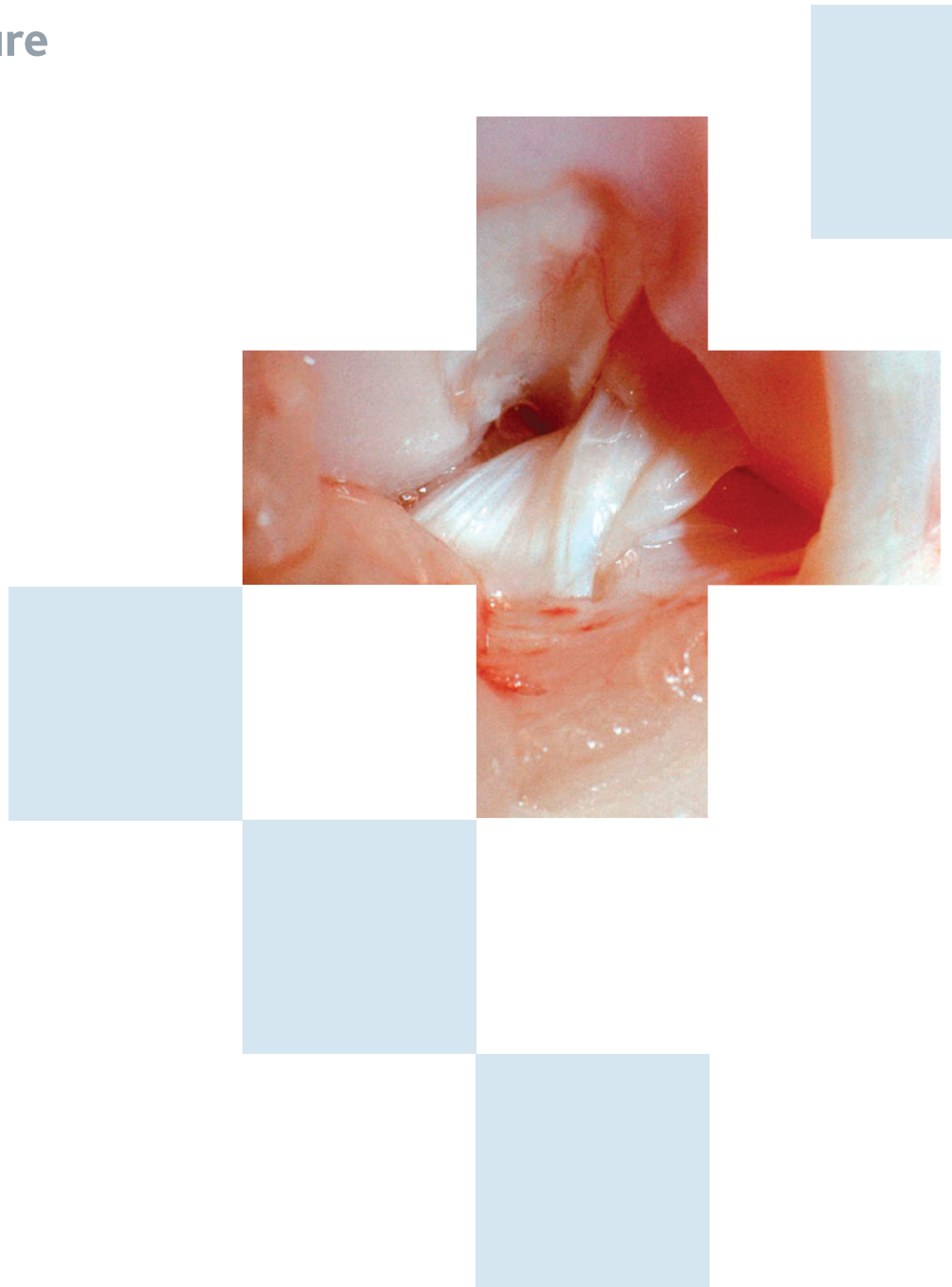
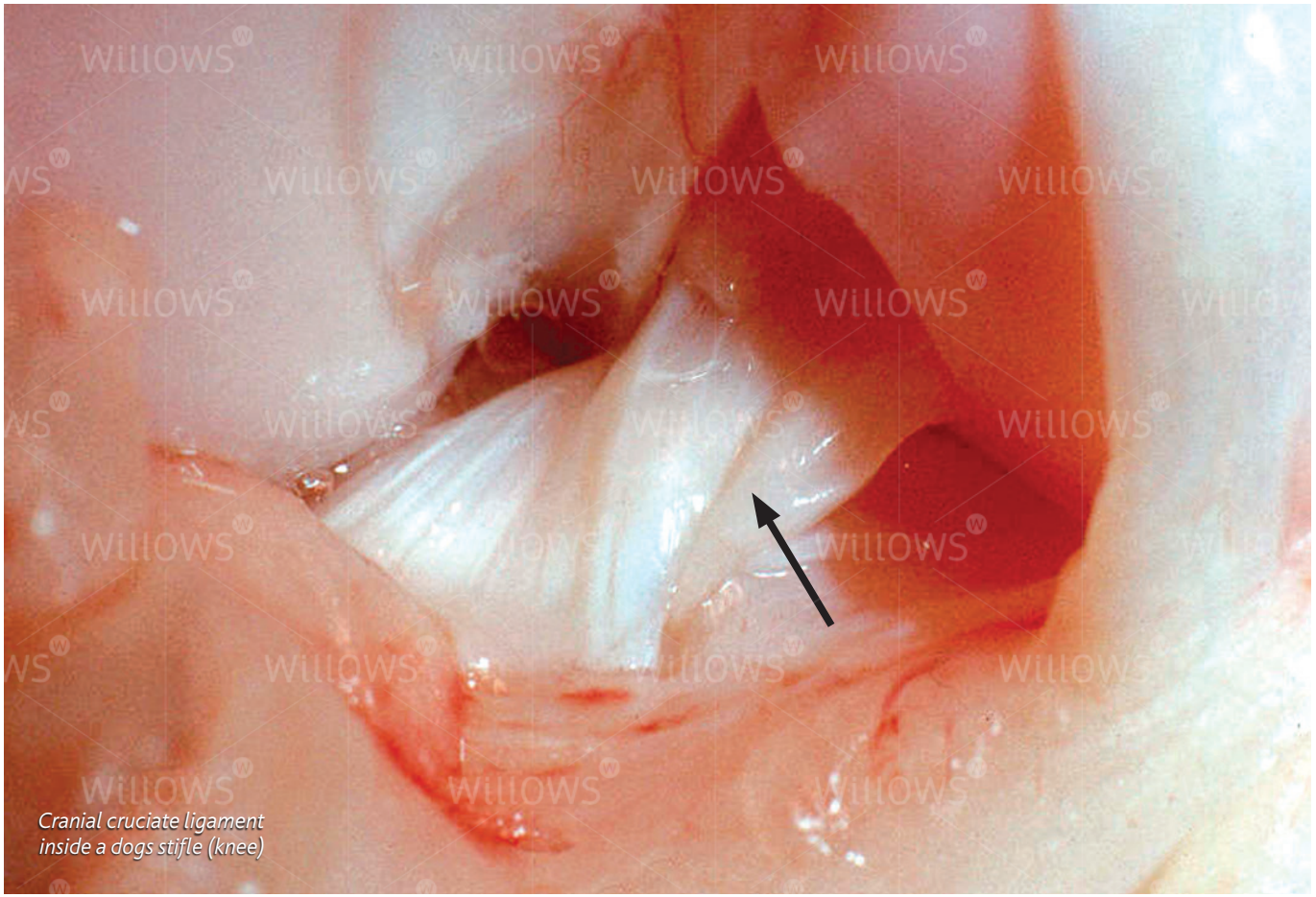


Specialist Referral Service  
Willows Information Sheets

# Cranial cruciate ligament rupture





*Cranial cruciate ligament  
inside a dogs stifle (knee)*

## Cranial cruciate ligament rupture

### What is the cranial cruciate ligament?

The cranial cruciate ligament (CCL) is an important ligament inside the knee (stifle) joints of dogs. In people it is referred to as the anterior cruciate ligament (ACL). The ligament plays an important role in stabilising the stifle during weight-bearing. It prevents the shin bone (tibia) moving forwards relative to the thigh bone (femur).

### Why does the cranial cruciate ligament rupture?

In dogs the cruciate ligament tends to undergo degenerative changes that weaken it prior to rupturing. This is in contrast to people, where rupture is often associated with an injury such as skiing or playing football. This important difference explains why treatment options in dogs are quite different to those in people.

The reason the cruciate ligament degenerates prior to rupturing is not clearly understood. Certain breeds, such as Labradors and Rottweilers, are much more commonly affected than others. This suggests there is an inherited component to the condition, possibly related to conformation or gait.

## Is cranial cruciate ligament rupture common in dogs?

Rupture of the CCL is the most common cause of hind limb lameness in dogs. It is a very common presentation in referral orthopaedic practice.

Large and giant breeds are particularly affected although any breed and size of dog can rupture their CCL. Some dogs can be affected before they are two years of age.

## Is cranial cruciate ligament rupture associated with any other stifle problems?

Rupture of the CCL is associated with the development of osteoarthritis within the stifle. This occurs in every case and is often evident by the time the dog is examined and X-rayed (radiographed). Osteoarthritis tends to be a progressive disorder and it is dubious whether treatment of the CCL rupture reduces or stops this progression.

Many dogs with CCL rupture tear their cartilages (or menisci) within their knees. This is similar to the situation in people. Torn cartilages can be very painful. The response to painkillers can often be poor. Surgery to remove the damaged section of cartilage is generally necessary.

Occasionally rupture of the CCL is associated with an abnormality of the shin bone (tibia). It is thought that the bone grows abnormally and this places abnormal forces on the ligament. The ligament subsequently degenerates, weakens and ruptures.

## What are the signs of cranial cruciate ligament rupture?

The signs of CCL rupture can be quite variable as rupture may be sudden and complete or gradual and partial. The key signs are hind limb lameness and stiffness. The latter is generally most evident after rest following exercise. Difficulty rising and jumping are common features in dogs with both knees affected. Occasionally 'clicking' noises may be heard.

## How is cranial cruciate ligament rupture diagnosed?

Examination may reveal muscle wastage (atrophy), especially over the front of the thigh (the quadriceps muscles). Thickening of the stifle is often palpable. Manipulation of the joint may enable the detection of instability. Flexion and extension of the joint may cause pain. In some cases palpation under sedation or light anaesthesia may be necessary to enable the detection of more subtle instability of the knee as occurs with partial rupture of the CCL.

Radiographs provide additional information, especially regarding the presence and severity of osteoarthritis. Specific views may be necessary to assess the angle of the top of the shin bone (the tibial plateau) prior to possible surgery.

In selected cases it may be necessary to take a sample of fluid (synovial fluid) from the knee and send it to a laboratory for analysis. This enables the detection of any inflammatory changes such as occur with infection and rheumatoid arthritis.

## How can cranial cruciate ligament rupture be treated?

Some dogs with CCL rupture can be managed satisfactorily without the need for surgery. The smaller the dog, the more likely it is that this approach will be successful. Exercise needs to be restricted. Hydrotherapy is often beneficial. Dogs that are overweight benefit from being placed on a diet. Tit-bits may need to be withdrawn and food portions reduced in size. Regular monitoring of weight may be necessary. Pain killers (anti-inflammatory drugs) may be indicated to make the dog more comfortable. Long-term drug therapy should be avoided if at all possible in view of potential side effects.

Many medium, large and giant breed dogs with CCL rupture benefit from surgery. The key types of surgery are **(1) CCL replacement** **(2) TPLO** and **(3) meniscal** (cartilage surgery).

### 1 CCL replacement surgery

The conventional treatment for CCL rupture in dogs has been to replace the ligament with either a graft or an artificial ligament. Graft replacement is commonly performed in people following anterior cruciate ligament rupture where, as previously mentioned, the cause of the rupture is generally injury. The long-term stability provided by grafts and artificial ligaments in large dogs with degenerative rupture of their ligaments is questionable. As a result the use of these replacement techniques is limited to specific circumstances.

The aftercare following CCL replacement surgery is very important. Exercise has to be restricted for many months. Hydrotherapy can be very helpful.

### 2 TPLO surgery (see also [TPLO surgery information sheet](#))

TPLO is the abbreviation for tibial plateau levelling osteotomy. It involves changing the angle of the top of the shin bone (the tibial plateau) by cutting the bone, rotating it, and stabilising it in a new position with a plate and screws.

Candidates for TPLO surgery are dogs with a ruptured cranial cruciate ligament that have persistent lameness and stifle joint instability. Young dogs and those with rupture of both of their ligaments are particularly good candidates. It is primarily performed in medium, large and giant breed dogs. Occasionally small breeds, particularly terriers, need a similar type of operation to correct an actual deformity of the tibia.

Exercise following TPLO surgery must be very restricted for the first few weeks until the soft tissues and cut bone heal. It must be

on a lead or harness to prevent strenuous activity, such as chasing a cat or squirrel. At other times confinement to a pen or a small room in the house is necessary. Jumping and climbing should be avoided. After a few weeks, exercise may be gradually increased in a controlled manner (still on a lead). Hydrotherapy may be recommended.

### 3 Meniscal (cartilage) surgery

Cartilage injury, as in people, can be a significant cause of pain and lameness. The damaged section needs to be removed (known as a partial menisectomy). This can be performed either by standard surgery which is often key-hole, or arthroscopically by using a camera.

Recovery after meniscal surgery is usually quick. Exercise generally needs to be restricted for a few weeks and then gradually increased.

### What is the outlook with cranial cruciate ligament rupture?

The outlook or prognosis with CCL rupture is quite variable. As mentioned previously some dogs, especially small ones, can be managed successfully with conservative treatment involving modification of exercise and weight. Many large dogs benefit from surgery to stabilise the joint or remove an injured cartilage. The more major procedures such as TPLO have potential complications. Unfortunately all dogs with CCL rupture develop osteoarthritis. This can result in permanent lameness and stiffness in some cases.

Those that fail to respond satisfactorily may necessitate salvage surgery, such as a total knee replacement (see also [total knee replacement information sheet](#)). The outcome of knee replacement surgery is generally good albeit there are potential complications.

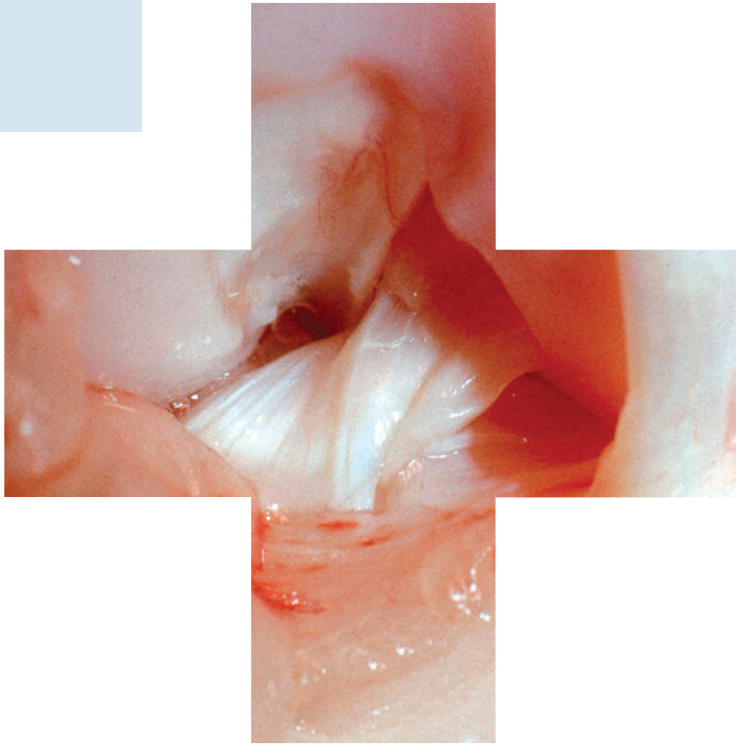


*X-ray of a dog's knee without arthritis*



*X-ray of a dog's knee with arthritis*

Specialist Referral Service  
[www.willows.uk.net](http://www.willows.uk.net)



The information contained is proprietary to Willows Veterinary Centre & Referral Service and may not be modified, reproduced, distributed or utilised in any manner in whole or in part, without the express prior written permission of Willows Veterinary Centre & Referral Service.