

Case Report

ACCESSORY SUBSCAPULARIS MUSCLE COMPRESSING POSTERIOR DIVISION OF UPPER TRUNK: A RARE PRESENTATION

Vinay Sharma¹, C S Ramesh Babu¹

1. Department of Anatomy, Muzaffarnagar Medical College, Muzaffarnagar, India

ABSTRACT

Presence of additional or accessory muscles near the axilla can lead to compression of vital structures of the axilla. Opposite conventional thoughts, it seems that the subscapularis muscle (SM) is the most variable muscle of the rotator cuff group. Accessory Subscapularis muscle is one of the rare variants of the Subscapularis muscle. Presence of this variant (ASsm) can cause abnormal clinical presentation. During routine dissection of the axilla in a female cadaver in the Department of Anatomy, Muzaffarnagar Medical College, we found an additional slip or accessory subscapularis muscle, arising from the anterolateral part of the Subscapularis and running upward and medially, finally attached to the coracoid process (palpated tip). During its course, it passed through the Brachial plexus and caused compression of the posterior division of the Upper trunk. This type of accessory slip or accessory subscapular muscle can cause compression neuropathy, or this accessory slip can be used during the repair of a ruptured Subscapularis or any other adjacent muscle.

Keywords: Accessory Subscapularis Muscle, Rotator Cuff Variants, Brachial Plexus Compression

INTRODUCTION

The subscapularis, forming the anterior part of the rotator cuff of the shoulder, is a multipennate muscle causing internal rotation of the shoulder joint [1]. Contrary to the belief that the subscapularis muscle was devoid of

variation (Pires et al., 2017), the subscapularis gained a reputation for its variations in terms of its number of bellies, tendon, and insertion or communication with nearby musculature. One of the rare variations of the Subscapularis muscle (Ssm) is the presence of Accessory Subscapularis

Address for Correspondence:

Dr. Vinay Sharma, Professor, Department of Anatomy, Muzaffarnagar Medical College, Muzaffarnagar, India
Email: vinay_sharma1979@yahoo.com Mob:

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shoulder region such as the lesser tuberosity, shoulder joint capsule, or fusion with nearby musculature [3]. The presence of ASsM is clinically important because the muscle fibers of ASsM can cause compression of neurovascular structures in the axilla, depending especially on its mode of insertion. It may cause clinical presentations resembling quadrangular space syndrome, making the presence of ASsM and its study clinically relevant.

OBSERVATIONS

During routine dissection of the left axilla in a female cadaver for medical undergraduate teaching according to the given protocol at the Anatomy Department of Muzaffarnagar Medical College, we noticed the presence of an accessory slip of SsM. A small muscle belly bridging in front of the posterior division of the upper trunk was found. On further tracing, these fibers were arising from a tendinous origin from the anterolateral aspect of the Subscapularis, and distally, ASsM was inserted into the coracoid process in the form of muscular fibers. To fully display ASsM, the middle third of the clavicle was resected (Fig. 1). In this course, the upper part of ASsM was crossing the posterior division of the upper trunk.

DISCUSSION

Musculature around the shoulder joint and in the axilla is full of variations. Kameda [4] noticed an additional muscle in 10 out of 380

upper limbs (2.6%) that may cause compression of the nearby neurovascular bundle. The Subscapularis, one of the most important muscles contributing to the Rotator Cuff, is well known for its variations in terms of its origin, number of bellies, and their insertions at different points near the shoulder joint.

Zielinska et al. [5] observed 66 specimens of the Subscapularis and proposed a classification and categorizing the subscapularis into 9 types based upon the number of bellies of the subscapularis, its tendon, and insertion. With this classification of the subscapularis, authors consider the presence of ASsM and suggest that during dissection of the Axilla attention must be paid during clearing of Fascia and cleaning of the long head of the bicep brachii to avoid the removal of any Accessory Subscapularis muscle (A.S.M.) – A rare variation of the Subscapularis.

In the present case, ASsM originated from the anterolateral aspect of the scapula in a usual pattern as described by authors reported ASsM Zielinska et al. [6], and Yoshinaga et al. [7]. Usually, the intermediate belly is fleshy and the point of insertion frequently varies.

In most cases, it is inserted into the lesser tuberosity [5]. Yoshinaga et al. [7] reported ASsM in which the tendinous insertion was fused with the capsule of the shoulder joint.

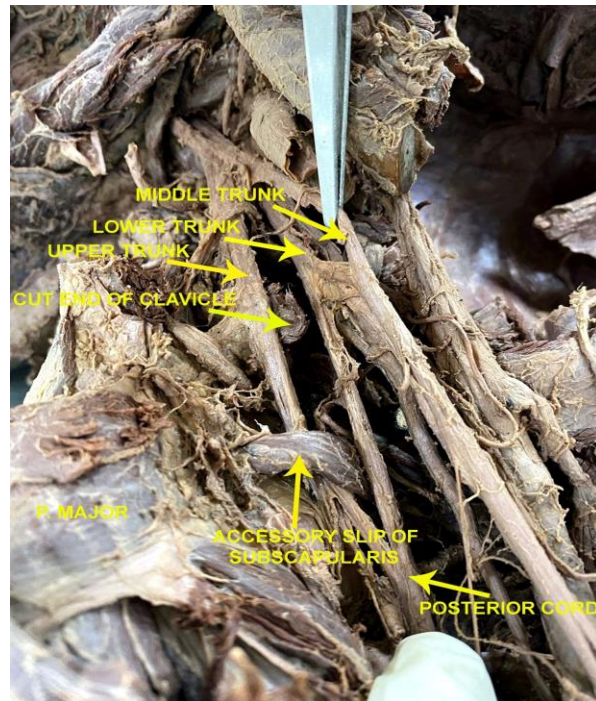


Fig. 1. Case of an accessory slip of the Subscapularis muscle (ASsM)

Kellam et al. [8] reported this part of the muscle fused with another muscle such as the latissimus dorsi or teres major. MacAlister [9] defined two types of ASsM: a subscapulo-capsularis muscle and a subscapulo-humeral muscle. In the present case, ASsM is surprisingly inserted in the form of muscular cylindrical fibers into the coracoid process of the scapula, and this type of variation of the insertion of ASsM is seldom reported. Before insertion into the coracoid process, this muscle passed through the Brachial plexus and caused compression of the posterior division of the Upper trunk.

Due to this variation in insertion of the ASsM, it can cause compression of neurovascular structure in the Axillary region, especially the posterior cord and related structures. Krause

and Youdas [10] reported ASsM associated with quadrilateral space syndrome. Zielinska et al. [5] also reported the origin of ASsM by two tendinous heads, one from Subscapularis and one from Teres major, and division into four slips at its second, third, and fourth slips of which were inserted into the base of the coracoid process. This type of insertion causes the compression of the posterior cord.

The author claimed that this is the first reported case of ASsM where the insertion of the point of insertion is the coracoid process; that means the present case can be considered the second case in this sequence where Accessory Subscapularis muscle is inserted into the coracoid process. Insertion of ASsM into the coracoid process is itself a rare variety of this muscle, and probably

chances of compression of the posterior cord, its forming divisions, or branches increases in this type of ASsM because the direction of this accessory muscle moves forward, and that may present with the weakness of musculature around the shoulder joint or pain and numbness in a specific region.

Mann et al. [11] claimed by meta-analysis of 46 studies in 2166 shoulders, the pooled prevalence of accessory Subscapular Muscle as high as 24.6%. Conventional thinking was that the SsM is formed after the ninth week of intrauterine development as a muscle mass is formed and differentiates itself to form the latissimus dorsi, teres major, and subscapularis muscles sequentially may be the inferior portion of the SM is detached, in order to form the ASsM incidentally.

Theory is replaced by a new concept that states that those muscles which are derived from the dorsal muscle mass of the upper limb bud, at the fifth week of development, when myogenic precursors start migrating to form large myoblasts condensations into dorsal and ventral, which will give origin to the muscles of the dorsal and ventral aspect of the limb bud, respectively.

CONCLUSION

The subscapularis muscle, one of the chief members of the rotator cuff, is known for its variations, and Accessory Subscapularis

Muscle (ASsM), also known as Subscapularis secundus, one of the rare variations of the subscapularis, may be inserted into the capsule of the shoulder joint, lesser tuberosity, and recently reported in the coracoid process. This kind of ASsM can cause compression of the axillary nerve structure related to the posterior cord or neurovascular bundles, leading to the weakness of nearby structure or brachial plexus entrapment neuropathy or leading to quadrangular space syndrome.

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