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Successful Intrapericardial Alteplase Administration for Nonpurulent Pericardial Effusion Following Cardiac Surgery: A Case Report

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KEYWORDS: cardiac surgery, alteplase, pericardial effusion, fibrinolysis.

CITATION: Cardiol Croat. 2026;21(11-12):345. | https://doi.org/10.15836/ccar2026.345

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Introduction: Despite limited evidence, intrapericardial fibrinolysis has primarily been described in patients with purulent pericarditis, primary to improve drainage and reduce pericardial loculations. However, its use in nonpurulent pericardial effusions remains scarcely reported, and to our knowledge, there are only few case reports.[1-4]

Case report: 63-year-old male presented to the emergency department after a frontal car accident with proximal sternal fracture, and with a 2-month history of progressive bilateral leg edema, dyspnea, and orthopnea. His comorbidities included atrial fibrillation, type 2 diabetes mellitus, hypertension, and chronic renal disease (GFR-CKD 38 ml/min/1.73m^2). NT-proBNP was markedly elevated. CT was notable for bilateral pleural effusion, pulmonary consolidation, and contusion. Echocardiography demonstrated prolapse of both mitral valve leaflets, predominantly involving the anterior leaflet, resulting in severe eccentric mitral regurgitation. The left ventricular ejection fraction (LVEF) was 55%. Severe biatrial dilatation, right ventricular dilatation, and markedly elevated pulmonary artery pressure (55 + 20 mmHg) were also observed. Transesophageal echocardiography (TEE) confirmed severe mitral regurgitation due to extensive prolapse of all segments of both mitral valve leaflets, predominantly involving the A2 segment extending towards A3, with two ruptured chordae tendineae. Empirical antibiotic therapy, intravenous furosemide, and non-invasive ventilation were initiated. Coronary angiography revealed 70% stenosis of LAD and 80% stenosis of RCA. The patient underwent mitral valve replacement with a bioprosthetic valve, double aortocoronary bypass grafting (VSM-LAD and VSM-RCA), and left atrial appendage occlusion. Echocardiography performed on POD 18 revealed LVEF of 45–50% and a pericardial effusion measuring up to 22 mm in diastole adjacent to the lateral wall of the left ventricle (**Figure 1A**), without signs of cardiac tamponade. Colchicine was initiated. However, the effusion subsequently increased in size, measuring up to 35 mm in diastole along the posterolateral and anterolateral walls of the left ventricle, with visible fibrin strands. Pericardiocentesis was therefore performed on POD 44 via an apical approach, initially draining 170 mL of hemoserous fluid. As subsequent drainage was inadequate, intrapericardial alteplase was administered via the drainage catheter (10 mL). Three doses were administered, resulting in the drainage of 300 mL, 300 mL, and 400 mL of fluid after each respective dose (**Figure 1B-C**). Bedside transthoracic echocardiography demonstrated near-complete resolution of the pericardial effusion.

Conclusion: Intrapericardial alteplase may represent a viable and safe treatment option for nonpurulent pericardial effusion following cardiac surgery, particularly when conventional drainage is inadequate.



FIGURE 1. A-C Evolution of pericardial effusion.

RECEIVED:
October 24, 2026

UPDATED:
November 4, 2026

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