



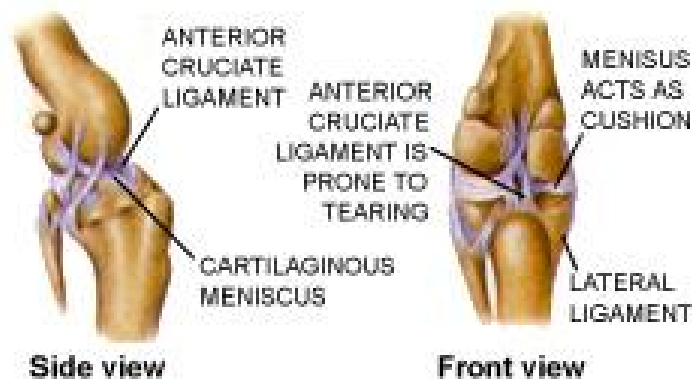
Paws, Claws & Wings

Physical and Behavioral Rehabilitation for Animals



Cruciate ligament injury

The anterior cruciate ligament (ACL) is commonly torn in people. Dogs, like humans, often rupture this ligament that is more properly called the cranial cruciate ligament (CrCL) in dogs. Unlike humans, this tear is often the result of subtle, slow degeneration that has been taking place within the ligament rather than the result of trauma to an otherwise healthy ligament. This is why approximately half of the dogs that have a cruciate ligament problem in one knee will, at some future time, develop a similar problem in the other knee. Also, in contrast to humans, the skeletal structure of the dog knee is such that the CrCL is under a tremendous mechanical stress even during relatively sedentary activities.



Surgical Options:

o **Extra-capsular suture stabilization** (also called "Ex-Cap suture", "lateral fabellar suture stabilization" and the "fishing line technique") - This is a traditional surgical treatment that has been performed for many years. The concept of this procedure is to replace the function of an incompetent cranial cruciate ligament with a heavy monofilament nylon suture placed along a similar orientation to the original cruciate ligament, but outside of the joint (the actual ligament is inside the joint). The suture needs to stabilize the tibia relative to the femur while allowing normal knee movement, until organized scar tissue can form and assume the stabilizing role. These techniques tend to have a little bit too much "give" for larger breeds and active dogs, but seem to work reasonably well in small breeds and inactive dogs. Postoperative care at home is very critical and involves strict activity restriction for ~ 4 months. Premature and excessive activity risks complete or partial failure of the stabilizing suture that can render the surgery a complete or partial failure.

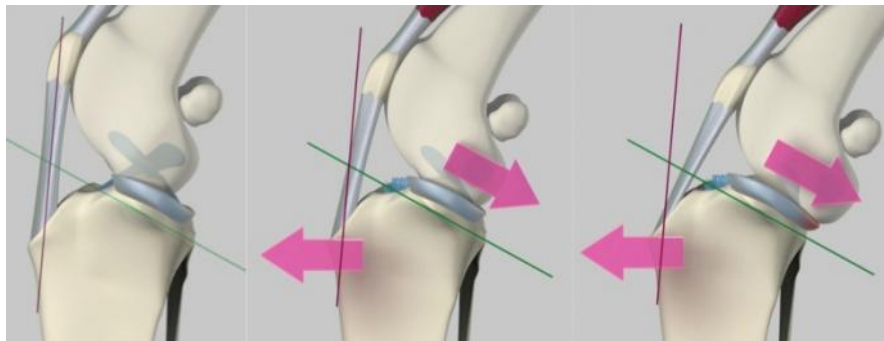
o **Tibial Plateau Levelling Osteotomy (TPLO)** -TPLO involves making a circular cut in the top of the tibial plateau and rotating the contact surface of this bone until it attains a relatively level orientation that puts it at ~ 90 degrees to the patellar tendon. This orien-

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tation of the tibial plateau renders the knee relatively stable, independent of the role of the cranial cruciate ligament. The cut in the bone is stabilized by the use of a bridging bone plate and screws. Once the bone has healed, the bone plate and screws are not needed, but are seldom removed unless there is an associated problem. A recent study demonstrated superiority of this technique over suture stabilization in giant breeds of dogs, active dogs, young dogs and dogs that have a relatively stable knee to start with (suture stabilization doesn't seem to be able to improve these patients much). Postoperative care at home is very critical and involves strict activity restriction for ~ 4 months. Premature and excessive activity risks re-fracture of the bone prior to bone healing.

o **Tibial tuberosity advancement (TTA)** - This method makes a linear cut along the front of the tibia. The front of the tibia, called the "tibial tuberosity" is advanced forward until the patellar tendon is oriented approximately 90 degrees to the tibial plateau (notice that this is simply another way to accomplish the same orientation as the TPLO). This orientation renders the knee relatively stable, independent of the role of the cranial cruciate ligament. The amount of advancement needed to obtain this orientation is determined from x-rays and we have recently completed a study that has helped us to determine how this planning is best performed. The cut in the bone is stabilized by the use of a bridging bone plate and screws. Once the bone has healed, the bone plate and screws are not needed, but are seldom removed unless there is an associated problem. In some dogs, during their pre-operative planning it is discovered that their knee structure does not lend them to safe or effective application of this technique. Postoperative care at home is very critical and involves strict activity restriction for ~ 4 months. Premature and excessive activity risks re-fracture of the bone prior to bone healing.



Non-Surgical Options:

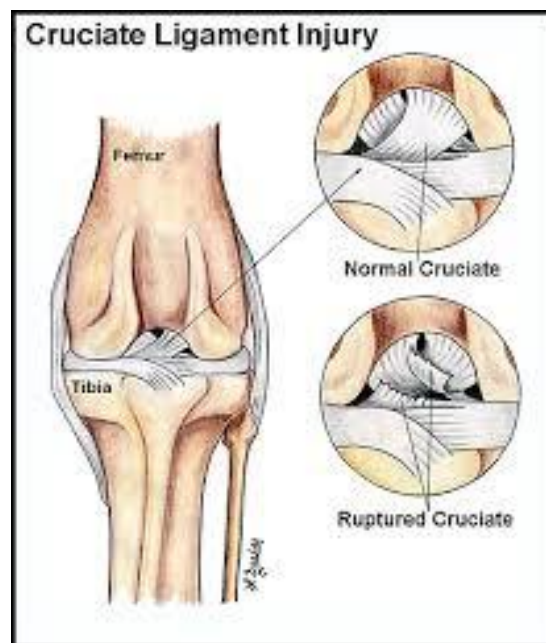
o **Activity restriction, weight loss and anti-inflammatories** - This combination is not a treatment per se because it does not stabilize the knee. This regimen may allow the knee joint inflammation to subside somewhat. While the symptoms of lameness and pain may subside with time, attempts to return to normal activity levels will often be limited by the

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progression of osteoarthritis. In general, this therapy is not advised as the ideal form of treatment, but it may be appropriate for individual dogs due to some combination of their very small size, inactive lifestyle, other concurrent injuries or diseases, or financial realities. In general, the earlier surgical therapies are performed, the more effective they are; thus a "wait and see" approach to non-surgical management based only on wishful thinking is seldom advised.

o **Physical rehabilitation** - There is ample evidence that perioperative rehabilitation therapy by a trained rehabilitation practitioner can advance and hasten the recovery from surgery. There is little/no evidence to suggest that this is a consistent and predictable alternative to surgical management for most dogs, but occasionally the combination of concurrent injuries or diseases, advanced age, patient size and financial limitations lead pet owners to pursue this option.



Post-Operative care:

0-6wks

Your dog's activity level **must** be limited to short leash walks outside to urinate and defecate. When the dog is alone, it **must** be restricted to a crate or small area. While you are at home and directly supervising, the dog can be tied with a short leash to a heavy piece of furniture in order to be near family activities. At no time should your dog be allowed to play with other pets in the home, or be allowed to run or jump. If the dog must go up or down stairs, you should provide support via a sling under the abdomen, to prevent an accidental fall. During this period, your pet will benefit from physical rehabilitation including

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passive range of motion (PROM), massage and stretching. Recheck radiographs at six weeks post-op should show good progression of healing at the surgical site. Some of the younger dogs will exhibit full bone healing at 6 weeks, but most dogs above 4-5 years of age will require another set of radiographs at 10 weeks postop. If healing is as expected, you may begin taking your dog on short leash walks, increasing in total duration throughout this period. It is better, if possible, to increase the frequency of the walks than the duration of each walk. If you see increased limping after exercise, you should decrease the amount of exercise to the previous level for several days, and then gradually increase again. Passive ROM continues to be beneficial throughout this stage. Hydrotherapy can usually be started at this point to alleviate pain, stiffness and begin to build muscle and strength.

10-14wks

For most dogs, recheck radiographs at ten weeks post-op will show full healing. The dog may be allowed to be off-leash within the house at this point. Discourage heavy running and jumping. Exercise should be gradually increasing at first, and rapidly increasing toward the end of this stage. It is important to use a moderate pace in walking the dog, to encourage equal use of affected and unaffected limbs.

14-18wks

Exercise restrictions will be lifted for most dogs, including working dogs. You should now gear your dog's exercise routine toward regaining muscle mass that was lost since the CCL rupture.

