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Coronary artery traversing the right ventricular outflow tract in Fallot tetralogy: what is the implication?

Bernadette G. Khodaghalian *, Phuoc H. Duong, and Caroline B. Jones

Department of Paediatric Cardiology, Alderhey Childrens Hospital, Eaton Road, Liverpool L12 2AP, UK

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A 3-month 5.5 kg infant with Fallot tetralogy post-right ventricular outflow tract (RVOT) stenting was presented for early surgical repair due to recurrent hypercyanotic spells. A small pulmonary valve (4 mm, *Z*-score -4.3) necessitates transannular patch repair; however, this is challenged by a coronary artery branch crossing the RVOT as diagnosed on echocardiography (*Figure 1*). Aortic root angiography confirmed the RVOT-crossing branch is the right coronary artery, arising from the left coronary system. Computed tomography coronary angiogram (128-slice, Philips Ingenuity) was attempted prior to invasive angiogram, with limited value due to motion associated with high heart rate.

Intraoperative examination confirmed the findings. There was the additional finding of an intramyocardial portion of the proximal left anterior descending artery (LAD) as it descended over the anterolateral surface of the heart. An extracardiac conduit was required for repair.

Coronary artery anomaly can change surgical strategy and therefore should be carefully studied preoperatively.[1] In this case, the left coronary system gave rise to the right. Other rare, but more common arrangements, are described such as dual LAD or the left arising from the right,[2] all of which have implications for surgical management and may preclude corrective surgical repair.

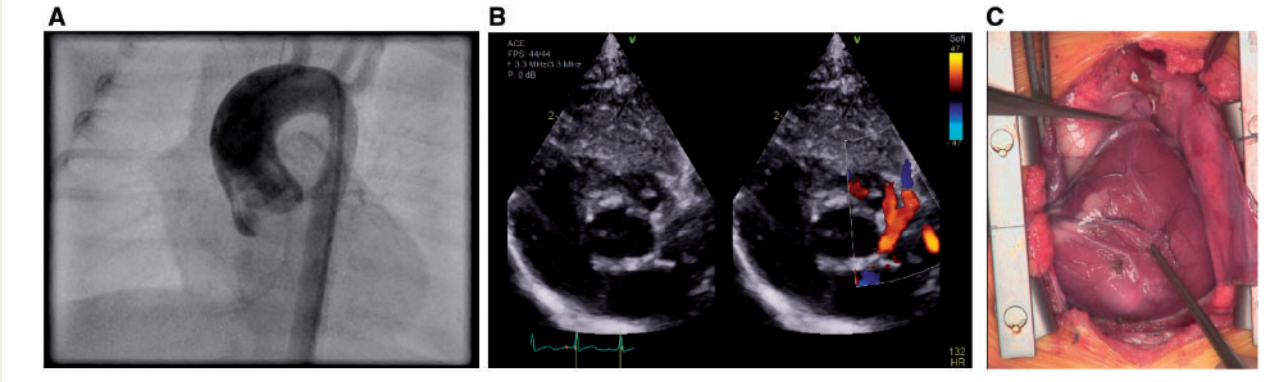

Figure 1 (*A*) Aortic root angiography illustrating single coronary system arising from left sinus. (*B*) Preoperative echocardiogram highly suggestive of single coronary stem arising from the left. (*C*) Intraoperative image illustrating the right coronary artery crossing anterior to the right ventricular outflow tract emerging from the left aortic sinus.

* Corresponding author. Tel: 01512284811, Email: bernadettekhodaghalian@doctors.org.uk
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Clear delineation of coronary anatomy may not always be possible prior to surgery. Multimodal investigations are recommended for challenging cases. Echocardiography remains a sensitive tool, and invasive angiography remains the most specific to delineate and identify such abnormalities.[3] Physician expertise and experience are of paramount significance in deciding the extent of investigation in these cases.

Consent: The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient's next of kin in line with COPE guidance.

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