

CASE REPORT

Drainage of External Jugular Vein into an Unusually Wider Internal Jugular Vein - A Rare Case Report

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Abstract:

The superficial veins are of utmost importance clinically for cannulation, which is required for diagnostic purposes and intravenous therapy. One such superficial vein in the neck region is the external jugular vein. The other vein, deeper in this region, is the internal jugular vein. The internal jugular vein is commonly used for central venous catheterization. Anomaly in the course and termination of both external and Internal Jugular Veins (IJV) are critical as they serve as an important route/site to perform various diagnostic or therapeutic procedures. Present case shows a rare variation of termination of the right external jugular vein into an unusually wider IJV. Variation as described in the present case, if found, would ease the clinicians' task to approach a less accessible IJV. Ultrasound-guided venous catheterization would serve as a guide to perform the procedure with ease and also to be familiar with such variations existing in the venous channels

Keywords: External Jugular Vein, Internal Jugular Vein, Variation, Catheterization

Introduction:

Superficial veins of the head and neck mainly drain into the External Jugular Vein (EJV). The EJV is formed by the union of the posterior division of Retromandibular Vein (RMV) and Posterior Auricular Vein (PAV) and drains into the Subclavian Vein (SV). The deeper vein at this site, Internal Jugular Vein (IJV) collects blood from the brain, neck and superficial part of the face and is

formed at the base of the skull by the union of the sigmoid sinus and inferior petrosal sinus, runs vertically downwards to unite with the SV and form the brachiocephalic vein. Jugular veins are among the accessible veins for various clinical and diagnostic approaches. IJV is one of the routes for Central Venous Cannulation (CVC), which is feasible and accessible in almost all age groups. EJV also serves as an alternate route for CVC especially in children in shock, dehydration and also cardiac patients with higher rates of success [1-2].

EJV is an easily accessible superficial vein in the neck. It is therefore used for cannulation either for intravenous therapy or diagnostic purpose apart from providing a reliable estimate of central venous pressure. EJV is also considered to be the preferred site for CVC when IJV is not functional [3]. Thorough knowledge of the formation, course, patency and termination of jugular veins is therefore of much use due to its need in various clinical procedures.

Case Report:

During the routine dissection for students, an unusual draining pattern of the veins in the head and neck region of a 54-year-old male cadaver was seen on the right side (Fig. 1). On further observation and dissection, it was noted that the

right EJV was draining into right IJV instead of SV. Additionally, the Common Facial Vein (CFV) formed by the union of the Facial Vein (FV), anterior division of RMV, and submandibular vein, drained into IJV. The drainage pattern was in a trifurcating manner. Interestingly, both the EJV and CFV drained into the IJV at the same site. The IJV appeared wider and thin-walled in this region. Therefore, its width was measured at various points using the verniercalipers. The width at the upper end and terminal point measured 1.2 cm and 2.4 cm, respectively. The most dilated site was seen between the point of termination of CFV to EJV which measured 3.3 cm wide and 2 cm long. The left side showed a normal anatomical pattern.

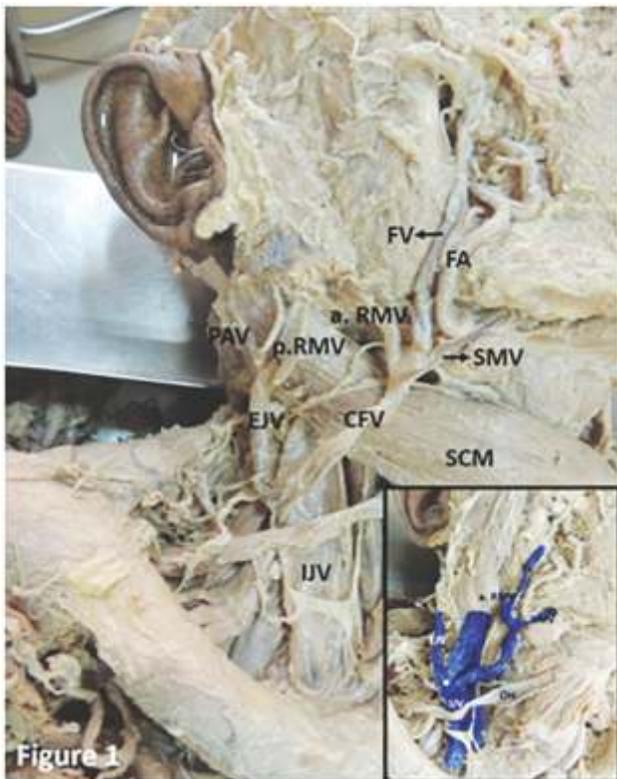


Fig. 1: Showing an Unusual Draining Pattern of the Veins in the Head and Neck Region (Inside Picture- coloured Image).

The EJV was formed by the union of the posterior division of the RMV and PAV. It later drained into the IJV. Additionally, the CFV was formed by the union of the FV, anterior division of RMV, and Submandibular Vein (SMV). The formation of CFV showed a trifurcating pattern and drained into IJV. Both the EJV and CFV drained into the IJV at the same site (indicated by * in the inside picture). The IJV appeared wider and thin-walled in this region. FA- Facial artery; SCM- Sternocleidomastoid; OH-Omohyoid muscle.

Discussion:

Various authors report variations in the superficial veins. Few authors have reported the variation in tributaries and the formation of EJV [2,4-5]. Ghosh *et al.*, found two cases wherein the undivided RMV received the facial vein and drained into the subclavian vein on the left side [4]. Olabu *et al.*, found facial vein draining into EJV in 8.8% of the cases. They extensively studied the pattern of EJV in 106 specimens and found a normal pattern in 82.4% of cases. However, the level of joining of PAV and RMV varied. EJV was reported to terminate into IJV only in 5.5% cases [2]. Similar observations were made in the present case.

Interestingly the present case also found the IJV to be wide and thin. Compression of Superior venacava or compression in the mediastinum could cause dilation of these veins [5]. However, the dilations in such cases are longer and along the entire length. On the contrary, the dilation was only at a specific site, i.e., at the region of drainage of the CFV and EJV in the present case. Possible muscle entrapment of the IJV resulting in cerebral insufficiency is also reported [6].

It has been suggested that diameters of EJV and IJV are inversely correlated and the EJV serves as

an alternative site for CVC when IJV is occluded [7]. But in the present case, the wide IJV did not seem to affect the width of the EJV or that of the anterior jugular vein.

Central venous line is currently used as an approach for a short period especially in children when compared to peripheral venous cut downs. However, when there are variations in the position in the central vein, EJV becomes the suitable and most accessible site. Communication of EJV with IJV, also the termination of EJV into IJV would simplify the access into the central line through the peripheral vein.

Conclusion:

The variation as described in the present case, if found, would ease the clinicians' task to approach a less accessible IJV. Ultrasound-guided venous catheterization would serve as a guide to perform the procedure with ease and also to be familiar with such variations existing in the venous channels.

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