



DANADA VETERINARY HOSPITAL, P.C.

Cruciate Ligament Injury and Repair in Dogs

The knee (stifle) joint of the dog is one of the weakest in the body. Just as athletes (football players, in particular) often suffer knee injuries, dogs can too. The knee joint is relatively unstable because there is no interlocking of bones in the joint. Instead, the two main bones, the femur and tibia, are joined with several ligaments. When severe twisting or excessive extension of the joint occurs, the most common injury is a rupture of the cranial cruciate ligament (CCL). This ligament is synonymous with the human ACL. When it is torn, instability occurs that allows the bones to move in an abnormal fashion in relation to one another. When this happens, it is not possible to bear weight on the leg without it collapsing.

Contributing Factors

Excessive body weight can be a strong contributing factor in cruciate rupture. The ligament may become weakened due to carrying too much weight; this causes it to tear easily. In addition, obesity will make the recovery time much longer, and it will make the other knee very susceptible to cruciate rupture. Sometimes endocrine (hormonal) diseases such as Cushing's syndrome can weaken the ligaments and increase the risk of rupture. Likewise, chronic use of steroid medications has been known to contribute to the disease.

Causes

In younger dogs, rupture of the CCL is usually the result of trauma to the stifle joint. In some cases, the ligament may only partially tear; however, this will eventually lead to complete tearing of the ligament. When ACL rupture occurs in older dogs, it is most often initiated by a progressive degenerative change (chronic wear and tear) in the ligament with eventual total rupture.

Clinical Signs

Dogs with a ruptured CCL are usually lame and may refuse to bear weight on the affected leg. They often sit with the affected leg splayed out to the side and straightened rather than tucked under them. With time, most dogs become more willing to bear weight, but some degree of lameness remains. They are often painful on manipulation of the knee joint, and the joint may feel and appear swollen.

Diagnosis

The most reliable means of diagnosing this injury is to move the femur and tibia in a certain way to demonstrate the instability. This movement is called a "drawer sign." It can usually be demonstrated with the dog awake. If the dog is very painful, has very strong leg muscles, or is too stressed for evaluation, it may be necessary to use sedation in order to examine the joint adequately. In patients with partial tears,

x-rays may be helpful in diagnosis. Inflammation of the joint, arthritic changes to the surrounding bones, and occasionally subtle displacement of the tibia relative to the femur can be seen.

Treatment

Correction of CCL rupture requires surgery. Multiple techniques exist including replacement of the ligament with nylon or Kevlar wire (lateral fabellar suture or tight rope), and reconstructive surgery to alter the configuration of the knee (Tibial Plateau Leveling Osteotomy, aka TPLO, is the most common.) Occasionally, the injury that causes a ruptured cranial cruciate ligament will also result in tearing of one or both menisci or "cartilages." At the time of surgery, these are examined and removed if necessary.

Prognosis

Following proper and prompt surgical correction, the joint is sound again. Patients bear some weight within days of surgery. Full recovery takes approximately 3-6 months, but varies based on patient size and weight, chronicity of the injury, and activity level. Most dogs walk and run without any lameness; however, some have either a mild limp or lameness associated with cold and damp weather. Post-operative rehabilitation and additional treatments such as therapeutic laser can enhance the recovery of most patients.

Occasionally, a dog that has a ruptured cruciate ligament will become sound (will no longer limp), even if surgery is not performed. However, progressive, degenerative arthritis will develop and result in lameness a few months later. Once these degenerative changes are established, the lameness cannot be corrected, even with surgery.

Regardless of whether surgery is performed, dogs that tear a cruciate ligament are at considerable risk of rupturing the CCL on the opposite leg. Approximately 50% of dogs that tear one CCL tear the other within a year of the initial injury. Prompt repair of the first rupture can help prevent lameness in both rear legs in the event the opposing CCL ruptures in the future.

Surgical Options and Surgeon Referrals

Types of Surgery

Lateral Fabellar Suture: This procedure is recommended for small and medium sized dogs. It is also referred to as an extracapsular repair because it places a piece of heavy-duty fishing line outside the joint that recreates the function of the cruciate ligament. The fishing line acts to stabilize the knee joint while new scar tissue forms.

Tibial Plateau Leveling Osteotomy (TPLO): This procedure is recommended for all large dogs (>60 lbs) and some medium sized dogs. It involves the cutting and rotating of the top of the tibia (lower leg bone), to eliminate the need for the cruciate ligament. This technique results in a permanent bone plate and screws being placed to stabilize the rotated bone.

Tibial Tuberosity Advancement (TTA): The most recent and promising procedure for repair of medium and large breed dogs is the TTA. This procedure also involves cutting the tibia, but instead of rotating the

bone, the fragment that is cut is realigned to change the physics of the joint and remove the forces that the cruciate ligament counteracts. This surgery may lead to a faster return to function than the TPLO for some patients. It also is believed to result in less arthritic changes in years that follow surgery. Some patients may not be candidates for this surgery depending on their anatomy or other concurrent orthopedic conditions such as patellar luxation.

TightRope CCL: This procedure is like the lateral fabellar suture in that it re-stabilizes from outside the joint. Instead of a fishing line, it uses a Kevlar-like material called Fiber-Tape that is meant to be stronger and more dependable than the medical fishing wire.

Stem Cell Therapy: Stem cells harvested from your dog's adipose (fat) tissue are injected into the joints. When the cells interact with the inflammation from the injury, they are stimulated to develop into the specific type of cells necessary for repair. Stem cells are not considered a guaranteed option for repair of torn ligaments. However, cases of ligament repair are documented, and an estimated 70% of patients return to a level of comfort and function that their owners deem desirable. Stem Cell is an alternative to be considered for patients when joint surgery is not desirable, safe, or affordable.

Surgeon Referrals

[Veterinary Specialty Center](#)

Bannockburn, IL

Board certified surgical specialists and anesthesiologists offering TPLO, TTA, or Lateral Fabellar Suture
Requires pre-operative blood work which can be done by a referring vet if within 30 days.

[Veterinary Centers of America Aurora Animal Hospital](#)

Aurora, IL

Board certified surgical specialists offering TPLO or Lateral Fabellar Suture
Requires pre-operative blood work which can be done by a referring vet if within 30 days.

[Veterinary Centers of American Arboretum View Animal Hospital](#)

Downers Grove, IL

Board certified surgical specialists offering TPLO or Lateral Fabellar Suture
Requires pre-operative blood work which can be done by a referring vet if within 30 days.

[Valley Veterinary Surgery](#)

Dr. Robert Cook

St. Charles, IL

Non-board certified surgeon offering arthroscopic approach exclusively using TightRope technique
Requires pre-operative blood work which can be done by a referring vet if within 6 months

[Pine Bluff Animal Hospital](#)

Dr. Brian Schmidt

Morris, IL

Non board certified surgeon offering TPLO at a more affordable price than the specialty centers