The term ‘biceps brachii’: a misnomer?

S Soni¹, T Ghulyani², A Saxena¹*, NK Saraswat¹

Abstract

Introduction
There are a variety of anatomical variations which can be observed during dissection, diagnosis and surgical procedures. These variations are equally important from a clinical as well as an academic point of view. This report discusses the additional head of the biceps branchii.

Case report
We noticed the third head of biceps brachii during dissection; the head was arising from the fascia covering the brachialis muscle and getting inserted on the radial tuberosity after merging with the long and short heads of biceps.

Conclusion
The supernumerary head may have both positive and negative effects. Clinical significance lies in the fact that this additional head may cause compression of musculocutaneous nerve, median nerve and brachial artery, which are in close relation with it and produce compression symptoms.

Introduction
Double-headed biceps brachii is a powerful supinator and flexor of forearm that is innervated by the musculocutaneous nerve (Mc). The long head arises from the supraglenoid tubercle and the short head from the tip of coracoid process along with coracobrachialis. Conjoint tendon of the long and short head gets inserted on the posterior aspect of radial tuberosity¹.² It is the most variant muscle of this region with 3, 4 and even 7 supernumerary heads. These additional heads are categorized according to their site of origin as superior, infero-medial, and infero-lateral heads. As per previous reports, incidence of additional head of this muscle is 7.1% in Indians, 8% in Chinese, 10% in European whites, 12% in African blacks, 15% in Turkish, 18% in Japanese, 21.5% in South African blacks, 8.3% in South African whites and 37.5% in Colombians¹. Among the supernumerary heads of biceps, humeral head is the most frequent; however, its incidence is low in the Indian population. This case report discusses the additional head of the biceps branchii.

Case report
Asymmetric architecture in the left brachium of a male cadaver was observed during dissection curriculum for undergraduate students. Biceps was found with a bulky additional head, originating from fascia covering the upper and anteromedial aspect of brachialis. Conjoint tendon of the long and short head after, it merged with biceps tendon and attached to the posterior aspect of radial tuberosity. This head was supplied by a branch of Mc. A thin small muscular slip was also arising just below the origin of the additional head of biceps and getting fused with the inner surface of this additional head (Figure 1). Both limbs were carefully dissected and examined. No other abnormality was found. Pictorial presentation of this variation was recorded.

Discussion
Biceps brachii is known to show frequent variations. Here we found an additional head of the biceps brachii in a North Indian hilly population (Figure 2). Functionally, this variant muscle may act as a pronator of forearm irrespective of the position of the shoulder joint⁴.

* Corresponding author
Email: alok.saxna@gmail.com

¹ Department of Anatomy, Veer Chandra Singh Garhwal University Medical Science and Research Institute, Srinagar, Uttarakhand, India
² Department of Anatomy, Government Medical College, Kota, Rajasthan, India

Figure 1: The figure shows the long head (BB₁), short head (BB₂) and BB₃ of biceps brachii innervated through Mc. Note the additional muscular slip (1) getting merged with BB₃.

Figure 2: The figure depicts common tendinous insertion of BB₁, BB₂, BB₃, BB₄ radial tuberosity.

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Previous reports have revealed the fact that the third head of biceps brachii (BB₃) may take its origin from upper, middle and lower portion of humerus, but no significant variation was noticed about its tendinous insertion.⁵-⁸ A unique variation was observed by Varlekar et al., where BB₃ was observed to originate from the pectoralis major tendon. It travelled between intervals of the long and short tendon of biceps brachii and was inserted on the radial tuberosity after merging with the tendon of the other two heads.⁹

Embryologically, BB₃ is considered as a component of brachialis, supplied by Mₙ, insertion of which has been translocated from the ulna to radius.¹⁰ Prevalence of BB₃ is more in males than in females in the Indian population.⁹

Presence of the supernumerary head of biceps may enhance the function of flexion and supination of forearm. Moreover, if its size is large, it may provide more power to biceps tendon.²¹¹

**Clinical significance** lies in the fact that this additional head may cause compression of Mc, median nerve and brachial artery, which are in close relation with it and produce compression symptoms. Any variation is not apparent until it hinders the normal function of an individual. Therefore, it is worth exploring these variations from academic, diagnostic and clinical point of view. As the name implies, ‘biceps’, a Latin origin word, stands for bi (two) + ceps (stem - cipit); two headed. We believe that the term ‘biceps’ is a misnomer because it has been observed with 3, 4 and even 7 supernumerary heads. Hence, it would be inappropriate to refer to this muscle as ‘biceps’.

**References**