

Cranial Cruciate Ligament Rupture in Dogs

What is Cruciate Ligament Injury?

- 🐾 Cranial cruciate ligament (CCL) rupture is the most common orthopedic condition affecting adult dogs, and can be seen in any age or breed of dog. Cats are rarely affected.
- 🐾 The two cruciate ligaments are located within the stifle (“knee”) joint, where they provide stability and restrict the joint to a hinge-type motion. The *cranial* cruciate ligament (similar to the “ACL” in humans) is most commonly injured. In affected dogs, the ligament weakens gradually prior to developing a partial tear or complete rupture. This final injury may be due to a trauma, but often occurs without any particular incident. The cause of the initial weakening is unknown, but age-related ligament degeneration, joint inflammation, or abnormal anatomy may be involved.
- 🐾 Rupture of the CCL in both knees is common. In fact, 30-50% of affected dogs will eventually develop the problem in the opposite hind leg.
- 🐾 Signs of early cruciate disease include mild lameness, stiffness, and swelling of the knee joint. Sudden rupture results in pain and severe lameness, which may improve a little over time but does not completely resolve unless corrective surgery is performed.
- 🐾 The goals of surgery are to eliminate pain, resolve lameness, and reduce the rate of continued cartilage destruction and progressive arthritis.

What is a TPLO?

- 🐾 In contrast to human anatomy, the top (“plateau”) of the dog’s shin-bone (“tibia”) slopes towards the rear. Without an intact CCL, this slope allows the thigh-bone (“femur”) to slide backwards off the tibial plateau. The tibia in turn is pushed forward in a motion called “cranial tibial thrust.” This abnormal motion, like a loose or sloppy hinge, occurs with every step and causes persistent joint pain.
- 🐾 The tibial plateau leveling osteotomy (“TPLO”) procedure is designed to eliminate cranial tibial thrust. This innovative surgery does not directly replace the damaged cruciate ligament or tighten the joint, but instead creates a dynamically stable stifle joint, essentially eliminating the need for the ligament.

Are There Other Surgical Options for Treatment?

- 🐾 There are two commonly-performed surgical treatments for dogs with cranial cruciate ligament rupture: extracapsular repair and TPLO.
- 🐾 With extracapsular stabilization, a strong suture is placed around the outside of the stifle joint to tighten it and reduce abnormal motion. A successful outcome requires the body to develop scar tissue before this suture stretches or breaks. It is this scar tissue that maintains joint stability long-term.
- 🐾 The TPLO surgery eliminates the need for the cranial cruciate ligament. The tibia is cut, and the top portion is rotated to reduce its slope. A metal bone plate is applied to maintain this new position while the bone heals. The TPLO surgery is very effective in dogs with either a partial tear *or* a complete rupture, whereas the extracapsular approach is typically only used to treat complete rupture.
- 🐾 After a TPLO, dogs return to full activity much more rapidly than with extracapsular stabilization or other traditional procedures. In addition, the TPLO usually results in better long-term function and may decrease and/or delay overall arthritis. This surgical option is highly recommended for dogs over 40 pounds, and can also be performed on smaller dogs with a highly active or performance lifestyle if desired.

What is the Recovery Period Following TPLO Surgery?

- 🐾 Many dogs will start to walk on the limb within 24 hours after surgery, most dogs use the limb within a week. By two weeks, moderate weight-bearing is expected. Dogs with partial tears tend to recover more quickly than dogs having complete rupture.
- 🐾 Leash walks are gradually extended, as directed by the surgeon. Increasing the number of walks per day is better than just increasing the duration of each walk. NO off-leash or high impact activity is allowed prior to bone healing.
- 🐾 Recheck x-rays six to eight weeks after surgery are used to assess bone healing. At this visit most dogs have mild or no lameness. Complete recovery may take three to five months.

How Successful is TPLO Surgery?

- 🐾 Following TPLO surgery, approximately 90% of dogs regain normal or near normal function of the limb (full weight-bearing). The remaining 10% of dogs often have concurrent arthritis of other joints or limbs; most of these dogs are still improved with the surgery. Only a small percentage of patients do not respond well to TPLO surgery.
- 🐾 Many working or agility dogs can return to full function after full recovery.
- 🐾 Dogs that have been previously operated using another technique with unsatisfactory results are generally improved with the TPLO surgery, but the outcome may not be as good as with a knee that has never had surgery.

What Are the Potential Complications with TPLO Surgery?

- 🐾 As with any surgery, anesthetic complications may arise. Pre-anesthetic bloodwork is required on all patients, and an individualized anesthesia protocol is designed for each dog. Additionally, the use of advanced monitoring & support equipment (mechanical ventilation, blood pressure, EKG, pulse oximetry, and expiratory carbon dioxide levels) helps to minimize the risks inherent with general anesthesia.
- 🐾 Infection is an unusual complication as antibiotics are given during the procedure.
- 🐾 Poor healing of the bone can occur if the dog is overly active, especially during the first two months after surgery. Dogs on steroid treatment for another condition may have severely impaired healing.
- 🐾 Screw loosening, breakage of the plate or screws, and even fracture of the bone can occur if activity is not limited as directed, or if the dog suffers a serious fall during recovery. These complications often require re-operation and may affect the final outcome.
- 🐾 Patellar ligament strain can occur during recovery. Rest and anti-inflammatory medications are generally sufficient to resolve this problem.
- 🐾 Fracture of the narrow tibial tuberosity can occur during healing. This is uncommon, and usually heals without surgical intervention. Recovery may be delayed, but the final outcome is not usually affected.
- 🐾 Arthritis is often present in the knee joint prior to surgery. There is no way to reverse the arthritis that is present, but the TPLO surgery can help to slow and/or minimize its progression.
- 🐾 Meniscal injury may occur at any time following TPLO surgery, sometimes requiring additional surgery. This complication occurs less frequently following the TPLO compared to other surgical techniques used to stabilize the stifle joint after cruciate ligament rupture.