

Neonatal interventricular septal aneurysm associated with right coronary artery fistula

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Images in Congenital Cardiac Disease

Cite this article: Tanimoto K, Iwai S, and Imai K (2024). Neonatal interventricular septal aneurysm associated with right coronary artery fistula. *Cardiology in the Young*, page 1 of 2. doi: [10.1017/S1047951124026672](https://doi.org/10.1017/S1047951124026672)

Received: 15 July 2024
Revised: 10 September 2024
Accepted: 10 September 2024

Keywords:

Coronary artery fistula; interventricular septal aneurysm; neonatal

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Abstract

We present a neonatal case of interventricular septal aneurysm associated with right coronary artery fistula. This report is the first to document such a neonatal case, highlighting the importance of early diagnosis and surgical intervention.

We present a case of a neonatal interventricular septal aneurysm associated with right coronary artery fistula. A male fetus diagnosed with right coronary artery fistula and interventricular septal aneurysm by fetal echocardiography was delivered via elective caesarean section at 38 weeks (birth weight 2916 g) to prevent sudden cardiopulmonary collapse due to coronary steal. Postnatal echocardiography (Figure 1a and b) and contrast-enhanced CT (Figure 2a–c) confirmed the diagnoses. The dilated right coronary artery drained into the aneurysm, which then drained into the right ventricle.

Despite no signs of myocardial ischaemia, we opted for surgical intervention immediately after birth to avoid potential myocardial ischaemia from a physiological decrease in pulmonary arterial pressure. Using cardiopulmonary bypass, antegrade cardioplegia was infused into the aortic root while compressing the peripheral end of the dilated right coronary artery. We longitudinally incised the peripheral end of the right coronary artery and found a foramen connecting to the interventricular septum. We directly closed it by interrupted sutures. The dilated right coronary artery was closed using continuous suture.

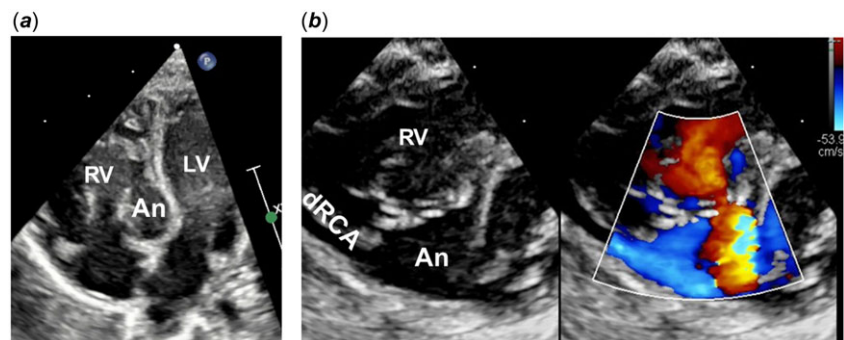


Figure 1. Preoperative echocardiography. (a) Apical four-chamber view. (b) Short-axis view. An = interventricular septal aneurysm; RV = Right Ventricle; LV = Left Ventricle; dRCA = Dilated Right Coronary Artery; CAF = Coronary Artery Fistula.

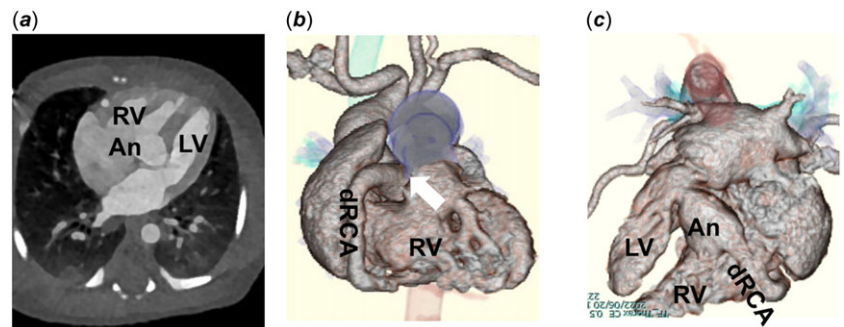


Figure 2. Preoperative contrast-enhanced CT. (a) Axial view. (b) Anterior view of 3D-contrast-enhanced CT: the origin and course of the dRCA is normal. The white arrow indicates the origin of the dRCA. (c) Posterior view of 3D-contrast-enhanced CT = the dRCA drains into the aneurysm, which then drains into the RV. An = Interventricular Septal Aneurysm; RV = right ventricle; LV = Left Ventricle; dRCA = Dilated Right Coronary Artery; CAF = Coronary Artery Fistula.

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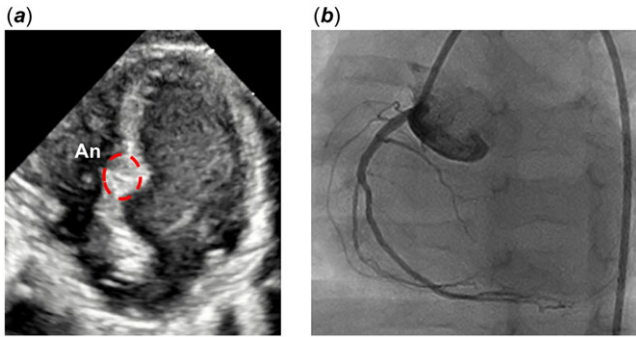


Figure 3. Postoperative images. **(a)** Echocardiography (postoperative day 43): The aneurysm is partially regressed. **(b)** Angiography (one year after surgery): The aneurysm is completely regressed, and the RCA is intact. An = Interventricular Septal Aneurysm; RCA = Right Coronary Artery.

Postoperative echocardiography before discharge showed partial regression of the aneurysm (Figure 3a), and angiography one year later confirmed complete regression of the aneurysm and an intact right coronary artery (Figure 3b). This suggests the

aneurysm was the ventricular exit of the coronary fistula, as its remodelling and regression indicate it was likely fistulous.

Although adult cases are reported,¹ this is the first report of a neonatal coronary artery fistula-associated intraventricular septal aneurysm, highlighting the importance of early diagnosis and surgery.

Financial support. The author(s) received no financial support for the research, authorship, and/or publication of this article.

Competing interests. The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical standards. Permission to publish this report and the included images was granted by the patient's parents.

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