

## Tibial Tuberosity Advancement (TTA)



One of the most useful and efficient ways to convey information to you about your pet is via the written word. We carefully craft these notes to give you helpful information and accurate expectations around your pet's surgical experience.

**Please read this.** *Please save it and read it during each stage of the recovery process.* Surprises make for a stressful time for everyone.

Photo and video examples may be found on our website: [www.directvetsurg.com](http://www.directvetsurg.com) in the Pet Owner Portal under “DVS Resources”.

Your pet has had a TTA (tibial tuberosity advancement) to stabilize a torn cranial (anterior) cruciate ligament (“ACL”). This procedure involves cutting the tibia (shin bone) and changing the angle of the knee joint to improve the biomechanics and stabilize the knee joint during weight bearing. A bone plate, screws and cage/spacer were used to move the tibial tuberosity forward and immobilize the surgical cut made in the tibia until the bone is fully healed. These metallic implants are usually in place for the life of the patient, but occasionally will need to be removed if they become infected or cause irritation. After a period of healing and rehabilitation, the TTA-stabilized knee joint will have no restrictions, and your pet may resume a normal lifestyle. It is not uncommon for some degree of knee stiffness to remain or develop over time as your pet ages. This occurs with any injury to a joint (i.e. arthritis). The goal of this procedure is to reduce joint instability and slow the progression of arthritis.

### GENERAL INFORMATION

Please keep a note of your questions as you and your pet progress through recovery, and address them to your primary care veterinary team. Our surgery group will contact your primary care team on **Day 2** (after their phone follow-up with you) and **Day 14** (after your recheck visit with them) to check in on your pet's progress and see if you have had any concerns or questions. This method will maintain continuity in care and an accurate patient medical record.

### ***First few days postop***

### MONITORING

Please keep your pet in a comfortable, safe, indoor location without free access to stairs for the next 24 hours as he/she recovers from anesthesia and surgery.

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 primary care veterinary team for assistance with medication adjustments or return for exam and additional pain medications as needed.

Monitor appetite and attitude. *If both do not steadily improve over the next 2-3 days*, please call your primary care veterinary team or return for progress evaluation and problem-solving.

You can expect your pet to have a bowel movement within 5 days. Some animals take longer than others depending on when they last ate prior to surgery and when they started eating after surgery. It may be abnormal in color and consistency for 2-3 days. If you have any concerns, please speak with your primary care veterinary team.

Please confirm that your pet has urinated within 24 hours of returning home. If he/she does not, or you notice any problems related to urination, please speak with your primary care veterinary team.

## MEDICATIONS

It is likely that you have been prescribed one or more medications (given by mouth) for your pet over the first 2-3wks of recovery. During the discharge appointment or shortly thereafter, please make sure you understand:

- what each medication is being used to treat,
- what side-effects may develop, and
- whether or not the medication should be refilled and continued.

## BANDAGE CARE (IF PRESENT)

A clear, plastic bandaid may have been applied to the incision (Tegaderm). This will protect the incision from infection from the environment and a wayward pet tongue! It is useful for up to 7-10 days. You may remove it like a “bandaid” at any time. If it is hard to peel off, waiting longer may make for easier removal. There is no urgency in taking it off.

A padded bandage *may have been* applied to the operated site. The goal of the bandage is to provide pressure to the surgical site to minimize swelling and improve patient comfort for 12-24 hours. If this bandage starts at the foot, please place a plastic baggy over the foot whenever you take your pet outside to prevent soiling of the bandage; remove when indoors. You may remove the bandage or return to your primary care clinic for removal the morning following surgery. If the bandage slips below the incision or

becomes soiled or wet *before this time*, please remove it by simply cutting away one layer at a time (use caution, avoid skin); no need to replace unless otherwise directed.

## **Week 1-2 postop**

### MONITORING

Please look at the incision on your pet's knee twice daily. It should be dry, slightly red along the margins, slightly swollen/thick on the edges with a light crust down the center. Over several days, it should lose redness and swelling.

Problems to call your veterinarian about:

- gapping (the edges should be exactly touching)
- ongoing or new discharge (other than small amount of crusting)
- swelling (other than slightly raised skin near edges).

Some bruising is normal and will resolve in 5-7 days.

The occasional patient will have more extensive bruising and/or a puffy ankle on day 2-3. If this develops, please let your primary care veterinarian know; a visit or sending photos will help them characterize the issue and decide on a course of action. The vast majority of the time, this is a transient issue that will follow a typical 5-7 day course resolving.

Do not allow your pet to lick or chew the incision. Pets tend to want to lick early in the healing period and scratch later in the healing period; this can compromise the incision and predispose to infection. If necessary, please prevent access to the incision by using creative clothing options (backward long-sleeved T-shirt worn as "pants"), an E-collar or other devices, if you must leave your pet unattended.

Closely supervise your pet's movements over the first 3-4 days when s/he will be groggy from anesthetics and pain medications. Limit activities to necessary events only (on leash/out to go to the bathroom; access to food/water.)

### TEST PENDING

If there were any samples removed for testing, they will be submitted and results usually will be available in 5-7 days. Your primary care team will contact you with test results and make any treatment changes as needed.

## PROGRESS EXAMS

Please return to your primary care clinic in 10-14 days for a progress exam. Skin healing will be evaluated, sutures (if present) will be removed, use of the limb will be assessed and any questions you have will be addressed.

Your pet should start touching his/her toe down within the first 2 weeks. Thereafter, leg use should steadily improve to 90% normal at 6-8 weeks. If you notice a sudden deterioration in leg use at any time after surgery, please see your veterinarian for exam.

Please return to your primary care clinic in 2 months for progress x-rays. These are necessary to confirm appropriate bone healing and implant stability prior to increasing activities. It may be beneficial to have some oral tranquilizer/sedatives to use before your visit, since quality x-rays require careful patient positioning (and cooperation). Please discuss with your primary care veterinary team at least a week before your scheduled x-ray visit.

## DIET

The **most** beneficial and **least** expensive treatment for arthritis over the lifetime of your pet is maintaining your pet on the lean/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 from the joints. Good parameters to monitor body condition are:

- 1) you should be able to feel the ribs and pelvic bones, but not see them;
- 2) your pet should have an "hour glass" figure when viewed from above looking down;
- 3) your pet should have a tucked-up belly when viewed from the side.

Glucosamine/chondroitin supplements ("chondroprotectants") may have some beneficial effects in these patients, but this has not been clearly established. High-dose (medicinal dose) fish oil may improve comfort in arthritic joints longterm. You and your veterinarian should discuss whether or not these products would be helpful for your pet.

## RESTRICTIONS

Restrict your pet from any rigorous activity for 12 weeks. No running, jumping, playing.

Confine your pet, when unattended, to one level/section of the house on carpeted floors or crate confine. Rugs can be used to reduce the risk of slipping on slippery surfaces.

Limited, supervised access to stairs is recommended for 8 weeks. Restrict access to stairs when your pet is unattended (baby gates, etc.) Use caution and direct supervision on stairs

(up and down) with a hand on the collar and a safety strap/leash under the belly to prevent falls.

Please **always** use a short (6 ft) leash when taking your pet outside to urinate/defecate during this restriction period. Use a belly band/sling/strap for safety when walking across slippery floors and going up/down stairs to prevent falling

Your pet should start touching his/her toe down within the first 2 weeks. Thereafter, leg use should steadily improve.

If your pet is not using the limb by 2 weeks, if you notice a sudden deterioration, or if your pet stops using the leg at any time after surgery, please call your veterinarian for advice. While it is not unusual for brief episodes of discomfort over 2-3 months of healing, limping that continues for more than 24 hours should be examined. X-rays or other tests may be needed to diagnose significant problems.

Your pet will feel like using the leg normally before the bone is well healed. Please continue the restriction during this difficult time when he/she is feeling "too" well! Failure to do so can result in serious healing problems.

If your pet's personality-type challenges these restrictions, discuss options for medicinal-assistance for your pet to make restrictions easier to manage (i.e. Trazadone, Gabapentin, Tramadol, other).

## EARLY HOME PHYSICAL THERAPY

Our lives are often very busy, so if you must err, err on the "do less" side of these instructions. Less physical therapy will result in a slower return to function, but more aggressive physical therapy by a non-professional too early may result in failure of the implants and surgical repair. Cats (and some dogs) often resist physical therapy dramatically; avoid any activity that results in major uncooperative behavior.

***\*\*Please let us or your veterinarian know if you are interested in a professional physical therapy referral in the Twin Cities.***

**Week 1: Range of Motion (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 knee. Concentrate on the extension movement. Repeat this motion slowly and smoothly 10 times once daily. Flex and extend only to your pet's comfortable limit. Do not go to the point of creating pain or resentment.

Following each ROM exercise, apply ice packs (wrapped in thin cloth) to incision area. Baggies of frozen peas work well for this, or snow wrapped up, or make an ice pack by freezing 2 parts isopropyl alcohol to one-part water in doubled up ziplock baggies.

**Week 2: Expanded ROM Exercise**—Have your pet lie on his/her good side. Apply a warm compress to knee for 5 minutes. Grip the front of the thigh with one hand and hold the foot with the other. Slowly push the foot up into flexion of all joints; hold for 5 seconds. Slowly pull the foot and push the thigh down and back into extension of all joints; hold for 5 seconds. Repeat this motion 10 times twice daily for 4 weeks. Again, do not go to the point of creating pain or resentment. Follow each session with 5-10 minutes of ice packs (see Wk1).

**Week 3: Controlled Walk Exercise**—Lay out a path that will allow you and your pet to turn corners and walk around objects on one level of the house with non-slip flooring or in the yard. Place your pet on a short leash. Walk slow enough so that your pet has to put each foot down and does not hop. The slower you walk, the more likely they are to put the foot down on the ground. If he/she is barely putting foot down, stop every few steps and ask your pet to back up a few steps. Walk your path for 5 minutes twice daily.

**Week 4:** Increase controlled walks to 10 minutes twice daily. Continue expanded ROM exercises

## ***Month 1-2 postop***

### EXPANDED HOME PHYSICAL THERAPY

**Week 4:** Increase controlled walks to 15 minutes twice daily. This increase in walk duration and improved patient comfort may lull both you and your pet into thinking you both are free to go for an “energizing walk”. Long leashes and public distractions (squirrel!!) can result in over-stressing of the surgery site. ***Please be patient and remain in a controlled environment.*** Continue 2 weeks.

**Week 4:** 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. To encourage proper knee flexion squarely under his/her body, have your pet sit next to a wall (or use your foot/shin as a blocker) so the knee doesn’t swing out to the side. Continue 4 weeks.

**Week 4:** 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 for 10-15 minutes 2x daily for 4 wks.

**Week 6:** Increase controlled walks to 20 minutes twice daily. Continue 2 weeks.

**Week 6:** Swimming is wonderful rehabilitation exercise when performed correctly. You may allow controlled swimming after week 6. Controlled swimming requires that your pet not jump or leap into the water; please walk your dog into the water until he/she is deep enough to swim. Throwing balls to fetch often results in sudden jumping and lunging, which can cause serious problems in the healing phase. Do not over-extend your pet; start with short excursions (5 min); increase duration/frequency gradually.

## ***Month 2-4 post op***

### RESUMING NORMAL ACTIVITIES

**Week 8:** 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.

## ***Long-term lifestyle***

The prognosis for dogs treated with a TTA to correct a ruptured cranial cruciate ligament is good to excellent. The majority of dogs return to a normal gait, level of activity, and endurance. Following the 12-week recovery period, there are generally no recommended limitations to your pet's lifestyle.

Dogs with arthritis at the time of surgery are likely to need some medications or supplements during and after recovering from surgery, and many dogs may need medications or supplements as they age, to support arthritis symptoms (stiffness, soreness after exercise) as they occur. Ask your veterinarian about conservative, long-term support of arthritis.

If the meniscus cartilage (one of two small cartilage pads in the joint) was damaged at the time of surgical stabilization, it will already have been removed. If it was normal at the time of surgical stabilization of the knee joint, a small percentage of those patients will damage the meniscus later in life. Many of these injuries will heal with a short period of restricted activity, but a small group of patients with meniscal injury may require surgery in the future to remove the torn cartilage.

It is very common (up to 50% of patients) for both knees to develop this ligament injury. The cause of the cruciate ligament injury/disease is not fully understood; breed, conformation, activity, obesity have all been implicated. Prevention is challenging; the most effective prevention is to maintain your pet at a lean/normal body condition and maintain a moderately active lifestyle.

## ***Checklist:***

### **HOME MONITORING AND PROGRESS CHECK-IN WITH VETERINARY TEAM**

- ☐ Pet attitude and appetite—Are these improving daily? What are your observations? What are your specific concerns?
- ☐ Pet mobility—Is this improving daily? What are your observations? What are your specific concerns?
- ☐ Incision health—Is redness and swelling going away? Is there discharge or moisture? (Photos taken close-up and at different angles are helpful for your primary care veterinary team,)
- ☐ Pet pain level—What are your observations? What are your specific concerns?
- ☐ Other

Based on your own experiences through this, we welcome and encourage suggestions to this information that may help future patients and their people navigate the postop experience. Pay it forward!

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