

Explanation of Procedure and/or Diagnosis

Anatomy

The elbow joint is made up of three bones. The lower end of the arm bone (humerus) joins with the two bones that form the forearm (radius and ulna). The radius runs from the wrist to the elbow and the end of the radius at the elbow is a round prominence known as the radial head. It forms the lateral or outer part of the elbow joint with the humerus to form a “hinge” joint to allow bending and straightening of the elbow. The radial head also forms a small joint with the upper part of the ulna which allows the forearm and wrist to rotate. The combination of these two joints along with the muscles and ligaments of the elbow allow the hand to be positioned in space for sports, physical labor and normal daily activities. The radial head is one of the more important bony structures that helps maintain stability of the elbow joint.



Fractures

Fracture of the radial head involves the elbow and most commonly results from a fall onto the hand or wrist with the force being transmitted into the elbow. Since the radius spans from the wrist to elbow, usually one end (wrist or elbow) takes the brunt of the fall. It is relatively common to have a minor wrist injury (sprain) as well and, rarely, a wrist fracture also. There may not be a crack heard or felt but there is immediate pain and gradual swelling. Immediately following a radial head fracture, it can be difficult and painful to try to move the elbow particularly into a fully straightened position. Most of these fractures are not displaced (moved out of the normal anatomic position of the bone) and therefore just need a brief period of immobilization. Fractures which are displaced can have consequences such as lost function and chronic pain if left to heal in a poor position. Symptoms of a radial head fracture can include:

- Pain in the elbow and occasionally the wrist
- Difficulty moving the elbow, especially complete straightening or turning the hand palm-up
- Swelling of the elbow and forearm
- Sense of catching at the elbow

If you have an injury to your elbow resulting in pain or difficulty moving, it is prudent to proceed to an emergency room where initial treatment is given. The emergency room physician or your personal physician will usually recommend that you see an orthopedic surgeon. Typically, your initial orthopedic visit for a radial fracture will involve a history in which you describe the injury along with a limited exam of your wrist and elbow to ensure there are no other injuries including injuries to the ligaments or nerves. X-rays are necessary to determine the severity of the fracture and are

usually done even if films were performed at an emergency room as the fragments can shift somewhat for the first few weeks after such an injury. In severe fractures, a CT scan may be necessary to better define the severity and, in many cases, help determine whether or not surgery would be beneficial.

Management of Radial Head Fractures:

The initial management of a radial head fracture involves:

- Immobilization with a sling and/or splint
- “Setting” the fracture is usually not necessary except in rare instances.
- Ice and pain medication
- Visit with an orthopedic surgeon within 3-5 days to assess need for further treatment

The definitive management of your fracture will be determined by your orthopedic surgeon. The need for surgical repair of these fractures is based on the X-rays and CT scans when necessary. The majority of radial head fractures are not displaced significantly. These can be treated non-surgically, typically with a period of immobilization in a sling of generally around 1 week depending on the type of fracture and its stability.

Fractures in which the displacement is significant may require surgical repair. Occasionally, wrist or elbow ligaments may also be involved which could require repair. If your fracture requires repair, your surgeon will usually need to perform an operation to reposition and hold the fracture in a more anatomic position. In some patients, this is not possible and replacement of the radial head with a metal implant is performed.

Non-Surgical Treatment

Radial head fractures are one of the few fractures in which cast immobilization is not usually necessary and 1 week of sling immobilization is usually recommended. There is some risk of fracture shifting in the first several weeks therefore your surgeon may want to see you back several times in the first two to three weeks to ensure that the fracture position remains optimal. The frequency of these visits will depend on the type and stability of the fracture. In stable fractures without much displacement, shifting is rare and early motion is strongly encouraged.

Even hairline fractures of the radial head can result in some loss of motion at the elbow, usually loss of several degrees of extension (straightening) or supination (moving the hand to a palm-up position).

Therefore, physical therapy is usually necessary as part of nonsurgical treatment of these fractures to restore full mobility and strength.

Function usually approaches normal with minimal to no pain within six to eight weeks after the injury.

Lighter activities may be resumed within a week or two but physical activities such as sports and heavy lifting/exercise may require six to eight weeks before return.

Surgical Treatment

If the fracture is more severely displaced, surgical repair may be necessary to minimize the risk of chronic pain and loss of function. Your surgeon will typically recommend surgical treatment if your fracture clearly places you at risk for chronic pain or poor function. Surgery is designed to reduce the amount of pain and dysfunction that otherwise would

exist if a poorly positioned fracture were allowed to heal on its own. There are two primary options for surgical repair, the choice of which depends on many factors including type and severity of fracture, patient age and medical conditions, and bone quality. Reconstruction of the bone with placement of hardware is one option and in other cases, replacement of the radial head with a metal prosthesis is necessary. It is relatively common to consider both of these methods for a particular fracture with the ultimate decision being based on findings during the surgery.

Open Reduction with Internal Fixation (ORIF)

If the fracture is significantly displaced and not appropriate for nonsurgical management, an open procedure is performed to manipulate the fragments into an acceptable position and then fix them in place using a combination of pins and/or plates and screws. An incision is usually made over the lateral (outer) part of the elbow and the fragments are placed in anatomic position as confirmed by an x-ray done in the operating room. If ligament damage is encountered, as is often the case with these more severe fractures, the ligaments are typically repaired. This procedure may take several hours and may rarely require an overnight stay in the hospital.

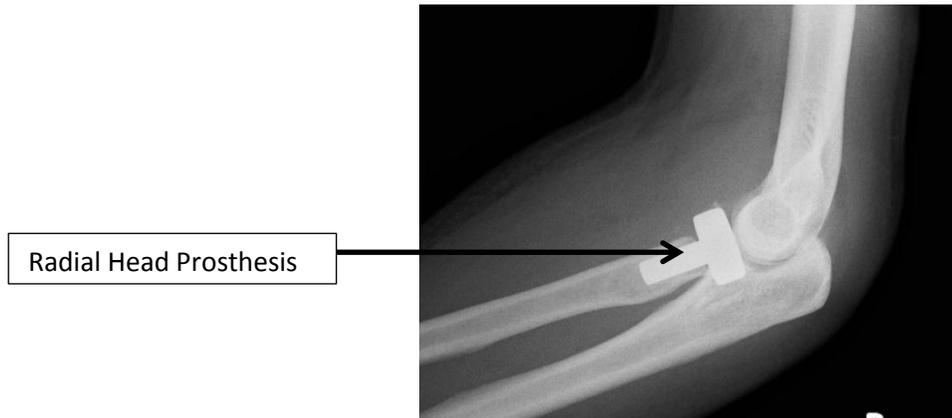


Excision

Occasionally if the radial head is severely damaged, it may simply be removed in lower demand patients. This minimizes the complexity of the surgery and recovery and typically avoids long-term complications of chronic pain and motion loss. In higher demand patients or where the elbow injury involves other bones or ligaments, excision and replacement with a prosthetic radial head is recommended.

Radial Head Arthroplasty (Replacement)

Generally reserved for more severe fractures or those in patients with poor bone quality (more common in older patients), radial head replacement involves removal of the bone which is too severely damaged to reconstruct and replacing it with a metal component. This prosthesis is size-matched to the patient's own radial head. It is important to note that this is very different from a total elbow replacement; this is replacement of only one of the bony components of the elbow and usually allows for relatively normal motion and function once recovery is complete.



Preparing for Surgery

Prior to surgery, patients may need to see their family doctor for a medical evaluation. The purpose of this “medical clearance” evaluation is to ensure any medical conditions such as a urinary tract infection, high blood pressure, or heart disease can be detected and treated appropriately prior to your surgery. This is not always possible with fracture surgery because there is usually a narrow window of only a week or two during which the fracture needs to be treated before it begins to heal. If full medical workup is not feasible during this window, your surgeon and medical doctor will closely confer to ensure that your conditions are as stable as possible to allow for safe surgery and recovery.

NOTE: If you take aspirin, Aleve, Motrin, Plavix or Coumadin (Warfarin) or certain arthritis medications you must inform your doctor. You may need to stop these medications as soon as possible prior to your surgery. In some instances, special steps may need to be undertaken to help you safely stop these medications before your surgery.

Dentures and contact lenses cannot be worn in the operating room. Please make sure to bring your container and solutions with you to the hospital so that they may be kept safe until the completion of your surgery.

Comfortable and loose fitting clothing which can be easily put on (e.g. comfortable button down shirt or sweat shirt) will be helpful to bring for the post-operative period.

The length of your hospital stay varies with some of these repairs being done as outpatient and others requiring an overnight stay.

What to Expect at Surgery

The hospital or surgery center will inform you what time you should arrive to the hospital the morning of surgery. It is essential that your orthopedic surgeon be aware of ALL the medications and supplements you are taking. Please bring with you to the hospital a list of these medications and their dosages.

After you check in with the admissions staff, you will be taken to the pre-operative area where you will change clothes. You will meet the pre-operative nurses as well as a member of the anesthesia team. They will ask you several questions, review your medical history and examine you. The anesthesia personnel will also discuss and explain your anesthesia.

An IV will be started to provide you with fluids and medications. Special elastic stockings will also typically be applied to your legs at this time to help with your circulation during the surgery.

A member of your orthopedic surgeon's team will also meet you in the pre-operative area to review the surgical plan and answer any questions.

Family members will have time to be with you in the pre-operative area prior to your surgery.

You will be taken to the operating room where you will be transferred to a special operating table. You will meet the operating room nurses and staff who will help you get comfortable on the operating table and explain to you what steps are occurring.

Care after Surgery

After your surgery, you will arrive in the recovery room where you will be given pain medicine to keep you comfortable. You will remain in the recovery room until you have recovered completely from the anesthesia. Your arm will typically be in a splint and sling.

To help prevent nausea during the first several days after surgery, you should slowly advance your diet from ice chips to liquids and then to regular meals. The splint is left in place until your first postoperative visit, typically a week or two after the surgery. Showering may begin on the second day as well but care must be taken to keep the splint clean and dry. Several plastic bags with tape sealant may be used. No submersion (bath or swimming) of the elbow may occur for at least four weeks after surgery.

At Home

When at home, plan to take it easy as you become increasingly independent and begin to resume your activities. You may walk as much as you like. You may drive a car when authorized by your surgeon; typically after four to six weeks. When to return to work will depend largely upon your employment duties. Check with your surgeon.

Medications

Take as prescribed. Narcotic pain medications such as Norco (hydrocodone) or oxycodone are used for severe pain. They can be taken up to every four hours as necessary. Most patients only require these medications for the first week. Once pain is better controlled, you may simply take Tylenol (acetaminophen) every four to six hours, not to exceed 3000 mg in one day. Take these medications with food. If you have any problems taking the medications, please stop them immediately and notify the clinic.

Possible Complications

- Bleeding
- Infection. Common signs of infection include increasing pain after surgery, increased redness around the incision, swelling, and drainage.
- Complications from anesthesia, including death
- Permanent or temporary nerve or blood vessel injury
- Failure of fixation
- Need for further surgery
- Damage to other tissues or fracture

- Loss of limb or function
- Recurrent instability is possible though uncommon
- Need for manipulation or surgical scar release
- Post-traumatic arthritis
- Loosening of prosthesis
- Instability of the elbow joint

Precautions and Instructions

Expect to see some bruising and swelling of your arm after your fracture repair. You should advise your surgeon of any changes around your incision. Contact your surgeon if any of the following develop:

- Drainage and/or foul odor from the incision
- Fever of 101° or greater
- Increased swelling, redness and or pain

Contact your surgeon if you develop: problems with your wound, a fever, sore throat, breathing problems, cardiac or circulation problems or any other problems that give you concern. Also, remember to contact your surgeon if you have any questions regarding your exercises once you have started therapy.

Do's and Don'ts

- Do NOT use the arm to push yourself up in bed or from a chair because this requires forceful contraction of muscles.
- Do NOT overdo it. Early overuse of the arm may compromise your repair.
- Do NOT lift anything heavier than a glass of water for the first 6 weeks after surgery.
- Do NOT put your arm in any extreme position, such as straight out to the side or behind your body for the first 6 weeks after surgery.
- Do ask for assistance. Your physician may be able to recommend an agency or facility if you do not have home support.

Post-Operative Visit

Your first post-operative visit with your surgeon will typically be in one to two weeks. At this point, your stitches or staples will be removed, your wound examined, X-rays obtained, your progress evaluated and plans for the next time interval made.

Questions

The CORE Institute is dedicated to your outcome. If any questions or concerns arise, please call The CORE Institute at 1.866.974.2673.