Transcatheter closure of coronary artery fistula causing neonatal myocardial ischaemia

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DESCRIPTION

This is a female term baby who was born by elective caesarean section with a birth weight of 3210 g. She was feeding well and remained haemodynamically stable in room air. At the age of 26 hours, examination revealed a grade 3/6 continuous murmur best heard over the left upper sternal border. The oxygen saturation and blood pressure of four limbs were normal. The 12-lead ECG showed depressed ST segment in the V1, V2 and V3 leads, with occasional premature atrial contractions. Echocardiography showed a large coronary-cameral fistula, 5 mm in diameter from the left coronary artery draining to the right atrium (figure 1 and video 1). The right heart chambers were mildly dilated. The serum troponin-T High Sensitivity (HS) level was high in four serial readings; 101, 44, 58 and 105 ng/L, respectively indicating neonatal myocardial ischaemia. At the age of 10 days, percutaneous transcatheter closure was done successfully using a 7 mm microvascular plug (figure 2 and video 2). The baby was started on prophylactic aspirin therapy after the procedure. During the follow-up, the baby was gaining weight, with unremarkable ECG and echocardiography.

Figure 1  (A) An apical four-chamber echo image showing coronary-cameral fistula from the left coronary artery (arrowhead) draining to the right atrium (RA). (B) A parasternal short-axis echo image showing dilated left main coronary artery (star) and fistula (arrowhead). (C) A selective left coronary angiogram showing a large fistula from the left coronary artery (curved arrow) draining to the RA.

Figure 2  Left coronary angiogram following the deployment of the device (arrow) showing no contrast in the right atrium, which implies complete occlusion of fistula by the device.
Most coronary artery fistulas (CAFs) originate from the right coronary artery and drain into the right heart chamber. The majority are asymptomatic at birth. Large CAFs might present at birth with a cardiac murmur or heart failure. Neonatal myocardial ischaemia mandates fistula closure either by percutaneous transcatheter closure or surgical closure. Transcatheter closure is less invasive and has faster recovery. The prognosis is promising.

Learning points

- Early recognition and closure of large symptomatic coronary artery fistulas are crucial to achieving normal cardiac functions and adequate growth.
- Close follow-up of those infants in specialised centres is recommended as they are at increased risk of thrombosis and myocardial infarction due to the slow angiographic flow.

Contributors MAAB initiated the idea of submission, obtained consent, performed the literature review, collected the patient’s medical data, edited the images and drafted and revised the manuscript. EEE performed the literature review, collected the patient’s medical data and drafted and revised the manuscript. MB edited the videos. MRR diagnosed the case, collected and edited the images and videos and reviewed the manuscript. All the authors revised and approved the final manuscript.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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REFERENCES


Video 2 Selective left coronary angiogram shows no contrast opacification of the right atrium following device deployment.