



Ruptured Cranial Cruciate Ligament Repair

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The cranial cruciate ligament (CrCL) is one of the most important stabilizers inside the canine knee (stifle) joint, the middle joint in the back leg. In humans the CrCL is called the anterior cruciate ligament (ACL). The CrCL connects the femur (thigh bone) to the tibia (shin bone) and prevents the tibia from sliding forward during normal use of the leg. Rupture of the CrCL is one of the most common reasons for hind limb lameness, pain, and subsequent knee arthritis. Since the development of this problem in dogs is much more complex than in humans, and they experience different degrees of rupture (partial or complete), the canine condition is referred to as 'cranial cruciate ligament disease' (CrCLD). While the clinical symptoms associated with CrCLD vary, the condition invariably causes rear limb dysfunction and pain. Surgical intervention is the only way to properly stabilize the limb and restore function.

How do we stabilize the stifle?

The goal of surgery is not to "repair" the CrCL itself. Due to biological and mechanical influences, the CrCL has no ability to heal once tearing begins regardless of the degree of severity. Unlike in human ACL surgery, the canine CrCL is not typically "replaced" with a graft. This fact is largely due to the major mechanical differences that exist between humans and our canine companions.

Three popular and effective surgical procedures that provide stability to the canine knee as a result of a torn CrCL include Tibial Tuberosity Advancement (TTA), Tibial Plateau Leveling Osteotomy (TPLO) and CORA Based Leveling Osteotomy (CBLO).

These surgeries work by eliminating the forward movement of the tibia (shin bone) in relation to the femur (thigh bone), which was previously controlled by the CrCL. This movement is referred to as the tibial thrust.

The Tibial Tuberosity Advancement (TTA) works by advancing part of the patella (knee cap) ligament (PL) until it is 90° in relation to the top of the tibia. This neutralizes tibial thrust, even in the absence of an intact CrCL. The advanced patella ligament and bone are stabilized using a titanium plate, spacer and screws.

The Tibial Plateau Leveling Osteotomy (TPLO) works by neutralizing tibial thrust like the TTA, but using a different technique. The top portion of the tibia is rotated until it is 90° relative to the patella ligament. The rotated tibia is stabilized with a titanium plate and screws.

The CORA Based Leveling Osteotomy (CBLO) is a unique procedure that modifies the tibial plateau angle to prevent cranial translation (cranial drawer) and tibial thrust in a cranial cruciate deficient stifle. Advantages of the technique include ease of the osteotomy, non-articular osteotomy, and rapid healing of the osteotomy. Rapid healing and early return to function are the result of complete bone contact along the surface of the osteotomy and ability to apply compression at the osteotomy.

What determines which of these procedures is recommended?

There are advantages and disadvantages to each of the above techniques and we will consider these when recommending the best surgical option for your pet. At the time of surgery a joint exploration will be performed to determine if there are any meniscal tears present and these will be addressed. It is also important that your dog not have concurrent pyoderma or a skin infection. Antibiotics may need to be given prior to surgery to lessen the risk of postoperative infection.

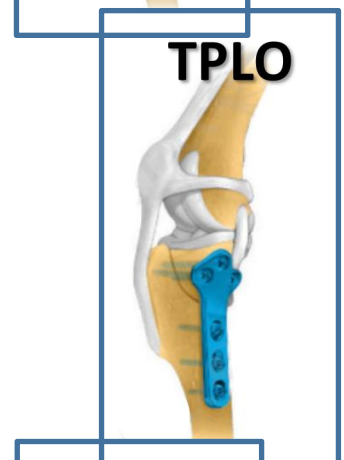
Factors include:

- ✧ Patient's preoperative tibial plateau angle
- ✧ Tibial shape and or size
- ✧ Patient's size and age
- ✧ Degree of CrCL rupture
- ✧ Concurrent patella luxation



TTA

TPLO



CBLO



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Frequently Asked Questions.....

What can I expect from surgery?

The goal of surgery is to return your pet to pain-free and improved knee function, including:

- ✧ Improved activity levels and quality of life
- ✧ Improved range of motion in the knee
- ✧ Increase in muscle mass

What is the success rate of these surgical procedures?

90+% of surgeries are successful in improvement of limb function, resolution of pain and return to normal / near normal activity

What are the potential complications of surgical CrCL repair?

The complication rate for these surgical procedures is low, but infections can develop immediately or several years after the surgery. When infections do develop they will be treated with antibiotics. In rare cases the implant will need to be removed once the bone has healed. Rare complications include cracks in the bone and implant failure. Anesthesia carries only a small risk of complications. At Brookville Road Animal Hospital, top of line equipment and an experienced surgery team are here to oversee anesthesia and recovery for your pet.

Is surgery performed the same day of my consultation?

Typically, yes. Your pet will first be evaluated prior to surgery. This includes reviewing medical history, physical examination, and a detailed discussion of the procedure being recommended. Preoperative blood work may be performed depending on your pet's age, general health, and previous lab results and/or dates.

Can my pet rupture the opposite CrCL?

It is estimated that between 40% and 60% of dogs will rupture the opposite CrCL in their lifetime.

Is post-operative physical rehabilitation important after CrCL surgery?

Yes. Postoperative physical rehabilitation helps return the leg back to pre-injury function. When your pet is discharged from Brookville Road Animal Hospital, you will be provided with detailed post-operative instructions regarding both at home therapy for your pet, as well as post-operative rehabilitation therapies offered locally.

What happens if I elect to not have my pet's ruptured CrCL surgically repaired?

Humans with ACL injuries may respond favorably to conservative management (i.e. physical therapy and knee braces), dogs do not. The larger the dog the more likely they are to remain lame. The body does lay down scar tissue to try to stabilize the knee. In medium to large breed dogs without surgery the lameness typically persists and pain is common.

How do I know if a TTA, TPLO or CBLO is best for my pet?

There are many factors that are taken into consideration when selecting a surgical technique for your pet. These factors include body size, age, health status and pre-injury activity level/lifestyle. Your Brookville Road Animal Hospital doctor will discuss these factors with you during your initial consultation.

Brookville Road Animal Hospital surgeons work together with your family and regular veterinarian to determine the most effective care for your pet. We successfully treat hundreds of orthopedic patients annually with positive results. For more information about ruptured cranial cruciate ligament (CrCL) repair options for your pet, contact Brookville Road Animal Hospital at 317.353.6143 or email info@brookvilleroadvet.com