Distal Biceps Tear

The distal biceps tendon, which connects the biceps muscle to the forearm, plays a key role in bending the elbow and rotating the forearm. When these functions are taken to an extreme—such as when picking up something heavy—the tendon can rupture or tear.

"The distal biceps tendon helps bend the elbow and rotate the arm."

Tendons are thick fibrous bands of connective tissue that connect muscle to bone. The distal biceps tendon starts at the bottom of our biceps muscle and goes down into the elbow joint, where it attaches onto the radius bone in the forearm.

The distal biceps tendon has been called "the long supinator of the forearm" due to its importance in rotating the forearm to where the palm of your hand is facing up. When the biceps muscle contracts, the tendon pulls on your radius, allowing your elbow to bend and your forearm to rotate (e.g., using a screwdriver or turning a door handle). When these functions are taken to an extreme, such as when picking up something heavy, the tendon can tear a bit or even break off the bone entirely.

Distal biceps tendon tears are also known as biceps tears at the elbow or distal biceps avulsions.

Tears can be partial or complete: A partial tear means that some of the tendon is torn but that some fibers are still connected to the bone. A complete tear means the tendon is totally detached from the bone.

When a complete tear happens, often the biceps muscle will become more prominent in the upper part of the arm, which is known as the Popeye sign. This bulge is caused by the biceps muscle no longer being properly tethered by the distal biceps tendon.

Symptoms

This type of injury announces itself immediately with:

» A popping noise
» A tearing sensation
» Pain
» Swelling
» Bruising in the front of the arm
» Weakness in bending the elbow
» Difficulty rotating the wrist
» A deformity in the front of the arm

Causes

Tears in the distal biceps tendon happen because of an eccentric load on a flexed biceps muscle. In other words, if you try to lift a very heavy object off the ground with a slight bend in the elbow and your arm is forced into a straight position, your biceps tendon can suddenly tear off the elbow.

For example, if two people are carrying a fridge and one person drops their side. When the full weight shifts to the other person, this can create excessive weight on the person's arm while it's contracted, tearing the distal biceps tendon from the bone. Other examples include weightlifting, such as biceps arm curls, deadlifts, and chinups. Activities such as CrossFit or HIT workouts, where a sudden increased load is applied to a flexed elbow, can also linked to a rupture of the biceps tendon.

It most often occurs in the dominant arm of men aged 40–60. This injury is rarely seen in women, with the exception of women athletes using performance-enhancing supplements.

Diagnosis

Distal biceps tendon injuries are usually diagnosed by a physical exam but may also require imaging.

Dr. Romeo will check for the unique physical signs of this injury:

» A change in the biceps as compared to the unaffected arm
» A gap at the front of the elbow
» Weakness with elbow flexion
» Weakness while trying to rotate the forearm so the palm faces up
» Inability to feel the distal biceps tendon in the front of the arm (the hook sign)

Depending on the injury, an x-ray and MRI is often performed to confirm the diagnosis.

Nonsurgical treatment options

People with partially torn distal biceps tendons can sometimes be treated conservatively with:

» Rest
» Exercise
» Physical therapy

Conservative treatment may be best for people with smaller tears and those who are not athletes or whose job does not require manual labor. Unfortunately, distal biceps tears that are not treated surgically often result in a permanent loss of strength and function of the biceps muscle. People will maintain some ability to flex the elbow and rotate the wrist, but their strength may be up to 30% less.

When a partial tear is confirmed on MRI, up to 50% of patients will subsequently require surgery to resolve the pain and return their function to their pre-injury level.

If the tear is complete then surgery should be performed quickly—within a couple of weeks. Otherwise, it can retract (shrink back) and scar into place, which makes it more difficult to repair later on.

How surgery is performed

Surgery can be performed either through an incision in the front of the arm or two incisions, with one made on the front of the arm and one on the back of the arm. Dr. Romeo prefers the single incision technique, except in unusual cases of revision biceps tendon repair.

Using the one-incision technique, a small cut is made about 3 cm below the central crease of the elbow.

"If the tear is complete, surgery should be performed quickly—within a couple of weeks."

Then, the part of the biceps tendon still attached to the muscle that has shrunk up the front of the arm has to be located and pulled back down to the radius bone. Thick, strong stitches (sutures) are sewn into the end of the tendon, and the sutures are attached to an anchor.

Next, a hole is drilled into the radius bone where the biceps tendon normally attaches (radial tuberosity). Using a special technique, the anchor and the distal biceps tendon are inserted into place in the hole and reattached to the bone. This surgery allows for the full return of flexion and rotation strength of the elbow.

Recovery time

A distal biceps repair surgery is an outpatient procedure typically performed in an ambulatory surgery center (ASC). After surgery, you will need to wear a hinged elbow brace for a month to protect your arm. Initially, your elbow is immobilized following surgery. Dr. Romeo will gradually increase the range of motion allowed over four weeks. Then the use of the brace will be discontinued.

After surgery, you may experience swelling, and Dr. Romeo recommends ice packs as an effective form of relief. An ice pack should be applied three to four times a day, up to 30 minutes at a time. Dr. Romeo will provide specific instructions to manage any post-op pain, which resolves quickly after the surgical repair.

After four weeks, you will begin physical therapy that includes range-of-motion and isometric exercises to strengthen the biceps muscle and prevent contracture (when the joint becomes too stiff).

Results

The good news about surgical repair of the distal biceps tendon is that you may expect to reclaim nearly full strength, range of motion, and rotational function in your arm, elbow, and wrist once healing is complete.

Office workers may be able to return to work within six weeks of surgery. Those with less physically demanding work responsibilities can often resume these around three months after surgery. Full recovery typically takes six months; however, many

patients are able to participate in the activities they enjoy within three to four months after surgery.

Fortunately, in most cases, the elbow will recover to full or very close to the pre-injury level of function.

FAQs

How can I prevent biceps tears?

You can prevent biceps tears by working to maintain strength in your biceps muscles through a full range of motion. Deadlifting heavy loads can be a risk factor for tearing the distal biceps tendon. Proper form and technique are key. Anabolic steroid use can also put weightlifters at risk for tendon rupture.

Last, smoking cigarettes can also make tendons more susceptible to tearing, so quitting or cutting back may help protect you from tears.

Want to learn more? Find relevant videos, animations, and research material related to this procedure at **anthonyromeomd.com**. ➔

For more information about causes and treatment of distal biceps injuries, please request an appointment with experienced Chicago orthopaedic surgeon Dr. Anthony Romeo.

Please visit our website to find out how to schedule your appointment.