

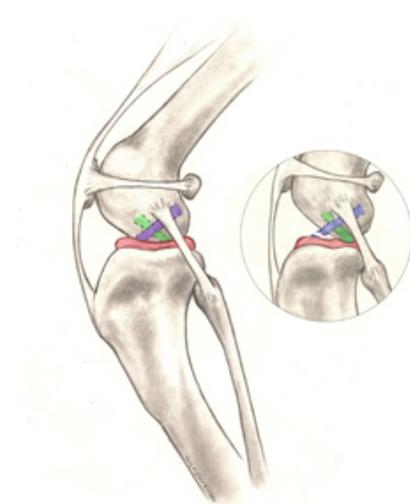


Palmetto

VETERINARY SPECIALIST

What is a cranial cruciate ligament rupture?

The cranial cruciate ligament (CCL) is one of the stabilizers of the knee. The knee is the joint between the femur and tibia. In a dog, the knee joint is sloped to the back of the knee. The CCL is the same as the ACL in humans. The CCL originates on the caudal aspect of the femur and inserts on the cranial aspect of the tibia. In the picture below, the CCL is purple. The job of the CCL is to keep the femur centered over top of the tibia. When the CCL is torn, the tibia will slide forward in relation to the femur, causing the knee to be unstable.



The CCL can rupture completely or partially. With a complete rupture the tibia slides forward in relation to the femur and often the dog will not walk on the leg because of the instability.

A partial CCL injury can be more difficult to determine. The CCL is not like a rubber band with only one strand. If you nick a rubber band and load it, the rubber band will snap. The CCL is comprised of multiple filaments like a climbing rope. Strands of the rope can be cut (partial tearing) but the rope will still have its overall strength. As more strands are cut, the strain will increase in the remaining fibers. In a living system the increase strain causes pain. Eventually enough strands are cut and the rope will break. In dogs with an early partial tear, they will have periods of lameness after activity. The lameness resolves after a few days. Over time, dogs will tear more strands in the CCL until it eventually ruptures completely.

The meniscus (pink in the picture above) are cartilage cups that support the round end of the femur on the flat surface of the tibia. The meniscus in a dog with a CCL rupture can be injured as the knee slides forward. Meniscal injury can be addressed at the time of surgery.

Treatment options

Surgery provides the most rapid return to normal activity. All of the surgery is performed outside of the knee. The steep angle of the canine tibia prevents intra-articular stabilization techniques from being effective.

One technique, the lateral suture, “mechanically” stabilizes the knee by placing a suture around the fabella, through a hole drilled in the top of the tibia and tying it on the lateral aspect of the knee. This suture “replaces” the CCL on the outside of the knee. The dog will reinforce the suture with tissue to reinforce the repair. This tissue takes 6 to 8 weeks to form and reach 60% of normal physiologic strength. It is the combination of the suture and the added tissue that provide stability to the knee. The lateral suture is commonly used in patients under 30lbs.

Another class of techniques change the biomechanics of the knee. This is achieved by positioning the patellar tendon perpendicular to the tibial plateau, so the dog does not need the CCL. The technique to be utilized on your dog is a tibial plateau leveling osteotomy (TPLO). The tibial plateau is the top of the tibia. A cut (osteotomy) is performed in the proximal portion of the tibia to isolate the tibial plateau. The plateau is rotated (leveled off). A plate is placed to hold the bone in the new position while it heals over the next 10 weeks. These are often performed in dogs that are over 30lbs.



Postoperative care

Postoperative confinement is critical for both techniques to have a successful outcome. Your dog needs 10 weeks of confinement to allow the soft tissues and the bone to heal. If your dog is used to a crate, this would be ideal. Most dogs are not crate trained at this stage of their life. An alternative is an expandable play pen, home office or laundry room. This prevents your dog from running to the front door when the doorbell

rings, hopping on the couch/bed and being rambunctious with your other pets. When they are taken outside, they should be on a leash and under control at all times. Please restrict free access to flights of stairs and do not allow your dog to play with other dogs or run off leash for 10 weeks after surgery. Controlled postop activity allows for two objectives to met - one is the soft tissues have time to reinforce themselves and to get used to their new tissue loads. The second objective is for the bone to heal in a tplo. Both take 8 to 10 weeks to occur. If a patient is active too early, they can stretch/tear the soft tissues or break implants. Either of these can have a devastating impact on the repair and could require additional surgery.

Once recovered, patients return to an active lifestyle. Most regain 90 to 95% of their activity levels prior to injury. They will have stiff periods secondary to arthritis. These tend to be mild and they rebound very quickly without the need for medications.

Thank you for the opportunity to be a part of the team that provides for your pet's surgical needs. We work closely with your regular veterinarian to ensure your family member returns to an active quality of life.