What Surgery Is Best For My Pet’s Cruciate Ligament Rupture

Having done thousands of cruciate repairs since graduating in 1980, I consider myself very knowledgeable regarding cruciate disease and surgery. Ruptured anterior cruciate ligament (RACL) repair represents fully one third of my surgical practice. There is a great deal of research underway to understand what causes this common problem and studies are constantly being done to evaluate all the different surgical procedures. There are twenty two different surgical procedures for cruciate repair in dogs and cats and numerous scientific studies have shown that outcomes are very similar. None of these many studies have shown any single procedure to be superior in outcomes despite individual surgeon’s claims to the contrary.

Surgery is almost always the best option for dogs that rupture their anterior cruciate ligament. Just like people, without surgery, degenerative arthritis can form leading to chronic discomfort, swelling and pain. Surgery is much less effective once this happens as one of the major reasons for performing surgery is to minimize arthritis as well as quickly alleviate pain and discomfort. Additionally, although the instability in the stifle will eventually heal in most cases without surgery, the healing process can take months and during that time your pet will be uncomfortable and is at risk for tearing the medial meniscus if it is not already damaged. During this lengthy healing process, your pet will be favoring their “good” leg and is at risk of weakening the anterior cruciate in the good leg or possibly rupturing that side before the first side heals! Even with surgery, 40% of dogs will rupture the other side within eight months (60% if overweight). One dog in five that I operate on has partial or full tears on the “good” leg at the time of surgery. The healing time and discomfort is dramatically shortened when the damage is surgically repaired. Additionally, if your pet has a torn meniscus, this could take a very long time to heal as the meniscus has no blood supply and almost always need to be removed to stop the pain and swelling. People with meniscal tears need arthroscopic surgery to remove the torn meniscus.

Remember, your pet’s activity, weight, musculature, age, tibial plateau angle, as well as other orthopedic issues like hip dysplasia or cruciate tears on the opposite limb can also affect whether your pet needs surgery and which kind of repair is best for your individual pet. Since no one procedure has superior outcomes, it makes sense to take a critical look at costs and complications when deciding what is best for your pet.

It is important to realize that most dogs do not rupture their cruciate ligament due to trauma or physical activity. Although we do see the occasional pet that hurt their leg “playing ball”, in most cases, the ligament was already partially damaged due to a degenerative process that we still do not fully understand. In rare cases, your pet may have an immune mediated disease called lymphoplasmacytic synovitis which, much like rheumatoid arthritis in people,
is a result of the body thinking the ligament is a foreign material that needs to be removed by the body’s immune system.

If your veterinarian has felt “anterior drawer” or “tibial thrust” (instability) in your pet’s stifle along with a medial buttress sign (swelling on inside of stifle), there is no doubt about the presence of an anterior cruciate ligament tear and I do not have to examine your pet before surgery. In cases of partial tears where there is minimal instability or chronic tears where scar tissue makes palpating the stifle difficult, a radiologist can almost always diagnose the condition with well positioned quality radiographs sent to them by digital camera and the internet. Rarely, I will need to examine your pet and take some fluid from the stifle for analysis to confirm the diagnosis.

You can often find veterinarians who will offer to repair your pet’s RACL for a seemingly very low and affordable fee. It is important to ask if the are using hard, medical grade “fishing line” with grommets or Fiberwire suture; if they are doing an arthrotomy to clean out the stifle and examine the meniscus for tears; if they have joint retractors and special tools to remove the damaged meniscus; if they are doing epidurals with morphine for pain; and what anesthetic and monitors they are using to keep your pet safe while under anesthesia. I would also ask how many they have done in the past six months. When I perform surgery on your pet, we utilize a half million dollar human mobile surgical suite with state of the art air filters, monitors for pulse oximetry, respiration, carbon dioxide, blood pressure, temperature, and oxygen sensors. We also have a ventilator and defibrillator if necessary. With that said, if your budget simply does not permit you to utilize our services, cleaning out the joint and placing a nylon lateral suture is always better than doing nothing. In fact, studies have shown that just cleaning out the joint without any stabilization has decent outcomes when compared to doing nothing (see Budget Surgery Without Stabilization below).

**Dogs Under 25 Pounds**
Pets that fall in this category do not always need surgery. Many patients will heal on their own with fibrosis (scar tissue) and do fairly well, but arthritis can still form and cause future discomfort that requires lifetime pain medication and joint supplements. If your pet is improving week by week, we often suggest waiting on surgery unless you want your pet to heal as fast as possible with the least amount of discomfort. Often smaller patients have a luxating patella that predisposes the stifle to ligament damage and must be repaired at the same time.

If your pet is severely lame after two weeks with little or no improvement, surgery is almost always necessary in order to remove a damaged meniscus and stabilize the torn ligament. In almost every case, a simple arthrotomy to clean out the joint is performed and a lateral suture is placed to stabilize the joint. Most surgeons use a medical grade “fishing line” of monofilament nylon for this purpose. I utilize a much more expensive material called Fiberwire. Fiberwire is made of a Kevlar like material that is very strong. While nylon can stretch and break and often needs metal grommets to secure the suture, Fiberwire is much smaller diameter and can be tied in a small surgical knot.
Fiberwire rarely breaks and hardly stretches at all making it ideal for this surgery. Fiberwire is routinely used in human surgery for ligament repair and shoulder surgery and is very safe.

In select cases, a mini-tightrope is utilized instead of a lateral suture if the small bone we anchor the suture to (fabella) is highly mobile or avulsed. This adds several hundred dollars to the cost of the procedure.

**Dogs 25 to 40 Pounds**
Pets that fall in this category should always have surgical intervention to repair the damaged ligament. Surgery should be performed within three weeks of the injury as arthritis can start forming after that time period. Again, a lateral suture anchored to the fabella bone with larger Fiberwire is the best way to repair this sized dogs. Interestingly, larger patients need larger medical grade fishing line but the larger the suture, the more it stretches. Fiberwire has been shown to be stronger than nylon for larger patients but most surgeons still use nylon and grommets. Patients repaired with Fiberwire have less instability post-operatively and therefore develop less arthritis and start using their leg sooner than patients repaired with nylon. Lateral suture has a 6-8% failure rate and on rare occasions, the patient develops an allergic reaction to the suture and it has to be removed in a simple surgical procedure.

**Dogs 41 to 60 Pounds**
Pets that fall in this category can be repaired with either a lateral Fiberwire suture or the new technique developed by Dr. Jimi Cook at University of Missouri called Tightrope. Tightrope is a larger, stronger form of Fiberwire that is flat and anchored with bone tunnels and titanium buttons. It has a 4-5% failure rate and a 10% complication rate overall. Most complications are not serious and resolve with medication or time. Some surgeons recommend a Tibial Plateau Leveling Osteotomy (TPLO) for this size range which involves cutting the top of the tibia with a special saw and rotating the bone. The rotated bone is then stabilized with a special bone plate to prevent the stifle from “thrusting” forward during weight bearing. Another procedure called Tibial Tuberosity Advancement (TTA) also utilizes a bone saw and titanium cage implant to move the tibial crest forward and stabilize the stifle. I call these two procedures “bone cutting” procedures. All bone cutting procedures are much more costly than lateral suture or Tightrope (TR) and have a 17-22% complication rate. If your pet has a severely abnormal tibial slope (angle of the top of the tibia) then a TPLO would be the best surgery for that pet. This represents around 1% of all patients.

**Dogs Over 60 Pounds**
Pets that fall in this category should always have a TR. If someone has financial constrains, I would always offer a lateral suture with Fiberwire, but for the extra $300-400 you are getting much better outcomes, faster use of the limb, and much less arthritis. Lateral suture has twice as many complications as TR. TR is so strong, you can pull a Mercedes Benz without it breaking. Again, we have good to excellent outcomes in 95.5% of our cases which means that 4.5% do not do well. It is impossible to know ahead of time which patients will have problems. If you are unfortunate enough to have a serious complication that needs a
second surgery, we only charge cost for this second procedure which can involve explanting the tightrope, cultures, and biopsies to determine the cause of the failure. Infections are the biggest complication (although only 3% get infections). If caught early, aggressive antibiotic therapy can avoid more surgery. If caught late, the implant must be removed to resolve the infection.

Other options include the “bone cutting” described above (TTA and TPLO) and many general practitioners offer a lateral suture technique utilizing heavy gauge nylon at a reduced cost over the TR and the bone cutting surgeries. This technique is probably the most commonly performed surgery for RACL, but the main disadvantage is that nylon can stretch and/or break leading to excessive instability after surgery. The more instability you have, the more arthritis your pet develops.

**Special Note About Boxers**
Boxers are notorious for having very slow, insidious cruciate tears. They start as partial tears and get effusion (swelling in stifle) and limp on and off until the ligament finally completely tears often 4-6 months after the initial limping. Diagnosing these early and stabilizing the stifle with a TR before a complete tear occurs leads to much better outcomes.

**Chronic RACL**
If your pet has been limping for months or longer and has a very swollen stifle, this is usually known as a “chronic cruciate tear” as opposed to an acute tear. Chronic RACL’s always take longer to operate on, longer to recover, and usually do not do as well as acute tears. Most patients will need to take pain medication and joint supplements with cold water fish oils for life. Cold weather and activity will usually cause increased discomfort. Even with an acute tear, a torn cruciate ligament is a devastating injury and the joint will never be good as new. But with proper repair, your pet will have good to excellent use of their leg even though 40% (50% if overweight) will eventually rupture the ligament on the other side within a year.

**Budget Surgery Without Stabilization or Medical Management**
As mentioned previously, studies have been done on pets that simply have the joint opened surgically and cleaned out and meniscal tears treated without doing any type of stabilization with bone cutting or lateral sutures and the outcomes are actually pretty decent. By removing the torn ligaments, the body does not have to fill the joint with fluid and special white blood cells (macrophages) to remove the tags of ligament remaining in the joint. This process takes a long time and the swelling (water on the knee) can cause chronic, low grade discomfort. A torn meniscus actually causes more pain than the torn ligament and while the body can repair the instability with scar tissue and remove the torn ligament, it cannot heal or remove the meniscus as there is no blood supply to this hard tissue. We tighten the joint capsule during closure in a procedure called “imbrication” to give some stability to the stifle but time and scar tissue eventually stabilize the joint with much more arthritis than would otherwise occur if a stabilization was performed. If your pet does not have a torn meniscus, weight loss, physical therapy, and joint supplements without any surgery can have a functional outcome.