

# Multiple muscular variations in the neck region — case study

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*During routine educational dissection studies, we encountered multiple muscular anomalies in a 25-year-old embalmed male cadaver. The muscular anomalies were observed on the right side. In accordance with their origin, insertion and innervation features, the abnormal muscles were considered sternocleidooccipital, sternomastoid and cleidomastoid muscles. The unilateral muscle variations were observed in both the superficial and deep layer. In the superficial layer, there were two muscles and one muscle bundle, while there was only one muscle in the deep layer. The first muscle in the superficial layer, known as sternocleidooccipital muscle, consisted of clavicular head and sternal head. The second muscle in the superficial layer was sternomastoid muscle. The muscle observed in the deep layer was cleidomastoid muscle. Additionally, a muscular bundle was observed between the sternocleidooccipital and sternomastoid muscles. A combination of these variations in the same case has not, to our knowledge, been previously described in the available literature.*

**key words:** sternocleidooccipital muscle, sternomastoid muscle, cleidomastoid muscle, muscular bundle, neck dissection, variation

## INTRODUCTION

The sternocleidomastoid muscle is situated on the side of the neck. This thick muscle protects the great vessels, the branches of the cervical plexus, deep cervical lymph nodes and soft tissues from damage [5, 8, 10]. Generally, variations of sternocleidomastoid muscle are observed at the origin on the clavicle. The clavicular part of sternocleidomastoid muscle sometimes can be as small as the sternal part, and sometimes can be bigger than the sternal part. The origin of sternocleidomastoid muscle might be 7–8 cm in length. It might rarely be wider, being related with the trapezius muscle. And it is seldom lined like bands until the low edge of the sternum. It has been reported that the clavicular part is divided to narrow intervals in several parts [2, 10]. In many animals, the cleidomastoid portion of the muscle is

quite distinct from the sternomastoid portion; this condition is frequently found in humans [2]. In the case of deformities related to some causes of cancer and trauma, sternocleidomastoid muscle is often used as muscle and myocutaneous flap in the treatment of oral cavity and facial deficits [3, 4, 9].

The aim of this report is to attract the attention of anatomists and surgeons dealing with myocutaneous flap to these possible muscular variations in the neck region.

## CASE REPORT

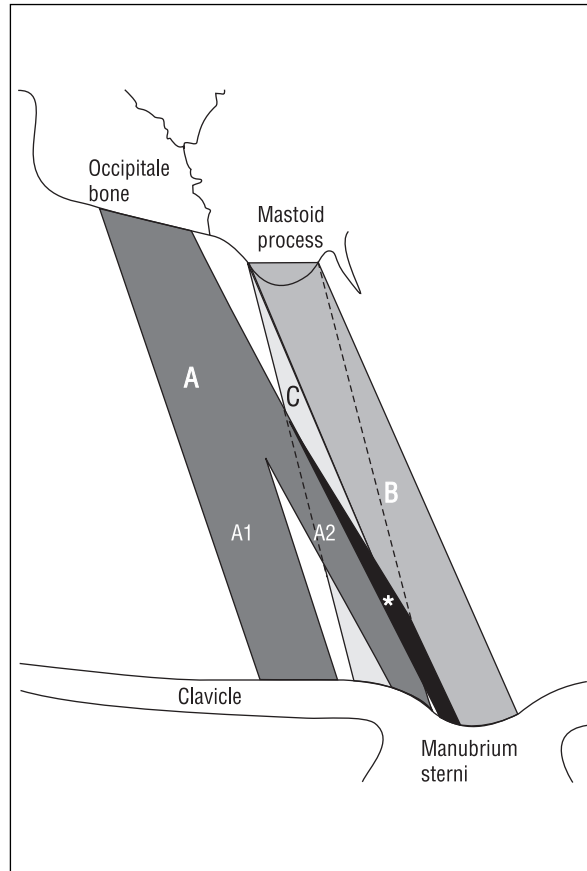
During the educational gross anatomy dissections of a 25-year-old male cadaver, on the right neck region a lot of abnormal muscles and a muscular bundle were discovered and prepared. Sternocleidooccipital muscle, which was the first muscle on the



**Figure 1.** The present case multiple muscular variations.

superficial layer, had two heads. The lateral part of sternocleidomastoid muscle was the clavicular head originating from the medial 1/3 of clavicle. The medial part of sternocleidomastoid muscle was the sternal head, which originated with a round tendon from the upper surface of the manubrium sterni. The clavicular and sternal head lied toward up by connecting on the 1/3 lower neck region and inserted into linea nuchae superior on occipital bones (Fig. 1, 2). The sternomastoid muscle, which is the second muscle on the superficial layer, originated from the upper surface of the manubrium sterni and ended on the mastoid process (Fig. 1, 2). In the middle of the neck, the muscle bundle was found to be 5.6 cm in length, 0.67 cm in width, 0.5 cm in thickness, lying obliquely across between the sternocleidomastoid muscle and the sternomastoid muscle (Fig. 1, 2).

In the deep layer, there was cleidomastoid muscle. The cleidomastoid muscle originated from the sternoclavicular joint and it was divided into two parts on the 1/3 upper neck region. One of these parts, the medial one, inserted into the front region

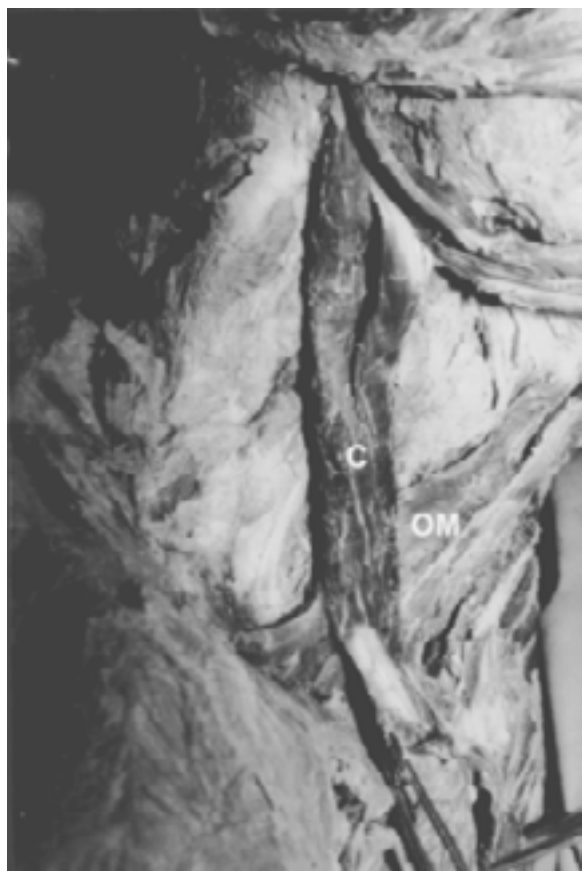


**Figure 2.** Schematic presentation of Figure 1. A — sternocleidomastoid muscle; A1 — clavicular head, A2 — sternal head, B — sternomastoid muscle, C — cleidomastoid muscle; \*muscular bundle.

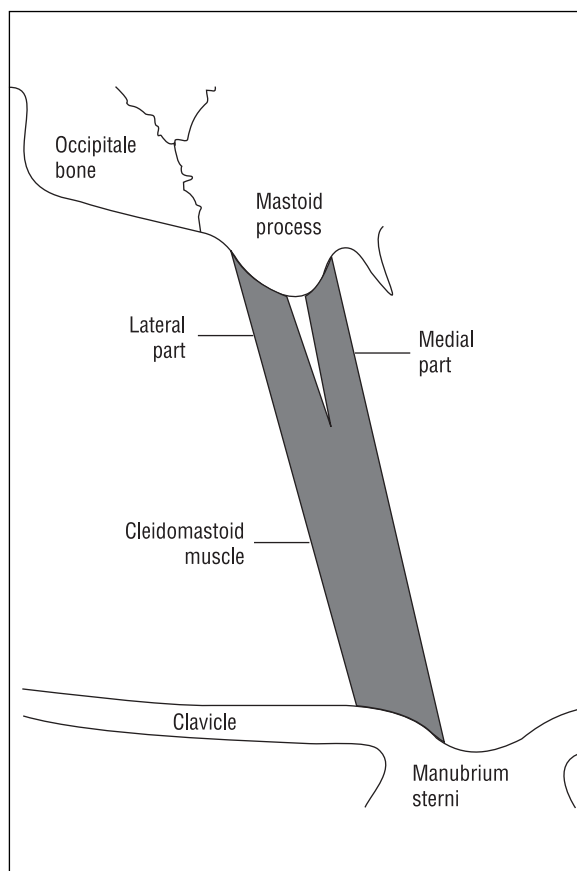
of the mastoid process while the lateral part inserted into the back of this process (Fig. 3, 4).

## DISCUSSION

We know that there are different variations of sternocleidomastoid muscle in the literature. Besides, the absence of sternocleidomastoid muscle and the complications related to this absence have also been reported [1]. Some studies have indicated a supernumerary cleidooccipital muscle more or less separate from the sternocleidomastoid muscle [6, 7]. Bergman et al. [2] reported that the sternocleidomastoid muscle may consist of two layers (superficial and profound layers) and 5 parts. The same authors also reported that the superficial part may consist of superficial sternomastoid, sternooccipital and cleidooccipital parts. On the other hand, the profound part may have sternomastoid profound and cleidomastoid parts [2]. In our case, similar to the reports of Bergman et al. [2], the superficial part consisted of superficial sternomastoid, sternocleidomastoid muscles; but there was only cleidomastoid muscle on the profound layer.



**Figure 3.** The cleidomastoid muscle present in the deep layer; C — cleidomastoid muscle, OM — omohyoid muscle.



**Figure 4.** Schematic presentation of Figure 3.

Interestingly, in our case, there was a muscle bundle lying between the sternocleidooccipital muscle and the sternomastoid muscle. According to our knowledge, there is no information about this muscle bundle in the literature.

The goal of this report of unilateral multiple muscular anomalies in combination with a muscular bundle is to focus the attention of anatomists and surgeons on these variations. These variations of the sternocleidomastoid muscle should be kept in mind during surgical operations or MR imaging observations of the neck region.

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