

CLINICAL VIGNETTE

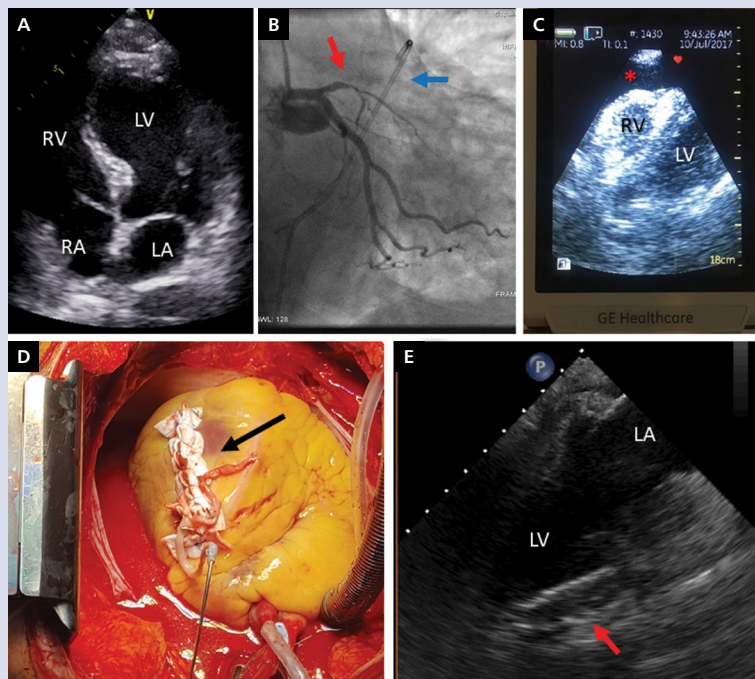
Immediate surgical repair of left ventricular wall rupture complicating ST-segment elevation myocardial infarction

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A 78-year-old man with no previous history of coronary artery disease was admitted to the Department of Cardiology with severe chest pain lasting for 1 h. Electrocardiogram showed sinus rhythm of 70 bpm and 6-mm ST-segment elevation in precordial leads V₃-V₅. Markers of myocardial necrosis were elevated, i.e. troponin 1.88 ng/mL and creatinine kinase-MB 102.2 ng/mL. Limited echocardiography performed during percutaneous coronary intervention preparations revealed akinesis of the apex with left ventricular ejection fraction (LVEF) of 25% (Fig. 1A) and normal pericardium. ST-segment elevation myocardial infarction was diagnosed, and the patient received aspirin, clopidogrel, and intravenous unfractionated heparin. Coronary angiography was performed, revealing occluded left anterior descending artery (LAD; Fig. 1B). During the diagnostic angiography, sudden cardiac arrest occurred with pulseless electrical activity. Resuscitation was initiated (including chest compressions, endotracheal intubation, intravenous infusion of catecholamines and colloids, and insertion of an intra-aortic balloon pump). During the resuscitation, an emergency point-of-care echocardiogram with a handheld device was performed, revealing large pericardial haematoma with cardiac tamponade due to suspected free wall rupture (Fig. 1C). Emergency pericardiocentesis was performed in the cath lab, and 2000 mL of blood was evacuated. The patient was immediately qualified for open-heart surgery in extracorporeal circulation. After sternotomy, tamponade and rupture of the free (anterior) wall of the left ventricle (LV) were confirmed. Blood and clots were removed from the pericardial sac and the anterior wall of the LV was reconstructed with the use of a Gore-Tex patch and Teflon strips (Fig. 1D). Intraoperative transoesophageal echocardiography confirmed a good early result of LV reconstruction (Fig. 1E). Subsequently, implantation of saphenous vein grafts to the LAD was performed. During and after the operation, the patient required circulatory support with the use of an intra-aortic balloon pump and intravenous infusion of catecholamines. In the postoperative period echocardiography confirmed successful repair and LVEF of 33% on the seventh day after the operation. After haemodynamic stabilisation, the patient was transferred to the general intensive care unit. Left ventricular free wall rupture occurs in approximately 0.45% of cases and is usually lethal because of haemopericardium and tamponade. A critical risk factor is delayed reperfusion, and the complication tends to occur more often in the elderly, in women, and in cases of first lateral or anterior acute myocardial infarction. As demonstrated, the use of handheld echocardiography devices accelerates the decisions leading to immediate cardio-surgical intervention, which offers patients the best chance of survival.



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Figure 1. **A.** Transthoracic echocardiography, apical four-chamber view — akinesis of apical segments; **B.** Coronary angiography, left anterior descending artery amputation (red arrow); percutaneous pericardial catheter drainage (blue arrow); **C.** Transthoracic echocardiography performed with pocket-sized device — pericardial fluid around the apex compressing right heart chambers; **D.** Operative field, arrow indicates the left ventricle (LV) anterior wall reconstructed with the use of Gore-Tex patch and Teflon strips; **E.** Intraoperative transoesophageal echocardiography — good early results of LV reconstruction (red arrow indicates the anterior wall reconstructed with the use of Teflon patches); LA — left atrium; RA — right atrium; RV — right ventricle

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