

ELBOW DYSPLASIA



Elbow dysplasia is a common developmental condition of dogs leading to the abnormal development of the elbow joint. Predisposition towards development of elbow dysplasia is inherited as a polygenic (multiple genes) trait with the severity of abnormal joint development also influenced by environmental factors such as exercise, growth rate and nutrition. Obesity will worsen the condition.

The development of the condition is poorly understood. It is thought that during growth the bones which form the elbow joint fit unevenly allowing abnormal loading of the cartilage at the joint surface. This allows focal pressure points to develop with resultant damage to the joint cartilage either by fissuring or fragmentation of the cartilage and underlying bone. This causes pain and lameness and inevitably leads to the development of osteoarthritis.

The site and type of problem where the cartilage and bone damage is located gives rise to the names of the conditions that make up elbow dysplasia (fragmented coronoid process, ununited anconeal process, osteochondrosis/OCD and joint incongruity).

Affected dogs frequently present with lameness in one or both forelimbs whilst they are still growing (5 -9 months of age). The degree of lameness can range from mild to severe and may be intermittent or persistent. Often the lameness is worse after rest following periods of exercise. Adult dogs can also become lame at a later date due to the onset of osteoarthritis in the elbow joint or sudden mechanical changes in weak areas. Veterinary examination can often detect muscle wastage (atrophy), joint swelling (effusion), and discomfort on manipulation of the affected elbow joint.

How is elbow dysplasia diagnosed?

It is generally necessary in dogs suspected as having elbow dysplasia to carry out further examination of the elbows under sedation or anaesthesia.

X-ray

Radiographs are the most common initial method of checking for elbow dysplasia. They allow an assessment of the presence and severity of secondary osteoarthritis and sometimes define a specific elbow dysplasia condition. Damage to the cartilage and any subtle joint unevenness (incongruity) is not readily identifiable on radiographs however and additional investigation is often required.



Elbow joint with osteoarthritis (arrows)

C.T. (computed tomography)

C.T. is a specialised form of radiography that enables a computer generated 3-D image of the elbow to be constructed. C.T gives more information than standard radiography and can allow accurate identification of fragmented or abnormal areas of cartilage on the joint surface and an assessment of joint congruency.

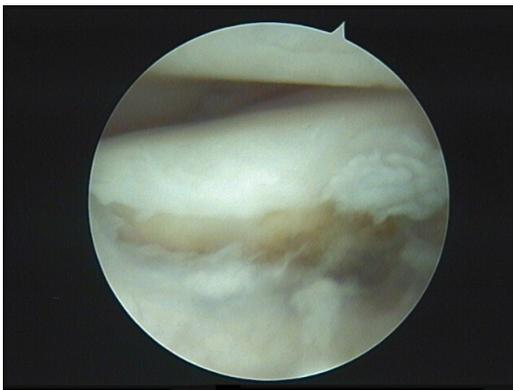


CT reconstructions of an elbow with a fragmented coronoid process (arrow)

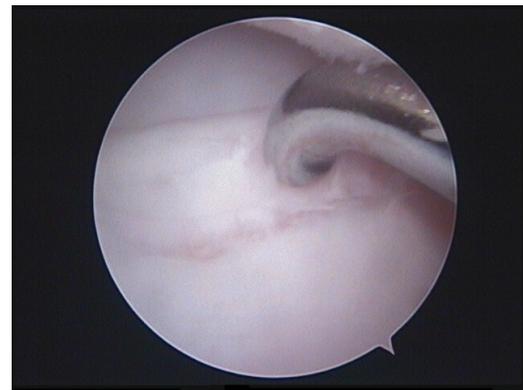


Arthroscopy

This involves examination of the elbow via surgical placement of a small camera and provides useful information on the extent of cartilage loss from the wider joint surfaces in addition to identifying incongruity and fragmentation.



Cartilage fragment



Surgical probe used to aid cartilage fragment removal

How can elbow dysplasia be treated?

- ***Conservative Treatment***

Some dogs with elbow dysplasia can be managed quite successfully without the need for surgery. Often exercise has to be restricted but this must be tailored to the individual dogs needs. Physiotherapy exercises and hydrotherapy can be beneficial. It is important that dogs with elbow dysplasia are maintained at their correct weight. A number of dietary supplements are available that may help manage the joint cartilage damage.

Painkillers (analgesics) and anti-inflammatory drugs may be required for several weeks or months. Life long medication is reserved for dogs with debilitating osteoarthritis usually with significant joint cartilage loss. Those dogs that fail to respond to conservative management may benefit from surgery.

- ***Fragment removal surgery***

Surgery to remove damaged areas of cartilage or bone from the elbow joint can either be done by minimally invasive surgery with the aid of a small camera (arthroscopic fragment removal) or by a direct surgical approach. Recovery from surgery is usually quite rapid and will often improve a lameness allowing dogs to return to normal levels of activity. This surgery can be expected to result in short to medium term improvement in approximately 60-70% of cases. Unfortunately some dogs do not improve despite surgery and in the longer term in all cases surgery does not influence the development of osteoarthritis.

- ***Incongruency surgery***

Dogs with an uneven joint may benefit from surgery to improve the shape of the elbow joint. The type of surgery undertaken is directed at the specific developmental abnormality seen in each individual dog. This is a more invasive procedure than fragment removal surgery and therefore recovery can take longer.

- ***Salvage surgery***

Salvage surgery is rarely necessary and is reserved for dogs with severe and debilitating lameness that has failed to respond to either of the previous treatments.

Total elbow replacement surgery involves replacing the elbow joint with metal and plastic implants allowing a relatively normal limb function. Total elbow replacement surgery is in its infancy in the U.K. and at present carries a relatively high complication rate. Recently a partial joint replacement has been developed and is undergoing clinical trials.

Sliding humeral osteotomy involves cutting one of the bones that forms the elbow (humerus) and sliding this bone into a new position allowing the load applied to the elbow to be shared between opposing healthy cartilage and therefore protect the damaged area. This is a relatively new technique and complications can also be seen with this procedure.

Proximal Abducting Ulnar Osteotomy This is again a recent development designed to shift load bearing to the more normal medial (inside) compartment. The risks here are potentially less severe than with a Sliding Humeral Osteotomy.

Elbow fusion (arthrodesis) It is possible to fuse the elbow joint which results in a pain free limb. The normal function of the limb is compromised, since the elbow no longer moves. Dogs have to learn to swing the limb externally.

What is the outlook in dogs with elbow dysplasia?

The outlook can vary from a mild lameness of short duration through to a continuous severe lameness causing pain and limiting the dog's quality of life. Many dogs can be treated successfully with exercise modification and weight control without the need of painkilling medication. It is not uncommon to see a degree of stiffness or lameness after exercise. Some dogs may benefit from painkillers on occasion or a more frequent basis. Surgery can often improve discomfort and lameness in the short to medium term but unfortunately the development of osteoarthritis can lead to lameness at a later stage despite surgical intervention. If this is severe then salvage surgeries can be considered.

