

Accessory Clavicular Head of Sternocleidomastoid Muscle: A Case Report

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Abstract: A unilateral (Left side) additional Clavicular head of sternocleidomastoid (SCM) was found during routine dissection of head and neck region in 43 years old male cadaver. The additional slip was extended its origin almost whole the length of middle third of clavicle. The fusion failure or abnormal mesodermal splitting during development may be the reason for present variation at origin of sternocleidomastoid. The internal jugular can be approached at the lesser supra clavicular fossa for cannulation during central venous access, temporary haemodialysis, and the placement of inferior vena cava filters. The anatomical knowledge of the SCM and its variations is identical significant for surgeons during branchial cyst removal, while dealing with myocutaneous flap.

Keywords: Sternocleidomastoid, Clavicular head, origin, variation.

INTRODUCTION

The anatomy of the every human being is unique at gross and structural level; to some extent even identical twins are anatomically not similar. As we know, the variation is the law of nature [1]. The sternocleidomastoid (Musculus sternocleidomastoideus) shows a wide range of variations; Especially at its origin and in the layered arrangement of its fibers [1, 2]. The variations at its insertion are very rare. The sternocleidomastoid (SCM) is a key muscular landmark in the neck, which divides each side of the neck into the anterior and lateral cervical regions (anterior and posterior triangles) [3]. The SCM produce movement at the cranio vertebral joints and the cervical inter vertebral joints. The SCM usually has two heads: the rounded tendon of the sternal head originates from manubrium, fleshy clavicular head attaches to the superior surface of the medial third of the clavicle [2, 3]. The heads join superiorly as they ascend towards the cranium and inserted into mastoid process and superior nuchal line of the occipital bone. The two heads of the SCM are separated inferiorly by a space, visible superficially as a small triangular depression, the lesser supra clavicular fossa [2].

Branchial cysts usually present in the upper neck in early adulthood as fluctuant swellings at the junction of the upper and middle thirds of the anterior border of Sternocleidomastoid [3]. The lesser supra clavicular fossa is an key anatomical landmark for the internal jugular vein cannulation as it lies between the two heads of the muscle, slightly lateral and anterior to the common carotid artery [2].

Creature designers have a unanimous opinion about the muscle's uniqueness as a "classic mammalian feature". Prominence of this muscle has been considered a symbol of Homo sapiens beauty [1]. On certain cases, the cleidomastoid part of the muscle is quite distinct from the sterno mastoid part, which is frequently found in human and in some animals [4]. 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 [4, 5].

The detailed anatomical knowledge about the sternocleidomastoid and its common variations helps for cannulation of internal jugular vein during central venous access, temporary haemodialysis, the placement of inferior vena cava filters and other venous devices. The present case report is adding the data towards the SCM variations observed by the previous authors, which will help the anatomists and surgeons while performing surgeries like branchial cyst removal, dealing with myocutaneous flap.

CASE REPORT

As a part of medical curriculum, during the gross dissection of neck region of 43 years old male cadaver showed the unilateral variation of additional head of sternocleidomastoid muscle which was originated from the middle third of the clavicle from its superior surface. The sternal head of the muscle was originated as round belly from the manubrium, clavicular head was originated from the superior surface of the medial third of the clavicle as routinely seen in all the cases. An additional head called accessory

clavicular head of sternocleidomastoid muscle was observed on left side, which was originating from the middle third of the clavicle, later it joins with the rest of the muscle at the middle of the neck and inserted on mastoid process of temporal bone and superior nuchal line of occipital bone. The length of the accessory clavicular head was 3.2cm at its origin from middle third of clavicle. In the deep layers of accessory slip, there were no additional slips observed. The vascular supply and innervations of nerves are routine like in normal cases.

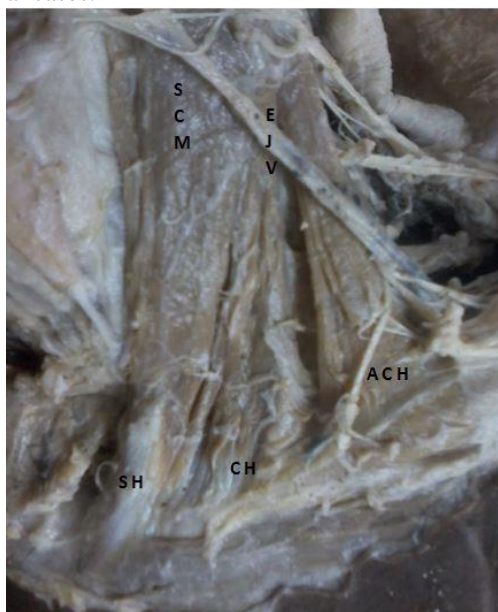


Fig 1: Showing the variation at the origin of Sternocleidomastoid muscle

*SCM – Sternocleidomastoid, EJV – External Jugular Vein, SH – Sternal Head, CH – Clavicular Head, ACH – Additional Clavicular Head

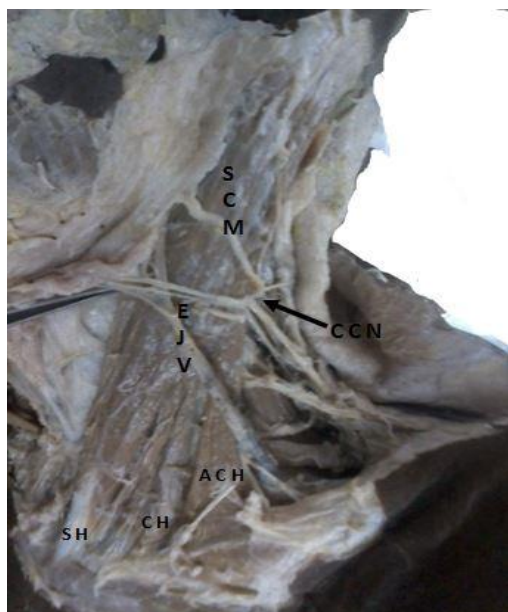


Fig 2: Showing the variation at the origin of Sternocleidomastoid muscle and its normal insertion

*SCM – Sternocleidomastoid, EJV – External Jugular Vein, CCN – Cervical Cutaneous Nerves, SH – Sternal Head, CH – Clavicular Head, ACH – Additional Clavicular Head

DISCUSSION

An overall review on literature of sternocleidomastoid muscle shows that, the variations of sternocleidomastoid are most common in humans. The origin of SCM as two heads from manubrium and clavicle, the Clavicular fibers are directed mainly to the mastoid process; the sternal fibres are more oblique and superficial, and extend to the occiput. The direction of pull of the two heads is therefore different, and the muscle may be classed as 'cruciate' and slightly 'spiralized'. Some of the previous authors reported that, SCM may be absent in some cases and a supernumerary cleido occipital muscle more or less separate from the SCM [2]. Muscular agenesis may lead to the complete absence of SCM, various authors have reported complete unilateral absence of the SCM [4]. The absence of SCM cover may lead to complicated congenital neck hernias in children, in addition to functional complications [4, 5].

The SCM has variable innervations arrangement; in 50% of the cases it shows the "classical anastomotic pattern" [6]. The SCM has unique pattern of muscle fibres especially at its origin. Most of the animals have considerable distance between cleidomastoid belly and sterno mastoid belly, if the same condition is present in humans, it is considered as variation from normal. The presence of accessory head shows an extra triangle, which is usually called as additional lesser supra clavicular triangle, sometimes it may considered as extended lesser supra clavicular triangle [6, 7].

Sternocleidomastoid muscle may consist of two layers (superficial and profound layers) and 5 parts, which was reported by Bergman *et al.*; [1]. The same authors also reported that the superficial part may consist of superficial sterno mastoid, sterno occipital and cleido occipital parts. Many authors have reported that broad Clavicular head splitting into multiple small muscular slips. Nigar Coskun *et al.*; [7], reported in a case study sterno cleido occipitalis muscle, sterno mastoid and cleidomastoid in 25 years old male cadaver. A bilateral additional slip origin of SCM from clavicle was observed by Ramesh RT [8] additional lesser supra clavicular triangle was found in same cadaver. A supernumerary cleido-occipital, more or less separate from the sterno mastoid was reported in 33% of the cases by Mustafa [9] Bergman *et al.*; [1]. An abnormal sternocleidomastoid muscle was reported bilaterally by SR Nayak [10] in 60 year old male cadaver during routine dissection of head and neck region. The occurrence of such variations can be explained by fusion failure or abnormal mesodermal splitting during development. In this regard we may

refer to Sinohara's law of fusion which states that a muscle supplied by two different nerves is formed by fusion of two separate muscle masses [11].

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