

DISEASES & CONDITIONS

Recurrent and Chronic Elbow Instability

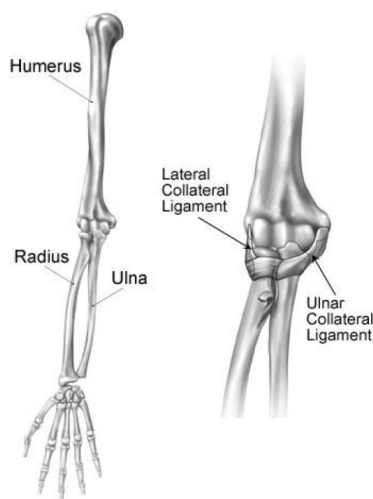
Elbow instability is a looseness in the elbow joint that may cause the joint to catch, pop, or slide out of place during certain arm movements. It most often occurs as a result of an injury – typically, an elbow dislocation. This type of injury can damage the bone and ligaments that surround the elbow joint and work to keep it stable.

When the elbow is loose and repeatedly feels as if it might slip out of place, it is called recurrent or chronic elbow instability.

Anatomy

Your elbow is made up of your upper arm bone (humerus) and the two bones in your forearm (radius and ulna).

On the inner and outer sides of the elbow, strong ligaments (collateral ligaments) hold the elbow joint together and work to prevent dislocation. The two important ligaments are the lateral (outside) ligament and ulnar (inside) collateral ligament. The muscles that cross the elbow joint also contribute to the stability of the joint.



(Left) The bones of the elbow and forearm shown with the palm facing forward. **(Right)** The ligaments of the elbow.

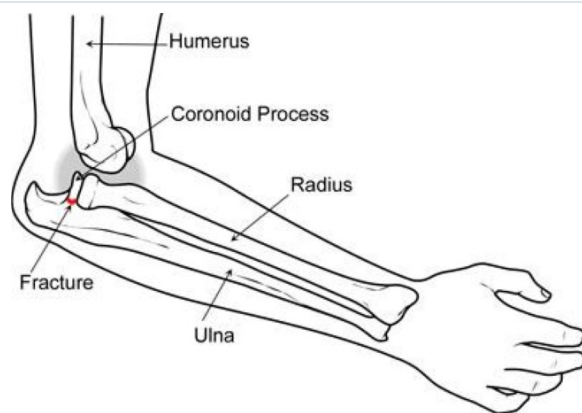
Reproduced with permission from J Bernstein, ed: Musculoskeletal Medicine. Rosemont, IL, American Academy of Orthopaedic Surgeons, 2003.

Description

There are three different types of recurrent elbow instability:

- **Posterolateral rotatory instability.** The elbow slides in and out of the joint due to an injury of the lateral collateral ligament complex, which is a soft tissue structure located on the outside of the elbow.
- **Valgus instability.** The elbow is unstable due to an injury of the ulnar collateral ligament, which is a soft tissue structure located on the inside of the elbow.
- **Varus posteromedial rotatory instability.** The elbow slides in and out of the joint due to an injury of the lateral collateral ligament complex, in addition to a fracture (break) of the coronoid portion of the ulna bone on the inside of the elbow.

When there is a fracture of the coronoid process and a dislocation, it may lead to varus posteromedial rotatory instability.



Cause

There are different causes for each of the different patterns of recurrent elbow instability:

- **Posterolateral rotatory instability** is the most common type of recurrent elbow instability. It is typically caused by a trauma, such as a fall on an outstretched hand. It may also develop as a result of a previous surgery, or longstanding elbow deformity.
- **Valgus instability** is most often caused by repetitive stress as seen in overhead athletes (such as baseball pitchers). Like the other forms of recurrent elbow instability, it may also result from a traumatic event.
- **Varus posteromedial rotatory instability** is typically caused by a traumatic event, such as a fall.

Symptoms

Recurrent elbow instability may cause locking, catching, or clicking of the elbow. You may also have a sense of the elbow feeling like it might pop out of place. This feeling commonly occurs while pushing off from a chair.

Overhead athletes may have pain on the inside of their elbow when throwing, or a loss in throwing velocity (speed).

Doctor Examination

Medical History and Physical Examination

After discussing your symptoms and medical history, your doctor will examine your elbow. He or she will check to see whether it is tender in any area or whether there is a deformity. Your doctor will have you move your arm in several different directions to test for instability or a popping or sliding sensation. He or she will also test your arm strength and make sure there are no injuries to your nerves.

Many cases of elbow instability can be diagnosed from the medical history and physical examination results.



In many cases, patients feel instability when pushing up from a seated position.

Reproduced with permission from Ricchetti ET, Ramsey ML, Getz CL: Physical examination of the elbow joint. Orthopaedic Knowledge Online Journal 2010. Accessed May 2013.

Imaging Tests

X-rays. Although x-rays cannot show soft tissues like the ligaments, they can be useful in identifying fractures, dislocations, or subtle changes in alignment of the elbow.

Magnetic resonance imaging (MRI). This scan creates better images of soft tissues, and may show tears in the ligaments, muscles, or tendons. MRI scans are typically not necessary for a diagnosis of elbow instability.

Treatment

Nonsurgical treatment options are effective at managing symptoms in most patients with valgus instability. However, a highly competitive overhead athlete who has a complete tearing of the ulnar collateral ligament may require surgery to return to full function.

Some cases of posterolateral rotatory instability can also improve with nonsurgical treatment, but surgery may be needed in cases where there is chronic stress of the lateral collateral ligament.

Varus posteromedial instability almost always requires surgery to repair the broken bone and the ligament injury. Without surgery, this injury may lead to continued instability and early arthritis of the elbow joint.

Nonsurgical Treatment

Nonsurgical management includes:

- **Physical therapy.** Specific exercises to strengthen the muscles around the elbow joint may improve symptoms.
- **Activity modification.** Symptoms may also be relieved by limiting activities that cause pain or feelings of instability.
- **Bracing.** A brace may help to limit painful movements and stabilize the elbow.
- **Non-steroidal anti-inflammatory medication.** Drugs like aspirin and ibuprofen may be helpful with pain during the initial injury.

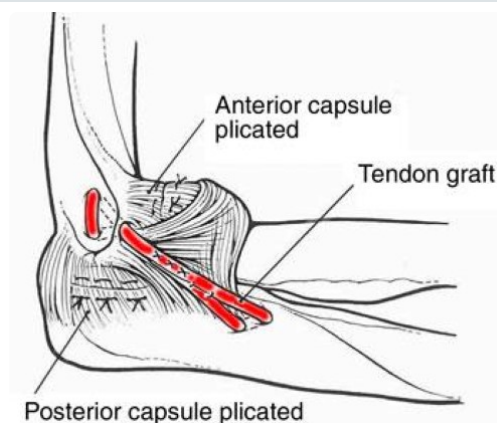
Surgical Treatment

Chronic elbow instability may require surgical treatment to return to full use of the arm and elbow.

- **Ligament reconstruction.** Most ligament tears cannot be sutured (stitched) back together. To surgically repair the injury and restore elbow strength and stability, the ligament must be reconstructed. During the procedure, the doctor replaces the torn ligament with a tissue graft. This graft acts as a new ligament. In most cases, the ligament can be reconstructed using one of the patient's own tendons. Sometimes an allograft (cadaver graft) will be used.

The injured lateral collateral ligament is replaced with a tendon graft. The ligament capsule surrounding the elbow is plicated (tightened) and reattached to the bone.

Reproduced and adapted with permission from Yadao MA, Savoie FH, Field LD: Posterolateral rotatory instability of the elbow. Instructional Course Lectures 2004; 53:607-614.



- **Fracture fixation.** Patients with varus posteromedial rotatory instability require treatment to repair the broken coronoid bone, as well as a repair of the torn ligament. During the operation, the broken bone fragments are repositioned into normal alignment and then held together with special screws and sometimes a metal plate.



This x-ray taken from the front of a straightened elbow shows a coronoid fracture fixed with a metal plate and screws.

Reproduced with permission from Steinmann SP: Coronoid process fracture. J Am Acad Orthop Surg 2008; 16: 519-529.

Recovery

During the first week after surgery, you will most likely wear a splint in order to protect your elbow as it begins healing.

Rehabilitation typically begins in the second week after surgery. The splint will be replaced with a brace that limits how far you can bend or straighten your elbow, but allows you to begin exercises to improve range of motion. With a commitment to rehabilitation, patients may regain full range of motion by 6 weeks after surgery.

Strengthening exercises are often prescribed 3 months after the procedure, and most patients return to full activities by 6 months to a year after surgery.

Throwing athletes may require up to a year of rehabilitation before returning to competitive sports.

Future Developments

Recurrent elbow instability is a relatively new concept. Future research will provide a better understanding of the interaction between the muscles, ligaments, and bones. Newer techniques are always evolving for reconstructing the ligaments. Research will lead to better ways to diagnose, treat, and recover from these complex injuries.

Last Reviewed

July 2013

Contributed and/or Updated by

[April D. Armstrong, MD](#)

[Gregory J. Pinkowsky, MD](#)

Peer-Reviewed by[Stuart J. Fischer, MD](#)[J. Michael Wiater, MD](#)

AAOS does not endorse any treatments, procedures, products, or physicians referenced herein. This information is provided as an educational service and is not intended to serve as medical advice. Anyone seeking specific orthopaedic advice or assistance should consult his or her orthopaedic surgeon, or locate one in your area through the AAOS [Find an Orthopaedist](#) program on this website.