

Lost And Found

Catastrophic En Block Embolism of a Mechanical Prosthetic Valve Thrombus after Thrombolytic Therapy

*Prashanth Panduranga,¹ Faisal Alam,² Laxmi Ratnam,³ Matlooba Al-Zadjali,⁴ Mohammed Al-Deeb¹

فُقِدَ ثُمَّ تَمَّ العثور عليه
أنصمام كارثي بعد علاج جلطة كبيرة بصمام بديل بدواء مضاد للتخثر

براشانت باندورانجا، فيصل علم، لاکسمی رانتام، مطلوبیة الزدجالي، محمد الديب

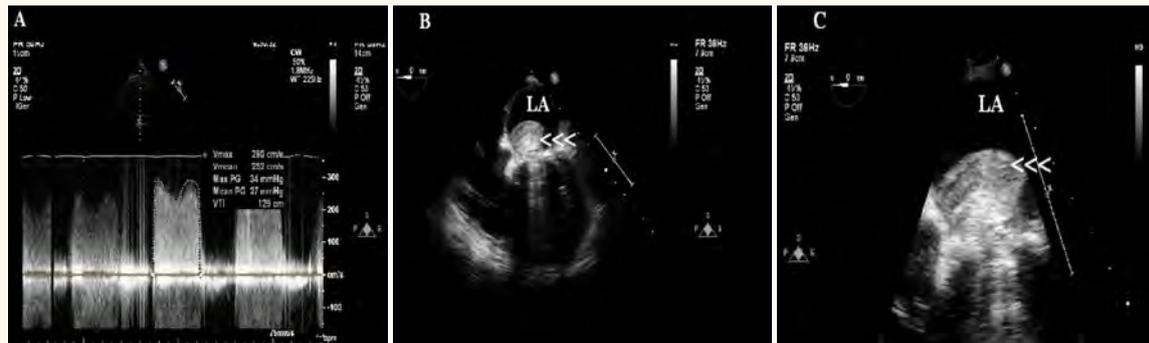


Figure 1: (A) Transthoracic echocardiography showing mean diastolic mechanical mitral valve transvalvular gradient of 27 mmHg and a peak gradient of 34 mmHg in a patient with prosthetic valve thrombosis. (B) Transesophageal echocardiography demonstrating stuck mechanical mitral valve with a large left atrial (LA) thrombus attached to the prosthetic valve (arrowheads). (C) Transesophageal echocardiography demonstrating close-up image of a large echogenic well defined LA thrombus attached to a mechanical prosthetic valve (arrowheads).

A 45-YEAR-OLD WOMAN PRESENTED with refractory pulmonary oedema secondary to a massive thrombosis of a St. Jude mechanical mitral prosthetic valve. She was noncompliant with warfarin and had suffered embolic stroke 3 years earlier, from which she had recovered. She was in sinus rhythm with absent valve clicks on auscultation. A transthoracic echocardiogram revealed a high transmitral peak gradient of 34 mmHg and a mean gradient of 27 mmHg with an ejection fraction of 55% [Figure 1A]. The international normalised ratio (INR) was 1.29. An urgent transesophageal echocardiogram (TEE) demonstrated a large (6 cm²) left atrial thrombus attached to the mechanical valve at the discs which

were stuck in a closed position [Figures 1B and 1C].

The patient was advised to have emergency surgery, but she and the family refused. In spite of explaining the risks involved in thrombolysing a large clot, the patient and the family preferred thrombolytic therapy. As a life-saving measure, patient was thrombolysed with 10 units of reteplase intravenously over 2 minutes with a repeat dose of 10 units administered 30 minutes later. After an hour of thrombolysis a repeat TEE showed complete disappearance of the thrombus from the left atrium with one of the discs stuck in closed position [Figures 2 A and B]. The peak transmitral gradient was 7 mmHg and the mean gradient was 4 mmHg [Figure 2C]. Immediately, the patient started

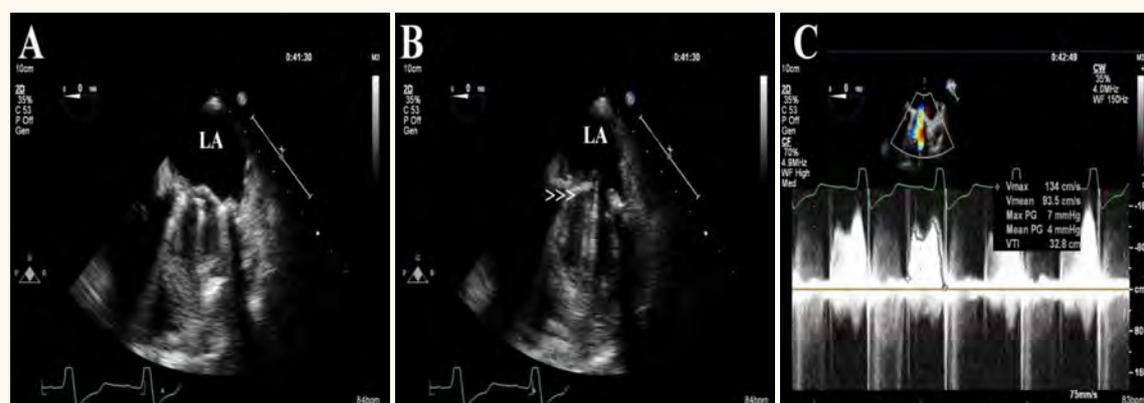


Figure 2: (A) Transesophageal echocardiography demonstrating disappearance of a large left atrial thrombus attached to a stuck mechanical valve after thrombolysis with reteplase. Note the bileaflet mechanical valve in closed position. (B) Transesophageal echocardiography demonstrating residual thrombus post-thrombolysis in a bi-leaflet mechanical valve with one of the disc immobile in closed position (arrowheads). Note the other disc is open. (C) Transesophageal echocardiography showing mean diastolic mechanical mitral valve transvalvular gradient of 4 mmHg and a peak gradient of 7 mmHg in a patient with prosthetic valve thrombosis treated with thrombolysis. LA, left atrium.

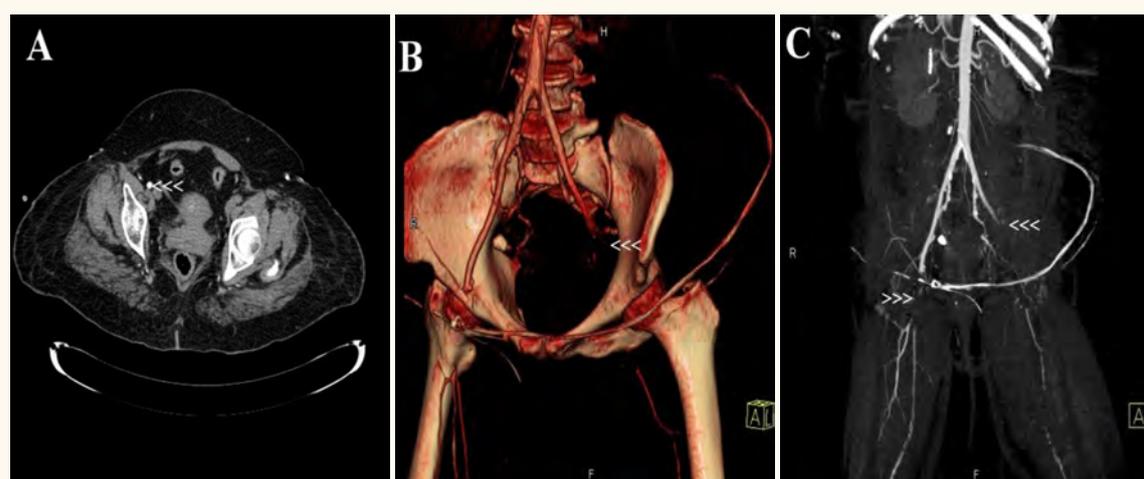


Figure 3: Contrast-enhanced computed tomography (CT) scan in axial (A) view showing presence of contrast in the right common iliac artery (arrowheads) with absence of opacification of left common iliac artery in a patient with prosthetic valve thrombosis treated with thrombolysis. Contrast-enhanced CT in three-dimensional reconstruction (B and C) demonstrates complete occlusion of left common iliac artery and right common femoral artery (arrowheads) in the patient with prosthetic valve thrombosis treated with thrombolysis.

to complain of severe pain in the left leg with cold periphery and absent femoral pulse on both sides. An urgent computed tomography angiogram of the abdomen, pelvis and legs demonstrated complete occlusion of left common iliac artery and right common femoral artery with reformation of distal arteries [Figures 3A, B and C]. An emergency open bilateral ilio-femoral embolectomy was performed and a large thrombus removed from the left common iliac artery [Figure 4 A and B]. Unfortunately, the patient developed refractory sepsis with acute renal shut down and died after 10 days of admission.

The incidence of left-sided prosthetic valve thrombosis (PVT) ranges from 0.5% to 0.8% per

patient-year.^{1,2} The mortality of obstructive PVT is about 10% irrespective of the treatment strategy.¹ The American College of Cardiology/American Heart Association (ACC/AHA) and American College of Chest Physicians guidelines recommend fibrinolytic therapy as first-line treatment for patients in good functional class with low thrombus burden ($< 0.8 \text{ cm}^2$) and in all other patients if they are considered to be at high risk for surgery.^{3,4} Emergency surgery is reasonable for patients with a thrombosed left-sided prosthetic valve and New York Heart Association (NYHA) functional class III–IV symptoms or a large clot burden ($> 0.8 \text{ cm}^2$).^{3,4} Furthermore, in the following groups of patients



Figure 4: (A) Intra-operative image of a large thrombus protruding from left common iliac artery in a patient with prosthetic valve thrombosis treated with thrombolysis. (B) Image of a large thrombus explanted en bloc from left common iliac artery in the patient with prosthetic valve thrombosis and post-thrombolysis embolism.

surgery is advised, namely: 1) patients with large left atrial thrombus; 2) patients with any active bleeding or a history of intracranial bleeding; 3) patients with evidence of ischaemic stroke from 4 hours to six weeks, and 4) post-valve replacement within 4 days.¹ The major complication of thrombolytic treatment for PVT is the risk of embolisation which occurs in 12–15% of the cases.³ A registry study demonstrated that thrombus size on TEE and a past history of stroke were independent predictors of complications as seen in this patient.² Left atrial thrombi are also known to embolise at the time of, or shortly after a change in atrial rhythm.⁵ In this case, there was not only obstructive PVT, but it was associated with a large left atrial thrombus and hence surgery was the initial choice of treatment. However, the patient refused surgery and was thrombolysed with catastrophic embolism.

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