

Case Report

## Accessory Pectoralis Muscle Intervening Between Pectoralis Major and Minor Muscles - A Case Report

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Received: 07/12/2013

Revised: 06/01/2014

Accepted: 13/01/2014

### ABSTRACT

Pectoral region is known to show the presence of accessory muscles. Functionally these muscles are regarded as insignificant, but their presence sometime causes confusions in the interpretation of radiologic procedures. One such anomalous accessory pectoralis muscle we would like to report here. This muscle was found between pectoralis major and minor muscles of left pectoral region, separated from them by a thin layer of fascia. It originated from the outer surface of left 4<sup>th</sup> rib and upper aspect of its costochondral junction. It fused with the deeper fibers of pectoralis major muscle near its insertion. Existence of such accessory muscles is rarely noted during diagnostic imaging techniques, prior knowledge of its occurrence is important for surgeons to achieve suitable dissection planes during surgery of the chest wall.

**Key words:** Accessory pectoralis, sternalis, pectoralis quartus, pectoralis intermedius

### INTRODUCTION

In normal description pectoralis major and pectoralis minor contribute to the formation of the chest wall. The pectoralis major muscle is a thick triangular muscle that usually arises from the medial half of the clavicle, the sternum, and the first 6 costal cartilages. From these origins it combines to form a tendon that inserts to the lateral lip of bicipital groove of the humerus. The pectoralis minor is a thin muscle lying deep to the major; arises from upper margins of outer surfaces of 3<sup>rd</sup> to 5<sup>th</sup> ribs near their costal cartilages and inserted into medial border of upper surface of coracoid process as a flat tendon (Standing et al, 2005). Both the muscles are innervated by the medial

and lateral pectoral nerves of brachial plexus.

Frequent variations pertaining to pectoral region includes axillary arch of Langer in which a slip originating from the anterior border of latissimus dorsi and inserting into the biceps fascia. Slightly variant form of such muscle but arising from pectoralis major itself and similar insertion is regarded as chondrohumeralis (Lama et al, 2010). Presence of this accessory slip may compress the axillary neurovascular structures leading to associated clinical complications. At times, there may be accessory muscular slips that lie on the anterior thoracic wall with or without causing clinical complications. In the

present case we are reporting an accessory pectoral muscle intervening between pectoralis major and minor muscles with atypical attachments makes it unique among other similar accessory muscles reported in the literature.

## CASE REPORT

During routine dissection of pectoral region for medical undergraduate students, we observed an accessory slender muscular slip lying deep to pectoralis major muscle and superficial to pectoralis minor muscle. A thin layer of fascia separated this muscle. It was separated from pectoralis minor and major muscles by a thin layer of fascia. It originated from the outer surface of left 4<sup>th</sup> rib and upper aspect of left 4<sup>th</sup> costochondral junction (Figure). As this muscle took its origin proximal to the origin of pectoralis minor on the 4<sup>th</sup> rib, its origin was deep to pectoralis major muscle. However, as it extended obliquely upwards and laterally it intervened between pectoralis major and minor muscles before fuse with the deep surface of pectoralis major muscle distally. This unilateral accessory muscle was about 15 cm long and encountered on left anterior chest wall of an adult male cadaver aged about 60 years.

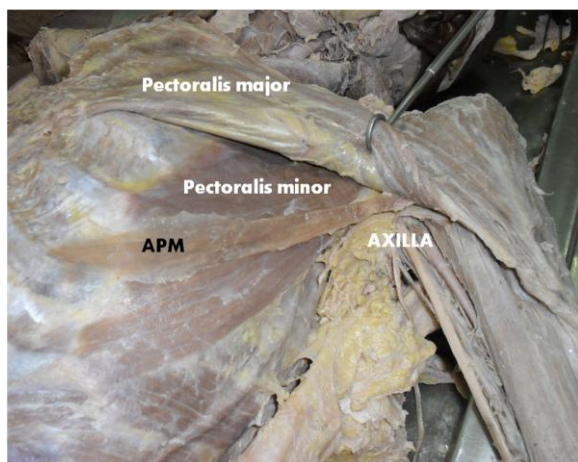


Figure 1: Dissection of left pectoral region showing the presence of accessory pectoralis muscle (APM) originating from left 4<sup>th</sup> rib and blending with the pectoralis major muscle (reflected upwards).

## DISCUSSION

Several cases of additional muscle in the pectoral region have been reported. These include the following: a sternalis muscle, which runs parallel to the sternum (Loukas et al, 2004); a pectoralis quartus muscle which arises from the rectus sheath (Bonastre et al, 2002), runs parallel to the pectoralis major muscle and inserts into the tendon of the pectoralis major.

Nonexistence of pectoralis major muscle either as an isolated anomaly or in association with congenital syndromes as classically referred to Poland syndrome was reported in the literature in 1962 (Katherine et al, 2012). However, patients diagnosed as Poland syndrome with normal pectoralis musculature but with malformed breast structure has been reported by Spear et al (2004). Such case has been described as anterior thoracic hypoplasia. A rare case of agenesis pectoral muscle associated with malformation of the ear was reported by Cilingir et al (2004)

Accessory pectoral muscles exhibit their presence in two forms. Either they are present anterior to pectoralis major as superficial muscles of pectoral region, or intervene between pectoralis major and minor muscles. Accessory pectoral muscles of superficial group is often termed as sternalis muscle which runs vertically, parallel and lateral to the sternum, anterior to pectoralis major. This accessory muscle is sometime regarded as the variant form of pectoralis major muscle when it gets its nerve supply from pectoral nerve. Rarely, it is innervated by intercostal nerves. In such condition it is considered as an aberrant abdominal muscle (O'Neil & Folan, 1998).

Accessory pectoral muscles intervening between pectoralis major and minor muscles are of several varieties. Pectoralis minimus, an anomalous slip, lie deep to pectoralis major and superomedial to pectoralis minor. Presence of this muscle

usually causes vascular symptoms with the hyperextension of arm. This is because thoracoacromial vessels lie deep to this variant slip of muscle (Rai et al, 2008). Pectoralis quartus, exists as a long flat tendon originating from costochondral junction of 5<sup>th</sup> and 6<sup>th</sup> rib pass under the pectoralis major to insert into the inter-tubercular groove of the humerus (Arıcan et al, 2006). Pectoralis intermedius in contrary to this arises from 3<sup>rd</sup> and 4<sup>th</sup> ribs and merges with the tendon of short head of biceps brachii (Arıcan et al, 2006). Loukas et al (2006) reported an anomalous pectoralis major lying deep to abdominal head of pectoralis major taking its origin from serratus anterior with normal pattern of insertion.

We report here an accessory pectoralis muscle of this category but differ from what has been described above. Because it originated from lower part of the outer surface of 4<sup>th</sup> rib about 3-4cm distal to costochondral junction and fused with the deep surface of pectoralis major muscle near its insertion. The origin of this variant muscle is similar to pectoralis minor but insertion to pectoralis major is the rare case of all its variant forms. Presence of such anomalous muscle slips often causes clinical problem like misinterpretation for a mass or tumor during CT or MRI (Loukas et al, 2004). Since there are no reliable clinical tests to ascertain the presence of abnormal or accessory pectoralis muscles and these anomalous muscle slips are rarely noted on radiologic procedures, it is therefore of paramount importance for the surgeons to be familiar with possibility of such accessory muscles before planning the surgical procedures of the chest wall (Pinhal et al, 2011).

## CONCLUSION

Presence of accessory pectoralis muscle being reported here may be

asymptomatic but its presence might be encountered during certain clinical approaches. As these muscular variations are rarely noted during diagnostic imaging techniques, prior knowledge of its presence is important for surgeons to achieve suitable dissection planes during surgery of the chest wall.

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How to cite this article: Patil J, Kumar N, Swamy RS et. al. Accessory pectoralis muscle intervening between pectoralis major and minor muscles - a case report. *Int J Health Sci Res.* 2014;4(2):198-201.

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