

## **Abnormal Origin of Vertebral Artery**

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**Key words :** vertebral artery, arch of aorta, artery

**Abstract:** Abnormal origin of vertebral artery (left) from arch of aorta was noticed during dissection of fifty specimens and the same is presented for its rarity and clinical significance.

The vertebral artery takes origin from the first part of subclavian artery and its branches supply the spinal cord, medulla oblongata and cerebellum.

It has become important to know the exact origin and course of the vertebral artery as well as the percentage of abnormalities of the variations from the point of view of surgery, angiography and in all non invasive procedures and for subsequent stabilization procedures of the cervical spine. Thorough knowledge of the anatomy of vertebral artery is mandatory to avoid potentially catastrophic injury to the vertebral artery.

### **Materials and Methods**

The extra cranial course of vertebral artery was dissected in 25 formalin fixed cadavers (both sides) in Institute of Anatomy, Madras Medical College. It included 17 male and 6 female cadavers and 2 fetal cadavers. Careful dissection was

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carried out to find the details of variations on both sides and photographs were taken.

### **Observation**

The vertebral artery (left) originated directly from arch of aorta in one adult specimen (2%). The right side vertebral artery originated from the first part of subclavian artery in the same specimen (Fig. 1).

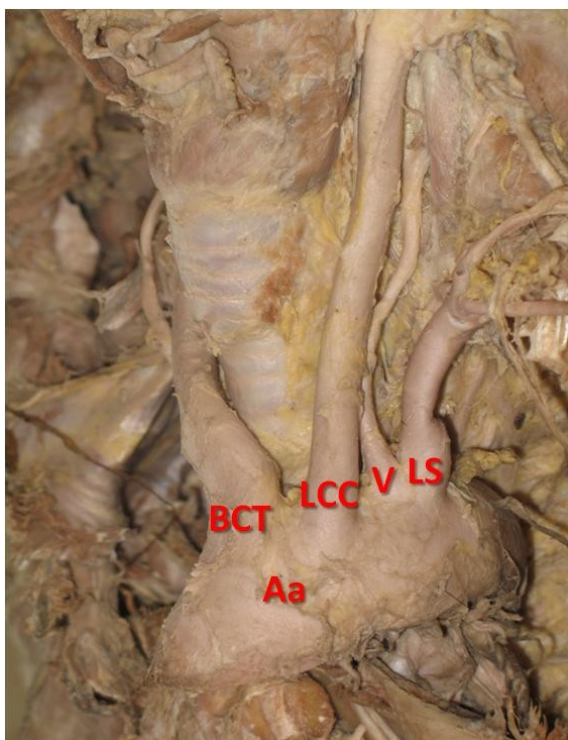
In the remaining specimens, the vertebral artery was found to originate from the first part of subclavian artery in the scaleno vertebral triangle.

### **Discussion**

Gray (1901), Piersol (1930), Grant (1951), Romanes (1964) have reported that the vertebral artery arises from the first part of subclavian artery.

Shivkumar *et al.*, (2010) has found an anomalous branching pattern of the aortic arch while dissecting a 55 year old male cadaver in which the left vertebral artery originated from aortic arch proximal to the origin of left subclavian artery. Jeyanthi *et al.*, (2010) has reported an anomalous origin of left vertebral artery directly from aortic arch in between left common carotid and left subclavian arteries

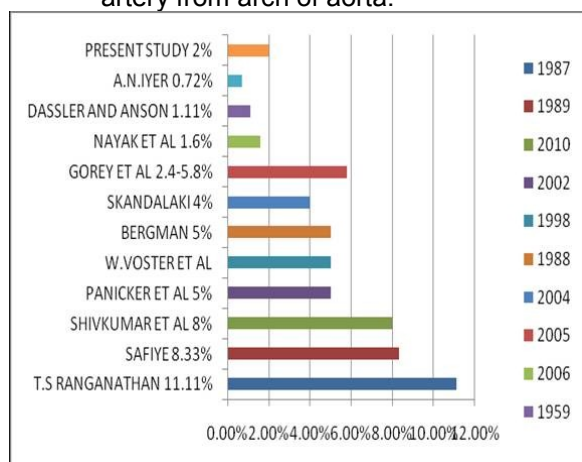
Fig. 1 Photograph showing abnormal origin of vertebral artery



Aa-Aortic arch, BCT -brachiocephalic trunk, LCC-left common carotid, V-vertebral artery, LS-left subclavian

Beeta Patasi *et al.*, (2009) found an abnormal origin of left vertebral artery from arch of aorta between left common carotid and left subclavian arteries, during dissection of a 77 year old male cadaver.

Fig. 2 Comparative study of origin of vertebral artery from arch of aorta.



Soubhagya and Nayak *et al.*, (2006) reported in 1.6% of the 62 cadavers dissected that the left vertebral artery had its origin from arch of aorta.

Gorey *et al.*, (2005) has stated that the most frequent variant is the left vertebral artery arising directly from arch of aorta between left common carotid and left subclavian arteries which accounts to about 2.4-5.8 percent.

Skandalaki (2004) has reported that in 4 percent of cases the vertebral artery originated from arch of aorta.

Panicker *et al.*, (2002), Voster *et al.*, (1998), have reported that the vertebral artery originated from arch of aorta in 5 percent of cases

Cavdar and Arisan (1989) has quoted that in 8.33 percent of cases, the left vertebral artery had its direct origin from arch of aorta.

Ranganathan and Jothi, (1987) has stated that the vertebral artery originated from arch of aorta in 11.11 percent of cases.

Bergman and Affifi (1988) have illustrated that the usual branches (80 percent) of arch of aorta were brachiocephalic trunk, left common carotid and left subclavian artery. If vertebral was present, more frequently it was left than the right vertebral. The variation of the four vessels has a frequency of about 5 percent.

Dassler and Anson (1959) have said that the left vertebral artery originated from the arch of aorta in 1.11 percent of the two bodies dissected.

Iyer (1917-1926) has recorded 6 out of 828 bodies (0.72%) in which the left vertebral artery originated from the arch of aorta.

In the present study, the origin of vertebral artery (left) from the arch of aorta was found in one specimen (2%) of the total fifty specimens dissected.

### Conclusion

The vertebral artery originated from the arch of aorta in 2% of cases in present study.

Neurosurgical procedures like proximal brachial plexus repair, scalenotomy, direct isolation of proximal vertebral artery requires good working knowledge of the first segment of vertebral artery. In angiographic or anatomic post mortem examinations, abnormal vertebral artery origins are only incidental findings, because, for most of the cases they are clinically asymptomatic. Nonetheless, these abnormalities are of diagnostic importance either prior to vascular surgery in the neck region or in cases of intravascular diseases such as arteriovenous malformations or cerebral aneurysms.

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