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TRAPEZOID SHAPED OMOHYOIDEUS MUSCLE: An Anatomic Variation seen in Functional Neck Dissection

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ABSTRACT

Omohyoid muscle (Om) is an important anatomical landmark in cervical lymph node partition, neck dissection for head and neck cancers and cervical spine surgery. It consists of two bellies united at an angle by an intermediate tendon. Variations in the origin and insertion of the muscle, absence or duplication of the superior or inferior bellies, aberrant position in relation to IJV and sternocleideomastoid muscle have been reported. We report a rare anatomical variation of the Om in this report. This variation was observed during neck dissection of a 58 years-old male patient with laryngeal carcinoma. It was noticed that, the superior belly of Om was in a trapezoid shaped unilaterally

Introduction

Omohyoid muscle (Om) is one of the infrahyoid muscle and consists of two bellies united at an angle by an intermediate tendon. The inferior belly arises from the upper border of the scapula, and ends there in the intermediate tendon. The superior belly begins at the intermediate tendon, passes almost vertically upwards near the lateral border of sternohyoid and is attached to the lower border of the body of the hyoid bone lateral to the insertion of sternohyoid [1]. It passed behind the sternocleidomastoid muscle and lies superficial to the internal jugular vein, the brachial plexus, phrenic nerve, and the transvers cervical artery and vein [2].

Om is an important landmark in cervical lymph node partition, neck dissection and cervical spine surgery [3]. Superior and inferior bellies of the Om divide the anterior and posterior triangles respectively [4].

A wide spectrum of Om has been reported. Variations in the origin and insertion of the muscle, absence or duplication of the superior or inferior bellies, aberrant position in relation to IJV and sternocleideomastoid muscle [2, 4-9]. The inferior belly may be attached directly to the clavicle and known as cleido-hyoideus muscle [10]. Variations of the Om are important in clinical and surgical aspect because of its close relationship with the IJV [5]. Surgery related with internal jugular vein is fraught with danger, and it requires the knowledge of the anatomical structure of the patients and meticulous dissection.

We hereby report a rare anatomical variation of Om. During the neck dissection of a 58-years-old male patient with laryngeal carcinoma, we observed the triangular (or trapezoid) shaped Om on the left side of his neck. A part of the superior belly of Om was fused medially with sternohyoid muscle.

Case Report

This variation was observed a during neck dissection of a 58 years-old male patient with laryngeal carcinoma. The superior part of the superior belly of Om coursed toward the hyoid bone as in normal anatomic structure, but an additional broad muscle bundle originated from intermediate tendon run medially and fused with sternohyoid muscle on the left side of the neck. The appearance of the whole superior belly of the Om was seen as a trapezoid (or triangular) shaped (Fig 1,2). On the other site of the neck, the Om was in normal anatomic structure.

Discussion

Omohyoid muscle abnormalities have been reported in a wide spectrum. These abnormalities are releated to the origin and insertion, the course and number of the bellies, and the surrounding muscles [11]. Although duplication, agenesia, insertion and origin anomalies of the omohyoid are frequently reported in the medical literature [2, 4-9], the triangular shaped omohyoid muscle, as in the present case, is very rare.

Raikos et al. (2014) have been reported a similar case, but there were some differences between that case and our case. Intermediate tendon has not in their case and the superior segment of the Om has duplicated, having a normal and an aberrant belly and inserted onto hyoid bone. An additional broad muscle slip originated from sternohyoid muscle has run laterally and has fused with the proximal portion of the inferior belly of Om muscle in their case [5]. As our case, the broad aberrant transverse muscle bundle similar with their case, but that part of the muscle was coursing between intermediate tendon and sternohyoid muscle. Additionally, the superior belly of Om muscle was not duplicated in our case. Up to date, this patient is our first case with triangular shaped Om muscle in our neck dissection series reached several hundred numbers.

Omohyoid muscle is an important anatomical landmark for staging and surgery (neck dissection) for head and neck cancers, in cervical spine surgery, in reconstructive omohyoideus flap surgery, and in endoscopic exploration of brachial plexus which recently had been used.

In lymph node partititation, omohyoid muscle accepted as a border between level III and IV lymph nodes [2,3,5]. One of the most widely used types of selective neck dissection is the supraomohyoid neck dissection. In supraomohyoid neck dissection, level I-III lymph nodes is removed in the N0 and N1 neck depending n the site of the oropharyngeal tumor and the inferior border for dissection is the omohyoideus muscle [9]. So variations of the omohyoid muscle are important in clinical and surgical aspect because of its close relationship with the IJV. Any variation in the anatomical landmark may increase surgical complication risks. Overall, the variations of the omohyoid muscle is important clinically. Correct knowledge about muscular variation is important.

Surgery related with internal jugular vein is fraught with danger, and it requires the knowledge of the anatomical structure of the patients and meticulous dissection. To help minimize operative morbidity and mortality and to reduce the complication rates, a clear understanding of anatomy is essential.

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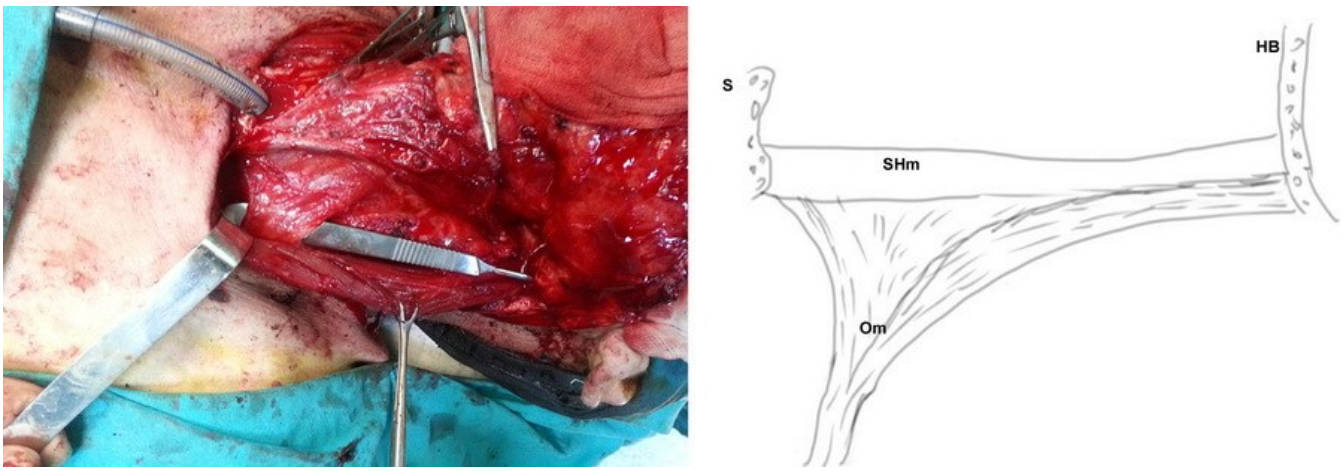

Figure 1 a

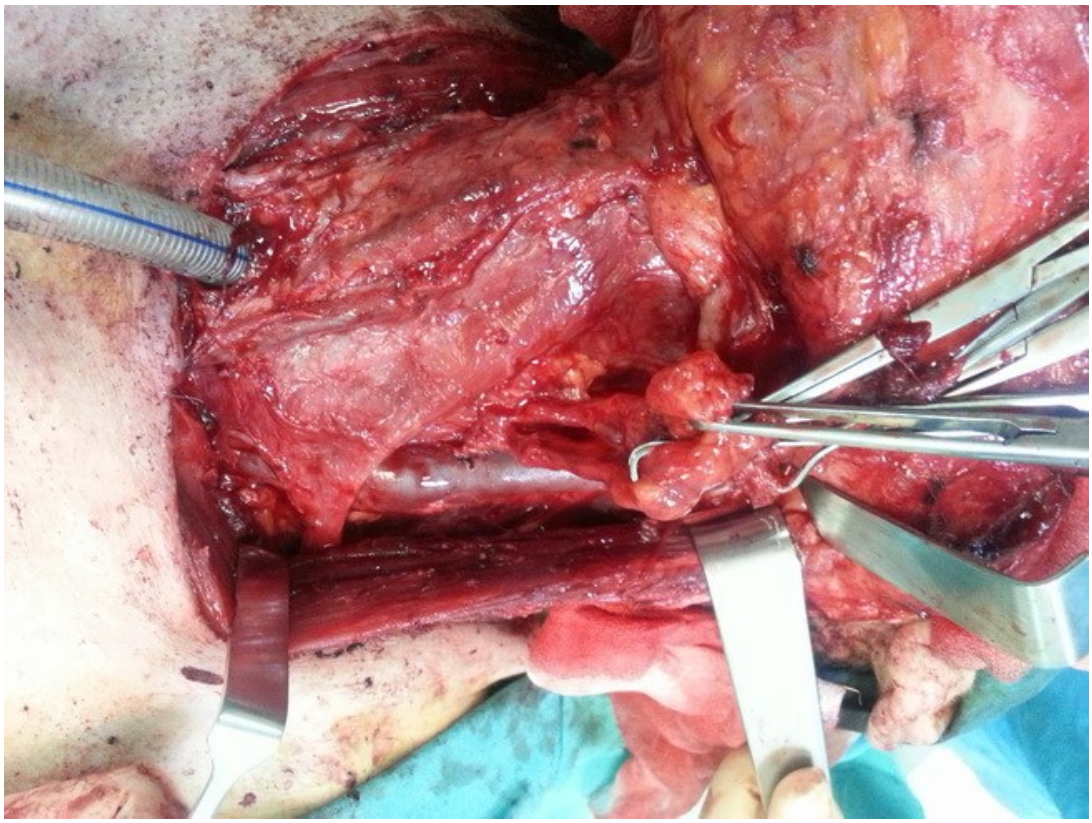

Figure 1 b

The superior part of the superior belly of Om coursed toward the hyoid bone as in normal anatomic structure, but an additional broad muscle bundle originated from intermediate tendon run medially and fused with sternohyoid muscle. The appearance of the whole superior belly of the Om was seen as a triangular (or trapezoid) shape. (Om: Omohyoid muscle, SHm: Sternohyoid muscle, SCMm: Sternocleidomastoid mascle, IJV: Internal jugular vein, S: Sternum, HB: Hyoid bone, *: Neck dissection materials).