

Extracapsular Repair of Cruciate Ligament Injury with Patella Stabilization

Your pet has had its stifle (knee) surgically stabilized following injury to the cranial cruciate ligament, a major ligament inside the knee joint. Additionally, a long-standing patella luxation (dislocating or “trick” knee) was stabilized. Without the cruciate ligament the femur slides forward and back relative to the tibia, creating discomfort and damaging the cartilage in the stifle joint. The goal of the cruciate surgery is to eliminate this instability by using a synthetic implant on the outside of the joint capsule that mimics the biomechanical function of the cruciate ligament (*Figure 1*). Over time, fibrous scar tissue will develop along this implant to enhance and permanently stabilize the joint. After the healing period, the new stability will reduce the discomfort and on-going cartilage damage, but will not completely eliminate the changes that lead to degenerative joint disease (arthritis).

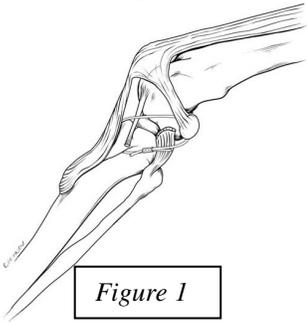


Figure 1

The patella is commonly referred to as the knee cap. Animals have a patella which is a small bone incorporated within the tendon of the quadriceps muscles (the muscles on the front part of the thigh). The tendon from the patella crosses over the front of the stifle (knee) joint to insert onto the long prominence (cranial tibial tuberosity) just below the joint (*Figure 2*). The patella is very important in the normal function and mechanics of the stifle. It acts as a lever arm and pulley to increase the mechanical advantage of the thigh muscles when extending the stifle.

The patella glides in front of the stifle when the joint is flexed and extended. To help maintain a constant and straight gliding pathway, the patella rides in a groove of the femur called the trochlear groove. When the patella is displaced out of this groove, it is referred to as luxated (*Figure 2*). The permanency of the luxation varies from that in which the patella occasionally slips out of the groove to where it is always out of the trochlear groove.

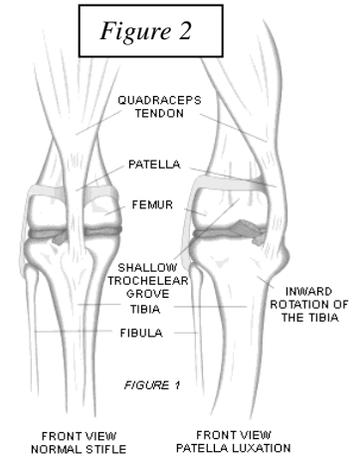
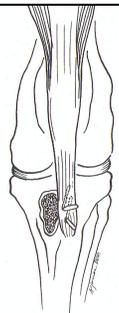


Figure 2

Figure 4



When the patella luxates from the trochlear groove a variable degree of pain occurs and the patient may limp or show discomfort. Also the luxation may produce a give way feeling which will result in a limp. The goal of surgery is to realign the extensor mechanism of the stifle and maintain the patella within the trochlear groove. The groove the patella rides in may be deepened with a trochlear wedge resection (*Figure 3*) and the patella tendon attachment site may be transposed (*Figure 4*) to correct stifle alignment. The patella stabilization will eliminate the intermittent limp or skip often seen with patella luxation, and will also eliminate the abnormal forces acting on the stifle joint that contributed to the cruciate ligament injury.

Recovery following repair of both the cranial cruciate ligament and the luxating patella tends to be slower in comparison to repair of either of these problems alone. The majority of animals will resume normal activities, but some stifle stiffness and soreness may remain after exercise and slowly worsen with advancing age.

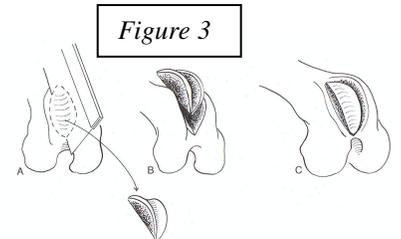


Figure 3

ACTIVITY RESTRICTION

- Please keep your pet in a comfortable, safe indoor location with no free access to stairs for the initial 24 hours following the procedure. Your pet may be groggy for the next few days. He or she may whine or appear more anxious than usual; this may indicate pain/discomfort or side-effects of the medications. Please call your veterinarian for assistance with any medication adjustments or return for an examination and additional pain medications as needed.
- Confine your pet to one level/section of the house on carpeted floors. Limited, supervised access to stairs is recommended for 8 weeks. Use a belly band for support when walking across slick floors or up/down stairs to prevent falling. Use baby gates, etc. to prevent free access to stairs during this restricted period. Please use a short, hand-held leash when taking your pet outside to urinate/defecate. Confine your pet to a small area/room/crate when unattended. Please do not allow your pet to run or jump during the initial 6 week healing period.
- Your pet may feel like using the leg normally before the site is well healed. Please continue the restriction during the initial 6 weeks post-op when he/she is feeling "too good". Failure to do so can result in serious healing problems.

INCISION CARE

- Please look at the incision once daily. It should be dry, slightly red along the margins, and slightly swollen/thick on the edges. Over several days, it should lose redness and swelling. *Problems to call your veterinarian about:* a) gapping (the edges should be exactly touching); b) discharge (other than small amount of crusting); c) swelling (other than slightly raised skin near edges). Some bruising is normal and will resolve in 5-7 days.
- Do not allow your pet to lick or chew the incision as this can compromise the incision and predispose to infection. If necessary, please use an E-collar if you must leave your pet unattended.

PROGRESS EXAMS

- Return to your veterinarian in 10-14 days for a progress exam. Skin healing and leg function will be evaluated, sutures will be removed, and any physical therapy questions will be answered.

- Your pet should start touching the toe down within the first 2 weeks following surgery. Thereafter, the leg use should steadily improve to 90% of normal at 8-10 weeks in the majority of pets. If you notice a sudden deterioration in leg use at any time after surgery, please see your veterinarian for reevaluation.

DIET

- Ideally, keep your pet on the thin side of normal his/her whole life. Any orthopedic condition can progress with arthritis over time due to excessive wear & tear; carrying less body weight will relieve some of this stress on the joints. Glucosamine/chondroitin supplements may have some beneficial effects in these patients, but this has not been clearly established. You and your veterinarian should discuss whether or not these products would be appropriate for your pet.

PHYSICAL THERAPY REGIMEN

Week 1

-Apply an ice pack to the knee 10-15 minutes four times a day for the first 24-36 hours following surgery (if the bandage is not present). Ice slurry can be made by mixing 2 parts isopropyl alcohol to one part water in a zip lock bag and freezing. This is kept in the freezer except when in use. Use a towel between the skin and ice pack for comfort.

-When swelling and redness have resolved (2-3 days post-op), begin application of a warm compress (a damp towel warmed in water) to the knee for 10 minutes three times a day before performing 10 slow repetitions of range of motion (ROM) exercises.

-ROM Exercise--Have your pet lie on his/her good side. Grip the front of the thigh with one hand and hold the foot with the other. Slowly push the foot up into flexion of knee and then slowly pull the foot and push the thigh down and back into extension of the knee. Concentrate on the extension movement. Flex and extend only to your pet's comfort limit. Do not go to the point of creating pain or resentment. Following ROM, apply ice packs to the surgical site for 10 minutes.

-After the third day, begin slow leash walks of 5 minutes duration three times daily. Use a short leash during the walks outside when your dog must urinate or defecate.

Weeks 2 and 3

-Apply the warm compress and continue flexion and extension of the knee as described above. Now slowly push the foot up into full flexion of all joints; hold for 5 seconds. Slowly pull the foot and push the thigh down and back into full extension of all joints; hold for 5 seconds. Repeat this motion 10 times twice daily. Again, do not go to the point of creating pain or resentment. Follow each session with 5-10 minutes of ice packs.

-Slow leash walks for 10 minutes 2 to 3 times a day is acceptable.

Weeks 4 and 5

-Sit/stand Exercise (for dogs)—Have your pet repeatedly sit and stand for *10 repetitions twice daily*. Use small treats to encourage participation. Do not push down on his/her rump. Continue 4 weeks.

-Massage—your pet may stand or lie down. Perform both superficial skin massage & deeper muscle massage. Skin massage around the knee joint involves using your hand loosely conformed to the surface of the skin; enough pressure is applied to move the skin relative to the underlying tissues. Muscle massage of the thigh and shin involves deeper kneading and pushing of the muscles. Perform massage for *10-15 minutes twice daily for 4 weeks*.

-Increase the slow leash walks to 20-30 minutes 2 to 3 times a day.

Weeks 6 and 7

-Active exercise-Place your pet on a short leash and have him/her walk at your side. Walk outside on even/solid footing for *10 minutes twice daily*. Continue 4 weeks, gradually increasing time and distance.

Weeks 8 - 10

-At the end of week 8, the dog should be reexamined by your veterinarian for evaluation of limb usage.

-Increase the slow leash walks to 30-40 minutes a day. The pace should be slow enough to ensure full weight-bearing on the affected limb.

-Have your dog slowly climb a flight of stairs 5-10 times twice daily.

-Jogging exercise-On a short leash, intermittently jog and walk your dog for 10 minutes twice daily. Continue 4 weeks, gradually increasing time and distance.

-Swimming is wonderful rehabilitation exercise when performed correctly. You may allow controlled swimming after week eight. Controlled swimming requires that your pet not jump or leap into the water; walking into the water until it is deep enough to swim is required. Throwing balls to fetch often results in sudden jumping and lunging, this can cause serious problems in the healing phase. Do not over extend you pet; start with short excursions (5 minutes) and increase duration and frequency gradually.

Weeks 11 and 12

-Light play exercise-On a long leash; encourage playing and romping with your dog for 15 minutes twice daily. Use toys for teasing and tugging. Continue 2 weeks.

-Healing should be complete and your dog can return to full activity by the 12th-16th week.

LONG TERM LIFESTYLE

Following the 12 week recovery period, there are no recommended limitations to their lifestyle. A gradual return to full function should occur, to allow for a smooth transition back to normal activity. If stiffness and lameness develop over time, intermittent use of anti-inflammatory medications can help improve limb function. Occasionally the implants that were placed in your dog's knee will cause irritation and lameness. If necessary, these are easily removed once complete healing has occurred.