Distal Biceps Tendon Rupture: A Rare Condition with Difficult Treatment

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We report a case of 59-year-old male who experienced sharp pain in his arm and elbow after lifting a heavy object. History and physical examination raised suspicion for biceps rupture. Magnetic resonance imaging determined chronic tear of superficial fibers of the long head of biceps in the distal arm. Surgical repair was performed for this tear by excising ruptured long head of biceps. Traumatic rupture of the biceps tendon is rare. When rupture does occur, it usually involves the long head of the proximal insertion. Rupture of the proximal biceps tendon occurs in 90-97% of all biceps ruptures and almost exclusively involves the long head. Distal biceps tendon rupture only occurs in about 3% of all biceps tendon injuries. The outcome was reasonably well with this rare injury pattern and even after excision of biceps 80% of his premorbid function was restored. He has good strength and is able to participate fully in his work.

Keywords: Biceps rupture, Hernia, Magnetic resonance imaging, Trauma

INTRODUCTION

Traumatic rupture of the biceps tendon is rare. When rupture does occur, it usually involves the long head of the proximal insertion. Rupture of the proximal biceps tendon occurs in 90-97% of all biceps ruptures and almost exclusively involves the long head. Tendon ruptures can occur at any age; however, most patients are middle aged, ranging from 30 to 60 years. Distal biceps tendon rupture only occurs in about 3% of all biceps tendon injuries.1 The biceps brachii muscle flexes the elbow and supinates of the forearm. It comprises a long head, whose origin is from the glenoid fossa, and a short head, which comes from the coracoid process, with a distal insertion on the radial tuberosity. The main mechanism of injury to the biceps is either eccentric contraction or resisted flexion of the elbow due to heavy lifting or a fall onto an outstretched hand.2 The patient usually hears or feels a “pop,” and a deformity of the muscle contour of the upper arm develops.

CASE REPORT

A 59-year-old male, right-hand dominant, presented to us with complaint of swelling in flexor aspect of the right arm. He was apparently asymptomatic when he lifted a flower pot in sitting position with his right hand when he suddenly heard a “pop” and experienced an immediate onset of pain in his arm that radiated to his shoulder. Gradually he developed a bulge in the flexor aspect of his right arm (Figure 1). This bulge used to remain small in size but gradually it progressed to the present size.

The patient’s work and activities of daily living were restricted due to pain. He felt pain on flexing the elbow and supination of the forearm. He was addicted to tobacco in the form of quid but does not drink alcohol.

He was treated symptomatically but swelling did not decrease.

On physical examination, no ecchymosis was noted. There was a visible bulge in flexor aspect of the forearm. It was of 5 cm × 5 cm. Margins were well defined, borders were regular, no scar mark was seen. The patient presented with difficulty in supination of the forearm and flexion of the elbow.

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An ultrasonography was done to visualize the defect. It stated “right biceps muscle show a wide partial hypoechoic defect at mid right arm level (Figure 2). Muscle appears heterogeneous around defect. Right biceps tendon is visualized within bicipital groove.” It was suggestive of partial tear of the right biceps muscle at mid arm level.

A magnetic resonance imaging (MRI) of the right arm utilizing a 1.5 Tesla system was obtained to confirm the diagnosis. The images demonstrated focal abrupt discontinuity of superficial fibers of the long head of biceps noted in the distal arm without significant altered signal intensities, suggestive of chronic tear. Rest of the muscle is visualized normally (Figure 3). The visualized parts of humerus appear normal in signal intensity and anatomy. No evidence of any contusion and cortical discontinuity noted. Visualized flexor and extensor tendons appear normal in course, caliber, and signal intensity. Visualized neurovascular bundles appear normal.

Plain radiographic findings were normal with no bony arthritis seen at the ulnohumeral and radiocapitellar joints; no bony avulsion fractures were seen.

The patient was prepared and laid down supine on operating table. Lacey’s incision given over anterior aspect of the right arm. Subcutaneous tissue dissected and incision deepened. Long head of biceps exposed and whole long head of biceps excised. Hemostasis achieved. Subcutaneous tissue and muscle closed with absorbable sutures. Skin approximated by skin stapler.

After surgery, the patient was placed in a well-padded posterior long arm splint, with the elbow at 90° of flexion and the forearm in neutral position. At 4 weeks, physiotherapy was started for flexion and supination/pronation at the elbow. At last follow-up, patient subjectively noted the complete return of elbow strength without pain of deformity. Examination demonstrated full range of motion and normal resistive motor strength to both flexion and supination.

DISCUSSION

Rupture of the proximal biceps tendon occurs in 90-97% of all biceps ruptures and almost exclusively involves the long head. They tend to occur in people aged >50 years and are often associated with rotator cuff tendonitis.3 Rupture of the distal biceps is an uncommon lesion. Not many case reports are found in the literature.4 There are varied opinions about the management of this lesion. Some authorities believe that the distal end should be re-anchored while others believe on a conservative nonoperative approach.4 There is an option of attaching the tendon of the distal biceps to the brachialis muscle tendon.4 The biceps has an important role to play in supination especially when the elbow is in flexion.4

The causes of the rupture are most likely multifactorial. A number of hypotheses have arisen to describe the pathogenesis: Degenerative, mechanical impingement, and ischemic factors appear to impact on the composition and structure of the tendons.5,6

The diagnosing partial ruptures of the distal biceps can be challenging due to variable clinical presentations and subtle symptoms. Both MRI and ultrasound are useful tools for the diagnosis.
The diagnosis of distal biceps tendon rupture must be suspected if there is a history of a sudden jerk in the elbow during a heavy lift. Examination reveals diminished force in elbow flexion and forearm supination and tenderness in the antecubital fossa.

Prompt surgical repair (ideally within 3 weeks) of a ruptured biceps tendon is usually the preferred treatment. Although conservative treatment can be used in the initial stages following injury, patients treated conservatively have been shown to have up to 30% reduction in flexion power and 40% reduction in supination power.

CONCLUSION

Distal biceps rupture is very rare as proximal rupture is the usual phenomenon (90-97%). In elderly patients with biceps rupture, priority should be surgical repair. Power in movements of upper limb should be restored with early surgical repair within 3 weeks. In delayed cases with fibrosis, muscle excision is preferred.

REFERENCES