

## Five Cases of an Accessory Left Vertebral Artery on the Aortic Arch

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### ABSTRACT

This is a review of an article presented in the Journal of Case Reports and Studies entitled “Five Cases of an Accessory Left Vertebral Artery on the Aortic Arch”. Each case presents unique aspects illustrating developmental variations that can occur in the individuals who choose to donate their bodies to science. The five cases presented with an accessory left vertebral artery originating from the aortic arch, between the left common carotid artery and the left subclavian artery.

**Keywords:** Accessory left vertebral artery, Duplicate origin of the left vertebral artery, Vertebral artery variation, Head and neck vascular variations

This article presents five cases of both male and female cadavers who exhibited an accessory left vertebral artery (ALVA) originating directly from the arch of the aorta, between the left common carotid artery (LCCA) and the left subclavian artery (LSA), in addition to a left vertebral artery (LVA) branching off the LSA. These five instances of an ALVA detected during a cadaveric review of 64 specimens, demonstrated a prevalence of 7.81%. Among the five specimens, there were further unique deviations from the norm.

This article describes five case studies involving the rare vascular variant known as unilateral duplicate origin of the vertebral artery or accessory vertebral artery. Accessory vertebral artery (AVA) is considered a developmental anatomical variation that involves dual origin of the vertebral artery with a variable level of fusion in the neck [1-6]. It is usually clinically asymptomatic but may alter cerebral hemodynamics. This may cause cerebral dysfunction and predispose individuals to cerebrovascular pathologies, such as aneurysm and/or a dissection [1,5,7-23].

Although the reported incidence of AVA is between 0.295 and 0.72% [1,2,7,8,24-26], this article presents a cadaveric population of 64 randomly selected specimens with a prevalence of 7.81%. The prevalence of this anatomical variant illustrates the potential frequency and thus, the clinical importance of extensive anatomical understanding of head and neck vascular variations.

The case studies presented in this article include: a white 65 year old male (Case 1), a white 89 year old female (Case 2), a white 80 year old female (Case 3), a White 96 year old

female (Case 4) and a white 95 year old female (Case 5). Each specimen presented with an accessory left vertebral artery (ALVA) originating from the aortic arch, between the left common carotid artery and the left subclavian artery. All five case studies also presented with a left vertebral artery (LVA) branching from the left subclavian artery. To assess the ALVA and LVA accurately, while also examining the right vertebral artery (RVA) for any variations, the entire cervical vertebral column and cranium was extensively dissected for each specimen. Several additional vascular variants were discovered during these dissections. These involved the vertebral arteries, circle of Willis and cerebellum. These variants included stenosis of the LVA and RVA; unilateral absence of the Posterior Inferior Cerebellar Arteries (PICAs); hypoplasia of the Anterior Inferior Cerebellar Arteries, Posterior Communicating Arteries (PCAs) and Posterior Cerebral Arteries; and dilation of the PICAs and PCAs.

In the medical academic context, it is essential to teach students to dissect the head and neck region with care. Meticulous dissection permitted detection of the ALVAs in these case studies. In the clinical setting, vascular variations

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of the head and neck are common. However, they often go undetected due to their general lack of clear clinical symptoms. Knowledge of the presence and location of such variations is critical since surgical errors in this region may result in iatrogenic complications or even fatalities. Given the potential clinical significance of ALVAs, physicians and surgeons should be aware of such variations.

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