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CASE STUDY

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Third Head of Biceps Brachii – A Case Report

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ABSTRACT

The biceps brachii is the muscle of the flexor compartment of the arm. The muscle takes its origin by two heads, short and long head. The present paper is to document the variation in the origin of biceps brachii which the authors encountered during the routine dissection. In the routine postgraduate dissection it was found that the variation in the origin pattern of the biceps brachii muscle, along with the normal two heads (short and long) the third head was seen which took origin from the shaft of the humerus. The knowledge of such additional head of the biceps brachii will enhance the preoperative evaluation, facilitate the surgical intervention and prevent the post operative complications.

KEYWORDS

Biceps Brachii, Third Head, Humerus, Radial Tuberosity

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INTRODUCTION

The biceps brachii is one among the muscles of the flexor compartment of the arm. The muscle takes origin from two heads namely short and long head. The short head takes its origin from the tip of the corocoid process of the scapula along with coraco-brachialis; whereas the long head takes its origin from the supraglenoid tubercle of the scapula[1]. The long head initially lie within the capsule of the shoulderjoint and curves above the head of the humerus enclosed by a tubular synovial sheath. It emerges out of the joint cavity by passing through the bicipital grove beneath the transverse ligament[1]. Both the heads expand into fusiform bellies and unite with each other at a distance of about 7cm above the elbow joint[2] (Fig1). It continues as a flat tendon little above the elbow and is divided into two parts a tendinous part and an aponeuroticpart (bicipitalaponeurosis). The tendinous part inserts into the radial tuberosity. The aponeurotic part descends downwards and

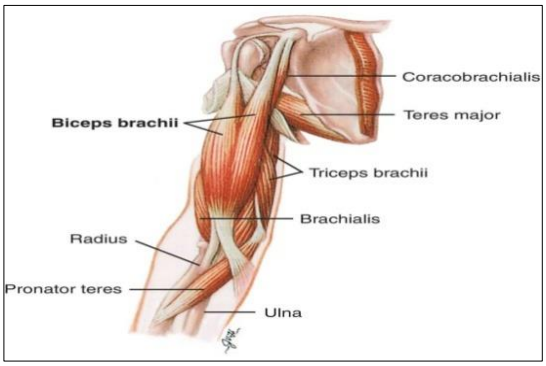

Fig 1 Shows normal anatomy of biceps brachii

medially across the brachial artery and gets fuse with the deep fascia of fore arm[1, 3].

The third head of biceps brachii originates from the supero-medial part of the brachialis muscle and gets attached to the tendon of insertion on its medial side,the incidence of such variation is reported as 10%[3]. Theknowledge of these variations is of a great clinicalsignificance for anesthetics and surgeons during selective nerve blocks and surgical interventions of the arm. As well the knowledge of such variation is significant to the clinicians and neurologistswhile treating nerve impairments.

CASE REPORT

In the routine dissection for the post graduate students of a male cadaver of age 85 years authors found variation in the origin of the biceps brachii muscle. The muscle showed the third head which was getting its origin from the middle of the anteromedial surface of the shaft of the humerus at the level of the insertion of deltoid muscle. The third head later fused with the under surface of the belly of the long head of the biceps brachii. Beside the short and long heads doesn't show any variations. Further the muscle showed the normal course and insertion pattern (Fig 2).

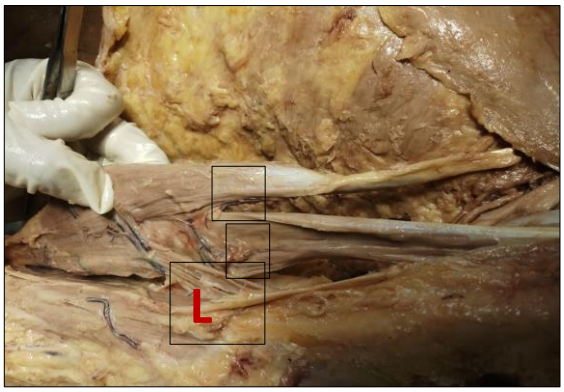

Fig 2 Third head of Biceps brachii. SH- short head, LH- long head, TH- third head

DISCUSSION

Variations in the biceps brachii are very common. The muscle may receive fascicules from adjacent musclelike coracobrachialis, pectoralis minor; from the bones like coracoidprocess, proximal part of the humerus; or even from the articular capsule[4]. Among them the variation in which the additional head arising from the proximal part of the humerus is termed as third head of humeral head[5, 6, 7, & 8]. According to presented studies, this anomaly varies in different population[7, 8, 9, &10]. The incidence of such variation in Indian population is 3.3%[11]. However, as the standard textbooks mention, the incidence of this variation is only 10%, where the third head arises from the supero-medial part of brachialis[3]. The table gives detail regarding few incidence of such variation.

In addition to the third head we have also noticed the musculo-cutaneus nerve which courses between the long head and the third head of the biceps brachii. This course of the nerve is clinically significant as the nerve is subjected to compression by the third head. The knowledge of this variation is important for clinicians during the diagnosis of the nerve impairment and to the surgeons during the surgical intervention of the arm. It is observed that any nerve having an abnormal origin, course and distribution may be prone to accidental injuries and impairment[12].

Presence of an additional head of a muscle might increase its kinematics. The biceps brachii is a prime flexor of the elbow joint in addition to the brachialisand also it assists the supination of forearm. An additional head of biceps brachii may increase the power of flexion and supination of elbow joint.

Probable causes:

Testut described this variation of the third head of biceps brachii as a portion of the brachialismuscle supplied by the musculo cutaneous nerve, in which the muscle instead of getting insertedintothe ulna gets translocated into the radius[13]. However, Nayak et al opined that the presence of the additional heads of the biceps brachii musclemight be influenced by the circulatory factors during the time of formation of brachial plexus[14]. Evolutionally, the presence of the third

head of the bicepsmuscle in humans might represent the remnantof long head of the coracobrachialis of someother primates[15].

CONCLUSION

The biceps brachii is one among the prime flexor of elbow located in the anterior compartment of arm. In 10% individuals the third head of biceps brachii is found. The knowledge of such variationis helpful for surgical intervention within the arm and improves postoperative outcomes and will also facilitate the management of nerve impairments.

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