



## Additional head of biceps brachii in elderly female cadaver

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### ABSTRACT

Variations are very frequent in the origin of biceps brachii muscle of upper arm. This was extensively reported in other parts of the world except in Indian population. During routine dissection of an 80-year-old female cadaver, additional head of biceps brachii was noted bilaterally. Occurrence of additional head in females and in Indian population is very rare. The findings were reported and compared with the studies of other eminent authors. Such variations are important not only for the anatomists but for surgeons and orthopedicians too. © IJAV. 2011; 4: 112-114.

**Key words** [variation] [biceps brachii] [additional head]

### Introduction

Biceps brachii is a superficial flexor muscle located in the anterior compartment of the upper arm. It is an important flexor of the elbow joint as well as a powerful supinator of the forearm [1]. The supination by biceps brachii is powerful in rapid and resisted movements. Origin of biceps brachii is by two heads, the long head takes origin from the supraglenoid tubercle of scapula and the short head arises from the coracoid process of the scapula along with coracobrachialis. The two heads join to form a common belly above the elbow joint and insert together into the tuberosity of radius and also form bicipital aponeurosis, which is attached to the deep fascia along the medial side of the forearm [1]. An additional head may be present in 10% of cases and it has been reported frequently in the literature [1]. The origin of additional head is variable. It might take origin either from the shaft of humerus near the insertion of coracobrachialis or along with brachialis or from intertubercular groove of humerus or from the capsule of shoulder joint [2]. If the origin is from the shaft of humerus, it is also called as the humeral head of biceps brachii. The humeral head is further classified into three types [2]. The additional head if present adds to the bulk of the muscle.

In this case report, we report the variation found in the number and origin of the biceps brachii muscle in an elderly

female Indian cadaver and also compare it with the previous studies.

### Case Report

Variations were encountered in the biceps brachii muscle of both the sides during routine dissection of an 80-year-old female cadaver. The additional head was found to take origin from the lower end of the shaft of the humerus medial to the origin of brachialis muscle. The additional head was medial to the short head of biceps brachii and joined with the tendon of biceps brachii along the medial side of the muscle above the elbow joint (Figures 1, 2). It also took part in the formation of the bicipital aponeurosis over the cubital fossa. The additional head of biceps brachii was found to be innervated by a separate branch of musculocutaneous nerve (Figure 1).

### Discussion

Variations in the origin of biceps brachii have been reported often by many authors. The additional head of biceps brachii is common in some ethnic groups like black races, African blacks 12% and South African blacks 20.55% [3, 4]. But incidence of this variation is quite rare in Indian population and there is lack of literature regarding the incidence of additional heads of biceps brachii [5, 6]. As per the study of Asvat et al. there is no gender or racial differences in



**Figure 1.** The additional head of biceps brachii with musculocutaneous nerve lying medial to it in the right arm. (*MCN*: musculocutaneous nerve; *LH*: long head; *SH*: short head; *AH*: additional head)

the appearance of additional heads of biceps brachii [4]. But the incidence of additional head was reported more in males than females [7]. They also stated that there was 60% incidence of bilateral symmetric third heads [3]. In 10% of cases the third head of biceps may take origin from the superomedial part of the brachialis muscle and insert into the bicipital aponeurosis and medial side of biceps tendon. The additional head of biceps brachii crosses only the elbow joint unlike the long and short heads. It will cause flexion of elbow joint irrespective of the position of shoulder joint. The inferomedial head is the most frequently

observed supernumerary head of the biceps brachii muscle [2]. It assists in the supination of elbow joint. In most of the reported cases it insert into either the tendon or the aponeurosis of biceps brachii. Insertion into both may cause clinical entrapment syndrome [8, 9].

The knowledge regarding the presence of additional head and nerve supply is important for surgeons performing arm surgeries and clinicians for selective motor nerve blocks and to treat the nerve impairments [5]. Biceps brachii has a very important role in plastic surgeries and an additional head has added value in flap surgeries [8].



**Figure 2.** The additional head lying lateral to the long and short heads of biceps brachii in the right arm. (*LH*: long head; *SH*: short head; *AH*: additional head)

**References**

- [1] Standring S, ed. *Gray's Anatomy. The Anatomical Basis of Clinical Practice*. 40th Ed., Edinburgh, Churchill & Livingstone—Elsevier. 2008; 825–826.
- [2] Rodriguez-Niedenführ M, Vázquez T, Choi D, Parkin I, Sañudo JR. Supernumerary humeral heads of the biceps brachii muscle revisited. *Clin Anat*. 2003; 16: 197–203.
- [3] Asvat R, Candler P, Sarmiento EE. High incidence of the third head of biceps brachii in South African populations. *J Anat*. 1993; 182: 101–104.
- [4] Emeka AG, Emmanuel ON. Variations of the proximal attachment of the biceps brachii muscle in a Nigerian population. *International Journal of Anatomical Variations (IJAV)*. 2009; 2: 91–92.
- [5] Rai R, Ranade AV, Prabhu LV, Pai MM, Prakash. Third head of biceps brachii in an Indian population. *Singapore Med J*. 2007; 48: 929–931.
- [6] Kumar H, Das S, Rath C. An anatomical insight into the third head of biceps brachii muscle. *Bratisl Lek Listy*. 2008; 109: 76–78.
- [7] Vijayabhaskar P, Baral P, Vaishya R, Shrestha RN. Supernumerary head of biceps brachii: A rare occurrence in the Nepalese population. *Kathmandu Univ Med J (KUMJ)*. 2008; 6: 225–227.
- [8] Mas N, Pelin C, Zagyapan R, Bahar H. Unusual relation of the median nerve with the accessory head of the biceps brachii muscle: an original case report. *Int J Morphol*. 2006; 24: 561–564.
- [9] Fogg QA, Hess BR, Rodgers KG, Ashwood N. Distal biceps brachii tendon anatomy revisited from a surgical perspective. *Clin Anat*. 2009; 22: 346–351.