Tibial Plateau Levelling Osteotomy (TPLO)

What is a TPLO surgery?

A Tibial Plateau Levelling Osteotomy is an orthopaedic procedure recommended for dogs with cranial cruciate ligament disease, both complete and partial ligament ruptures.

Cranial cruciate ligament disease is the most common cause of hind limb lameness in dogs. The cranial cruciate ligament has a major role in stabilisation of the knee, and prevents the tibia (shin bone) from moving forward and also prevents internal rotation of the tibia and hyperextension of the stifle joint. Please see the handout titled “Cranial Cruciate Ligament Disease” for more information on this condition.

When the cranial cruciate ligament is ruptured, the stifle joint becomes unstable, which causes the tibia to move forward relative to the femur then the dog is weight-bearing on the leg. This causes the dog to appear very lame. The reason for this movement during weight-bearing is that the top of the tibia (termed the tibial plateau) in the dog is not perpendicular to the tibia, which enables it to move forward when the cranial cruciate ligament is damaged.

A TPLO surgery aims to make this tibial plateau perpendicular to the long axis of the tibia, which will prevent the tibia from moving forward when your dog is weight-bearing. This procedure does not fix the ruptured cruciate ligament, but enables the stifle to feel more stable when weight-bearing.

What happens during a TPLO?

Following initial physical examination, sedation or light anaesthesia may be necessary for additional palpation in order to help confirm the diagnosis of a cranial cruciate ligament injury. Sedation enables us to detect more subtle movements of the knee that we see with partial ruptures of the cranial cruciate ligament, as opposed to in complete ruptures which have much more obvious instabilities.

Pre-operative planning is imperative to ensure correct placement of the bone cut. Specific radiographs need to be obtained with the stifle and hock joints at particular angles to enable us to measure the angle of the tibial plateau, and plan our surgical approach. The radiographs also enable us to determine the extent of osteoarthritis present in the knee. This is often done under the same anaesthetic as the surgical procedure, with the veterinarians conducting measurements on the radiographs whilst nurses prepare your dogs’ leg for surgery.

Once the leg is prepared in a sterile manner for surgery, a sample of joint fluid is obtained and analysed for infection. We then perform a local anaesthetic block of the stifle to improve patient comfort.
Often, we will perform a stifle arthroscopy prior to the TPLO procedure. This enables us to better investigate the cruciate ligament, and other structures inside the knee joint, and remove any damaged tissues.

Following arthroscopy, the TPLO is performed. This involves a curved bone cut on the tibia, and rotating the tibial plateau to level it out to the pre-determined location. A special plate is then applied to the bone and held in place with screws until the bone heals.

Post-operative radiographs are obtained of the limb to enable us to measure the new angle of the tibial plateau and ensure correct positioning of the plate and screws. We will then place a support dressing on the limb before recovering your dog from anaesthetic.

**What happens after a TPLO?**

We will keep your pet hospitalised overnight following surgery to ensure we have achieved adequate pain-relief, and that they have recovered well from their anaesthetic. Anti-inflammatory medications will be dispensed and your pet will have a pain relief patch on one of their limbs to improve comfort.

Following a TPLO surgery, rehabilitation is extremely important over the following few months. Strict rest must be adhered to for the first 6 weeks to ensure the soft tissues and bone is given the best chance of healing. This will involve confinement, with short periods of lead walking for toileting purposes only. After the first 6 weeks, exercise can slowly be increased in a controlled manner, and will be guided by our physiotherapy team. We recommend physiotherapy and hydrotherapy post-operatively to provide your pet with the best rehabilitation programme.

We will see your pet 1 week and 2 weeks post-operatively for follow-up examinations and to ensure everything is progressing as expected. 6 weeks following surgery we will assess limb and stifle function, and perform follow-up radiographs to ensure the bone cut is healing well and that the implants remain stable. Following this point, you will be given advice on increasing exercise for your pet.

**What are the potential complications?**

As with any surgery, there are potential complications. These include superficial or deep infection, seroma, screw or plate loosening and slow bone healing. Some dogs that have intact menisci at surgery will damage these at a later date, and may require initial surgery (stifle arthroscopy) to diagnose and treat this.

**What is the prognosis?**

In the majority of patients following TPLO surgery, knee pain is reduced and a significant improvement in limb function is noted.