

Tibial Plateau Levelling Osteotomy (TPLO) information

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 development and progression of osteoarthritis. Instability of the knee predisposes to secondary meniscal injury.

Multiple factors may influence 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

TPLO is considered the **gold standard** for the management of cranial cruciate ligament injuries in dogs and is the procedure favoured by most orthopaedic surgeons. TPLO has superior clinical and functional outcomes in both the short and long term, markedly lower rates of both minor and serious complications, a significantly lower rate of post-surgical meniscal injuries and the progression of osteoarthritis is **reduced** compared to other techniques.

What is TPLO?



TPLO involves making a curved cut in the top of the tibia (shin bone), rotating the separated segment of bone (the tibial plateau) and securing it in a new position with a bone plate and screws. This alters the biomechanics of the knee, dramatically reducing **cranial tibial thrust** thus creating **dynamic craniocaudal stability**. In simple terms, the knee is no longer unstable, despite the lack of a functional cranial cruciate ligament.

Prior to cutting the tibia the joint is inspected, the menisci (joint cartilages) are examined, and any damaged meniscal tissue is removed. Any remnants of the CCL are usually completely removed; however, if most of the ligament is intact and functional, the torn fibres may be debrided, and the remaining ligament left in place. X-rays are taken at the completion of surgery and are typically repeated approximately six to eight weeks after surgery to assess bone healing and implants.

Outcome and potential risks of surgery

Most dogs progress well following a TPLO and can return to normal activities. TPLO yields **better** limb function, **fewer** problems, **less** osteoarthritis, and **rapid** recovery times compared to other techniques. Nevertheless, it may take up to six months to fully recover. Dogs with chronic knee problems, 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 and complication rates have been shown to be lower with TPLO compared to other techniques.

- Infection is an uncommon complication as strict sterile technique is used during the surgery and antibiotics are administered during and potentially after the procedure. Should infection occur, early detection and treatment often results in rapid resolution, although sometimes removal of the implants may be required once the bone has healed. More serious problems may occur if infection progresses untreated or if your dog suffers an infection that is resistant to multiple antibiotics e.g., MRSA. Some medical conditions will increase the risk of a post-surgical infection, such as diabetes or pre-existing infection elsewhere e.g., skin and ear infections, cystitis, gingivitis. Pre-existing infections should be eliminated whenever possible. Some chronic infections e.g., skin and ear cannot be eliminated; discuss the implications with your Vet.
- Excessive early activity increases the risk of damaging or breaking the plate or screws.
- Partial or complete tearing of the patellar tendon in the recovery period is a rare but serious complication.

Increased tendon loading and reduced blood supply in the postsurgical period may play a role, as may damage during surgery; obesity, age hormonal influences and excessive activity are potential risk factors.

- Fracture of the tibial tuberosity occurs relatively rarely. Fractures of the tibial plateau are extremely rare but serious complications and typically require substantial force soon after surgery before the bone has had time to heal and remodel. This should not occur if dogs are appropriately managed after surgery.
- 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.

Confine appropriately to **eliminate running and jumping** for 8 weeks; chose appropriate confinement to achieve this for your dog; cage confinement is advised. Short **leash** walks in the garden (a few minutes four to six times daily) are recommended to allow toileting. Keep your dog at your side; use a lead of no more than 1-metre length.

- 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 - 9 minutes at a time, two to three times daily.
- Five weeks following surgery: increase lead walking to 10 minutes at a time, two to three times daily.
- Six weeks following surgery: increase lead walking to 12 - 15 minutes at a time, two to three times daily.

Always use a short lead when walking and 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 TPLO procedure; I hereby consent for my dog to undergo TPLO 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/