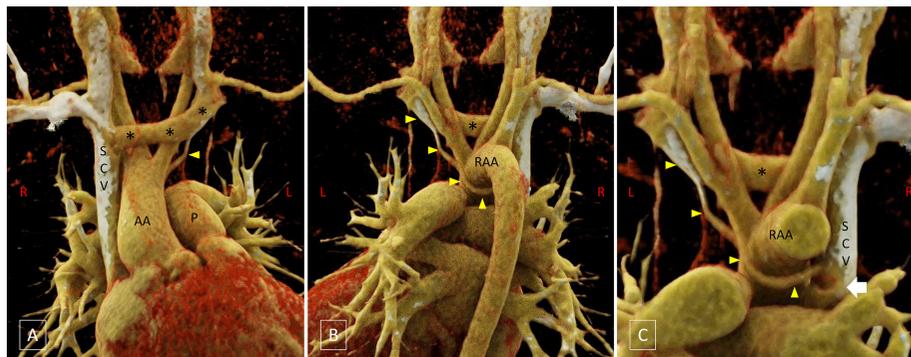


## Circumaortic Duplicated Left Brachiocephalic Vein in a Patient with Tetralogy of Fallot

A 3-year-old girl with a diagnosis of tetralogy of Fallot on transthoracic echocardiography underwent computed tomography (CT) angiography as part of pre-surgical evaluation. Incidentally, a duplicated left brachiocephalic vein (LBCV) was observed where an accessory branch of the LBCV was seen coursing postero-inferior to the aorta in addition to a normally coursing LBCV. The accessory branch of the LBCV was thinner in caliber and seen joining the superior caval vein more caudally, at the level of azygous venous drainage. The 2 branches of the LBCV were seen encircling the aorta to join the superior caval vein at different levels resulting in a "circumaortic duplicated LBCV" (Figure 1). The aortic arch was right-sided with mirror image branching of the arch vessels.

In the setting of the usual viscerocranial arrangement, the LBCV crosses supero-anterior to the aortic arch and supra-aortic branches while coursing obliquely downward toward its confluence with the right brachiocephalic vein to form the superior caval vein.<sup>1</sup> Uncommonly, it can have an aberrant subaortic (or retroaortic) course, coursing beneath the aortic arch to drain into the superior caval vein at or caudal to the level of azygous venous drainage.<sup>2</sup> A duplicated LBCV encircling the aorta, where an accessory branch of LBCV having a subaortic course is present along with a normally coursing LBCV, is extremely rare and is postulated to develop secondary to persistence of both ventral and dorsal transverse anastomosis between the bilateral precardinal veins.<sup>3-6</sup> While the anomalous anatomy is asymptomatic in itself, it may result in technical difficulties and complications during central venous catheterization or transvenous pacemaker insertion done via the left arm approach.



**Figure 1. Volume-rendered images (A-C) demonstrate the duplicated left brachiocephalic vein encircling the aorta, with the normally coursing branch (\*) of the left brachiocephalic vein crossing anterior to the arch vessels and the thin accessory branch (indicated by yellow arrowheads) of the left brachiocephalic vein coursing postero-inferior to the RAA and seen draining into the SCV at the level of drainage of the azygous vein (thick white arrow). AA, ascending aorta; P, pulmonary trunk; L, left; R, right; RAA, right-sided aortic arch; SCV, superior caval vein.**

### E-PAGE ORIGINAL IMAGE

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**Informed Consent:** Written informed consent was obtained from the patient's parents for the publication of this case report and accompanying images.

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