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CRANIAL CRUCIATE LIGAMENT DISEASE (TORN ACL)

What is it? The cranial cruciate ligament (CCL) (same as a person's ACL) is a ligament within the knee joint that prevents the tibia (lower leg bone) from sliding forward in relation to the femur (thigh bone), and it also prevents too much internal rotation of the tibia and paw. When it is injured, it can be either partially or completely torn resulting in instability of the knee joint, joint swelling and effusion (increased fluid within the joint), discomfort, lameness, and arthritic changes over time.

What animals are affected? Any animal can have a cruciate ligament injury but it is most commonly seen in mid-sized to large breed dogs.

What are the clinical signs? Animals with a cruciate ligament injury often show some degree of lameness, ranging from complete non-weight bearing to just subtle, intermittent favoring of the limb. The knee is often swollen, and they can be uncomfortable with manipulation of the knee.

How is it diagnosed? CCL injuries are diagnosed based on history of lameness, feeling swelling and instability of the knee, and radiographs (x-rays) of the knee. Radiographs do not show the ligament but can show abnormal positioning of the tibia in relation to the femur, joint effusion, and degenerative or arthritic changes. Partial tears of the CCL can be more difficult to diagnose. Sometimes joint fluid analysis, tick titers (blood tests for tick borne diseases), and other imaging via arthroscopy or MRI are recommended in these cases.

How is it treated? Partial and complete tears of the CCL are treated the same way, typically with surgical stabilization. There are many different surgical techniques used to repair the CCL or stabilize the knee. We offer the following techniques at our hospital:

- **Tibial Plateau Leveling Osteotomy (TPLO)**
- **Extracapsular suture repair (Fishing line tech.)**
- **Tightrope CCL repair**

All improve stability of the stifle; however each has advantages and disadvantages. The **TPLO** is one of the most widely performed and highly successful cruciate ligament repair techniques. It is performed on all sized dogs but is especially valuable in all larger dogs, performance dogs, and highly active dogs. It has been used with great success for almost 20 years. The TPLO repair does not use anything to replace the CCL but rather alters the anatomy of the top of the tibia so it changes the mechanics of the knee and keeps it stable when the animal is weight bearing (walking or running on the limb). This technique involves cutting the tibial bone (*osteotomy*), changing the position of the top of the tibia (the *tibial plateau*) to a more neutral position (*leveling*), and then applying a bone plate to the bone so it can heal in this new position. The **Extracapsular repair** is an effective repair for very small dogs and less active dogs. This repair uses a heavy duty nylon suture (sterilized fishing line) to replace the CCL ligament. The nylon is anchored behind the femur and through a small hole drilled in the tibia and then secured on the outer side of the joint. Over time, stability is gained by the fibrosis and scar tissue that forms around the suture. While many dogs do well with the extracapsular repair, results are a bit more uncertain when compared to the TPLO, and the failure rate is higher than desirable in large, active, or highly muscular dogs. The **Tight Rope CCL** repair is a newer repair that was designed to improve the success rate of the extracapsular repair technique. It uses a stronger material that is placed in the ideal anatomical position for the CCL

through bone tunnels in the femur and tibia. It allows better range-of-motion than the extracapsular repair and is believed to have a higher success rate overall. This technique is a very new repair that has limited long term results, but we feel it is an improvement over the extracapsular repair. It can be performed in dogs of almost any size.

What is the aftercare? The patient usually stays one overnight after surgery to ensure they are comfortable and recover well from anesthesia. Home care for CCL repair (any of the techniques) involves a minimum of 8 weeks restricted activity. Short leash walks only and specific rehabilitation exercises are recommended. We recommend applying cool compresses to the knee initially to help decrease swelling and inflammation, and the incision should be checked daily. Recheck examinations are recommended at 2 weeks and 8 weeks. Recheck radiographs are taken at 8 weeks for the TPLO and Tightrope CCL cases to evaluate healing. If the patient is doing well and the radiographs look good, a more extensive rehabilitation exercise program is initiated.

What is the prognosis? Prognosis with surgical intervention is good to excellent (depending on the chronicity of the problem, the degree of arthritis present at the time of surgery, and appropriate postoperative care and rehabilitation). Patients undergoing TPLO repair tend to start using the limb sooner after surgery than with the other two techniques, and most will return to full function or performance level. Very good results can also be obtained with the Extracapsular stabilization and Tightrope CCL technique. Prognosis for dogs with a CCL injury *without* surgery is fair. They typically will have chronic, intermittent lameness and develop significant arthritis in the affected knee. Weight management and physical rehabilitation can minimize these signs, but the patient typically does not return to full function.

Can it be prevented? CCL injury in animals, particularly the dog, is as much a degenerative disease as it is a result of trauma (ACL injuries in people tend to be more trauma or sports injury induced). It cannot truly be prevented, but weight management and good exercise fitness programs can help.

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