



TIBIAL PLATEAU LEVELING OSTEOTOMY (TPLO)

FOR TREATMENT OF CRANIAL
CRUCIATE LIGAMENT INJURY



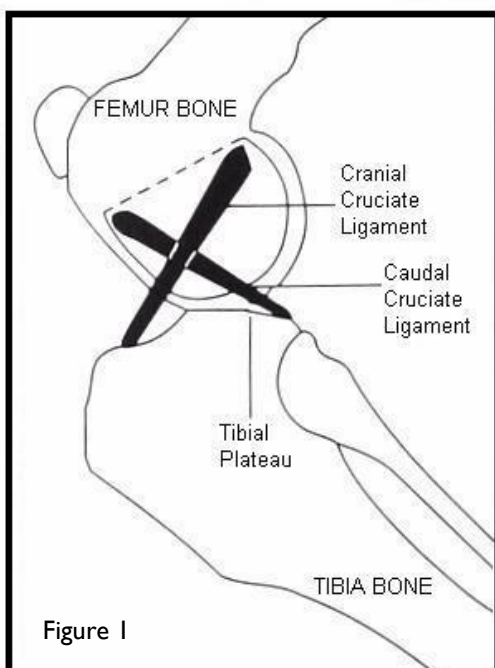
Veterinary **Specialist** Group

TIBIAL PLATEAU LEVELING OSTEOTOMY FOR TREATMENT OF CRANIAL CRUCIATE LIGAMENT INJURY

The most common cause of hind leg lameness in the dog is injury to the cranial cruciate ligament of the knee (stifle). This injury leads to degenerative changes (osteoarthritis) in the joint including cartilage damage, bone spur (osteophyte) production, and cartilage pad (meniscal) injury.

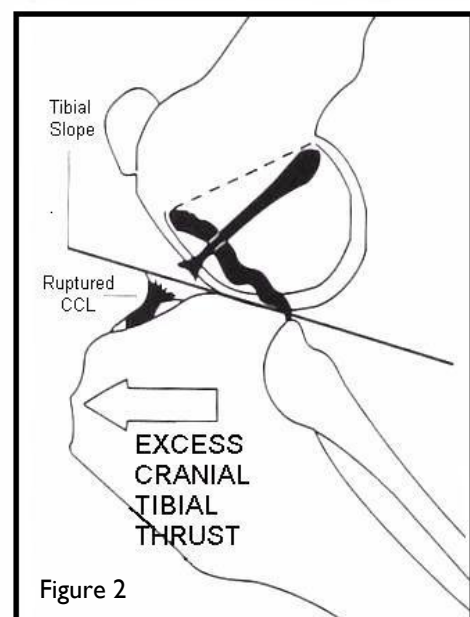
KNEE JOINT FUNCTION

The knee joint of the dog is held together by five ligaments and two cartilage pads. There are straight ligaments on the inside, outside, and front of the knee as well as two ligaments (the cranial and caudal cruciate ligaments) within the joint that cross over to provide forward and backward stability (Figure 1). Although the knee joints of dogs and humans have similar anatomy, the forces applied to these joints during standing, walking, or running are different.



Humans can stand easily with little stress on our knee ligaments because our hip, knee and ankle joints are parallel to each other and perpendicular to the bones. Dogs, however, stand on their toes with their knees bent forward. The upper portion of the tibia bone (the tibial plateau) is sloped and weightbearing creates a force that pushes the femur bone down this slope.

The tibia bone is thereby moved forward with a force called cranial tibial thrust. This force is only opposed by the cranial cruciate ligament. With every step a dog takes, stress is applied to the ligament. In dogs with a steep tibial plateau slope or that have a less-bent knee conformation, enormous forces are placed on the ligament (Figure 2). Over time, this can result in ligament injury or complete ligament rupture. When the knee becomes unstable due to rupture of the cranial cruciate ligament the cartilage pads are also prone to injury .



SYMPTOMS

When the ligament is injured, pain and swelling in the knee joint occur. This is usually accompanied by hind leg lameness which can be mild or severe depending on the degree of injury. The joint will typically settle down after rest and some pain relief but the lameness persists. The pain and swelling tend to reoccur easily even with only minimal activity. If not treated surgically, the joint will become arthritic and medication will have little effect on the pain and lameness the dog experiences.

DIAGNOSIS

A thorough orthopaedic and neurologic examination is performed evaluating the dog when walking and by manipulating all four limbs and the spine. Swelling, pain, and joint looseness (instability) can frequently be felt in the affected knee. Sedation or anaesthesia and X-rays are necessary to show signs of arthritis and to measure the tibial slope.

SURGERY

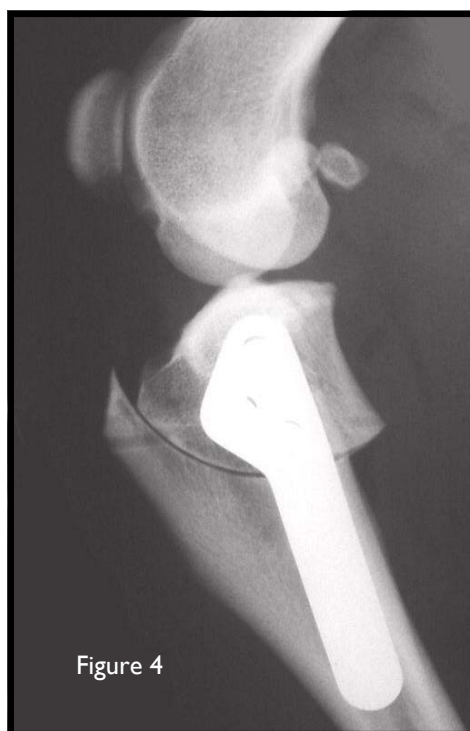
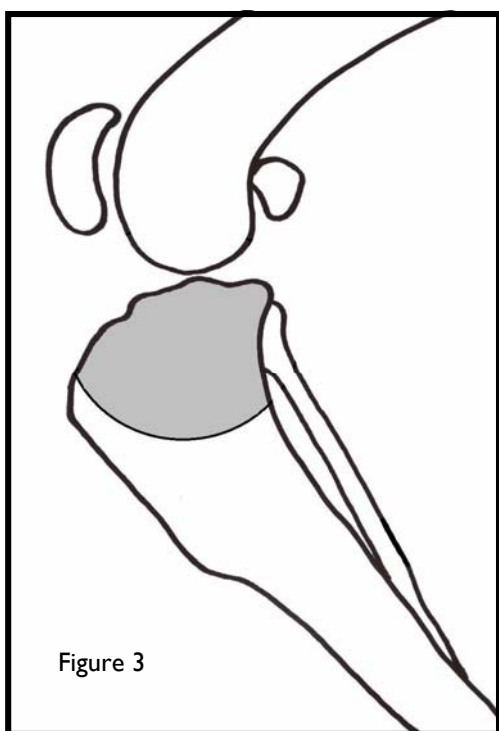
Traditional surgery for cranial cruciate ligament injury involves restricting

the joint instability by placing nylon outside of the joint or the dog's own tissue inside the joint in the same direction as the original ligament. Whilst these techniques have reasonable results, the joint instability returns and arthritis continues to develop rapidly in the joint.

The TPLO is used to neutralize the forces of cranial tibial thrust. The procedure "levels" the tibial plateau eliminating the need for the cranial cruciate ligament. The procedure involves cutting a circular bone cut in the top of the tibia (Figure 3). The tibial plateau portion is rotated before applying a small bone plate and bone screws (Figure 4). Injuries to the cartilage pads are also corrected during surgery.

RESULTS

Healing of the bone takes about two months and most dogs can return to full activity 3-4 months after surgery. Dogs, particularly those larger than 30kg, show excellent results with minimal progression of arthritis, few complications and normal function.



POSTOPERATIVE CARE

EXERCISE CONTROL

To allow the bone to heal following the surgery, complete restriction of exercise is absolutely necessary for the first 6 weeks. Your dog can be walked on a lead for toileting. Light (5-15 minutes) lead walks can begin after 4 weeks.

BANDAGE AND SUTURE REMOVAL

A bandage is generally placed around the operated leg to reduce swelling. This bandage should be removed 2-3 days after surgery. The skin stitches need to be removed 10-14 days following surgery. These tasks can be done by your regular veterinarian. Please call our clinic if there is any swelling, discharge or redness around the stitches.

MEDICATION

Most dogs are sent home with medication for additional pain relief. Sometimes, antibiotics are also dispensed. Give the medications as prescribed. Further pain relief can be prescribed if necessary.

PHYSIOTHERAPY

Physiotherapy is an important part of your dog's recovery. For the first 6 weeks after surgery this should consist of a warm compress applied to the region of the stitches for 15

minutes followed by gentle massage of the muscles. This can be followed by gentle flexing and extending of the leg.

After the bone has healed, your dog can begin more active physiotherapy with regular controlled exercise. Running without leash control is recommended for only short periods. Regular swimming is an excellent way of providing active exercise without joint stress.

FURTHER X-RAYS

Your dog should return to our clinic for further X-rays six weeks after surgery to evaluate the bone healing. The dog will require sedation to get good X-rays. Do not feed your dog on the morning of this visit. This assessment will incur an additional cost.

LONG-TERM TREATMENT

Some dogs will need long-term medication to control the arthritis already present in the knee prior to the surgery. Cartilage-protecting agents (chondroitin, glucosamine, green-lipped mussel, shark cartilage) can help lubricate the joint and keep cartilage healthy. Generally, life-long supplementation is necessary. Anti-inflammatory medication (aspirin-like drugs or cortisone) can be helpful in reducing pain but should only be necessary occasionally.

