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CASE REPORT

Unilateral asymmetrical anterior bellies of the digastric muscle in coexistence with accessory muscle bundles in the submental triangle: A rare case report

Chefs antérieurs asymétriques unilatéraux du muscle digastrique coexistant avec des faisceaux de muscles accessoires dans le triangle sous-mental : à propos d'un cas

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KEYWORDS

Accessory digastric muscle;
Variation;
Neck muscles;
Hyoid bone;
Anterior belly;
Trigastric;
Submental triangle

Summary A three-headed anterior belly of the digastric muscle (ABDM) on the right side of a 54-year old Greek male cadaver coexisted with two accessory muscle bundles (AMB) in the submental region. The left ABDM was typical. Typical ABDM was attached to the digastric fossa, while the accessory right anterior bellies to the lower border of the mandible. A muscle bundle arising from the attachment of the left ABDM to the hyoid bone was also observed fusing with the AMB of the ipsilateral side. It is of extreme importance to be aware of the submental region anatomical variations during surgery, imaging interpretation or differential diagnosis of neck masses.

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Résumé Un corps antérieur à trois chefs du muscle digastrique (ABDM) coexistait avec deux faisceaux de muscles accessoires (AMB) dans la région sous-mentonnière sur le côté droit d'un cadavre mâle grec de 54 ans. L'ABDM gauche était typique. Des ABDM typiques étaient attachés à la fosse digastrique, tandis que le chef antérieur accessoire était attaché à la bordure inférieure de la fosse digastrique de la mandibule. Un faisceau musculaire provenant de la fixation de l'ABDM gauche à l'os hyoïde a également été observé fusionnant avec l'AMB du côté homolatéral. Il est extrêmement important de connaître les variations anatomiques de la région sous-mentonnière pour la chirurgie, l'interprétation de l'imagerie ou le diagnostic différentiel des masses cervicales.

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Introduction

Digastric muscle (DM) consists of an anterior and a posterior belly (ABDM and PBDM) with different embryological precursors and separate innervation [1]. ABDM and PBDM typically arise from the digastric fossa of the inner mandibular surface and the digastric notch of the temporal bone, innervated by the mylohyoid and facial nerve. Both bellies converge to the intermediate tendon attached to the hyoid bone. The DM is vascularized by branches of the submental artery (branch of the facial artery) [2]. The ABDM vary in size, shape and form. Its fusion with the mylohyoid muscle [2], as well as triplication [3] and quadruplication [4] cases have been described and occasionally are associated with unilateral or bilateral accessory muscle bundles (AMB) passing to the mandible or the mylohyoid muscle or crossing over the midline [5] giving branches to the opposite mylohyoid or course to the opposite digastric fossa [6]. The ABDM may be absent or atrophied in 0.2% of the cases. Such agenesis or atrophy may occur in up to 40% of patients with hemifacial microsomia and associated with ipsilateral facial nerve palsies [7]. Moreover, an accessory muscle connecting the hyoid bone with mandibular symphysis area, the so-called mentohyoid muscle, was described as an anatomical variant of the DM by Macalister (1882) [8].

DM variants may affect diagnostic and therapeutic procedures in head and neck [4]. Knowledge of ABDM typical and variable anatomy is important for an uneventful outcome in a plethora of procedures including submandibulectomy, submental lipectomy, rhytidectomy, cervicomental angle alteration, submental rejuvenation, submental artery flap and mouth reanimation after facial nerve palsy [9].

The current case focuses on multiple muscular variations in the submental triangle. Knowledge of this variability could be helpful in avoiding imaging misinterpretation and differential diagnosis pitfalls in neck mass cases.

Case report

During submental area dissection in a 54-year old Greek male cadaver, an atypical three-bellied ABDM was detected on the right side, while the contralateral ABDM was typical. Typical anterior bellies were attached to the digastric fossa, while the accessory bellies to the lower border of the mandible. In the submental triangle, two AMB in a triangle formation were observed superficially and medially to the

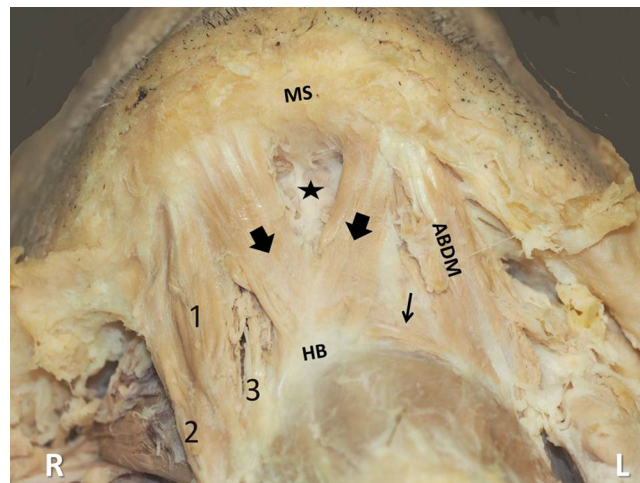


Figure 1 Organization of the bellies of the digastric muscle (view of the suprahyoid region): thick black arrows indicate the accessory muscle of the submental triangle, located superficial and medial to the anterior belly of the left digastric muscle (ABDM), originated from the lower border of the mandible bilaterally and inserted at the body of the hyoid bone. Numbers 1, 2, 3 indicate the three bellies of the right ABDM. The thin black arrow indicates the extra muscle slip. Black asterisk shows the mylohyoid muscle and part of the superficial layer of the deep cervical fascia. ABDM-left anterior belly, HB-hyoid bone, MS-mandibular symphysis, R-right side, L-left side.

ABDM, originating from the lower border of the mandible bilaterally, inserting to the body of the hyoid bone. The AMB were separated from the mylohyoid muscle by the superficial layer of the deep cervical fascia. Accessory muscle fibers, the so-named muscle slip, entirely arising from the attachment of the left ABDM to the body of the hyoid bone, were also observed, heading upwards and towards the midline, eventually fusing with the AMB (Fig. 1). Further dissection in the submental triangle revealed that typical and accessory ABDM were supplied by a small vascular branch emanating from the submental artery (Fig. 2). No other muscular abnormalities were observed.

Discussion

Developmentally, the suprahyoid AMB are formed due to the abnormal splitting of the rudimentary embryonic muscle,

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