Osteochondritis Dissecans (OCD) of the Stifle

Osteochondrosis and Osteochondritis Dissecans

Osteochondrosis is an abnormality of longitudinal bone growth (a disturbance of cell differentiation in metaphyseal growth plates and joint cartilage) that causes a focal thickening of the joint surface. The deeper layers of this thickened cartilage surface become starved of nutrition which results in a structural weakness. In some cases this can result in an intra-cartilage separation between the superficial and deep cartilage layers. Once separation occurs, vertical fissures can form in the superficial cartilage layer resulting in a 'flap'.

If this condition results in a dissecting flap of articular cartilage with some inflammatory joint changes, it may then be termed osteochondritis dissecans (OCD). This condition is very common in many species. In the dog, medium, large, and giant breeds are typically affected.

OCD is most frequently seen in rapidly growing, large and giant breed dogs. Males are affected 2-3x more than females.

What causes it?

The cause of osteochondrosis appears to be multifactorial. Rapid growth, nutritional factors, genetic / hereditary factors and trauma all play a role. Excessive calcium has also been shown to predispose to OCD.

The shoulder is the most commonly affected joint, however OCD can also affect the elbow, stifle or hock.

The prognosis for long term function depends on which joint is affected, the degenerative changes already present at the time of treatment, and whether the cartilage flap is in position or has moved elsewhere in the joint. OCD of the shoulder carries the most favourable prognosis, with all other joints often requiring management for secondary osteoarthritis.

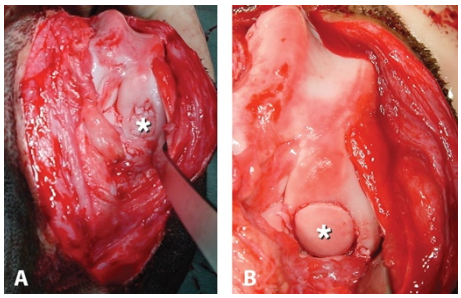
OCD lesions of the stifle may affect the lateral or medial femoral condyle; they are typically larger and particularly deeper than in other joints, and the prognosis for larger OCD lesions treated with traditional management techniques is typically significantly more guarded.

Treatment options

Traditional management techniques involve removal of the cartilage flap and curettage or micro-picking of the subchondral bone surface. Whist this may achieve reasonable results for smaller, shallow lesions in the shoulder, however, outcomes with the much deeper lesions more typical of stifle OCD are somewhat disappointing.

What is osteochondral autograft transfer?

A more recent innovation involves cutting out a cylindrical core of bone that includes the OCD lesion and replacing it with a core of bone and healthy articular cartilage taken from a non-weight bearing donor site in the knee. The procedure is called osteochondral autograft transfer (OAT). Long-term studies in people have demonstrated significantly better outcomes with OAT procedures compared with cartilage flap removal, curettage/micro-picking. A precise set of devices to facilitate the OAT procedure has been developed by Arthrex; the osteochondral autograft transfer system (OATS).



Intraoperative image of an osteochondrosis dissecans (OCD) lesion (asterisk) in the lateral femoral condyle (A). Intraoperative image in which the OCD lesion has been removed and repaired by using an Osteochondral Autograft Transfer System (OATS) graft (B, asterisk)

Outcome and potential risks of surgery

The majority of dogs are likely to have relatively uneventful recoveries following OATS procedures, with the hope of improved function allowing eventual return to reasonable levels of activity for a pet dog (i.e. non-working). Lameness may, however, persist and progress. As with any surgery complications may arise and are detailed below, although serious complications are uncommon.

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- Infection is an uncommon complication as strict sterile technique is used during the surgery and antibiotics are administered during the operative period. Should infection occur, early detection and treatment often results in rapid resolution. 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. Some medical conditions will increase the risk of a post-surgical infection, such as pre-existing infection elsewhere e.g. skin and ear infections, cystitis, gingivitis etc. Pre-existing infections should be eliminated whenever possible to reduce the risk of post-surgical infection.
- Fracture of the graft may occur during surgery. This may affect outcome. If an additional, suitable donor site is not available it may be necessary to replace the original core and manage with traditional curettage/micro-picking techniques.
- Excessive early activity may cause subsidence (sinking) of the graft or affect successful incorporation with surrounding bone and cartilage.
- Even after the graft has been incorporated it may still be of benefit to have a controlled, gradual increase in activity, similar to human patients undergoing rehabilitation following joint surgery. If activity in dogs is increased too quickly after surgery straining of ligaments or other joint structures may occur. Rest and anti-inflammatory medications typically resolve these problems.
- Arthritis is usually present at the time of surgery and will progress to some degree regardless of treatment. Unfortunately, it is not possible to reverse the arthritic changes in the joint or undo other damage already done, although restoring a cartilage surface at the site of the OCD lesion may help to reduce the rate of progression of arthritis.

Postoperative care

A pad may be covering the wound at the time of discharge from the hospital. This can be removed after several days, or immediately if soiled.

Medications e.g., Pain killers will be dispensed.

Ice packs may also be helpful in the days following surgery to reduce swelling and improve comfort.

Your dog should be kept confined to **eliminate running and jumping** for the first 6 to 8 weeks: a single room with non-slip flooring and no furniture may be sufficient, however a large cage is generally preferable. Short, **slow** leash walks in the garden (a few minutes four to six times daily) are recommended initially to allow toileting.

- Three weeks following surgery: commence lead walking for 5 minutes at a time, two to three times daily.
- Four weeks following surgery: increase lead walking to 7 - 9 minutes at a time, two to three times daily.
- Five weeks following surgery: increase lead walking to 10 minutes at a time, two to three times daily.
- Six weeks following surgery: continue lead walking for 10 minutes at a time, two to three times daily.

Maintain confinement **at all other times**; running, jumping and play must be avoided for at least 8 weeks.

Hydrotherapy is beneficial to recovery and may commence at three weeks post-surgery in a water treadmill, or at six weeks following surgery in a swimming pool under the guidance of a hydrotherapist. Any activities prior to confirmed healing of bone will introduce risk e.g. car travel to and from hydrotherapy, slipping/falling.

Declaration:

I have read the information contained herein and am satisfied I have a sufficient understanding of the osteochondral autograft transfer procedure; I hereby consent for my dog to undergo OAT surgery.

Owner's name: Dog's Name:

Owner's signature: Date: