

## Variation in the Origin of Sternocleidomastoid Muscle. A Case Report

### Variación en el Origen del Músculo Esternocleidomastoideo. Reporte de Caso

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**SUMMARY:** A rare case of additional slip in the origin of the clavicular head of sternocleidomastoid muscle was found during our routine dissection, on both sides of the neck in an elderly male cadaver. However, on both side of the same muscle no such additional slip of origin was found at the sternal head of the sternocleidomastoid near its origin nor at its insertion of the muscle.

**KEY WORDS:** Sternocleidomastoid muscle; Anatomical variation.

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### INTRODUCTION

Sternocleidomastoid muscle is present across the side of the neck and forms a prominent landmark when contracted. It originates in two heads, medial sternal head which is rounded and tendinous; and lateral clavicular head. The sternal head originates from the upper part of the anterior surface of the manubrium sterni and ascends posterolaterally. The clavicular head is variable in width and originates from the superior surface of the medial third of the clavicle and ascends almost vertically. The two heads of origin are separated by a triangular interval, which corresponds to a surface depression, the lesser supraclavicular fossa. As they ascend the clavicular head spirals behind the sternal head and blends with its deep surface below the middle of the neck, forming a thick, rounded belly. The muscle is inserted by a strong tendon to the lateral surface of the mastoid process from its apex to its superior border, and by a thin aponeurosis into the lateral half of the superior nuchal line. The clavicular fibres are mainly directed to the mastoid process; the sternal fibres extend to the occipital bone.

The sternocleidomastoid muscle is supplied by the spinal part of the accessory nerve. It also receives proprioceptive innervations by cervical spinal nerves from the cervical plexus.

The sternocleidomastoid muscle receives its blood supply from branches of the occipital and posterior auricular

arteries, which supply the upper part of the muscle. The muscular branches coming from the superior thyroid artery and suprascapular artery supply the middle and lower part of sternocleidomastoid muscle.

The sternocleidomastoid muscle acting alone, laterally flexes the neck and rotates the face to the opposite side. The two muscles acting together flex the head and neck forcibly.

Spasm of the sternocleidomastoid muscle, usually of unknown origin but sometimes congenital, is one cause of a flexion deformity of the neck known wryneck or torticollis; other muscles that rotate and flex the neck also may contribute to torticollis (Williams *et al.*, 1995; Standring *et al.*, 2005).

### CASE REPORT

During the gross dissection of an elderly male cadaver a rare case of additional slip of origin was found on both sides, in the clavicular head of sternocleidomastoid muscle (Fig. 1). Because of this additional slip of origin the clavicular head was extending up to the middle of the

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clavicle on both sides, thereby reducing the gap between the trapezius and sternocleidomastoid muscles. The two clavicular heads of origin of sternocleidomastoid muscle were separated by a wider triangular interval (compared to the interval between the sternal head and normal clavicular head), which corresponds to one more surface depression, the additional lesser supraclavicular fossa. The additional slip is also supplied by a branch from the spinal part of the accessory nerve. However, on both sides the origin of sternal head and the insertion of sternocleidomastoid muscle were found to be normal.

## DISCUSSION

The sternocleidomastoid muscle varies much in the extent of its origin from the clavicle. In some cases the clavicular head may be as narrow as the sternal; in others it may be as much as 7.5 cm in breadth. When the clavicular origin is broad, it is occasionally subdivided into several slips, separated by narrow intervals. More rarely, the sternocleidomastoid and trapezius muscles are fused with each other. Some authors regard this fusion between the

**Additional clavicular head**

**Additional lesser supraclavicular fossa**

**Clavicular head**

**Lesser supraclavicular fossa**

**Sternal head**

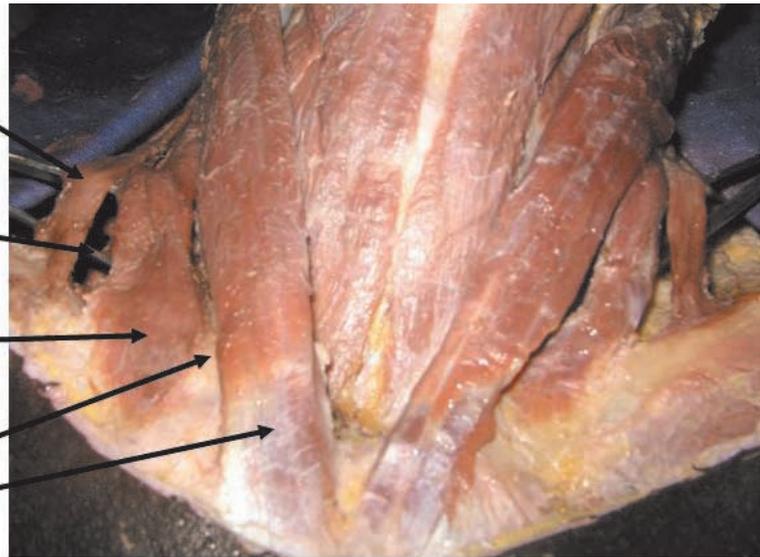


Fig. 1. Variation in the origin of sternocleidomastoid muscle.



Fig. 2. Variation in the origin of sternocleidomastoid muscle.

sternocleidomastoid and trapezius muscles as normal (Bergman *et al.*, 1988). This may be due to the developmental reason, since both the muscles are derived from the same source, the post-sixth branchial arch. The sternocleidomastoid muscle frequently separates into other parts, which are arranged in two parts: a superficial sternomastoid, sterno-occipital and cleido-occipital part; and a deep layer consisting of a deep sternomastoid and cleidomastoid part. The names indicate the attachment of various parts. Knowing the 5 parts of the sternocleidomastoid muscle is important for harvesting the muscle flap. A supernumerary cleido-occipital, more or less separate from the sternomastoid has a reported frequency of 33% (Mustafa, 2006, Bergman *et al.*).

Occasionally, the lower portion of the muscle is traversed by a tendinous intersection, which may indicate the formation of the muscle from different myotomes (Bergman *et al.*). The supraclavicularis muscle arises from the manubrium behind the sternocleidomastoid muscle and passes behind the sternocleidomastoid muscle to the upper surface of the clavicle.

In our present findings, of the additional slip in the clavicular origin of sternocleidomastoid muscle may be due to abnormal splitting in the mesoderm of post-sixth branchial arch. However, the relevance of our findings whether it is associated with the condition of wry neck and other congenital deformities of the neck needs to be evaluated by further studies.

In our study, even though additional slip of origin was found on both sides, in the clavicular head of sternocleidomastoid muscle, we did not find any noticeable clinical symptoms. It is essential for the surgeons to be aware of possible variations during routine head and neck surgeries.

Knowledge of sternocleidomastoid muscle consists of additional parts and the muscle fibers in each part are lying in the same direction from origin to insertion in the same fascial package may be important for harvesting the muscle flap reconstruction during parotid surgery is an effective method of covering the surgical defect and possibly preventing Frey's syndrome. Thus, it would be possible to choose more appropriate muscle parts.

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**RESUMEN:** Durante una disección de rutina, fue encontrado un raro caso de un fascículo adicional en el origen de la cabeza clavicular del músculo esternocleidomastoideo, en ambos lados del cuello, en un cadáver de un anciano de sexo masculino. Sin embargo, en ambos lados, no se encontró un fascículo adicional en el origen de la cabeza esternal ni en la inserción del músculo esternocleidomastoideo.

**PALABRAS CLAVE:** Músculo esternocleidomastoideo; Variación anatómica.

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