



RECTUS STERNALIS- AN ABERRANT MUSCLE OF CHEST WALL

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ABSTRACT

INTRODUCTION- Rectus sternalis muscle is an uncommon anatomic variant which lies in a para-median fashion to the sternum, thus the name para-sternalis. Knowledge about its origin and possible clinical relevance is essential amongst the operating surgeons, radiologists and medical students.

CASE STUDY- 54 year old male undergoing total laryngectomy with pectoralis myocutaneous flap reconstruction with a left sided sternalis found incidentally intra-operatively.

CONCLUSION- The muscle can be used as a possible source of flap in both breast and head and neck reconstructive surgeries, thus its knowledge to the operating surgeon as a normal anatomic aberration is important.

KEYWORDS

Rectus Sternalis, Sternalis-pectoralis Muscle Flap, Head And Neck Reconstruction

INTRODUCTION

The rectus sternalis muscle also known as the para-sternalis as the name suggests lies in a para-median fashion to the sternum, over the pectoralis major muscle.¹ It has also been called musculus sternalis, presternalis, sternalis brutum or thoracicus in various literature.² Even though the muscle has long been discovered and described, it is not uncommon for clinicians other than anatomists to not be aware of its identity. Bailey and Tzarnas demonstrated a ubiquitous incognizance of this anatomic variant among general surgeons, plastic surgeons, radiologists, and medical students.³

The muscle is frequently encountered during cadaveric dissections, reconstructive surgeries done for both breast and head and neck carcinomas and to radiologists while interpreting mammograms.⁴

Though no definitive function has been assigned to the muscle, its utility as a source of flap during reconstructive surgeries has been proffered.⁵

We describe an incidental finding in a patient of carcinoma larynx while undergoing reconstructive surgery and discuss about its origin and possible clinical relevance.



Figure 1: Band Like 9*2cm Muscle Seen Paramedially To The Sternum.

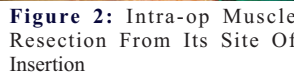


Figure 2: Intra-op Muscle Resection From Its Site Of Insertion

CASE STUDY

A 54 year old male, resident of Haryana with chief complaints of difficulty in swallowing and progressive shortness of breath presented to the ENT OPD of our hospital. He was diagnosed with T4N0M0 stage of Carcinoma larynx. The patient was planned for total laryngectomy with pectoralis major myocutaneous (PMMC) flap for reconstruction. The patient had a left sided sternalis which was seen as a longitudinal band like muscle measuring around 9cm in length and 2cm in breadth placed obliquely in the para-sternal region superficial to the pectoralis major muscle. The muscle was resected from its site of insertion and the PMMC flap was harvested. The post-operative follow up of the patient was satisfactory and uneventful.

DISCUSSION

The muscle first described by Cabrol in 1604 in his book "Alphabeton anatomikon", has been a source of keen scientific interest for over 400

years.² Other notable scientists including Du Puy(1726), Turner (1867), Ruge (1905), Clemente (1985), Sadler (1995), Barlow (1935) have detailed the embryological as well as anatomical background for the muscle.

Regional and ethnic diversities affect the prevalence rates in the populations. With an overall average of 3-6%, maximum prevalence of 11% was noted in the Asian population averaging 4.8% in the Indian population, whilst least prevalence was observed among the races of European descent (2%).^{6,7} Female (8.7%) preponderance over males (6.4%) is noticed as cited by Scott-Corner.⁸ Unilaterality of the muscle has been demonstrated in 4.5% of subjects, while bilaterality is seen in less than 1.7%.⁹

The muscle takes its origin from the infra-clavicular region along with the superior part of sternum and shows varying points of insertion such as the fascia pectoralis, lower ribs and their costal cartilages, rectus abdominis muscle sheath or the external oblique muscle aponeurosis.^{10,11}

Based on a review of multiple studies, branches of external and internal thoracic nerves innervated the muscle in about 55% of cases, intercostal nerves in 43% cases while 2% had supply from both the nerves.¹²

The muscle being topographically related to the anterior perforating branches of internal thoracic artery and pectoral branches of lateral pectoral vessels receives its blood supply from them running similar to the pectoral major muscle.¹¹

Although some authors suggest the role of the muscle in elevating the lower chest wall, no definitive consensus on its function has been concluded.⁹ Clinically the muscle is implicated as it may mimic a mass on mammography warranting unnecessary biopsy or recurrence of a breast lump or may cause alterations in the ECG.^{1,13} Also, it may lead to a clinical conundrum to the operating surgeon during breast surgery or anterior chest wall plastic reconstruction. Similarities to benign and malignant breast lesions, desmoid tumors, granular cell tumors, abscesses, hematomas, sclerosing adenitis, lymphadenitis etc. cannot be ruled out.

Use of the muscle as a possible source of flap has also been described. Schulman and Chun have reported using a conjoint sternalis-pectoralis muscle flap for a case of mastectomy with immediate tissue expander insertion in two cases. Raising a conjoint flap helped drape over the implant in a tension-free manner with adequate coverage over the implant.¹⁴ In our patient because the defect warranted a larger flap, conjoint muscle flap could not be used. However, it is imperative to mention that the overall data for using sternalis as a reconstructive flap material remains deficient.

CONCLUSION

Your eyes can only see what your mind knows. Therefore, albeit the

rarity and doubtful clinical significance of this muscle, the treating physician must be aware of this anatomic aberration when encountered with and must recognize it as a normal variant and not be confounded by its presence. Also, as the literature for its utility as a reconstructive material remains elusive a near future possibility for the same cannot be ruled out.

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