



## Right Elbow Replacement in a left forelimb amputee Labrador Retriever

Case Report

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### **Signalment:**

“Soldier”

Approximately 6 year old neutered male Labrador Retriever

### **History:**

Soldier was rescued as an adult and had a history of apparent traumatic mid-humeral amputation of the left forelimb, and of severe osteoarthritis and varus deformity of the right elbow. Over the course of two years, he had been treated with Deramaxx, Tramadol, glucosamine, Adequan, amantadine, gabapentin and water therapy as well. In April 2007, a bio-implant was placed into his left humerus, but this was followed by persistent infection at the implant site. A left forequarter amputation was subsequently conducted in December 2007. He was presented at the end of May 2008 for a total elbow replacement of the right elbow.

### **Clinical Exam:**

Previous left forequarter amputation. Grade 4/5 lameness right forelimb with varus deformity and decreased range of motion right elbow (20° range of motion). No other abnormalities.

### **Laboratory Findings:**

Pre-operative CBC, biochemistry panel, and urinalysis were unremarkable.

### **Diagnostic Imaging:**

Severe osteoarthrosis of the right elbow.

### **Treatment / Management:**

The patient was given pre-anesthetic acepromazine and hydromorphone and a brachial plexus block with lidocaine and bupivacaine was administered. He was induced with diazepam and propofol and maintained on isoflurane. A constant rate infusion of morphine, lidocaine, and ketamine (MLK) was initiated intra-op for supplemental analgesia. A caudomedial approach was made to the right elbow and the ulnar nerve was retracted cranially with a quarter inch penrose drain. An arthrotomy was conducted and an osteotomy of the medial epicondyle was performed. With the mill guide in place, the joint was milled to accept a 19 mm TATE implant. The medial epicondyle was reattached with two 2.7 mm cortical SS bone screws. The ulna was fixed to the radius proximally with a 3.5 mm Ti bone screw. The surgery site was lavaged with LRS and Gm solution. The fascia and subcutaneous tissues were closed with 2-0 PDS-Plus and the skin was apposed with SS staples. A modified Robert Jones bandage was placed immediately post-operative. Recovery from anesthesia was uneventful.

The patient was weaned off of the MLK constant rate infusion, which was discontinued the morning after surgery. Supplemental hydromorphone was administered as needed for another 24 hours. Baytril and cephalexin were initiated at induction and continued post-operatively for ten days. Tramadol and Deramaxx were also continued. A gurney was used to transport the patient outside for urination and defecation. A chest harness was used to prevent the patient from bearing any significant weight on the operated limb once on the ground. He was allowed to place the limb, and appeared to do so appropriately without any neurological deficits. The range of motion in the patient's elbow continued to increase over the following few days. Three days post-op, the patient was moving himself around in his run. The limb bandage was removed four days following surgery, and the incision appeared to be healing without complication. Six days post-op the patient was doing very well, hopping up on to his operated limb when food was offered. He was

discharged the following day (one week post surgery). The owners were instructed to confine the patient for four to eight weeks to an area approximately 4' x 6' with a solid, non-slip surface. His activity was to be restricted, with no access to stairs and with a chest harness being used to support his weight anytime he was taken outside. Baytril, cephalexin and Deramaxx were continued at home. Tramadol was discontinued prior to discharge.

**Diagnosis:**

Total elbow replacement of right elbow with TATE implants.

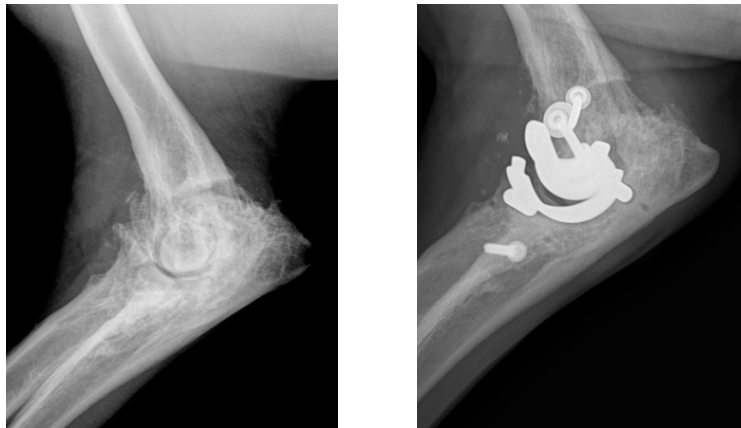
**Prognosis:**

Fair to good for function of right elbow. No evidence of complication one month post surgery.

**Discussion:**

Elbow dysplasia affects a large number of dogs each year, and leads to painful osteoarthritis that is commonly treated with NSAIDs, chondroprotectives, acupuncture and other medications and modalities thought to help make these joints more comfortable. While medical management alone can be successful in mild cases, surgery is often indicated to provide more effective pain control. Several salvage procedures exist, including arthroscopic coronoidectomy and distal ulnar ostectomy, when fragmented coronoid processes and/or elbow incongruity exists. Unfortunately, even with these procedures, severe, debilitating arthritis can set in just a short time later. Sliding humeral osteotomies have shown promise in redistributing weight to decrease the load on the medial compartment, thereby decreasing elbow pain. For patients with severe damage to both the medial and lateral compartments, total elbow replacements are a new alternative to arthrodesis given the recent availability of implants.

The new elbow implant system was developed by Dr. Randy Acker and BioMedtrix and is called the TATE system (total arthroplasty of the elbow). There are four components that are secured via cement and hybrid fixation. The condylar portion of the humeral component incorporates a porous surface to allow biological ingrowth to further stabilize the implant. The implants are currently in clinical trials and, at this point, results have been positive. The procedure is technically difficult, comparable to a total hip replacement, and care must be taken at every step. In Soldier's case, the success of the procedure was particularly important since amputation was not an option in a dog with only one forelimb. Complications that can result from a total elbow replacement include fracture, hemorrhage, damage to nerve supply, post-operative infection and implant loosening or migration.



**References:**

World Small Animal Veterinary Association World Congress Proceedings, 2007. *Advances in Joint Replacement for Hip and Elbow Dysplasia*. Chris Preston. BioMedtrix product information at BioMedtrix.com.