



The bilateral additional origin of pectoralis major muscle: A case report

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Abstract

Introduction

In the routine dissection of pectoral region of upper limb anatomy, an additional slip of pectoralis major was observed. The origin of the extra slip was from 6th rib and the costal cartilage. The fibers of the slip were directed upwards and medially and joined with the deep fibers of pectoralis major and finally inserted to the lateral lip of intertubercular sulcus. The nerve supply was similar to that of pectoralis major. Earlier studies named the extra slip of pectoralis major as costohumeralis, where the origin was from the 6th rib and the costal cartilage. However, the insertion of the extra slip was found to be varying. According to the literature review, the slip runs either in conjunction with the pectoralis major or runs as a separate slip. Variations in the muscular fibers may not be symptomatic but are of academic interest. If symptomatic may be associated be altered kinetics of the joints which influences the movements of the joint or nerve entrapment.

Conclusion

In the present study, the extra origin of pectoralis major, was observed to asymptomatic and could not be associated with any clinical application, but is of academic interest.

Introduction

Variations are quite common in different regions of anatomy. Upper limb anatomy generally shows numerous variations with reference to brachial plexus or the individual nerves, where different nerves share the roots of origin. Even though, muscular variations are less common, reports on extra origin or deficient origin of muscle and variable positions of insertion are being reported. The muscular variations, most of time, are asymptomatic and sometimes are symptomatic. Symptomatic conditions may associate with soft tissue tumors, which are difficult to differentiate accurately. The pectoral muscles show extremely rare muscular variations such as chondroepitrochlearis, costoepitrochlearis or costohumeralis that extends from costal cartilage or from the ribs. The appropriate insertion of these muscles was reported to be variable. The studies that are reported on these muscular variations indicated that the muscle may be

inserted to different parts of the humerus such as medial epicondyle or medial inter muscular septa of the humerus. In the present case, we observed a muscular slip that originated from 6th rib near the costochondral junction, ran along the inferior margin of the pectoralis major, continued as anterior fold of axilla and got further joined with abdominal fibers and finally inserted as same classical pattern. These variations carry considerable morphological significance. These muscular variations may be the analogs of pectoral muscle extensions in lower mammals.

Case Report

During the routine dissection schedule for 1st year MBBS graduates, in a female cadaver of unknown age and medical history, which was obtained for the teaching and research work, the skin, superficial fascia and deep fascia of pectoral region were dissected as per the guidelines of Cunningham's manual of human anatomy. No specific pathological conditions are observed in the cadaver. The pectoral fascia, which forms the deep fascia of the pectoral region, was carefully removed. While observing the origin of the muscle, on left side, 2.5 cm width muscle strip was identified originating from the 6th rib. The length of muscle strip was 6 cm, continued with the inferior margin of pectoralis major. On the right side, the length of muscle strip was 4 cm, width was 1cm. On the left side, the muscle strip was thick and prominent, whereas on the right, it was thin and not prominent. On both the sides, the muscle strip was directed upward and backwards, continued along the inferior border of pectoralis major. At the inferior border, the fibers joined with abdominal fibers and inserted as the same classical pattern (Figure 1). The study does not have any financial support from any organization; however, there was consent from the management to report the findings.

Discussion

The pectoral muscles, develop from primitive muscle mass, constituting, the upper limb, derived from 5th to 7th cervical myotomes, during 5th week of intra uterine life. A combination of migration, fusion and apoptosis gives the final shape ¹. It was opined that abdominal origin of pectoralis major was considered as derivative of panniculus carnosus. The abdominal portion may be fused with rectus abdominis or with external oblique. Sometimes, a slip from pectoralis major extends to biceps, pectoralis minor, coracoid process, capsule of the shoulder joint or the brachial fascia ². In 12-20% of the bodies, a muscular strip, costoepitrochlearis, chondroepitrochlearis or chondrohumeralis has been described arising from one

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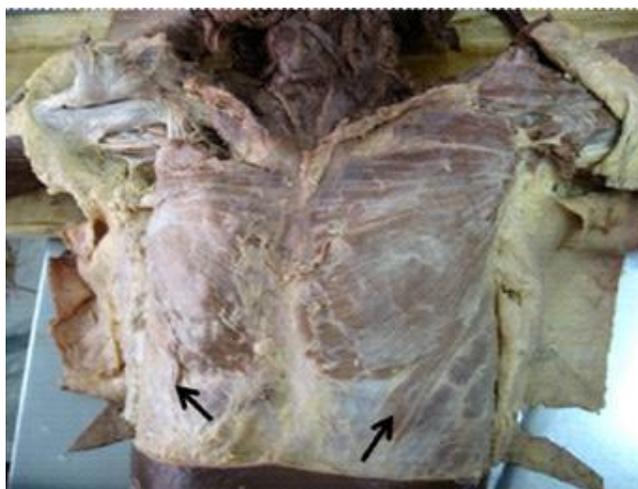


Figure 1: Photograph showing the extra origin of pectoralis major muscle. Arrows indicate the right and left origin. The right strip of muscle is thin, where as the left one is thick and prominent.

or more ribs, crosses the axilla, attaches to medial intermuscular septum or to the medial epicondyle of the humerus³. Knowledge of these anatomical variations is of important in the surgical interventions of axillary and head and neck reconstructive surgeries⁴. Variability in the musculature pattern in the pectoral region is reported in some of the earlier studies. The pectoralis major slip that originates from aponeurosis of external oblique abdominis may be sometimes absent. The costal attachments, the extent of clavicular part may vary. Sometimes, the muscles on either side may decussate and join with the opposite or sometimes, the muscle may form a continuous sheet from rectus abdominis, pectoralis major and sternocleidomastoid indicating the sternalis muscle formation⁵. In the present case, the origin was similar to earlier reported variable observations that are from the 6th rib and the costal cartilage, but the insertion was directly with the abdominal fibers which further inserted to lateral lip of intertubercular sulcus. Unilateral presence of costohumeralis in a 66 year old male cadaver, which originated from 6th rib, near the costochondral junction, coursed along the lower border of pectoralis major and got inserted to medial epicondyle of humerus⁶. Unilateral presence of epitrochlearis muscle was reported in a Indian cadaver⁷. Vasculaitiy and innervations in chondroepitrochlearis was also reported in a Indian cadaver⁸. In the present study, no variable vascular supply and nerve supply was observed for the strip muscle. In comparison with the previous observations, the difference that was observed was at the point of insertion, where, the extra slip can called as thoracohumeralis muscular flap.

Conclusion

Familiarity on the anatomic variations of pectoral musculature is of utmost importance and to proceed for a definitive dissection plane during surgery of chest wall.

The variations may be advantageous for cosmetic reconstructive surgeries and radiological anatomy.

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