

# Papillary Muscle Rupture After Acute Inferior Myocardial Infarction

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**A** 65-year-old woman presented at a hospital with an inferior-wall acute myocardial infarction (AMI). She was in cardiogenic shock with hypoxic respiratory failure. Emergency left-sided heart catheterization revealed an occluded right coronary artery. An intra-aortic balloon pump was placed, and she was transferred to our hospital.

Transesophageal echocardiograms (TEE) showed a completely ruptured head of the posteromedial papillary muscle (Fig. 1A), with severe secondary eccentric mitral regurgitation visible in color-flow (Fig. 1B) and continuous-wave Doppler (Fig. 1C) modes. The patient underwent emergency surgical mitral valve replacement with use of a 25-mm Carpentier-Edwards bioprosthesis (Edwards Lifesciences Corporation). She recovered and began short-term rehabilitation.

## Comment

Papillary muscle rupture, a rare subacute complication of AMI, is fatal when untreated. Primary percutaneous coronary intervention has enabled its detection and reduced its mortality rate.<sup>1</sup> Anterolateral papillary muscle rupture is rarer than posteromedial rupture. A dual blood supply from the left coronary artery and left circumflex coronary artery reduces the risk of sudden and complete occlusion to the anterior papillary muscle, thus reducing the risk of rupture. Delaying admission beyond 24 hours after AMI is an important risk factor in survival.<sup>2</sup> Patients present with rapidly progressive cardiogenic shock and pulmonary edema. When rupture is suspected, TEE helps to confirm the diagnosis and to evaluate the extent of damage, especially when transthoracic echocardiography is inadequate.<sup>3,4</sup>

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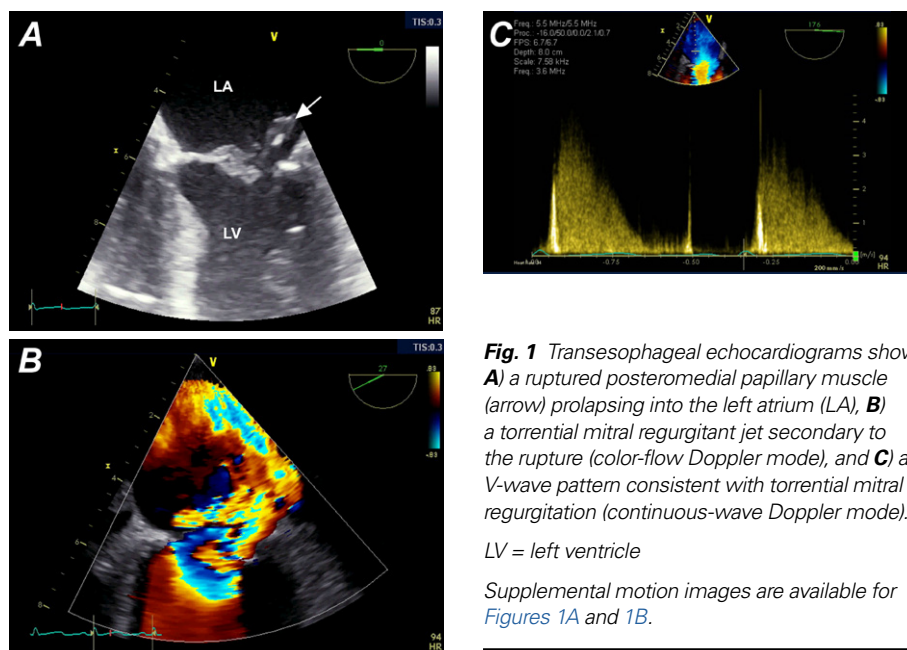
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**Fig. 1** Transesophageal echocardiograms show **A**) a ruptured posteromedial papillary muscle (arrow) prolapsing into the left atrium (LA), **B**) a torrential mitral regurgitant jet secondary to the rupture (color-flow Doppler mode), and **C**) a V-wave pattern consistent with torrential mitral regurgitation (continuous-wave Doppler mode).

LV = left ventricle

Supplemental motion images are available for Figures 1A and 1B.

The posterior papillary muscle provides chordae to both mitral leaflets, and its rupture can be differentiated from a pure chordal rupture because both leaflets are affected. Emergency surgery is necessary after the patient's hemodynamic status is stabilized; mitral valve repair or replacement is definitive treatment.<sup>5</sup> Prompt diagnosis and surgical intervention were crucial for successfully managing the acute papillary muscle rupture in our patient.

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