Management of concomitant medial patella luxation and cranial cruciate ligament rupture

Your dog has (or may have) two orthopaedic problems affecting the knee;

1. luxation (dislocation) of the patella (knee cap)
2. tearing of the cranial cruciate ligament (CCL), the main stabiliser of the stifle joint (knee)

Medial patella luxation (MPL) occurs secondary to malalignment of the quadriceps mechanism. Deformities in the hip, femur (thigh bone) and tibia (shin bone) typically contribute to poor alignment of the quadriceps mechanism. Poor alignment of the quadriceps muscle group "pulls" the patella out of position. Surgery is primarily aimed at improving overall alignment; additional procedures are typically performed to deepen the patella groove (if the existing groove is too shallow), tighten the outside of the knee joint and relieve tension on the inside of the knee joint. Addressing alignment at the level of the attachment of the patella tendon on the tibia with a tibial tuberosity transposition (TTT) may improve alignment sufficiently to stop the patella luxating, however sometimes the patella will continue to luxated after TTT; in cases of persistent dislocation correction of deformities of the distal femur and/or at the level of the hip may also be necessary.

Patella luxation destabilises the knee resulting in increased strain on other joint stabilisers including the cranial cruciate ligament (CCL). Chronic patella luxation is a risk factor for tearing of the CCL. The cranial cruciate ligament will be assessed during exploration of the knee joint. If tearing of the CCL is identified additional surgical procedures are typically necessary to stabilise the knee e.g. IPLS procedure, TPLO, TTA.

CCL tears are the most common orthopaedic problem in dogs, and typically occur secondary to degenerative changes in the ligament; in extreme cases dogs may be affected as early as 3 or 4 months of age. A number of factors may influence early onset of degeneration including genetics, sex, hormones and obesity, and will typically affect the CCL in both stifles. Purely traumatic injury is rare, although trauma is often associated with tearing of an already weakened ligament. There are a number of techniques that can be used to manage a tear of the CCL, and your vet may have discussed various options with you; results with isometrically placed sutures such as the IPLS procedure appear to compare favourably with other techniques. The IPLS procedure is a recent advancement on a commonly used technique, the lateral fabellotibial suture (DeAngelis suture). Ultra high molecular weight polyethylene is a much stronger material than has been traditional used and the suture is placed in a more favourable position.

The isometric ultra-high molecular weight polyethylene lateral suture (IPLS) is placed through bone tunnels in the femur and tibia – the traditional technique places the "origin" of the suture around a small bone and ligament at the back of the stifle. The bone tunnel in the femur allows more secure fixation and isometric placement of the suture – an isometrically placed suture remains at relatively constant tension through full range of motion of the stifle; a suture placed in a non-isometric position will become excessively lax or tight depending on the position of the stifle, resulting in both instability and reduced range-of-motion of the stifle. Prior to placing the IPLS the stifle joint is inspected, the menisci (joint cartilages) examined and any damaged meniscal tissue removed. Any remnants of the cranial cruciate ligament are also removed.

The majority of dogs progress uneventfully following IPLS & MPL surgery and are eventually able to return their normal activities, nevertheless it may take six months or more before a dog has **fully** recovered. Dogs with chronic stifle problems, and especially those with substantial muscle atrophy and/or dogs that have had previous surgery will be expected to progress more slowly. As with any surgery complications may arise and when managing **two problems** at the same time the potential for complications may be **mildly increased**. Potential complications that may occur are detailed below, although serious complications are rare.

- Even though very uncommon, anaesthetic death can occur. With the use of modern anaesthetic protocols and careful monitoring the risk of problems with anaesthesia is minimised, but never eliminated.
- Infection is an uncommon complication as strict sterile technique is used during the surgery and antibiotics are administered during and after the procedure. Should infection occur, early detection and treatment often results in rapid resolution, although if bacteria colonise the UHMW polyethylene braided suture removal of the IPLS may be required. More serious problems may occur if infection progresses untreated or if your dog suffers infection with a multiple resistance bacteria e.g. MRSA. If you suspect an infection contact your VET immediately.
- Excessive early activity may increase the risk of breaking or loosening of pins and wires, as well as increasing the risk of the suture breaking (or stretching), even though the ultra high molecular weight polyethylene material is markedly stronger than the suture materials traditionally used in the DeAngelis technique.
- Fracture of the tibial tuberosity and trochlear can occur, which may necessitate further surgery.

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- Even after the initial period of strict confinement (typically first six to eight weeks) it is still important to have a controlled, gradual increase in activity, similar to human patients undergoing rehabilitation following cruciate surgery. If activity in dogs is increased too quickly after surgery spraining/straining of joint structures may occur. Rest and anti-inflammatory medications may be necessary to manage these problems.
- Arthritis is usually present at the time of surgery and will progress to some degree regardless of treatment. If the CCL has been ruptured for some time significant additional joint injury may have occurred, and arthritis is typically more advanced. Previous stifle surgery is also often associated with a more rapid progression of arthritis. Unfortunately it is not possible to reverse the arthritic changes in the joint or undo other damage already done, but the surgery will stabilise the stifle thereby reducing inflammation, which may help to reduce the rate of ongoing progression of arthritis.
- Damage to the meniscus (cartilage pad in the stifle) may occur following tearing of the CCL ligament; if meniscal injury is present at the time of surgery the damaged meniscus is removed. Meniscal injury may still occur after stifle surgery has been performed, and may occur at any time i.e. weeks or even years after surgery. If this occurs additional surgery is usually necessary to manage the torn meniscus. This complication occurs more frequently following IPLS when compared to TPLO.
- Repeated patella luxation gradually wears away the cartilage on the underside of the patella. This damage is permanent and cannot be undone. In cases of severe wear underlying bone may be exposed which can be a source of chronic pain. This is why it is important to address recurring patella luxation as soon as reasonably possible.
- Persistence or recurrence of patella luxation may occur. As previously mentioned quadriceps malalignment involves deformities of the hip, femur and tibia, and whilst improving alignment at the level of the tibia will often be sufficient to resolve patella luxation it is not addressing all deformities present. Where luxation recurs additional surgery is indicated and may need to address (in particular) femoral deformities.

AFTERCARE OF YOUR DOG FOLLOWING KNEE SURGERY:

Your pet should be kept confined (ideally to a large cage or alternatively a single room with **non-slip** flooring) to restrict activity. Short **leash** walks in the garden (a few minutes four to six times daily) are recommended to allow toileting. Confinement should be maintained at all times for first six weeks following surgery, with the exception of scheduled rehabilitation as detailed below.

Ice packs for 10 to 15 minutes several times daily are recommended in the first few days following surgery to reduce swelling and improve comfort. Regular, gentle massage (sweeping motions from ankle to hip) may help dissipate oedema fluid.

Three to four weeks following surgery commence lead walking for 5 minutes at a time, two to three times daily, but maintain confinement at other times. Lead walking may gradually increase but should not exceed **10 minutes** at a time for the first six weeks following surgery.

Hydrotherapy is beneficial (but not essential) to recovery but should only be performed in a centre with qualified personnel. Hydrotherapy may commence at three to four weeks post surgery in a water treadmill, or at four to six weeks following surgery in a swimming pool.

DECLARATION:

I have read the information contained herein (2 pages) and am satisfied I have a sufficient understanding of the knee surgery my dog is scheduled to undergo, including potential complications that may occur and requirements for aftercare following surgery.

I hereby consent for my dog ……..…….…… to undergo knee surgery as scheduled by my veterinary surgeon.

Owner's signature: Witness:

Print name: Print name:

Date: Date:

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