



Elbow Dysplasia, Medial Compartment Disease and the SHO

Dr. Michael Bauer • Diplomate, American College of Veterinary Surgeons

Fragmented coronoid process (*Figure 1*) is a subset of elbow dysplasia that affects large and giant breed dogs, particularly Retrievers, Rottweilers, Mastiffs, Bernese Mountain dogs, and German Shepherd dogs. Mal-alignment and overloading of the medial compartment are believed to be key in this pathology. Loading or abnormal weight bearing on the medial compartment leads to concurrent cartilage erosions (often full thickness) and possible fragmentation of the medial coronoid. Cartilage erosions involving the medial aspects of the elbow joint are now termed **Medial Compartment Disease** (*Figure 2*).

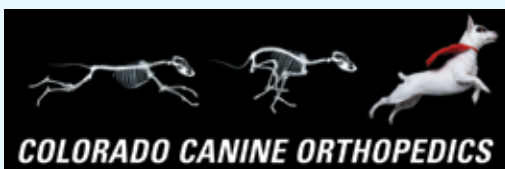


Figure 1
Arthroscopic view of fragmented coronoid

Diagnosis of fragmented coronoid process and medial compartment disease can be challenging. Radiographs are helpful but not definitive. In our opinion, arthroscopy is the ideal modality for the diagnosis of fragmented coronoid process because it allows accurate diagnosis and treatment of the fragment, as well as cartilage assessment. Traditional open surgery to diagnose fragmented coronoid is antiquated. First and foremost, the surgical approach to the elbow joint that affords the surgeon a thorough inspection is invasive and has moderate post-operative morbidity. Secondly, the arthroscopic visualization of key structures is far superior to an invasive surgical approach.

With newer, more effective and less invasive surgical treatments for fragmented medial coronoid process and medial compartment disease, we believe non-surgical management including stem cell therapy is inappropriate for most patients,

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especially those with years to live and develop DJD. We have treated nearly 30 dogs with elbow disease using regenerative stem cells at Colorado Canine Orthopedics and our results have been somewhat disappointing.

Treatment of fragmented coronoid process in mild cases involves arthroscopic removal of the fragmented bone and cartilage. Arthroscopy is fast, effective, and minimally invasive. Arthroscopic treatment takes between 15 and 30 minutes per elbow and many dogs can be treated on an out patient basis. Most dogs return to normal activity within a few weeks to two months with little or no lameness.

In moderate cases, a fragment is present, the remaining coronoid process is abnormal and some cartilage loss has occurred both on the medial humeral condyle and the non-fragmented portion of the remaining medial coronoid. In these situations the fragment is removed and a partial coronoidectomy is performed arthroscopically. An ulnar osteotomy may also be performed in moderate cases.

The prognosis for moderate cases of fragmented coronoid process is less certain. If the aforementioned treatments are performed and the cartilage is in fair condition, many dogs have no or minimal lameness and the progression of arthritis is slow.

In the worst cases, all of the cartilage on the medial aspect of the joint is worn away, again both on the medial humeral condyle and the non-fragmented portion of the coronoid, resulting in what is now termed medial compartment disease. Unfortunately, this can occur in dogs as young as 1 year of age. In previous years, there was little that could be done for dogs with medial compartment disease. Now we have a procedure that looks very promising. The procedure is called Sliding Humeral Osteotomy or SHO (*Figure 3*).

Sliding Humeral Osteotomy

The sliding humeral procedure is the result of almost 10 years of laboratory research. These studies have demonstrated that the sliding humeral osteotomy significantly decreases joint pressure in the medial side of the elbow joint. Clinical studies have been performed to design a bone plate and screw system that results in superior osteotomy stability. The entire SHO procedure can be routinely performed in 30 – 60 minutes.

Almost any dog with medial compartment disease is a candidate for the SHO procedure. Any dog with forelimb lameness of uncertain cause warrants evaluation by a surgeon and possibly arthroscopy of the elbow joint. An SHO may be performed regardless of patient age. The diagnosis of medial compartment disease requires arthroscopic evaluation and the SHO procedure may be performed at the same time.

Postoperative care for dogs undergoing an SHO is similar to care for dogs following TPLO. The patient should rest for the initial two weeks followed by leash walking for the next 6 to 10 weeks. Complete healing of the SHO usually requires 8 to 12 weeks after which time the patient may return to normal activity.

Over the last 3-4 years over 100 SHO procedures have been performed. Careful clinical studies have been performed to evaluate the efficacy of this procedure. The majority of dogs undergoing SHO have decreased lameness by 12 weeks postoperatively with many dogs having no visual lameness at a 26-week evaluation. The owner satisfaction rate following SHO has been nearly unanimously positive. Arthroscopic examination of elbow joints several months after SHO procedures have been performed has revealed healing of the diseased joint.

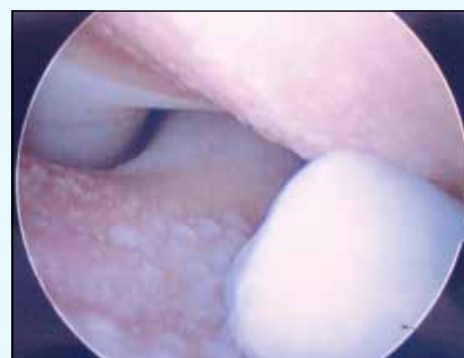


Figure 2
Arthroscopic view of severe cartilage erosion involving the entire medial aspect of the joint.

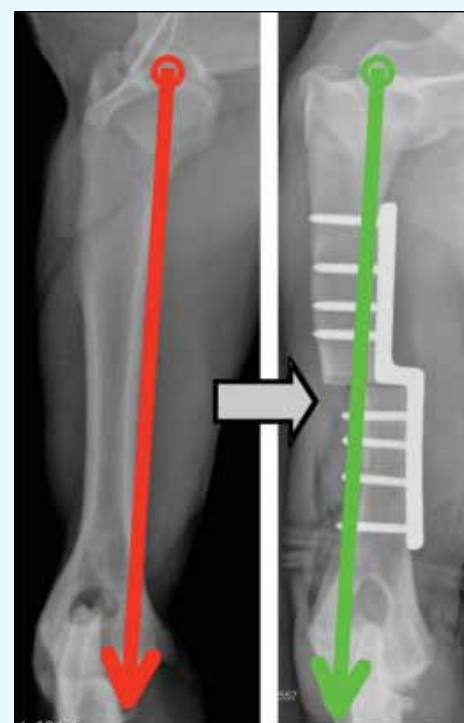


Figure 3
The SHO procedure shifts the load from the diseased medial compartment to the healthy lateral compartment.