

# UNILATERAL RECTUS STERNALIS MUSCLE: A CASE REPORT.

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## Abstract :

The Rectus Sternalis muscle is a small supernumerary muscle occasionally present in the anterior thoracic wall. During routine dissection for undergraduate medical students we observed a unilateral left sided rectus sternalis present on the anterior thoracic wall. The knowledge about this variation is very useful for morphologists and anatomists. The presence of this muscle may be mistaken by surgeons, radiologists and physicians for tumor on mammogram or during mastectomy which may increase unnecessary burden on their patients.

Keywords : Sternalis muscle, Rectus sternalis, Mammogram.

## Introduction:

The rectus sternalis muscle is a small supernumerary muscle<sup>[1]</sup> present in the anterior thoracic wall superficial to the sternocostal fibers of pectoralis major muscle<sup>[2,3]</sup>. Cabrol named it for the first time in the year 1604; later Du Puy described it accurately in the year 1726<sup>[3,4,5,6,7]</sup>. It is also referred as the sternalis, the episternalis, the rectus thoracis and the superficial rectus abdominis<sup>[8]</sup>. It is also termed as abdomino- guttural, abdomino-cutaneous, sternalis brutorum, cutaneous pectoris.<sup>[5,7,9]</sup>

This muscle has been reported both in males and females. It is most commonly unilateral than bilateral and the frequency varies among different ethnic groups. However, there is a great variation in height, width, and thickness of this muscle. Its presence ranges from a few short fibers to a well-formed muscle<sup>[2]</sup>. The incidence is more in Chinese 23.5% and lowest in Taiwanese 1%. The incidence of this muscle within Asians is 11.5%<sup>[2,7,10,11]</sup> and 4–8% in Indian

subjects. Though rectus sternalis muscle is well reported in literature its attachments and nerve supply is unclear and debatable<sup>[6,12,13]</sup>. Several authors suggest that it originates from adjacent

muscles such as sternocleidomastoid, pectoralis major and the rectus abdominis (or) a remnant of panniculus carnosus<sup>[11]</sup>. Here we report a case of unilateral left sided rectus sternalis muscle.

## Case report :

During routine dissection of pectoral region in a male cadaver in the department of Anatomy at K.S. Hegde medical academy, Mangalore, Karnataka, we observed a thin strip of muscle with width of 2.5 cm and length of 14 cm on the left half of the sternum on the anterior thoracic

Figure 1. Figure showing unilateral left sided rectus sternalis muscle.

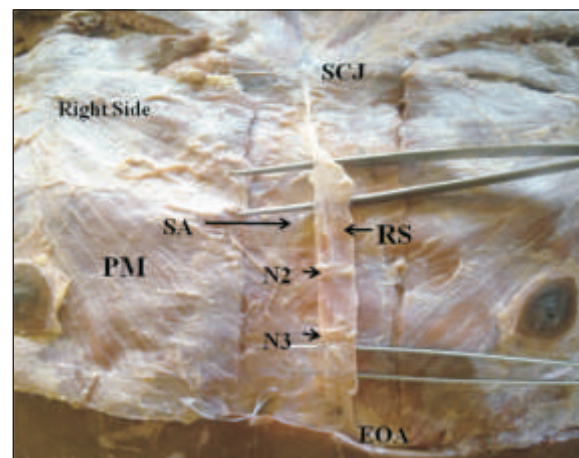


Figure 1 : SCJ - Left Sterno clavicular joint. RS - Rectus Sternalis Muscle, SA - Sternal Angle, N2 & N3 - 2<sup>nd</sup> & 3<sup>rd</sup> anterior cutaneous branch of intercostal nerves and perforating branches of internal thoracic arteries respectively, EOA - External oblique aponeurosis, PM - Pectoralis major muscle.

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wall. The muscle extended from the region between the sternoclavicular joints above to external oblique aponeurosis below. The muscle was deep to the superficial fascia of the pectoral region and superficial to the pectoral fascia and sternocostal fibers of pectoralis major muscle. This 2.5 cm wide muscle strip after crossing the sternal angle continues as a narrow tendon and deviates towards the median plane. The muscle fibers are arranged longitudinally (Figure 1). The muscle is pierced by two anterior cutaneous branch of intercostal nerves (2<sup>nd</sup> and 3<sup>rd</sup>) and the perforating branches of internal thoracic arteries near its medial border.

#### Discussion :

Rectus sternalis is a supernumerary muscle of the pectoral region<sup>[1,2]</sup>. Embryologically this muscle is derived from the ventral longitudinal column of muscle arising from ventral tip of hypomeres which is represented by the infrahyoid muscles in the neck, rectus abdominis in the abdomen and occasionally by the rectus sternalis in the thorax<sup>[5,11,14]</sup>. This variant muscle may also associated with anencephaly<sup>[12]</sup> and with anomalies of the adrenal gland and skull<sup>[1]</sup>. Morphologically the muscle may be the remnant of panniculus carnosus (or) might have derived from pectoralis major with its innervations from pectoral nerves (or) from the rectus abdominis with innervation from intercostal nerves<sup>[7,10,13,15]</sup>. The rectus sternalis is supplied by pectoral nerves in 55% of cases, by intercostals in 43% and a combination of the two in 2% of cases<sup>[13]</sup>. However still there is lot of confusion about the nerve supply of this muscle<sup>[5,12]</sup>. In the present case we found two anterior cutaneous branches of intercostal nerves (2<sup>nd</sup> and 3<sup>rd</sup>)

piercing near the medial border of the muscle. The motor function of this muscle is subjected to much debate<sup>[1]</sup>. Based on its general proximal and distal attachments, it has been hypothesized that, it may act as an accessory inspiratory muscle by elevating the lower rib cage<sup>[13]</sup>. Perforating branches of the internal thoracic artery supplies this muscle<sup>[10]</sup> which was similar to our finding.

The knowledge about this muscle is clinically important, since it may be mistaken as a tumor on the mammogram<sup>[13]</sup> and causes difficulty in interpretation of mammograms by radiologists<sup>[5,10]</sup>. It may appear as hernia of the pectoralis major muscle and may confuse the examining physician and it may cause abnormalities in ECG<sup>[3,16]</sup>. The Surgeons should be familiar of this variation during breast surgeries<sup>[5]</sup>. It should not be mistaken for recurrence of malignancy at a later stage. It may appear as a mass requiring surgical resection<sup>[17]</sup>. If the muscle is encountered during modified radical mastectomy, it must be excised because part of mammary gland may present deep to the muscle. Leaving this muscle behind is detrimental to the oncosurgeon during the surgery of the breast<sup>[1,18]</sup>. This muscle is helpful in breast reconstruction surgeries after mastectomy<sup>[19]</sup>. Awareness about this variation is important for radiologists for clear interpretation of mammogram<sup>[3,12]</sup>. The function of this muscle is insignificant, it can be used as a flap in the plastic and reconstruction surgeries of head and neck.

#### Conclusion :

The rectus sternalis muscle is a variant muscle of the anterior chest wall, with an uncertain function and origin. Awareness of this variation is important for morphologists, clinicians and surgeons in confirming the diagnosis or mistaking it for a tumor on mammography.

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