



Cranial Cruciate Disease

Cranial cruciate disease is when there is a complete or partial tear to the cranial cruciate ligament in the stifle or knee joint. This ligament prevents a cranial-caudal (forward-backward) motion of the stifle joint. When the ligament is damaged, this allows for the tibia bone to move forward relative to the femur

and therefore the bones “slip” when walking.

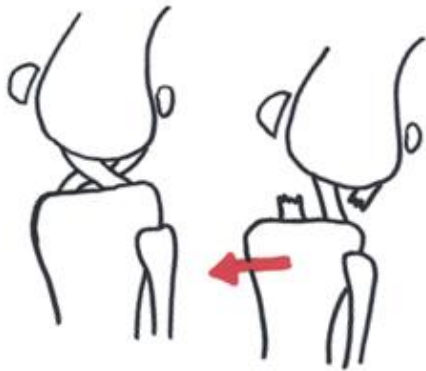


Figure: The image above on the left depicts a normal stifle joint with intact cruciate ligaments. The image on the right shows the cranial cruciate ligament that has ruptured. The red arrow shows how the tibia can now “slip” forward when walking.

How could this happen?

A ligament tear can result from chronic degeneration, trauma or a combination of both. Degeneration can occur with age or secondary to improper bone conformation and is most commonly seen in large breed dogs. Traumatic events are often caused by running and turning at the same time, an internal “twist” of the stifle, and is most commonly seen in young, active dogs and cats. Animals with cruciate disease due to degeneration or conformation will have a higher risk of having bilateral cruciate disease occur.

Cruciate disease is very painful and often presents with the animal not wanting to bear weight. The resulting joint instability leads to cartilage degeneration, osteoarthritis formation, swelling of the joint, thickening of the joint capsule or injury to the meniscus (cushion in the joint).

Diagnosis and clinical signs

- Painful stifle joint
- Joint swelling
- Thickening of the joint capsule in older injuries, called a medial buttress
- A positive cranial drawer test: palpation of the joint eliciting a forward and backward movement
- A positive tibial thrust test: palpation of the stifle joint that elicits an abnormal movement of the tibia moving forwards in relation to the femur
- Quadriceps muscle atrophy on the affected side
- Sitting with the affected limb held to the side
- Walking with the affected limb held to the side and decreased weight bearing
- Swelling or arthritic changes seen on radiographs (x-rays)
- X-rays help to rule out other causes of hind limb lameness such as fractures, infections or cancers



Surgical Management

Surgical management is the gold standard approach to treating cranial cruciate ligament ruptures because it has the best chance of returning the stifle to normal function. The joint is examined surgically or via arthroscopy to assess the meniscus for signs of tearing and to remove any fragments of the cranial cruciate ligament that may cause irritation within the joint (like a rock in your shoe). Several repair techniques exist, below are two of the most commonly performed techniques.

1. TPLO (Tibial Plateau Leveling Osteotomy): most commonly recommended for large breed, active dogs

- A steeply angled tibial plateau is leveled by creating a circular bone cut (osteotomy) and rotating this section of bone.
- The cranial cruciate ligament, when intact, inhibits “slip” of the tibia down the steep angle.
- After rotation of the bone to the desired shallow angle, a bone plate is used while the bone is healing
- This is a strong repair. Once the bone has healed, the repair does not rely on hardware. Leveling of the plateau angle prevents “slip”.
- The bone plate stays in place, it is only removed should there be a complication or infection, which occur infrequently
- Veterinary surgeons are available in Vancouver, Victoria for this procedure.

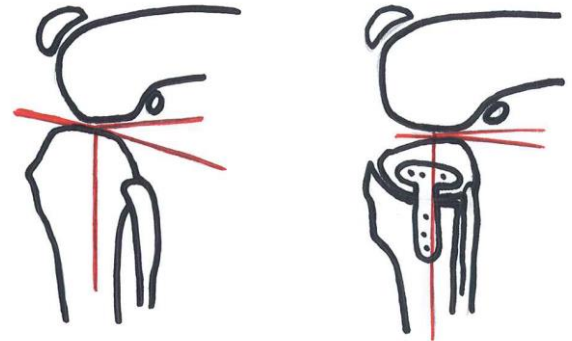
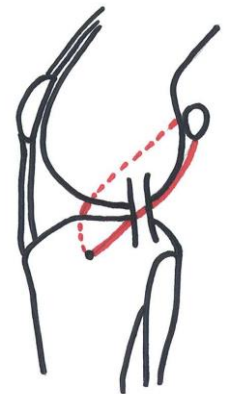


Figure: The image on the above shows how the tibial plateau angle is greater in a patient with a steep slope (abnormal). The image on the right shows the Tibial Plateau Angle postoperatively showing the leveling of the tibial slope for active stabilization of a joint with a cranial cruciate ligament rupture.

2. Extra-capsular techniques: acceptable for smaller dogs, cats or older, non-active dogs

- A strong suture or nylon is placed around the joint mimicking the orientation of the cranial cruciate ligament
- Relies on the suture or nylon staying intact, it may be at risk of rupturing in larger, heavy or active dogs.
- The suture or nylon remains in place and is not removed unless there are complications
- There are several variations of this technique
- Veterinary surgeons are available in Vancouver, Victoria to perform this type of repair

Figure (right): The nylon suture is depicted in red passing through the tibia, using the sesamoid bone as an anchor and around the femur. Notice how it mimics the direction of the cranial cruciate ligament.





Rehabilitation

Rehabilitation is important after surgery to encourage good return to function. It is most successful if rehabilitation is started soon after the repair to regain normal range of motion and begin re-building muscle strength.

Medical Management

- This conservative treatment is better success in small animals weighing 10kg or less.
- Not very successful for return to function in larger dogs. The lameness tends to improve with time, however they do not return to the same level of function or activity that was prior to the injury.
- Rest
- Anti-inflammatory medication to reduce swelling and pain
- Neutraceuticals/Cartrophen: a cartilage protector and joint fluid modifying agent
- Joint health supports/supplements: omega fatty acids, collagen, green lipped muscles, glucosamines etc.
- Instability of the joint will persist and secondary arthritis forms more rapidly



Weight Management

Animals that are overweight have an increased risk of arthritis formation and of having the other stifle suffer a rupture of the ligament. For animals that are overweight, a weight loss program should be implemented.

What to expect

It can be scary to learn of a diagnosis of cranial cruciate disease in a loved pet. Your veterinary team at Nanaimo Veterinary Hospital wants to work with you to help improve your pet's quality of life and help them return to their best self. We want to work together to help you maintain the bond you have with your pet. We are here to support you and your pet along this journey. Please let us know if you are interested in pursuing a referral for a surgical consult.

Please contact us with any questions or concerns that you may have at 250-758-3985 or by email at nveth@shaw.ca