

eccentrically loaded bone (fig. 5).

Over the past 3-4 years, the SHO procedure has been performed in well over 100 dogs. Careful clinical studies have been performed (and published in VetSurg Feb 2009) to evaluate the efficacy of this procedure. The majority of dogs undergoing SHO have decreased lameness by 3 months post-operatively with many of the dogs exhibiting complete clinical soundness at 6 month post-operative. In nearly all patient cases, there was profound owner satisfaction with the outcome.

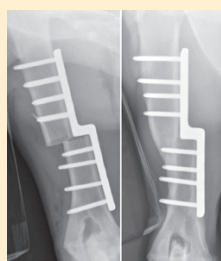


Figure 5 demonstrates an immediate post-operative x-ray of a Sliding Humeral Osteotomy (SHO).

Total Elbow Replacement (TER)

Total elbow replacement (fig. 6) may be indicated when the severity of cartilage damage is completely throughout the joint. In other words, when the damage is no longer limited to the medial compartment. There are a variety of commercially available elbow replacements that have been tried over the past two decades — none of which has been shown to be safe, reliable and effective enough for recommended use at this time. Research in this field is very active, and there is promise on the horizon for a more reliable unit.



Figure 6 demonstrates an immediate post-operative x-ray of a Total Elbow Replacement (TER).

Summary

Elbow Dysplasia is being diagnosed more frequently because of an increased awareness of the disease process and improved diagnostic techniques. Early diagnosis is essential if surgical treatment is to be of value in relieving discomfort and removing some of the sources of irritation that can lead to arthritis.

As with Hip Dysplasia, early radiographic screening of the elbow joints is recommended. This procedure very often can be done at the time of spaying or neutering (typically 6 months of age). Since the problem is genetic in nature, dogs with Elbow Dysplasia should not be used for breeding.

Veterinary Surgical Centers will be happy to answer your questions about the screening and treatment of Elbow Dysplasia.



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The Elbow
Treatment of Canine
Elbow Dysplasia



Come. Sit. Stay.
Heal...

Canine Elbow Dysplasia

Elbow dysplasia is a genetic disorder that occurs when the bones of the elbow joint fail to develop properly, resulting in misalignment, uneven joint surfaces and stress points. This problem occurs in young dogs, especially large breeds such as Labrador retrievers and Rottweilers, although it can occur in other breeds as well. Since it is hereditary, care should be taken to avoid breeding dogs with elbow dysplasia.

Symptoms of this condition include forelimb lameness and sometimes swelling of the elbow. The extent of symptoms and discomfort depends upon the severity of the disease and your dog's tolerance to pain. In many animals, the condition occurs in both elbows.

The elbow is made up of three bones: the humerus, radius and ulna (fig. 1) During a dog's rapid growth phase, usually between 4-9 months of age, these bones fail to grow in harmony. The result is an uneven joint surface and 'stress' points in the elbow joint.

At the very least, this condition predisposes the elbow to premature wear. In many cases, the stress points become severe enough to cause bone or cartilage fragments to break off. These fragments in the joint feel similar to a stone in the shoe. These fragments also increase discomfort and often hasten the onset of arthritis. The most common fragments occur in the areas of aconeal process (fig. 2), the medial coronoid process (fig. 3) and on the medial humeral condyle. These conditions are called Ununited Aconeal Process, Fragmented Coronoid Process and Osteochondrosis of the Elbow.



Figure 1 demonstrates a lateral x-ray of a normal elbow.

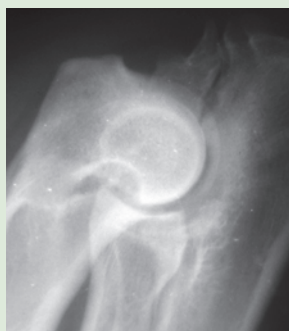


Figure 2 demonstrates a lateral x-ray of a dog elbow with an Un-United Anconeal Process (UAP).



Figure 3 demonstrates a cranial-caudal x-ray of a dog with a Fragmented Coronoid Process (FCP).

Diagnosis

Since Elbow Dysplasia is not the only cause of forelimb lameness, it is important to have your pet carefully examined to ensure that an accurate diagnosis is made and appropriate treatment instituted.

A physical examination is very useful in localizing the cause of the lameness. By observing your dog move and by palpating the limb(s), the veterinarian is often able to isolate the specific bone or joint responsible for the lameness. Radiographs (x-rays) may show if any bone fragments are present within the joint and whether or not arthritis has developed.

Early in the disease process, bone and cartilage fragments may not be visible on the radiographs. In these cases, additional tests such as a CT scan may be required. This special imaging detects joint problems at a very early stage. Once the diagnosis is established, treatment can be initiated.

Medial Compartment Disease (MCD)

Medial Compartment Disease (MCD) is a specific manifestation of these elbow pathologies (FCP, cartilage loss and bone exposure) – within the elbow. Specifically, a diagnosis of MCD requires an arthroscopic assessment of the elbow with surgical confirmation of joint abnormalities that are restricted to the medial compartment, with little to no disease involvement of the lateral compartment. MCD elbows may have treatment strategies not available to those elbows with involvement of both the medial and lateral compartments.

Treatment

The treatment of Elbow Dysplasia depends on the severity of the disease and at what stage it is diagnosed. If the disease is recognized in a young dog and the elbow has minimal arthritic changes, surgical intervention can help. The conditions within the elbow will determine which, if any, surgery is available. The goals of surgery are to remove the sources of joint irritation and, in severe cases, to improve joint mechanics by improving bone alignment. Even after surgery, some dogs may continue to have lameness and may need to be restricted from heavy exercise, i.e., Frisbee or ball playing.

In the early stages of elbow dysplasia, where there is minimal malalignment, the joint is explored arthroscopically and any fragments are removed (fig. 4) through small openings in the joint. This eliminates the 'stone-in-the-shoe' effects of

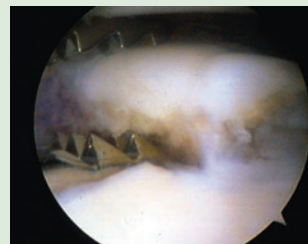


Figure 4 demonstrates arthroscopic retrieval of an FCP.

the disease, and has proven adequate to relieve discomfort and swelling. Following surgery, your dog should have restricted activity for approximately four weeks.

When more severe bone deformity occurs, the surgeon may actually cut the ulna, to improve the biomechanics of bone surfaces within the elbow. The ulna is then sometimes repaired with stainless steel pins, and wire. The pins and wire remain in place as long as they do not move or otherwise irritate your pet. Aftercare is more involved with this procedure, requiring restricted activity for 6-8 weeks. With each of these techniques, there is approximately a 70-80% chance of significant improvement. Some dogs may continue to have lameness and need to be restricted from heavy exercise following recovery from surgery.

In some cases of Elbow Dysplasia, dogs may not show symptoms of this disease until later in life, after they have developed significant arthritis. Sometimes these dogs become suddenly lame and very often have strained or sprained their arthritic elbow or have developed secondary infections in these joints.

Radiographs (x-rays) taken at that time often reveal advanced arthritic changes in their elbows.

A joint centesis (where a sample of the joint fluid is removed) is recommended in these older arthritic joints to differentiate between arthritis and secondary infection. Whatever the cause for these old, arthritic joints becoming aggravated, these are best treated medically with various forms of pain relievers, joint lubricating drugs, physical therapy, acupuncture, stem cell therapy and anti-inflammatory medications.

Sliding Humeral Osteotomy (SHO)

The Sliding Humeral Osteotomy (SHO) was experimentally derived in the Orthopedic Research Laboratory of the University of California, Davis in the late 1990's to treat Medial Compartment Disease (MCD). This research generated a number of clinical procedures which have since been refined into what we know today as the SHO. Basically, the rationale of the SHO is based on an essentially similar procedure performed in the human knee. The SHO realigns the limb such that there is a shift of forces from the diseased medial compartment over to the more healthy lateral compartment. This realignment relieves the pain of bone-on-bone contact and allows the damaged joint an opportunity to heal.

Once MCD is confirmed and initially treated arthroscopically, then a medial (inside arm) approach is made to the humerus (upper arm). A bone cut, or osteotomy, is made in the middle of the humerus, and a bone plate with a 'step' and screws is applied such that as the screws tighten the two individual pieces of the humerus, slide past one another, resulting in an