Middle-East Journal of Scientific Research 21 (5): 733-735, 2014
ISSN 1990-9233

DOI: 10.5829/idosi.mejsr.2014.21.05.83266

Anomalous Belly of Digastric Muscle: Gross Anatomy with Clinical Implications

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Abstract: The digastric muscle in the human body has two bellies joined by a rounded intermediate tendon. The anterior belly is attached to the digastric fossa which is situated on the base of the mandible. The posterior belly of digastric muscle is longer than the anterior counterpart and it is attached to the mastoid notch of the temporal bone of the skull. The two bellies meet by means of an intermediate tendon which is attached to the hyoid bone. In the present case, we observed the anterior belly to have fleshy part whereas the posterior belly did not have any fleshy component; rather it had tendinous part, which was very unusual. Anatomical knowledge of variations of digastric muscle may help in better understanding of the kinematics of the mandible and beneficial in neck surgeries.

Key words: Digastric · Muscle · Variation · Anomaly · Neck · Anatomy

INTRODUCTION

The anterior belly of the digastric muscle (DM) is attached to the digastric fossa in the mandible whereas the posterior belly attaches to the mastoid notch of the temporal bone [1]. According to standard textbooks of anatomy, the two bellies of DM meet as intermediate tendon which continues as a fibrous sling that is attached to the body and greater cornu of the hyoid bone [2]. The intermediate tendon is even reported to be covered with a synovial sheath [2].

The anterior and posterior bellies of the DM are innervated by the mylohyoid branch of the inferior alveolar nerve and the facial nerve, respectively. The action of the DM is to depress the mandible against resistance and elevate and steady the hyoid bone during the action of swallowing and speaking [1].

Conventional textbooks of anatomy do not highlight the variations related to the DM. In the present case, we report a variant posterior belly of the DM. The posterior belly exhibited the tendinous component, only. Presence of tendinious component of a muscle may alter the kinematics of the mandible. Anatomical knowledge of variations of DM may also be important for neck surgeons.

Case Report: During routine dissection, we observed anomalous digastric muscle unilaterally on the right side of a 53-year-old male cadaver. The region of the neck was dissected in detail. Detailed morphological measurements were taken and the specimen was photographed (Fig.1).

The anterior belly of the DM was observed to originate as usual from the digastric fossa. The anterior belly measured 3.1 cm whereas the posterior belly measured 5 cm. The posterior belly was entirely tendinous with no fleshy component of the muscle being seen. The pulley formed by the meeting of the anterior and posterior belly was as usual. The anterior and posterior bellies were innervated by the mylohyoid branch of the inferior alveolar nerve and the facial nerve, respectively.

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Fig. 1: Photograph showing dissection of the right neck. PB: Posterior belly; T: Tendinous component; AB: Anterior belly. Asterisk * shows the intermediate tendon.

DISCUSSION

The two different bellies of DM muscle have different embryological origin. The anterior belly develops from the first pharyngeal arch whereas the posterior belly develops from the Reitcher's cartilage (Second pharyngeal arch) [3]. Both the bellies are innervated by different nerves because of their developmental origin from different mesenchyme of branchial arches. The same was observed in the present case. Any anomaly of the posterior belly as seen in the present case may be related to the developmental defect in the second pharyngeal arch.

Research reports depict that these anomalies are usually unilateral [4, 5]. In the present case, the anomaly was also unilateral *i.e.* on the right side. The earliest anomaly discovered on the anterior belly was way back in 1948 by Testut and Latarjet [4]. One study reported the anterior belly to be absent and in the absence of the anterior belly, the posterior belly inserted into the middle of the jaw or the hyoid bone [6].

The clinical implications of the variations related to the bellies of DM may not be undermined easily. It has been reported that variations related to the anterior belly may be confused with pathological conditions and lesions seen in the floor of the mouth and submental region when viewed in CT and MRI scans [7-9].

Researchers examined the relationship between contingent negative variation amplitude and digastric muscle activity while performing jaw-opening motor task [10]. We believe that tendinous component of the posterior belly in the present case may alter the force of pull of the mandible downwards and also be liable for injury.

Hence, anatomical knowledge may be important for neck surgeons performing resection of the lymph nodes.

CONCLUSION

The present case described the gross anatomy and clinical importance of anomalous posterior belly of DM. Larger studies confined to different geographical areas may also help in better understanding the anthropological aspect of such anomalies.

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