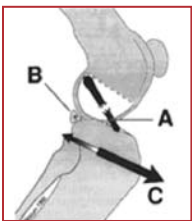


## **Cranial cruciate ligament injury in the dog and Tibial Plateau Leveling Osteotomy (TPLO)**

**Introduction:** Cranial cruciate ligament (CCL) rupture is a common orthopedic condition seen in dogs of all ages and breeds. By the late 1990's Tibial Plateau Leveling Osteotomy (TPLO) has become the most common technique performed to address this condition due to its significant success in large and active canine patients. Early signs of CCL stress or partial tear include stiffness or mild lameness. As the CCL continues to tear further, symptoms increase. A full tear usually results in complete lameness in the affected leg. In some cases, the knee will make a clicking or popping sound as the dog walks. This often indicates damage to the cartilage cushions (menisci) within the knee.

**Anatomy of the stifle (knee):** The cruciate ligaments are important stabilizing elements within the canine stifle joint. There are two cruciate ligaments in the knee, called the cranial and caudal cruciate ligaments. These same structures are present in the human knee, but they are called the anterior and posterior cruciate ligaments. The cranial cruciate ligament (CCL) is commonly injured in both canines and humans (referred to as the ACL in humans).

**Effects of CCL rupture:** When the CCL is ruptured, stability of the stifle is lost. This instability is often described as tibial thrust or drawer movement. This shearing motion causes excessive wear of the cartilage on the ends of the bones within the joint, and stretches the surrounding tissues, causing pain.



It can also injure the medial meniscus within the stifle. The Tibial Plateau Leveling Osteotomy (TPLO) can eliminate excessive tibial thrust, thus creating a more functionally stable joint and sound gait.

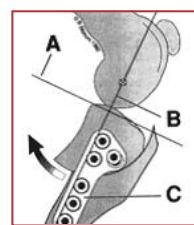
A- torn CCL    B- Caudal medial meniscus  
C- Forward thrust

**CCL diagnosis:** Diagnosis of a ruptured CCL is made by palpation (feeling the knee) and radiographs (x-rays). The

radiographic findings associated with a ruptured CCL include osteoarthritic changes and joint effusion (swelling). The actual ligament cannot be seen on the radiographs.

**Prognosis with TPLO:** The TPLO technique has gained acceptance throughout the country due to consistent reports indicating that dogs treated with TPLO have a better functional outcome and decreased development of osteoarthritis than dogs treated with older "traditional" repairs. The exciting aspect of this technique is the possibility of returning your dog to nearly normal long-term function following CCL rupture (which has not been possible with any of the traditional techniques attempted to date) and the prospect of a reduction in the future progression of arthritis.

**Surgical technique:** A curved cut (osteotomy) through the tibia bone is made using a specially designed saw blade. The top portion of the tibia is then rotated a precise number of degrees in order to level the slope of the tibial plateau and prevent the instability and sliding that occurs with a CCL



tear. A bone plate and screws are then placed on the tibia to stabilize it and allow healing to occur.

A- tibial plateau    B- functional tibial axis  
C- TPLO plate/screw implant

**Pain control:** Pain control for each patient will be addressed throughout the stay at the hospital and the first weeks of recovery at home. All patients will receive pain medications before, during and after surgery, as well as medications to go home.

**Recovery:** Strict confinement will be crucial for several weeks after surgery to avoid potential difficult complications. This will be discussed further during your appointment with the surgeon.