

Specialist Referral Service  
Willows Information Sheets

## TPLO surgery





## TPLO surgery

### What is TPLO surgery?

TPLO is the abbreviation for tibial plateau levelling osteotomy. This is a surgical procedure used to treat cranial (or anterior) cruciate ligament rupture in the knee joints of dogs. It involves changing the angle of the top of the shin bone (the tibial plateau) by cutting the bone, rotating it, and stabilising it in a new position with a plate and screws.

Cranial cruciate ligament rupture is the most common cause of hind limb lameness in dogs. As a result TPLO surgery is one of the most common orthopaedic surgical procedures performed in dogs in specialist orthopaedic practices. (See also [Cranial cruciate ligament rupture information sheet](#))

### How does TPLO surgery work?

Following rupture of the cranial cruciate ligament, the knee (stifle) becomes unstable. When the dog takes weight on the limb this instability allows the shin bone (tibia) to move forward relative to the thigh bone (femur). The stifle feels as though it is 'giving-way' and this can cause the dog to appear severely lame.

The reason the tibia moves forward with weight-bearing is that the top of the bone (called the tibial plateau) is not perpendicular (90 degrees) to the length (the axis) of the bone. This is in contrast to people where our tibial plateau is parallel to the ground when we are standing upright with our legs straight.

TPLO surgery aims to make the tibial plateau perpendicular to the long axis of the bone and, in doing so, to prevent the shin bone moving forwards. The stifle thus feels stable for the dog when weight-bearing, despite the fact that the ligament has been ruptured and not directly repaired.

## Does my dog need a TPLO?

Tibial plateau levelling osteotomy surgery is a major procedure with possible complications. As a result it is only performed in dogs where the benefits of surgery outweigh the possible risks and where alternative methods of treatment are less successful.

TPLO surgery is primarily performed in medium, large and giant breed dogs. Occasionally small breeds, particularly terriers, need a similar type of operation to correct an actual deformity of the tibia.

Candidates for TPLO surgery are dogs with a ruptured cranial cruciate ligament that have persistent lameness and stifle joint instability. Young dogs and those with rupture of both of their ligaments (bilateral disease) are particularly good candidates.

## What does TPLO surgery involve?

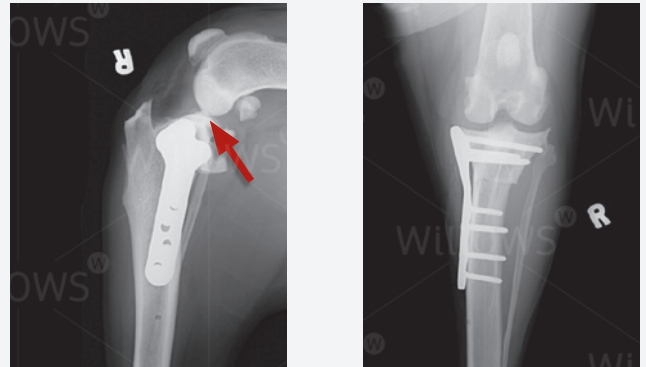
Dogs need to be carefully evaluated to see if they need TPLO surgery. Following the initial examination, additional palpation under sedation or light anaesthesia may be necessary. This may enable the detection of more subtle instability of the knee as occurs with partial rupture of the cranial cruciate ligament.

Very specific X-rays (radiographs) need to be obtained of the stifle and tibia. The presence and severity of osteoarthritis can be assessed and the angle of the top of the shin bone (the tibial plateau) measured. This enables planning prior to surgery. The position of the cut on the bone, the amount the bone needs to be rotated, and the size of plate necessary to stabilise the bone in its new position can be evaluated. It may be necessary to take a sample of fluid (synovial fluid) from the knee and send it to a laboratory for analysis.

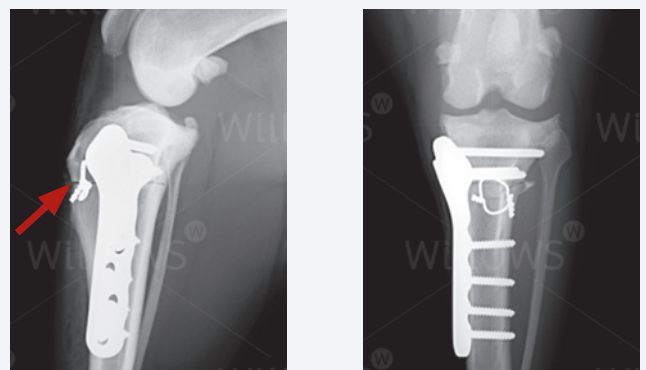
Surgery may be performed on the same or a different day from the investigations. Antibiotics and painkillers are administered at the time of anaesthesia and the limb is clipped from the level of the hip to the hock (ankle). Prior to performing the TPLO a small incision or cut is made into the knee joint to enable inspection of the structures within it. Many dogs with ruptured cranial cruciate ligaments tear their cartilages (menisci). Damaged portions need to be removed. At the same time remnants of the ruptured ligament can be trimmed. The tibial plateau may be levelled by either cutting the tibia with a curved saw and rotating the plateau, or by removing a wedge of bone from the front of the tibia and closing the gap with the aid of a loop of wire. The latter technique is called a tibial wedge osteotomy (TWO). With both techniques a special plate is applied to the cut bone that has been designed especially for tibial plateau leveling surgery. Some of the screws are "locked" into the plate which makes the repair stronger.

X-rays are obtained at the end of the operation to assess the new angle of the top of the shin bone (the tibial plateau) and check the position of the plate and screws. A light bandage is sometimes applied.

Most dogs can go home the day after surgery. By this time the bandage may have been removed.



X-rays showing plate and screws following TPLO surgery with rotation of the tibial plateau (arrow)



X-rays showing plate and screws following tibial wedge osteotomy (TWO) surgery to level the tibial plateau. A wedge of bone has been removed and the gap at the front of the bone closed with the aid of a loop of wire (arrow)

## Aftercare

Aftercare following TPLO surgery is very important, with rehabilitation taking many months. Courses of painkillers and antibiotics are prescribed at discharge. If the dog tends to excessively lick the wound it may be necessary to use a plastic Elizabethan collar. Visits to your own veterinary surgeon are necessary within the first two weeks to check the wound and remove any sutures.

Exercise must be very restricted for the first few weeks until the soft tissues and cut bone heal, and at this stage is primarily for toileting purposes. It must be on a lead or harness to prevent strenuous activity, such as chasing a cat or squirrel. At other times confinement to a pen or a small room in the house is necessary with avoidance of jumping and climbing.

After a few weeks, exercise may be gradually increased in a controlled manner (still on a lead). Hydrotherapy may be recommended.

A check-up at Willows is necessary six to eight weeks after the operation. Limb and stifle function are checked at this time. X-rays are obtained to evaluate healing of the bone cut (osteotomy). Depending on progress advice is given regarding increasing exercise.

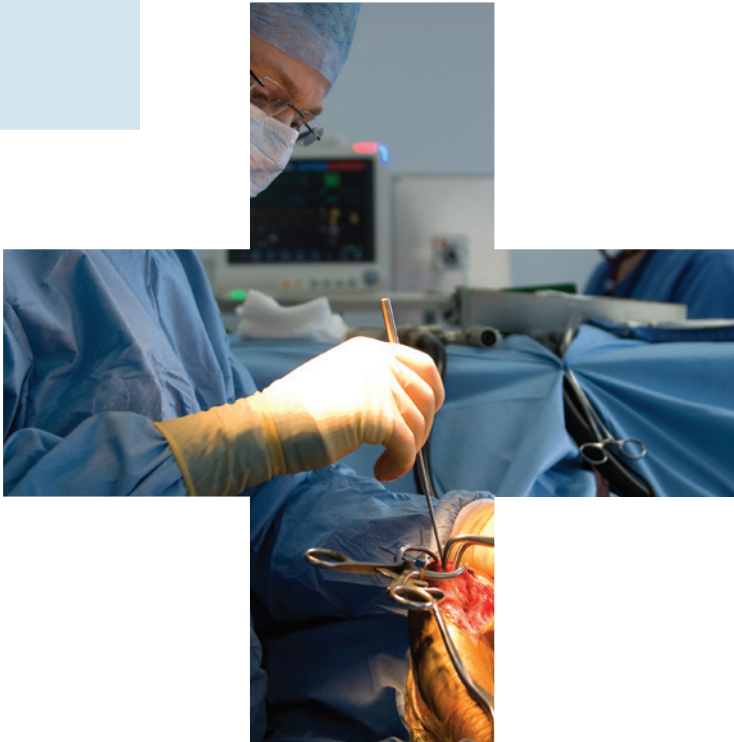
Further clinical and radiographic examination may be necessary on an individual case basis.

### **Risks and complications**

TPLO surgery is a major procedure. There are potential complications including infection, screw loosening and slow healing of the cut bone (osteotomy). A small percentage of dogs that didn't have an injured cartilage at the time of TPLO surgery tear it at a later date. A sudden increase in lameness usually develops and a second operation (key hole or arthroscopic) is necessary to remove the torn piece of cartilage. However, although there is the potential for complications, in the majority of patients selected to undergo TPLO surgery, knee pain is reduced and function of the limb is improved.

***If you have any queries or concerns, please do not hesitate to [contact us](#).***

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