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Abstract

We observed a bilateral and symmetrical variation of the anterior belly of the digastric muscle during the dissection of a 35-year-old female cadaver. The accessory muscle bundles were arranged in a cross. These bundles were found superficial to the mylohyoid muscle and deep in the platysma. Such a variation from perfect symmetry has not been previously reported. To avoid misinterpretation of radiological tests, it is important to be aware of bilateral and symmetrical variations of the anterior belly of the digastric muscle when examining the floor of the mouth and the submental region.

KEYWORDS: digastric muscle, anterior belly, variation

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Case Report

A Bilateral and Symmetrical Variation of the Anterior Belly of the Digastric Muscle

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We observed a bilateral and symmetrical variation of the anterior belly of the digastric muscle during the dissection of a 35-year-old female cadaver. The accessory muscle bundles were arranged in a cross. These bundles were found superficial to the mylohyoid muscle and deep in the platysma. Such a variation from perfect symmetry has not been previously reported. To avoid misinterpretation of radiological tests, it is important to be aware of bilateral and symmetrical variations of the anterior belly of the digastric muscle when examining the floor of the mouth and the submental region.

Key words: digastric muscle, anterior belly, variation

A rare variation of the digastric muscle is encountered during the dissection of a 35-year-old female cadaver.

The anterior bellies of the right and left digastric muscles had their normal origins in the digastric fossa on the mandible, while the posterior bellies of both sides had their own origins in the mastoid notch of the temporal bone. As in the normal course, the anterior and posterior bellies met at the intermediate tendon that is connected to the body and greater horn of the hyoid bone (Fig. 1 and 2).

In addition to the normal origin, course and insertion of the anterior and posterior bellies of the digastric muscles on both sides, there were also accessory muscular bundles within the area between the two anterior bellies (Fig. 1 and 2). These bundles were organized like a cross, superficial to the mylohyoid muscle and deep in the platysma. One bundle originated in the mandible medial to the origin of the anterior belly on each side and followed a course to the midline. The bundle's maximum width

was 7.0 mm on the right and 11.5 mm on the left. Another bundle was emerging from the intermediate tendon and partially from the anterior belly on each side and also followed a course to the midline with a maximum width of 9.8 mm on the right and 10.0 mm on the left. The accessory muscles were a couple millimeters thick. All of these bundles coming either from the mandible or the intermediate tendon and the anterior belly were gathered in a common tendon on the midline.

A further dissection revealed that the mylohyoid and geniohyoid muscles were in their normal anatomic position. The nerve to the mylohyoid, which normally innervates the anterior belly of the digastric and mylohyoid muscles, was supplying the accessory muscle bundles. The infrahyoid muscles were normal on both sides as well.

Discussion

Variations or anomalies of the anterior belly of the digastric muscle are quite common, and many forms of such variations have been reported, beginning with the report of Testut in 1894 [1]. Later reports described variations that were either unilateral [2, 3] or bilateral [4-8]. The originating points were the anterior belly

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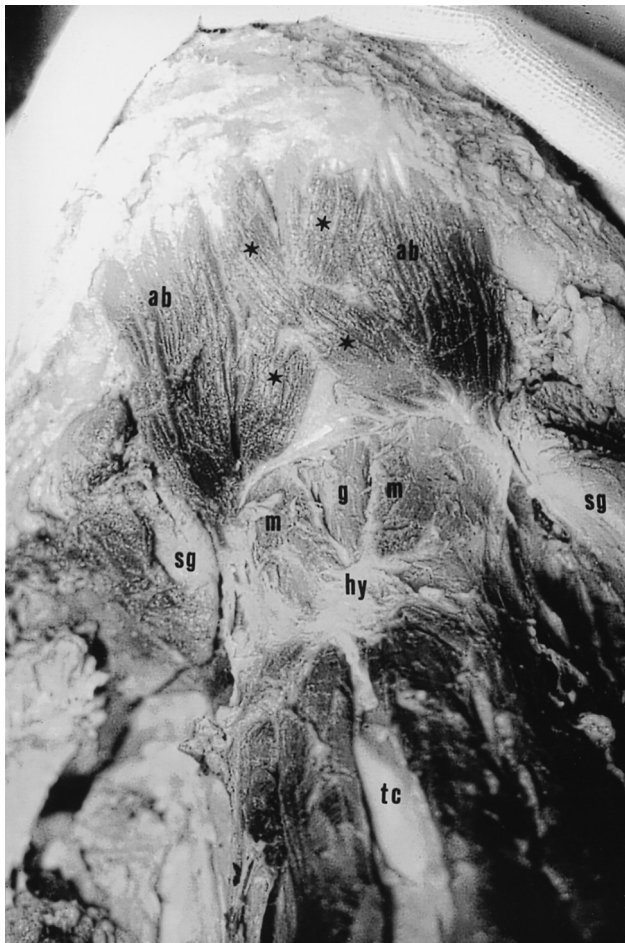


Fig. 1 Photograph of the submental region showing the cross-shaped accessory muscle bundles (*) between the 2 anterior bellies of the digastric muscles (ab). The mylohyoid muscle (m) is cut to show the underlying geniohyoid muscle (g). sg, submandibular gland; hy, hyoid bone.

itself [3], the intermediate tendon [2, 8], the hyoid bone [9, 10], the mandible [6] and the digastric fossa [7], while the insertion points included the mylohyoid raphe [7, 8, 11, 12], the hyoid bone [4, 7], the mandible [8-11], the anterior belly of the opposite side [6], and even the mylohyoid muscle [10, 12]. Some of the accessory muscles were reported as crossing the midline [6, 8].

According to the review of Sargon *et al.* [13] it is more usual to observe a unilateral variation of the digastric muscle than a bilateral one, although both bilateral and asymmetrical variations have been described [4, 6, 11]. In contrast, the variation we observed was both bilateral

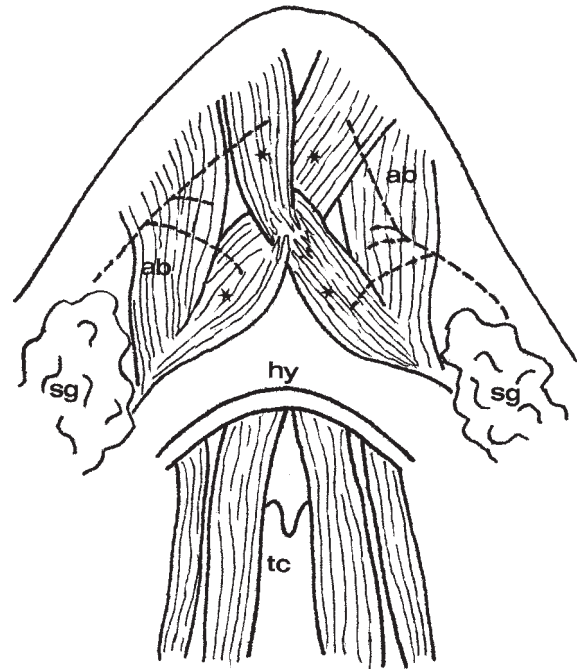


Fig. 2 Schematic drawing of the submental region. ab, anterior belly of digastric muscle; hy, hyoid bone; sg, submandibular gland; tc, thyroid cartilage; *, accessory muscle bundle. The broken lines represent the course of the nerve to the mylohyoid muscle and its branches to the accessory muscle bundles.

and symmetrical (Fig. 1 and 2). None of the anomalies of the anterior belly of the digastric muscle reported in the literature were described as having such perfect symmetry. Even in the studies on human fetuses, it is reported that symmetrical variations are extremely rare [14]. Ziolkowski found only 2 bilateral variations of the anterior belly of the digastric muscle in 110 cases but did not indicate whether they were symmetrical.

Asymmetrical unilateral or bilateral variations of the anterior belly of the digastric muscle have radiological importance. Especially in the evaluation of the submental region and the floor of the mouth for tumor detection and staging using CT or MRI, it is essential to differentiate the structures to know whether they are really tumors or metastatic lymph nodes or muscular variations. Because not all asymmetrical images indicate tumors, clinicians must be attentive to avoid misinterpretation. A bilateral and symmetrical variation could easily be misinterpreted as a pseudomass or a normal or metastatic submandibular or submental lymph node [9].

During some surgical procedures of the neck and oral

region, for example, during the mobilization of myocutaneous flaps of platysma in reconstructive procedures or dissection for metastatic node removal, one might encounter a variation of the anterior belly of the digastric muscle, so it is very important to remember that it is possible to see bilateral and symmetrical variations in this region. Also as a landmark, the anterior belly of the digastric muscle is used to identify the lingual nerve or the duct of the submandibular gland [9]. Unlike asymmetrical variations, such a perfect symmetrical variation of this region could cause an inexperienced surgeon to misinterpret radiological findings.

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