A rare coronary anomaly: origin of the right coronary artery from the left ventricular outflow tract

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A previously healthy 15-year-old male was referred for the evaluation of a murmur. His initial workup included an echocardiogram and subsequent catheter angiogram. The right coronary artery was not seen on an aortogram (Panel A, Supplementary material online, Cine 1). Selective left coronary arteriograms demonstrated multiple large collaterals between the left anterior descending and the proximal right coronary artery (arrows, Panel B, Supplementary material online, Cine 2). The dilated proximal RCA appeared to drain into the left ventricular outflow tract immediately beneath the aortic valve.

Retrospective EKG-gated CT was performed to further delineate the complex anatomy. The mid- and distal-portions of the right coronary were normal, perfused by the left coronary artery collaterals (arrows, Panel C). The proximal right coronary was dilated and coursed anomalously beneath the right sinus of Valsalva to connect to the left ventricular outflow tract immediately below the intercoronary commissure of the aortic valve (Panel D, Supplementary material online, Cines 3 and 4). There was no connection of the right coronary to the aortic root. The Prograde flow from LV to RCA during systole and the retrograde flow from RCA to LV during diastole were noted, suggesting haemodynamic steal from the coronary circulation during diastole (Supplementary material online, Cines 2 and 4). Because of this coronary steal and the potential for myocardial ischaemia, the patient was referred for surgical repair. The anomalous proximal portion of the right coronary was divided and an aortic origin of the right coronary created using a 6-mm Gore-Tex interposition tube graft between the right coronary artery and the ascending aorta.

Supplementary material is available at European Heart Journal online.