Variant form of sternalis muscle with bifurcated end: case report

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Abstract
Introduction
The anterior thoracic wall is often encountered with the presence of accessory muscles. Very often, it is the sternalis muscle. In anatomical literature, it has been highlighted with various synonyms such as rectus sternalis, presternalis or parasternalis. This article reports a case of an atypical sternalis with a bifurcated end.

Case Report
We report here a variant type of this muscle lying superficial to the left pectoralis major with a bifurcated end at its site of insertion. It originated from the left fourth costal cartilage close to the costochondral junction. Then, it ascended upwards about 10 cm and bifurcated into tendinous and fascial slips. The tendinous slip crossed the midline and attached to the deeper surface of the right pectoralis major and the fascial slip blended with the ipsilateral pectoral fascia.

Discussion
The sternalis muscle is often encountered with a variety of appearances on the chest wall. Rectus thoracis is one of its variant forms that lies lateral to the sternum. Very rarely, rectus sternalis may cross the midline. Raikos et al. categorised it as the crossed variants of sternalis with a new subtype, in which it is connected to the sternocleidomastoid of the opposite side. But in the present case, it bifurcated into tendinous and facial slips. The tendinous slip of got attached to the pectoralis major of the opposite side instead of the sternocleidomastoid and the fascial slip gained its attachment ipsilaterally by blending with the pectoral fascia. Characteristically, this muscle resembled the sternalis muscle with the exception of its bifurcating morphology with bilateral insertion. So it has to be categorised as a separate sub-type. Thus, this variation marks a rare entity.

Developmentally, these accessory muscles are derived from myotonic hypomeres, which form the muscles of the ventral and lateral body walls in the thorax and abdomen. Morphologically, it may be considered as a remnant of panniculus carnosus as before. However, many authors consider them as the derivative of pectoralis major or rectus.
Case report


Figure 1: Dissection of pectoral region showing unilateral presence of atypical sternalis muscle (AS) lying superficial to left pectoralis major muscle with bifurcated slips. TS: Tendinous slip, FS: fascial slip, PF: pectoral fascia.

abdominis muscles depending upon their pattern of nerve supply. In most cases, these muscles receive innervation from the internal thoracic nerve (derived from subclavian plexus and phrenic nerve), and in remaining cases it may be innervated by intercostal nerves or at times both.

Mehta et al. reported a similar case of accessory muscle in relation to sternum with the similar feature of bifurcation at its distal attachment. But as reported by them, the accessory muscle is attached to the sternocleidomastoid of the opposite side which is the normal feature of the rectus thoracis bifurcalis muscle.

Functionally, sternalis muscle might bring about shoulder joint movement in its accessory role. This could be justified in the present case due to its attachment to the pectoralis major muscle and its fascia. Though the functional aspect of this accessory muscle is clinically insignificant, existence of such variant muscles may result in misinterpretation in diagnosing routine mammography with a malignant lesion.

Therefore, its presence makes it obligatory to the radiologists to be familiar with its anatomy to avoid misinterpretation. Confirmation of such occurrence is possible by CT or MR imaging to rule out misdiagnosis in a malignant lesion. If this muscle is left unresected during operations for carcinoma of the breast, it may be confused for a recurrence at a later stage.

Conclusion

Presence of accessory muscles on the pectoral region may be asymptomatic. But the rare variety which we report here with the phenomenon of bifurcation will add additional information to the literature of anatomy as a new variant of the sternalis muscle. Prior knowledge of these muscles is important for radiologists to avoid any misinterpretations and to the surgeons in reconstructive procedures.

References