

UNUSUAL ORIGIN OF THIRD HEAD OF BICEPS BRACHII – A CASE REPORT

Amudha Govindarajan, Vimala Vellaichamy

Department of Anatomy, PSG Institute of Medical Sciences and Research, India

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Corresponding Author:

Amudha Govindarajan
Department of Anatomy, PSG
Institute of Medical Sciences and
Research, India

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ABSTRACT

Biceps brachii is one of the key flexors of the elbow joint which had been studied extensively. Variations are common in the number of heads, their origin, insertion and nerve supply. Third head of biceps brachii is not an infrequent observation. During routine dissection, we came across a third head of biceps brachii which had an unusual origin. Such variations are important for clinicians and surgeons for performing diagnostic and surgical procedures in the upper limb.

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INTRODUCTION

Biceps brachii is a flexor of elbow joint and also a powerful supinator of the forearm present in the anterior compartment of arm. It takes origin from the scapula via two heads. The long head arises from the supra glenoid tubercle of scapula and the short head from the tip of coracoid process of the scapula. The long head has intracapsular origin. It is covered by the synovial sheath of the shoulder joint. It arches over the humeral head and emerges from the joint behind the transverse humeral ligament and descends in the intertubercular sulcus of the humerus. The short head takes its origin from the coracoid process of the scapula along with coracobrachialis. The two heads of biceps brachii descend separately up to 7cm above the elbow joint where they fuse together to form a common tendon and insert in to the posterior part of the tuberosity of radius and also forms a fibrous expansion called bicipital aponeurosis which is inserted in to the subcutaneous posterior border of ulna through the deep fascia of the forearm. Biceps brachii receives its innervation from the musculocutaneous nerve. The long head keeps the humeral head in contact with the glenoid cavity in abduction (1).

Biceps brachii is one of the well documented structures with frequent anatomical variations. Third and additional heads are often documented in the literature. Origin of third head is highly variable. It may arise either from the intertubercular sulcus of the humerus or from the shaft of the humerus near the insertion of coracobrachialis.

In this case report, we report the unusual origin of the third head of biceps brachii and its clinical significance.

Case Report:

During routine dissection in Department of Anatomy, PSG Institute of Medical Sciences and Research, we encountered biceps brachii muscle with three heads in a 60 year old male cadaver in the right upper limb. The third head had tendinous origin from the capsule of the shoulder joint (Fig-1).



Fig-1: Shows the origin of third head from the capsule of shoulder joint. LH-Long head, SJ-Shoulder joint, SH- Short head, TH-Third head

It had thin muscle belly which descended in between the long and short heads of biceps brachii muscle and fused with them in the middle third of the arm (Fig-2).

The mode of insertion of the fused tendon of biceps brachii muscle was normal. All the three heads were innervated by the musculocutaneous nerve (Fig-3).

DISCUSSION

Hitendra kumar et al, stated that they found bilateral third head of biceps brachii in one male cadaver out of 48 cadavers. Its origin was from the anterior limb of deltoid muscle on the humerus and it fused with the common bulk of the muscle for insertion (2).

Baris Ozgur Donmez et al, found supernumerary heads in two male cadavers. In one case the origin was from the medial lip of the intertubercular groove and in another case it was from the lateral lip of intertubercular groove. In both the cases, the three heads united with one another at the middle third of the arm and formed a common tendon before the insertion (3).



Fig-2: Shows the fusion of three heads of biceps brachii above the elbow joint. LH-Long head, SH- Short head, TH-Third head



Fig-3: Shows the innervation by musculocutaneous nerve to biceps brachii. LH-Long head, MCN-Musculocutaneous nerve, SH- Short head, TH-Third head.

Lokanadhan et al , found supernumerary head bilaterally in two cadavers out of 40 cadavers. In one cadaver the third head originated from lower anterior part of humerus on its medial side and fused with common bulk of muscle before its termination into bicipital aponeurosis. In another male cadaver it had its origin from upper anterior part of humerus on its medial side. The third head fused with common bulk of muscle before the origin of bicipital tendon(4). Prabhot Cheema et al found three unilateral supernumerary heads in biceps brachii muscle out of 63 adult cadavers in North Indian Population. Two of the supernumerary heads had their origin from the shaft of the humerus near the insertion of coracobrachialis and one had its origin near the origin of brachialis. Their insertion was into the muscle belly in two cases and into the bicipital aponeurosis in one. The supernumerary heads were innervated by a branch from musculocutaneous nerve (5).

In our case report, we found that the third head of biceps brachii had tendinous origin from the capsule of shoulder joint and the mode of insertion of the fused biceps brachii muscle was normal. All the three heads were innervated by musculocutaneous nerve. This origin of third head is unusual and not found to be reported in the literature so far. As the third head originated from fibrous capsule of the shoulder joint, it would strengthen the capsule of the joint and will be useful to stabilize the shoulder joint during its movements. As biceps brachii is a powerful supinator of forearm and flexor of the elbow joint by spurt action and flexes best in supinated position , the presence of third head may increase the power of flexion and supination.

CONCLUSION

Variations in the heads of biceps brachii have lot of clinical importance. The presence of supernumerary head may cause neurovascular compression and may be mistaken for bone tumors due to the bulk of the muscle in the arm. So the surgeon should borne in mind about the variations of biceps brachii while doing diagnostic or surgical procedures in the upper limb.

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