A 64-year-old woman with no previous cardiac history suffered an out-of-hospital cardiac arrest the day after her husband died. She had previously complained of chest tightness, but an exercise ECG performed 2 months before this episode had not elicited any chest pain or ECG abnormalities. She was found in ventricular fibrillation by a paramedic ambulance crew, who successfully cardioverted her to sinus rhythm before transfer to the emergency department.

The ECG on arrival demonstrated ST segment elevation (2 mm) in the inferior leads (II, III, and aVF), which subsequently progressed to pathological Q waves. Her serum creatinine kinase rose to a maximum of 1037 IU/L on the second day of admission. Left heart catheterization demonstrated localized inferobasal hypokinesia on ventriculography; it further indicated that the right coronary artery arose anomalously from the left posterior sinus of Valsalva (Figure 1), although there were no significant coronary stenoses. Subsequent cardiac MRI (Figure 2) confirmed that the proximal segment of the right coronary artery passed between the aorta and pulmonary artery and indicated that the origin was acutely angulated.

An association between this rare coronary anomaly and sudden cardiac death has been reported. It has been proposed that the oblique insertion of the right coronary artery and its upright, slit-like origin in such cases may cause intermittent obstruction to right coronary flow, particularly when the aorta and pulmonary trunk dilate during stress. The clinical details in this case are consistent with the hypothesis that malignant ventricular arrhythmias may be triggered by acute myocardial ischemia in the right coronary territory in the presence of this anomaly. The patient underwent a single vein graft to the right coronary artery performed off bypass, and she was well at last follow-up.

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Circulation encourages readers to submit cardiovascular images to the Circulation Editorial Office, St Luke’s Episcopal Hospital/Texas Heart Institute, 6720 Bertner Ave, MC1-267, Houston, TX 77030.

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Figure 1. Selective coronary angiograms of right coronary artery (rca) in right anterior oblique (RAO; top) and left anterior oblique (LAO; bottom) projections. The right coronary artery arises anomalously close to left main stem (lms), and right coronary ostium appears splayed in left anterior oblique projection. The left anterior descending (lad) and left circumflex (lcx) arteries can also be seen; they were faintly highlighted by radiographic contrast medium.

Figure 2. Cardiac MRI confirmed that the proximal segment of the right coronary artery (rca, *) arose from the left posterior sinus of Valsalva and passed between the aorta and pulmonary trunk (pa). View is a left anterior oblique projection, with the left ventricle (LV) and right ventricle (RV) labeled for orientation.
Failed Sudden Cardiac Death in a Patient With an Anomalous Origin of the Right Coronary Artery
I. D. Cox, N. Bunce and D. S. Fluck

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