

# Rupture of the Anterior Cruciate Ligament (Over 15kg or athletic smaller dog)

## Description – Cruciate = Latin for cross.

The anterior cruciate ligament is a ligament that stabilises the stifle (knee in humans) joint. It joins the femur (thighbone) to the tibia (shin bone), and prevents the tibia from moving forwards in relation to the femur. In the event that the ligament ruptures, stability is lost such that the contact surfaces of the bones no longer align, producing abnormal pressure and wear. This results in pain, and after 6 weeks or so osteoarthritis begins to develop. Damage to the “cartilages” also occurs either at the time of the cruciate rupture or as a result of instability following the rupture.

There are a number of other ligaments of the stifle, including a posterior cruciate ligament. Damage to each ligament requires it's own surgical or medical remedy.

## Cause

Rupture of the cruciate ligament is a traumatic incident. It requires sudden application of force in excess of the strength of the ligament. It is seen in two main categories

- Athletes or dogs subjected to abnormal force – vehicle accident or jumping from a vehicle etc
- Old dogs as a result of senile degeneration – weak cruciate.

Dogs in the second category are at a high risk of rupturing the cruciate in the opposite leg – if one is damaged, the other is probably weak as well, and it will be carrying all of the load after the first is damaged.

A twisting force applied while jumping is a typical cause – like a dog catching a high bouncing tennis ball or a sheep dog jumping from a moving ute.

## Typical presentation.

Your dog will likely have shown a sudden pain episode and carried the hind leg. After a variable (but less than 48 hours) period they will use the leg gingerly but obviously be uncomfortable with it. They will often use it when running but be sore and carry it again for a period after such excesses. The stifle will thicken and be warm to the touch compared with the other leg.

A “sprain” should clear up within a week or so. If your dog is still showing such signs after 7 days it is time to get it investigated.

Osteoarthritis will develop sometime after 2 – 3 weeks but not usually before about 6 weeks. Once it has developed, it can be arrested from worsening but not cured. Occasional dogs will develop “Degenerative Joint Disease”, a progressive and incurable severe arthritis.

## Diagnosis

In a consultation, we attempt to demonstrate the instability of the stifle. Holding the leg straight, using thumb pressure we attempt to move the tibia (shin bone) forward while holding the femur (thigh bone) still. There should not be any movement in this plane.

This test is not possible in nervous or jumpy dogs while conscious. It is also hard to discern when there is gross swelling or arthritic changes.

X-rays of the stifle are helpful both in diagnosing the condition and in assessing the secondary arthritic changes.

## Treatment

Treatment of a ruptured anterior cruciate can only be performed by surgery and a long period of restricted exercise. For the large or active medium dog a surgical technique that reproduces the ligament is necessary. There are numerous techniques described in various journals and textbooks. Naracoorte & Penola Veterinary Centres uses a modification of a classical technique that we have found to produce good results.

A strip of tendinous tissue attached to the tibia is harvested from the outside of the muscle layer of the thigh and is redirected through the stifle to mimic the ruptured ligament. This strip is sutured in place under tension. It is considered that by using natural living tissue the graft will actually strengthen with time, unlike artificial implants that can only weaken.

Courses of antibiotics and analgesics are provided for the post-operative period.

## Convalescence/Aftercare

Skin sutures should be removed at about 14 days post-operative. Extend this to 21 days in the geriatric patient.

It should be recognised that the initial surgical repair provides a thin strip of tendon held in place by sutures. This is not strong – the repair is only completed by the healing process over months.

Post Operative Exercise: Not too much, but some walking essential.

- Unrestricted exercise in the first month or so will DESTROY the repair. All exercise in the first months should be on a lead. NO jumping allowed. Even taking the patient out to the toilet should be on a lead. Older dogs that have ruptured through senile degeneration are at increased risk of rupturing the other side cruciate in this period if not restricted.
- On the other hand, a total lack of exercise will result in atrophy (wasting) and scarring will produce an over-stiff joint. This is typical in sedentary or older dogs.

After the initial fortnight, lead walking for short distances is encouraged unless your patient is too excitable. Swimming is an excellent exercise but difficult to control.

It is usual that proper use of the leg begins around 8 weeks and strengthens steadily from then. Full use and unrestricted exercise should commence from about 12 weeks post-operatively.

## Long Term Considerations

Following surgery performed before secondary osteoarthritis, and with the proper aftercare normal function is likely.

Once secondary osteoarthritis has set in, it is likely that the arthritis will progress very slowly post operatively, but well within the range that medication will hold it under tolerable control. Without surgery, the stifle will worsen dramatically and not be controllable with medication.

Old patients having ruptured an anterior cruciate ligament are at HIGH risk of rupturing the opposite cruciate. It is wise to

- Try and hold this off until the first leg is fully healed
- Budget for this in the future

We have never had the same cruciate/repair break down once through the healing period.