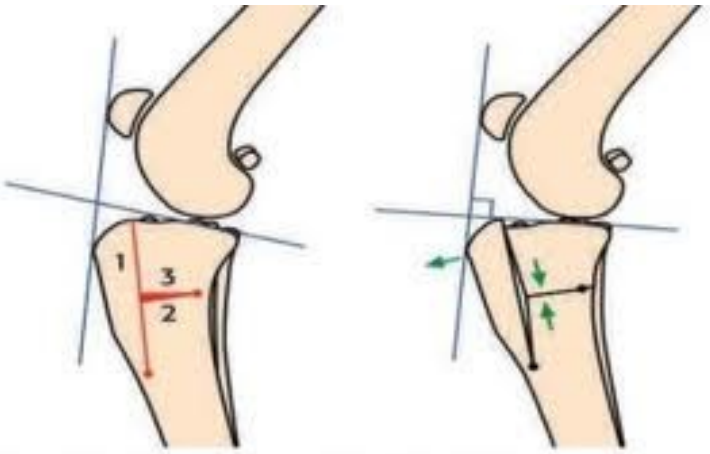
What can be done to treat the condition?
Treatment for cruciate ligament disease can broadly be classed as conservative and surgical. The actual choice of treatment will be based on the individual patient and together with the wishes and expectation of the owner.

With conservative management, there is no attempt to replace the function of the damaged ligament and it is attempted to enable the patient to make the best use of restricted function. This would include drugs to help alleviate the symptoms of pain and arthritis, weight and exercise control plus the use of physiotherapy and hydrotherapy (swimming). Conservative management is useful where surgery is not possible and where there are constraints on the owners' circumstances. However, it will rarely return a patient to full activity.

In almost all situations, surgery is the treatment of choice to stabilise the knee. There are many different surgical techniques for treating the condition and even specialty surgeons disagree regarding the best option. Pet owner and surgeon preference for a particular technique is an important factor. The two techniques performed at Nicklin Way Veterinary Surgery are:

- **Ligafibre extracapsular repair:** Aims to replace the function of the cruciate and passively stabilize the stifle joint. These involve placing a synthetic ligament on the outside of the joint capsule ("extra-capsular") to take the place of the missing cruciate ligament

- **Triple Tibial Osteotomy (TTO):** Recent surgical advances involve stabilising the stifle joint through dynamic means. In other words, altering the biomechanics of the joint so that the cranial cruciate ligament (CrCL) is no longer required and the joint is stabilised by the actions of actively contracting muscles. As a general rule, dogs over 20kg are best treated with this method.



From Veterinary Instrumentation, Sheffield, www.vetinst.com

In the long run, all joints with cruciate ligament rupture will develop some degree of osteoarthritis. However, for most dogs the response to surgery is good and the osteoarthritis does not seem to cause problems for years. The progression of the arthritis will vary from dog to dog.

Your veterinarian will discuss which option is best for your pet.