

## Case Report

# REPORTING OF AN ANATOMICAL VARIATION FOR ANTERIOR JUGULAR VEIN

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## ABSTRACT

Being acquainted with anatomical variations is a sine qua non for surgeons. Since there were a few findings about Anterior Jugular Vein (AJV) that most of them were about its aneurism than of the about its anatomical variations we intend to report one of its variations. AJV is a superficial vein in head and neck anatomy which is paired (left and right), that seems U-shaped. In this case which was a male cadaver AJV is single and only has one branch parallel to mid-line instead of being paired. There is no Jugular arch in this case.

**KEY WORDS:** Anterior Jugular Vein, Anatomical Variations, Case Report, Cardinal Vein, Head and Neck Anatomy.

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## INTRODUCTION

Being acquainted with anatomical variations is a sine qua non for surgeons; because this awareness performs an important function for injections and using catheters. Hence practitioners should be looking forward to facing with new forms of vascular divisions especially in upper limbs. For instance, unusual forms of radial and brachial arteries can result in failure of radial (not femoral) coronary angiography.

A paper in 1961 has it that arterial [or in general, vascular] variations is secondary to genetic mutations and local operating factors play no role [1]. It should be regarded that this hypothesis might be changed so far, because it's a controversial issue.

In 2003 it has been claimed that the embryological justification of vascular variations is still an unknown and controversial issue [2] that our search showed this statement holds good as yet. In embryology we know that vascular differentiation of the main vessels is proximal to distal. In a newer paper has been announced that this embryological basis can be caused from unusual vascular evolution or unusual division of the distal end of over-forming vessels [3]; but in the mentioned reference it is not announced that whether this departure from usual procedure is the result of genetic mutations or uterine operating factors. The sentence "The embryological basis of arterial variations could be described by modification

of normal capillary maintenance and regression” was announced in 2001 [4] and also nowadays has citations in articles (like 5, 6) that can be accomplishment of our introduction.

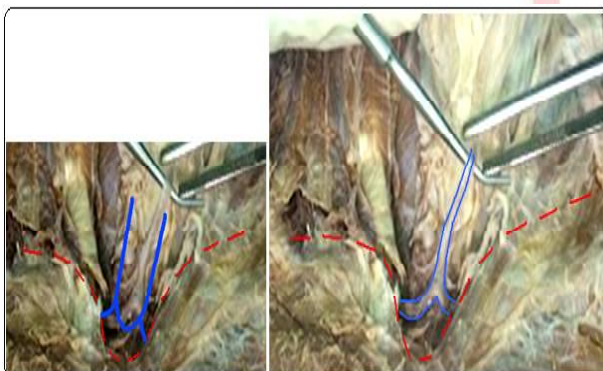
### CASE REPORT

Since there were a few findings about Anterior Jugular Vein (AJV) that most of them were about its aneurism than of the about its anatomical variations we intend to report one of its variations. In this case which was a male cadaver in Lorestan University of Medical Sciences, AJV is single. Although this variation is not novel and has been represented before, but we found no free access colorful figure that shows this variation neither in radiologic images nor in dissected cadaver images.

### OBSERVATIONS

AJV is a superficial vein in neck anatomy observed in anterior view of neck in the boundary between Sternocleidomastoid muscle (SCM) and anterior median line. AJV is usually paired (right and left) that seems U-shaped (figure 1). Another name of Supra-Sternal notch is Jugular notch; because the inferior arch of the mentioned “U” -- which is an anastomosis between left and right AJV – is called Jugular arch that is parallel with this notch. Finally AJV of each side usually ends to inferior part of the External Jugular Vein (EJV) of the same side or directly to Subclavian vein in posterior to clavicle bone and SCM (figure 2). In present case, AJV is a single branch in front of the anterior median line, instead of being paired (figures 1,2,3). Also its ending to EJV and its origin from Suprahyoid region were natural. In the figures Supra-Sternal notch is showed by red color. All the figures are captured from anterior view of the neck.

**Fig. 1:** Showing the AJV variation (right) and its usual form with thick blue color (left).



**Fig. 2:** AJV continues to the back of Clavicle bone and SCM then ends to the External Jugular Vein (right SCM is removed).



**Fig. 3:** Showing the variations (Original Photograph).



### DISCUSSION

Jugular veins are of the draining vessels of head and neck. Internal Jugular Vein (IJV) is deep whereas EJV and AJV are superficial. Anastomoses between superficial and deep ones might be observed in some cases (7). AJV is usually formed in Suprahyoid region through the confluence of superficial veins of out here.

The embryologic basis of this variation and even embryologic basis of AJV is still unknown. In Longman’s embryology 2006 there were no information about formation of Jugular veins; but the edition of 2012 announced that Anterior Cardinal Vein forms IJV and EJV is originated from the venous network of face (8). Hence it seems that embryologic basis of AJV is peripheral vasculogenesis and not the primary heart and anterior cardinal vein.

### CONCLUSION

Knowledge of head and neck veins anatomical variations such as IJV, EJV and AJV in head and

neck surgery and catheterization is very important for surgeons and radiologists (9). Also AJV is a part of collateral venous system of thorax and neck (7). Thus it was upon our self to share our experience and pictures with scientific data bases as an adobe for anatomical, surgical and radiological sciences.

### ACKNOWLEDGEMENTS AND SUPPORTS

This cadaver was provided by Lorestan University of Medical Sciences and originally fixed, dissected and captured by the first author. These figures have free copy right if correct citation.

### Abbreviations

Anterior Jugular Vein (AJV)  
Internal Jugular Vein (IJV)  
External Jugular Vein (EJV)  
Sternocleidomastoid Muscle (SCM)

**Conflicts of Interests: None**

### REFERENCES

- [1]. Keen JA. study of the arterial variations in the limbs, with special reference to symmetry of vascular patterns. American journal of anatomy 1961;108(3):245-261.
- [2]. Rodriguez-Niedenfuhr M, et al. Arterial patterns of the human upper limb: update of anatomical variations and embryological development. European Journal of anatomy 2003;7:21-28.
- [3]. Jayakumari S, Gayatri R, Jyoti A. Unilateral double axillary and double brachial arteries. Embryological basis and clinical implications. Int J Morphol 2006;24(3):463-468.
- [4]. Rodriguez-Niedenfuhr M, et al. Development of the arterial pattern in the upper limb of staged human embryos: normal development and anatomic variations. Journal of anatomy 2001;199(04):407-417.
- [5]. Senanayake KJ, et al. A rare variant of the superficial ulnar artery, and its clinical implications: a case report. Journal of medical case reports 2007;1(1):128.
- [6]. Venkateshwarlu AA, Manoj MK, Kiran P. Unilateral presence of superficial ulnar artery: A case report. International Journal of Medical Science and Public Health 2013;2(3):775-777.
- [7]. Schummer W, et al. The anterior jugular venous system: variability and clinical impact. Anesthesia & Analgesia 2004;99(6):1625-1629.
- [8]. Sadler, TW. Longman's Medical embryology. 12<sup>th</sup> edition. Lippincott Williams & Wilkins 2012; chapter 13.
- [9]. Nayak BS. Surgically important variations of the jugular veins. Clinical Anatomy 2006; 19(6):544-546.

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