



Case Report

Six heads of origin of sternocleidomastoid muscle: a rare case

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ABSTRACT: A morphological variation in the origin of the right sternocleidomastoid muscle was encountered during routine dissection of the neck for undergraduate students. We found six heads of the sternocleidomastoid muscle, two sternal and four clavicular heads. The two sternal heads were lying side by side, while two clavicular heads were lying superficially and another two clavicular head lying in a deep plane. These variations must be kept in mind while approaching the region for any surgical intervention to avoid complications.

KEY WORDS: *Sternocleidomastoid; Anatomical variation; Sternal heads; Clavicular heads*

INTRODUCTION

The sternocleidomastoid muscle (SCM) is an important landmark in the neck which divides it into an anterior and a posterior triangle. This muscle binds the skull to the sternum and clavicle. It arises by two heads, a medial rounded and tendinous sternal head (SH) and a lateral fleshy clavicular head (CH). They arise from the anterolateral surface of the manubrium sterni and the medial third of the superior surface of the clavicle, respectively¹. The thickness of the CH is variable². The two heads are separated by a triangular surface depression, the lesser supraclavicular fossa. As they ascend, the CH spirals behind the SH and blends with its deep surface below the middle of the neck, forming a thick rounded belly to gain attachment to the lateral surface of the mastoid process through a strong tendon, and to the lateral half of superior nuchal line through an aponeurosis. The SCM protects the vertical neurovascular bundle of neck, branches of cervical plexus, deep cervical lymph nodes and soft tissues of neck from damage¹.

CASE DETAILS

During routine dissection of the neck of a male cadaver for undergraduate students, we observed that right SCM arising by six heads, two sternal and four clavicular head (**Figure 1**). Out of the two SH, the medial fleshy head arose from the anterolateral surface of the manubrium sterni, while the lateral tendinous head was arising from the sternum close to sternoclavicular joint, and both fused with each other near its attachment to the mastoid process. Out of the four CH, two were superficial and two were deeply placed. The medial one of the superficial CH arose by a tendon from the medial end of the clavicle near the sternoclavicular joint just lateral to the SH while the lateral one was arising by a tendon from the junction of medial one third and lateral two third of the clavicle from its superior aspect. The superficial heads formed a single belly at the junction of the upper two-thirds and lower one-third of the SCM but remained separated from the deep CH. Two CH present in the deep plane (**Figure 2**) were lying side by side arising from the medial one-third of the superior surface of the clavicle; the medial head was fleshy and the lateral tendinous. These fibers ascended vertically and spiralled deep to SH. All the CH and SH fused with each other near their attachment to the mastoid process and the superior nuchal line. These additional heads made the SCM muscle thick and bulky to an extent that caused extreme reduction in the size of the lesser supraclavicular

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fossa. The left SCM was found to be without any variation.



Figure 1: Photograph showing six heads of sternocleidomastoid muscle: S1 medial sternal head, S2 lateral sternal head, C1 medial superficial claviclar head, C2 lateral superficial claviclar head, C3 medial deep claviclar head, C4 lateral deep claviclar head

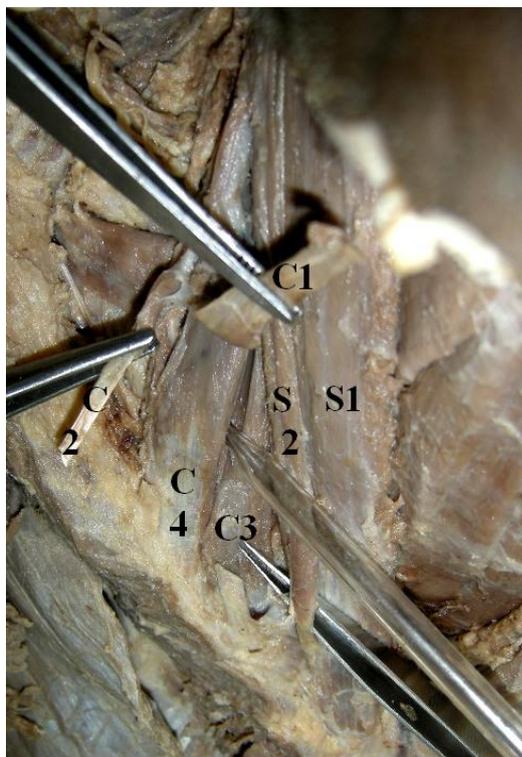


Figure 2: Photograph showing six heads of sternocleidomastoid muscle: S1 medial sternal head, S2 lateral sternal head, C1 medial superficial claviclar head, C2 lateral superficial claviclar head, C3 medial deep claviclar head, C4 lateral deep claviclar head

DISCUSSION

Variation in the number of heads of origin of the SCM is not uncommon^{3,4}. Bergman et al² in their comparative anatomical studies described SCM consisting of five heads; they described three SH in the superficial plane and one in the deep plane, while out of two CH one in the superficial and another in the deep plane. Boaro et al⁵ reported the presence of three CH and one SH in an infant. Out of three CH, one originating from the sternum, another from the acromial part of the clavicle and the third head arising between them, thereby reducing the space of the posterior triangle. Rao et al⁶ in their study reported an additional CH bilaterally; whereas the SH was without any variation. Origin of the CH extended up to the middle of the clavicle thus reducing the gap between the SCM and trapezius muscle, but none have reported six heads of origin of SCM which makes this case unique and interesting.

Knowledge of human embryology is an important tool in understanding human anatomic variations. The SCM muscle is derived from the ventral part of the occipital myotomes just caudal to the sixth arch². In the present case, an explanation of these additional heads of the SCM may be due to abnormal splitting in the mesoderm of post-sixth branchial arch⁷. Since the SCM is used as a myocutaneous flap in various graft surgeries^{8,9} and the lesser supraclavicular fossa is utilized for central venous access¹⁰, these variations must be kept in mind while approaching the region to avoid complications.

CONCLUSION

Knowledge of these variations is important for anesthetists and surgeons while approaching the lesser supraclavicular fossa, for any surgical intervention, to avoid complications.

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