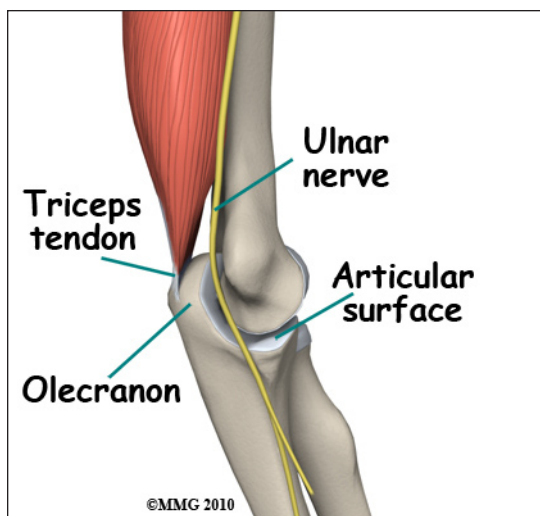
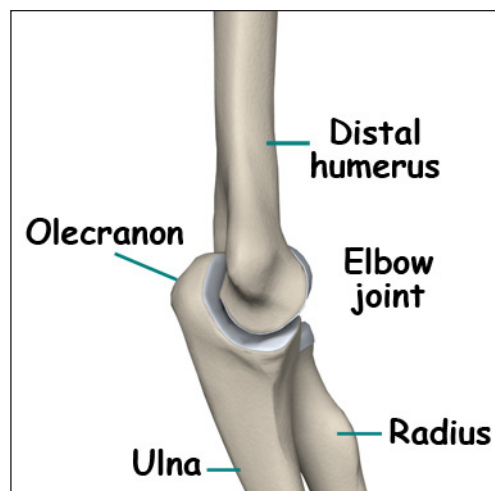


## Adult Olecranon (Elbow) Fractures

### Anatomy

The *olecranon* is the end of the *ulna* and forms the tip of the elbow. The ulna is one of two bones that form the forearm - the other bone is called the *radius*. The radius and the ulna both move against (or *articulate*) with the distal end of the upper arm bone, or *humerus*, to form the elbow joint. The olecranon is important for two reasons: 1) the large *triceps* muscle tendon attaches to the olecranon; when this muscle contracts it straightens the elbow and 2) part of the olecranon is covered with *articular cartilage*; it helps form part of the joint surface of the elbow.



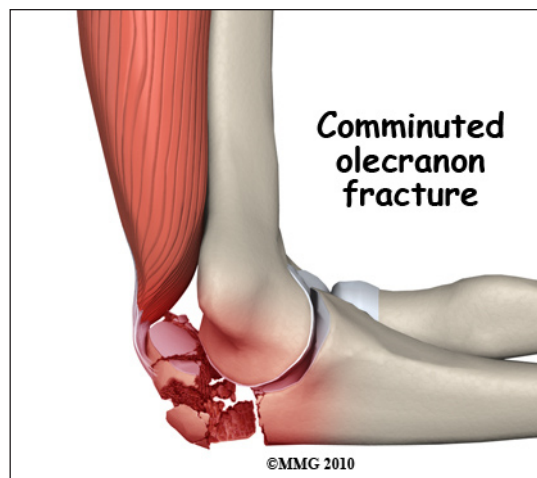
### Signs and Symptoms

An olecranon fracture is usually caused by a fall directly on the elbow. There is immediate pain in the elbow area. You may be able to feel a gap at the tip of the elbow if the olecranon has been pulled away from the elbow by the triceps muscle contraction. You will probably not be able to straighten the elbow. There is usually bleeding from the fracture into the tissues of the elbow and swelling occurs around the elbow.

### Evaluation

The primary goals of the clinical evaluation of an olecranon fracture are to decide whether the fracture consists of only two fragments or multiple fragments (a bone broken into multiple fragments is called *comminuted*) and to decide whether those fragments are separated enough to need surgery.

The fracture is evaluated by taking several x-rays of the elbow. Special imaging studies such as a CAT Scan or MRI Scan are usually unnecessary. Your provider will also want to make sure that there has been no damage to the ulnar nerve. This can usually be accomplished with a careful physical examination.

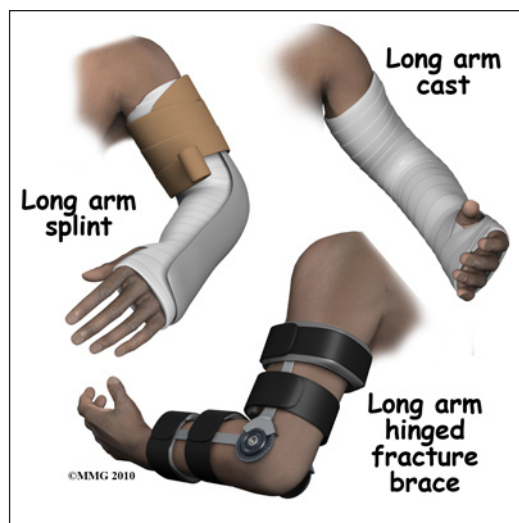


## Treatment

Most olecranon fractures require surgery. Olecranon fractures typically *displace* (meaning that the fragments separate) too much to expect the fracture to heal. The pull of the triceps muscle tends to make the displacement worse and holds the fragments in the displaced position. The fragments must be *reduced* (meaning returned to their original position) and held there until healing occurs. This usually requires surgery to reduce the fracture and some type of fixation to hold the fragments while healing occurs. Because the olecranon makes up part of the elbow joint, the joint surface needs to be repaired as close to normal as possible to reduce the risk of developing *osteoarthritis* (wear-and-tear arthritis) of the elbow joint.

### Nonsurgical

Olecranon fractures can be treated without surgery if the fragments remain in close connection with narrow cracks through the bone between the fragments. The ligaments and soft tissue around the fracture may be strong enough to keep the fragments from separating. If your surgeon decides that the fracture can be treated without surgery a splint is usually applied for the first one or two weeks. Unlike a cast, a soft, bulky splint allows for necessary changes due to the amount of swelling that occurs during the first few days or weeks.



After the swelling has subsided, a long arm cast or fracture brace is usually recommended. The cast or fracture brace will remain in place until the fracture shows signs of healing. This usually occurs at six or eight weeks.

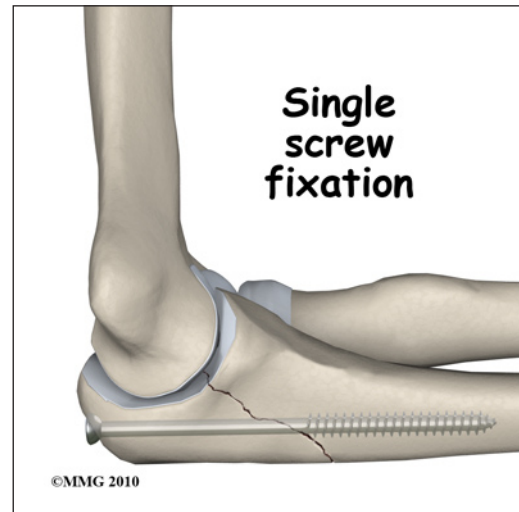
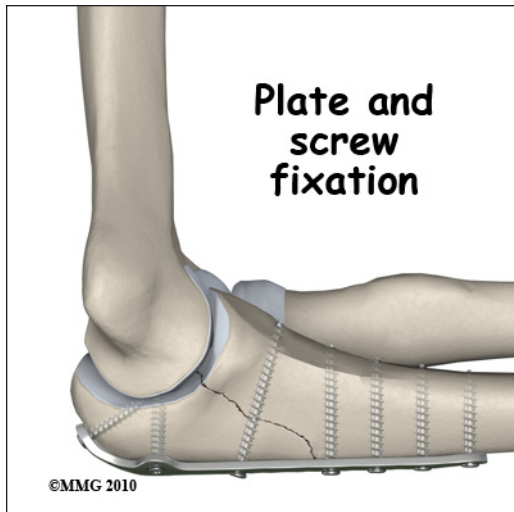
X-rays are normally taken after one or two weeks to make sure that the fracture fragments are not separating and again several times throughout the treatment period to assess whether the fracture is healing. Once your surgeon thinks that the fracture has healed, the cast or fracture brace are discontinued and you will work with a physical therapist to regain the motion and strength in the arm.

### Surgery

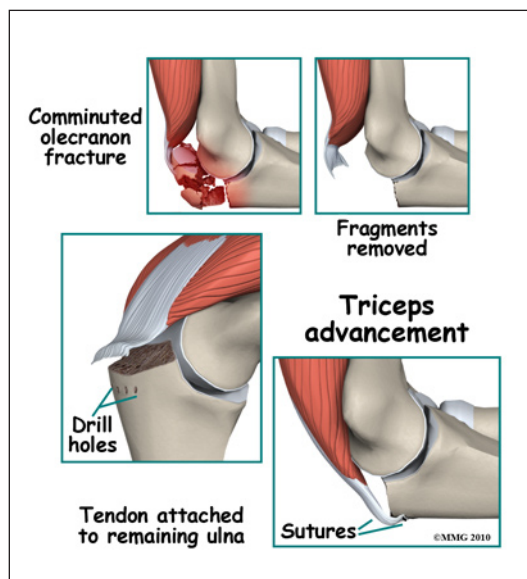
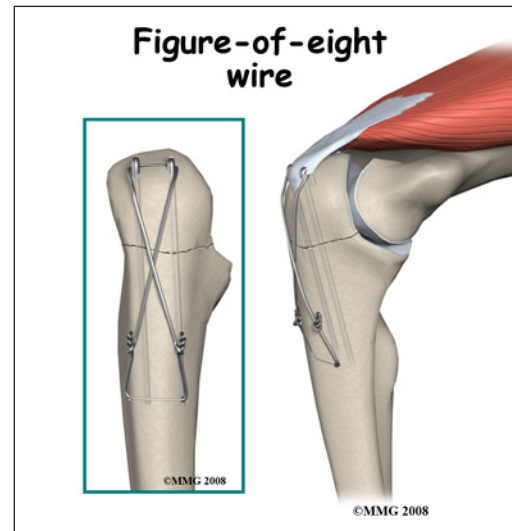
Olecranon fractures normally require surgery. If your provider makes the assessment that the fracture will NOT heal and give you good elbow function without surgery, surgical treatment will be recommended. If the fracture cannot be held in acceptable position with a cast or fracture brace and the fragments begin to separate, surgery may be suggested after several days or weeks of attempting nonsurgical treatment.

Surgical treatment of olecranon fractures usually involves making an incision over the back of the elbow, putting the fracture fragments back in their normal position, and holding them there with some type of fixation. Depending on the fracture pattern, your surgeon may choose to use a large screw, metal pins, metal wire, or a metal plate and screws to hold the fragments together. This type of surgery is called an *Open Reduction and Internal Fixation (ORIF)*.

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Because the olecranon is *superficial* (meaning that there is only a thin layer of skin covering the bone) the hardware used to hold the fragments together may be annoying after the fracture has healed. We commonly rest our elbows on tables and chairs. This can cause irritation and pain as the skin is caught between the hardware and the surface of the table or chair. For this reason, many patients elect to have the hardware removed after the fracture has healed.



In some severely comminuted fractures of the olecranon, the multiple fragments may simply not be repairable. The damage to the articular surface and the risk of osteoarthritis may be too great to consider trying to fix the fracture. This is more likely to occur in elderly patients. In this case, your surgeon may suggest removing the fracture fragments and reattaching the tendon of the triceps muscle to the remaining bone of the ulna. The procedure actually works very well; it stabilizes the elbow joint and restores the ability to straighten the elbow. The risk of osteoarthritis and a stiff elbow is reduced, but you may lose some of the strength in *extension* (or straightening) of the elbow.

## **Complications**

Nearly all fractures can result in damage to nerves and blood vessels. Damage to the ulnar nerve is uncommon after an olecranon fracture, but it is one of the complications that your surgeon will watch for carefully. The fracture fragments may fail to heal; this is referred to as a *nonunion*. The fracture fragments may also heal in an unacceptable alignment; this is called *malunion*. Both of these complications are rare in olecranon fractures but if they occur they may result in pain, loss of strength, and a decreased range of motion of the elbow. A second operation may be needed to treat the complication.

Because the olecranon makes up part of the elbow joint surface, a fracture of the olecranon may damage the articular cartilage surface. This may lead to *osteoarthritis* (wear-and-tear arthritis) of the elbow joint months or years after the fracture has healed. You will always have some risk of developing osteoarthritis after an olecranon fracture because of the damage to the articular surface caused by the fracture. Osteoarthritis of the elbow may result in pain and stiffness of the elbow joint and may require additional treatment or surgery if the symptoms are severe.

## **Rehabilitation**

The prognosis for olecranon fractures is generally excellent. Olecranon fractures heal in about three months. Your shoulder may become somewhat stiff because you will not be using the joint normally. Physical therapy is usually recommended to regain both strength and range of motion in the shoulder and elbow.

Rehabilitation will begin once your surgeon feels that the fracture is stable enough to begin regaining the range of motion in your shoulder and elbow. If surgery has been required, the rehabilitation program will be modified to protect the fixation of the fracture fragments. Your surgeon will communicate with your physical therapist to make sure that your rehabilitation program does not risk causing the fixation to fail. If the surgeon feels that the fixation is very solid, you may be able progress your program quickly; if the fixation is not so solid, the speed at which you progress may need to be slowed until more healing occurs.

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