# Elbow Dysplasia in Dogs

## Fragmented coronoid Process (FCP)

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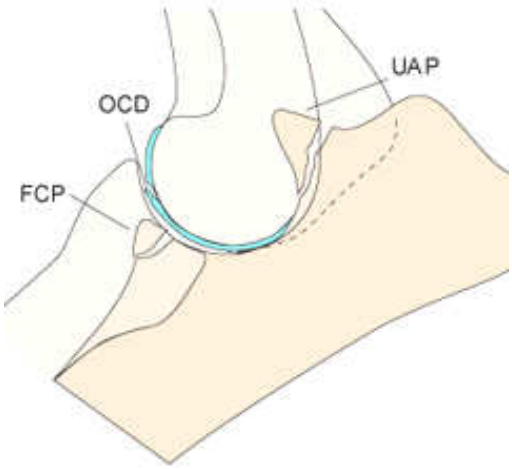
### What is Elbow Dysplasia?

Elbow dysplasia is the abnormal development of the elbow joint and is the most common cause of foreleg lameness in dogs. Osteoarthritis in the elbow occurs most frequently secondary to elbow dysplasia. Elbow dysplasia refers to a group of diseases of the elbow which include:

- **Fragmented coronoid process (FCP)**
- **Medial compartment disease (MCD)**
- **Osteochondrosis dessicans (OCD)**
- **Ununited anconeal process (UAP)**
- **Incomplete ossification of the humeral condyle**

### Fragmented coronoid process (FCP)

Fragmented coronoid process (FCP) is the most common form of elbow dysplasia in dogs. In this disease, a fragment of bone and cartilage of one of the bones of the elbow joint (ulna) becomes detached and breaks off from its usual position. This fragment (the "FCP") can vary in size ranging from a half lentil to a half peanut! This fragment may non-displaced or it can be detached and then rub and cause irritation to the opposing cartilage surfaces on the inner aspect joint, causing even more damage and early osteoarthritis. In many cases, the outer aspect of the joint may be normal despite the presence of the FCP and damage on the inner aspect. This is termed "medial compartment disease". In severely affected cases cartilage can be worn away leaving the exposed bone surfaces rubbing against each other causing pain and discomfort. The cause of FCP is unknown. Common theories include abnormalities of growth rates between the radius and the ulna, two of the three bones that make up the elbow joint. The elbow joint is one of the most complex joints of the body, and the three bones must fit together precisely. This allows forces to be evenly distributed throughout the joint and avoids damage to the cartilage and bone. If the elbow joint does not fit perfectly the cartilage will wear down and the underlying bone may even crack (so called fissured coronoid process). Poor fit and mal-alignment of the bones of the elbow joint is often referred to as incongruence.

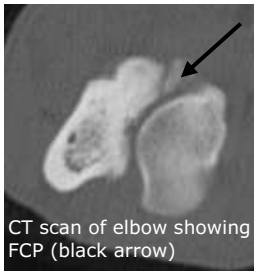



### Diagnosis of FCP

Diagnosis of FCP can be challenging. Initially, careful orthopaedic examination will usually reveal varying degrees of joint thickening, pain on joint manipulation and loss of range of motion. However, occasionally no abnormalities will be present on examination. X-rays (radiographs) will often reveal early changes consistent with osteoarthritis.

***Arthroscopic view of FCP (arrow)***

However, X-rays rarely actually show the FCP or fissure itself and sometimes therefore are of limited value in the diagnosis of FCP. By the time there are significant changes on x-rays there may already be damage to the cartilage within the joint. In fact, recent studies have confirmed that there can be severe cartilage damage in a joint despite normal x-rays. The FCP fragment or fissure can almost always be seen on a CT scan.



CT scan of elbow showing FCP (black arrow)

We recently installed a CT scanner and this procedure can now be performed in house. However, a CT scan is purely an aid to diagnosis and does not provide an opportunity for treatment. Furthermore, a CT scan does not reveal the condition of the cartilage within the joint.

Arthroscopy (insertion of a videoendoscopic camera) of the elbow is an ideal method to investigate elbow lameness and aids the diagnosis of FCP/fissure. Unlike a CT scan, it allows accurate visual inspection of the cartilage and treatment (usually removal) of the FCP. Sometimes, traditional surgery to diagnose FCP can be utilised and a small incision allows inspection of the area of the coronoid process. If the coronoid process is deemed to be diseased then it may be then removed through the small surgical incision.

## Treatment of FCP

Some cases mildly affected by FCP will not require surgery and the lameness will often settle with conservative (non-surgical) management (see box below). Limb function will improve over time with lameness problems becoming intermittent and infrequent.

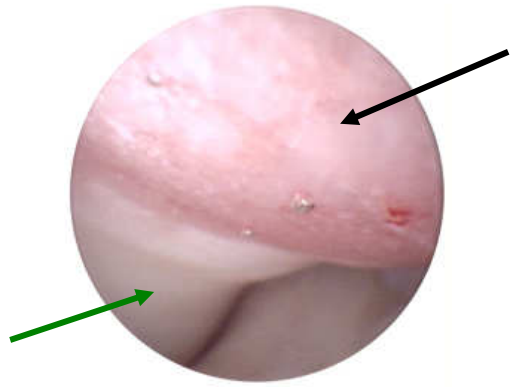
### *Conservative management of elbow dysplasia and FCP ("WET" regime)*

- ***Weight***
  It is imperative that the patient is within the correct weight range for their breed and type
- ***Exercise***
  Modification of activity may be necessary, avoiding crazy periods of vigorous exercise such as ball/frisbie chasing. High impact twist/turn activities should be discouraged
- ***Treatment***
  Anti-inflammatory/pain killing drugs may be prescribed and used continuously, at a low dose or intermittently at higher doses. Dietary supplements such glucosamine could be considered but there is currently little evidence to verify their efficacy

In more severely affected cases, the basic principle of management of FCP is removal of the fragmented and diseased bone and cartilage from the inner aspect of the elbow. This can be performed by arthroscopy which is the least invasive method but sometimes the fragment is too large to be removed through the small portal and open surgery will be necessary

## Prognosis after treatment for FCP

The outlook after treatment of FCP varies enormously and is dependant on the condition of the cartilage in the joint at the time of diagnosis and the degree of osteoarthritis present at the time of treatment



***Arthroscopic view of worn cartilage in the elbow joint (black arrow). Normal cartilage can be seen on the outer aspect of the joint (open arrow)***

### *Mildly affected cases*

Where the fragment is small, easily removed and the cartilage on the inner aspect of the joint is healthy and white with little wear and tear, the prognosis is generally good. Most dogs return to normal activity in around 2-3 months post-operatively and may suffer from only very mild lameness intermittently or even achieve a return to full athletic function.

### *Severely affected cases*

The prognosis for severely affected patients with FCP is more guarded. In these cases the fragment is large and there may be significant cartilage damage to the point that all of the cartilage on the inner (medial) aspect of the joint has been worn away, leaving exposed bone.

This is termed "***medial compartment disease***" and unfortunately may occur in dogs as young as 8-9 months old. Patients with this degree of damage will tend to have some residual lameness even after removal of the FCP and surgery may carry a poor prognosis.

Whatever treatment is option is undertaken, the pre-existing osteoarthritis will progress and therefore could cause lameness issues at some stage in the future.

### *Advanced surgical treatment of Elbow Dysplasia and FCP*

Some patients with FCP and medial compartment disease may be candidates for additional or alternative surgical techniques. These include osteotomy (bone cutting) procedures such as Proximal Abducting Ulna Osteotomy (PAUL).

Total elbow replacement is occasionally indicated when the cartilage is severely and extensively damaged throughout the elbow joint.

Elbow dysplasia and FCP is a complex disease which can potentially have a serious detrimental effect on elbow joint function. However, with careful clinical evaluation and assessment, we will guide you through this complex condition and recommend the optimum treatment for your dog.