

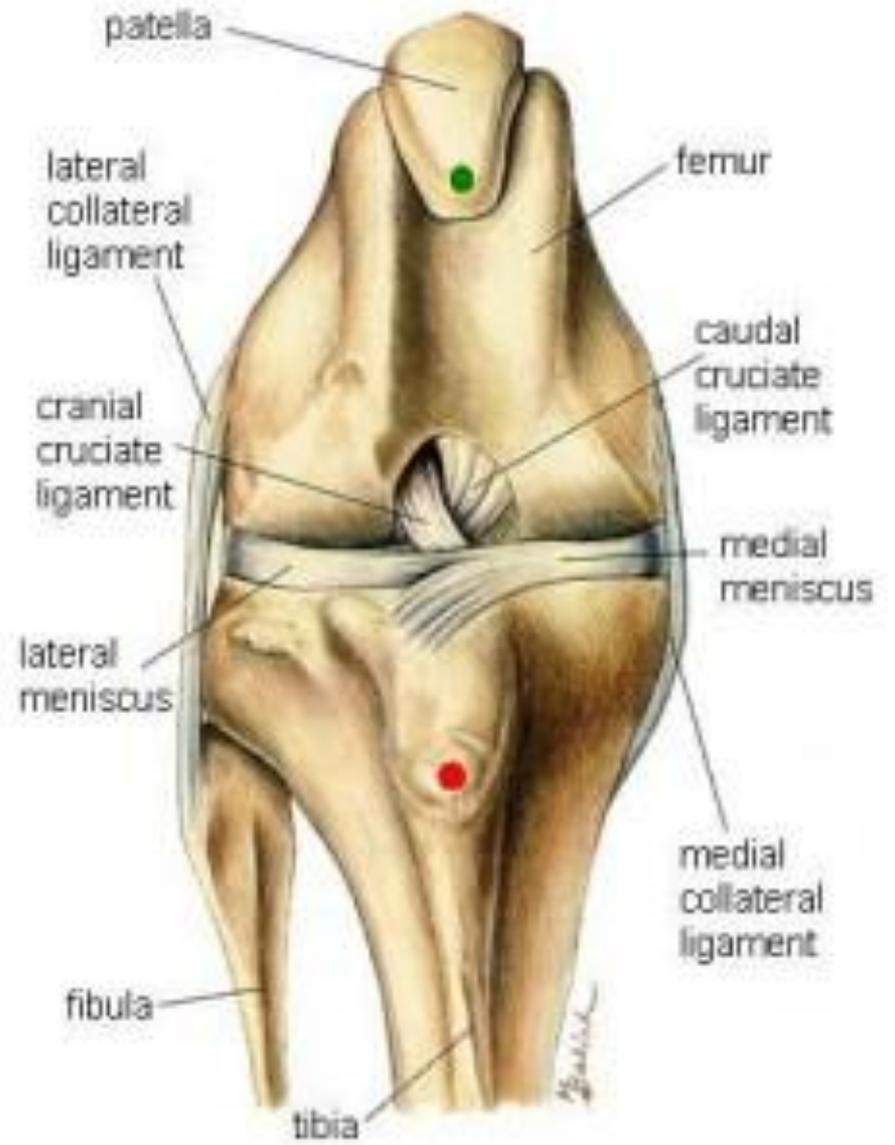
**COLLEGE OF VETERINARY SCIENCE AND ANIMAL
HUSBANDRY, MHOW
DEPARTMENT OF SURGERY & RADIOLOGY**

RUPTURE OF CRUCLATE LIGAMENT



An Over View of Joint

- ❖ Knee or the stifle joint that is formed by three bones
 - 1) **Femur**:- The long bone extending down from the hip
 - 2) **Tibia**:- The bone between the knee and ankle
 - 3) **Patella**:- The kneecap
- ❖ These bones are joined together by a number of ligaments which are tough fibrous bands of tissue

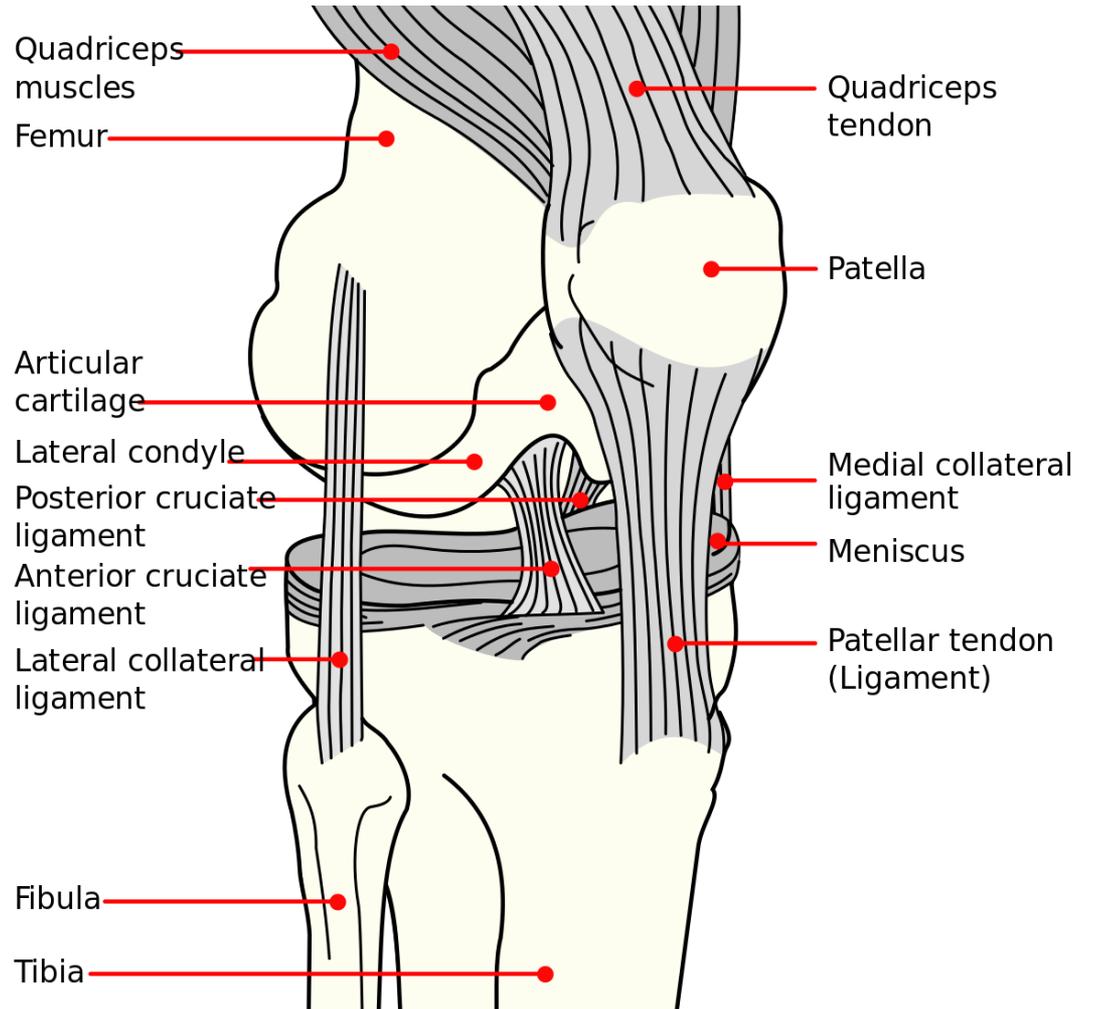
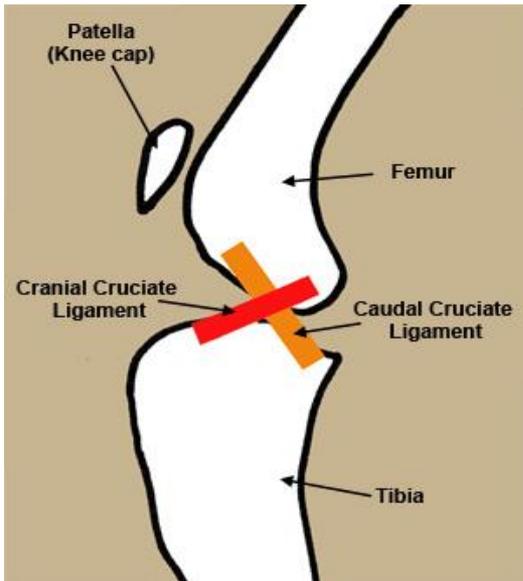


- ❖ It is a complex joint comprises of **two main articulations**
 - 1) Femoro patellar articulation
 - 2) Femoro tibial articulation

- ❖ Two ligaments crisscross in the joint from the femur to the tibia and are called **“Cruciate Ligaments”**
- ❖ The one towards the front of the leg is called the **“Anterior Cruciate Ligament”** and the one crossing behind it is the **“Posterior Cruciate Ligament”**

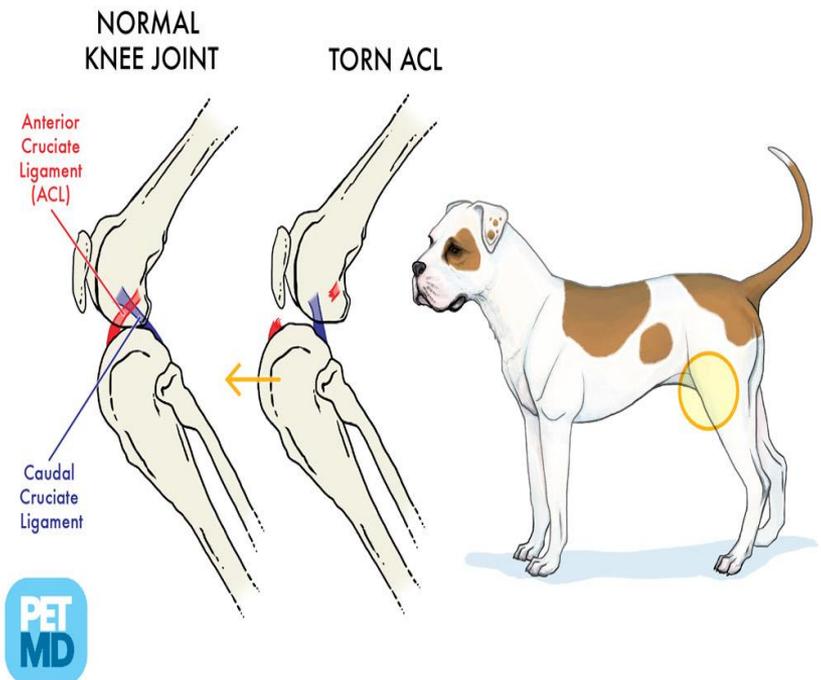
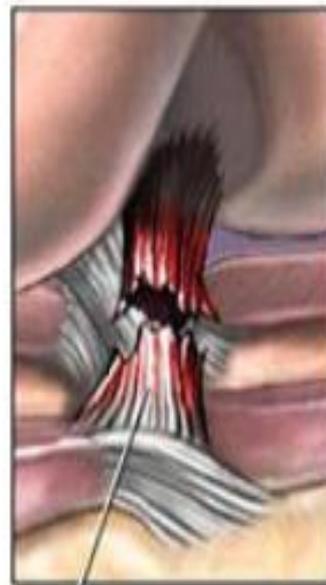
- The **CL** control the back and forth motion of knee.
- **ACL** diagonally in the middle prevents tibia from sliding out in front of the femur. **PCL** prevent the tibia displacing posterior to the femur.

The Cruciate Ligament



RUPTURE OF CRUCIATE LIGAMENT

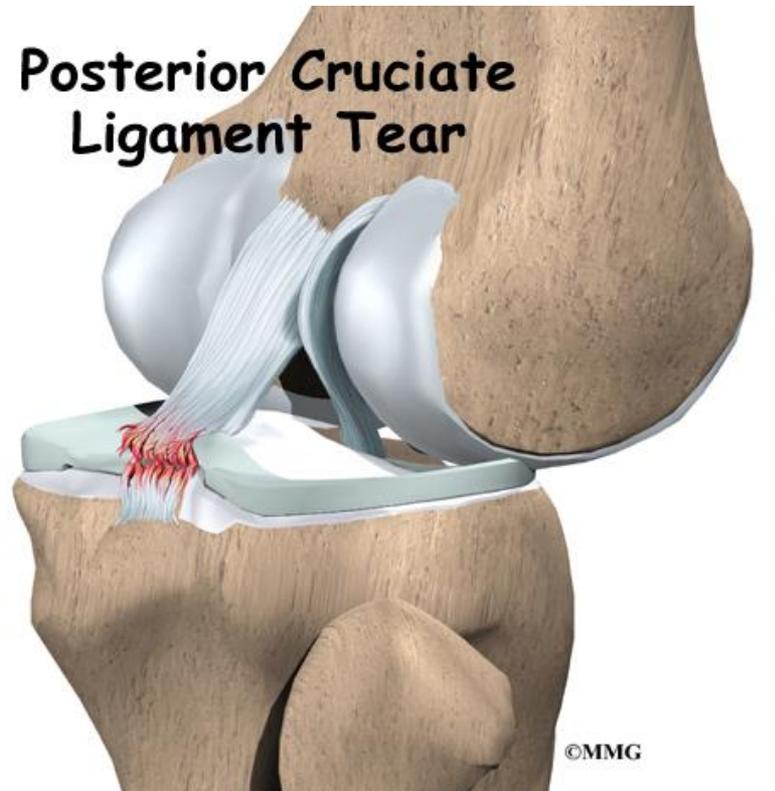
Cranial Cruciate Rupture is the most common cause of **rear leg lameness** in dogs and a major cause of **degenerative joint disease** (progressive & permanent deterioration of **joint cartilage**) rupture may be partial or complete.



CAUSES OF RUPTURE

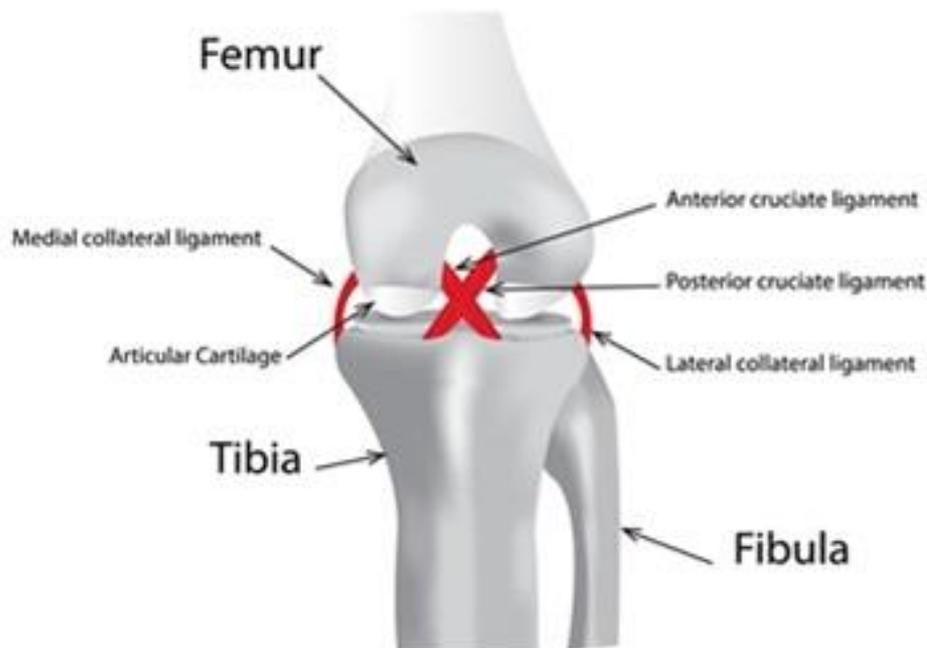
- Twisting** : Dog twists on his hind leg the twisting motion puts too much tension on the ligament and it tears.
- Slipping** : Dog slips on a slippery surface or if it makes a sudden turn or if it is hit by an automobile.
- Obesity** : In case of obesity the animal puts too much weight on the knee and overweight dogs tend to have more occurrences.
- Deformities of the joint** : Symmetrical or structural abnormalities that occur in the formation of bone during growth.
- Breed Susceptibility** : In the small breed dogs a luxating patella may predispose them.

Caudal Cruciate Ligament is slightly larger than Cranial and injury to this ligament is relatively **uncommon** and painful and knee joint becomes unstable.



Torn Posterior Cruciate Ligament

Normal Knee



Knee with a Torn Posterior Cruciate Ligament



Causes

Biomechanics : The biomechanics of the stifle, the caudal cruciate ligament is positioned in such a way that physical forces that cause ligament injury are directed towards the cranial cruciate ligament

Striking or Falling : This occurs most commonly in car accidents or from falling onto the knee when while its bent.

Symptoms

- ✧ Severity of this condition depends on the degree of rupture whether it is a partial rupture or complete rupture.
- ✧ Lameness due to pain.
- ✧ Inflammation in the Joint resulting in Effusion.
- ✧ Swelling & Thickenening.

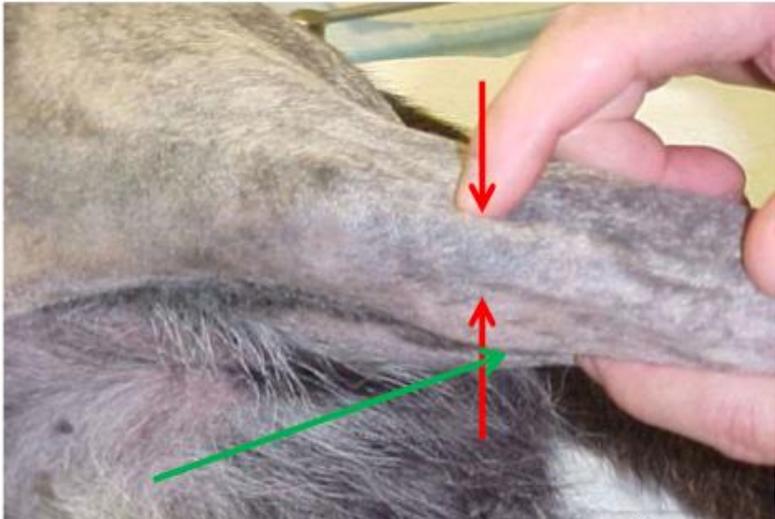
- ✧ The dog will hold the leg in a partial bent position (flexion) while standing
- ✧ If lameness remains untreated the partial tears get degenerated and progress to complete rupture.
- ✧ Progressive and permanent deterioration of joint cartilage encourages the degeneration of the ligament and surrounding muscles.



DIAGNOSIS:-

- ✓ Observing Gait : Abnormal movement of the joint is observed for pre-existing inflammation, and predisposing genetic factors.
- ✓ Palpation :The practitioner places one hand around the femur and one hand around the tibia in a precise manner and by applying the pressure on the knee he will feel the bones moving abnormally in what is called a “Drawer” sign.
- ✓ If a person suspects a ruptured cruciate ligament in dog but cannot elicit the drawer sign the dog may be sedated to relax the muscles and then re-examined.

Medial Buttress & Joint Effusion



STRESS RADIOGRAPHY

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- ✓ Medial Buttress : Many dogs will have a swelling on the inside aspect of the knee and this is called a “Medial Buttress”
- ✓ Arthroscopic tools : Helps in direct examination of the interior ligament, cartilages and the other structures.
- ✓ Cytology: Arthrocentesis is done to study the cells for infections, or immune mediated diseases.
- ✓ Radiography : X ray of the complete joints involved in articulation i.e the entire leg is examined to investigate the extent of damage and rule out other possible causes of lameness.

A**B****C****D**

TREATMENT

Nonsurgical management:-

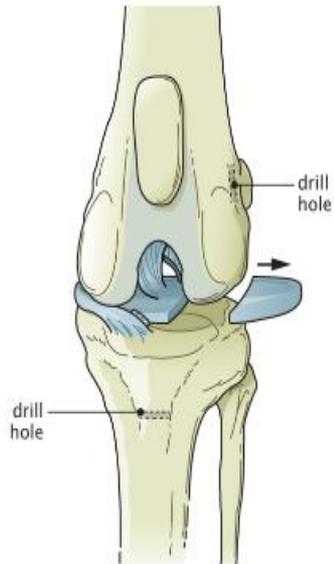
- ✧ Immobilisation : It includes rest, confinement, least walks
- ✧ NSAIDS like Carprofen @ 4mg/kg iv, sc
- ✧ Analgesic like Tramadol @ 2mg/kg iv
- ✧ Chondroitin Sulphate ,Glucosamine Hydrochloride, Hyaluronidase are used.
- ✧ Supplementation of Vit C, Vit E, Calcium and Minerals (Mn, Zn).
- ✧ Corticosteroids like Dexamethasone @ 0.01-0.16 mg/kg im,sc,po q24 3-5 days.
- ✧ Weight control is imperative

Surgical management:-

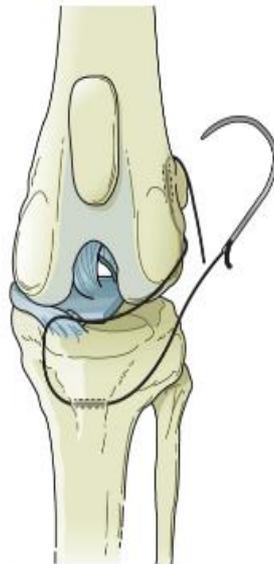
- 1) Extra capsular repair
- 2) Tibial Tuberosity Advancement (TTA)
- 3) Tibial Plateau Levelling Osteotomy (TPLO)

EXTRA CAPSULAR REPAIR:-

- ✧ After removing the damaged ligament stabilizing sutures are placed on the bone to stabilize the joint so it functions nearly normal.
- ✧ This suture is placed outside the joint capsule



If the meniscus (cartilage pad) is damaged, the traumatized part is removed.



The stabilizing suture is secured through small channels drilled into the femur and tibia and then tied in place. The suture mimics the stabilizing effect of the CCL.



The stabilizing suture may be secured with a special clip rather than with a bulky knot.

TIBIAL TUBEROSITY ADVANCEMENT:-

- ✧ The **Tibial Tuberosity Ligament** is removed from the tibia and allowed to bring it forward.
- ✧ In the new found space between the tubercle and rest of the tibia a metal spacer is placed to maintain the distance between the two parts.
- ✧ A bone graft is placed if necessary to strengthen the joint.
- ✧ The tibial tuberosity is attached back to tibia with a metal plate to hold the ligament further forward than usual.



TIBIAL PLATEAU LEVELLING OSTEOTOMY:-

- ✧ The **Tibial Plateau** (portion of tibia adjoining stifle) is cut and rotated so that the slope changes.
- ✧ This prevents the femur from further sliding down when the dog puts the weight on its knee
- ✧ This results in faster recovery times compared to other procedures to stabilize the knee.

