

A Rare Anatomical Variation of Biceps Brachii Muscle -Clinical Importance

S. Lokanadham^{1*}, N. Vinay Kumar¹, Usha Kothandaraman²¹Department of Anatomy, Government Medical College, Palakkad, Kerala, India²Professor and Head, Department of Anatomy, ESIC Medical College & PGIMSRS, Chennai, Tamilnadu, India***Corresponding author**

S. Lokanadham

Article History

Received: 23.11.2017

Accepted: 27.11.2017

Published:30.1.2018

DOI:

10.36347/sjmcr.2018.v06i01.001



Abstract: Variations in insertion of biceps brachii muscle are very rare and not reported previously unlike variations in its origin. We have found biceps brachii muscle showed a rare anatomical variation unilaterally while inserting into radial tuberosity in a 60 year old male cadaver in Department of Anatomy, Government Medical College Palakkad. The aponeurosis part of biceps brachii replaced with muscle fibers and merged with fibers of Flexor carpi ulnaris muscle and lies superficial to the neurovascular bundle in cubital fossa. The variant muscular slips superficial to neurovascular bundle in our report may leads to nerve entrapment in cubital fossa.

Keywords: Biceps brachii, flexor carpi ulnaris, variation.

INTRODUCTION

The biceps brachii muscle long head originates from the supraglenoid tubercle and its short head from the coracoid process of the scapula [1]. The main tendon of insertion formed by deep tendinous fibers originating from both heads enters the cubital fossa on its lateral aspect and is attached to the radial tuberosity [1]. Furthermore, superficial tendinous fibers of both muscle bellies form an aponeurotic sheet that reinforces the antebrachial fascia and is attached via this fascia to the dorsal border of the ulna [1, 2].

The aponeurosis is also believed to protect the neurovascular bundle on the antecubital fossa [3]. Although the variations in the origin of biceps brachii are plenty, there are a very few cases reported on the variations in the insertion of this muscle [4]. Our case report could be useful to the clinicians in understanding causes for neurovascular entrapment in cubital region.

CASE REPORT

During routine dissection for the medical undergraduates at Government Medical College, Palakkad, Kerala, we have found biceps brachii muscle showed a rare anatomical variation unilaterally while

inserting into radial tuberosity in a 60 year old male cadaver. The origins of biceps brachii muscle in both the limbs are normal and insertion to radial tuberosity in right limb showed variation whereas left inserted normally in their course. The aponeurosis part of biceps brachii replaced with muscle fibers and merged with fibers of Flexor carpi ulnaris muscle lies superficial to the neurovascular bundle in cubital fossa [Figure-1]. The flexor carpi ulnaris is normal in its distal course till its insertion. It is very rare anatomical variation related to the biceps muscle unlike the additional heads of the muscle.



Fig-1: Bicipital tendon of Biceps Brachii inserting into radial tuberosity whereas some of Muscle fibers(MS) of Biceps brachii muscle merged with fibers of Flexor carpi ulnaris muscle in cubital fossa (BB: Biceps Brachii Muscle; BT: Bicipital tendon; FCU: Flexor carpi Ulnaris; MS: muscular slips; Arrow-Neurovascular Bundle)

DISCUSSION

Embryologically, during the fourth week of intrauterine life the confined somites are individually migrating to the developing limb bud, but later several fuse to form a specific muscle which may explain the extra slips from the bicipital aponeurosis [5]. The aponeurosis or the lacertus fibrosus of biceps brachii may be doubled lead to compression of median nerve [6]. Tight or thickened lacertus fibrosus—often associated with brachialis hypertrophy [7,8,9]. Bicipital aponeurosis in its proximal part is contributed by the short head and distally it was derived from the fascial sheath over the tendon of long head of biceps [10]. A muscular tendinous slip originating from the undersurface of bicipital aponeurosis gave extensions to both pronator teres and flexor carpi radialis. The knowledge of the muscular variations, in any region, might be important for explaining the uncommon neurovascular symptoms, due to their unusual association with the neurovascular bundles in that area [11]. Paval and Mathew [12] reported a Variant biceps brachii insertion in which some of the muscle fibres formed two tendinous slips. One slip passed superficial to the brachial artery and median nerve and merged with the fascia covering the flexor carpi ulnaris and the other slip passed deep to the nerve and the vessel and attached to medial supracondylar ridge of the humerus [12]. Our report is similar to the report presented by Paval and Mathew but as we have only slip of biceps fused with flexor carpi ulnaris. Very few literatures are available in variations of Biceps brachii muscle insertion. So our report is one of the rare entity and gives better knowledge to clinicians in understanding the nerve entrapment in cubital region.

CONCLUSION

The rare entity in our report having clinical significance due to variant muscular slips from biceps brachii superficial to neurovascular bundle leads to median nerve entrapment in cubital fossa.

REFERENCES

1. Dirim B, Brouha SS, Pretterklieber ML, Wolff KS, Frank A, Pathria MN, Chung CB. Terminal bifurcation of the biceps brachii muscle and tendon: anatomic considerations and clinical implications. *American Journal of Roentgenology*. 2008 Dec; 191(6):W248-55.
2. Standring S. *Anatomy of Upper limb*. Gray's Anatomy, 40th Edn. London: Churchill Livingstone. 2008. pp 825.
3. Eames MHA, Bain GI, Fogg QA, Van Riet RP. Distal biceps tendon anatomy: a cadaveric study. *J Bone Joint Surg Am*. 2007; 89(5):1044-49.
4. Daimi SR, Siddiqui AU, Wabale RN, Gandhi KR. Additional Tendinous Insertion of Biceps Brachii: A Case Report. *Pravara Med Rev*. 2010;2(1):16-8.
5. Moore KL, Persaud TVN. *The limbs. The Developing Human: Clinically Oriented Embryology*. 5th ed. Philadelphia, Pa: WB Saunders. 1993. 375-83.
6. Lister G. *The Hand: Diagnosis and Indications*, 3rd ed. Churchill Livingstone: New York. 1993. p. 291-2.
7. Hartz CR, Linscheid RL, Gramse RR. The pronator teres syndrome: Compressive neuropathy of the median nerve. *J Bone Joint Surg Am*. 1981; 63A:885-90.

8. Martinelli P, Gabollini AS, Poppi N. Pronator syndrome due to thickened bicipital aponeurosis. *J Neurol Neurosurg Psychiatr.*1982; 45:181-2.
9. Spinner M, Spencer PS. Nerve compression lesions of the upper extremity: A clinical and experimental review. *Clin Orthop.*1974; 104:46-67.
10. Joshi SD, Yogesh AS, Mittal PS, Joshi SS. Morphology of the bicipital aponeurosis:a cadaveric study. *Folia Morphologica.* 2014; 73(1):79.
11. Bhat KMR, Kulkarni V, Gupta C. Additional muscle slips from the bicipital aponeurosis and a long communicating branch between the musculocutaneous and the median nerves. *IJAV.* 2012; 5:41-3.
12. Paval J, Mathew JG. A rare variation of the biceps brachii muscle. *Indian J Plast Surg.* 2006; 39(1):65-7.