

Iso-Toggle Isometric UHMW Polyethylene Lateral Suture (IPLS)

What is cranial cruciate ligament disease?

The cranial cruciate ligament (CCL) is the main stabiliser of the stifle joint (knee). CCL tears are the most common orthopaedic problem in dogs and typically occur secondary to degenerative changes in the ligament. Rarely, dogs may be affected as young as 3 or 4 months of age. After the CCL tears, joint instability leads to inflammation and the development and progression of osteoarthritis. Instability of the knee predisposes to secondary meniscal injury.

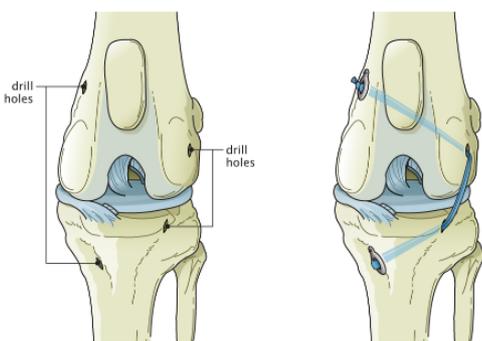
Multiple factors may influence the early onset of degeneration of the CCL including genetics, sex, hormones and obesity and degenerative changes will typically affect the CCL in both stifles. Purely traumatic injury is rare, although trauma may be associated with tearing of an already weakened ligament.

Treatment options

Multiple techniques exist for the management of a torn CCL; these include dynamic stabilisation techniques utilising osteotomies such as TPLO, TTA & TTO and techniques relying on passive restraint such as extracapsular lateral sutures. Extracapsular lateral sutures produce more favourable results in small dogs; results are less predictable in larger dogs. Some studies show extracapsular lateral sutures to be comparable with TTA, although both are inferior to TPLO. Studies recommend avoiding TTA for dogs with tibial plateau angles (TPA) > 25-28 degrees. Increasing TPA also appears to increase the failure rate for extracapsular lateral sutures, and TPLO should be considered for dogs with higher TPAs. **TPLO** is currently considered the **gold standard** for managing cranial cruciate ligament injuries in dogs and is the procedure favoured by most orthopaedic surgeons. TPLO is associated with lower complication rates, an improved clinical-functional outcome and slower progression of osteoarthritis compared to other techniques.

What is IPLS?

The Iso-Toggle IPLS procedure is a more recent advancement of an old but commonly used technique, the lateral fabellotibial suture (DeAngelis suture). Ultra-high molecular weight (UHMW) polyethylene is a much stronger material and exhibits minimal stretch unlike traditionally used nylon, and the suture is placed in a more favourable position.



The isometric ultra-high molecular weight polyethylene lateral suture (IPLS) is placed through bone tunnels or bone anchors in the femur and tibia; the traditional technique places the “origin” of the suture around a small bone and ligament at the back of the stifle. The bone tunnel or anchor in the femur allows more secure fixation and isometric placement of the suture. Quasi-isometric placement maintains relatively constant tension through a full range of motion of the stifle. A suture placed around the fabella is typically **not isometric** & will become excessively lax or tight depending on joint position, resulting in both instability and reduced range of motion of

the stifle. Before placing the IPLS the stifle joint is inspected, the menisci (joint cartilages) examined, and any damaged meniscal tissue removed. Any remnants of the cranial cruciate ligament are also removed.

Outcome and potential risks of surgery

Most dogs progress satisfactorily following IPLS and can eventually return to normal activities, although recovery is slower compared to TPLO and TTA. It may take many months before a dog has **fully** recovered. Dogs with chronic knee problems and especially those with substantial muscle wastage or that have had previous surgery are expected to progress more slowly.

As with any surgery complications may arise as detailed below, although serious complications are uncommon:

- Infection is a relatively uncommon complication as strict sterile technique is used during the surgery and antibiotics are administered in the operative period. It is, however, one of the more serious complications

that may occur. Early detection and treatment may result in resolution, although if bacteria colonise the UHMW polyethylene braided suture removal of the IPLS may be required, reverting to an unstable stifle. More serious problems may occur if the infection progresses untreated or if your dog suffers infection with multiple resistance bacteria e.g. MRSA. If you suspect an infection contact your VET immediately.

- Excessive early activity may increase the risk of the suture breaking (or stretching), even though the ultra-high molecular weight polyethylene material is markedly stronger than the suture materials traditionally used in the DeAngelis technique.
- Even after the initial period of strict confinement (typically the first six to eight weeks), it is still important to have a controlled, gradual increase in activity, similar to human patients undergoing rehabilitation following cruciate surgery. If activity in dogs is increased too quickly after surgery spraining/straining of joint structures may occur. Rest and anti-inflammatory medications may be necessary to manage these problems.
- Arthritis is usually present at the time of surgery and will progress regardless of treatment. If the CCL has been ruptured for some time significant additional joint injury may have occurred and arthritis is typically more advanced. Previous knee surgery is also often associated with a more rapid progression of arthritis. It is not possible to reverse the arthritic changes in the joint or undo other damage already done but the surgery will stabilise the knee thereby reducing inflammation, which may help to reduce the ongoing progression of arthritis.
- Damage to the menisci (cartilage pads in the knee) may occur following tearing of the CCL ligament i.e. it is a complication of cruciate ligament injury. Damaged menisci are resected at the time of surgery. Menisci can also be injured after surgery; this may occur at any time, weeks or even years after surgery. In comparison to other techniques, TPLO significantly reduces the risk of subsequent meniscal injury, but cannot eliminate it.

Postoperative care

A pad may be covering the wound at the time of discharge from the hospital. This can be removed after several days, or immediately if soiled. Medications e.g., Pain killers will be dispensed.

Ice packs may also be helpful in the days following surgery to reduce swelling and improve comfort.

Your dog should be kept confined to **eliminate running and jumping** for the first 6 to 8 weeks: a single room with non-slip flooring and no furniture may be sufficient, however, a large cage is preferable. Short leash walks in the garden (a few minutes four to six times daily) are recommended initially to allow toileting.

- Two weeks following surgery: commence lead walking for 5 minutes at a time, two to three times daily.
- Three weeks following surgery: continue lead walking for 5 minutes at a time, two to three times daily.
- Four weeks following surgery: increase lead walking to 7-8 minutes at a time, two to three times daily.
- Five weeks following surgery: continue lead walking for 7-8 minutes at a time, two to three times daily.
- Six weeks following surgery: increase lead walking to 10 minutes at a time, two to three times daily.

Maintain confinement **at all other times**; running, jumping and play must be avoided for at least 8 weeks.

Declaration

I have read the information contained herein and am satisfied I have a sufficient understanding of the IPLS procedure; I hereby consent for my dog to undergo IPLS stifle surgery.

Owner's name:

Dog's Name:

Owner's signature:

Date:

For further information and explanatory videos go to: bonevet.com.au/review-articles/ccl-treatment-options/