

Orthopaedic Observations

A Matter of Medicine...

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Therapy for Wrist Fractures with Open Reduction and Internal Fixation

By Kathy Jacobsen, PT, CHT

Contribution by Richard A. Bernstein, M.D.



Wrist fractures are often considered the most common type of fracture seen by physicians. The fractures are generally caused by a fall on the outstretched hand. The distal portion of the radius bone is usually the affected area, and fractures vary greatly in type and severity. X-rays are used to determine proper treatment.

Simple fractures of the radius, where the bone is not displaced, can be treated with a cast for approximately 6 weeks. If the bone is not in proper alignment, the physician will need to put the bone back into position in a procedure called a closed reduction prior to being casted. In more severe fractures the physician will often recommend surgical fixation to obtain optimal fracture position for healing and a better functional outcome.

Fractures of the radius, that extend into the joint, called intra-articular fractures, are the type that most often require surgical fixation. When the articular surfaces of the wrist are not in good alignment this may result in significant loss of motion, strength and overall function of the wrist and hand. In addition, patients may experience long term pain and eventually develop arthritis at the joint.

The physician will recommend that a patient have surgical fixation based on the x-ray and the individual patient's needs.

There are a variety of methods available to treat displaced fractures of the distal radius. Traditionally, external fixators were the modality of choice. These metal frames involve pins within the radial shaft and metacarpals with bars spanning the wrist to hold the wrist distracted. Occasionally,

this could be augmented with pin fixation. However, there has been a revolution in the treatment of wrist fractures utilizing metallic plates placed on the palm surface of the wrist. This T-shaped piece of hardware is placed on the volar surface of the distal radius. The articular surface of the distal radius can be appropriately aligned and the fracture pieces held securely in position. Ideally, the patient would have surgery within the first few days following the injury. The surgery can be performed as an outpatient procedure, placed in a compressive postop dressing and then advanced to a splint in 3-5 days. The patient is then seen by a hand therapist to start their rehabilitation process.

At the first therapy visit the post-op dressing is removed, a lighter dressing is applied, and a custom thermoplastic splint is fabricated. The splint allows greater freedom of movement of the fingers and thumb than a cast and is adjusted to be comfortable for the patient. The hand therapist teaches the patient active exercises for the hand, and gentle active exercises for the wrist.

The patient is instructed to continue to keep the wrist elevated to decrease the swelling and to use the hand for light daily activities. Most patients experience very little pain with this procedure and may take pain medicine for a few days following surgery. Patients are encouraged to ice the wrist and hand as needed.

At the follow-up visit with the surgeon a week and a half post surgery sutures are removed and an x-ray is obtained to check the alignment of the fracture. The patient is allowed to remove the splint for showering and exercise but will continue to use the splint as external support for the healing fracture for the next 4 weeks. Therapy visits now focus on steadily increasing hand and wrist range of motion and function. Heat modalities and gentle stretching and mobilization techniques are used to facilitate motion. Ice, elevation and compressive wraps control swelling, which is often resolving at this point. The surgical scar is minimal. (*article continued on back...*)

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Most patients return to light work and daily activities, however, patients with more demanding physical jobs or sports requirements will need to wait for clearance from the physician to resume these activities.

Approximately 6 weeks following surgery, the patient can start light strengthening of the wrist and hand and is no longer using the splint. Patients generally have functional range of motion at this time. The majority have full or close to normal motion of the wrist and good strength several months post-op.

There are very minimal complications associated with this procedure and less than 5% of patients require hardware removal.

Kathy Jacobsen PT, CHT has 23 years experience as a Physical Therapist and has been a Certified Hand Therapist since 1993. She worked at Yale New Haven Hospital for 10 years before leaving to join The Orthopaedic Group, LLC where she worked for the last 13 years with Dr. Richard A. Bernstein. Kathy is a hand therapist for the ProPT division of The Orthopaedic Group where she works as a member of a group of highly qualified physical, occupational, and certified hand therapists. Kathy is an adjunct faculty member at Quinnipiac University where she teaches hand therapy and splinting. She has been on six medical mission trips to Honduras, Central America where she works with a team of surgeons and nurses to provide care for hand patients.



Contributing author, Dr. Richard A. Bernstein is a practicing partner of The Orthopaedic Group, LLC. He is a Board Certified Hand Surgeon, and Board Certified Orthopaedic Surgeon. He attended college and medical school in Connecticut. Since returning from his Fellowship at Harvard, he has developed a specialty Orthopaedic Practice in Hand and Upper Extremity Surgery.

Dr. Bernstein is actively involved with the American Society for Surgery of the Hand and has been asked by its Presidents to serve on multiple task forces, the Residents and Fellows Conference and Scientific Exhibits Committees. Besides his active clinical practice, he teaches at the Yale Medical School for Medical and Physician Associate Students as well as the Resident Doctors training in Orthopaedic Surgery.

(For more information regarding the surgical treatment of wrist fractures detailed in the above article, and other hand and wrist procedures, please visit our website for The Orthopaedic Group, LLC at www.togct.com)