Cranial Closing Wedge Ostectomy

The Theory

Cranial Closing Wedge Ostectomy (CCWO) is a surgical procedure to stabilise a stifle (knee) with a ruptured cranial cruciate ligament. The cranial cruciate ligament is one of the main stabilising structures of the stifle joint. In a healthy stifle the cranial cruciate ligament prevents the femur from sliding back and downwards in relation to the top of the tibia (shin bone) during weight bearing. It also restricts inward rotation of the joint. When the ligament is torn the joint becomes unstable leading to pain, inflammation and osteoarthritis.

The Procedure

The first part of the surgery involves internal examination of the joint. The joint is opened and the remnants of damaged ligament are removed. During this time, the menisci (cartilages) are inspected, and any damaged meniscus removed. During the CCWO procedure, a wedge of bone is removed from the tibia. The resulting gap is closed with a bone plate and wire to secure the bone. This effectively flattens the tibial plateau, so weight is placed on a flat surface when walking which eliminates tibial thrust.

The Aftercare

CCWO is a major procedure, and it is important to follow these instructions closely to have the best chance of a successful outcome. Exercise should be restricted in the 6-8 weeks following surgery. This will involve confinement to a dog crate or small room, toilet breaks should be on a lead, access to stairs and slippery floors restricted and no opportunity to jump on/off furniture. The surgeon will instruct you on how and when you can return to leash walking, this will vary based on the individual patient. This period of restriction of exercise is a critical part of the recovery process and not adhering will increase the risk of complications.

You will be given a combination of medications for pain relief and occasionally antibiotics. It is important you follow instructions closely to avoid complications. Any changes in demeanour, vomiting or diarrhoea should be reported immediately to your vet.
| Weeks 1 and 2 | Ensure your pet’s surgical wound is kept clean and dry. Prevent licking with a buster collar. Report any signs of infection promptly to your veterinary practice.  
Toilet breaks to the garden should be controlled and on a short lead. Exercise should be restricted according to the instructions found in your pet’s post-operative information sheet. This will vary depending on the patient.  
For the first 3-5 days apply an ice pack (or frozen vegetables) wrapped in a damp towel around the stifle for 10 minutes 3 times a day.  
If you notice swelling around the hock, massage the area using your thumbs in a circular motion moving up towards the stifle twice a day.  
Once your pet is feeling more comfortable, usually 3-4 days following surgery, begin gentle flexion and extension of the joint. Your clinic can show you how to do these or visit our website for physiotherapy videos. Start with 5 repetitions twice daily, and increase to 20 repetitions three times daily. Stop immediately if your dog resents this, or seems painful.  
Sutures will be removed at the end of this period (if applicable). |
| Weeks 2 to 6 | Your surgeon will suggest to begin physiotherapy around this time, please refer to your tailored instructions regarding this. |
| Week 6–8 onwards | Your pet will require x-rays to check bone healing. Please keep your pet on restricted exercise during this time.  
Once the surgeon is happy that the bone is healing you will be advised to begin a gradual return to normal exercise over a period of 6 weeks.  
From short lead walks of 5-10 minutes twice daily increase this by 5 minutes weekly, and once your dog is walking comfortably on the lead for 30 minutes, you can let him/her off the lead for the last 5 minutes of the walk and gradually increase off lead time whilst decreasing on-lead time.  
At all times your dog should make steady progress. If he/she stops improving, or becomes more lame, please contact your vet immediately. |
What To Expect

This procedure was first described in the 1990’s and thousands of dogs have been treated successfully since. 90–95% of dogs return to an equivalent level of exercise compared to the pre-injury state. Of these, four out of five will not need any ongoing medication or treatment. The remaining one of five will generally be unrestricted but will need occasional intermittent medication such as anti-inflammatory drugs or joint supplements for bouts of stiffness in the joint.

As with any surgery however, complications can occur. The most common is late meniscal injury. Dogs have menisci (cartilages) in their joints like humans do and it is reported around 5% of dogs suffer meniscal injury some weeks or months after surgery. The cardinal sign of this is the onset of lameness in a dog that has been doing well, that doesn’t settle with rest. Treatment for this is repeat surgery on the joint to remove the injured tissue.

The next most common complication is infection. Despite modern antibiotics, preparation techniques and disposable drapes and gowns, this occurs in around 3% of cases and in some dogs requires removal of the implants. Other major complications that are very rare but have been reported include fractures of the tibia, implant failure and the onset of patella luxation. Your surgeon will discuss the risks at the time of admission.

Cruciate rupture in dogs is usually as a result of degeneration in the cranial cruciate ligament rather than trauma. Unfortunately, this means the joint is usually arthritic by the time surgery becomes necessary, and this arthritis will progress, (though at a slower rate than if surgery had not been carried out). In addition degeneration can be ongoing in both stifles, and up to 70% of especially larger younger dogs will suffer rupture of the cruciate ligament in the other stifle within a year to 18 months.

RCVS Canine Cruciate Registry

We take part in the UK’s largest study which analyses the short and long term progress of patients undergoing surgery for cruciate disease.

Participation is simple, enter your email address on our consent form and you will be sent a link by the cruciate registry with further information. Following this you will be provided with questionnaires on your pets mobility and comfort before surgery and at interims following. More information can be found here https://caninecruciateregistry.org/dog-owners/