

# Results of Surgery for Bone Fractures Around Elbow Joint Repl

What do all these activities have in common? Feed yourself. Comb your hair. Button your shirt. Open a door. Tie your shoes. Get up from a chair using your arms. You need pain free elbow motion to accomplish any one of these tasks. And that's what elbow joint replacement is supposed to provide. But complications can arise following elbow arthroplasty (another word for joint replacement).

In this study, surgeons from the Mayo Clinic report on the results of surgical treatment for 30 patients who had a bone fracture on the ulnar side of an elbow joint replacement. The ulna is the larger of two bones in the forearm.

The elbow implant inserts up into the humerus (upper arm) and down into the ulna. Bone loss around the implant causes instability. Movement of the implant combined with the bone loss can result in bone fractures around the implant called periprosthetic fractures.

The fractures occurred in one of three places: at the olecranon, around the stem, and below the stem. The olecranon is the bony, curved part of the ulnar bone that forms what you feel as the back of the elbow.

This type of periprosthetic fracture is fairly uncommon and studies are few and far between. So this study is important to give surgeons an idea of what to expect in terms of managing the problem and results of surgery to correct the problem.

There are several surgical options to choose from including strut allografts, allograft-prosthetic composites, and impaction grafting. These are all ways to augment (build up) the areas of weak, thin, or absent bone.

The specific method of surgical reconstruction used was based on the severity of bone loss. The surgeon removed the fracture, found the fracture site, and cleaned out any debris or loose fragments in the area.

Then bone graft material (struts or impaction grafting) was used to support the fracture until it could heal. Metal plates and screws were used to hold the graft in place. In the case of a prosthetic composite, a replacement implant is partially cemented into the ulna. The unit is then placed inside the patient's remaining ulna.

After surgical reconstruction, patients were followed at regular intervals. Results were measured using pain levels, number of complications, and X-rays to show healing of the bone. They also looked at joint motion and function (ability to perform tasks like eating, personal care, dressing, opening doors).

There were several patients who had complications. Infection, implant loosening, fracture (of the olecranon in one patient and humerus in another), and nerve damage were reported in a total of seven of the 30 patients. Otherwise, the results were good for most of the patients. Three patients still had moderate elbow pain while the rest reported no pain or only mild pain.

The surgeons concluded that periprosthetic ulnar fractures can be managed with revision surgery. The use of bone grafting and bone is helpful. But there's a need to figure out why such severe bone loss occurs around the implants.

One suggestion is that the problem comes from the type of implant used and in particular, the type of finish placed around the prostheses. Some have a sprayed on layer of titanium plasma. Others have a beaded surface or precoat with a thin layer of polymethylmethacrylate (PMMA). It's possible that these surface finishes (designed to help bone fill in around the implant) cause bone loss.

The authors leave us with the idea that bone stabilization and reconstruction are possible in treating this problem. It's a challenging surgery. Complications may arise but the results are satisfactory in most cases. But prevention through implant design and surface finish is the key.

Reference: Antonio M. Foruria, MD, et al. The Surgical Treatment of Periprosthetic Elbow Fractures Around the Ulna

Semiconstrained Total Elbow Arthroplasty. In *The Journal of Bone and Joint Surgery*. August 3, 2011. Vol. 93-A. No. 1399-1407.