

Images in Congenital Cardiac Disease

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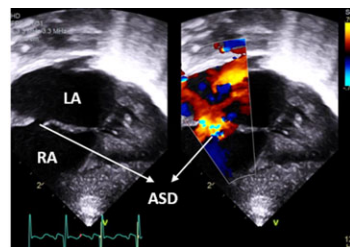
Unusual coronary artery arrangement in D-transposition of the great arteries with ventricular septal defect

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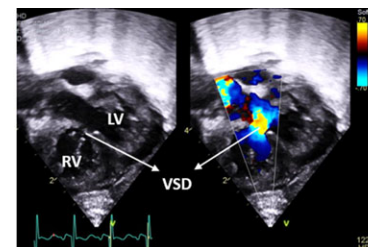
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A term female with prenatally diagnosed D-Transposition of the great arteries, large membranous ventricular septal defect with inlet extension, moderate secundum atrial septal defect, and large patent ductus arteriosus (Fig 1) was born by scheduled caesarean section. Transthoracic echocardiogram confirmed the anatomy with both coronary arteries arising from a single sinus with separate ostia. The right coronary artery arose from right posterior facing sinus (Fig 2). The left coronary artery arose anomalously from the same sinus adjacent to the right coronary artery ostium, coursing posterior to the aorta, with brief intramural and interarterial course before bifurcating into the left anterior descending and left circumflex coronary arteries (Figs 3 and 4). As a result of this unique coronary pattern, she underwent unroofing of the intramural left coronary artery noted on opening the aortic root to the coronary ostium. Both coronary buttons were harvested and this large button was then divided into two buttons. The left coronary artery button was implanted with a trap-door technique, right coronary artery button was implanted, and the remainder of the arterial switch procedure along with Lecompte maneuver was completed uneventfully, with closure of the atrial and ventricular septal defects. The post-operative course was uneventful and the patient was discharged on the seventh post-operative day. At discharge, the patient had normal biventricular systolic function, no residual intracardiac shunt, and robust antegrade flow in the reimplanted coronary arteries. The patient was growing well at the fourth month post-operative visit with normal biventricular function, patent coronaries, and out-flow tracts.

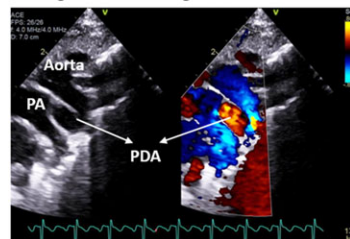
Knowledge of this unusual coronary anatomy assisted in appropriate modification of the surgical technique with excellent results. Post-operative outcome following arterial switch procedure is dependent on many variables, most importantly coronary artery anatomy, which is crucial for both short and long-term outcomes, morbidity, and mortality.¹



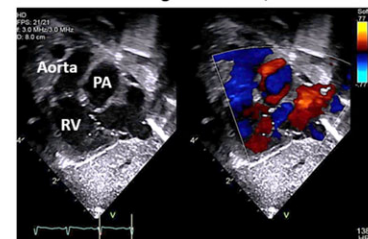
Subcostal long-axis 2D and colour comparison: Moderate secundum atrial septal defect (ASD) with left-to-right flow. RA=right atrium; LA=left atrium



Subcostal short-axis 2D and colour comparison: Moderately large membranous ventricular septal defect (VSD) with bidirectional flow. RV= right ventricle; LV= left ventricle



2D and colour compares suprasternal view showing large patent ductus arteriosus (PDA). PA=pulmonary artery



2D and colour compares short-axis view: Aorta anterior and parallel to pulmonary artery (PA). RV= right ventricle

Figure 1. Images demonstrating the anatomy of D-TGA with ASD, VSD, and PDA.

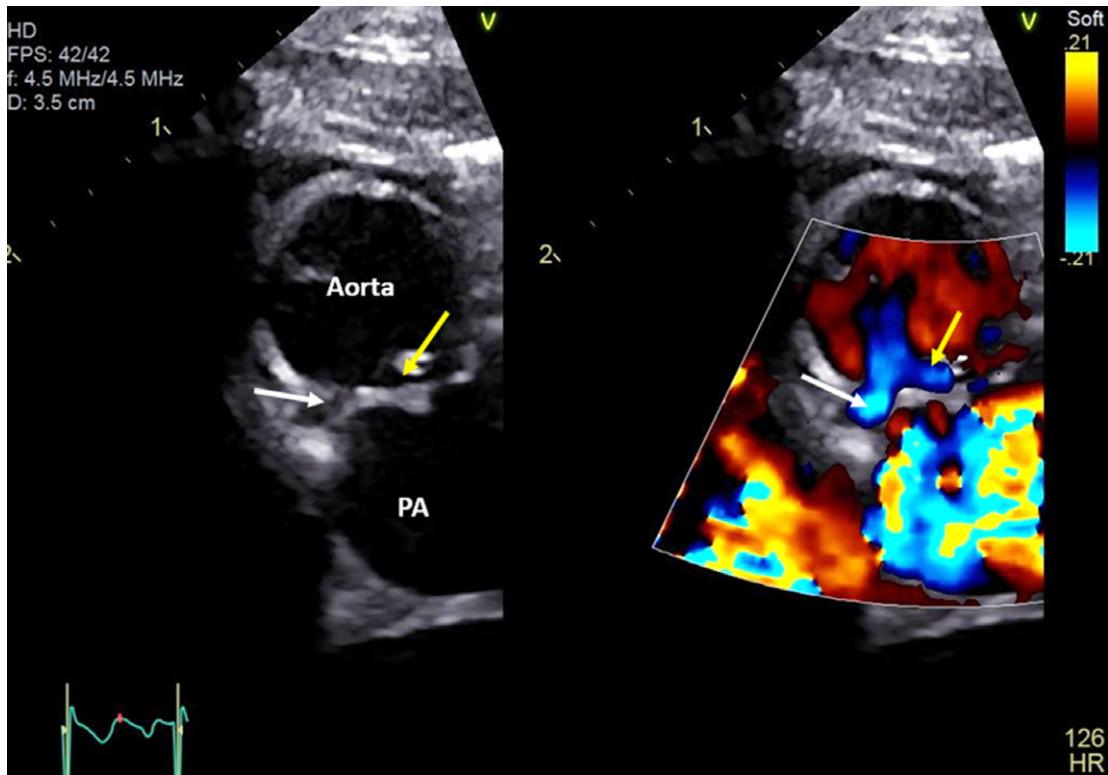


Figure 2. Parasternal short-axis 2D and colour images: Right coronary artery (white arrow) arising from the right posterior facing sinus. Left coronary artery (yellow arrow) ostium is immediately adjacent to the right coronary ostium. PA=pulmonary artery.

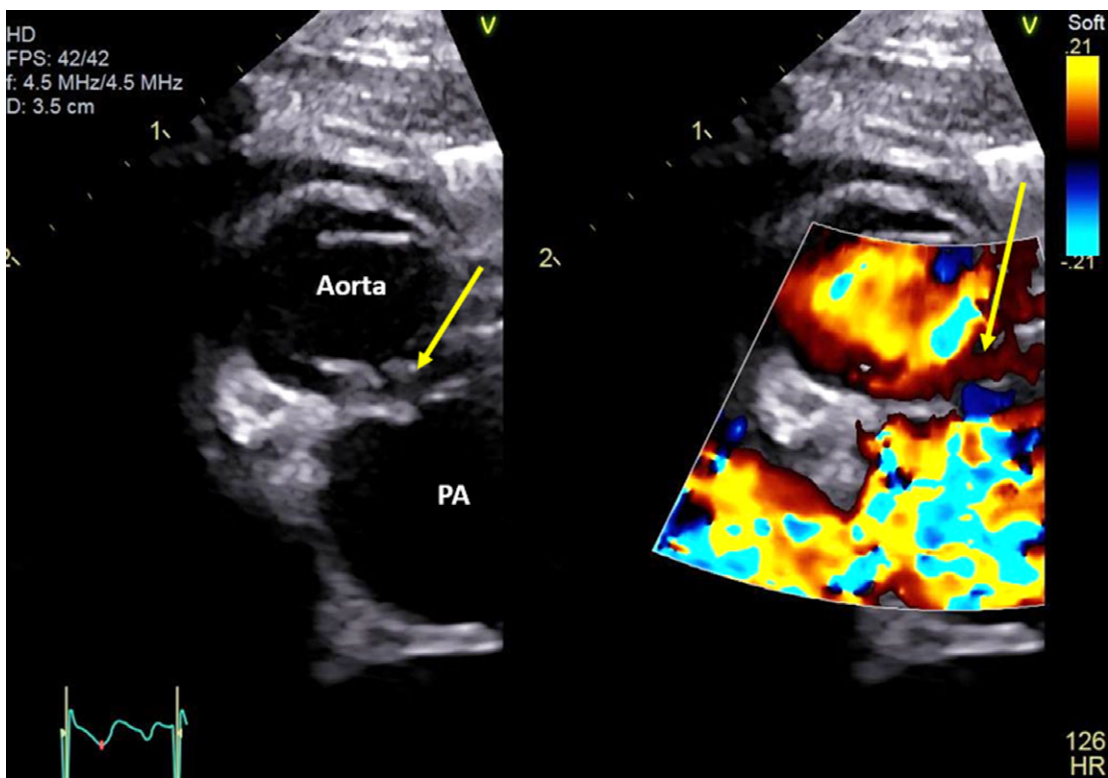


Figure 3. Parasternal short-axis 2D and colour compare images: Left coronary artery (yellow arrow) arising from the right posterior facing sinus with intramural and interarterial course.

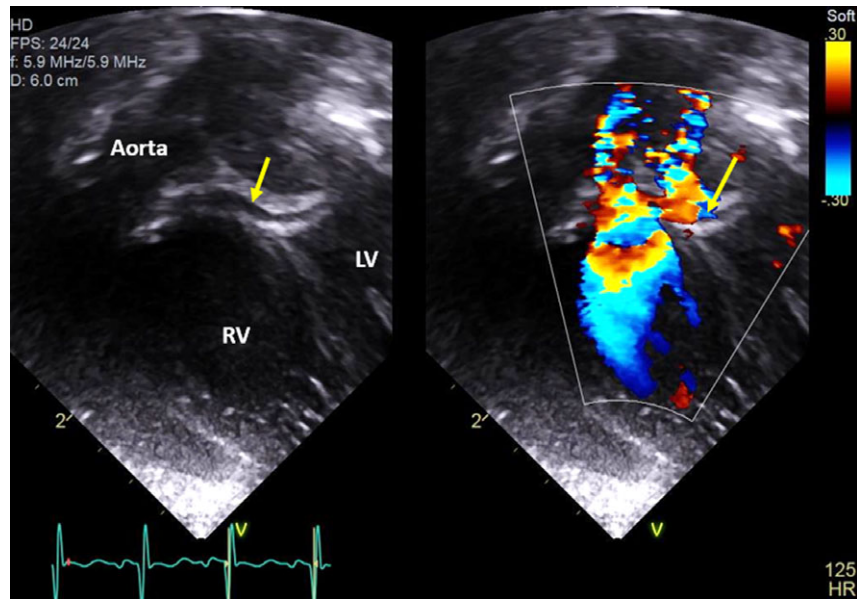


Figure 4. Apical 5 chamber 2D and colour compare views: Left coronary artery (yellow arrow) seen in the atrioventricular groove crossing to the left. RV=right ventricle; LV=left ventricle.

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Conflict of interest. None.

Ethical standards. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national guides.

This work does not include any experimentation on human or animal subjects.

Reference

1. Villafane J, Lantine-Hermosis RM, Bhatt BA, et al. D-Transposition of the great arteries: hot topics in the current era of the Arterial Switch Operation. *Am Coll Cardiol.* 2018; m64: 498–511.