“When the Owner Does Not Want Surgery....
Treating the CCL injury Conservatively”

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- Predisposing factors that can cause CCL injuries: Common in many large breeds, Sex, Neutered, Overweight dogs, Age, Active dogs, Athletes.
- Sex of the dog: Females are more likely to rupture their CCL than males “Females 65% compared to males 35%”. Harasen Greg G. A retrospective study of 165 cases of rupture of the canine cranial cruciate ligament. Can Vet J 1995;36:250–251
- Neutering vs not neutering: “There was no occurrence of CCL in either intact male or intact female dogs, or in late-neutered females.” “However, in early-neutered dogs, the occurrence reached 5.1 percent in males and 7.7 percent in females, representing significant differences in occurrence from both intact and late-neutered dogs”. Neutering Dogs: Effects on Joint Disorders and Cancers in Golden Retrievers. Gretel Torres de la Riva, Benjamin L. Hart mail, Published: February 13, 2013
- Over weight: It is well documented that weight play a key role in the development of CCL related injuries.”Body weights of dogs with ruptured CCL were significantly greater than those of control dogs.” “Dogs weighing > 22 kg had a higher prevalence of CCL rupture, This greatly increased the prevalence of bilateral CCL ruptures.” [J Am Vet Med Assoc](#). 1999 Sep 15;215(6):811-4. Breed, sex, and body weight as risk factors for rupture of the cranial cruciate ligament in young dogs. [Duval JM](#), Budberg SC, Flo GL, Sammarco JL.
- Age: Two studies 1) Small breed dogs averaged 8.7 y, large breeds averaged 5.8 y, giving an overall mean of 7.7 y. 2) Small breed dogs averaged 8 y, large breeds averaged 7 y, giving an overall mean of 7.3 y. Can Vet J. Oct 2003; 44(10): 845–846. Canine cranial cruciate ligament rupture in profile [Greg Harasen](#).
- Diagnosis of CCL injuries are done by: 1) Patient history 2) Physical examination 3) Non-invasive diagnostic tests or 4) Invasive diagnostic tests
  1) Patient History Questions: Is there any history of acute trauma to the affected leg? Is there a history of on and off lameness that resolved after a few days of rest and NSAID treatment? Is there a history of lameness on one leg only for is it bilateral? Is the lameness a slight limp or total non-weight of the leg or somewhere in between?
2) Visual Examination: Important to watch the patient walk to see what level of lameness there is. This can be done by having the patient walk over different surfaces: Up and down stairs, Walking on uneven surfaces. If you don’t have steps or a pre built obstacle course in your clinic, the car park with the curbs/gutters are a great place to watch the patient walk.

3) Physical examination: Cranial draw test. The distal end of the femur is stabilized by one hand and the other hand rest on the proximal end of the tibia. If the tibia is able to be moved forward it is considered a positive draw and indicates a ruptured CCL. Tibial compression test. The femur is held in place with one hand and the other hand flexes the ankle, if the tibia moves abnormally when flexing the ankle joint it indicates a CCL rupture.

4) Non-invasive tests: Radio graphs: The radio graph will not show the ruptured ligament but it will show the overall position of other strutures in the stifle joint. With rupture of the CCL structures will move and be visible in inappropriate areas of the joint.

5) Invasive diagnostic tests: 1) Arthroscopic Evaluation. A scope is inserted into the stifle joint to evaluated the CCL ligament as well as the health of the joint. Is also used to debride meniscal tears. 2) Traditional Evaluation. The joint capsule is opened so that visual inspection of the CCL ligament and the meniscus can be performed.

Incidence of CCL injuries: 40-60% of dogs that have a CCL injury in one stifle will, at some future time, develop a similar problem in the other knee. Partial tearing of the CCL is common in dogs and can progresses to a full tear over time. Evidence indicates that TPLO does not halt the progression of OA in dogs. Some studies indicate higher incidence of OA after surgery as you have opened the joint capsule.

Surgery may not be the best options here are some points to consider: the financial cost of the surgery, Medical reasons, Age of the patient, Other non-related medical conditions, Physical condition of the patient, Overweight, Adolescent patient to young growth for surgery, Other complicating injuries (if due to an acute trauma), Unacceptable surgical or anesthetic risk, Owners may not be able to handle the post surgical maintenance or rehabilitation of the patient or Owner may just be against any type of surgery.

Options: We have been taught that surgery is the only ‘real’ option. But is it? Many owners feel ‘guilted’ or rushed into making a quick surgical decision. The panic can soon turn to anger if the client finds out that there where other options.

CCL disease: The chronic, unrelenting course of cruciate disease in dogs emphasizes the need to try a multifaceted non-operative strategy first. Even in humans who usually acutely rupture their cruciate, many advocate rehabilitation: “At present, there are no evidence-based arguments to recommend a systematic surgical reconstruction to any patient who tore his ACL.”

CCL treatment: Research on non surgical approaches are growing for humans and dogs. No evidence supporting crate rest only in contrast there are study that show the detrimental effect of cage rest only for dogs recovery post CCL surgery. Need to have a combination of rest and multimodal approach to successfully treat the injury. Can Vet J. Oct 2003; 44(10): 845–846. Canine cranial cruciate ligament rupture in profile, Greg Harasen

When is surgery needed: When there is confirmed meniscal damage. Non compliant owners that will not be able to commit to non-surgical conservative management program of their patient. If there is no improvement after 8 weeks of non-surgical conservative management. The patient is not a candidate for conservative treatment and the non-surgical approach may do harm to the patient than the surgical approach

The best approach is open and honest discussion with the owner: Conservative does not always work, It is not a cure and will not fix the damaged CCL, Can require as much time as surgical rehab, And may be just as costly, However, if conservative management does not work, it will help condition the patients body for a faster recovery time from surgery. Owners MUST be compliant, The most difficult thing is no running/jumping. They need to understand that all of the work they are doing can be ‘undone’.Set short term goals and re-evaluate every 10 to 14 days

Multimodal Approach to Conservative Treatment: Exercise restriction, NSAIDS, Chondroprotectants, Weight loss/diet if needed, Bracing, Physical rehabilitation

The goals of a multimodal approach: Pain control, Reduce the inflammation, Increase strength, Increase range of motion and increase function and quality of life
• Conservative Approaches: Restricted activity Different than complete crate rest. Restricted activity is to prevent excessive stresses to the injured leg and allow the CCL ligament time to heal. A dog that show improvement over a 8 week period of restricted exercise is not a candidate for surgery
• Complete crate rest: Is not beneficial. Crate rest will cause significant atrophy of the affected limb as well as the entire body. Due to muscle atrophy can predispose the bilateral limb to CCL rupture. Psychologically will drive the dog and the owner crazy
• Exercise restriction: No running, jumping, No freedom running through house, Leash walks only, 3 to 5 times a day, Quality over quantity, Owners need to understand what lameness is
• Pain control: Moist heat, Cyrotherapy, Laser therapy, Massage & Pharmaceutical interventions. Good Pain control!!!!Everyday regiment!!!! Nonsteroidal anti-inflammatory drugs (NSAID): Rimadyl®, Deramaxx®, Metacam®, Zubrin®, Previcox®. Inflammation leads to cartilage degeneration. Accelerates development of osteoarthritis. Many people/vets think NSAIDS will make dogs feel too good and they will run around and use leg “This is not the case”. Will encourage healing and help with muscle control. Helps to start rehabilitation exercises earlier as the patient is pain free and able to function better than if they were in pain
• Weight loss: One of the first steps that should be taken to deal with arthritis is weight loss. Approximately 35% of adult dogs are overweight and of those that are middle-aged that percentage goes up to 50%. Excessive weight puts added stress on the joints which in turn contributes to the degenerative joint disease. 1lb of excess weight equals 4 lb of additional shear force placed on the joints. When pets are suffering with CCL issues, it is far better to be on the skinny side.
• Rehabilitation Modalities: Laser (Class IV or Class 3B), Therapeutic Ultrasound, NMES, Tens, Pulsed Magnetic Field, Shock Wave Therapy, Cryotherapy (hot and cold), Manual therapy, Underwater Treadmill, Swimming, Acupuncture.
• Bracing the stifle joint: There are now custom orthotic braces that are available to your patients. The stifle brace is designed for: Non-surgical solution for CCL injuries, Pre-operative solution for CCL injuries (adolescent patients), Post-operative solution for bilateral CCL injuries, Bilateral knee that is non-operated on, Pivot shift instability. Normal healing times require the patient to be in the brace for 6 to 9 months. The brace acts the same as a cast for a bracken bone, that it is prevents movement in a certain direction. This allows the body time to form scar tissue around the stifle joint stabilizing the stifle joint long term. The bracing device stabilizes the stifle joint form the outside where surgery stabilizes the joint form the inside. The brace is worn during the day and removed at night. The brace can be manufactured in a few days and your patient can be almost 100% functional once the brace is applied. Rehabilitation times take about as long as if the patient had surgery but they can be fully functional in a few days to weeks, “when the brace is on”. Where with the surgical option the patient is not back to full function for at least 6-9 months.

• Laser therapy: Benefits of Laser Therapy: Faster wound healing, Analgesia, Decreased inflammation, Angiogenesis, Vasodilation, Improved lymphatic drainage, Improved nerve function, axonal regeneration, neurologic repair, Decreased fibrosis, Immunoregulation/Immunomodulation

• Strength improvement: Balance and proprioceptive exercises. Begin with weight shifting. Attempting to encourage weight bearing on the affected limb. Quality over quantity

• Under water treadmill: Begin with the water ABOVE the stifle, between stifle and greater trochanter. Slow speeds - .5 mph to 2.0 mph (.8 kmph to 3.21 kmph) 5 to 10 minutes to start. May do intervals. Lean on the side of caution

• Physical rehabilitation: Evaluate and take objective measurements. Will want to re-evaluate every 2 weeks. Girthometers – muscle mass and Range of motion – goniometer we also want to look at Static and Dynamic force plate, Functional scale & Lameness scores

• Re-assessment: every 10 to 14 days, Determine if your short term goals have been met, If yes, re-establish goals, If not, why? Evaluate girth, range of motion, function, force plate. Our desired results are for: Small gains in walking, Small gains in standing, Happier at home, Able to go up a few stairs & Increased quality of life

• Conservative Treatment Program: Two to three times a week, Exercise restriction, Laser therapy, Joint compression, Balance and proprioceptive exercises, Continuous reassessment, 10 to 14 days to improve
Case example: “Tug” 4 y/o MI Rottweiler, Top 5 Rottweiler’s in conformation. Intermittent lameness on Right hind limb. Saw orthopedist and MRI demonstrated partial CCL tear. Owner opted to try to avoid surgery and began intensive therapy. Boarded with therapy for 6 weeks. Laser to the right stifle, right lumbosacral area 8 to 10 joules/cm². Balance and proprioceptive exercises. Underwater treadmill – water filled above the level of the stifle at speeds between 2.0 and 4.0 mph for 10 to 30 minutes. Competed in Westminster 2012 and made the cut – significant in that owner/breeder/handled. 5 out of 38 dogs. No girth differences. Maintained with laser therapy twice a week, land treadmill daily, and core work on the peanut