



Case Report

Successful percutaneous closure of post myocardial infarction left ventricular ruptured pseudoaneurysm after failed surgical repair



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ABSTRACT

Left ventricular pseudoaneurysms occur as a consequence of left ventricular free wall rupture contained by pericardium. This clinical situation is an uncommon but lethal complication of acute myocardial infarction. Surgery usually is the preferred therapeutic option but is associated with significant perioperative risk. We present a case of successful percutaneous closure of left ventricular ruptured pseudoaneurysm post myocardial infarction in a patient who failed two previous surgical repairs.

<Learning objective: Recently there has been some published experience regarding percutaneous closure of left ventricle pseudoaneurysm as an alternative to surgical repair in patients at high operative risk. To the best of our knowledge this is the first reported case that demonstrates successful percutaneous closure of ruptured pseudoaneurysm after failed surgical repairs.>

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Introduction

Rupture of left ventricular (LV) pseudoaneurysm may result in cardiac tamponade. Survival depends primarily upon rapid recognition and prompt management. Emergency surgical intervention is frequently the preferred therapeutic option. Percutaneous closure provides an alternative option for high-risk surgical candidates.

Case report

A 45-year-old previously healthy woman presented to our Emergency Department (ED) with chest pain of five days' duration. On admission she was tachycardic with systolic arterial blood pressure of 60 mm Hg. A 12-lead electrocardiogram (ECG) revealed recent inferolateral myocardial infarction (MI). Transthoracic echocardiography (TTE) demonstrated massive pericardial effusion with signs of tamponade and LV posterolateral pseudoaneurysm (Fig. 1A). Fluid and inotropic agents were given immediately. After hemodynamic stabilization, coronary angiogram revealed normal left and right coronary arteries except for a very small inferior

branch of the obtuse marginal vessel involved with severe disease (Fig. 1B). The left ventricular angiogram demonstrated infero-basal pseudoaneurysm (Fig. 1C). As soon as leaking pseudoaneurysm was diagnosed, the patient was transferred immediately to the operating room. After pericardiotomy, a large amount of dark blood and a clot were evacuated and the myocardial tear was identified and successfully repaired using Gortex strips with prolene 2\0 with Teflon pledgets. She tolerated the procedure without complication. On the tenth postoperative day the patient was found to be hypotensive and tachycardic. At this point, a bedside TTE showed reaccumulation of large pericardial effusion and it was evident that the patient had ruptured myocardium for the second time for which she underwent redo surgical repair. Intraoperatively another tear in the posterior LV wall was found after evacuation of bloody pericardial collection. The repair was done to the perforated area using Teflon strips and prolene 3\0 with Teflon pledgets. The recurrent myocardial rupture was attributed to evolution of the massive posterior infarction with recurrence of rupture which is in the same territory of the circumflex artery. The patient had uneventful post-operative recovery, TTE 4 weeks post second surgical repair revealed no significant pericardial effusion (Fig. 1D) and she was discharged home in stable condition after one week.

One month later she presented again to the ED with a tender pulsatile epigastric mass.

Clinical examination showed systolic arterial blood pressure of 95 mm Hg with no clinical signs of tamponade. A large clot

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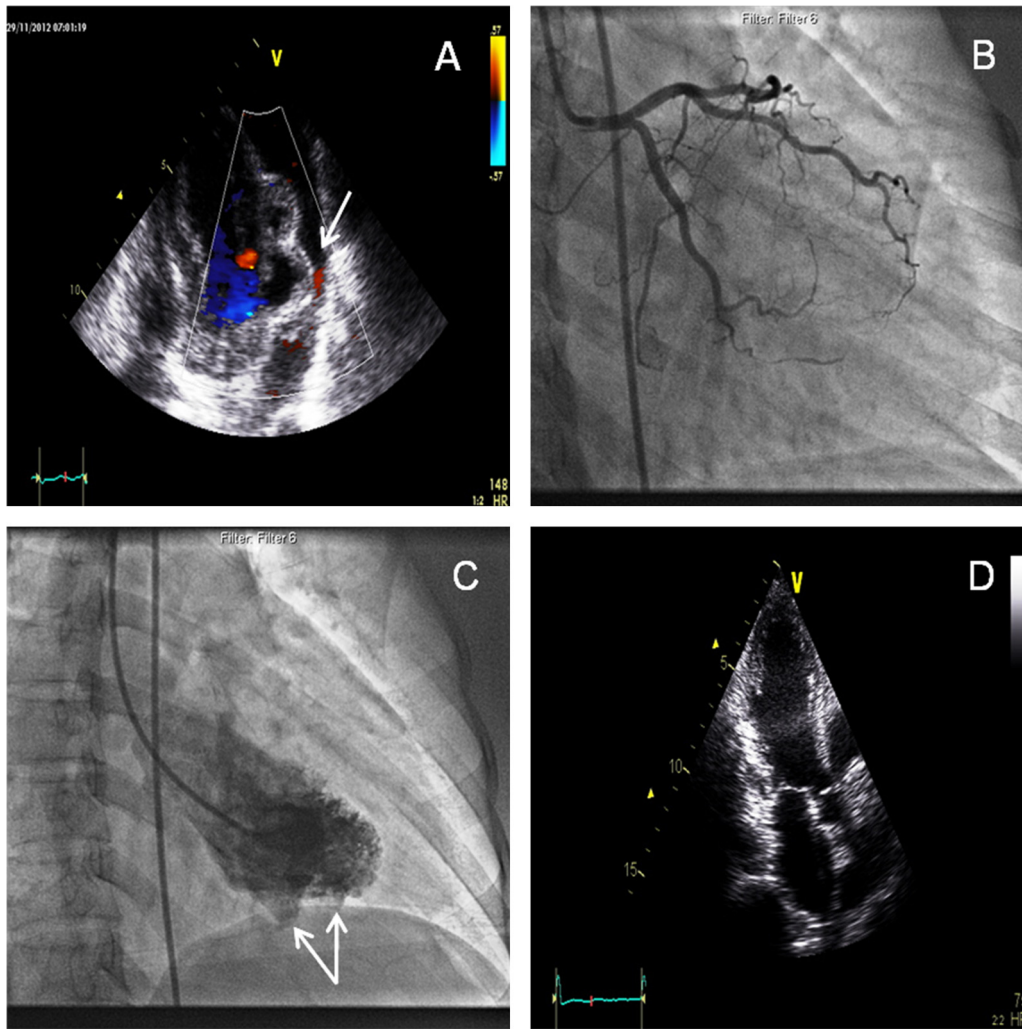


Fig. 1. Transthoracic echocardiogram with color Doppler flow showing pericardial effusion and posterolateral left ventricular wall pseudoaneurysms with small myocardial tear (A). Coronary angiographic findings demonstrating a small obtuse marginal branch involved with severe disease (B). Right anterior oblique left ventricular angiogram revealing pseudoaneurysms (C). Transthoracic echocardiogram postsurgical patch repair (posterior wall) revealed no significant pericardial effusion (D).

behind the posterior LV wall was demonstrated by TTE. Chest and abdomen contrast-enhanced computed tomography (CT) showed a large hematoma around the left ventricle with a size of approximately (13 cm × 9 cm × 9 cm) that had ruptured in the mediastinum extending to the upper abdomen as well as the abdominal wall and it was partially connected to the left ventricle via a small

tear (Fig. 2). Because the patient was deemed high risk for redo surgical repair, we planned percutaneous closure. Urgent cardiac catheterization and LV angiogram were performed demonstrating basal posterior LV wall pseudoaneurysm with contrast flow through a narrow neck into the large blind sac (Fig. 3A and B). Successful closure of the defect was performed under

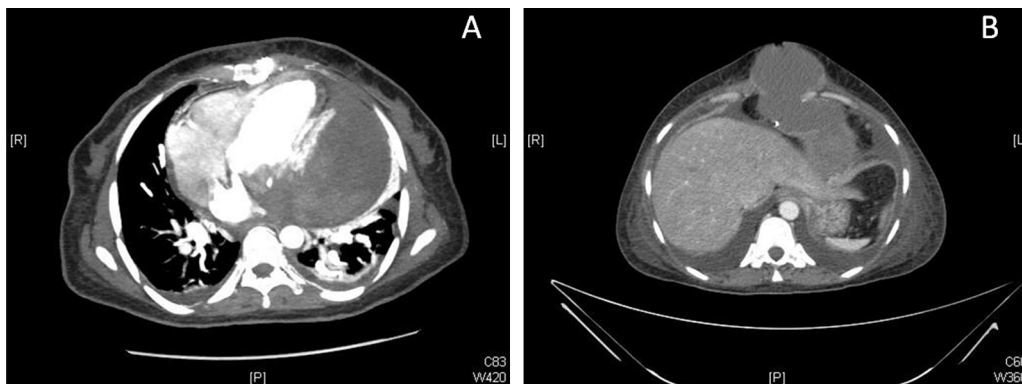


Fig. 2. (A and B) Contrast enhanced computed tomography of the chest and abdomen demonstrated a large hematoma around the left side of the heart that had ruptured in the mediastinum and extended into upper abdomen and anterior abdominal wall.

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