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MORPHOLOGICAL STUDY ON ACCESSORY HEADS OF BICEPS BRACHII IN INDIAN CADAVER

Anatomy

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ABSTRACT

Accessory heads of Biceps Brachi are common in unilateral, but we found the presence of bilateral accessory Biceps Brachii combined with variation of musculocutaneous nerve and Median Nerve. Clinicians should be aware of this neuromuscular variation from the surgical and anaesthetic point of view.

KEYWORDS

Biceps brachii, Anatomical variation, Accessory heads.

INTRODUCTION:

Biceps brachii has two heads. Short head arises by a thick flattened tendon from corocoid process together along with coracobrachialis and Long head starts within the fibrous capsule of shoulder joint as a long narrow tendon , the later running from the supraglenoid tubercle of the scapula. Two tendons lead into elongated bellies closely applied which can be separated to within 7 cm of the elbow joint and get inserted into the posterior border of tuberosity of the radius. The tendon has a broad medial expansion the bicipital aponeurosis which descends medially across the brachial artery to fuse with deep fascia over the origins of flexor muscles of the forearm '(1).The knowledge of accessory heads of biceps brachii is important for teaching and clinical purposes.

MATERIAL AND METHODS :

The study was done in the Department of Anatomy B K L Walawalkar Rural Medical College, Sarwarde, Kasarwadi, Tal. Chiplun, Dist. Ratnagiri, Maharashtra, India. 32 pairs of upper superior extremities fixed in 10% formalin were dissected for undergraduate classes. Complete morphological study of muscles of front of arm was evaluated. Biceps brachi was dissected and accessory heads were studied in detail and documented and photographed.

RESULT

Amongst 64 superior extremities studied accessory heads were present in 9.37% of biceps brachii muscle. Two cadavers, one male and another female showed bilateral variation whereas two male cadavers showed unilateral variation. In the 6 upper limbs the accessory heads of biceps brachi originated from the anteromedial and anterolateral surface of humerus. In one male cadaver on right side the origin of accessory head was from the shaft of humerus in the form of small slip close to the insertion of Corocobrachalis . The insertion of the accessory head was found on the biceps tendon at the cubital fossa (Fig - 1).). On the left side in the same cadaver two accessory heads were present out of which third head was arising from median side shaft of humerus at the insertion of Corocobrachialis as a thin slip of muscle joining the tendon. A bulky fourth head was found to be arising from the deltoid tuberosity close to the insertion of deltoid muscle (Fig - 2). The fourth head was found on the biceps tendon at cubital fossa giving a few slips to Brachioradiais muscle (Fig - 3). In the very same extremity, we found communication between Median cutaneous nerve and median nerve at distal third of the arm. Median cutaneous nerve gave separate branches to all muscles of the front of arm including accessory heads and finally communicate with median nerve at distal third of the arm. In one female cadaver presence of bilateral accessory heads of biceps brachii muscle was observed. Right superior extremity showed accessory head arising from deltoid tuberosity joining the tendon at cubital fossa giving muscular slips to brachioradialis muscle (Fig - 4).

In left superior extremity third head arose from the antero- medial side, that is, just below the insertion of coracobrachialis muscle. Medial (Third head) accessory head was thin and slender.

In one male cadaver the variation was unilateral and third head originated from the anteromedial aspect of the shaft of humerus below the attachment of coracobrachialis muscle (Fig - 5). In the other male cadaver unilateral variation was found, third head arose from anterolateral aspect of shaft of humerus as a slip from brachialis muscle.

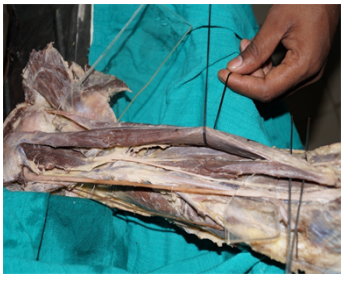

Figure 1 Three head Biceps brachii right superior extremity

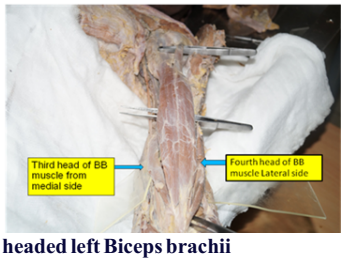

Figure 2 Four headed left Biceps brachii

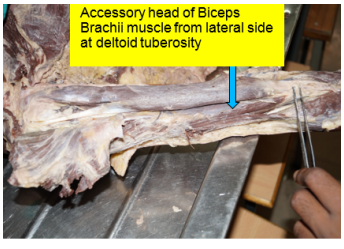

Figure 3 Fourth head of Biceps brachii on Left superior extremity

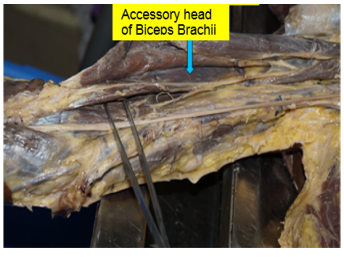

Figure 4 Third Head of Biceps Brachii muscle

Table 1 Variants of Biceps brachii

S.N.	No. of Accessory heads of biceps brachi	No. of Cases	%
1.	One accessory head	5	7.81
2.	Two accessory head	1	1.5

DISCUSSION –

Additional heads of biceps are not uncommon findings during dissection. The commonest variations are one or more heads from middle third of humerus (2). According to gray's anatomy 3rd head is present in 10% cases of arises from superomedial part of brachialis (3). As observed by Rai et al the incidence of third head of biceps was rare in Indian population and the incidence was about 7.1% (4). It was observed by kosuigi et al that additional head was present on humerus between insertion of coracobrachialis and upper part of origin of brachialis muscle and from medial intermuscular septum(5) and also few cases origin of additional heads from tendon of pectoralis major, deltoid, articular capsule and crest of greater tubercle of humerus. The 3rd head of biceps brachi to arise from humeral shaft below or in common with insertion of coracobrachialis or in common with brachialis muscle. Occasionally medial fibres arise from short head of biceps and lateral fibres from deltoid fascia thus giving a dual origin and they observed incidence of 21.5 % (6). Rodriguer et al found that supernumerary head originated from the surface of humerus between lesser tubercle and the attachments of coracobrachialis and brachialis muscle and fused muscular fibres of short head of biceps brachi muscle at its union with the long head. Accessory heads may be classified as superior, inferomedial and Inferolateral heads based on the locations, is 1.5% cases (7). And also Abu Hijleh et al found supernumerary heads from anteromedial surface of humerus, below the coracobrachialis insertion (8). Various muscular or tendinous slips have been studied connecting biceps with the lower end of humerus, ulna, radius, antebrachial fascia or neighbouring muscles. Supernumerary heads may arise from brachialis, brachioradialis, pronator teres or pectoralis major. Occassionaly a fleshy slip may arise from medial border of biceps brachii and join the intermuscular septum or medial epicondyle over the brachial artery (4). Many articles have mentioned about cluster of accessory fascicles arising from coracoid process, Pectoralis minor tendon, proximal head of humerus or articular capsule of humerus (9). Various authors have mentioned about supernumerary heads of Biceps brachii associated with neurovascular variations. Four headed biceps brachii muscle and double piercing of one of the supernumerary heads by the musculocutaneous nerve has been reported (7). In human development, the limb muscles develop by myogenic precursor cells from somatic mesoderm and also from ventral dermomyotome somite's in response to molecular signals. It has been suggested that muscle undergoes early splitting to form an accessory head of biceps (10). In the present study, accessory third head was mostly arising from the anteromedial surface of shaft of humerus. These accessory heads may cause compression of brachial artery and median nerve and neurovascular symptoms may appear Variant biceps brachii may confuse surgeon in case of fracture shaft humerus and may lead to iatrogenic injuries

CONCLUSION :

Anomalous communication between nerves of the front of the arm along with muscular variations of biceps brachii should be kept in mind by anatomist surgeons and anaesthetics. In fracture shaft Of humerus there could be difficulty in surgical dissections due to variant biceps brachii muscle

REFERENCES

1. Susan Standring, PhD, Ds. (2008). Gray's Anatom. The Anatomical Basis of Clinical Practice, 40th ed. In Churchill Livingstone.
2. Baird, R. N. (1983). Anatomy for surgeons volume III: The Back and limbs. W. Henry Hollinshead. Third edition. 270 × 185 mm. Pp. 878 + viii. Illustrated. 1982. London: Harper and Row. £56.00. British Journal of Surgery. https:// doi. org/ 10.1002/bjs.1800700941
3. Standring, S. (2005). Gray's Anatomy, 39th Edition: The Anatomical Basis of Clinical Practice. American Journal of Neuroradiology.
4. Rai, R., Ranade, A. V., Prabhu, L. V., Pai, M. M., & Prakash. (2007). Third head of biceps brachii in an Indian population. Singapore Medical Journal.
5. Kosugi, K., Shibata, S., & Yamashita, H. (1992). Supernumerary head of biceps brachii and branching pattern of the musculocutaneus nerve in Japanese. Surgical and Radiologic Anatomy. https://doi.org/10.1007/BF01794898
6. Asvat, R., Candler, P., & Sarmiento, E. E. (1993). High incidence of the third head of biceps brachii in South African populations. Journal of Anatomy.
7. Vázquez, T., Rodríguez-Niedenführ, M., Parkin, I., & Sañudo, J. R. (2003). A rare case of a four-headed biceps brachii muscle with a double piercing by the musculocutaneous nerve. Surgical and Radiologic Anatomy. https://doi.org/10.1007/s00276-003-0146-6
8. Abu-Hijleh, M. F. (2005). Three-headed biceps brachii muscle associated with duplicated musculocutaneous nerve. Clinical Anatomy. https://doi.org/10.1002/ca.20100
9. Sargon, M. F., Tuncali, D., & Çelik, H. (1996). An unusual origin for the accessory head of biceps brachii muscle. Clinical Anatomy. https://doi.org/10.1002/(sici)1098-2353(1996)9:3<160::aid-ca4>3.0.co;2-k
10. Keith L. Moore, Mark G. Torchia, T. V. N. P. (2016). Developing Human- Clinically Oriented Embryolog. The Developing Human.