

CRUCIATE LIGAMENT RUPTURE





What is cruciate ligament rupture?

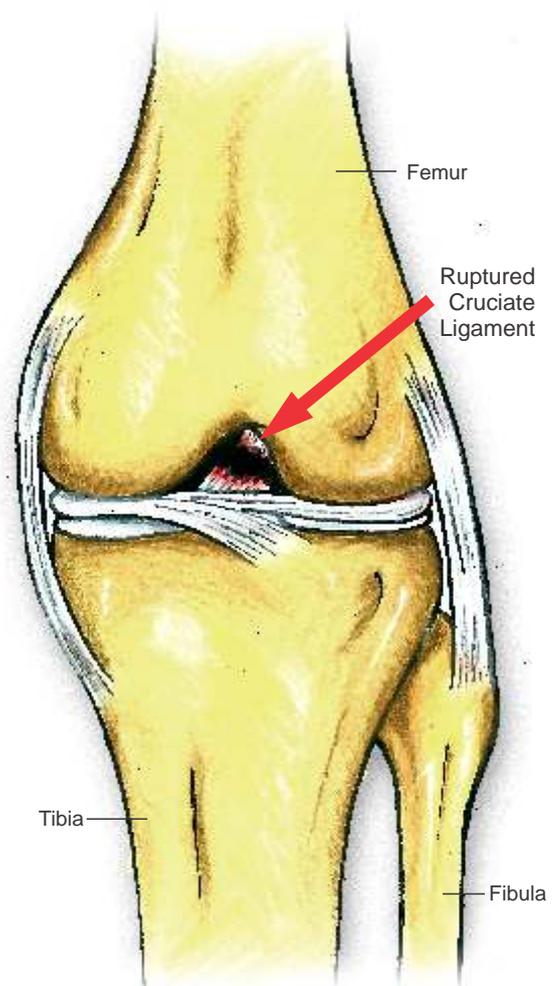
Hind limb lameness is often caused by rupture of the cranial cruciate ligament in the stifle or knee joint. This condition can be either;

- **Degenerative** (progressively getting worse) and occurring over an extended period of time.
- **Acute** (sudden onset), due to rotational instability at a specific time e.g. injuring it while chasing a ball.

The knee joint consists of the top of the tibia/fibula associated with a padded meniscus cup in contact with the lower surface of the femur.

Between the two bones are the cruciate ligaments – cranial and caudal, that cross over in the joint and act to keep the bones from sliding over each other. Collateral ligaments run on either side of the joint to prevent the bones from sliding side to side.

This injury can occur at any age and in any breed, but most frequently occurs in middle aged, overweight medium to large breed dogs.



Knee (front view)

How does the injury occur?

The ligament injury occurs when the forces involved are too strong in a certain direction. Usually an acute (sudden) cruciate injury occurs when the lower half of the leg remains still and the upper half above the knee joint is forced to rotate.

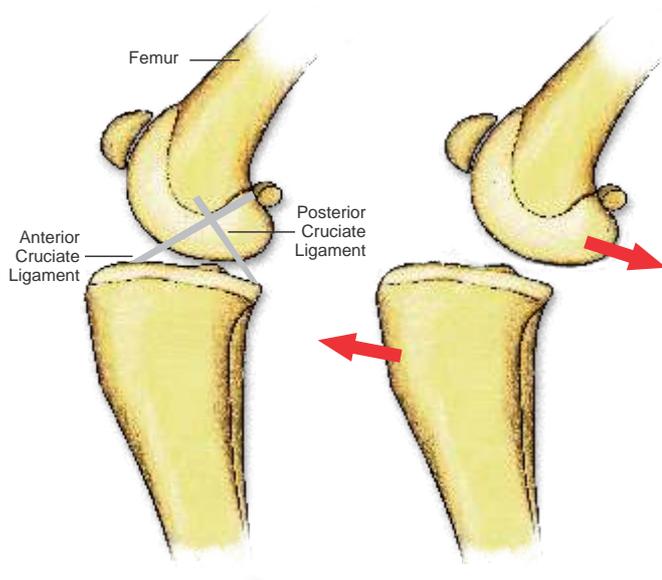
Such events can occur when an animal leaps up or down and twists with the takeoff or landing, places their foot in a hole or between stairs and continues to move forward, or even suddenly stops running or changes direction. The cranial cruciate ligament is the one most commonly affected in these situations.

How do you diagnose cruciate ligament rupture?

Diagnosis involves a few manual tests by the veterinarian and can also involve radiographs for larger dogs. The common tests are

The “cranial drawer sign” test

This involves holding the stifle joint with one hand on the femur and one on the tibia/fibula. The vet then tries to move the bones forward and backward to produce “draw” or give. In a normal knee joint there is little to no movement and there is no pain. In an animal with a rupture there is marked movement or sliding of one bone in front of the other, as shown in the diagram below. Pain can accompany the movement.



The Tibial Thrust test

This involves the stifle held in slight flexion and the hock being flexed and extended to elicit thrust from the tibia at the patella.

Occasionally a general anaesthetic may be required if palpation is too painful for the animal or if the animal is not relaxed enough to allow a thorough examination.

Ligament strains do occur but generally we see a partial or complete rupture to the ligament. The only way to stabilise the ligament is through surgery. Without surgery, the ligament will not repair or rejoin itself. Several types of surgery have been done throughout the years, but patient selection is very important to obtain the best outcome.

A better prognosis is given for animals that are;

- Not overweight. If your pet is overweight, we recommend feeding them a calorie controlled diet until they reach their goal weight. We can tailor a weight loss program for your pet.
- Can be kept restrained over the recovery period.
- Are less boisterous.

What does the surgery do?

Surgically, the stifle joint is opened up and explored to confirm the diagnosis of a partial or complete cruciate ligament rupture. Remaining strands of ligament can at this time be cleaned out, the joint flushed and the meniscus examined for tears. The surgeon can then begin the repair.

The three most common techniques to repair a ruptured cruciate are;

- De Angelis Technique
- TTA (Tibial Tuberosity Advancement)
- TTO (Triple Tibial Osteotomy)

We'll explain each repair in the following pages.

De Angelis Technique

Small dogs and cats usually do well with the De Angelis Technique.

Each veterinarian has a slight variation on the way they use this method of repair. It usually involves the positioning of up to 3 strands of prosthetic suture material in alignment to take the forces that the ruptured cruciate ligament used to.

The material is passed through a drill hole in the tibial crest (shin bone) – some vets use a bone tunnel, and around the back of the fabella (back knee cap) or through another bone tunnel in the condyle of the femur.

The prosthetic material is then tightened by either standard surgical knots or by a metal crimp. A lateral imbrication (tightening of the joint capsule) is also performed after cleaning out the joint and checking for tears in the meniscal pads.

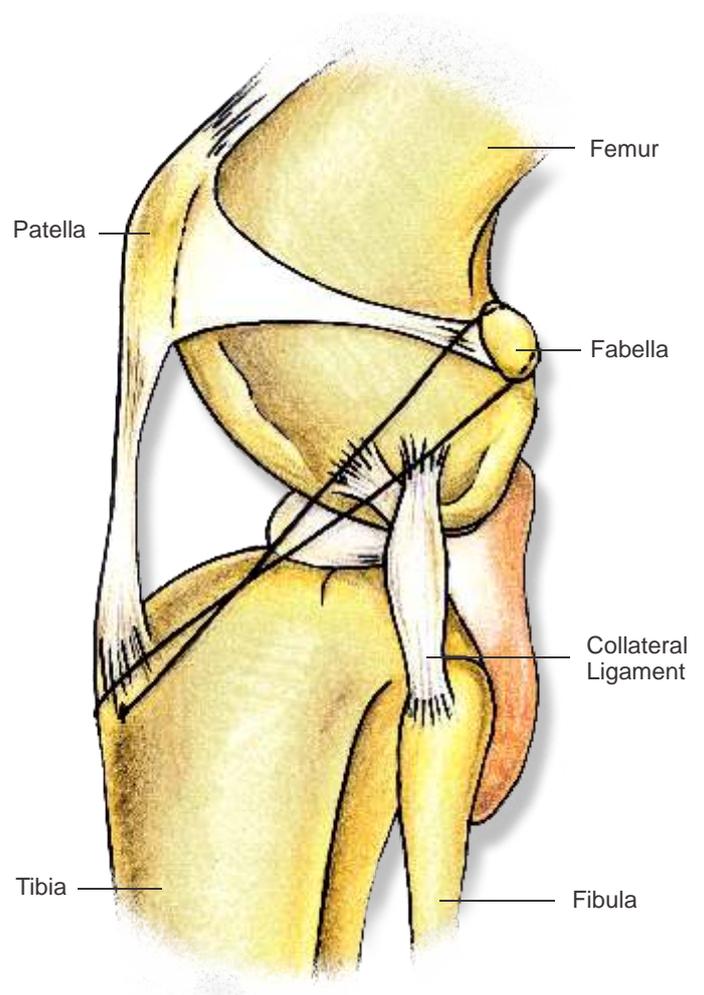
At least 90% of these operations are very successful. Complications can be reaction to the prosthetic suture material, infection and over exercising during recovery.

The De Angelis technique is not usually recommended for;

- Dogs over 20kg
- Dogs who are overactive or overweight

An animal who is over 20kg, overactive or overweight, will put a severe amount of pressure on the implant meaning there is a greater chance of breaking the suture material.

The De Angelis repair does not correct the anatomical problem and as such is not the best procedure for animals over 20kg or who are overactive. This is a more economical procedure however and will still give a good result in up to 85% of cases.

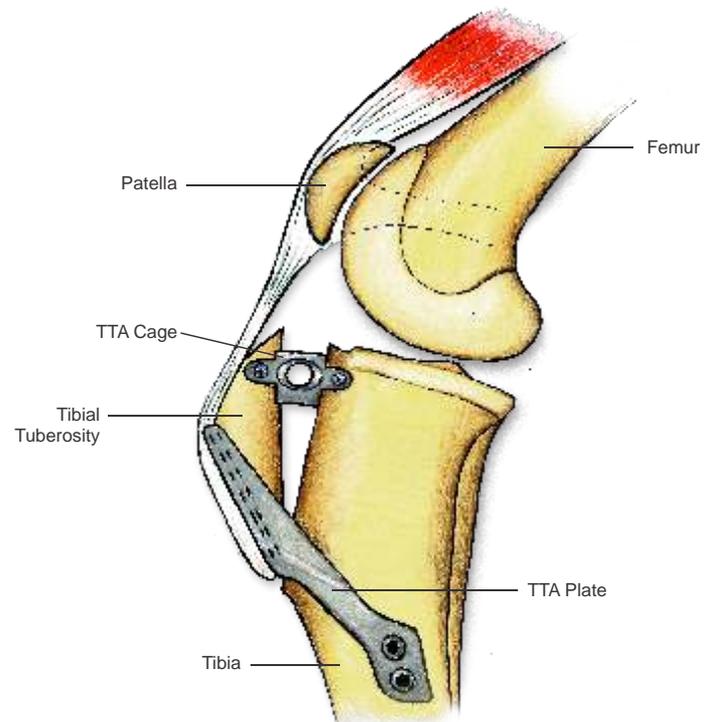


TTA (Tibial Tuberosity Advancement)

Large dogs may need a TTA procedure to realign the sliding surfaces of the knee joint to prevent the top leg bone from continually trying to move forward over the lower leg bone. This is a more involved procedure, though results are typically more than 98% successful.

This procedure involves cutting the lower leg bone and placing a bone plate on to stabilize the leg. These patients tend to walk on the leg sooner and recover quicker.

A TTA is a complex surgical procedure and a highly skilled surgeon is required to perform it. Your pet will be in hospital for two to three days with this procedure.



TTO (Triple Tibial Osteotomy)

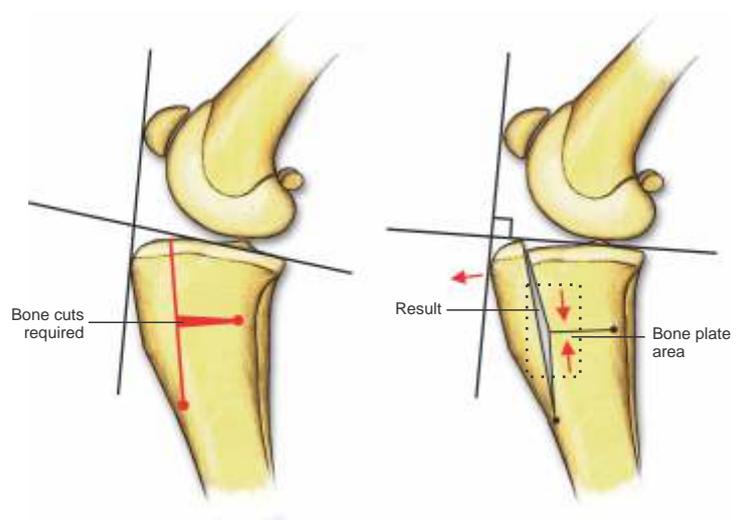
Again a larger dog procedure, this type involves a realignment of the angle that the tibial plateau has within the stifle joint.

If you can imagine that if the tibial plateau is angled downward at the joint, the femur will then slide forward and put pressure on the cruciate ligament holding the joint in place.

By correcting the angle to be more like a right angle and so perpendicular to the ground, there is no pressure on the joint to slide forwards.

The surgery requires a section of bone to be cut out and then angled and held with a sterile bone plate.

A TTO is a complex surgical procedure and a highly skilled surgeon is required to perform it. Your pet will be in hospital for two to three days with this procedure.



POST OPERATIVE CARE

“The aftercare is almost as important as the surgery itself. Planning and preparation will make it easier for you to ensure the best possible outcome”

Precautions

Confined area

Restrict or confine your pet during the post-operative period. You can set up a gated off area, use a dog crate or prepare a small room like the laundry.

NO jumping

It is important not to allow your dog to jump. Over extension of the stifle could ruin the surgery and slow down healing.

No stairs

Like jumping, climbing stairs will overstress the joint and inhibit repair. In the initial stages, directly after surgery, it is important you prevent your pet from going up and down stairs.

No slipping

Use non slip surface coverings if possible.

What's normal following the surgery?

Normal to see:

- Some swelling around the incision and to the repaired leg (this should only last for the first 3-4 days following surgery)
- Bruising
- A small amount of discharge from the incision that is clear or even a little blood tinged
- Discomfort of the repaired leg and around the incision

Abnormal

- Swelling that lasts longer than three to four days
- Bruising in areas other than the incision site

- Coloured discharge
- Lots of discharge
- Continuous bleeding
- Unrelenting discomfort that does not settle with ice application and prescribed pain medication
- Discomfort that causes your pet to whine, be uncomfortable or bite

Weekly Recovery

In the following pages we'll discuss what you need to do at home to help your pet recover as quickly as possible. The guidelines should be used as closely as possible in order to:

- Speed up the recovery
- Decrease pain
- Help healing of the wound
- Prevent further muscle mass loss
- Restore normal range of motion

If you have any concerns with the recovery of your pet please contact the surgery.





Week One

Massage

- Massage for 5-10 minutes, 3-4 times per day. You can easily do this with your pet on its side, start at one end and work to the other. Gentle pressure will help circulation.

Cold Therapy

- Carry out for 10-15 minutes after exercise.
- Use a cold pack on the stifle – 10-15mins max – there will be no effect after this amount of time.
- You can use moist heat before the physio after the first 3-4 days if the swelling at the surgery site has come down.

Passive Range of Motion (PROM)

- Do 10 repetitions, 3-4 times per day.
- In the same position, flex and extend all the joints of the leg.

Short and Slow Controlled Leash Walks



- Do for 5 minutes, 3-4 times per day.
- Some pets will need to be carried outside to toilet. A towel can be used as a sling to support the body. Slow walks will make the pet place the injured leg down and speed up recovery.

Week Two

Massage

- Do for 10 minutes, 3-4 times a day.

Moist Heat

- Do for 10 minutes before exercise.
- You could either buy a heat gel pack or use a warm flannel. It should be warm enough to hold comfortably.

Passive Range of Motion (PROM)

- Do 15 repetitions, 3-4 times a day.

Short and Slow Controlled Leash Walks

- Do for 5-10 minutes, 3-4 times a day.

Week Three

Massage

- Do for 10 minutes, 2-3 times a day.

Moist Heat

- Do for 10 minutes prior to exercise.

PROM, as Needed

- If walking okay this can be stopped.

Slow Controlled Leash Walks

- Do for 15-20 minutes, 3-4 times a day.

Sit-to-Stand Exercises

- Do 5-7 repetitions, 3-4 times a day
Just asking the animal to sit, and then stand back up straight away.



Week Four

Massage

- As Needed.

Moist Heat

- 1-2 times a day.

PROM

- As Needed.
(If walking ok this can be stopped)

Controlled Leash Walks

- Up to 20 minutes, 3-4 times a day, perhaps on a longer leash.

Sit-to-Stand Exercises

- Increase to 10 repetitions, 3-4 times a day.

Figure 8s

- Do 10 repetitions, 3-4 times a day.
Walking in a figure 8 to allow turning.

Weeks Five - Eight

Stop Moist Heat, PROM, and Massage

- This can be stopped if your dog is using his limb consistently.

Controlled Leash Walks with Hill Work

- Do controlled leash walks for 20-30 minutes, 3-4 times per day.
- Do hill work for 5-10 minutes, 1-2 times per day. Start slow and increase length daily.

Sit-to-Stand Exercises

- Do 10-15 repetitions, 3-4 times per day.

Figure 8s

- Do 10-20 repetitions, 3-4 times per day.

Small Step Ups

- Have your pet step up 1 step on a set or stairs or from road to footpath, 3-4 times per day on walks. Go slowly so that it is comfortable for your pet. If your dog seems to have any difficulty with this exercise, do not perform yet.

Weeks Nine - Twelve

The Strengthening Period

Stairs

- Do 5-7 steps in a row, 1-3 times per day – start slowly on the lead still.

Supervised Off-Leash exercise

- No balls, frisbies etc though.

Controlled Leash Walks with Hill Work

- Do 30 minutes total with 10 minutes on hills, 3-4 times a day.

Sit-to-Stand exercises

- Do 10-15 repetitions, 3-4 times a day.

Figure 8s

- Do 20 repetitions, 3-4 times per day on walks.

Small Step Ups

- 1 step, 3-4 times per day.

Jogging

- Do intervals of 10 metres, 3-4 times per day.

Swimming

- Do 5-10 minutes, 1-2 times per week.
- No Beach work yet though.

