

Images in Cardiology

“Tear in My Heart”: A Multimodality Perspective

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A 72-year-old woman presented with a late-presenting inferior ST-segment elevation myocardial infarction (Fig. 1A). Coronary angiography demonstrated a culprit lesion of the distal right coronary artery treated with 2 drug-eluting stents (Fig. 1B; Video 1  view video online). A left ventriculogram demonstrated inferior wall hypokinesis and a sliver of contrast within the pericardium along the inferior wall with no obvious ventricular septal defect. Repeated injections into the coronary circulation revealed no evidence of contrast-dye extravasation. An urgent point-of-care ultrasound revealed a trivial pericardial effusion. An electrocardiogram-gated computed tomography (CT) scan of the heart within 30 minutes of the primary percutaneous coronary intervention confirmed that the pericardial effusion progressed to a moderate-sized hemopericardium with extravasation of contrast from the inferolateral wall of the left ventricle (Fig. 1C). Transthoracic echocardiography with left ventricular opacification following administration of Definity (Perflutren lipid microsphere [Lantheus, Billerica, MA]) demonstrated microbubbles within the pericardial space, confirming the free-wall rupture (Fig. 1D; Video 2  view video online). The patient underwent emergency cardiac surgery; intraoperatively, a punctate inferolateral free-wall tear of the left ventricle was identified and repaired with a bovine pericardial patch (Fig. 1E; Video 3  view video online).

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Ethics Statement: The case report adheres to the University of Manitoba ethical guidelines.

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Novel Teaching Point

- When a new pericardial effusion is identified in the post-myocardial infarction setting, prompt diagnosis of a ventricular free-wall rupture with multimodality cardiovascular imaging using CT and contrast echocardiography should be pursued.

Mechanical complications following an acute myocardial infarction are exceedingly rare in the era of primary percutaneous coronary intervention, occurring in less than 1% of acute coronary syndrome presentations.^{1,2} However, ventricular free-wall rupture is the most common complication with late-presenting ST-segment elevation myocardial infarction, with the right coronary artery being the least likely culprit vessel, accounting for only 23% of cases.³ Although there are few case reports of survival following a conservative approach, surgical repair is the treatment of choice.^{3,4} Surgical intervention alleviates the life-threatening pericardial tamponade and closes the ventricular free-wall tear. When a new pericardial effusion is identified in the acute coronary syndrome setting, prompt diagnosis of a ventricular free-wall rupture with multimodality cardiovascular imaging using CT and contrast echocardiography should be pursued.

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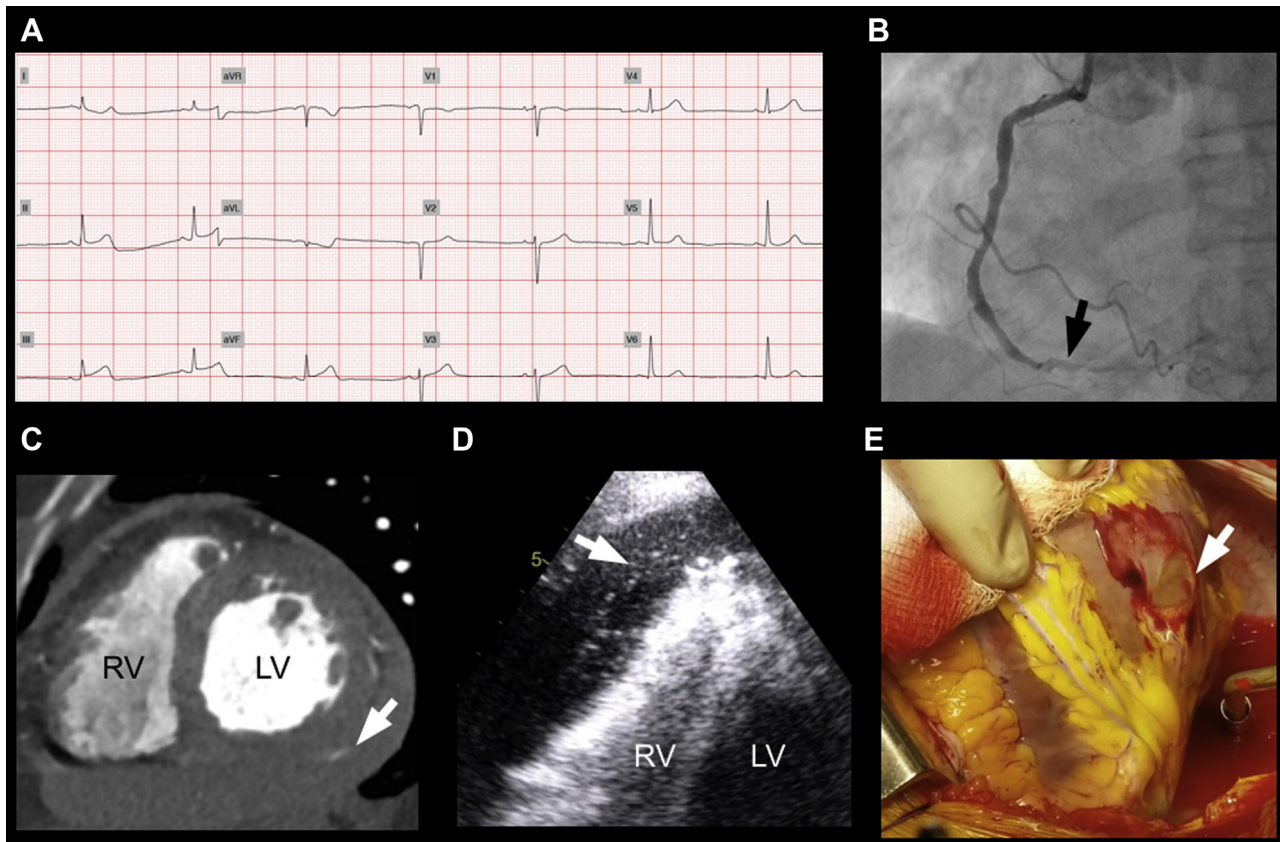


Figure 1. (A) A 12-lead electrocardiogram demonstrating ST elevation in the inferior leads. (B) Selective coronary angiography of the right coronary artery demonstrating distal occlusion of the vessel (arrow). (C) Short-axis reformation of a retrospectively electrocardiogram-gated computed tomography scan of the heart shows a small blush of contrast along the basal-to-mid inferolateral segment of the left ventricle (LV; arrow) within a moderate-sized hemopericardium. (D) A subxiphoid view on transthoracic echocardiogram demonstrating Definity (Perflutren lipid microsphere [Lantheus, Billerica, MA]) contrast within the pericardial space. (E) Intraoperative findings demonstrating the site of free-wall rupture (arrow) and active extravasation of blood. RV, right ventricle.

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Supplementary Material

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