CRUCIATE SURGERY – TIBIAL TUBerosity
ADVANCEMENT: AT HOME CARE

Your pet has had surgery for the treatment of a ruptured cranial cruciate ligament. The tibial plateau (the "table top" on which the rounded end of the femur sits) has been adjusted to become at right angles to the patella tendon, which essentially takes over the function of the now deficient cranial cruciate ligament. To hold the bone in the correct position, a 3D printed titanium implant (which has a honeycomb structure similar to that of bone) has been inserted into the bone and held in place with screws.

Implant removal is generally not necessary. Most dogs will be putting some weight on the leg within ten days post-surgery. There should be a progressive increase in weight-bearing over the following weeks. There is about a 10% chance of a late meniscal injury occurring, which usually causes severe lameness. If this occurs, a more minor procedure may need to be performed to remove the damaged portion of meniscus; the outcome is usually very good and recovery is rapid.

Your pet has had a surgical skin wound made to accomplish the procedure today. Together with us, you are responsible for this wound - we suture the wound and then it is essential that you care for the wound at home by following these instructions explicitly. Do not allow your pet to lick the wound. If this is likely to occur, then please ensure that an Elizabethan collar is fitted at all times until the surgical wound has healed, which takes about 10 days.

Re-examination
Re-examination is advised in 4 days to remove the dressing as well as examine the wound, but sooner if you are concerned. There is often some bruising and swelling around the surgery site; this is normal and should resolve uneventfully. Weekly rechecks and injections of disease modifying osteo-arthritic agents (DMOAAs like Zydax®, Cartrofen®, Pentosan®, Synovan®) are advised for 4 consecutive weeks; please make appointments at your convenience for these. Please make an appointment to drop your pet off for a day stay for follow-up radiographs in 6 weeks; we will assess the degree of recovery and discuss the rehabilitation exercise program then.

Medications
- Anti-inflammatory: _______________
  Label instructions on the packet should be followed.
- Analgesic patch (fentanyl). This will be removed at the 4 day recheck.
- Tramadol tablets - Label instructions on the packet should be followed.

Post-operative exercise
Strict rest (no free exercise allowed) for the next 8-12 weeks is necessary to allow healing of the fracture and stabilisation of the joint. This means your pet should be confined to a small room or run for the duration of this period. The only exercise allowed is short-duration (10 minutes maximum), slow walks on a leash for toileting purposes. This includes no jumping (including into and out of cars) and definitely no stairs! Please try to keep your pet on flat surfaces only, and preferably not on slippery surfaces e.g. tiles and polished floors. If this is unavoidable, then consider putting rugs down or non-slip matting (which can be purchased by the metre from hardware stores). An old towel can be rolled up and used as a hind-quarter sling by placing it underneath the abdomen. By doing this you can provide support and security in the early post-operative period.
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After the recovery period, a progressively increasing lead exercise and hydrotherapy program is required to strengthen the muscles and improve joint mobility. During the rehabilitation period, daily food intake should be reduced by 30% to prevent your pet putting on more weight while not exercising. Free exercise off the lead is not advised until after the rehabilitation program has finished.

Physiotherapy
After the first few days postoperatively, physiotherapy in the form of passive range-of-motion exercises can be performed. Ideally, all joints of the affected limb should receive physiotherapy 2 to 3 times a day but you should concentrate mainly on the stifle joint if time is short. During each session, a minimum of 10 flexions and extensions should be performed on each joint. After flexion and extension of the individual joints, the entire limb should be cycled through its full, pain-free range-of-motion 10 times, as if your pet were riding a bicycle. It is very important never to force the joints or cause pain, but gently manoeuvre the limb through a range-of-motion that is well tolerated.

Longer-term follow-up and care
At around 6 weeks post-operatively, a radiograph of the stifle should be taken to assess the progress of healing. All going well, controlled exercise on a leash may begin at this time. Leash walks should be minimal at first (10-15 minutes twice daily), and then gradually increased after 8 weeks post-operatively.

Sit-to-stand exercises should also begin around 4 weeks post-operatively. This can be achieved during leash walking when the patient is commanded to “sit” and just before assuming the sitting position, the command to “walk-on” is given. This routine is repeated 10 or more times every walk and has the effect of building the quadriceps muscle mass, which is very important in rehabilitation following cruciate surgery. There should be no unsupervised exercise, and running and jumping should be avoided during the 12 week post-operative period. Between 8 and 12 weeks, exercise can be increased slowly to 30 to 40 minutes twice daily. Walking through water for 10 to 15 minutes a few times a week is excellent therapy at this stage. This should be performed in a controlled situation e.g. an aqua-treadmill (see below), shoulder height water at a calm beach/river, or a swimming pool. Beaches can be used, however it is important to avoid uncontrolled activity, so keep your pet on a leash (preferably with a harness), and avoid times when there might be other dogs around. By 12 to 16 weeks, your pet should have returned to near normal activity. However, there is a large variation in how quickly individuals return to full function following TTA surgery. If there is not near normal activity by 12 to 16 weeks post-operatively, then please make an appointment for reassessment.

Prognosis
Your pet has a good chance of improvement in lameness. Most patients make an excellent recovery within three to six months of surgery. Osteoarthritis (OA) is likely to progress, regardless of treatment; this does not necessarily influence a satisfactory outcome. The progression of OA can be slowed by using nutraceuticals (e.g. Glyde®, 4Cyte®). It is most important not to allow your pet to become overweight and to maintain a reasonable level of fitness. If you have any questions or concerns, please don't hesitate to contact us.
Rehabilitation program

While the surgery is important to alleviate pain and restore adequate function to your pet's knee, of equal importance is the rehabilitation. Here is a guide to what can be done to help return your pet to function as quickly as possible. There are several excellent veterinary physiotherapists in South-East Queensland that can help with your pet's recovery (see below).

**Week 1**
- For the first 3 days, please try to apply an icepack to the knee for 10 minutes on/10 minutes off for 40 minutes every 3-4 hours
- After 3 days, if your pet will tolerate it, start physiotherapy. Let your pet guide you as to duration and intensity.
- This should be started gently and slowly, using the resistance in the leg as an indicator of comfort level, i.e. if you start to feel resistance or any vocalising, then that is the limit for that day. Use this a guide for the next day.
- Imagine your pet riding a bicycle; this is the movement you want to replicate.
- Try to put the whole leg through a full cycle between 20-30 repetitions 2-4 times daily
- Alternate backwards and forwards
- Strict rest and confinement
- Short leash walks (10 min max) in backyard only for toileting purposes only
- NO running, jumping or stairs!
- Should be toe touching the ground intermittently

**Week 2**
- DMOAA injection #1
- Strict rest and confinement

- Short leash walks (10min max) in backyard only for toileting purposes
- Should be taking a little more weight on the leg, but mainly toe touching
- Continue physiotherapy daily

**Week 3**
- DMOAA injection #2
- Short leash walks (10 min max) in backyard only for toileting purposes
- Should be taking a little weight on the leg, may be 3 legged lame when walking outside
- Continue physiotherapy daily

**Week 4**
- DMOAA injection #3
- Continue physiotherapy daily
- Should notice increase in range of motion and comfort levels
- Should be taking weight on the leg most of the time, but still noticeably lame
- Start sit to stand exercises to increase muscle mass of quadriceps and hamstrings:
  - Command your pet to sit
  - Just as your pet is about to put bottom on the ground, walk them forward a step or two
  - Repeat this several times over the course of the day (liver treats help!)
  - Provided your pet is comfortable with this exercise and the lameness isn’t worsening, continue this exercise each day, and gradually increase the daily frequency

**Week 5**
- DMOAA injection #4
- Continue physiotherapy daily
- Should notice increase in mobility, comfort levels and should be taking weight on the leg most of the time, with moderate lameness
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Week 6

- If your vet feels that your pet has made a good recovery, you can start some CONTROLLED activity:

  - Hydrotherapy and/or swimming is the best form of controlled exercise, as it is supportive/buoyant and non-concussive on the knee joint
  - Alternatively, you can start short CONTROLLED leash walks. It is VERY important that this is performed under very controlled settings, as any uncontrolled activity may result in implant failure or prolonged recovery.
  - The easiest way to do this is providing an environment where there are no distractions (other dogs, cats, birds, possums etc.), so definitely NOT at the dog park! The backyard or local park/oval at off-peak times would be best.
  - Ensure your pet is on a leash AT ALL TIMES.
  - Start with some physiotherapy and sit-stand exercises at home to warm up, then go to a grassed area (backyard, oval) and ON A LEASH, start slow paced walking.
  - Use your pets’ comfort levels as a guide to how far or fast to walk. Most dogs by this time should be able to cope with 5 to 10 minutes walking once to twice daily. Do so for a week, then gradually increase the duration by 5 minutes per week. If there is any noticeable increase in lameness, then decrease the duration to the previous level, and maintain that level for an extra week before increasing the duration.

Week 7 onwards

- Continue physiotherapy and sit-stand exercises a few times a day.

- Provided your pets’ lameness has continued to improve, and your vet was happy with your pets’ progress at the last visit, increase duration of CONTROLLED LEASH walking by about 5 minutes once to twice daily.

- If at any stage you are concerned, please contact us.

Animal Physiotherapists & Hydrotherapy

Animal Physiotherapy Solutions
Lindsey Connell
14 The Centre at Springwood
Corner of Lexington & Logan Roads
Underwood QLD 4119 Australia
www.vss.net.au/services/physiotherapy/

Brooke Marsh
431 Tanawha Tourist Drive
Tanawha, QLD 4556
Sunshine Coast
Australia
www.ncvs.net.au/3662_Therapists.html

Hydrotherapy

The Canine Fitness Centre
3385 6090
583 Oakey Flat Rd, Morayfield, 4506
www.caninefitnesscentre.com.au

Mobile Rehabilitation Therapist

Alpha Mobility Solutions
Dr Laurence Oner
Based in Petrie QLD 4502
0421 169 107
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