

Distal Biceps Tendon Injury: An Overview

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Anatomy and Function of the Distal Biceps

The biceps muscle, one of the muscles in the front of the upper arm bone (or humerus), has two muscle bellies, or heads, that have distinct attachments at the shoulder. These attachments are located at the “proximal” end of the humerus. At the other end of the muscle, near the elbow, the two heads of the biceps join together to form a single distal biceps tendon.

This tendon, located at the “distal” end of the humerus, inserts into the radius bone, one of two bones in the forearm. Through this distal attachment on the radius, the biceps participates in both elbow flexion and supination. Supination is the act of turning the forearm from a “palm down” position to a “palm up” position, such as when tightening a screw with a screwdriver.

Distal Biceps Injury & Symptoms

Injuries to the distal biceps tendon can be partial or complete ruptures. They commonly occur in the dominant arm of middle aged adults. Unanticipated loading of the tendon is a common mechanism of injury when the biceps muscle is contracting but the elbow is rapidly straightened, such as when a heavy object is attempted to be caught when it unexpectedly falls from a height. Typically, the injured tendon has some level of preexisting disease or degeneration, called [tendonosis](#), that makes it vulnerable to injury. Persons who smoke and those who are not physically active are more likely to rupture their biceps tendon when it is subjected to heavy loads.

Presenting symptoms of a distal biceps rupture include pain at the front of the elbow. Sometimes, people with the injury report hearing a “pop” from the area. Pain typically subsides after the acute injury, and if left untreated, a chronic distal biceps rupture is usually not painful. There may be bruising of the skin in association with the injury. If completely ruptured, the tendon can retract toward the shoulder. If this occurs, a cosmetic

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deformity may be noticeable that looks like a rounded mass in the lower biceps muscle. There may also be a hollow area at the elbow where the tendon used to attach. Most commonly however, there is not much noticeable change in appearance of the arm.

From a functional standpoint, some weakness will result in both flexion and supination, or rotation of the forearm. Supination is usually affected more than elbow flexion. However, multiple muscle groups are used in both motions, and no deficit in functional range of motion will result. The other muscle groups can strengthen to help compensate for the non-functioning, injured biceps. Some residual weakness will be noted, however, for heavy lifting or using a screwdriver, for example..

The diagnosis of a distal biceps rupture can usually be made on patient history and clinical examination. If there is question of a partial tendon injury or concern of another associated injury (fracture, ligament injury, etc) [magnetic resonance imaging](#) (MRI) may be obtained.

How are Distal Biceps Ruptures Treated?

There are several options available for the treatment of a torn distal biceps tendon, ranging from conservative treatment to operative interventions. Most patients will have surgery, but there is a role for non-operative treatment in the low-demand person or a patient who is a poor surgical candidate. The treating orthopedic surgeon will discuss these options and help decide the ideal treatment based on patient demands, physical examination, and the type of tear seen on imaging studies including routine [x-ray](#) and magnetic resonance imaging (MRI).

A non-operative, physical therapy treatment program will often focus first on reducing pain and maintaining the full motion of the elbow. Oral [non-steroidal anti-inflammatory medications](#) (i.e., Ibuprofen) may also be prescribed. After the initial injury, after pain has decreased and the elbow motion is good, treatment may move to muscle strengthening of the other muscles located about the elbow. Painless function with some residual weakness and early fatigue of supination can be achieved through conservative management.

Surgical management focuses on restoring the distal biceps tendon anatomy by repairing the tendon at its insertion site on the radius and allowing it to heal. Surgery is typically performed through an open incision in the front of the elbow or through a two-incision approach, with a small incision in both the front and the back of the elbow.

Chronic ruptures are much more difficult to treat surgically, and sometimes grafts need to be used in this setting. For acute ruptures, the tendon can be reattached to bone through a variety techniques including sutures, surgical buttons, anchoring devices, and surgical screws.

Rehabilitation

After surgery, the elbow is typically immobilized for a few weeks and then gentle range of motion exercises are initiated. The majority of tendon healing is usually complete after two months, at which time light strengthening exercises can begin. Return to full activity is variable, but most patients can expect to be back to their preoperative activities by 4-5 months.

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