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Case Report

An interesting and rare anomaly of external jugular vein: Case report

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ABSTRACT

External jugular vein is being increasingly utilized for central venous access for parenteral nutrition, intravenous chemotherapy, diagnostic procedures, and anastomosis for free tissue transfer. Therefore, knowledge of its variation is important to clinician's associated with critical care, intervention radiology, and micro-vascular reconstruction. We report a very rare and interesting situation in which linguofacial venous trunk joined with external jugular vein forming a common trunk and drained into the anterior aspect of the internal jugular vein above the omohyoid muscle. The knowledge of such variation is also of importance to head and neck oncologists to avoid unnecessary bleeding during neck dissection.

1. Introduction

Normally the external jugular vein (EJV) is formed by the union of posterior division of the retromandibular vein and posterior auricular vein. The facial vein joins with the anterior division of the retromandibular vein to form common facial vein, which drains into the internal jugular vein (IJV). The EJV after formation runs vertically downwards in the superficial fascia of the neck and crosses the sternocleidomastoid muscle from the superficial aspect. It pierces deep cervical fascia just above the middle of the clavicle and drains into subclavian vein (SCV).[1] EJV is now being increasingly utilized by interventional radiologists for procedures like caval filter placement and transvenous liver biopsy.[2,3] EJV catheterization for placement of hemodialysis catheters is used in cases with internal jugular vein occlusions.[4] Micro-vascular surgeons also utilize the EJV for vascular anastomosis during free flap reconstruction of defects in head and neck region due to ablative surgery for cancer. Therefore, any variation in the external jugular vein is important and should be kept in mind by the clinicians while performing such procedures. Head and neck oncologists should also be aware of such variation so that unnecessary bleeding can be avoided during performing various forms of neck dissections. We report a case where linguofacial venous trunk united with EJV forming a common trunk, which drained into the anterior aspect of the internal jugular vein.

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2. Case report

A 58-year-old male patient presented to us with T4a N2b squamous cell cancer of the lower gingivobuccal complex on the left side. We performed left buccal mucosa composite resection and modified neck dissection preserving IJV and Spinal accessory nerve. During clearance of fibro-fatty tissue and lymph nodes in the level V region, we could not locate the lower end of the EJV on the left side. Instead, while clearing lymph nodes along the IJV, we found venous trunk draining into the anterior surface of IJV above the level of the omohyoid muscle. On tracing the anomalous vein upwards, it was seen to be formed by the EJV and linguofacial venous trunk anterior to the surface of the sternocleidomastoid muscle (Fig. 1).

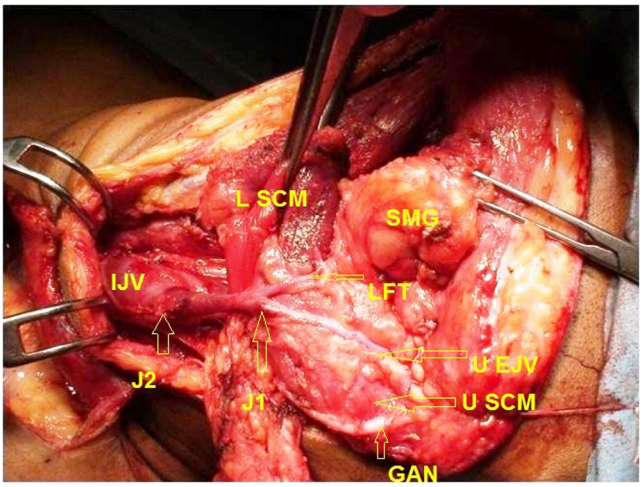

Fig. 1 – Modified neck dissection showing linguofacial trunk joining EJV and draining into the anterior surface of the IJV (*U EJV*: Upper end of external jugular vein; IJV: Internal Jugular vein; J1: Junction of linguofacial trunk with external jugular vein; J2: Junction of external jugular vein with anterior aspect of internal jugular vein; L SCM: Lower border of sternocleidomastoid muscle; U SCM: Upper end of sternocleidomastoid muscle; SMG: Submandibular gland; LFT: Linguofacial trunk; GAN: Greater Auricular nerve).

3. Discussion

Superficial veins of the head and neck develop from the superficial plexus of capillaries. Larger veins are formed by enlargement of the individual capillaries, confluence of adjacent ones, and regression of some from where the flow will be diverted.[5] The factors, which control this selection and differentiation of the appropriate channels, are not completely understood.[5] Literature search reveals variations in the formation, course, and termination of the external jugular vein. In a study of 100 EJVs in 50 cadavers, Deslaugiers et al. showed that in 60% of the cases, the EJV flowed into jugulo-subclavian venous confluence; in 36% of the cases, it flowed into the subclavian vein at a distance from its junction into IJV and in 4% cases into the trunk of the IJV.[6] Kopuz C et al. in their study of 100 dissections on 50 new born cadavers found that EJV terminated into the Jugulo-subclavian venous confluence, the SCV, and trunk of the IJV in 72%, 26%, and 2% cases, respectively.[7] In their study of 58 human cadaveric dissections, Vadia et al. described in 2 cases an interesting course of the EJV , and which to the author's knowledge had never been reported in the literature before. In their two cases, facial and the lingual veins united forming linguofacial venous trunk and participated in forming the external jugular vein, which drained into the internal jugular vein above the upper belly of the omohyoid muscle.[8] Similarly, in our case, EJV after emerging from the parotid gland, instead of assuming vertically downward course along the surface of the sternocleidomastoid muscle, turned medially to join linguofacial venous trunk. After forming a common trunk, it drained into the anterior surface of the IJV just above the omohyoid muscle. Prassana et al. also described somewhat related anomaly, in which the external jugular vein was formed by the undivided retromandibular and posterior auricular vein on the right side and by the union of anterior division of the retromandibular and facial vein on the left side. On both sides, they passed at first superficial to the sternocleidomastoid, then obliquely downwards, and then medial to it to drain into the internal jugular vein.[9] Balachandra et al. reported about an anomaly in a case where retromandibular vein did not divide into anterior and posterior divisions; rather it united with the facial vein to form the common facial vein. The common facial vein was united with the posterior auricular vein and drained into the internal jugular vein.[10]

The knowledge of such variation assumes importance as EJV is being increasingly used for not only venous access but for various other interventions and procedures. In 2004, Povoski et al. reported EJV cut down procedure for chronic indwelling venous access device in cancer patients as a technically feasible, safe, and successful alternative to subclavian approach.[11] Mc Cowan et al. described EJV as an excellent alternative for caval filter placement as it did not necessitate surgical cut down in the operating room for venous access, avoided deep vascular punctures in the neck and groin, and was safe in patient receiving anticoagulant therapy.[2] Seigel et al. described EJV approach for transvenous liver biopsy as there was no procedure-related complications to this approach.[3] Micro-vascular surgeons frequently use EJV for anastomosis during free tissue transfer for reconstruction of the defects following head and neck cancer surgery. Therefore, the knowledge of presence and significance of such variations in the vascular system of head and neck region is important for all the clinicians involved in such procedures. A thorough knowledge of such variation will avoid inadvertent complications during diagnostic, therapeutic, and surgical procedures.

Conflict of interest

The authors have none to declare.

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