

UNUSUAL BILATERAL PROXIMAL ATTACHMENTS OF THE PECTORALIS MINOR MUSCLE: A CASE REPORT ON CADAVER DISSECTION

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ABSTRACT

The pectoralis minor muscle is one of the muscles connecting the upper limb to the thoracic wall. It is a triangular muscle lying in deep relation to the pectoralis major. This is a case report on a possible variation in the attachment of the pectoralis minor muscle. During normal routine dissection of a male cadaver, four skin incisions were made on the anterior chest wall and skin reflected to expose the pectoral muscles. The pectoralis major muscle was cut and reflected to expose the pectoralis minor muscle. The pectoralis minor muscle thus exposed, showed a variant proximal attachment on the 6th rib on both sides in addition to the outer surfaces of the 3rd, 4th and 5th ribs near their costal cartilages. The distal attachment was on the coracoid process of the scapula. This report has established a variation in the attachment of the proximal part of the pectoralis minor muscle. This information will be of immense benefit to the anatomists and clinicians during the examination of the anterior chest wall.

KEYWORDS: Variant anatomy, Pectoralis minor and Cadaver.

INTRODUCTION

The pectoralis minor muscle is one of the muscles connecting the upper limb with the thoracic wall. It is a thin triangular muscle lying posterior to the pectoralis major muscle (Williams *et al.*, 1995). The pectoralis minor arises from the upper margin of the anterior surface of the 3rd, 4th and 5th ribs near their cartilages. It also arises from the intervening fascia covering external intercostal muscles. The pectoralis minor muscle is inserted on the medial border and upper surfaces of the coracoid process (Chaurasia, 2013).

The pectoralis minor muscle is related anteriorly to the pectoralis major muscle, lateral pectoral nerve and to the pectoral branches of the thoracoacromial artery (Williams *et al.*, 1995). Posteriorly, the muscle is related to the ribs, external intercostal, serratus anterior, the axilla, axillary vessels, lymphatics and brachial plexus. The upper part of the pectoralis minor is separated from the clavicle by a triangular gap filled by the clavipectoral fascia. The lower border is related to the lateral thoracic artery (Williams *et al.*, 1995). The pectoralis minor muscle is innervated by the lateral and medial pectoral nerve (Chaurasia, 2013). The muscle assists the serratus anterior muscle in the protraction of the scapula, keeping the anterior angle in opposite with the chest wall as the vertebrae border is drawn forwards by the serratus anterior (Sinatamby, 2006). The blood supply to the

muscle is via the pectoral and deltoid branch of the thoracoacromial artery (Moore *et al.*, 2010).

Variations in the attachment of the pectoralis minor, has been reported by different authors. Sinha *et al.*, 2014 and David *et al.*, 2015 have reported a variation in which pectoralis minor took origin from ribs 2nd -4th ribs on both sides. They also reported a presentation of a musculotendinous slip measuring 21cm arising from 5th and 6th ribs on the left side. Clavicular insertion of the pectoralis minor has been reported by Taylor, 1898. In a routine cadaveric dissection, Anil *et al.*, 2016 reported a variant origin of pectoralis minor from the 2nd to 5th ribs.

Shoulder stiffness has been described to be caused by the ectopic insertion of the Pectoralis minor over supraspinatus tendon by Gregory *et al.*, 2008. Abnormal insertion of the pectoralis minor is common on the coracohumeral ligament Uzel *et al.*, 2008 and on the glenohumeral joint Cheong *et al.*, 2014. An ultrasound examination of the shoulder revealed an abnormal insertion in 9.57% shoulders.

In addition to the variants of the pectoralis minor muscle, supernumerary or accessory muscles that originate on the anterior thorax and insert on the bones, ligaments, and tendons that comprise the shoulder has been recorded (Wood, 1867; Testut, 1884; Le Double, 1897; Bannur *et*

al., 2013; Hardy and Fabrizio 2009 and Del and Vasquez, 2009).

CASE REPORT

Four skin incisions; on the sternum, the clavicle, around the breast and connecting the breast with the arm in that order were made on the pectoral region of a male cadaver using a scalpel to expose the muscles of the pectoral region. A cut was then made across the clavicular head of the pectoralis major muscle and was reflected towards its insertion. The remainder of the muscle was cut 5cm from the sternum and its parts

reflected medially and laterally. Pectoralis minor muscle was then exposed. The clavipectoral fascia was removed to have a clearer view on the pectoralis minor muscle and its attachments defined (Romanes, 2012). This process was repeated on the opposite side. The pectoralis minor muscle thus exposed showed a variant proximal attachment on the 6th rib on both sides in addition to the outer surfaces of the 3rd, 4th and 5th ribs near their costal cartilages as indicated on figures A and B. The distal attachment was on the coracoid process of the scapula as is usually reported.

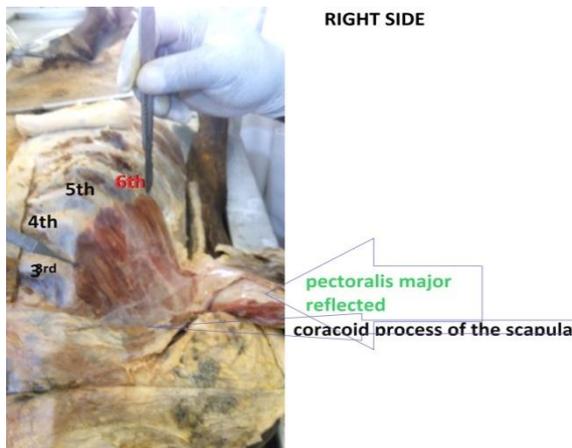


FIGURE A

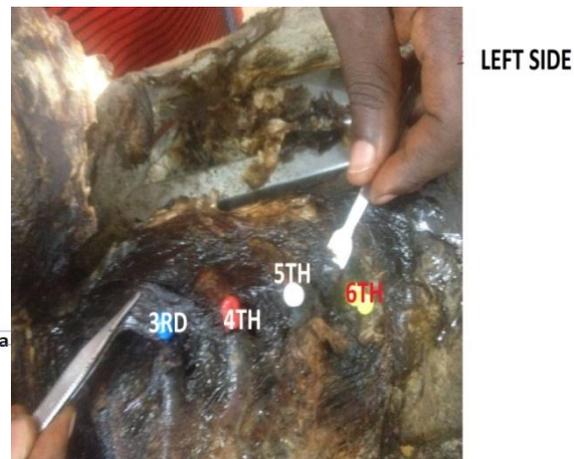


FIGURE B

DISCUSSION

The pectoralis minor muscle as one of the muscles connecting the upper limb to the anterior chest wall helps in drawing the scapula forwards. In this report the pectoralis minor was found to arise from the 3rd to 6th ribs, suggesting that it could elevate the 3rd to 6th ribs in the living. This report is similar to earlier report by Anil *et al.*, 2016 who reported a variant proximal attachment from the 2nd to 5th ribs. However in the case of Anil *et al.*, 2016, only the right side muscle was reported contrary to the bilateral report in this present study. Bilateral variant was reported by David *et al.*, 2015. This is in tandem with this report in that, the pectoralis minor muscle on both sides extended its proximal attachments to the 6th rib. In their report a musculotendinous strand was inserted to the fascia of the coracobrachialis muscle with its nerve supply derived from the medial pectoral nerve (C5, C6, and C7).

CONCLUSION

The importance of the variation in the proximal attachment of the pectoralis minor muscle is enormous. It is therefore useful to the anatomists, clinicians and the radiologists. This is to help them in any situation that may warrant the opening and examination of the anterior chest wall.

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