

Anterolateral Papillary Muscle Rupture in a 78-Year-Old Man

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A 78-year-old man who presented with a 2-day history of chest pain was taken to the cardiac catheterization laboratory for evaluation of suspected myocardial infarction. An electrocardiogram showed ST-segment depression in the anterior and inferior leads, and a bedside transthoracic echocardiogram showed moderate degrees of left ventricular systolic dysfunction and mitral regurgitation. The patient was hypotensive. After several unsuccessful attempts to cross the culprit lesion in the proximally occluded left anterior descending coronary artery (LAD), the patient was intubated, placed on intra-aortic balloon pump support, and transferred to the intensive care unit. Despite mechanical and inotropic support, he remained hemodynamically unstable. Transesophageal echocardiograms showed the rupture of the head of the anterolateral papillary muscle (PM) (Fig. 1). The head of the muscle and the A1 scallop of the anterior mitral leaflet were prolapsing into the left atrium during systole (Figs. 2 and 3), resulting in torrential mitral regurgitation (Fig. 4). Multiorgan failure rapidly developed, and the patient died before surgery could be performed.

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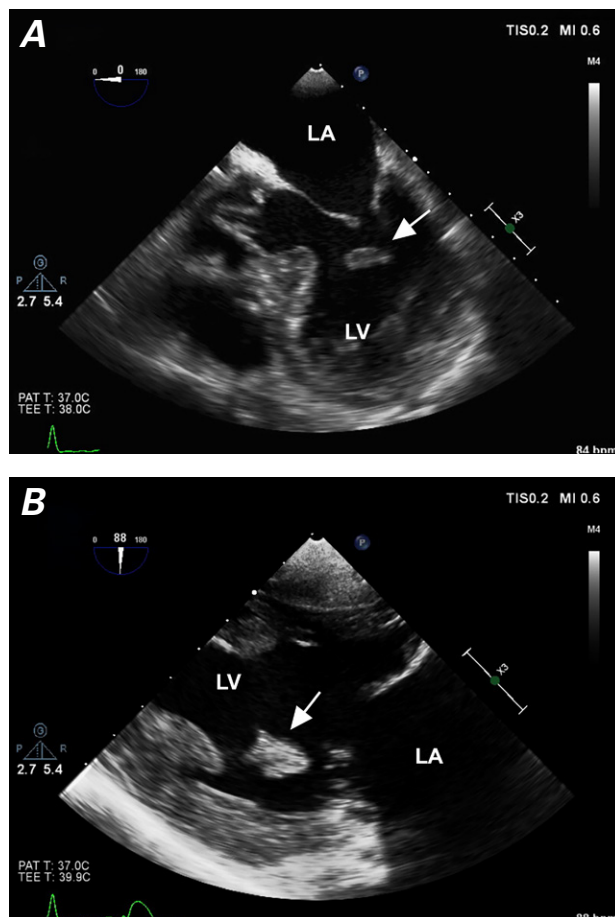


Fig. 1 Transesophageal echocardiograms in **A**) mid-esophageal 4-chamber and **B**) transgastric 2-chamber diastolic views show the ruptured papillary muscle fragment (arrow).

LA = left atrium, LV = left ventricle

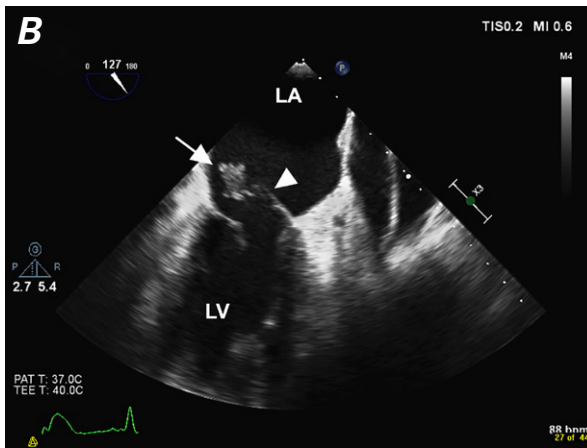
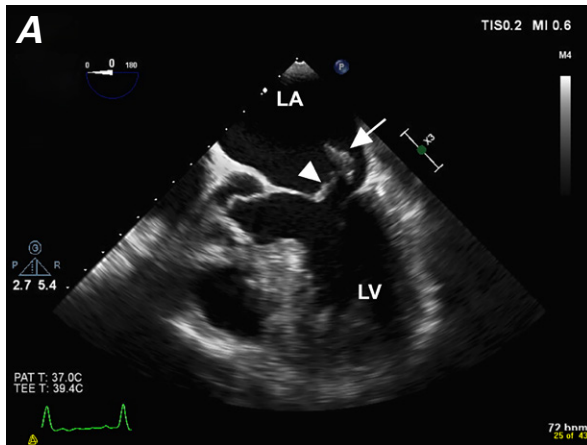


Fig. 2 Transesophageal echocardiograms in mid-esophageal **A)** 4-chamber and **B)** long-axis systolic views show the ruptured papillary muscle fragment (arrow) and the A1 scallop (arrowhead) prolapsing into the left atrium (LA).

LV = left ventricle

Supplemental motion image is available for [Figure 2](#).

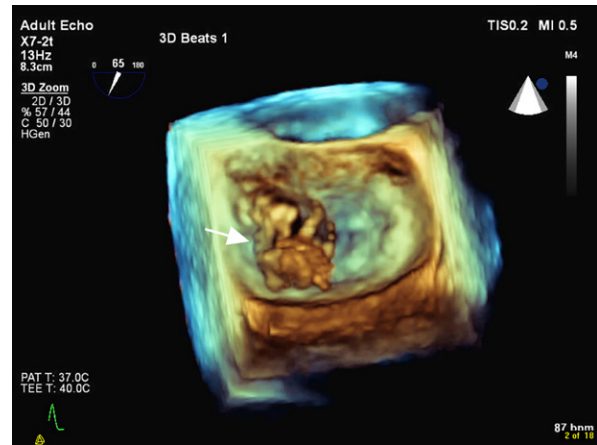


Fig. 3 Transesophageal echocardiogram (3-dimensional zoom surgical view in systole) shows the ruptured papillary muscle fragment (arrow) prolapsing into the left atrium.

Supplemental motion image is available for [Figure 3](#).

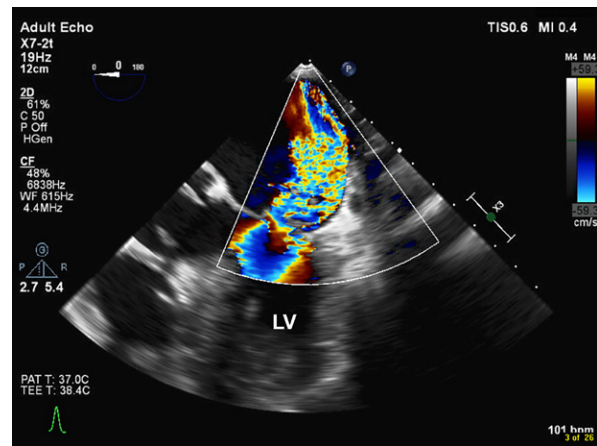


Fig. 4 Transesophageal echocardiogram (mid-esophageal 4-chamber view in color-flow Doppler mode) shows torrential mitral regurgitation.

LV = left ventricle

Comment

Before the introduction of percutaneous coronary intervention, PM rupture was reported in 1% to 5% of patients who had a myocardial infarction; since then, the incidence has decreased to 0.25% to 0.5%.^{1,2} In 80% of cases, rupture occurs within 7 days, and in 20% of cases, it occurs weeks to months later.² The posteromedial PM receives blood solely from the posterior descending artery and is affected most often. The anterolateral PM, which has a dual blood supply from the LAD and the left circumflex coronary artery, is less frequently affected³; it is connected by chordae tendineae to the anterior and posterior mitral valve leaflets. In our patient, anterolateral PM rupture caused the head of the muscle and the A1 mitral leaflet to prolapse into the left atrium. Early diagnosis, optimally by echocardiography,

is crucial.⁴ Without urgent surgical repair, death occurs within 24 hours in 50% of cases.^{1,2}

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