

Case Report

FOUR HEADS OF STERNOCLEIDOMASTOID: A CASE REPORT

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ABSTRACT

During the routine cadaveric dissection, the presence of accessory heads of Sternocleidomastoid was observed on right side. i.e., additional bellies from sternal and clavicle were observed on the right side. These additional slips were innervated by the spinal accessory nerve. These additional slips could have been formed due to unusual splitting in the mesoderm of post-sixth branchial arch during organogenesis.

The awareness of variations of sternocleidomastoid muscle is important for Anaesthetists, Plastic surgeons, Orthopaedicians and Dental surgeons while taking muscle flap in reconstructive surgeries and is also important for radiologists while interpreting MR images of this region.

KEY WORDS: Sternocleidomastoid, Clavicular head, Sternal head.

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INTRODUCTION

Sternocleidomastoid is a key landmark because it divides the neck into anterior and posterior triangles. Sternocleidomastoid descends obliquely across the side of the neck and forms a prominent surface landmark, especially when contracted. It is thick and narrow centrally, and broader and thinner at each end. The muscle is attached inferiorly by two heads. The sternal head is rounded and tendinous, arises from the upper part of the anterior surface of the manubrium sternum. The clavicular head ascends vertically from the superior surface of the medial third of the clavicle. The two heads are separated near their attachments 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. Sternocleidomastoid inserts superiorly by a strong tendon into 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 fibers are directed mainly to the mastoid process, the sternal fibers are more oblique and superficial, and extend to the occiput [1].

The present study reports double bellies of the clavicular portion and sternal portion of the sternocleidomastoid, they may reduce or cause

narrowing of the lesser supra clavicular space, leading to overcrowding of the neurovascular structures in the neck and can cause complications during internal jugular vein cannulation. Sternocleidomastoid is widely used as a myocutaneous flap for oral and maxillary surgeries. So anesthetists, radiologists and surgeons must be aware of these variations to avoid hazards during various procedures in these regions.

CASE REPORT

During routine cadaveric dissection for undergraduate teaching in the Department of Anatomy, Pondicherry Institute of Medical Sciences Pondicherry, the presence of accessory heads of Sternocleidomastoid was observed on right side. Skin, superficial fascia with platysma was reflected. Investing layer of deep cervical fascia was incised and sternocleidomastoid was exposed.

OBSERVATIONS

Sternal head of SCM displayed two bellies originated from manubrium sternum separated by a gap of 1 cm and clavicular head has two origins from clavicle as medial and lateral heads, separated by a gap of 1.6 cm. Medial and lateral head arises from the superior surface of middle third of clavicle and blended with the other fibers and normally inserted into the lateral surface of mastoid process. Nerve supply of all the four heads was from spinal part of accessory nerve.

Fig. 1: Showing four heads of sternocleidomastoid.



DISCUSSION

Variations in origin of both heads of sternocleidomastoid muscle have been reported but variations in clavicular head are more common than sternal head. Usually the clavicular origin is narrower than the sternal head. When the clavicular origin is broad; it is subdivided into several slips separated by narrow intervals.

Embryology of developing human is a valuable asset in understanding anatomic variations. The sternocleidomastoid and trapezius develop from a common pre-muscle mass from last two occipital and upper cervical myotomes. At 9 mm stage the common mass splits and separates. The two divisions grow independently along the upper limb bud. At 14 mm stage the mass destined to form sternocleidomastoid becomes fixed first to the clavicle and later to the sternum, occipital bone and mastoid process. When the clavicular origin is broad enough as much as 7.5 cm it is divided into several slips separated by narrow intervals [2]. The additional slip in the clavicular origin can be due to the unusual splitting in the mesoderm of the post sixth branchial arch [3].

Coskun et al. [4] reported a case, in which they found sternocleido-occipital and sternomastoid muscle in superficial layer and cleidomastoid muscle in deep layer. The additional clavicular head seen in present case was on the right side and it does not have an independent attachment to the mastoid process or occipital bone but the muscle fibers were merged with the main muscle belly [4.] A similar case of additional clavicular head of sternocleidomastoid was reported by Ramesh et al [5]., but it was bilateral [6]. Unilateral additional clavicular head has been reported by Cherian et al (2008) [7] and Fazliogullari et al (2010) [8]. Unilateral additional sternal head has been reported by Natsis et al (2008) [9] while Nayak et al (2006) [10] reported it bilaterally. Kaur et al (2013) have reported six heads of origin of sternocleidomastoid muscle [11].

Sternocleidomastoid can be used in several ways by the surgeons who harvest these muscle flaps for reconstructions such as during parotid surgery where the sternocleidomastoid muscle flap may cover the surgical defects and avert the

Frey's syndrome. It can be used as myocutaneous flap for facial defects, carotid artery protection and repair of oral cavity defects. Patients with cancer in neck sometimes develop radiation induced cervical muscle spasm which can be relieved by botulinum toxin which is commonly injected in sternocleidomastoid muscle. Individuals with additional heads of sternocleidomastoid may need a larger dose of medication [12].

Anaesthetists, for central venous catheterization prefer internal jugular vein cannulation, as this approach has a lower incidence of pneumothorax. Any variation in origin of sternocleidomastoid muscle can lead to narrowing of lesser supraclavicular fossa, which can complicate internal jugular vein cannulation [13]. The posterior border of sternocleidomastoid is an important landmark for radiological parameter so additional heads should be kept in mind while judging the various levels of CT and MRI [14-16].

CONCLUSION

The unusual muscle mass seen in the present case is accessory heads of sternocleidomastoid muscles. In most cases, these muscles go unnoticed as they do not produce any symptoms in the individual. These abnormal muscles may cause functional deficits by compressing the neurovascular structures. Anaesthetists, Plastic surgeons, Orthopaedicians and Dental surgeons should be aware of these variations while taking muscle flap in reconstructive surgeries.

Conflicts of Interests: None

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