Journal of the Anatomical Society of India 66S (2017) S11–S12

Contents lists available at ScienceDirect

Journal of the Anatomical Society of India

journal homepage: www.elsevier.com/locate/jasi

Case Report

Jugulo-facial venous circle, accessory slip of trapezius and absence of typical facial vein—Clinically important anatomical variations

Satheesha Nayak B

Melaka Manipal Medical College (Manipal Campus) Manipal University, Madhav Nagar, Manipal, Udupi District, Karnataka State, 576104, India

ARTICLE INFO

Article history:
Received 11 April 2017
Accepted 3 October 2017
Available online 10 October 2017

Keywords:
Vein jugular
Radiology
Anesthesia
Neck plastic surgery
Neck muscles
Radical neck dissection

ABSTRACT

Knowledge of facial and external jugular vein variations is useful for medical disciplines such as radiology, anesthesia, general surgery and plastic surgery for the success in their procedures in the head and neck region. I report a unique combination of venous and muscular variation in the left side of the neck of an adult male cadaver. The typical facial vein was absent. Facial vein was represented as a vena comitans of facial artery. The common facial vein joined with the external jugular vein to form a jugulo-facial venous circle above the lateral part of the clavicle. This circle was closely related to an accessory muscle slip from the trapezius. Further, the common facial vein was connected to the anterior jugular vein through a large anonymous vein. I discuss the clinical implications of these variations.

1. Introduction

External jugular vein is one among the superficial veins of the neck. It is formed by the union of posterior division of the retromandibular vein and the posterior auricular vein. It descends superficial to the sternocleidomastoid muscle, passes behind the clavicle and terminates by opening into the subclavian vein. It may be absent, doubled, tripled or fenestrated [1–3] Sometimes, it might deviate from its usual termination and open into the internal jugular vein or it might pass superficial to clavicle to join cephalic vein or directly open into the subclavian vein.[4,5] Facial vein is the main vein of the face and it begins as the continuation of angular vein at the medial canthus of the eye. It joins with the anterior division of retromandibular vein to form common facial vein which terminates into the internal jugular vein. The facial vein may terminate into external jugular vein or anterior jugular vein as a variation in its termination.[6] Aim of the current report is to present a combination of an unreported combined musculo-venous variation of clinical importance, knowledge of which could be vital to many disciplines in the medical field.

2. Case report

During dissection classes for undergraduate medical students, I observed multiple venous variations associated with an accessory muscle slip from trapezius in a male cadaver aged about 60 years. The variations were observed on the left side of the neck and were unilateral. There was an accessory muscle slip of trapezius, which got separated from the lower part of the anterior border of the muscle and got inserted onto the superior surface of the middle of the clavicle, thus reducing/distorting the subclavian triangle (Figs. 1 and 2). There was a narrow gap between the main part of trapezius and the accessory slip. The typical facial vein was absent. Facial vein was represented as a slender vena comitans of facial artery, which was closely adherent to the facial artery through fascia. Anterior division of the retromandibular vein joined the facial vein to form the common facial vein. There were three prominent veins on the massester which united to form a single vein, which terminated into the anterior division of retromandibular vein. The common facial vein descended downwards and laterally superficial to the sternocleidomastoid muscle to reach the lower part of posterior triangle, where it formed a jugulo-facial venous circle by joining the external jugular vein (Figs. 1 and 2). Further there was a large anonymous vein in the anterior triangle, which connected the common facial vein to the anterior jugular vein (Fig. 1). The external jugular vein was formed within the parotid gland by union of posterior division of retromandibular vein and the posterior auricular vein. It descended down vertically in the posterior triangle and formed the jugulo-facial venous circle at the gap between the trapezius and its accessory slip (Figs. 1 and 2). From this venous circle, a single vein arose and descended down obliquely under cover of the

E-mail address: nayaksathish@gmail.com (N.B. Satheesha).

https://doi.org/10.1016/j.jasi.2017.10.008
0003-2778/

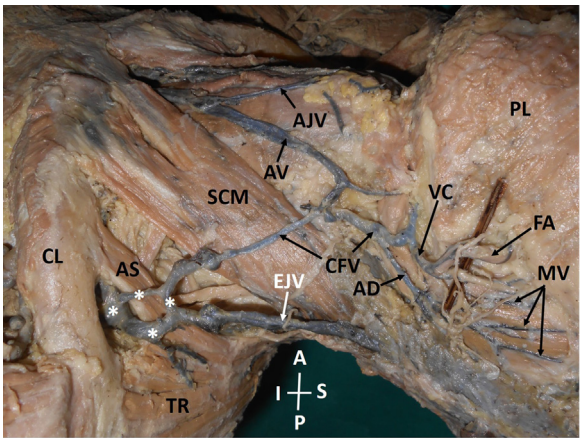

Fig 1. Superficial dissection of the left side of the neck showing the jugulo-facial venous circle (indicated by asterisks).
(CL – clavicle; SCM – sternocleidomastoid; TR – trapezius; AS – additional slip of trapezius; EJV – external jugular vein; CFV – common facial vein; AD – anterior division of retromandibular vein; AV – anonymous vein of the neck; AJV – anterio jugular vein; PL – platysma (reflected upwards from the neck); FA – facial artery; VC – vena comitans of faical artery; MV – masseteric veins).

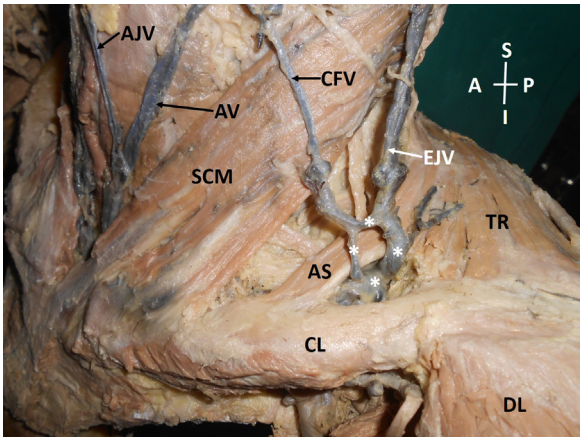

Fig. 2. Closer view of the jugulo-facial venous circle (indicated by asterisks).
(CL – clavicle; SCM – sternocleidomastoid; TR – trapezius; DL – deltoid; AS – additional slip of trapezius; EJV – external jugular vein; CFV – common facial vein; AV – anonymous vein of the neck; AJV – anterio jugular vein;).

accessory slip of trapezius and joined the subclavian vein at an angle of 70 degrees.

3. Discussion

The knowledge of combined musculo-venous variations being reported here could be of importance in various disciplines of medical sciences such as radiology, surgery and anesthesiology.[7–9] External jugular vein is the vein used for central venous access. Its variations might cause complications in this procedure. In the current case, the external jugular vein formed the jugulo-facial venous circle just above the clavicle. This circle was situated in a narrow gap between the anterior border of trapezius and its accessory slip. This circle might get entrapped during the contraction of the muscle and might result in aneurysm of both facial and external jugular veins. Anterior/medial part of the circle was narrow compared to its posterior part. Any catheter passing through it might result in its rupture. Since the circle was closely related to the weakest part of the clavicle, it might get involved in the fractures of clavicle, resulting in alarming bleeding.

Facial vein being represented by just a vena comitans is a very rare variation. This was combined with presence of three unusual masseteric veins. Knowledge of this possibility could be useful in facial surgeries and parotid surgeries.

Trapezius muscle shows many variations in its origin and insertion. Cleido-occipitalis cervicalis is one of its commonly reported variations where the lateral occipital fibres of the muscle get separated into an additional belly running parallel to the anterior border of trapezius.[10] The current additional slip represented the lower part of this variant. This additional slip fills the major part of the subclavian triangle, especially the supraclavicular part of brachial plexus. It might be diagnosed as a supraclavicular mass. It might also impede in the anesthesia procedures of brachial plexus. Though the presence of accessory slips of sternocleidomastoid and termination of facial vein into external jugular vein have been reported earlier, the formation of a venous circle above the clavicle has not been reported yet. The absence of a classic facial vein is also an extremely rare variation. A combined musculo-venous variation makes the case unique. Hence a knowledge of these combined variations in the neck could be of importance in diagnostic, invasive, surgical, anesthesiology and pastic surgery procedures.

Conflict of interest

None.

References

[1]. Cvetko E. A case of left-sided absence and right-sided fenestration of the external jugular vein and a review of the literature. *Surg Radiol Anat*. 2015;37(September (7)):883–886.
[2]. Shenoy V, Saraswathi P, Raghunath G, Karthik JS. Double external jugular vein and other rare venous variations of the head and neck. *Singapore Med J*. 2012;53(December (12)):e251–253.
[3]. Paraskevas G, Natsis K, Ioannidis O, Kitsoulis P, Anastasopoulos N, Spyridakis I. Multiple variations of the superficial jugular veins: case report and clinical relevance. *Acta Medica (Hradec Kralove)*. 2014;57(1):34–37.
[4]. Anehosur V, Rajendiran S, Jayade GR, Kumar N. An unusual observation during neck dissection. *J Maxillofac Oral Surg*. 2016;15(July (Suppl. 2)):306–308.
[5]. Reinhardt KR, Kim HJ, Lorich DG. Anomalous external jugular vein: clinical concerns in treating clavicle fractures. *Arch Orthop Trauma Surg*. 2011;131(January (1)):1–4.
[6]. Gupta V, Tuli A, Choudhry R, Agarwal S, Mangal A. Facial vein draining into external jugular vein in humans: its variations, phylogenetic retention and clinical relevance. *Surg Radiol Anat*. 2003;25(April (1)):36–41.
[7]. Lohn JW, Penn JW, Norton J, Butler PE. The course and variation of the facial artery and vein: implications for facial transplantation and facial surgery. *Ann Plast Surg*. 2011;67(August (2)):184–188.
[8]. Kato K, Taniguchi M, Iwasaki Y, et al. Central venous access via external jugular vein with CT-venography using a multidetector helical 16-section CT. *J Invest Surg*. 2014;27(June (3)):176–182.
[9]. Marcy PY, El Hajjam M, Lacout A, Nöel C, Simon JJ, Figl A. External jugular vein cross-over as a new technique for percutaneous central venous port access in case of left central venous occlusion. *J Vasc Access*. 2013;14(October-December (4)):388–391.

[10]. Kwak HH, Kim HJ, Youn KH, Park HD, Chung IH. An anatomic variation of the trapezius muscle in a Korean: the cleido-occipitalis cervicalis. *Yonsei Med J*. 2003;44(December (6)):1098–1100.