



Unilateral absence of the sternothyroid muscle: a case report

Published online January 18th, 2017 © <http://www.ijav.org>

Logan S.W. BALE⁺
Sean O. HERRIN

Department of Basic Sciences, University of Western States,
Portland, Oregon, 97230 USA.



+ Logan S.W. Bale
Department of Basic Sciences
University of Western States
2900 NE 132nd Ave.
Portland, OR 97230 USA.
☎ +1 (503) 251-2843
✉ lbale@uws.edu

Received August 25th, 2016; accepted January 15th, 2017

Abstract

The left sternothyroid muscle was not found during routine educational dissection of a 54-year-old female cadaver. While many variations of the infrahyoid muscles exist, few cases of absent sternothyroid muscles have been described in the literature. In this instance, the unilateral absence of the sternothyroid muscle is believed to be congenital as the regional anatomy of the neck was otherwise unremarkable and signs of surgery or trauma were not present. The exact functional implications, if any, due to the absence of the left sternothyroid muscle are not known.

© *Int J Anat Var (IJAV)*. 2016; 9: 55–56.

Key words [sternothyroid] [infrahyoid muscles] [unilateral absence]

Introduction

The infrahyoid (strap) muscles act on the thyroid cartilage of the larynx and the hyoid bone to function in speech, swallowing and mastication. The infrahyoid group consists of four paired muscles: sternohyoid, sternothyroid, omohyoid and thyrohyoid. The infrahyoid muscles are hypaxial derivatives, formed by myoblasts of cervical myotomes. The omohyoid consists of superior and inferior bellies joined by an intermediate tendon, while sternohyoid, sternothyroid and thyrohyoid have one muscle belly. The sternothyroid muscle is innervated by the ansa cervicalis and its blood supply is from the superior thyroid artery. Here we report a unilaterally absent sternothyroid muscle that was noted during cadaveric dissection as part of chiropractic education.

Case Report

During routine educational dissection of a 54-year-old female cadaver it was discovered that the sternothyroid muscle was not present on the left side (Fig. 1). The contralateral sternothyroid muscle was grossly unremarkable. The portion of the right sternothyroid that spanned from the midline of the suprasternal notch of the manubrium to its insertion at the thyroid cartilage of the larynx was 7.5 cm. The maximum

width of the right sternothyroid muscle was 2.0 cm and the maximum thickness was 0.2 cm. The omohyoid, thyrohyoid, sternohyoid and cricothyroid muscles were grossly unremarkable. Further dissection of the anterior neck did not reveal other anomalies. Signs of trauma and/or surgery were not present.

Discussion

The sternothyroid muscle exhibits many variations, including: doubling, presence of a membranous tendon, development of a cruciate pattern arising from the medial aspects of the right and left muscles, and blending of the muscle's fibers with the cricothyroid, inferior pharyngeal constrictor and/or thyrohyoid [1]. Additionally, the sternothyroid muscle can exist as medial and lateral bellies [2] and can exhibit accessory bellies [3]. The omohyoid is the most frequently absent infrahyoid muscle; usually one muscle belly (superior or inferior) is not present, however both bellies may be absent [1].

While many variations have been described for the infrahyoid muscles, few documented cases exist pertaining to absent sternothyroid muscles. Walsham [4] related an anecdotal account with sparse information and Kampmeier [5]

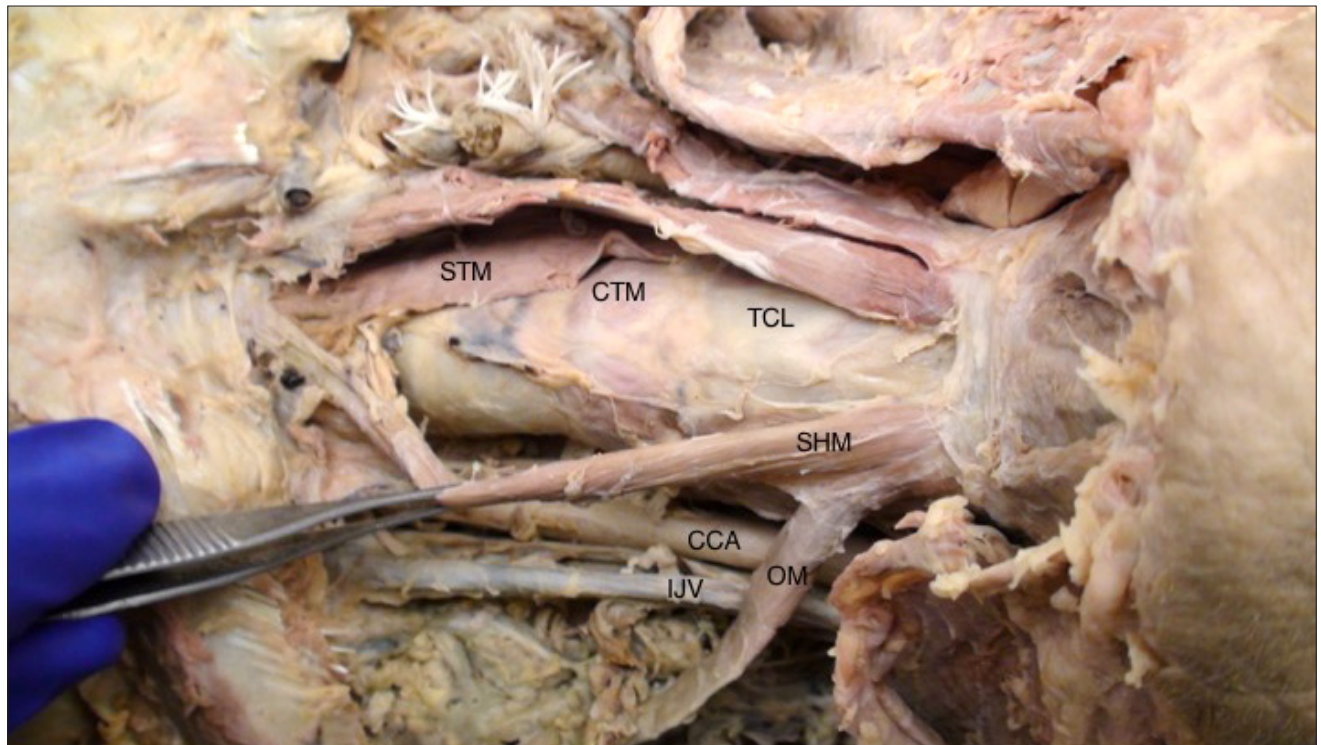


Figure 1. Dissection of the anterior neck with the left sternohyoid muscle displaced to show absence of the left sternothyroid muscle. (*STM*: sternothyroid muscle; *SHM*: sternohyoid muscle; *OM*: superior belly of omohyoid muscle, *CTM*: cricothyroid muscle; *TCL*: thyroid cartilage of larynx; *CCA*: common carotid artery; *IJV*: internal jugular vein). The left lobe of the thyroid gland was removed at the isthmus using sharp dissection.

thoroughly described a cadaver with a branchial cyst and many asymmetries in the thyroid region, including unilateral absence of the right sternothyroid muscle.

This cadaver's lack of a left sternothyroid muscle is assumed to be a congenital absence as anterior neck structures were otherwise normal and signs of surgery and/or trauma were not present. The exact biomechanical implications of the absent sternothyroid are not known. We cannot infer what functional

effects, if any, this individual would have experienced with respect to speech, swallowing or mastication.

Acknowledgements

The authors wish to thank individuals who donate their bodies and tissues for the advancement of education and research. Special thanks to Pamella Balomenos, Tyson Long, Erik Metzger, Braden O'Dell and Shirtina Quon for their careful dissection.

References

- [1] Tubbs RS, Shoja MM, Loukas M, eds. *Bergman's Comprehensive Encyclopedia of Human Anatomic Variation*. Wiley. 2016; 239-240.
- [2] Nayak S, Rai R, Krishnamurthy A, Prabhu LV, Potu B. An anomalous belly of sternothyroid muscle and its significance. *Rom J Morphol Embryol*. 2009;50(2):307-308.
- [3] Kang DW, Byeon Y, Yoon SP. An accessory belly of the sternothyroid muscle on the anterior neck. *Surg Rad Anat*. 2015;37(2):215-217.
- [4] Walsham WJ. *Anatomical Variations: An Account of a Few of the More Interesting Abnormalities that Have Occurred in the Dissecting-rooms During the Last Seven Years: with Remarks on Their Morphological Significance, and Their Bearing on the Practice of Surgery*. St Bartholomew's Hospital Reports. 1880;16:69-105.
- [5] Kampmeier OF. A striking case of asymmetry in the thyroid region associated with the occurrence of a branchial cyst. *Anat Rec*. 1921;22(5):310-316.

