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Case Report

A variant digastric muscle

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ABSTRACT

Presence of variant digastric muscle is not uncommon. Knowledge of such variations is important for the anatomists and clinicians particularly the surgeons who use the anterior belly of digastric muscle as a landmark in certain surgical procedures. We report a variant digastric muscle found in the suprahyoid region in an adult male cadaver dissected for undergraduate dental students. The anterior belly of the digastric muscle on the right side was absent and a bilateral symmetrical accessory anterior digastric muscle (AcADM) was present. The AcADM was seen to be superficial to the mylohyoid muscle on the right side and superficial to the anterior belly of the digastric muscle on the left side. This AcADM was innervated on its deeper aspect by nerve fibers coming from the nerve to the mylohyoid. The posterior bellies of the digastric muscle were in usual anatomical locations. © **IJAV. 2011; 4: 120–122.**

Key words [anterior belly] [digastric muscle] [variation] [accessory muscle] [nerve supply]

Introduction

The standard description of the digastric muscle informs us that the anterior belly of the muscle originates from the digastric fossa on the base of the mandible near the midline while the posterior belly originates from the mastoid notch of the temporal bone and that the anterior and posterior bellies meet at the intermediate tendon that passes through a fibrous sling connected to the body and greater horns of hyoid bone [1]. Digastric muscle is a basic landmark in the region and its anterior belly which lies on the inferior surface of the mylohyoid muscle, helps to demarcate the area of submental triangle which is placed between the two anterior bellies with its base formed by the body of the hyoid bone with apex of the triangle being at the chin [1]. The action of the digastric muscle is to stabilize and to regulate the position of the hyoid bone and help in jaw movements.

The two bellies of the digastric muscle developmentally come from two different sources which is reflected in their nerve supply. The anterior belly is derived from the first pharyngeal arch and is innervated by a branch from nerve to mylohyoid [a branch of inferior alveolar nerve coming from the mandibular nerve which is the nerve of the first arch]. The posterior belly comes from the second pharyngeal arch and thus derives its nerve supply from the facial nerve which is nerve of the second arch [2].

Variations in the development of the pharyngeal arches can lead to malformations with varying degrees of clinical consequences. From time to time, several studies and case reports on the variations of the digastric muscle have appeared in the literature. The purpose of this case report was to present a unique variation showing absence of the right anterior belly of digastric muscle coupled with the presence of accessory anterior digastric muscle (AcADM) bellies on both the sides so that anatomists, radiologists and surgeons benefit from it alike.

Case Report

The variant digastric muscle was seen in an adult formalin preserved male cadaver dissected routinely for the undergraduate dental students. The region showing AcADM was cleaned by dissection and muscle attachments were noted and photographs were taken. The right and left AcADMs were seen to be attached to about the middle of the base of the mandible with muscle fibers going downwards and medially to be attached on their other end on the body of the hyoid bone with some muscle fibers attaching to the intermediate tendon of the digastric muscle (Figures 1, 2).

The AcADM on the left side was superficial to the anterior belly of digastric muscle (Figure 2) but deep to platysma, whereas the right AcADM was seen to be superficial to the

mylohyoid muscle (Figures 1, 2) and deep to platysma, the anterior belly on the right side was absent (Figures 1, 3) and the posterior belly was attached to the hyoid bone through its tendon. The AcADMs were seen to draw their nerve supply through nerve fibers coming from the nerve to mylohyoid muscle, the nerve fibers entering on the deep surface of the AcADMs near their attachments on the base of the mandible (Figures 3, 4).

The dimensions of the accessory muscle were measured with the help of a spreading caliper. The AcADM on the right side was seen to be 2.7 cm wide at its attachment on the base of the mandible with its inner medial margin at its commencement being 3.3 cm from the midline of mandible. The width of this muscle at its attachment on the hyoid bone was 2.9 cm. The AcADM on the left side was seen to be 2.3 cm wide at its attachment on the base of the mandible with its inner medial margin being 3.4 cm from the midline of mandible. The width of this muscle at its attachment on hyoid bone was 1.8 cm. The length of the AcADMs along their inner medial margins was 2.5 cm on right side and 2.2 cm on left side, while this length along their outer lateral margins was 2.0 cm on both the sides (Figure 5).

Discussion

The complexity of the sequential development in this region can lead to potentially countless variations. The pharyngeal arches begin to develop early in the 4th week of development as the neural crest cells begin to migrate into the developing head and neck region. By the end of the 4th week well-defined pairs of pharyngeal arches are visible externally [2].

Variant digastric muscles began to be reported about a hundred years ago. A good number of reports on various types of variations of the anterior belly of digastric muscle are available. These variant muscles are either unilateral [3] or bilateral [4–7], or median in location [8] or are bilateral

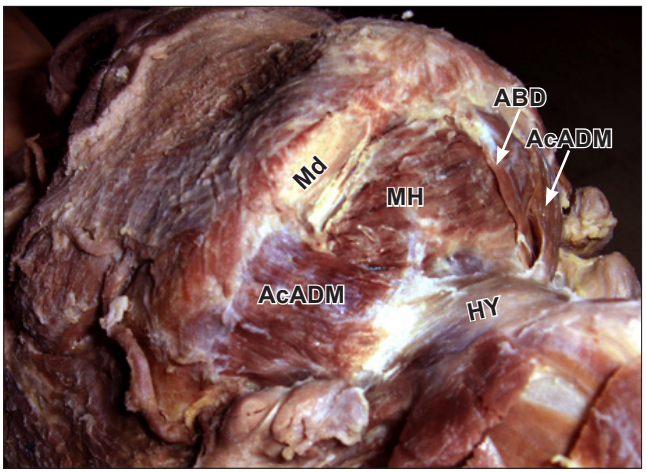

Figure 1. Photograph of dissection of the suprahyoid region showing the the variant digastric muscle. *(**Md**: base of mandible; **MH**: mylohyoid muscle; **ABD**: anterior belly of digastric; **HY**: hyoid bone; **AcADM**: accessory anterior digastric muscle)*

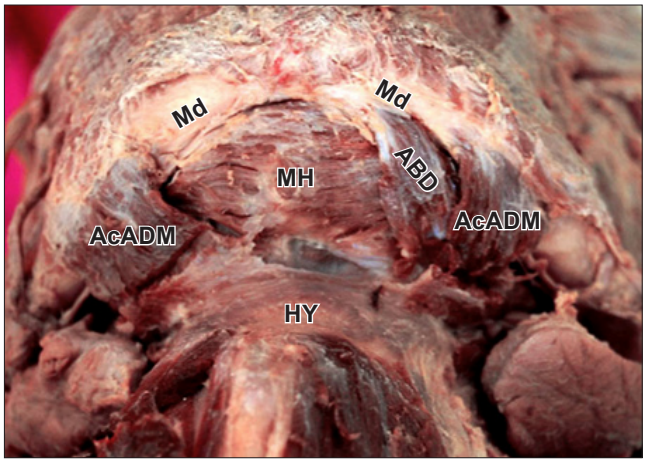

Figure 2. Photograph of the dissection of the suprahyoid region showing bilateral accessory anterior digastric muscle. *(**AcADM**: accessory anterior digastric muscle; **Md**: base of mandible; **MH**: mylohyoid muscle; **ABD**: anterior belly of digastric; **HY**: hyoid bone)*

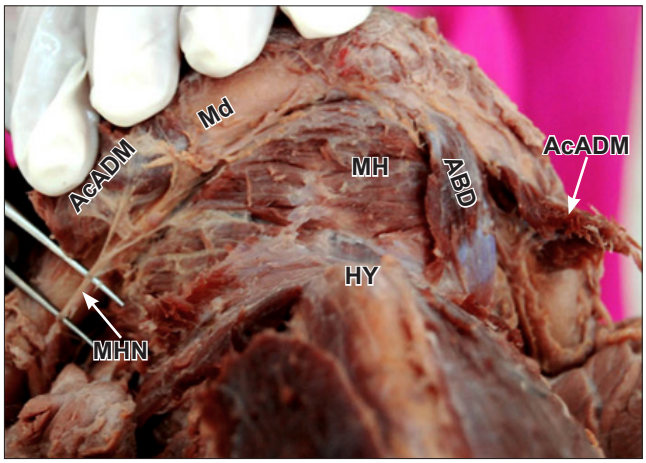

Figure 3. Photograph of suprahyoid region with right accessory anterior digastric muscle cut and reflected upwards to show its nerve supply from nerve to mylohyoid muscle. *(**Md**: base of mandible; **MH**: mylohyoid muscle; **HY**: hyoid bone; **ABD**: anterior belly of left digastric muscle; **AcADM**: accessory anterior digastric muscle; **MHN**: nerve to mylohyoid)*

and symmetrical [9,10]. These variations relate to the differences in the shape of the muscle and their attachments. The accessory muscle fibers could cross the midline or remain on the same side. Unilateral variations in the region could lead to asymmetry in the anterior region of neck. On radiological examination, accessory muscle fiber bundles in the submental region could be confused to be tumours or enlarged lymph nodes. Mangalagiri and Razvi [11] are of the opinion that unilateral and bilateral variations in the anterior belly occur equally as also observed by Liquidato et al. [12]. In the present case, the accessory muscle (AcADM) was attached to the base of the mandible and the hyoid bone and intermediate tendon of digastric muscle. The anterior

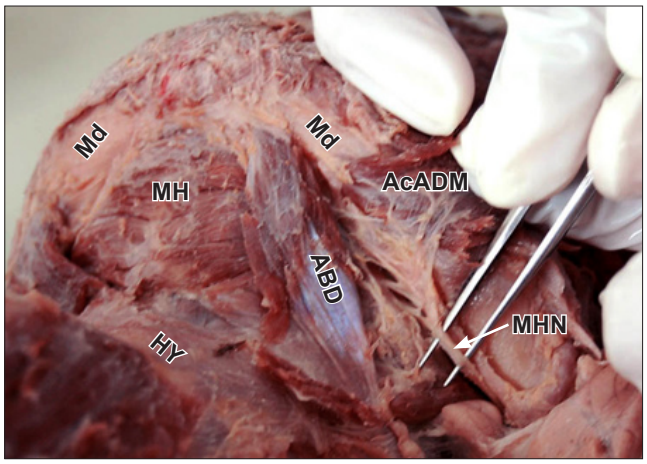

Figure 4. Photograph of suprahyoid region with left accessory anterior digastric muscle cut and reflected upwards to show its nerve supply from nerve to mylohyoid on the left side. *(**Md**: base of mandible; **MH**: mylohyoid muscle; **HY**: hyoid bone; **ABD**: anterior belly of left digastric muscle; **AcADM**: accessory anterior digastric muscle; **MHN**: nerve to mylohyoid)*

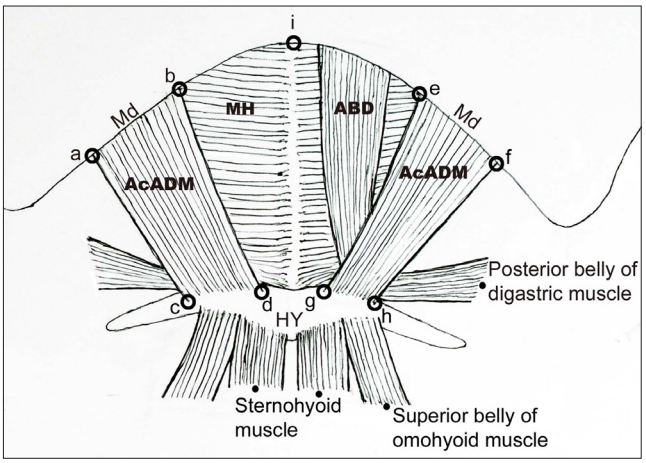

Figure 5. A schematic view of the variant digastric muscle described in the text. *(**Md**: base of mandible; **MH**: mylohyoid muscle; **HY**: hyoid bone; **ABD**: anterior belly of left digastric muscle; **AcADM**: accessory anterior digastric muscle)* Distance **a – b** = 2.7 cm; **c – d** =2.9 cm; **b – i** = 3.3 cm; **b – d** = 2.5 cm; **a – c** = 2.0 cm; **e – f** = 2.3 cm; **g – h** = 1.8 cm; **e – i** = 3.4 cm; **e – g** = 2.2 cm; **f – h** = 2.0 cm.

belly of digastric was absent on the right side. On the left side, AcADM was superficial to the anterior belly of digastric. This type of unique variant digastric muscle has not been reported previously.

Unilateral and bilateral variations in the anterior belly of digastric muscle can be due to deficiency in the differentiation process of the muscle primordium of the first pharyngeal arch on one or both sides, as the case may be. The authors believe that knowledge about these anatomical variations of surgical landmarks may help avoid complications in surgery and may help to avoid confusion while interpreting the images of the region. The present report is aimed at raising the awareness of the anatomical variations in the region.

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