Anatomic variations

An accessory mylohyoid muscle

Ü Sehirli and S Çavdar

Department of Anatomy, Faculty of Medicine, Marmara University, 81326, Istanbul, Turkey

Summary: During dissection of the submandibular region of a forty year old male a unilateral left accessory mylohyoid muscle was revealed. This muscle was located between the left anterior belly of the digastric and left mylohyoid muscles. It arose from the left mylohyoid line of the mandible and was inserted into the lower portion of the mylohyoid raphe and hyoid bone. This unilateral accessory mylohyoid muscle is a rare anomaly, which is thought to contribute to the functional support of the floor of the mouth.

Un muscle mylo-hyoidien accessoire

Résumé : Au cours de la dissection de la région submandibulaire, un m. mylo-hyoidien accessoire gauche a été trouvé chez un homme de 40 ans. Ce muscle était situé entre le ventre antérieur du m. digastrique gauche et le m. mylo-hyoidien gauche. Il naissait de la ligne mylo-hyoidienne gauche de la mandibule et s’insérait sur la partie inférieure du raphé mylo-hyoidien et sur l’os hyoïde. Le m. mylo-hyoidien accessoire unilatéral est une anomalie rare, qui, nous le pensons, peut participer à la fonction du plancher oral.

Key words: Mylohyoid — Accessory — Unilateral — Variation

The mylohyoid muscle is a diaphragm for the floor of the mouth and it elevates the oral floor in the first stage of deglutition [13]. Embryologically, it arises from the first pharyngeal arch together with the anterior belly of the digastic muscle [2, 13]. Although there are many case reports on anomalies of the anterior belly of the digastic muscle, the variations concerning the mylohyoid muscle are quite rare [1, 4, 7, 10, 12]. Macalister describes a case in which the mylohyoid muscle was absent and replaced by large anterior belly of the digastic muscle [5]. Additionally, he found the mylohyoid raphe, was interrupted or completely absent in some of his examples; in the absent mylohyoid raphe, the fibres of right and left mylohyoid muscles converged on each other in the midline [5]. Hamy and Chudzinski observed three cases, cited in Le Double’s article, in which the mylohyoid muscle inserted into the intermediate tendon of the digastic muscle [4]. This further study reveals a rare anomaly of the mylohyoid muscle, which can be of clinical interest in the surgery of the region.

Materials, methods and findings

The submandibular region of a forty year old male cadaver was being dissected for educational purposes when a unilateral left accessory mylohyoid muscle was revealed. The left accessory mylohyoid muscle was located between the left anterior belly of the digastric and the left mylohyoid muscles.

The accessory mylohyoid muscle originated from the left mylohyoid line on the mandible. The anterior fibres of this muscle coursed obliquely, traversing the lower portion of the mylohyoid raphe to be inserted medial to the inferior edge of the anterior belly of the right digastric, onto the body of the hyoid bone and also to the lower portion of the mylohyoid raphe. The posterior left of the body of the hyoid bone (Figs. 1a-b, 2a-b, 3a-b).

The origin of the anterior belly of each digastric muscle was wide, the left was 2.8 cm and the right was 2.7 cm; the digastric fossa were normal in shape and the fibres of these muscles converged towards their intermediate tendons (fig. 1a-b). The anatomy of both mylohyoid and posterior bellies of these digastic muscles were normal.

Discussion

The variations of the anterior belly of the digastic muscle are quite common; however, variations of the mylohyoid muscle are not so [9, 11].

Embryologically, the anterior belly of the digastric and mylohyoid muscles have the same origin and same innervation. Therefore, any variation of these
This accessory mylohyoid muscle was presumed to have a supportive function to mylohyoid. Additionally, the wide origin of the anterior belly of each digastric muscle might likewise contribute to floor support, as well as depressing the mandible.

In rodents, the mylohyoid muscle consists of superficial and deep portions. The superficial portion is smaller and extends from half of the mandible to the hyoid bone. The deep portion is relatively thin and also extends between the mandible and the hyoid bone. Similar organisation of the mylohyoid muscle is observed in reptiles and Indian elephants [4, 11].

Kosugi studied the variations of muscles and came to the conclusion that an anomaly was either from the past (atavistic) or a form on the way to further differentiation [3]. He divided the muscles into two groups; the first group possessing many variations which he referred to as muscles on the way to further differentiation and the second group having fewer variations in other words stable differentiated muscles [3].

This case particularly resembles the mylohyoid muscle in rodents, reptiles and Indian elephants. We believe that the mylohyoid muscle is a stable muscle from viewpoint of phylogeny and therefore this very rare variation could be described as evolutionary.

Nathan and Luchansky described mylohyoid deficiency causing sublingual gland and fat tissue herniation through the muscle in 27.3% of the studied cases [8]. The authors have speculated on the deficiency of the muscle and herniation of the gland be it congenital or acquired. Further more, they concluded that the reason for an acquired deficiency of the muscle and herniation of the gland was the change in oral pressure due to swallowing, coughing, sneezing, etc; alternatively the perforation of the mylohyoid muscle by vessels to the gland might predispose to herniation as in any abdominal hernia [8]. An accessory mylohyoid muscle would in this case presumably prevent such a herniation. Also the single accessory mylohyoid muscle will cause division of the trigeminal.

Fig. 1a, b
The illustrations of submental region of a cadaver, showing the accessory mylohyoid muscle (RD: right digastric m., LD: left digastric m., AMM: accessory mylohyoid m., MM: mylohyoid m., M: mandible, HB: hyoid bone)

Fig. 2a, b
The illustrations of submental region, after the left digastric muscle has been reflected (RD: right digastric m., LD: left digastric m., AMM: accessory mylohyoid m., MM: mylohyoid m., M: mandible, HB: hyoid bone)