Accessory head of sternocleidomastoid—a case report

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Abstract

As many important nerves emerge from the posterior border of sternocleidomastoid (SCM), it is important to know the morphological anatomy of sternocleidomastoid for surgical as well as radiological purpose. During routine dissection of head and neck for student demonstration, an accessory head of sternocleidomastoid was found arising from the superior surface of the middle third of the clavicle on the right side of the neck. Sternocleidomastoid is a key landmark as it divides the neck into anterior and lateral regions (anterior and posterior triangles respectively). Morphological variations arise due to the complexity of sequential development of any region. SCM is an important surgical landmark for clinicians. A well versed knowledge of its variations can avoid diagnostic and surgical complications.

Key words: manubrium sterni, posterior triangle, anterior triangle, sternomastoid

Introduction

Sternocleidomastoid (SCM) is a key landmark because it divides the neck into anterior and lateral regions (anterior and posterior triangles respectively). Sternocleidomastoid descends obliquely across the side of the neck and forms a prominent surface landmark.

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 sterni and the thin, fleshy clavicular head, arises from the upper 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.

The clavicular fibres 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'.

The occipital artery crosses deep to the muscle at, or under cover of, the lower border of the posterior belly of digastric. At this point the accessory nerve passes deep to sternocleidomastoid, then pierces and supplies the muscle, before it reappears just above the middle of the posterior border.

In lower mammals the cleidomastoid section of the sternocleidomastoid is separate from the sternomastoid. Such a variation may be detected in humans as well.

The sternocleidomastoid has been utilized as a myocutaneous flap in the correction of oral cavity and facial defects.

It has attracted the general surgeons and plastic surgeons because of the applications in tissue repair: as it is richly vascularised, can be used as a myocutaneous flap, each of its 2 heads can be shifted separately, and the cosmetic results are satisfactory.

As the spinal accessory nerve blockade is used in the diagnosis and treatment of chronic myofacial pain originating from trapezius muscle, it arouses the need to know the anatomy of spinal accessory nerve in relation to sternocleidomastoid.

A knowledge of the cervical plexus and the posterior triangle of the neck is important when performing a cervical plexus block. This useful regional anaesthetic technique can be utilized in carotid, ear, nose and throat (ENT) and thyroid surgery.
Discussion

Variations in the origin of sternocleidomastoid have been reported earlier by some authors.

The sternocleidomastoid and trapezius develop from a common pre-muscle mass from last two occipital and upper cervical myotomes. At 9 mm stage this 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.

The additional slip in the clavicular origin of sternocleidomastoid muscle may be due to unusual splitting in the mesoderm of post-sixth branchial arch.

It has been described by Bergman et al. that SCM is disposed in two layers, superficial and profound, that subdivide into five parts. The superficial portion of the SCM may have sternomastoid, sterno-occipital, and cleido-occipital subregions. Additionally, the profound part may display sternomastoid and cleido-mastoid subregions.

Coskun et al. have reported multiple variations of the sternocleidomastoid muscle. The SCM shows a great variation in its clavicular origin. The clavicular head can be as narrow as the sternal head, or it can be up to 8 cm of width. When the clavicular origin is wide, it is occasionally subdivided in various slips, separated by narrow interval which occludes the lesser supraclavicular fossa.

SCM muscle can be used as myocutaneous flap for facial defects, parotid surgery, carotid artery protection and repair of oral cavity defects. Thorough knowledge of variations of sternocleidomastoid is necessary for harvesting the muscle flap. Awareness of additional clavicular head should be kept in mind while adjudging the various levels in CT and MR images. The additional
triangular interval between two clavicular heads should be kept in mind while approaching internal jugular vein for venous catheterization.

References


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