Supraclavicular course of the left cephalic vein: Rare anatomical variant

Radha Krishna Shetty Kommanda, Muhammed Asif, Shivarama C.H.

ABSTRACT

Introduction: The cephalic vein is formed by dorsal venous arch on the radial side of the upper extremity. Its course was normal till deltopectoral groove. It then communicates with the subclavian vein by crossing superficial to clavicle instead of emptying into the axillary vein.

Case Report: The rare variant of supraclavicular course of subclavian vein was observed in routine upper limb dissection. This case report presents variation in the course of left cephalic vein and its abnormal communication with the subclavian vein.

Conclusion: Although the supraclavicular course of the cephalic vein is a rare anatomical variant, the knowledge of variations in the origin, course and termination of cephalic vein is important for surgeons, radiologists, and plastic surgeons. It is a preferred vein for suitable central venous access, pacemaker and defibrillator implantation. Further, the normal anatomy of cephalic vein, including its anatomical variation is paramount to avoid complications.

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CASE REPORT

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Keywords: Pacemaker, Subclavian vein, Supraclavicular cephalic vein

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INTRODUCTION

Dorsal venous arch is formed by longitudinally oriented dorsal and palmar digital veins, which empty into the dorsal metacarpal veins [1, 2]. Radial continuation of the dorsal venous arch forms cephalic vein [3, 4]. At the wrist, the cephalic vein crosses superficial to the anatomical snuff box. It travels upward along the anterior border of the brachioradialis muscle in the forearm. At the level of the elbow in 84% of cases cephalic vein anastomosis with the median cubital vein, which is the tributary of basilic vein [5, 6]. Leaving the antecubital fossa, it ascends in a groove along the lateral border of the biceps brachii till lower two-thirds of the arm, and then it passes in the deltopectoral groove [5]. At the lateral aspect of the deltopectoral groove, the cephalic vein is located superficially in a pad of fat between two muscles [7]. It further courses in the deltopectoral triangle it pierces the clavipectoral fascia and terminates in the axillary vein. The subclavian, femoral, brachiocephalic and cephalic veins are most commonly used for central venous access at the bedside [8]. Further, cephalic vein is suitable for pacemaker and defibrillator implantation, and reported to have a lower incidence of complications than subclavian puncture [9]. Therefore, correct anatomical knowledge of the cephalic vein is of critical importance

when considering emergency procedures [6]. In this case report, we described anatomical variation of the cephalic vein, where it has joined with the subclavian vein instead of axillary vein by passing over the clavicle.

CASE REPORT

The present study, observation was made during routine dissection for undergraduate students in Department of Anatomy, Yenepoya Medical College, Karnataka, India. The venous variation of left cephalic vein was noticed on the left upper extremity in a male cadaver aged 55 years. The left cephalic vein instead of draining into the axillary vein, passes superficial to the clavicle piercing the investing layer of deep cervical fascia of the neck and opens into the subclavian vein (Figure 1). The course of the right cephalic vein on the right extremity was normal (Figure 2).

DISCUSSION

Anatomical variations in the course of the cephalic vein is already documented, but the clinical cases reported in medical literature are rare, and include cases with absence or small diameter of the cephalic vein, accessory

Figure 1: Supraclavicular course of left cephalic vein.

Figure 2: The course of the supraclavicular cephalic vein terminating into the subclavian vein.

veins running parallel to the cephalic vein or even pre-clavicular or supraclavicular anomalous courses [10–15]. The knowledge of the normal venous anatomy of cephalic vein, including its anatomical variation, is paramount to avoid complications. If cephalic vein is used as an access during permanent lead placement the knowledge of the supraclavicular course of the cephalic vein would help to reduce complications related to lead dysfunction, erosion or collateral vascular damage [16]. Some of the clinicians prefer the cephalic cut-down method rather than subclavian or the internal jugular vein puncture for implant a device to venous access for transvenous placement of pacemaker or defibrillator which may avoid risk of pneumothorax, subclavian crush, and other possible complications as well [17]. The cephalic vein may terminate at the internal jugular vein, the external jugular vein, or the basilic vein [18, 19]. Lau et al. reported a supraclavicular course of the cephalic vein. In this case report, the cephalic vein drained into the subclavian vein with an unusual supraclavicular course.

Further, it is important to know about the communication between the cephalic vein and subclavian vein across the clavicle because in case of fracture of clavicle the cephalic vein may bleed profusely and during catheterization it may get punctured to the overlying skin, and structures on the pectoral area leading to damage. Moreover, if guide wire punctures the subclavian vein, there is a risk of damage to vital structures in the supraclavicular fossa [20]. Therefore, the knowledge of the supraclavicular course of the cephalic vein would help to reduce iatrogenic complications such as erosion or collateral vascular damage.

CONCLUSION

Cephalic vein with supraclavicular course is an rare anatomical variant and seen in 0.2% of individuals. The knowledge of cephalic vein variation is of top importance, considering its role in central venous access, pacemaker and defibrillator implantation. The supraclavicular course of the cephalic vein would help to reduce iatrogenic complications such as erosion or collateral vascular damage, avoid profuse bleeding in the fracture of clavicle and puncture of the guide wire to skin.

Author Contributions

Radha Krishna Shetty Kommanda – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Muhammed Asif – Substantial contributions to conception and design, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Shivarama C. H. – Substantial contributions to conception and design, Analysis and interpretation of data, Acquisition of data, Drafting the article, Final approval of the version to be published

Guarantor of Submission

The corresponding author is the guarantor of submission.

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Conflict of Interest

Authors declare no conflict of interest.

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