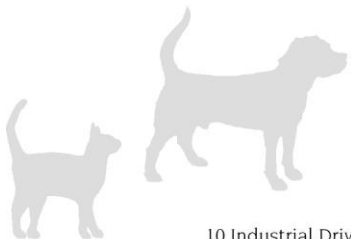




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Methods of Cruciate Fixation Offered At Almonte Veterinary Services

The cranial cruciate ligament provides stability between the tibia and the femur. Rather than a simple athletic tear that we think of occurring in people, dogs tend to be affected by more of a chronic degenerative process. As the disease continues, there is more and more instability in the knee, and the ligament is less able to keep the tibia and femur in appropriate alignment. This unstable knee causes mechanical pain and inflammation. If you have ever “popped your shoulder out,” you know that many pain receptors activate when a joint is not in an appropriate position. In all patients, there will typically be some osteoarthritis in the long term, as all patients experiencing cruciate disease have had the disease to a significant structure within the joint. The goal of surgery is to provide mechanical stability to the joint so animals are not uncomfortable in daily activity and to reduce the inflammation that instability generates. The goal of surgery is to allow the patient to resume normal activities for years before developing osteoarthritis and a painful stifle. Without surgery to stabilize the knee, constant discomfort will persist and osteoarthritis will develop rapidly.



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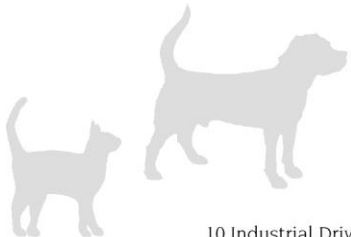
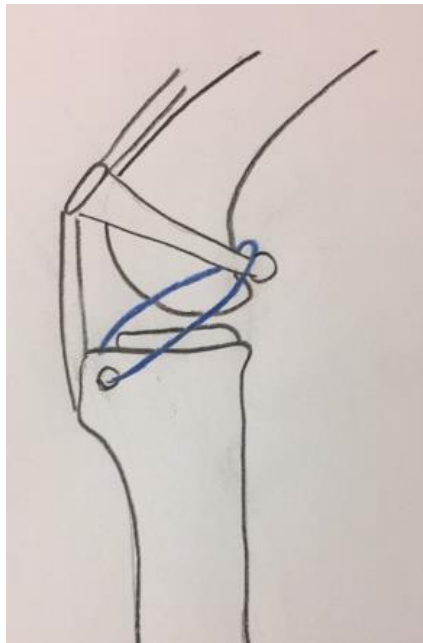


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Methods of Surgical Fixation

Traditional Extracapsular Fixation- Lateral Fabellar Suture

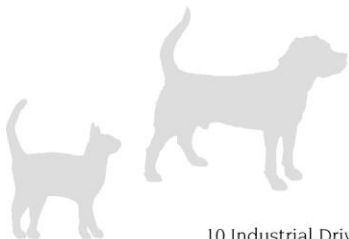
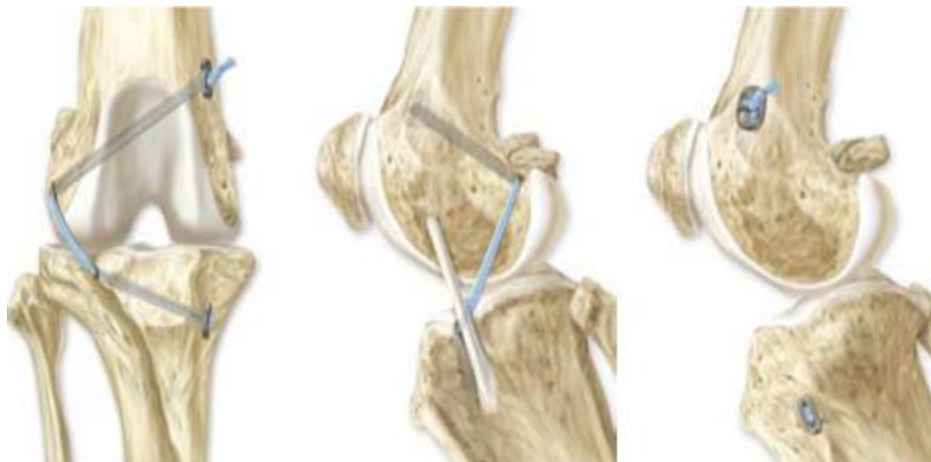
The oldest technique to stabilize the knee joint is a synthetic “ligament” (typically nylon) inserted through a channel drilled into the tibia. This synthetic ligament allows for some stabilization of the knee as the synthetic ligament attempts to hold things in place and prevent the tibia from moving forward. This procedure is ideally suited for animals under 50-70 lbs. This procedure is not a bone-cutting technique, so complications are typically limited to failure of the implant or infection. This procedure is usually most susceptible to failure of the implant as the line can break or stretch over time. A lateral fabellar suture is the least expensive option, but it offers inferior outcomes in patients of all sizes.



Extracapsular fixation – Tight rope

This newer procedure allows the stabilization of the joint in a more isometric (natural) manner. Rather than compressing the joint as the traditional extracapsular repair does, the tightrope aims to maintain the normal range of motion. It acts to help the joint pivot in its normal position. This method typically offers superior outcomes compared to the traditional lateral fabellar suture. However, it is considered to be inferior to the bone-cutting geometric techniques. The maximum weight of this implant is up to 250 lbs, which ensures that it is far less susceptible to breakage.

This method requires animals to be strictly rested after surgery for 6-8 weeks to ensure that the implant does not cut through the bone. This postoperative exercise restriction is essential as the implant is strong enough to saw through the bone. Over the 6-8 weeks after surgery, the drilled tunnels mesh together with the bone and make the implant interwoven with the bone. At this time, normal activities can be resumed slowly. Infection must be closely monitored as the implant is a multifilament fiber tape. Hence, removing infection is almost impossible once it has set in. While this procedure initially saw increased infection rates, the technique has been modified over time, and the overall infection rate is now comparable to other methods. As mentioned, if infection does reach the tightrope, it is incredibly difficult to completely clear. Because of this, care must be taken to ensure that the cone stays on and that the animal stays out of the water. In some studies, the success rates for tightropes have been comparable to TPLOs if postoperative rest and rehabilitation are performed appropriately. Most clients find that restricting exercise entirely is challenging and that there is a small amount of instability due to some patient activity in the postoperative period.





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TPLO

A Tibial Plateau Levelling Osteotomy (TPLO) is the gold standard. This means it is the procedure that is considered the best for long-term outcomes. This procedure cuts the tibia so that the cranial cruciate ligament is made redundant. The femur articulates on the tibia during normal motion. The cranial cruciate ligament ensures that the femur does not slide down the steep slope of the tibia. When the ligament is diseased, the femur starts to slide down the slope of the tibia as the ligament has more slack than when it is healthy.

The common analogy is putting a car in neutral on a hill- compared to putting a car in neutral on a flat road. Consider the shin bone (tibia) as the hill and the thigh bone (femur) as the car in this analogy. If there is a steep slope on the hill, the car in neutral will roll down the hill. When the cranial cruciate is torn, the "brakes" are no longer on the femur- it can move forward and backward on the tibia. If the shin bone has a steep slope, the thigh bone will slide down the shin bone. It is important to note that the shin's "gradient" is typically quite steep (about 27 degrees or so on average), so cutting the shin bone to reduce the gradient it is on means the thigh bone won't move nearly as much. A TPLO changes the car from resting on a hill to resting on a flat surface.

The bone is plated in place with a metal plate that allows the tibia to heal quickly. This allows the tibia to heal with the new gradient where the femur is no longer unstable. Because this technique is more invasive, there may be more pain associated with the surgery initially. Typically, complications are rare, and this procedure offers a repeatable, favourable return to function. This technique, while more invasive, provides the best outcome compared to other methods for stabilizing the stifle and delaying the onset of osteoarthritis.

