

Case report:

A morphological variant of anterior belly of digastric muscle: a cadaveric case report

Nayak SB¹, Rao SS², Sudarshan S³, Prasad M⁴, Deepthinath R⁵

Abstract

Occurrence of accessory bellies of anterior belly of digastric muscle (ABD) in the submental region is not uncommon. However reporting of different pattern of accessory bellies is of tremendous clinical significance for head and neck surgeons, radiologists and plastic surgeons. Herein we report a rare asymmetrical variant of ABD in the suprahyoid region. Accessory bellies were observed on either side of midline. On the right side accessory belly had two segments; one segment extended between the lower part of the ABD and hyoid bone, other one extended between the digastric fossa of mandible to the body of hyoid bone. On the left side accessory belly extended between mylohyoid muscle and to the lower part of the ABD.

Keywords: Digastric muscle; accessory belly; hyoid bone; mylohyoid muscle; radiologists

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Introduction

Digastric muscle is one of the suprahyoid muscles that consists of two bellies; anterior and posterior, connected by an intermediate tendon. The intermediate tendon is anchored to the hyoid bone by a fibrous pulley which is derived from investing layer of deep cervical fascia. ABD originates from the digastric fossa, situated at the lower part of internal surface of the body of the mandible. Posterior belly takes origin from the digastric groove at the medial surface of the mastoid process. ABD lies superficial to the mylohyoid muscle. It is derived from the first pharyngeal arch in the fourth week of intrauterine life. It is supplied by mandibular nerve. Along with its posterior belly it depresses the mandible and elevates as well as stabilize the hyoid bone. ABD divides the area between the hyoid bone and mandible into submental and digastric triangles.¹ Since it forms an important landmark in the neck region, documentation of its abnormalities have

important clinical implications during neck surgery, pathology and soft tissue imaging procedures involving the submental region.² Herein we report a rare asymmetrical bilateral variation of ABD and discuss its clinical and embryological perspective.

Case report

During regular dissection classes for the undergraduate medical students, we came across an anatomical variation in the submental region. It was noted in a 60-year-old male cadaver of South Indian origin. Asymmetrical accessory bellies were observed in this region, on either side of the midline. On the right side accessory belly had two segments; one of these segments extended from the lower part of the ABD close the intermediate tendon to the body of hyoid bone, other one extended between the digastric fossa of mandible to the body of hyoid bone. On the left side accessory belly extended from the mylohyoid muscle to the lower part of the ABD close to the intermediate tendon (Figure 1). Further, on

1. B Satheesha Nayak, Department of Anatomy, Melaka Manipal Medical College (Manipal Campus), Manipal University, Madhav Nagar, Manipal, Karnataka State, India. 576104
2. Srinivasa Rao S, Srinivas Rao S, Department of Human and Clinical Anatomy, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman, P.O. Box 50, P.C. 123.
3. S Sudarshan
4. AM Prasad
5. R Deepthinath
Department of Anatomy, Melaka Manipal Medical College (Manipal Campus), Manipal University, Madhav Nagar, Manipal, Karnataka State, India. 576104

Correspondence to: Dr Srinivasa Rao S, Assistant Professor, Department of Anatomy, Melaka Manipal Medical College (Manipal Campus), Manipal University, Madhav Nagar, Manipal, Karnataka State, India. 576104, Email: seenaih.anat@gmail.com

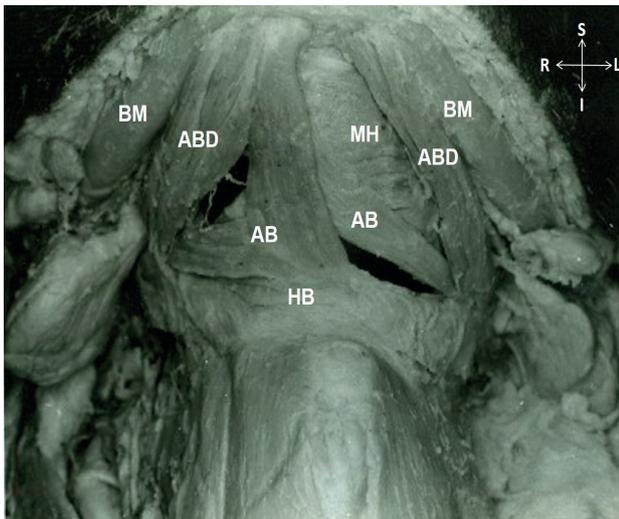


Figure 1: Photograph showing the muscles in the suprahyoid region. Note accessory bellies (AB) of anterior belly of digastric muscle (ABD). (HB: hyoid bone; BM: base of mandible; MH: mylohyoid muscle; R: right; L: left; S: superior; I: inferior)

both sides anterior and posterior bellies of digastric muscle had usual attachments.

Discussion

Anatomic variations of the digastric muscle are not uncommon. Morphologic variations have been observed in its anterior belly, intermediate tendon and posterior belly.² However anterior belly variations are more frequently reported in the literature. Presence of additional accessory bellies varying from one to four, originating from intermediate tendon or from a common tendon are commonly noted variations.²⁻⁶ Celik et al. have noted the quadrification of ABD.³ Rarely ABD is completely absent.⁷ Presence of accessory bellies may be unilateral or bilateral.^{3,4} Symmetric variants of ABD are more rarely observed.⁴ Two accessory bellies crossing the midline like 'X' extending from the bilateral intermediate tendon to the mental symphysis of mandible has been described.⁸ A similar case having the posterior halves of the accessory anterior bellies with tendinous portions has also been observed.⁹ Further, Liquidate et al. have reported a case in which two accessory bellies originated from the corresponding digastric fossae and reached the mylohyoid raphe near the

hyoid bone by fusing with each other.¹⁰ De-Ary-Pires et al. have classified the morphological variants of the ABD (type I to type V) based on the occurrence of number of the accessory bellies on each side separately, attached to the mylohyoid or mandible on same side and/or opposite side. In the present case, we observed type III ABD variation.² Contrary to classical type III, in the present case two accessory bellies on the right side were attached to the hyoid bone. Ozgur et al. have classified the ABD variations into digastric fossa type and crossover type. In the former type the attachments of the accessory bellies are found to be on same side whereas in later type accessory bellies cross to the opposite side for the attachment.⁵ Present case should be considered as combination of both types as the accessory bellies of right side are attached to the hyoid bone just left to the midline.

It has been suggested that occurrence of accessory bellies of ABD could be due to the anomalous development of neural crest cells in the first branchial arch. Further, abnormal development and/or maturation of the first branchial arch explains the abnormal attachment of accessory bellies of ABD with mylohyoid muscle.²

Digastric muscle is an important landmark in the submental region for the head and neck surgeons while planning surgeries in this region. According to Robbins' classification submental region contains an important Level I lymph nodes.¹¹ Therefore presence of accessory bellies could alter the topographic anatomy of this region and lead to confusion. Morphological variants of ABD are clinically important for the radiologists as accessory bellies of ABD may be mistaken for the pathological lymph node. Further presence of accessory bellies obstruct the lymph node biopsy procedure. Digastric muscle is frequently used in the plastic surgeries for the reconstruction of facial, intra-oral and lower lip defects.¹² Hence, reporting of various anatomic variants of ABD may be useful for plastic surgeons during muscle bundle transfer.

Conflict of interest: None

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