

TPLO Surgery of the Canine Knee

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12/15/2021

A common injury for humans and particularly athletes is an ACL (anterior cruciate ligament) tear. Similarly, the cranial cruciate ligament (CCL) in dogs can tear after extensive impact on the ligament or during a sudden injury. I have first-hand experience with a torn CCL and subsequent TPLO surgery with my Border Collie/Husky Mix Siena. Siena was diagnosed with osteoarthritis at the age of 1 ½ years old due to elbow dysplasia. At age 4 she tore her left CCL and we opted for a TPLO surgery. It was the right choice, and she made a full recovery. Siena is now 8 years old and is showing signs that her arthritis is getting worse. She is the main reason I wanted to learn canine massage so that I can help maintain her quality of life for as long as possible.

There are two ligaments in a dog's knee joint—the cranial cruciate ligament and the caudal cruciate ligament. These ligaments are responsible for helping the knee function as a hinge joint and help to prevent rotation between the femur (upper bone) and tibia (lower bone, a/k/a shin bone). The meniscus helps to function as a cushion between the tibia and femur.

A torn CCL causes pain and immobility. The level of immobility depends on the severity of the rupture. The diagnosis relies on an examination, X-rays, and manipulating the joint (called the cranial drawer test). This test measures the level of instability present in the joint. Over time, the joint will continue to degenerate, resulting in pain, chronic arthritis, and lameness.

To treat a CCL rupture, veterinarians recommend the Tibial Plateau Leveling Osteotomy (TPLO), surgery. TPLO is a surgical procedure used to treat cranial (or anterior) cruciate ligament rupture in the knee joints (stifle) of dogs. Most dogs achieve about 95% of their normal limb function and return to their prior level of activity approximately 10-12 weeks after surgery. Because of the success rate of the TPLO procedure, it is the most popular type of repair.

TPLO surgery is more often recommended for injuries affecting large dog breeds, but dogs of ALL breeds, sizes and ages can have this procedure if they have incurred a rupture of the CCL and have joint instability with mild to severe lameness.

Overview Of the TPLO Surgery

TPLO surgery involves making a curved cut in the tibia from the front to the back, much like half a smiley face. The top section of the tibia is then rotated backward until the angle between the tibia and femur are appropriately level. The stifle (knee joint) will then be stable for the dog when bearing weight. A metal bone plate and screws are then used to affix the two sections of tibia in the desired positions, allowing the tibia to heal in its new configuration. TPLO surgery helps to stabilize the stifle and reduce the likelihood of further osteoarthritis.

During TPLO surgery, the meniscus will also be evaluated and repaired if needed because a torn meniscus can be a source of constant irritation to the joint. If the meniscus is not damaged, the surgeon performs a “meniscal release.” This helps prevent it from being damaged in the future.

Usually, the dog will stay overnight in the hospital to be monitored and can go home in the morning. When we picked Siena up the next morning, we were shocked to see she could walk herself right out of the hospital. We knew we had chosen the right option for her.

Recovery

The recovery period following a TPLO surgery will require rehabilitation, rest, and exercise restrictions for 8-12 weeks for the best outcome. This allows the incision and bone to heal and the knee function to return. Until the bone is completely healed, you will have to be incredibly careful and follow your veterinarian's instructions explicitly.

Effect of Gait

A slight limp for a period of time after an extensive orthopedic surgery such as a TPLO is completely normal. By two weeks after surgery, the dog should be increasing the length of his walks on leash and by the eighth week he should be able to take two 20-minute walks each day. The dog will gradually resume normal gait and daily activities.

Can Massage Help?

Absolutely it can! I did not know this back then, but I certainly do now. Massage is a gentle, non-invasive way to help dogs recovering from TPLO surgery, or any kind of surgery. As long as it is applied GENTLY there are numerous benefits. A few of them are listed below:

- Enhances human-animal bond and the dog's quality of life
- Relieves stress and anxiety
- Decreases pain by stimulating endorphins
- Improves blood circulation and lymphatic flow
- Improves spinal/body alignment, flexibility, and range of motion
- Decreases edema (excessive fluid collecting in cavities or tissues in the body)
- Helps maintain muscle tone
- Improves immune system function
- Increases energy, which can aid in weight loss

On the flip side, there are some circumstances in which you would not want to massage a dog after surgery. If the dog has an open wound or incision, skin infection, or fever, you should wait on massaging the dog. Always be mindful of the veterinary care the dog receives and only proceed when the massage is agreeable with the dog's veterinarian.

Muscle Groups Affected

It is vital that the quadriceps and hamstring muscle groups are maintained as they control flexion and extension of the stifle joint. If these muscles become weak the stifle can become vulnerable and at risk of further injury. Massage can help both muscle groups and it is important to remember that not only should you massage the injured leg, but you should massage all the legs as well as the entire body of the dog as well to keep everything strong, pliable, and to maintain balance.

Nerve Innervations

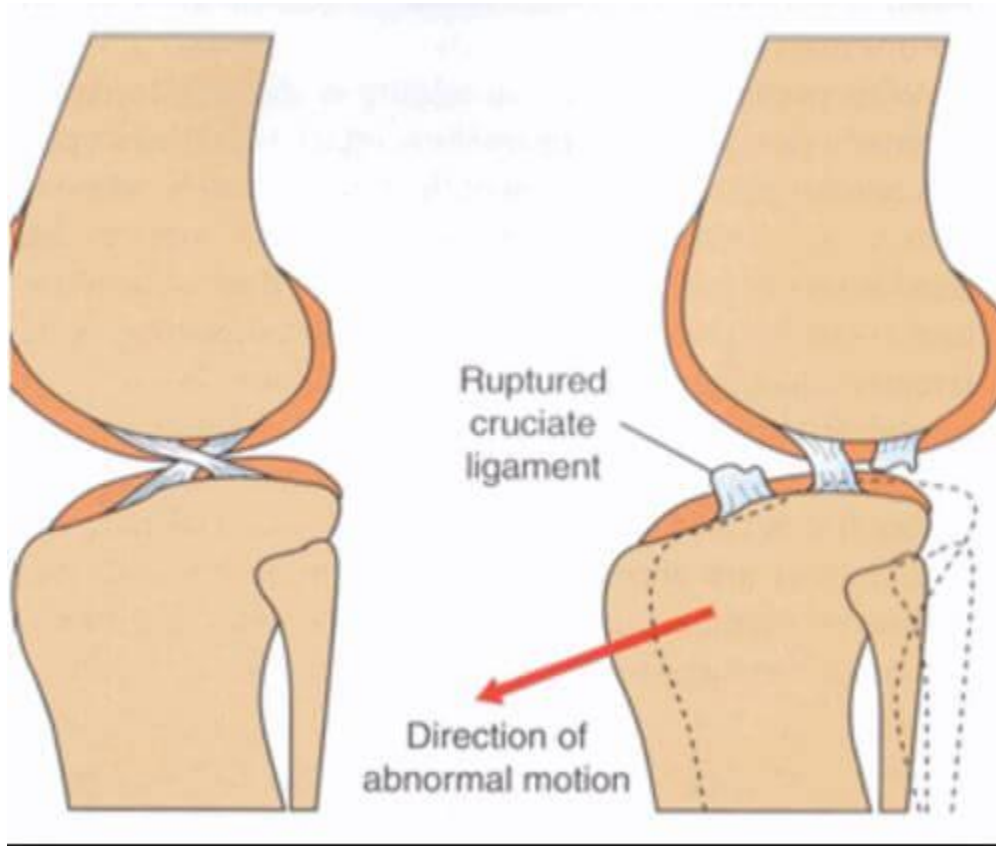
The main nerve supplying the cruciate ligament is the posterior articular nerve (PAN) derived from the tibial nerve. Three major articular nerves arise from the saphenous nerve, tibial nerve, and common peroneal nerve to innervate the periarticular tissues of the canine stifle joint.

Blood Source

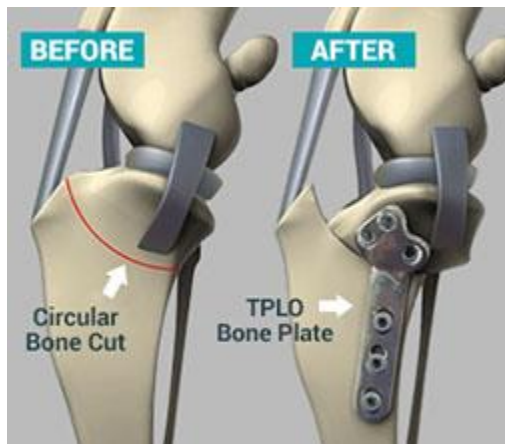
The major vascular contribution to the center of the stifle joint occurs from branches of the middle genicular artery.

Graphics

Below is a graphic showing a CCL tear:



Below is a graphic showing the TPLO repair:



References and Sources

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