

ADDITIONAL TENDINOUS INSERTION OF BICEPS BRACHII: A CASE REPORT

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Abstract

In view of the variable presentations of biceps brachii, a proper understanding of the anatomy of the muscle, and possible anatomical variants is a pre-requisite in managing distal biceps injury. We present the case of a 65 years old male cadaver showing variation in the insertion pattern of biceps brachii muscle unilaterally on the left arm. Although the origin of the muscle was normal, its insertion was by two separate tendons; a common and an accessory; both inserting on diverse regions of the radial tuberosity. The common tendon was formed by the tendons from short head and long head. The accessory tendon was the extension of the fleshy belly on the lateral side of the main muscle (Accessory Muscle Belly) towards its lower third. Knowledge of the accessory tendon of the biceps is crucial while performing tendon reconstruction and repair and it may also lead to unusual displacement of the bone fragment, subsequent to fracture.

Key words: *Biceps brachii, common tendon, accessory tendon and radial tuberosity*

Introduction

Although the proximal end of the biceps brachii is commonly discussed for its well documented variations, its distal tendon is rarely described and understood. Anatomical texts describe biceps brachii as having two proximal heads, the short head arising from a thick flattened tendon from the apex of the coracoid process and the long head from the supraglenoid tubercle of the scapula. The two tendons lead to elongated bellies that, although closely applied, can be separated to within 7 cm or so of the elbow joint. At this joint they end in a flattened tendon which is attached to the rough posterior area of the radial tuberosity. The tendon has a broad medial expansion, the bicipital aponeurosis, which descends medially across the brachial artery to fuse with the deep fascia over the origins of flexor muscles of the forearm.^[1] The aponeurosis is said to protect the neurovascular bundle on the antecubital fossa.^[2]

The anatomy of the distal biceps tendon is still a topic for contemporary research, and the transition of muscle into the tendon remains vaguely understood. A clear understanding of the distal tendon would be helpful in better management of its surgical repair.

Materials and methods

The variation in insertion pattern of biceps brachii muscle described was found in the left upper limb of a cadaver, 65 years old Indian male, during routine dissection in the Department of Anatomy, Rural Medical College, Loni. The history of the individual and the cause of death is not known. The topographic details of the muscle was examined by casual dissection and photographed. The length and thickness of the tendons were measured by vernier calipers.

Case report

During routine dissection, we came across an unusual unilateral insertion of the biceps brachii by two tendons. One common tendon and another accessory tendon, on the left arm, in a male cadaver

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of 65 years of age. The origin of the muscle was normal and both the heads fused to form a belly. The belly continued distally to form a common tendon which comprised of tendons from the short and long head. The length of the common tendon was 58 mm and the thickness was 5 mm and was inserted on the posterior part of the radial tuberosity.

The accessory tendon was an extension of the fleshy belly which was separated from the lateral side of the muscle on its lower one-third. The length of the fleshy belly was 45 mm and thickness was 6 mm, while the length of the accessory tendon was 28 mm and the thickness was 1.5 mm. This tendon was inserted on the radial tuberosity, distal to the insertion of the common tendon. (Fig 1)

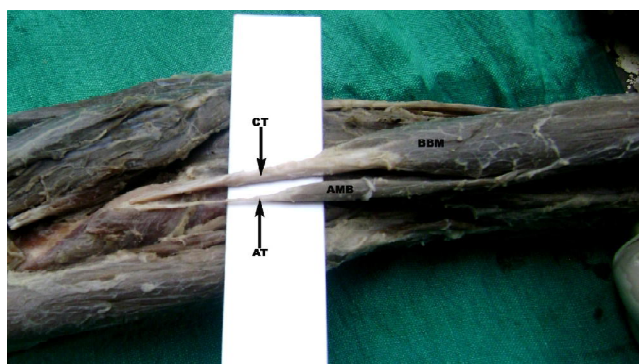


Fig 1: Lower part of arm showing biceps brachii muscle (BBM), continuing downwards as Common Tendon and inserted on radial tuberosity. Accessory tendon extending from the accessory muscle belly from the lateral aspect of BBM (lower one third), and inserted onto the distal part of radial tuberosity

Discussion

Literature is replete with variations of the origin of biceps brachii.^[3, 4] Only few cases have been reported on the variations related to the insertion of this muscle. Pavai J and Mathew JG, described a case of abnormal insertion where most of the muscle fibres formed a rounded tendon which was inserted on the radial tuberosity, but some of the fibres from

the medial side, below the level of middle of the arm, formed a separate muscle bundle and continued as a narrow tendinous slip, which divided into medial and lateral. Medial slip was inserted on the medial supracondylar ridge of humerus and the lateral slip merged with the fascial covering of flexor carpi ulnaris.^[5]

Fogg QA, et. al, in their study on 46 cadaveric arms observed connection between the two muscle heads (short and long heads). This study demonstrated a more complex arrangement of fascicles of common biceps tendon. They suggest that most distal biceps brachii tendon have multiple connections between the tendinous bands that originates from each muscle belly.^[6]

Eames M S, et. al, studied insertion pattern of distal biceps tendon in 17 limbs. They observed that the tendon of the long head passed deep to the tendon of the short head to insert more proximally. The tendon of the short head inserted in a fan like fashion into the distal portion of radial tuberosity.^[2]

There are very few studies on distal biceps tendons and its insertions. Despite extensive search of literature we did not find a case similar to ours in which the biceps is inserted by two distinct tendons on the radial tuberosity. The practical fallout of the accessory tendon reported in this case may point to the kinematics of the biceps muscle. As both the tendons are inserted on the radial tuberosity, it might not have effected the direction of pull but may have had a significant role in the increased power of flexion and supination of the muscle.

Knowledge of the accessory tendon of the biceps is crucial in avoiding pitfalls while performing tendon reconstruction and repair in cases of avulsion. The present findings could be useful for the well informed clinician as the accessory tendon could provide additional strength or cause unusual displacement of the bone fragments subsequent to fractures. The interest in the variable presentations of biceps brachii is continual and with further studies, it is hoped that increased anatomical knowledge of the muscle would be very helpful in enhancing the understanding and management of different upper limb disorders.

References

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