



Biceps Brachii With Tri - Ceps

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Abstract

Introduction: One of the muscles of the flexor compartment of forearm, the Biceps Brachii is known to present with variations in the number of heads ironic to its name. In this study three headed biceps was noted.

Materials and methods: The study was done on 36 upper limb specimens obtained from the Department of Anatomy of Government Thoothukudi Medical College, Tamilnadu, India. **Results:** Four limbs showed the presence of supernumerary biceps. **Conclusion:** Third head may be the reason of any neurovascular compression in the arm. Variations of Bicep brachii must be kept in mind by the surgeons to avoid confusion during surgeries.

Keywords: Biceps brachii, Supernumerary head

Introduction

Biceps brachii (BB) derives its name from its two proximally attached 'heads'. The short head arises by a thick flattened tendon from the coracoid apex. The long head starts from the supraglenoid tubercle of the scapula. They end in a flattened tendon, which is attached to the rough posterior area of the radial tuberosity [1]. In 10% of cases, a third head arises from the superomedial part of brachialis and is attached to the bicipital aponeurosis and medial side of the tendon of insertion. It usually lies behind the brachial artery.

The extra heads of BB muscle have clinical significance as they might confuse surgeons who perform surgeries on the arm and might lead to iatrogenic injuries or the extra head might cause compression of vital neurovascular structures in the upper limb [2].

Materials And Methods

The study was done at Department of Anatomy, Govt. Thoothukudi Medical College, Tamilnadu. 36

upper limb specimens were dissected according to the Cunningham's manual. Thorough examination of the number of heads of biceps brachii, its origin, insertion and nerve supply was done. Photographs were also taken.

Results

Out of the 36 upper limb specimens dissected, in four limbs the biceps brachii muscle appeared to have three heads (*Fig 1 & Fig 2*). They were found to be present bilaterally in two cadavers.

In the first cadaver the supernumerary head on the right side measured 10.5x1.5cm and on the left side 9x0.5cm. Both originated from anteromedial surface of humerus and inserted with the main muscle belly. The right to the lower third of the main belly and the left to the upper third. In the second cadaver, the right side measured 12x0.6cm originating from brachialis just below corachobrachialis and on the left (13x0.7cm) originated from anteromedial surface of humerus. Both fuses with the tendon of the main

muscle, the left to the middle third and right to the lower third.

Discussion

The most frequently reported variation is the biceps with three heads of origin, though up to six heads have been documented [3]. Incidence of additional head of BB was 10% [4].

The level of origin of additional head of BB reported by various authors were from the inserting tendon of the deltoid muscle [5] from the antero-medial surface of the humerus just beyond the insertion of the coracobrachialis [6], together with the short head from the coracoid process, from superomedial part of brachialis, at the insertion of coracobrachialis[1].

Regarding insertion of supernumerary heads, mostly it joins with biceps to get form a common tendon to get inserted [7]. The third or humeral head presented an unique area of insertion into the bicipital aponeurosis (lacertus fibrosus) [8].

Additional head of biceps brachii was reported in a 56-year-old male cadaver which arose from anteromedial surface of shaft of the humerus in common with and distal to insertion of the coracobrachialis [9].

Gupta C et al [2] reported three headed biceps brachii unilaterally in three male cadavers, which originated near the insertion of the CB and at the origin of the brachialis in two cases whereas it originated along with the long head of BB in the third case. Understanding of these extra heads is significant in handling injuries of the muscle and in tendon reconstruction operations.

Four-headed biceps brachii muscles was also reported [10,11,12].

It can originate from the tendon or fascia of the neighboring muscles, the intermuscular septum, the capsule of the shoulder joint and the neck, lesser tuberosity or the anteromedial surface of the humerus. The occurrence of the supernumerary head of the biceps brachii(SNB) is also often coupled with variations of MCN which may incorporate a peculiar branching pattern, the absence of the nerve or its duplication[3]. The SNB have been implicated in compression of adjoining neurovascular structures which can manifest as symptoms of high median nerve entrapment, thrombosis and oedema by

compression of BA and veins, respectively. Furthermore, a unilateral variation of SNB can lead to misconception of soft tissue tumors which should be identified by routine MR imaging. Functionally, the THB augments its kinematics by enhancing the strength of flexion and supination of the forearm. Moreover, it permits the elbow flexion irrespective of the position of the shoulder joint[7]. Ultimately, supernumerary heads can be a reason for abnormal dislocation of fragments of fractured humerus. Duplication[3]. The MCN can pass anteriorly, posteriorly, or through the supernumerary head and sometimes can be compressed by it [7]. Familiarity with such variations is vital for detection and effective management of nerve entrapment [7].

Conclusion

These supernumerary heads may be significant in producing the strong flexion as well as supination of forearm. They may be the reason of compression of neurovascular structures because of their close relationship to brachial artery and median nerve. Variant BB may confuse a surgeon who performs operations on the arm and may lead to iatrogenic injuries[13].

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Figures Legends

Figure 1: Black arrow indicates the third head (Right arm)

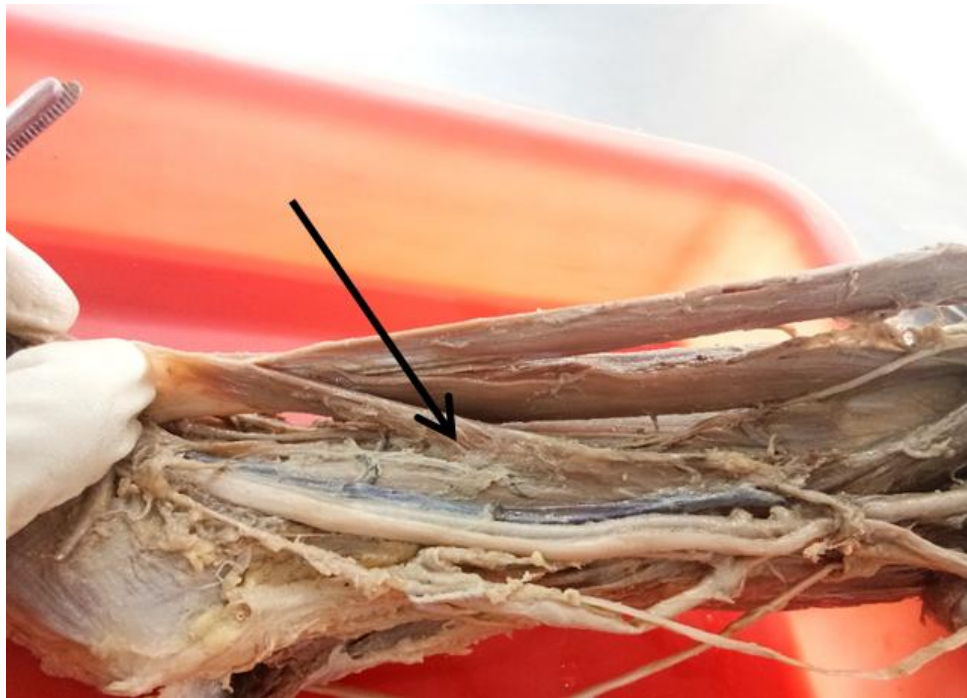


Figure 2: Black arrow indicates the third head (Left arm)

