

ACL Repairs What are the Options?

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The doctors at Colorado Canine Orthopedics have preformed well over 10,000 ACL repairs including, Under and Over, Over the Top, Fishing Line, Fibular Head Transposition, TTA, Tigtrope and TPLO.

Anterior cruciate ligament (ALC) tears represent the most common orthopedic problem in small animals. The underlying cause of canine ACL tears remains somewhat unclear. Unlike humans, dogs usually tear their ACLs gradually rather than acutely. The canine problem is an insidious biomechanical injury rather than acute athletic trauma in most cases. Because of this biomechanical wearing, 40% of dogs that tear one side will someday tear the other.

Clinical signs of ACL tears are quite variable. Some dogs become carrying leg lame while others have a slow onset of lameness that varies from day to day. Almost all dogs with ACL problems sit off to the side with one leg extended.

Tentative diagnosis of ACL tears involves clinical examination and radiography (X-rays). The definitive diagnosis should almost always be made using non-invasive arthroscopy. Arthroscopy can be used to confirm the diagnosis, thoroughly inspect the meniscus and other intra-articular structures, debride the ACL and perform a meniscal release or meniscectomy when indicated.

Treatment of ACL tears has always been changing and opinionated. Virtually all veterinary surgeons agree canine ACL tears become debilitating if left untreated but the technique of choice has been an ongoing debate. The history of canine ACL repairs dates back long before I became a veterinarian, and have generally been classified as replacement versus biomechanical techniques.



Figure 1

Replacement techniques were the first attempts to repair canine ACL tears. These repairs were modeled after techniques used in humans. The first canine technique advocated using a strip of skin to replace the ligament. This idea evolved into using the patient's fascia (Under and Over) as well as a portion of the patellar tendon (Over the Top). Fishing line also became a commonly used material for replacement. These techniques became popular during my residency in the early 80s. Another technique introduced in the early 80s was the Fibular Head Transposition, which changed the orientation of the lateral collateral ligament to mimic the ACL. I have had the opportunity to perform thousands of all of the above (except the strip of skin technique). For the most part all of these techniques have fallen out of favor.

More recently, a special type of suture material, passed through bone tunnels has been described. This new replacement technique is called the tightrope procedure (figure 1). The material is stronger than any other material available and the placement using bone tunnels positions the material in the most ideal orientation.

Biomechanical techniques have become popular over the last 12 years because replacement techniques were not producing consistently satisfactory results. Biomechanical repairs change the sliding motion of the femur on the tibial plateau, inherent in canine knees but not so in humans. Consequently, biomechanical



techniques are unique to canine orthopedics.

The tibial tuberosity advancement (TTA) is a newer biomechanical technique (I did my first TTA about 5 years ago) that alters the orientation of the patellar tendon (figure 2). In this case a longitudinal osteotomy is performed just behind the tibial tuberosity, the bone is advanced and fixed using a specialized bone plate.



Figure 2



Figure 3

The tibial plateau leveling osteotomy (TPLO) was the first and still is the most accepted and successful technique in this group (figure 3). The TPLO involves making a curved osteotomy in the proximal tibia, rotating or leveling the tibial plateau and fixing the osteotomy in place with a small bone plate. This new orientation eliminates cranial tibial thrust. I did my first TPLO about 12 years ago and performed nearly 6,000 since.

And the winner is????? Despite hundreds of thousands of canine ACL repairs performed, the best technique is still not unanimously agreed upon by veterinary surgeons. Hopefully, clinical research will clear up this ongoing discussion in the near future. In the mean time veterinary surgeons will recommend the technique that works best in their hands. This is certainly the case with the numerous human ACL repair techniques available.

In the United States the TPLO is by far the most commonly performed ACL repair technique. It is the gold standard that all other techniques are compared to. The doctors at Colorado Canine Orthopedics have preformed well over 11,000 ACL repairs including, Under and Over, Over the Top, Fishing Line, Fibular Head Transposition, TTA, Tightrope and TPLO. We have performed thousands of replacement techniques, hundreds of TTAs and thousands of TPLOs. Each of our three board certified surgeons performs the procedure they believe offers the best results with the fewest complications or failures. All three agree the TPLO is, at this point, the superior technique.

Occasionally, we perform one of the other techniques in unique situations, but the bottom line is, if one of our dogs, or our employees' dogs or relatives' dogs or our friend's dogs tore their ACL the TPLO would be (and has been) the technique of choice. I dare to say that by far the majority of board certified surgeons agree. If you would like to discuss the pros and cons of any ACL repair technique, please contact us at 719-264-6666 for a consultation.

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