



**SECOND
EDITION**

THE 5-MINUTE ORTHOPAEDIC CONSULT

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Wolters Kluwer
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BICEPS TENDON RUPTURE

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BASICS

DESCRIPTION

- The biceps tendon can rupture proximally near the shoulder or distally near the elbow (1).
 - Most ruptures occur proximally.
- Proximally, the biceps helps depress and stabilize the humeral head, whereas distally it is the primary supinator of the forearm and assists in elbow flexion.

EPIDEMIOLOGY

Incidence

- Typically occurs in males >40 years old
- These injuries can be seen in young athletes, and anabolic steroid use should be investigated.
- Typically occurs in the dominant extremity

RISK FACTORS

- >40 years of age
- Rotator cuff impingement
- Anabolic steroids

PATHOPHYSIOLOGY

- Tendon degeneration, symptomatic and asymptomatic, is thought to be the cause of biceps tendon ruptures (2).
 - Proximally, degeneration from decreased vascularity or from mechanical impingement from the coracoacromial arch
 - Distally, the degenerated tendon usually avulses from the radial tuberosity when a large extension force is applied to a flexed elbow.

ASSOCIATED CONDITIONS

Rotator cuff disease



DIAGNOSIS

SIGNS AND SYMPTOMS

History

- Patients may complain of anterior shoulder, arm, or antecubital pain.
- Patients may have antecubital elbow pain with forearm supination or flexion.

Physical Exam (3)

- Ecchymosis and swelling may be present in the antecubital fossa, arm, or shoulder.
- The retracted biceps muscle belly presents as a large distortion of the arm ("Popeye sign").
 - Muscle retracts away from the tendon tear.
- Some weakness or pain may present with supination or flexion.

TESTS

Imaging

MRI is the best diagnostic study for biceps tendon rupture.

DIFFERENTIAL DIAGNOSIS

- Rotator cuff impingement
- Rotator cuff tear



TREATMENT

GENERAL MEASURES

- For proximal tears, treatment initially is nonoperative.
 - Patients who sustain these injuries often are >40 years old with minimal functional deficits or weakness.
 - Patients <40 years old or those who are athletes, who are concerned about cosmesis, or who wish an optimal return of function can consider surgery.
- For distal lesions, surgical repair offers the best functional result.
 - Nonoperative treatment may result in activity-related pain and decreased strength in flexion and supination.

Physical Therapy

- Acutely, rest is recommended until pain and swelling resolve, followed by gentle ROM.
- Advance activity as tolerated.

MEDICATION (DRUGS)

NSAIDs and acetaminophen are recommended acutely.

SURGERY

- Proximal tears:
 - For isolated tears, the biceps tendon is tenodesed in the bicipital groove.
 - If associated with rotator cuff disease, acromioplasty is performed in addition to the tenodesis.
- For distal tears, the biceps tendon is reattached to the radial tuberosity through 1 or 2 incisions.

 FOLLOW-UP

PROGNOSIS

- In general, patients undergoing surgical repair of distal tears can expect a near-full return of strength.
- Patients with proximal lesions treated with tenodesis can expect pain relief.

COMPLICATIONS

- Without surgery:
 - Some patients may continue to experience activity-related pain.
 - Patients can expect a loss of supination strength.

REFERENCES

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2. Yamaguchi K, Bindra R. Disorders of the biceps tendon. In: Iannotti JP, Williams GR, Jr, eds. *Disorders of the Shoulder: Diagnosis and Management*. Philadelphia: Lippincott Williams & Wilkins, 1999:159–190.
3. Curtis AS, Snyder SJ. Evaluation and treatment of biceps tendon pathology. *Orthop Clin North Am* 1993;24:33–43.

ADDITIONAL READING

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- Ramsey ML. Distal biceps tendon injuries: diagnosis and management. *J Am Acad Orthop Surg* 1999;7:199–207.



MISCELLANEOUS

CODES

ICD9-CM

727.62 Ruptured biceps tendon

PATIENT TEACHING

- Patients with proximal biceps tendon tears often have associated rotator cuff or impingement problems.
- The best functional results, especially with distal tears, are obtained with surgery.
- Patients should use caution when lifting heavy objects (e.g., piano, furniture) because they are at risk for a distal biceps tendon tear.

FAQ

- Q: If I have ruptured my biceps tendon distally, must I have surgery?
 - A: No. However, you may experience weakness in elbow flexion and, more commonly, in forearm supination, and you may have difficulty with simple tasks of daily living such as turning doorknobs or grabbing heavy objects off a shelf. Strength is best restored through primary repair of the tendon.
- Q: If I rupture my biceps tendon proximally, do I need surgery?
 - A: No. Because usually only the long head of the biceps tendon ruptures proximally, strength can still be generated through the short head of the biceps. Because proximal ruptures can be associated with rotator cuff disease, the cuff may require surgery.

