

## Explanation of Procedure and/or Diagnosis

### Overview

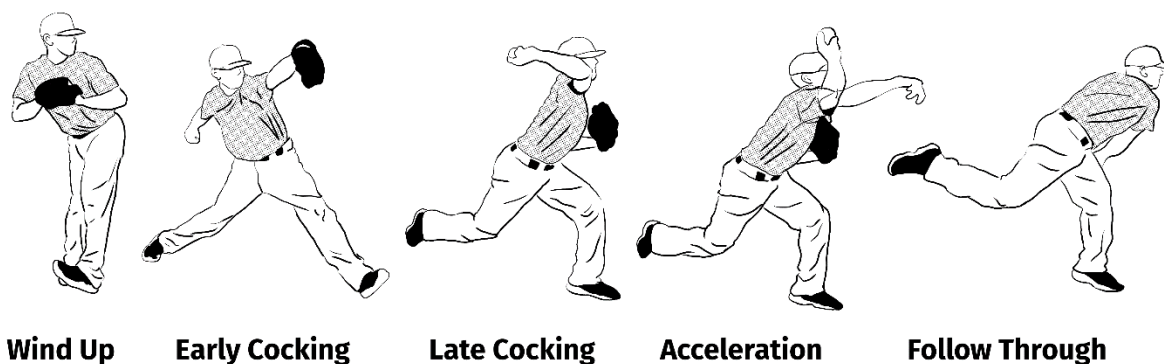
Ulnar Collateral Ligament Reconstruction is commonly referred to as “Tommy John Surgery”. Tommy John was a baseball pitcher who played for the Los Angeles Dodgers. He was the first person to have ulnar collateral ligament reconstruction surgery performed by Dr. Frank Jobe in 1974 and this procedure ended up saving his career.

The UCL (ulnar collateral ligament) plays an important role in the majority of throwing sports, including baseball, javelin, and racquet sports. Injury to this ligament rarely occurs as a result of an acute injury. UCL injury is generally a chronic one, meaning it happens over time from repetitive overhead activities, for example baseball pitching. Small tears may occur over time from repetitive stresses, which can cause pain and instability on the inside of the throwing elbow.

While typically thought of as a thrower’s injury, some non-athletes do occasionally sustain an injury to this ligament. It is rare that the ligament requires reconstruction in a non-athlete unless that person is involved in significant vigorous activities on a daily basis beyond just simple exercise. Essentially, most people can function perfectly normally with a compromised UCL. A notable exception to that is throwing an object which is very difficult to do well without an intact UCL.

It is useful to look at the different phases of throwing an object to help understand ulnar collateral ligament injury. The general throwing mechanics are similar for many throwing sports; however it has been studied most in baseball throwers. In general, there are 5 phases of throwing.

1. Wind up
2. Early cocking
3. Late cocking
4. Acceleration
5. Follow-through



The late cocking and early acceleration phases of throwing place the greatest amount of tensile stress on the UCL ligament.

### Description of Tear Types

Tears can be either full thickness or partial thickness.

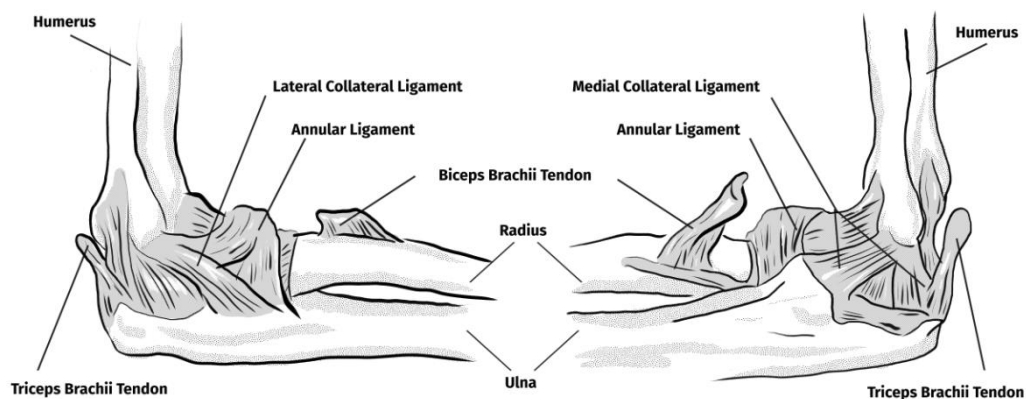
- Partial Tear- tear does not extend completely through the ligament. This can cause pain, and if it is a high grade partial tear may cause instability.
- Full thickness tears- complete tear of the ligament into two pieces. This causes instability on inside of your elbow.

### Anatomy

The elbow joint consists of three bones; the arm bone or humerus, the ulna (the larger bone of the forearm) and the radius (the smaller bone of the forearm).



There are several important ligaments in the elbow. Ligaments are soft tissue structures that connect bones to bones. Ligaments keep joints stable. In the elbow, two of the major stabilizing ligaments are the ulnar collateral ligament (UCL) and the lateral ulnar collateral ligament (LUCL). The UCL is also known as the medial collateral ligament or “Tommy John Ligament”. The ulnar collateral ligament is on the inside or medial side of the elbow and the lateral collateral is on the outside or lateral side of the elbow. The ulnar collateral ligament forms a triangular shape along the inside of the elbow. It has three bundles; an anterior bundle, posterior bundle, and transverse bundle. This large complex ligament is the major structure that helps keeps the inside of your elbow stable when you throw an object.



## Causes

The ulnar collateral ligament is usually damaged by overuse and repetitive stress, such as the stresses associated with throwing. This repetitive stress can weaken the ligament and lead to a complete tear. Occasionally a traumatic injury may result in sudden tearing of the ligament but in thrower's it is usually a gradual process.

## Symptoms

Medial elbow pain and, to a lesser degree, instability are the most common symptoms in athletes who throw. Pain is usually especially prominent during the late cocking and early acceleration phase of throwing.

Pain is often chronic or recurrent, may occur only with throwing or after throwing on the inside of the elbow. It may cause a slow decrease in the ability to pitch over time. Pitchers will typically have decreased pitch velocity and have difficulty locating their pitches.

## Diagnosis

### The Orthopedic Evaluation

Your orthopedic surgeon will review the results of your evaluation with you and discuss whether ulnar collateral ligament reconstruction is the best method to relieve your pain and improve your function. Other treatment options such as bracing, physical therapy or other types of surgery also may be considered. The orthopedic evaluation will typically include:

- A medical history, in which your orthopedic surgeon gathers information about your general health and asks questions about the extent of your elbow pain and dysfunction, and how it affects your ability to perform your activity or sport
- A physical examination to assess elbow mobility, strength, alignment, and stability
- X-rays (radiographs)
- MRI arthrogram
- X-rays
  - An x-ray will show your elbow bones, and is useful in ruling out other potential diagnoses (fractures, bone spurs). X-rays cannot directly show an UCL tear, however would be able to see if there was an avulsion fracture of the medial epicondyle (ligament pulls a piece of bone off insertion site) or other bony abnormalities where the UCL inserts.
- MRI-
  - MRIs are better at looking at soft tissues, i.e. ligaments, tendons, and can pick up injury to the UCL, either partial or full thickness tears. An MRI arthrogram is the most sensitive imaging study to detect UCL tears. This is where a special dye is injected into the elbow, and then an MRI is done. The injected dye helps detect tears in the ligament.

## Treatments

### Non-operative:

- Non-operative treatment is the first line treatment for ulnar collateral ligament injuries that are not complete tears. This treatment involves rest from throwing, and physical therapy, which can take a minimum of 3 months. Occasionally, use of a brace may also be recommended during this period. At this point an interval throwing program is initiated. The throwing program can take approximately 6 weeks to 3 months to complete.

Operative:

- Operative treatment is the last line of treatment for players whom do not get better with the above regimen, or for complete tears of the UCL. This involves reconstruction of the UCL. Note that the ligament is not simply repaired. This has been attempted in the past and it is clear that simple repair is not adequate; the ligament must be reconstructed using a tissue graft. Frequently that tissue is taken from you (autograft) either from a tendon in your wrist or your knee. In some cases, it may be more appropriate to use donor tissue (allograft) to reconstruct your ligament.
  - Bone tunnels are made where the UCL inserts on the humerus (arm bone) and ulna (forearm bone). The graft used is passed through these bone tunnels to take the place of the torn ligament.

**Expectations Regarding “Tommy John” Surgery**

An important factor in deciding whether to have UCL reconstruction surgery is to understand what the procedure can and cannot do:

- The majority of players are able to return to their previous level of activity or sport based on current literature (85-90%). However, this means that not all patients will be able to return to their previous level of activity and, unfortunately, there is little way of identifying these patients preoperatively.
- Ulnar collateral ligament reconstruction will NOT make you stronger, or make you throw faster. Many patients are able to return playing at a high level, but not all.

**Preparing for Surgery**

Patients who are scheduled for elbow ligament reconstruction should discontinue all anti-inflammatory (Advil, Aleve, Ibuprofen, naproxen, meloxicam, etc.) 7-10 days prior to surgery to decrease intra-operative bleeding. Medications that thin the blood need to be discontinued as well (aspirin, warfarin, Plavix). Please consult with your primary care physician prior to stopping these medications. Many vitamins and supplements have blood thinning properties and should be stopped as well 7-10 days prior to surgery.

Do not schedule minor procedures such as dental procedures (e.g. teeth cleaning, crowns, repairs) urologic or gastrointestinal procedures within two weeks of your elbow surgery. These procedures increase the risk of developing an elbow infection when performed near the time of your elbow surgery. If you have any questions, ask your orthopedic surgeon.

If you develop a sore throat, significant cough or the flu within a week of your planned elbow surgery, please inform your orthopedic surgeon. These conditions may make your anesthesia more complicated and increase your operative and anesthesia risks and as such, require your surgery to be rescheduled.

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.

You should have **nothing** to eat or drink after midnight the night prior to your surgery, except medications that you are instructed to take by our surgical team with a sip of water. We recommend you wear loose fitting clothing that is easy for you to dress into after surgery. Please leave all jewelry at home, no jewelry will be allowed on the operative arm due to risks with swelling.

### **What to Expect at Surgery**

You will be instructed by the surgical scheduler what time to arrive to surgery, typically this is 2 hours prior to your surgery. This is important to prepare you for surgery. Nurses will prepare the surgical site and administer any medications that have been ordered. An intravenous (IV) line will be started. You will receive pre-operative antibiotics to help prevent infection. The IV will remain in until you have recovered or until you no longer need intravenous support.

Before any surgery requiring anesthesia, a short pre-operative exam will be done by an anesthesiologist. During this exam your anesthesiologist will be assessing whether you have any conditions that may affect the course of your anesthesia. You will be asked questions pertaining to any allergies you may have and medications you may be taking. The anesthesiologist will also ask about any prior anesthetics that you have had and your reaction to them. Your anesthesiologist will also ask about any previous or current health conditions as well as physical symptoms you currently have. A brief physical exam will include assessment of your heart and lungs. The anesthesiologist will also perform an exam of your airway to assure you will not have any breathing difficulty during your surgery. Surgery typically will last 1-2 hours as patient anatomy and disease processes vary. The surgeon will speak with your family or friends that are present after surgery to give them a brief overview of the procedures that took place.

### **Care After Surgery**

- Ice is applied immediately after surgery and thereafter intermittently for 20-30 minutes at a time over the first seven days. This reduces swelling and relieves pain.
- If you had a graft using a knee tendon, you may also have a soft dressing on your knee which may be removed in 24 hours.
- Posterior splint is placed on the elbow and left in place until first follow-up appointment
- After the splint is removed, a hinged elbow brace is put in place to protect the ligament while it is healing for 6 weeks.
- Avoidance of complete extension (straightening) of the elbow is recommended for the first 4 weeks.
- Physical therapy is started 2-3 week after surgery and some form of therapeutic exercise will be necessary for 4-6 months.
- Return to vigorous pushing and lifting activities with the arm is started around 6 months after surgery.

### **Medications**

- Take as prescribed. Narcotic pain medications such as hydrocodone (Norco) 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 acetaminophen (Tylenol) 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 and Instructions**

Every surgery has risks associated, as with any invasive procedure the risks associated with elbow replacement are:

- 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
- Inability to return to throwing at pre-injury level
- Stiffness
- Fracture of the elbow

#### **Recovery and Return to Throwing**

- An interval throwing program is started around 6 months after surgery.
- Return to competitive throwing off a mound is typically around 12-18 months after surgery.

#### **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.