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Case Report

Anomalous External Jugular Vein with variant Omohyoid – anatomico-clinical appraisal

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ABSTRACT

Variability in size, formation, course and termination of superficial system of veins of Head and Neck are common. This is due to the complex development of veins and various stages of evolution and involution of multiple paired embryonic veins. These variations often noticed during routine anatomical dissection, may provide invaluable assistance for the clinicians, surgeons and radiologist. External Jugular Vein is routinely used in the estimation of Central Venous Pressure, IV Catheterization for haemodialysis, parental nutrition in critically ill patients and in trans – jugular procedures. An unusual termination of left External Jugular Vein (EJV) and atypical left Omohyoid muscle was noticed during routine dissection of a 65 year old male cadaver. The left EJV crossed the jugular notch in the midline and drained into the right Subclavian vein. On the same side Omohyoid had a single belly that originated from the medial half of the clavicle and was inserted into the hyoid bone. This unilateral spectrum of anatomic variation makes it a rare special case.

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1. Introduction

External Jugular Vein (EJV) is a superficial vein in the neck formed by the union of posterior division of retromandibular vein and posterior auricular vein. It crosses the sternocleidomastoid muscle obliquely, pierces the deep cervical fascia and terminates into the Subclavian vein (SV). Any variation in EJV may be significant, as it is routinely used in the estimation of Central Venous Pressure, IV Catheterization for haemodialysis and in trans-jugular procedures.¹ EJV shows greater

variability with respect to formation, course, tributaries, communications and termination². The vein is sometimes doubled.³

Omohyoid an infrahyoid muscle has two bellies united by an intermediate tendon. It is connected to the clavicle by a fascial sling. It has a topographical value in description of anterior and posterior triangles. It forms a landmark in the neck as this muscle is related to large cervical vessels and plexus of nerves.⁴ Multiple variations of Omohyoid have been recorded since 19th century. There are reports about the unusual origin of omohyoid from transverse process of C6⁵ and

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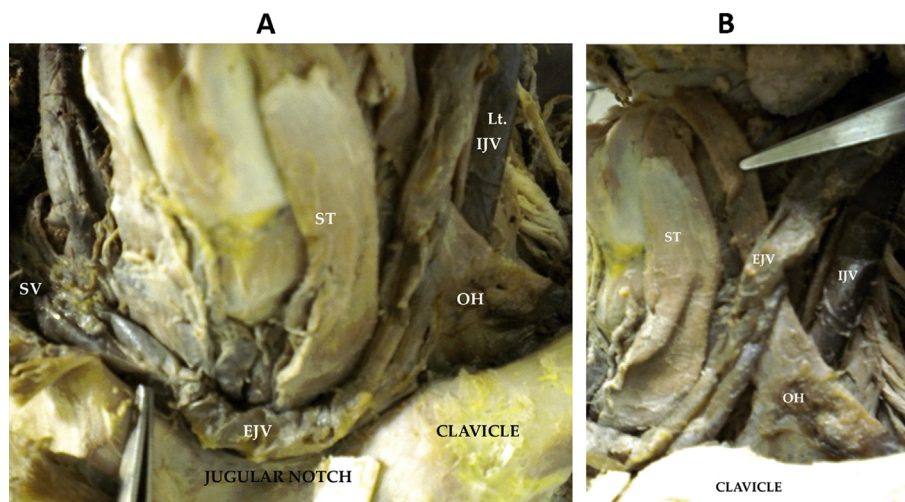


Fig. 1 – Photograph of dissected neck with left sternocleidomastoid removed. A: Left External jugular vein crossing jugular notch and draining into right subclavian vein. B: Attachments of left omohyoid exposed. EJV: External Jugular Vein, IJV: Internal Jugular Vein, OH: Omohyoid, SV:Subclavian vein.

from clavicle.⁶ In present case we report combined occurrence of variable course and termination of EJV with an anomalous omohyoid muscle which is novel.

2. Case report

An unusual termination of left External Jugular Vein (EJV) and atypical left Omohyoid muscle was noticed in the 65 year old male cadaver during routine dissection. The left EJV formed at the angle of the mandible was found to be larger in diameter. It continued downwards and medially along the anterior border of sternocleidomastoid, crossed the jugular notch in the midline and drained into the right SV (Fig. 1A). On the same side Omohyoid had a single belly without an intermediate tendon. It was a short muscle measuring 7.2 cms that originated as an aponeurotic expansion from the posterior surface of medial half of the clavicle (Fig. 1B) and was inserted into the hyoid bone. The muscle was innervated by ansa cervicalis. On the right side EJV was absent and the omohyoid muscle exhibited typical attachments.

3. Discussion

Complex embryological development of the vascular system and various stages of evolution and involution of multiple paired embryonic veins may often result in clinically relevant variations. The external jugular being one of the variable veins in head and neck shows more variations at its origin than termination.³ The termination of EJV into corresponding Internal Jugular Vein (IJV) has been reported by various authors. Hollinshead (1956)⁷ has described in one third of cases EJV terminated into lower part of IJV. Yadav et al (2000)⁸ reported a case wherein EJV crossed superficial to the sternocleidomastoid muscle and ended in IJV above the level of superior belly of omohyoid. In our observation the left EJV

terminated into the right Subclavian vein and also a variant omohyoid on the same side was noticed, which has not been reported so far.

Langsam (1941)⁹ described the absence of intermediated tendon of omohyoid in 10% of the population. Hatipogulu et al (2006)¹⁰ reported the presence of an accessory cleido-hyoideus that was attached at its caudal end to the clavicle. An unusual form of omohyoid was observed, wherein the superior belly originated from the clavicle when the inferior belly was absent. This muscle was termed cleido-hyoideus (Bergman et al 2006).¹¹ According to its origin and insertion the muscle in our case may be considered as cleido-hyoideus. It originated as a fan shaped aponeurosis from the clavicle (Fig. 1B) and obscured the subclavian vessels. This may have led to the termination of left EJV into the right subclavian vein, which may be due to regression and retention of different parts of veins as explained by gupta et al (2003)¹² in monkeys.

Prior anatomical knowledge of variations with respect to EJV and omohyoid muscle warrant attention for surgeons in radical neck dissection, for radiologist performing catheterization and for clinicians in general. The inspection, auscultation and doppler sonographic examination of the jugular veins may give a clue for the diagnosis of cardiac diseases[1]. Topographically, omohyoid is important as it is related to large cervical vessels and plexuses of nerves, which makes it a landmark for radical neck dissection.^{4,13} The variant Omohyoid being short in our observation may compress the IJV that may lead to modifications in intracerebral venous haemodynamics (Patra P et al 1998).¹⁴ Thus awareness and better understanding of variations of EJV and Omohyoid muscle is of paramount importance.

Conflicts of interest

All authors have none to declare.

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