

Case Report

Unilateral left rectus sternalis muscle: a case report

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ABSTRACT

The rectus sternalis muscle is a small supernumerary muscle present in the anterior thoracic wall and is superficial to the sterno-costal fibers of pectoralis major muscle. In present study we came across left rectus sternalis, originated as a small tendon from the aponeurosis of the external oblique muscle, and the fascia of the rectus abdominis, and seen inserted into the clavicular fibres of pectoralis major of the opposite side of the manubriosternal joint. The rectus sternalis or sternalis muscle is of much importance in the field of radiology or surgery as its presence and knowledge might be effective and useful for the radiologists and surgeons during management of the pectoral region.

Keywords: Sternalis muscle, Pectoralis major, Rectus abdominis

INTRODUCTION

The rectus Sternalis muscle is a small supernumerary muscle present in the anterior thoracic wall and is superficial to the sterno-costal fibers of pectoralis major muscle.¹ It is also known by other names like the sternalis, the episternalis, the rectus thoracis, and the superficial rectus abdominis.² Literatures suggest that it originates from the adjacent muscles such as sternocleidomastoid, pectoralis major and the rectus abdomen is muscle (or) a remnant of panniculoscarnosus.³

CASE REPORT

During the routine dissection of pectoral region of a 60 year old male cadaver by 1st year M.B.B.S. students in the Department of Anatomy, Kannur Medical College and Hospital. We came across rectus sternalis muscle on the left side. It was located superficial to the pectoral fascia and sterno-coastal fibres of pectoralis major muscle on the anterior thoracic wall in a paramedian position deep to the skin and superficial fascia of the pectoral region. It originated as a small tendon from the aponeurosis of the external oblique muscle and the fascia

of the rectus abdomen is, ran upwards along the right side of sternum, and finally inserted into the clavicular fibres of pectoralis major of the opposite side of the manubriosternal joint as shown in figure. It measured 15 cm in length and 1.5 cm in width in the middle of the muscle. It was innervated by intercostal nerves.

DISCUSSION

Embryologically rectus sternalis arises from ventral longitudinal column of muscle; arising from ventral tip of hypomeres.³ According to literature bilateral rectus sternalis muscle if derived from rectus abdomen is muscle was supplied by intercostals nerves as both were derived from ventral longitudinal paramedian muscular sheet represented in human being by the hyoid muscles in the neck, the rectus abdominis muscle in the abdomen, and occasionally the rectus sternalis muscle in the thorax.⁴⁻⁸

A small variable muscle, the sternalis is sometimes present on one or both sides.⁹ According to Williams. SPL et al, when typical, it arises from the sheath of the rectus abdominis muscle, aponeurosis of the external oblique muscle, pectoralis major muscle, or costal cartilages and ends above onto the upper costal cartilages,

manubrium, or may be joined to the sternal head of sternocleidomastoid muscle.¹⁰ Sarikcioglu L et al stated that, the sternalis muscle is a fleshy band of longitudinal fibers of varying length and width, located close to and generally parallel to the sternum.¹¹

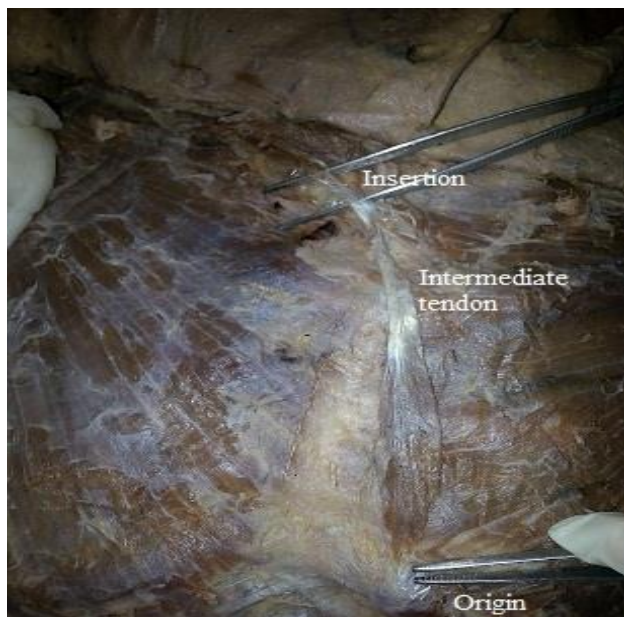


Figure 1: Left side rectus sternalis muscle seen inserted into the clavicular fibres of pectoralis major of the opposite side.

Kulkarni DU et al had found the muscle located unilaterally on the left side in the pectoral region and suggesting that sternalis is nothing more than misplaced developed muscle tissue, arising from variable sources in a localized region at the anterior thorax, and serving no apparent function but to confuse diagnosticians.¹² Authors support that the muscle develops either from the rectus abdomen is sheath or from pectoralis major due to a defect in the muscle patterning.

Particularly, in the latter case, the defective precursor migration of the pre-pectoral mass which gives rise to the pectoralis major and minor muscles may also contribute to the sternalis muscle development, while mechanical disturbances may lead to atypical clock wise rotation of the muscle fibers.^{2,13} Thus different authors suggest different theories regarding the origin of sternalis muscle; but almost all of them converge on the verdict that its presence could jeopardize the diagnosis in the region by radiologists and surgeons.

The unilateral sternalis muscle has been reported to be present in 4.5% of subjects, while the bilateral manifestation is found in less than 1.7%.¹⁴ Incidence of the sternalis muscle varies widely between nationalities, 4% to 7% in white population, 8.4% in black population, 11.5% in Asian population, and 9.3% in Turkish population as referred by Schaeffer.^{11,15} Sternalis muscle

was present in almost half anencephalic fetuses while in healthy fetuses frequency was lower.

55% of the sternalis muscles were innervated by branches of internal and external thoracic nerves, 43% by branches of inter-costals nerves, and 2% both from intercostal and thoracic nerves¹⁶. The function of this muscle is insignificant, but it can be used as a flap in the plastic and reconstruction surgeries of head and neck.¹⁷ It may participate in the shoulder joint movement or have an accessory role in the lower chest wall elevation.¹⁴

Presence of this muscle can be mistaken as a tumor on the mammogram because it appears as focal dense spot along the side of sternum. It may also appear as hernia of pectoralis major muscle and can lead to clinical confusion¹⁸. Rectus abdomen is muscle encountered during modified radical mastectomy should be excised as a part of mammary gland may be present deep to the muscle.¹⁹ Awareness of such variation is important for radiologists for clear interpretation of CT, MRI and mammogram.¹⁷

CONCLUSION

The sternalis muscle is a muscular variant of the anterior chest wall, with an uncertain etiology, function and origin, well known to anatomists but quite unknown to clinicians. The rectus sternalis or sternalis muscle is of much importance in the field of radiology or surgery as its presence and knowledge might be effective and useful for the radiologists and surgeons during management of the pectoral region. At last, sternalis may be a misplaced developed muscle tissue, arising from variable sources in a localised region at the anterior thorax, and serving no apparent function but to be misdiagnosed by the clinicians.

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REFERENCES

1. Arraez-Aybar LA, Sobraoo-perez J, Merida velasco JR. Left musculus sternalis. Clin Anat. 2003;16(4):350-4.
2. Kida MY, Izumi A, Tanaka S. Sternalis muscle: topic for debate. Clin Anat. 2000;13:138-40.
3. Kumar H, Rath G, Sharma M, Kohli M, Rani B. Bilateral sternalis with unusual left sided presentation: A clinical perspective. Yonsei Med J. 2003;44(4):719-22.
4. Motabagani MA, Sonalla A, Abdel-Meguid E, Bakheit MA. Morphological study of the uncommon rectus sterni muscle in German cadavers. East African Medical Journal. 2004;81(3):130-3.
5. Shah AC. The Sternalis muscle. Indian J Med Sci. 1968;22:46-7.

6. Jelev L, Georgiev G, Surchev L. The sternalis muscle in the Bulgarian population: Classification of sternales. *J Anat.* 2001;199:359-63.
7. Yap SE. Musculus sternalis in Filipinos. *Anat Rec* 1021;21:353-71.
8. Barlow RN. The Sternalis muscle in American whites and Negroes. *Anat Rec.* 1935;1:413-26.
9. Jones Wood F. Buchanan's manual of Anatomy. 8th edition. London. Bailliere, Tindall and Cox. Henrietta St. 1953;397.
10. Williams SPL. Gray's Anatomy. 38th edition. Churchill Livingstone. 1995:838.
11. Sarikcioglu L, Demirel BM, Oguz N, and Ucar Y. Three sternalis muscles associated with abnormal attachments of the pectoralis major muscle. *International journal of experimental and clinical Anatomy.* 2008:67-71.
12. Kulkarni DU, Kulkarni UK. Unilateral Rectus sternalis muscle – A case report. *Al Ameen Journal of Medical Science.* 2010;3(2):69-71.
13. Paraskevas GK, Raikos A. Bilateral pectoral musculature malformations with concomitant vascular anomaly. *Folia Morphol (Warsz).* 2010;69:187-91.
14. Young Lee B, Young Byun J, Hee Kim H, Sook Kim H, Mee Cho S, Hoon Lee K et al. The sternalis muscles: incidence and imaging findings on MDCT. *J Thorac Imaging.* 2006;21:179-83.
15. Schaeffer JP. Morris' Human Anatomy. 10 edition. Philadelphia: The Blackiston Company. 1942;437.
16. Folan - Curran J, O'Neill MN. Case report: bilateral sternalis muscles with a bilateral pectoralis major anomaly. *Journal of Anatomy.* 1998;193:289-92.
17. Raju S, Raghu J, Sreenivasulu Reddy M, Sirisha B, Indira B, Sujata M. An unilateral rectus sternalis muscle: Its clinical significance. *Journal of Surgical Academia.* 2012;2(1):21-2.
18. Glasser SP. Electrocardiogram of the month. *J La State Med Soc.* 1975;127(4):136-50.
19. Kabay B, Akdogan I, Ozdemir B, Adiguzel E. The left sternalis muscle variation detected during mastectomy. *Folia Morphol (Warsz).* 2005;64(4):338-40.

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