

TIGHTROPE® as an Alternative for the Treatment of Injuries of the Cranial Cruciate Ligament in Dogs

Cranial cruciate ligament (CCL) deficiency is a common and costly problem in dogs for which there are multiple treatment modalities. Numerous techniques have been investigated; however, each of these techniques has its pros and cons. The most commonly performed techniques to date include Tibial Plateau Leveling Osteotomy (TPLO), lateral suture (also called fabellotibial suture/extracapsular repair or nylon suture technique or lateral imbrication technique) as well as recently Tibial Tuberosity Advancement (TTA). The main disadvantage of the TPLO and the TTA lies in the necessity of performing an osteotomy (cutting the bone to achieve biomechanical stability of the knee). The main disadvantage of the lateral suture is the weakness of the suture, prolonged recovery, long-term arthritis progression and possibility of loosening of the anchor site at the fabella (the little piece of bone that the suture is usually anchored around) which is especially common in larger dogs. Therefore, newer techniques are constantly evolving and we want to offer the best option for the treatment of your pet.

Dr. James L. Cook, DVM, PhD, Diplomate ACVS University of Missouri has developed a new technique for the treatment of CCL deficient stifles in collaboration with Arthrex Vet Systems, Inc. Their goal was to invent a stifle stabilization technique that had the potential to address perceived shortcomings of current techniques - specifically to be minimally invasive, technically feasible, address all aspects of instability, minimize secondary pathology, and consistently result in functional outcomes with a low complication rate in a cost effective manner. The Tightrope® CCL technique is based on the prosthetic or false ligament. The theorized advantages of Tightrope® over the lateral suture include:

- Instead of just anchoring the suture around the fabella, a tunnel is drilled and the suture is affixed to the opposite side of the bone with a toggle.
- The suture material is much stronger than previous materials such as nylon and the overall strength with the toggle implants is greater.
- The placement of the suture is on the lateral (outside) only and the suture does not cross under the patella tendon which may interfere with range of motion.
- The tunnel fixation with the toggles allows for more accurate isometric placement (allowing normal range of motion).
- Minimally invasive technique with multiple small skin incisions is possible.

The Tightrope® CCL device is placed after complete assessment and treatment of the joint via arthroscopy (to make sure that there is no damage to the meniscus/caudal cruciate ligament and address any problem if found).

A study (currently non-published but presented at an orthopedic meeting; TREATMENT OF CRANIAL CRUCIATE DEFICIENCY IN DOGS - Technique and results of a prospective comparison to TPLO using validated outcome measures by James L. Cook, Jill K. Luther, Jodi Beetem, Cristi R. Cook University of Missouri, Comparative Orthopaedic Laboratory) was performed to prospectively compare the outcomes of the novel technique, the Tightrope® CCL, to TPLO. Outcomes for the first 24 consecutive patients receiving Tightrope® CCL were assessed using a previously published questionnaire as the primary outcome measure. Tightrope® (TR) patients were prospectively compared to a cohort of patients undergoing



TPLO (n=23) performed by the same surgeon in the same time period and with the same postoperative instructions. The study endpoint was six months postoperatively. Complications were recorded and subjective radiographic assessment was performed preoperatively and at the endpoint. The complication rates (12.5 percent TR versus 17.4 percent TPLO), including secondary meniscal tears (8.3 percent TR versus 8.4 percent TPLO), were similar between techniques. The data suggest that Tightrope® can be successfully performed in medium, large, and giant breed dogs with CCL deficiency and result in six-month outcomes which are as good as or better than TPLO in terms of function and radiographic progression of osteoarthritis.

It is important to realize that this study was performed on a small number of cases and that long-term data is missing to date. This is true for all CCL repair techniques. However, in our opinion it justifies further evaluation and clinical use of this new technique. At AESC, we are more than happy to offer this alternative to the TPLO-procedure.