

Sliding Humeral Osteotomy (SHO)

Many people have heard of canine hip dysplasia, a hereditary condition that results in abnormal hip joints and osteoarthritis at a young age. Dogs may also be born with elbow dysplasia. Like hip dysplasia, dogs with elbow dysplasia develop an abnormal elbow joint resulting in a variety of conditions. The end result of these conditions is osteoarthritis. Affected dogs will limp in one or both of their front limbs. The condition is common in Labrador and Golden Retrievers but can be seen in any breed. Signs may be noted as early as 6 months of age but many times the condition is not diagnosed until dogs are young to middle aged adults.

The elbow joint of a dog with dysplasia can be similar to the human knee joint in that the inner (medial) portion of the joint can collapse with time. This results in increased pressure on the cartilage and underlying bone. Over time, the loss of cartilage and bone-on-bone wear results in osteoarthritis. Dogs may limp from the bone-on-bone grinding, loss of cartilage (see fig.1), fragmentation of the bone, and from the osteoarthritis that forms. This progression has been termed "medial compartment disease".

Traditionally, we have treated canine elbow dysplasia with arthroscopic exploratory and removal of any loose fragments in the elbow. Osteoarthritis is treated with a multimodal approach including physical therapy, medications such as anti-inflammatories and joint supplements, and diet. While some dogs improve, there remains a percentage of dogs that still have lameness and progression of arthritis. In cases of severe elbow arthritis, elbow replacement is sometimes recommended. True candidates for this procedure, however, are rare.

The sliding humeral osteotomy (SHO) procedure addresses medial compartment disease by shifting the load and weight bearing to the lateral (outer) portion of the joint. This unloads the medial compartment of the joint and reduces the bone-on-bone grinding. To accomplish this, an incision is made on the inner portion of the arm, above the elbow. The bone of the humerus is cut and shifted laterally. A specially designed plate is used to stabilize the bone and shift the weight to the lateral part of the elbow (see fig.2). Special locking screws are then placed through the plate and bone. Healing of this bone usually takes about 8 to 10 weeks. Dogs must be kept confined during this time and walked on a leash to assure adequate healing.

The SHO is a new procedure that has now been performed on more than 70 dogs with elbow dysplasia. These dogs have been closely followed over the past few years and the current results are encouraging. The vast majority of dogs

receiving the SHO procedure have shown significant reductions in their lameness. All have been able to return to normal activity and none of the dogs needed to go on for a total elbow replacement. Some of the 70 dogs were reevaluated with follow-up arthroscopic exploratory. Interestingly, dogs that received the SHO procedure underwent healing and replacement of the cartilage that had been lost (fig.3). This was also confirmed with biopsies that were obtained from the cartilage area. While the procedure requires an osteotomy (cutting of a bone), it is no more invasive than the TPLO or TTA procedures that are commonly performed in dogs with ruptured cranial cruciate ligaments in their knee.

WestVet is now performing the SHO procedure for appropriate candidates. If you think that your dog may have elbow dysplasia or may benefit from this procedure, ask your veterinarian.



Fig.1: Cartilage loss and erosion in a dog with elbow dysplasia. Articular cartilage should be smooth and white. Note the red, abraded appearance of this elbow.

Fig. 2: The SHO procedure shifts the load to the lateral aspect of the elbow joint. The implants usually stay in for the rest of the dog's life and don't need be removed.

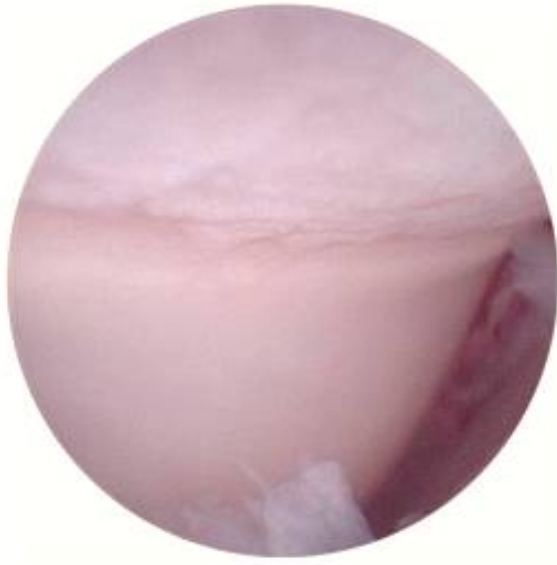


Postoperative SHO

Healed SHO



Medial elbow joint before SHO



Medial elbow joint 6 months after SHO

Fig. 3: Shifting the weight to the lateral aspect of the joint takes away the bone-on-bone grinding in the elbow and allows cartilage to heal. Note how the area of eroded cartilage has been replaced with healing cartilage. Pictures are courtesy of Dr. Kurt Schultz.