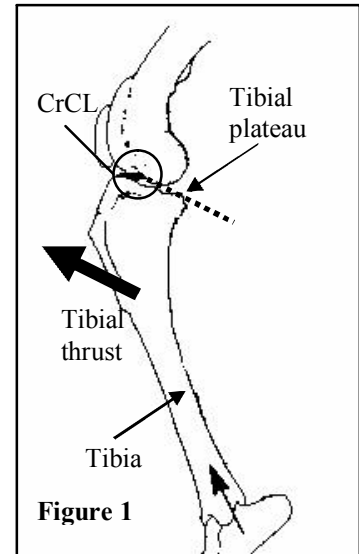


## Answers to Frequently Asked Questions about Ruptured Cranial Cruciate Ligament Repair

### What is the Cranial Cruciate Ligament (CrCL) and what are the important points regarding its injury?

The CrCL or anterior cruciate ligament (ACL) is one of 4 ligaments within the knee but is the most important joint stabilizer. It connects the femur (thigh bone) to the tibia (shin bone) and prevents the tibia from sliding forward during normal leg use. CrCL rupture is a common orthopedic injury and the most common source of knee problems in all sizes and breeds of dogs. Ligament injury occurs in the young and old, in athletic dogs and “couch potatoes” alike, and usually happens during normal activities (playing ball, running, jumping, etc.). The ligament may be either fully or partially torn but once damaged has virtually no capacity to heal. Instability results from CrCL injury and produces knee pain that manifests as lameness. Only surgery can restore proper limb stability and function, rest and medication alone are ineffective treatments for partially or fully torn CrCLs.



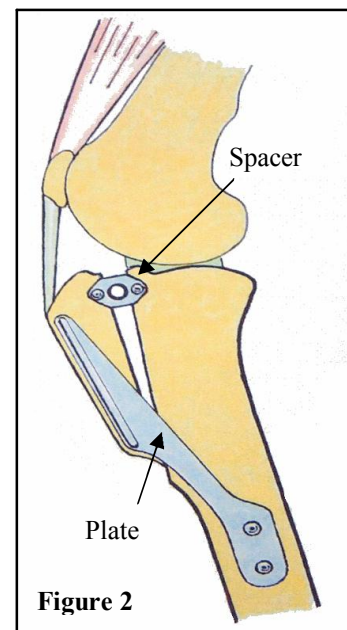
### What are the preferred ways to “fix” a torn CrCL?

Two of the most popular and effective techniques available are the Tibial Plateau Leveling Osteotomy (TPLO) and the Tibial Tuberosity Advancement (TTA). They are surgical procedures that provide stability to the unstable canine knee as a result of a torn CrCL. Knee stability is necessary for proper leg function and comfort.

### How do the TPLO and TTA work?

Both surgeries work by eliminating tibial thrust. Tibial thrust is caused by the transmission of weight up the tibia (shin bone) and across the knee, which causes the tibia to “thrust” forward relative to the femur (thigh bone). It is because the top of the tibia (tibial plateau) is sloped, not flat, that forward tibia movement (tibial thrust) occurs (Figure 1). The CrCL normally opposes this force, but when torn is incapable of preventing tibial thrust so knee pain and lameness results.

The TTA works by advancing part of the tibia to a 90° degree angle with the tibial plateau. This allows the quadriceps muscles to keep the knee balanced and stable even with a ruptured CrCL. To accomplish this, a cut is made in the tibia and the bone is then advanced. After the cut is made in the bone and the bone advanced, a special bone plate and spacer are applied with screws to allow healing (Figure 2).



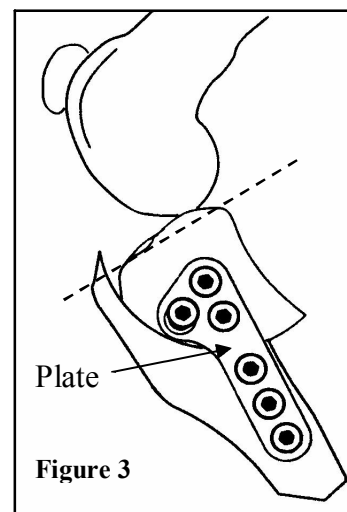
The TPLO neutralizes tibia motion by turning tibial thrust into tibial compression. During surgery, a cut is made in the tibia and the bone is then rotated. This produces a more level plateau that no longer allows thrust to occur. Since the tibial plateau angle varies between dogs, multiple x-rays of the knee are taken before surgery to determine the individual angle. After the cut is made in the bone and the plateau angle is leveled, a special bone plate is applied with screws to allow healing (Figure 3).

### **What is the success rate of these surgeries?**

If you define success as a dramatic improvement in limb function, a resolution of pain, and a return to normal or near normal activity, then they have a better than 90% success rate. Because of the nature of a CrCL injury, it is not realistic to expect every patient to have the exact same recovery or results.

### **What can I expect from surgery?**

The goal of surgery is to return your pet to pain-free and improved knee function. Increase in muscle mass, improved knee range-of-motion, and improved activity levels are observed in patients. Many dogs return to the same level of activity and knee function they had before injury. Others may have some limitations with more intense activities or have intermittent knee stiffness. Regardless, an improved quality of life, greater comfort, and much improved knee function are expected in every patient following a TTA or TPLO.



### **What decides whether a TTA or TPLO surgery is recommended?**

Factors that are considered when deciding on which surgery may be best for your dog include the patient's preoperative tibial plateau angle, tibia shape/size, patient size and age, degree of CrCL rupture, and whether any other orthopedic abnormalities are present. Which surgery is considered best for your dog and why will be discussed in detail during the initial consultation.

### **What are the complications with these surgeries?**

The complication rate for these procedures is low. Infections uncommonly develop and when they do, usually resolve completely with proper treatment. Rare complications such as bone cracks, plate breakage, and implant reactions have been described but are uncommon.

Anesthesia itself carries only a small risk of complications. It's a fact that in any patient, young or old, healthy or unhealthy, problems can arise. At MedVet we take many precautions to make anesthesia as safe as possible. We use the same drugs and monitoring equipment that are used on humans. We employ very experienced doctors and technicians who anesthetize thousands of patients each year (many of whom are very ill) with very few unexpected results. Major anesthetic complications associated with TTA or TPLO surgery are extremely rare.

### **Is surgery performed the day of my appointment?**

No. Your pet must be evaluated before surgery. This entails a complete medical history, physical examination, and discussion of the procedure. Preoperative bloodwork may also be performed depending on your dog's age and health.

### **How long will my dog stay in the hospital?**

The routine length of hospitalization for postoperative TTA or TPLO patients is overnight following surgery.

### **My dog is on medication. Should I stop giving this before surgery?**

Medications for health conditions such as diabetes or low thyroid function should not be stopped. Medications for knee pain can be continued up until the day of surgery. Oral steroids (even for skin conditions) should ideally be stopped 1 week before the surgery.

### **What are the costs involved?**

The cost of a TTA or TPLO varies depending on a number of variables (patient size, age, etc.). There is no difference in price between a TPLO and TTA surgery. The estimated cost will be

discussed with you during your initial visit. The estimate quoted will include all aspects of the surgery except the initial consultation, any necessary bloodwork, and a 6-week recheck x-ray.

### **What is the aftercare following surgery like?**

The majority of postoperative care involves restriction of your dog's activity. For the first 6 weeks after surgery your dog is allowed certain at-home activities. Leash walks are progressively increased. No off-leash activities are allowed. Inside the house your pet should avoid flights of stairs and slippery floors. Absolutely no running, jumping or playing is allowed for the first 6 weeks after surgery. When your dog is not under your direct control, he/she should be kept confined to a small room, cage, or crate. All postoperative restrictions are discussed in detail and written down for you at the time of your dog's discharge from MedVet.

### **Is postoperative physical rehabilitation important?**

While the TTA or TPLO will make your dog's knee comfortable and functional again, it is incomplete without proper postoperative rehabilitation. A torn CrCL results in muscle atrophy, joint scar tissue, arthritis, and reduced joint range-of-motion. Physical rehabilitation helps to reverse these changes and return the leg back to pre-injury function. When your dog is discharged from MedVet some basic rehabilitation exercises will be illustrated for you. More intensive physical rehabilitation, such as swimming and aquatic treadmill exercise, is also available and should greatly enhance your dog's recovery. Please refer to the Veterinary Rehabilitation of Ohio brochure and visit [www.vetrehabohio.com](http://www.vetrehabohio.com) for more details.

### **Do I have to bring my dog back to MedVet for a check up?**

If possible we prefer to reevaluate our patients at MedVet. Typically, a 6-week and 10-week postoperative reevaluation is required. At the 6-week recheck, your dog will be evaluated physically and the TTA or TPLO knee will be x-rayed to determine bone healing. The 10-week recheck is to ensure proper recovery is progressing appropriately. We understand that people come to us from all over the Midwest, so if it is not convenient for you to return to MedVet, we ask that you have your veterinarian x-ray your dog 6 weeks after surgery and mail the x-rays to us for evaluation.

### **Does a partially torn CrCL require surgery?**

Yes. Whether a CrCL is partially or fully torn does not matter because the ligament has almost no capacity to heal. Progression of the tear and ongoing lameness is expected. While the history and physical exam findings may differ between the two types of tears, treatment does not. Rest and medication alone is as ineffective for treatment of partial CrCL tears as it is for full tears. Partial CrCL tears respond very well to TTA or TPLO surgery.

### **Will arthritis develop over time?**

Most patients already have at least mild arthritis at the time of the surgery. Arthritis can be a cause of and/or a result of a torn CrCL. Surgical intervention is the best way to limit the progression of arthritis over time. The instability present from the torn CrCL is the most critical issue. Once the TTA or TPLO is performed and the instability resolved, markedly improved knee function and comfort is expected even in the presence of severe arthritis. Even when arthritis is present, it is often not associated with significant pain or lameness.

### **What happens if surgery is not performed?**

Permanent lameness and progressive severe arthritis is expected in patients that do not have surgery to treat a torn CrCL. Markedly decreased activity level, chronic knee pain, and diminished quality of life is expected.

**Both of my dog's knees have torn CrCLs; can both be operated at the same time?**

Yes, because the TTA and TPLO procedures provide immediate rigid stability (unlike other procedures) it can be performed on both knees at one time. This cuts recovery time in half, quickens the overall recovery, and is less expensive than staged procedures. We may elect to stagger surgeries in very large dogs (typically greater than 100 lbs) because of the potential for healing complications.

**Do the plate and screws need to be removed?**

Once the bone has healed, the plate and screws are unnecessary. However, because the implants rarely cause problems routine removal is not recommended. Less than 5% of TTA or TPLO implants are removed in MedVet patients. If removal becomes necessary because of signs of infection or irritation (drainage at the incision site, lameness, swelling, etc.) it is a minor, inexpensive outpatient procedure.

**Can a TTA or TPLO be done if my dog has had a previous surgery on the same knee?**

Generally, yes. We see many patients that have had another surgical technique performed to treat CrCL rupture and require a TTA or TPLO because they have not had a satisfactory outcome. To date, every one of these patients has improved significantly after re-operation with a TTA or TPLO.

**Can a TTA or TPLO be done in any size dog?**

We typically do not perform the procedure on small dogs (<20 lbs) but there is no upper limitation on patient size. Many giant breed dogs (>150 lbs) have been operated on with excellent success.

**Can my dog re-injure the same knee?**

Prolonged significant lameness due to re-injury after a or or TPLO has healed is very rare. Occasionally, dogs will develop short-term lameness after a fall or some other form of injury. Invariably, rest and anti-inflammatory medication results in the return of comfortable limb function in these dogs. An injury significant enough to require additional surgery in a healed patient is extremely rare.

**What are the chances this will happen to the opposite knee?**

Approximately 20-40% of dogs will rupture the opposite CrCL in their lifetime. It may be days or years between such injuries.

**How can I prevent CrCL injury in my dog?**

The only factor you, as an owner, can control is body weight. It is well established that overweight dogs have a higher risk of CrCL injury. Weight loss is recommended and is beneficial for both the operated and unoperated leg. Long-term activity restriction is unrealistic and is not successful in preventing additional injury since most dogs rupture their CrCLs performing normal activities.

**Is a TTA or TPLO the only treatment available for my pet?**

No, other surgical options do exist. Many combinations of factors are considered in technique selection including your dog's body weight, body size, age, current health status, and pre-injury activity levels.



300 E. Wilson Bridge Rd., Worthington, Ohio 43085  
(614) 846-5800, (800) 891-9010, Fax (614) 891-2081

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