

Supernumerary head of biceps brachii: A rare occurrence in the Nepalese population

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Abstract

Unilateral three headed biceps brachii muscle was observed in the dissected cadaver of a 45-year-old Nepalese cadaver. The supernumerary head is taking origin from the tendon of deltoid and crossing in front of the long head of biceps and joining with short head of biceps brachii. The incidence of this variation is very rare and there was no available literature in Nepalese population. Presence of such variation should be kept in mind by Surgeons and Traumatologists.

Key words: Biceps brachii muscle, Supernumerary head

Biceps brachii is the muscle of forearm having two heads hence the name. The short head arises in common with coracobrachialis from the tip of coracoid process. Long head arises from the supraglenoid tubercle and from the posterior part of glenoid labrum. The tendon passes over the front of the head of the humerus within the capsule of the joint and into the intertubercular groove. The two heads join to form a common belly of biceps brachii that ends in a flattened tendon that attaches to the posterior end of the radial tuberosity. This muscle is innervated by musculocutaneous nerve. Blood supply is from axillary artery and muscular branches of brachial artery.

Biceps is a flexor of the elbow joint and the most powerful supinator of the forearm. In addition, the short head is a weak adductor and flexor of the shoulder joint, and the long head plays a role in keeping the head of the humerus in the glenoid cavity with its long tendon of origin¹.

Case report

During our routine dissection studies on a 45 year old male cadaver we encountered a variation on right side related to biceps brachii muscle. The short head of biceps was getting supernumerary head from the tendon of deltoid muscle (Fig 1). This supernumerary head crosses in front of the long head of biceps and joins with short head of biceps brachii that originated from the coracoid apex, together with the coracobrachialis. This supernumerary head is also innervated by musculocutaneous nerve and supplied by branches of brachial artery.

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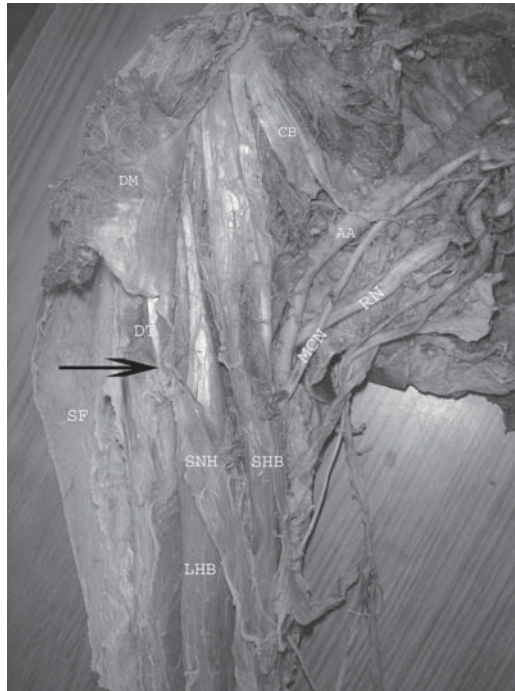


Fig 1: Supernumerary head of biceps brachii

Abbreviations

DM – deltoid muscle, CB – coracobrachialis muscle, AA – axillary artery
 RN – radial nerve, MCN – musculo-cutaneous nerve, BA – brachial artery
 SHB – short head of biceps brachii muscle, SNH- supernumerary head of biceps brachii
 LHB – long head of biceps brachii, DT – deltoid tendon, SF – skin and fascia

Discussion

Biceps brachii is known to show extremely variable anatomy in terms of number and morphology of its heads^{2,3,4}. 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, but it may consist of two slips, which descend in front of and behind the artery⁵. Often absence of entire muscle or one of its heads^{6,7} and variations of the insertions seem to be uncommon⁸, supernumerary heads of the biceps brachii are relatively frequent^{9,10}.

The most frequent variation of the biceps brachii muscle is in the number of muscle heads with a prevalence range of 9.1- 22.9%^{3,4,6,7,9,11}. Although supernumerary bicipital heads have been described as part of either a three-, four-, five or seven headed biceps brachii, the three headed variant represents the most common type that has been reported with a prevalence ranging from 7.5-18.3% and with no clear racial or gender differences^{3,4,9}.

Recently Rodriguez-Niedenfuhr⁷ classified the supernumerary bicipital heads based on their origin and location. Taking into account all studies and cases

reported previously, they defined three different types: superior, inferomedial and inferolateral humeral heads. They observed the presence of a third head in 23 of 175 (13.1%) cadavers or in 27 of 350 (7.7%) arms. The infero-medial humeral head was observed in 31 of 350 (9%) arms and was therefore the most common variation. The superior humeral head was observed in five (1.5%). The infero-lateral humeral head was the least common variation, observed only in one (0.3%) of 350 arms. In the present case, the supernumerary bicipital head corresponds to the infero-lateral type and it is a very rare variation originating from the tendon of deltoid muscle.

A biceps brachii with more than two heads is found in about 8% of Chinese, 10% of white Europeans, 18% of Japanese³, 20.5% of South African blacks and 8.3% of South African whites¹⁰ and 15% of Turkish¹¹. There was no such reporting regarding the presence of supernumerary head in Nepalese population. Hence our reporting has significance.

If the supernumerary head is relatively large, it may provide additional strength to the biceps brachii muscle as Swieter and Carmichael¹² reported. In the

present case, the third head provided approximately 10% of the total mass of the biceps brachii muscle. Since this supernumerary head is taking origin from the tendon of deltoid it may have some contribution to the action of deltoid along with biceps brachii muscle. The innervation and vascularisation to the third head of the biceps brachii agrees with normal embryologic development of the related dermatomes and myotomes as reported by other authors^{10, 13}. The incidence of its occurrence is more in males than females^{10, 14, 15}. The relevance of these observations in the clinical scenario is related to some physiopathological consideration¹⁶. Presence of such muscular variations should be kept in mind by Surgeons and Traumatologists.

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