

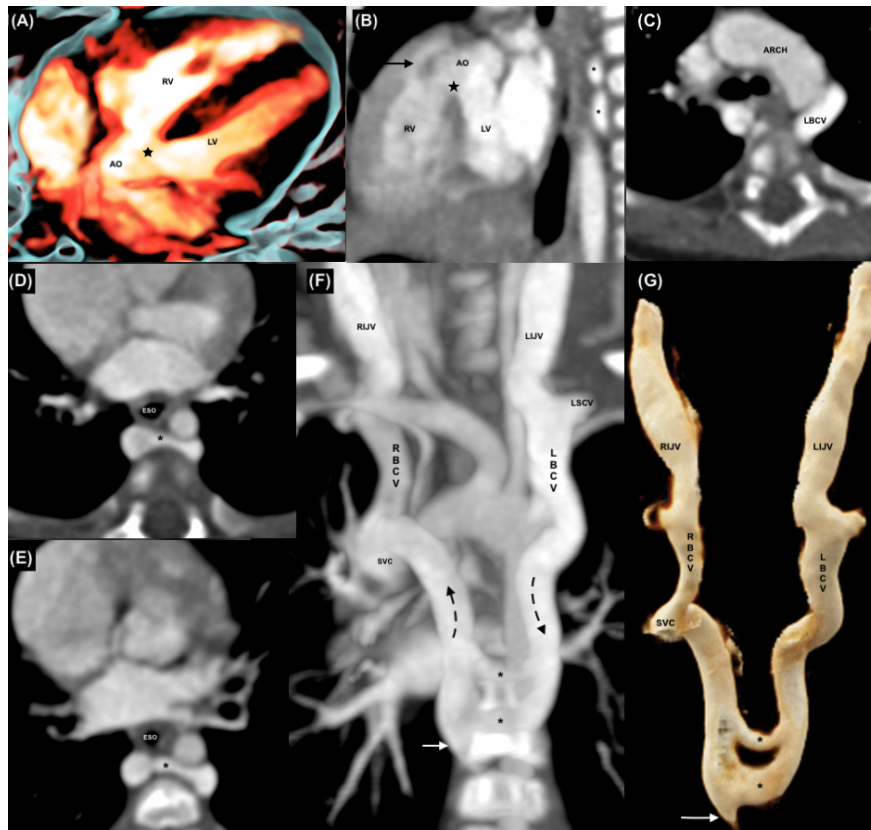
# UNIQUE ANOMALOUS LEFT BRACHIOCEPHALIC VEIN IN A CHILD WITH TETRALOGY OF FALLOT

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To the Editor,



## UNIQUE ANOMALOUS LEFT BRACHIOCEPHALIC VEIN IN A CHILD WITH TETRALOGY OF FALLOT

A three-month-old child presented with complaints of recurrent cyanotic spells and failure to thrive. Trans-thoracic echocardiography showed a subaortic ventricular septal defect (VSD) with aortic-override and pulmonary atresia suggestive of tetralogy of Fallot (TOF) morphology. Computed tomography angiography was performed for further evaluation and confirmed a subaortic VSD (Figures A & B, black star), aortic-override and right ventricular infundibular stenosis (Figure B, black arrow) with hypoplastic confluent

branch pulmonary arteries, suggestive of Tetralogy of Fallot (TOF) morphology. Additionally, an anomalous course of the left brachiocephalic vein (LBCV) was noted. The LBCV was seen coursing inferiorly in the mediastinum, posterior and lateral to the distal aortic arch and then the proximal descending aorta (**Figure C**) before splitting into two branches – a smaller superior branch at T6-T7 vertebral level (**Figure D, black asterisk**) and a larger inferior branch at T7-T8 vertebral level (**Figure E, black asterisk**). These two branches then crossed the midline behind the oesophagus and further united to re-form the LBCV, which then coursed superiorly in the right para-tracheal region to join the right brachiocephalic vein (Figure F, dotted arrows) to form the right superior vena cava (SVC), giving a ‘double garland appearance’ (**Figure G**). In addition, the azygous vein was seen draining into the inferior branch of the LBCV (**Figures F and G, white arrow**) rather than its usual drainage into the SVC.

Exact delineation of systemic venous anatomy is crucial for interventional and surgical procedures requiring systemic venous access, such as BD Glenn shunt. In addition, central venous catheterization is imperative before cardiac surgical procedures. If unknown, inadvertent injury of the anomalous systemic vein can lead to mediastinal haemorrhage. In addition, various surgical shunt procedures for structural heart diseases are based on the systemic venous system.

The ‘U-shaped’ or ‘garland’ configuration of the retroesophageal course of LBCV is a rare variant with limited case reports in literature. However, a ‘double garland’ appearance with splitting of the LBCV is unique and, to the best of our knowledge, has not been reported previously.

#### Figure Legends –

Axial thin VRT (Volume rendering technique image (Figure A) and sagittal CTA (computed tomography angiography) image (Figure B) show the right ventricular infundibular stenosis (black arrow) with sub-aortic VSD (black star) and aortic overriding.

Axial CTA images at the level of carina (Figure C), T6-T7 vertebral level (Figure D) and T7-T8 vertebral level (Figure E) shows the LBCV coursing lateral to the arch of aorta and crossing the midline behind the esophagus, respectively.

Coronal maximum intensity projection image (Figure F) and three-dimensional VRT image (Figure G) delineating the course of the LBCV.

#### Abbreviations –

RV – Right ventricle; LV – Left ventricle; Ao – Ascending aorta; Arch – Arch of aorta; Eso – Esophagus; LIJV – Left internal jugular vein; RIJV – Right internal jugular vein; RBCV – Right brachiocephalic vein; LBCV - Left brachiocephalic vein; LSCV – Left subclavian vein; SVC – Superior vena cava; MIP - Maximum intensity projection; VRT – Volume rendered technique.

#### References –

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**Consent for publication** – De-identified image data of the patient was used in retrospective manner from the radiological archive of the department. Hence, consent was not obtained/applicable.

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