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## Distal Biceps Rupture

A distal biceps rupture occurs when the tendon attaching the biceps muscle to the elbow is torn from the bone.

This injury occurs mainly in middle-aged men during heavy work or lifting. A distal biceps rupture is rare compared to ruptures where the top of the biceps connects at the shoulder.

Not uncommon in middle aged men

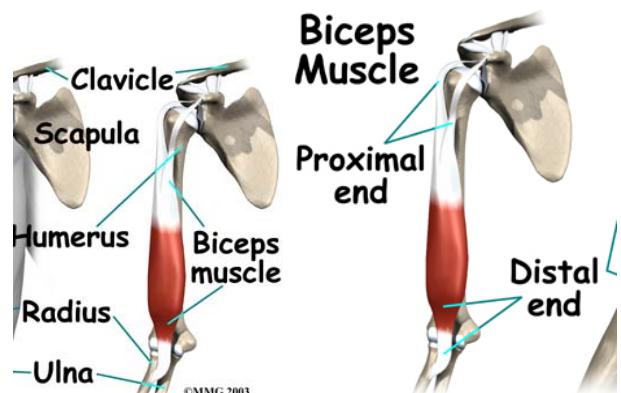
Is more common than original thought

Requires surgical in active patients

### What parts of the elbow are affected?

The lower biceps tendon is called the distal biceps tendon. The word distal means that the tendon is further down the arm. The upper part of the tendon is called the proximal biceps

The **distal biceps tendon** attaches to a small bump on the radius bone of the forearm. This small bony bump is called the radial tuberosity.



### Why did I develop a rupture of the distal biceps?

The most common cause of a distal biceps rupture happens when a middle-aged man lifts a box or other heavy item with his elbows bent. Often the load is heavier than expected, or the load may shift unexpectedly during the lift. As tension on the muscle and tendon increases, the distal biceps tendon **snaps or tears** where it connects to the radius.

### What does a ruptured distal biceps feel like?

It usually sounds and feels like a pop directly in front of the elbow.

At first the pain is intense. The pain often subsides quickly after a complete rupture because tension is immediately taken off the pain sensors in the tendon.

Swelling and bruising in front of the elbow usually develop shortly after the pop.

The arm often feels weak with attempts to bend the elbow, lift the shoulder, or twist the forearm into supination (palm up).

### How can my doctor be sure I have ruptured the distal biceps?

Ruptured their distal biceps tendon usually have better results when surgery is done soon after the injury.

The physical exam is often most helpful in diagnosing a rupture of the distal biceps tendon. Your doctor may position your elbow and forearm to see which movements are painful and weak. By feeling the muscle and tendon, your doctor can often tell if the tendon has ruptured off the bone.

X-rays are mainly used to find out if there are other injuries in the elbow. X rays will not show a distal biceps rupture unless a small piece of bone got pulled off the radius as the tendon ruptured. Sometimes Ultrasound or MRI examination is required to diagnose

## What can I do to treat this problem?

### Nonsurgical Treatment

Many doctors prefer to treat distal biceps tendon ruptures with surgery.

Nonsurgical treatments are usually only used for people who do minimal activities and require minimal arm strength. Nonsurgical treatments are only used if arm weakness, fatigue, and mild deformity aren't an issue. If you are an older individual who can tolerate loss of strength, or if the injury occurs in your nondominant arm, you and your doctor may decide that surgery is not necessary.

Nonsurgical measures may include a sling to rest the elbow. Patients may be given anti-inflammatory medicine to help ease pain and swelling and get them back to activities sooner.

Your doctor may have you work with a physical or occupational therapist. Exercises are used to gradually strengthen other muscles that can help do the work of a normal biceps muscle.

When a ruptured biceps tendon is treated nonsurgically, you may need to avoid heavy arm activity for three to four weeks. As the pain and swelling resolve, it will become safe to begin doing more normal activities.

## Surgery

Best results with surgery to reconnect the tendon right away. Surgery is needed to avoid tendon retraction. When the tendon has been completely ruptured, contraction of the biceps muscle pulls the tendon further up the arm. When the tendon recoils from its original attachment and remains there for a very long time, the surgery becomes harder, and the results of surgery are not as good.

### Direct Repair

#### Two incision technique

A incision across the arm, just above the elbow. Forceps are inserted up into this incision to grasp the free end of the ruptured biceps tendon. The surgeon pulls on the forceps to slide the tendon through the incision.

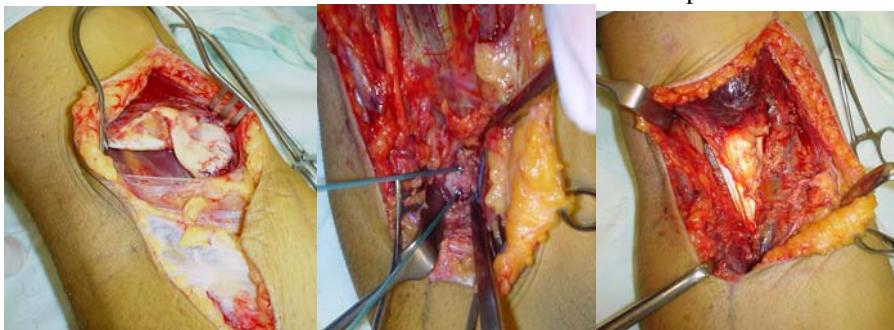
A curved instrument is passed through the incision and directly between the radius and ulna bones. The surgeon pushes the instrument through this space, puncturing the muscles and soft tissues. The surgeon feels the back side of the forearm for the spot where the instrument is protruding. A **second incision** is made at this spot.

The tendon is passed between the radius and ulna, exiting through the second incision that was made on the back of the forearm. The sutures are threaded into the three holes that were drilled into the rim of the radial tuberosity. The surgeon ties the sutures, securing the **newly reattached biceps tendon**. When the surgeon is satisfied with the repair, the skin incisions are closed, and the elbow is placed either in a cast or a range-of-motion brace.

#### Single incision technique [Suture Anchor Method]

A new method of anchoring the torn tendon to the radius is gaining popularity. This method uses special anchors, called suture anchors, to fix the tendon in place. The procedure requires only one incision

The surgeon begins by making a **single incision** across the arm, just above the elbow. Along the outside edge of the arm, the incision curves and goes upward for a short distance. Two small suture anchors are embedded into the cavity in the radial tuberosity. These anchors can either be screwed into the bone or implanted like a staple. Each anchor has a long thread (suture) connected to it. The **suture is woven** into the lower end of the tendon and crisscrossed upward.



When the surgeon is satisfied with the repair, the skin incisions are closed, and the elbow is placed either in a cast or a range-of-motion brace.

### **Graft Repair**

If more than three or four weeks have passed since the rupture, the surgeon will usually need to make a larger incision in the front of the elbow. Also, because the tendon will have retracted further up the arm, graft tissue will be needed in order to reconnect the biceps to its original point of attachment on the radial tuberosity. The Achilles tendon allograft is commonly used. This is rarely done operation.

### **How soon can I use my elbow again?**

Rehabilitation takes even longer after surgery. Immediately after surgery, your surgeon may cast your elbow for two weeks, end of which sutures are removed.

A special range-of-motion brace with careful elbow motion starting within one to two weeks. Your therapist may also use massage and other types of hands-on treatments to ease muscle spasm and pain. You will gradually start exercises to improvement movement in the forearm, elbow, and shoulder. You need to be careful to avoid doing too much, too quickly.

Exercises for the biceps muscle are avoided until at least four to six weeks after surgery. Your therapist may begin with light isometric strengthening exercises. These exercises work the biceps muscle without straining the healing tendon.

You may require therapy for two to three months. It generally takes four to six months to safely begin doing forceful biceps activity. Before your therapy sessions end, your therapist will teach you a number of ways to avoid future problems.