

How I Select Surgical Treatment: Extracapsular, TPLO, TTA, joint replacement, conservative.

Dr. Callum W. Hay, BVMS (Hons.), MRCVS, Diplomate ACVS
Veterinary Surgical Services, Inc
Tampa, FL
Tel. (813) 901 5100
E. Mail Veterinarysurgicalseervices@yahoo.com

My practice consists of 100% referral-type surgeries with the primary goal of providing surgery for companion animals that will improve outcome as a result of treatment. This goal while simple in theory is sometimes complicated in the management of cranial cruciate ligament (CCL) injury because there are no universally accepted measures of outcome to evaluate treatment response. This is a contentious issue in our profession especially in the era of evidence based medicine. Our literature does not clearly support one technique of CCL management over another. On any given day, owners of dogs with CCL injury will be told different things by Dr's as to why they should or should not pursue surgery and be given different recommendations on which repair to use. Much of the information provided to owners is likely to be opinion based. It is my opinion that treatment of CCL injury in dogs is historically undertaken in veterinary medicine by using our patients to learn how effective our treatments are. Procedures become acceptable possibly not only due to benefit but by the lack of harm caused by treatment.

Early in my career I relayed what I learned from mentors regarding CCL disease: that it should be repaired because it would do less harm than leaving the problem untreated. I have practiced for 12 years now as an ACVS Diplomate and have come to realize that treatment of this problem is much more complicated than I initially believed. As a sole practice owner I have the opportunity to stay in the same location for long enough to see the fruits of my work and become better educated regarding statements that I have made. I believe that there is a fairly wide outcome of use of the pelvic limb after repair and that some patients are at risk for disappointing outcomes. I think the repeated introduction of CCL surgical techniques to our profession is a reflection of the frustration clinicians feel from treating this problem.

Each week I will probably consult with 5-8 pet owners who are experiencing a pet with CCL disease. I try to make statements to pet owners that I believe not overstate facts, yet provide some realistic expectation of outcome. When I make a diagnosis of CCL injury, I tell the owners that this is a very common problem in veterinary medicine. Understandably most owners look at this as if this was unique to them. I then proceed as follows "Mrs. /Mr. Pet owner, no ideal treatment exists for your dog. In fact, even though this is a ligament problem, we

do not replace the ligament primarily because we cannot. Therefore, we employ procedures that are used to provide some degree of benefit. That benefit is defined from the fact that dogs limp less by 3-6 months postoperatively. The procedures that we use seem to differ mostly in how quickly dogs use the limb after surgery. For suture based repairs I think you will find that limb use during the first month is slow and understandably you might question if your dog is going to get better. By months 2 and 3 you will see more improvement and your pet will continue to heal by 6 mo post op. The bone cutting procedures usually allow quicker use and so in months 1 and 2 there is less worry on your part. If there was an ideal procedure, every surgeon would perform it. The truth is that *some type* of surgery is usually beneficial when a pet is demonstrating enough pain.” I also explain that my rule of thumb is to achieve better than 70% function by 6 months post op. I define this as greater than 70% thigh circumference compared to the contralateral limb. I recommend surgery if lameness is non-weight bearing or has a cyclical nature of 1-3 months where the progression is toward the negative. If a dog is generally 80 % plus and static in limb use, I will usually follow the progression, especially if extracapsular repair is the only option I am given by the client. Some of those pets will remain stable; others will progress to becoming surgical candidates.

Considerations I use in my practice on treatment selection

Compliance:

If I perceive an owner will not be compliant, I will err towards suture repairs or conservative management until lameness is non-weight bearing. The worst that can happen in this scenario is that the knee loosens and the dog transitions into a natural state of limb use. With a TTA or TPLO, complications due to non-compliance could be catastrophic. I have not personally had a “disaster” with TTA, I had several with TPLO and there is very little leeway with these procedures if failure occurs. The heads up client for non-compliance is a young male owner – especially with multiple dogs! Within the realm of compliance I also assess how willing clients are to listen to me. Some clients clearly do not wish to pursue surgery. I think it is erroneous to talk them into surgery unless they see themselves that it is necessary. There is the potential for disappointment and complaint if outcome is sub-optimal in their mind, but realistically normal for CCL disease. My general impression is that clients “get it” when their pet is non-weight bearing or has not “turned the corner” in limb use with 2-3 months of monitoring.

Cost:

If cost is a concern and a pet is not using the limb, I will recommend an extracapsular repair. Essentially I say to the client “If you choose this procedure it will still help because your pet is starting from a worse place”. However, if limb use is greater than 80 percent and the owner is generally happy with progression, I will not strongly recommend surgery if extracapsular repair is the only option, especially if based on cost.

Breed:

I believe certain breeds will rehabilitate well no matter what procedure is used. Well-muscled dogs such as English Bulldogs, Pit Bulls come to my mind. I look at Rottweilers as pets that probably need tibial osteotomies and will measure the tibial slope in this breed or any dog that seems to have a tibial plateau angle that is steep. Some chondrodystrophied breeds have pronounced tibial tuberosities and essentially the patellar tendon is already perpendicular to a tangent through the joint, so I usually look at this type of tibia as not being a good TTA candidate.

Body Condition:

Paradoxically, I believe that overweight dogs rehabilitate well because they cannot weight shift well to the front limbs or contra lateral pelvic limb as is the case in lean dogs. A very overweight dog with small tibia gives me concern about selecting an osteotomy, so I will probably lean towards a suture based repair (nylon or braided fiber wire). On the other hand, very lean dogs will tend to be perfectly happy not using the operated limb. I prefer tibial osteotomy in these patients because I believe this procedure will not cause such a significant set back as a suture repair.

Age:

Dogs that are greater than 10 years of age are patients that I try to conservatively manage, however I prefer TTA in these patients if the clinical signs are persistent enough to justify performing surgery.

Severity of Arthritis:

For patients with severe arthritis I will treat medically or recommend knee replacement. Assessment of severity of arthritis is very subjective and I use radiographs. There is usually much more arthritis present in the joint than is visible on radiographs, so severe arthritic changes in radiographs translate into a more arthritic joint in the patient. I have not been able to use any type of grading system to assess candidacy for knee replacement. So far I have performed 12 Total knee replacements in dogs with very good outcomes. For lesser degrees of arthritis, I do not have a strong opinion either way of osteotomy over suture repair. For pets that have well established arthritis, I have concerns that we could be treating the owner and not the pet, but I do not have a clear cut off of when I will recommend one procedure over another. The medial meniscus is a significant barrier to self cure and I believe that tearing of it will frequently prompt a client to pursue surgery because their dog will become non-weight bearing. I believe that medical management or arthrotomy/arthroscopy with treatment to the meniscus is going to be an area that receives more attention. If patients fail to improve from there, I think joint replacement will become more common. However, pet owners generally do not like to hear that their pet really will have ongoing problems and that even after treatment that continued follow up for the rest of the pet's life is a good thing. Until we can reliably measure outcome and follow progression, treating CCL disease will continue to be perceived as a

problem that is “repaired” with no ongoing issues by both lay people and veterinarians alike.

Patient size:

Osteotomies are more likely to be recommended in large dogs. For a dog over 50 kg, I strongly recommend TTA and no longer perform TPLO unless a client requests this procedure. If a suture type repair was to be done, I perform the tightrope technique. In rare instances I have performed combined patellar tendon grafts with extracapsular monofilament repairs. While results were good, I never was comfortable in assessing whether the pet would have improved anyway without surgery. In pets 25kg-50 kg, I prefer TTA, but will perform extracapsular repairs. I use monofilament nylon for most extracapsular repairs, but recently have used braided fiberwire as the “tightrope” with success. For pets less than 25 kg I lean more towards extracapsular repairs, especially in pets under 5kg.

Tibial Slope:

If tibial plateau angle is excessive, I will usually perform either suture based repairs or TPLO. I do not use a precise cut off number for tibial plateau angle and defer to Kyon to make their recommendations.

Other considerations:

There are certain aspects of treating CCL disease that I would like to share, that are not necessarily rules but statements that if followed will guide a surgeon towards successful management of this problem. My current philosophy is that treating CCL disease in dogs is an elective procedure. Clearly a pet will not die if treatment is not administered and I prefer not to scare clients into pursuing treatment. I think we treat these problems because pets are presented to us because they limp to an extent that it concerns their owner. After our treatment, they limp less and owners are generally happy. Client assessment of outcome is very subjective and their happiness relating to the procedure can be affected by non-scientific measures. There is a tendency to over exaggerate outcome in our profession and doing so can cause problems in clients who themselves have high expectations. For example if outcome is expected to be greater than 90 percent or near sound, this assessment means different things to different people. In addition claims as to minimizing arthritis progression can cause concern when arthritis still progresses. High expectations can lead to over aggressive re-operation of knees which can give ever disappointing results. How much pain is a dog in with this problem? We cannot realistically answer this question for our clients, granted the problem causes pain and has a cyclical nature, but will subside with time. Many pets will continue to act normally despite an obvious limp. I think that we are lucky as surgeons that our patients are quadrupeds and ostensibly more dominant on their pectoral limbs than their pelvic limbs. I think that the stress our repairs are subjected to is less in a quadruped than would be in a biped and different biomechanics in animals versus humans has led to the types procedures that have been used in our profession. For patients that are clearly symptomatic some degree of

stabilization is likely to help, however I never tell an owner that surgery is the only option because I cannot prove to them that their pet will be better off. There is inherent risk with any procedure and the potential is there to leave animals worse than if they had not been treated. The best I can say to any client is that I employ procedures that give a satisfactory level of improvement in patients that I have operated on before.

How I integrate TTA into my practice

Dr. Callum W. Hay, BVMS (Hons.), MRCVS, Diplomate ACVS
Veterinary Surgical Services, Inc
Tampa FL
Tel. (813) 901 5100
E. Mail Veterinarsurgicalservices@yahoo.com

I first heard about TTA during a lecture by Dr. Pierre Montavon at ECVS in Glasgow in 2002. I was initially very skeptical but as the procedure gained popularity my interest was piqued. Two years ago I took a TTA course at Alameda East. My motivation was part driven by a desire to learn the procedure but also driven by the fact that referring veterinarians were asking for TTA. The scientist part of me was waiting for the definitive study that would prove beyond a shadow of doubt that this was The procedure and better than any other. Unfortunately this has never been the case with CCL surgery in our profession. I have “made my peace” with this issue by understanding that arguing about the different procedures is like arguing about which mode of transportation is better to get from point A to point B. For example you might discuss how you should travel from Milwaukee to Madison. Clearly most may choose to drive, however One could walk, bicycle, fly etc. No-one could say that any decision was wrong because many factors could have been used in arriving at a travel choice. For example you might like to bike because you are training for a triathlon. It would be erroneous to berate someone for driving because their car broke down and they were late. The reality was it was unlikely event to happen, but it did in this case but should not be a factor in not choosing to drive again. Equally with CCL surgery we are looking for the “best” way to travel from point A to B. I view TTA as another means to travel the road with hopefully few breakdowns. To travel the road I had to introduce my clients to the procedure. I had just taken the TTA course and here I was, in Tampa back from Colorado, equipment assembled and ready to go! My experience: >3000 CCL surgeries using other techniques and on the other hand, 0 TTA. I could not reliably tell a client how well the TTA would work in my hands!

Client and patient selection:

Avoid the temptation to talk up the procedure, especially to a client that loves to be “blinded by science”. It creates high expectations for “Poopsie” to be the top topic at the next wine and cheese hosted by her owner. Poopsie may or may not become a good reflection of your practice and could be a source of derision for your skills if all did not go well. I think that it is much better for Poopsie to limp and gain sympathy because the problem has not been treated than it is to limp with a complication from surgery and the source of Poopsie’s pain to be from “Dr. who can’t do a TTA”. For my first patient, I selected a client who had less of an emotional investment in their pet. I work with many rescue groups and this has the advantage of working with people who have level headed approach to

treatment. My first patient was a Chow, approx. 25kg in good body condition. I told the rescue group that if they selected this procedure that it would be the first time I had done this on a live animal. I said that I felt comfortable performing the procedure and that I would do everything possible to minimize complications and if there were would take care of any issues at no charge. Further more if they let me perform this procedure, there would also be no charge. The first procedure went very well and for subsequent procedures I progressively increased price. As my confidence grew, I operated more "Poopsie"-type patients. I was also able to tell clients how many procedures I had done. For example, I started charging for the hardware and bone graft, then supplies, technician time. After about 15 procedures I went to full price. By progressively increasing price and performing more procedures I was able to match my ability with what I perceived as fair to charge. I plan for the worst case scenario and would never like to be in a position where after the fact I have to admit to an attorney that I did not inform a client that their dog was the first I had operated on. Furthermore, exposure to being sued must surely be reduced if the cost incurred was low. I view my method as safe and is the same way I have introduced other procedures such as knee replacement. Clearly there is additional cost by doing it this way, but I paid that back quickly with TTA.

Learning Curve:

I found that the TTA was already a familiar procedure to me because of performing tibial tuberosity transpositions for medial patellar luxation. I have made some modifications to the technique as it was taught to me, but overall found the procedure to work in my hands as the technique would lend us to believe.

Patient assessments:

Post operative swelling was most marked by 3-4 days post op. Dependant swelling especially around the hock was common. Overall the degree of swelling and bruising was acceptable and probably less than I experienced with TPLO. Many patients are discharged 1 day post op. I recommend recheck exam at 2 months and dogs are usually using the limb consistently while walking. Most owners are happy. With suture based repairs they will typically still use the limb at a walk, but at rest will variably lift the limb or toe tap. Several clients previously had experienced extracapsular repairs responded favorably when a TTA was performed in another joint. They commented that limb use was faster.

Advertising:

Once I became comfortable with TTA, I sent a brochure to referring veterinarians with pictures of TTA, TPLO, Extracapsular repair and Knee replacements. I put price quotes beside each procedure. The response was very good and I felt that I was able to provide a more complete array of procedures to their patients.

Day to day decisions:

In many cases the clients want to leave it up to me on which procedure to perform. I use the risk factors outlined in the previous talk to decide. For me the decision is usually between TTA and extracapsular repair. I never really liked TPLO, however at the time I was performing this procedure I had much higher expectations on outcome that I just was not seeing. Many years ago I had the pleasure of listening to Theresa Slocum talk at ACVS and she was asked a question regarding why her husband (Barclay) did not perform extracapsular repairs and compare them side by side to TPLO. Her answer was that they felt TPLO was so good that it would be inappropriate to subject dogs to extracapsular repairs. When I participated in the TPLO course in Oregon several years later, the message from Slocum enterprises had softened and Theresa acknowledged that the TPLO was a tool to treat this problem and not necessarily a panacea. Never the less I still feel that TPLO was put on a pedestal as being "The" procedure. Since TPLO was so novel there was a tremendous hype regarding its success and I think invariably this can lead to disappointment. When I adopted the TTA, my philosophy was that this was another tool to travel from Point A (poor limb use) to point B (better limb use). I accepted that the journey may vary for different patients and do not expect results to be perfect every time. Generally if a pet is clearly not responding to medical therapy, some type of surgery is likely to stack odds in favor of a good outcome. TTA provides clinicians with a viable procedure that is less invasive than osetomising the entire tibia. With clear portrayal of expectations to my clients, however, I have enjoyed performing this procedure and been happy with the outcomes.