

Atamleh S., Kuker Dyrbjerg R.

VARIANT ANATOMY OF THE BICEPS BRACHII MUSCLE

Tutor: PhD, associate professor Pasiuk H.A.

Normal Anatomy Department

Belarusian State Medical University, Minsk

Variant anatomy, a crucial component of anatomical science, is concerned with deviations from the typical structure of the human body. Thousands of years of anatomical experience provide the foundation for our understanding of variant anatomy. These anomalies often do not affect how the human body works and do not present as pathogenic nosological units. These aberrations, however, can aggravate current clinical states or perhaps elicit new ones under specific circumstances.

One of the three muscles found in the anterior compartment of the arm is the biceps brachii (BB) muscle. Biceps brachii are the only flexor muscles of the arm, which cross the shoulder as well as the elbow joint. It is one of the most variable muscles in the human body, in terms of both number and morphology.

Biceps brachii, as its name suggests, has two heads of origin and inserts on the radial tuberosity. The origin of the long head of the biceps brachii has classically been shown to be the supraglenoid tubercle. Based on a cadaveric study, there was a reported 25% incidence of actual tendon origin from the glenoid tubercle and a 70% incidence of the tendon blending with the posterosuperior glenoid labrum. The tendon is normally found within the glenohumeral joint, within a synovial sheath. It passes anteriorly and superiorly to the humeral head, emerging from the joint in the bicipital groove, where it is bound by the subscapularis and supraspinatus tendons. The transverse humeral ligament and an extension from the pectoralis major's tendon stabilize the long head BB tendon. However, mentions of anomalies of the long head BB tendon itself are rare. This less common occurrence includes the following variants: complete absence of the tendon, extrasynoviallocation, and partial or entire intracapsular position. The short head of the BB and the coracobrachialis arise in common from the coracoid process of the scapula. Just as the coracobrachialis may, instead of being narrow at its coracoid origin, spread medially toward the base of the coracoid process, so also may the short head of the BB extend lateralward to take partial origin from the adjacent portion of the capsule of the shoulder joint and the coraco-acromial ligament. Distally, two heads of BB join to form a common tendon that inserts into the radial tuberosity, and some aponeurotic fibers form the bicipital aponeurosis, which merges with the deep fascia of the forearm.

The BB is one of the muscles with the most frequent anatomical variationism: normal two-headed BB (79.16%), incidence of three-headed BB (16.66%), incidence of four-headed BB (2.08%), incidence of ununited two heads of BB (2.08%), incidence of anomalous bicipital aponeurosis attachments (2.08%), and incidence of other muscles originating from the BB (2.08%). Only four previous cases of congenital absence of the long head BB have been reported.

The musculocutaneous nerve supplies the BB muscle. in the case of a three-headed BB nerve passing between supernumerary heads or supernumerary heads pierced by the musculocutaneous nerve. The intramuscular course is a potential compression site, and compression of the nerve in between the heads of the biceps may lead to paraesthesia and weakness of elbow flexion and supination due to involvement of the brachialis and the nerve to the long head of the biceps.

Knowledge of the existence of the three or four heads of the biceps brachii may become significant in preoperative diagnosis and during surgery of the upper limbs.