

Ruptured aortic dissection into the pulmonary artery: A case study

A 39-year-old male patient was admitted to our emergency department with a complaint of severe chest pain lasting for the past 30 minutes and a short-term loss of consciousness. Shortly after his admission, he succumbed to cardiac arrest caused by pulseless ventricular tachycardia. Accordingly, direct defibrillation was performed using 200 Joules and cardiopulmonary resuscitation (CPR) was initiated along with the intravenous administration of 300-mg amiodarone. Furthermore, repeated biphasic electrical defibrillation therapies were implemented as required, all of which failed at conversion into any palpable rhythm. An emergency bedside echocardiographic evaluation performed via hand-held ultrasound device revealed a visual estimation of left ventricular ejection fraction to be 20% with no specific wall motion abnormality, pericardial effusion, or dilation in the right cardiac chambers. The ascending aorta and the pulmonary trunk could not be clearly assessed because of poor visualization. While transferring the patient to the catheter laboratory for an emergency coronary angiography, the rhythm degenerated into asystole. The findings of the first cineangiography demonstrated Stanford A, DeBakey type 2 aortic dissection ruptured into the pulmonary trunk in immediate vicinity of the aortic root with contrast passage further into the right pulmonary arterial tree (Fig. 1, Video 1). The tip of the diagnostic catheter was observed to lodge in the left main coronary artery with no passage of contrast agent into the left coronary arterial tree, possibly because of the propagation of the dissection flap further into the left coronary system. Despite CPR, the patient died soon. Ruptured aortic dissection is a life-threatening disease, with a wide range of devastating complications. In addition, mortality is deemed almost certain if it is complicated with cardiac arrest.

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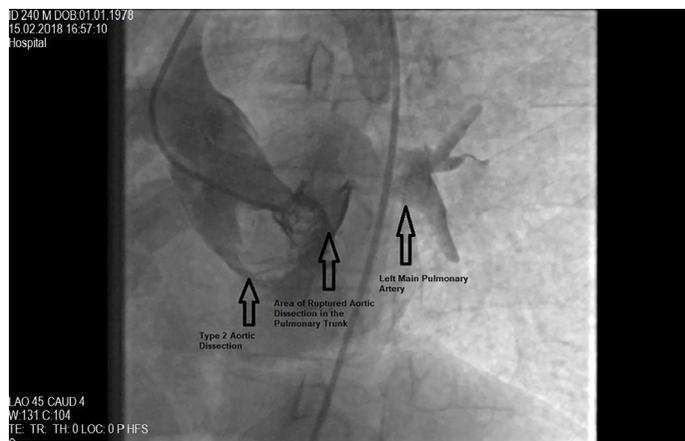


Figure 1. The angiographic image demonstrates Stanford A, DeBakey type 2 aortic dissection ruptured into the pulmonary artery

Video 1. The cineangiographic record demonstrates Stanford A, DeBakey type 2 aortic dissection ruptured into the pulmonary trunk just in the vicinity of aortic root with contrast passage further into the right pulmonary arterial tree

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Interventricular septal dissection sustained by an aneurysmal sac

A 58-year-old male presented at the emergency room with progressive exertional dyspnea and dizziness. Physical examination revealed a holosystolic murmur and pulmonary crackles. Blood pressure was 100/60 mm Hg, and oxygen saturation was 90%. Electrocardiogram (EKG) showed signs of a previous inferior and anterior myocardial infarction as well as right ventricular overload

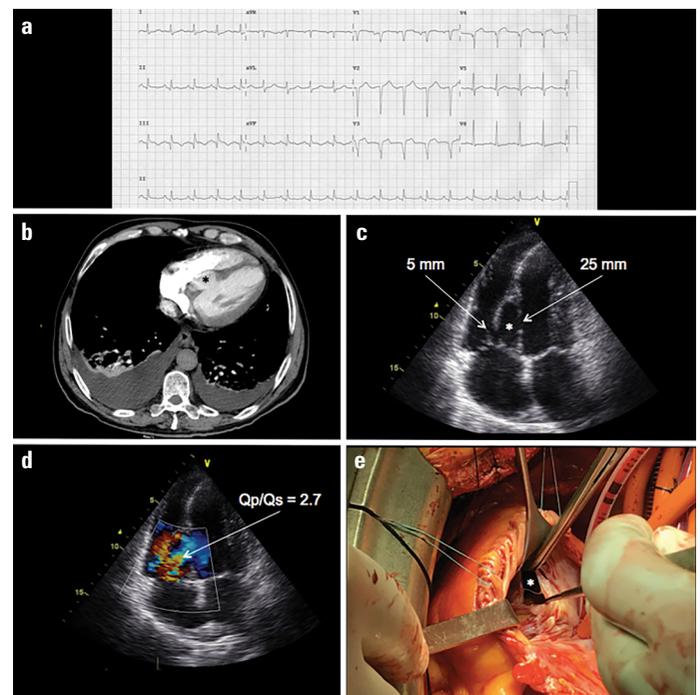


Figure 1. (a) 12-lead electrocardiogram with the S1Q3T3 pattern. (b) Computed tomography scan, where we can see the interventricular septal defect (black star). (c) Transthoracic echocardiogram: 4 chambers view. We can see the septal defect (black star) and the left and right perforations (white arrows). (d) Transthoracic echocardiogram 4 chambers color Doppler view, showing the left-to-right shunt. (e) The interventricular septal defect seen from the right ventricle during surgery

(S1Q3T3 pattern) (Fig. 1, Panel A). Troponin levels were normal, and an urgent computed tomography scan was performed to rule out acute pulmonary embolism (PE). Unexpectedly, no PE was observed, but a large interventricular septal (IVS) defect was visualized (Fig. 1, Panel B, star). Transthoracic echocardiography showed an IVS dissection with an entry defect of 25 mm sustained by an aneurysmal sac bulging into the right ventricle with multiple small perforations (maximal size of 5 mm), causing a left-to-right shunt with an estimated Qp/Qs of 2.7 (Fig. 1, Panels C and D; Supplementary material online, Video S1). Coronary angiogram displayed subacute total occlusion of the right coronary artery and severe stenosis in the left anterior descending coronary artery. The patient underwent urgent surgical IVS repair (Panel E) and coronary artery bypass grafting, and his recovery was uneventful. Postmyocardial infarction IVS dissection is a rare complication, which is considered a subacute form of cardiac rupture. Despite surgical repair, which is the definite treatment, mortality is high, and timing depends on hemodynamic status and heart failure symptoms. Our

patient was fortunately protected by a large aneurysmal sac with a relatively small perforation, which prevented him from suffering from acute and catastrophic hemodynamic decompensation.

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Video 1. Transthoracic echocardiogram 5 chambers color Doppler view. We can appreciate the left-to-right shunt through the interventricular septal defect.

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