

Sternalis Muscle

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ABSTRACT

Sternalis Muscle is a rare entity occasionally found in the anterior thoracic wall. It's presence may create confusion in the diagnosis of chest wall and breast neoplasms. In the present case, an unilateral sternalis muscle was discovered during routine cadaveric dissection. The case is reported here and its clinical significance is discussed in detail.

KEY WORDS: Sternalis, Manubrium, Costal Cartilage

Case Report

During routine dissection at the Department of Anatomy, Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry one unilateral sternalis muscle was encountered in a male cadaver.

The muscle was strap like, flattened, lying superficial to pectoral fascia and pectoralis major muscle. It's length was 16 cms and breadth was 1cm. The muscle tendon took origin from manubrium sterni in continuation with sternal

origin of right sternocleidomastoid muscle, and upper part of pectoralis major muscle. The muscle passed downwards, crossed the midline obliquely at the level of 2nd and 3rd costal cartilage and inserted on 6th to 7th costal cartilages.

The muscle was supplied by intercostal nerves

Discussion

The unilateral sternalis muscle has been reported to be found in 4.5 percent of subjects whereas bilateral presence is reported in less than 1.7 percent of the subjects [2]. Siveria D et al have found presence of sternalis muscle in two among 102 cadavers during a study and one was taking origin from manubrium and other from body of sternum, and they were inserted on superior part of rectus abdominis and base of xiphoid process respectively [3]. Athansios R et al found bilateral sternalis in paramedian positions which were inserted in external oblique aponeurosis and 10th to 12th

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costal cartilages[4]. The embryological origin of sternalis muscle is considered to be from hypaxial myotome /dermatomes from which the ventral and lateral body wall muscles of thorax and abdomen are developed. It can also originate from adjacent muscles or their blastems such as sternocleidomastoid, rectus abdominis and panniculus carnosus muscle sheet[5]. According to some authors the muscle develops either from rectus abdominis or from pectoralis major due to a defect in muscle patterning. The defective precursor migration of the prepectoral mass giving rise to pectoralis major and minor muscle may also contribute to sternalis muscle development and mechanical disturbances may lead to atypical clockwise rotation of the muscle fibers[6]. O'Neill and Follan Curran found that in 55 percent of the cases the muscle was innervated by external and internal thoracic nerves and in 43 percent of the cases it was supplied by the intercostal nerves and in rest of the cases it was supplied by both the nerves[5].

According to the classification of sternalis muscles by L Jevlev et al [1], this case can be classified as type I-3 .The action of sternalis muscle is not well known. It may have some role in shoulder joint movement, or accessory role in chest wall elevation [2].

Although its existence has been described for many years, many medical students and physicians are unfamiliar with sternalis muscle variants due to insufficient references in standard medical textbooks [7]. The ignorance about the sternalis muscle may lead to diagnostic dilemma and complications during anterior thoracic region interventions.

The existence of sternalis muscle may present alterations in the electro cardiogram [8] or may create confusion in routine mammography [9].Therefore it may cause misdiagnosis giving a false impression of benign and malignant lesions in chest wall and in breast. Various

imaging techniques like multidetector CT, MRI and modern techniques can be utilized to avoid the diagnostic dilemma[2,10]. The sternalis muscle can easily confuse the diagnosis because it mimics a variety of benign and malicious conditions [11], breast or chest asymmetry or deviation of the ipsilateral nipple areolar complex[12] or it may coexist with other pectoralis major defects[13]. In augmentation mammoplasty the muscle may interfere with the submuscular pocket dissection and may lead to unexpected result. Due to functional insignificance sternalis muscle can be used as muscle flap in anterior chest wall and breast reconstruction surgeries[12,14].

Conclusion

The sternalis muscle is a rare muscle which is not well known and studied. A unilateral sternalis muscle having oblique course, crossing the midline was found in the present study. This type of unusual existence of sternalis muscle may lead to wrong diagnosis and inappropriate surgeries in clinical practice. The presence of sternalis can be confirmed by CT and MRI to avoid diagnostic dilemma.



Fig 1: Sternalis Muscle

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