

Multimodality imaging of an anomalous right coronary artery originating from the left aortic sinus with extrinsic compression

A 39-year-old cardiologist with no cardiovascular risk factors presented with a 6-month history of exertional chest pain. A stress echocardiogram was negative at a high workload, and she subsequently underwent 320-slice coronary CT for persistent symptoms. This revealed an anomalous right coronary artery (RCA) originating from the left aortic sinus. The course of the proximal RCA was anterior to the aorta and posterior to the right ventricular outflow tract (RVOT). The ostial and proximal segments had a slit-like appearance consistent with extrinsic compression from the RVOT (figure 1A, white arrow).

A conventional coronary angiogram confirmed a normal left coronary system. The anomalous RCA ostium could not be selectively engaged without dampening despite the use of multiple catheters. However, it was successfully wired (figure 1B), and an intravascular ultrasound (IVUS) study was performed. IVUS confirmed a slit-shaped ostium with severe eccentric luminal compromise (minimum and maximum lumen diameters 1.23 mm and 3.26 mm respectively, lumen area

3.79 mm² (red outline), vessel area 4.36 mm² (yellow outline, figure 1C)). The unaffected portion of the proximal RCA had a normal circular shape (minimum and maximum lumen diameters 3.25 mm and 3.65 mm respectively (red outline) with a significantly larger lumen area of 9.10 mm² (yellow outline, figure 1D)).

In view of this anatomical anomaly with severe compression and its known association with sudden, exercise-related death,¹ the patient underwent successful surgical RCA reimplantation.

This case highlights the utility of combining cardiac CT and IVUS to demonstrate extrinsic compression of an anomalous coronary vessel and guide appropriate therapy.

Wai-ee Thai, Thomas David, Garry Barron, Sujith Seneviratne

Correspondence to Dr Sujith Seneviratne; sujith.seneviratne@southernhealth.org.au

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

Heart Asia 2010;47. doi:10.1136/ha.2010.001818

REFERENCE

1. **Taylor AJ**, Rogan KM, Virmani R. Sudden cardiac death associated with isolated congenital coronary artery anomalies. *J Am Coll Cardiol* 1992;**20**:640–7.

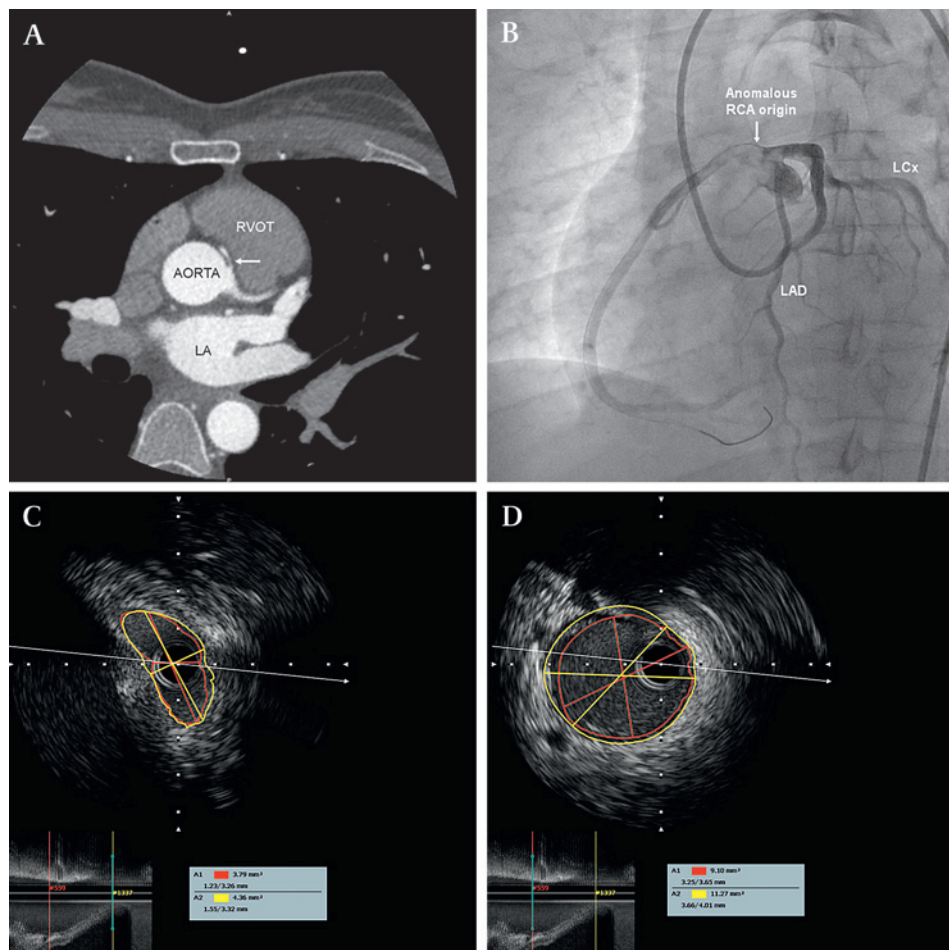


Figure 1 (A) Computed tomography image demonstrating an anomalous RCA from the left aortic sinus with slit-like appearance consistent with extrinsic compression from the RVOT. (B) Anomalous RCA origin. Note that the catheter is engaged non-selectively with a wire down the vessel. (C) IVUS image confirming a slit-like RCA ostium. (D) IVUS image of the unaffected proximal portion of RCA which has a normal circular shaped lumen.