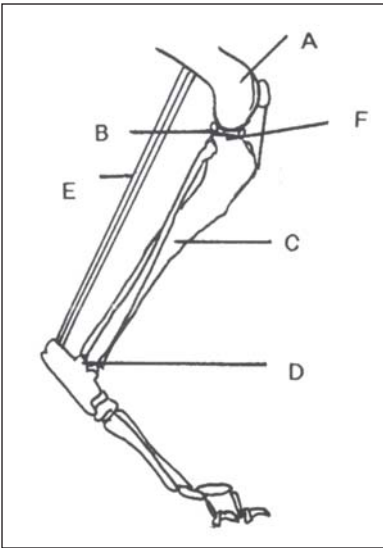


Tibial Plateau Leveling Osteotomy (TPLO)

My dog has been diagnosed with a cruciate ligament injury. What does that mean?



Normal Canine Tibia

- A. Femur
- B. Meniscus
- C. Tibia
- D. Tarsus
- E. Achilles Tendon
- F. Tibial Plateau

Often, there is thickening on the inside of the knee. The dog will often exhibit what is called a positive sit response—leaving the leg sticking out instead of tucked tight under the body. With a complete rupture, your veterinarian will detect abnormal forward backward movement and tibial thrust. X-rays will usually show swelling within the joint and varying degrees of osteoarthritis.

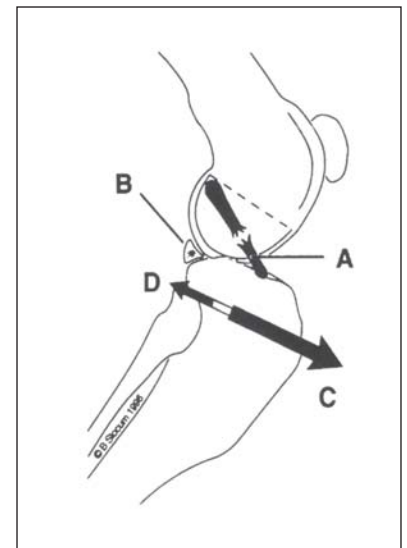
How does surgery correct the problem?

The tibial plateau leveling osteotomy (TPLO) is used to overcome the effects of the cranial tibial thrust. TPLO involves making a curved cut in the top of the tibia bone (osteotomy) to include the tibial plateau. The tibial plateau (the dashed line denotes the top of the tibial plateau) is then rotated along the curved osteotomy in order to level the slope. A plate and screws are used to hold the tibial plateau in place so that the bone can heal well. This procedure levels the tibial plateau thus eliminating tibial thrust. By eliminating tibial thrust, the need for the cranial cruciate ligament as a restraint is eliminated.

A cruciate ligament injury means that the ligament in the knee has been torn or has ruptured. Frequently, cruciate ligament rupture is a gradual process and not simply due to a single traumatic injury. Clinical signs of early cruciate disease include stiffness or very mild lameness. As the ligament progressively tears, the lameness becomes more pronounced. Rupture of the ligament leads to inflammation of the knee and subsequent degenerative osteoarthritis.

The key to understanding lameness of the dog's knee is understanding the forces generated in the knee. The Achilles tendon is a fixed length; therefore, all of the forces generated during weight bearing are transmitted through the tibia. The top portion of the tibia, the tibial plateau, is sloped. This slope causes the tibia to slide forward relative to the femur unless an intact cranial cruciate ligament restrains it. This forward force is called tibial thrust. When this force is too great it contributes to cranial cruciate ligament rupture.

Cranial cruciate ligament rupture is the most common orthopedic condition seen in dogs. This problem afflicts all ages and breeds of dogs; however, most dogs have a predisposing factor, such as age-related ligament degeneration, obesity, trauma, or anatomical abnormalities. Diagnosis of a cruciate ligament injury is made with a complete orthopedic evaluation of the affected leg. The affected knee is often painful on flexion and extension.



The cranial cruciate ligament is ruptured (A) and the caudal horn of the medial meniscus (B) is impinged when the cranial tibial thrust (C) is not neutralized by the pull of the hamstring and biceps femoris muscles (D).

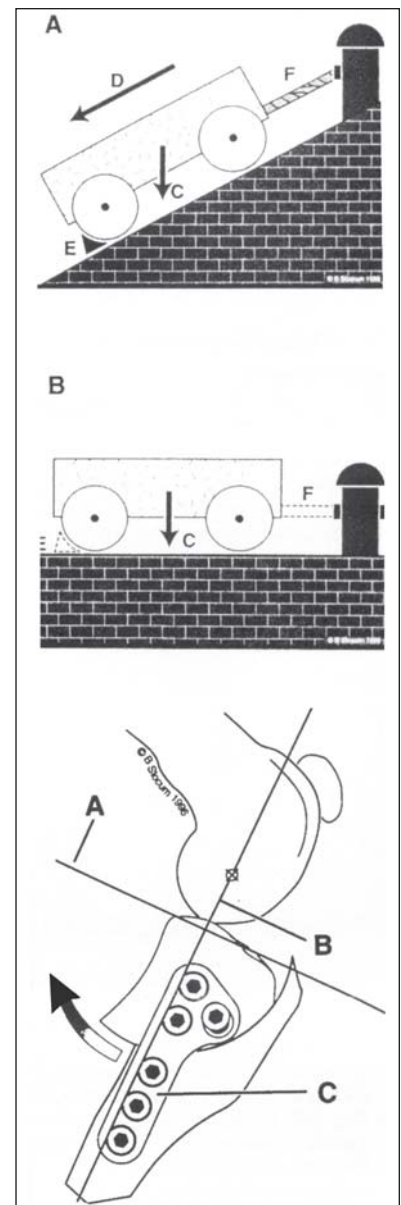
A good analogy to simplify understanding of this process is that of a wagon parked on a hill. The force created by the weight of the wagon (gravity) and the slope of the incline is analogous to tibial thrust. If a rope tied to an immobile object acts as a tether to the wagon; the wagon doesn't roll down the hill. The rope is analogous to the cranial cruciate ligament. If the rope breaks, the wagon rolls down the hill. If the same wagon is parked on a level surface, there is no need for the rope as a tether. The tibial plateau leveling osteotomy levels the tibial plateau eliminating the need for the cranial cruciate ligament.

What can I expect after taking my dog home from surgery?

Your dog will spend one night in the hospital after surgery. When you pick your dog up, you will be given instructions on how to care for your dog and the incision. The leg will not likely be bandaged, so you will need to keep an eye on the incision and follow all instructions regarding post-operative care.

You will need to confine your pet—strictly limiting activity—for the first four weeks after the surgery. One of the most difficult aspects of confinement is that your pet will often feel better long before he is healed. At this point your pet may become more likely to be overactive and injure himself. Until the bone is healed, you must adhere strictly to the confinement guidelines and not allow your pet to do more.

At the end of the four weeks, you will need to have your pet re-examined by your veterinarian. At that point, your veterinarian may allow leash walks, but your pet's activity will need to continue to be limited. Eight weeks after the surgery, you will need to schedule another recheck appointment. At that time, x-rays will likely be taken to assess the healing. Your veterinarian may recommend a physical therapy regimen that will help your pet fully regain normal function in his knee. Generally, you can expect a return to normal function within approximately six months.



The tibial plateau leveling osteotomy rotates (arrow) the sloped tibial plateau segment (A) until it is 10° more than perpendicular to the line between the stifle and hock joint centers (B). A Tibial Plateau Leveling Osteotomy Plate (C) compresses the proximal portion of the tibia against the distal portion by means of radially aligned compression holes and secures the rigid internal fixation for optimum bone healing.