

Timothy B. Salib, MS4, George L. Higgins, III, MD

From the University of Vermont College of Medicine, Burlington, VT (Salib); and the Department of Emergency Medicine, Maine Medical Center, Portland, ME (Higgins).

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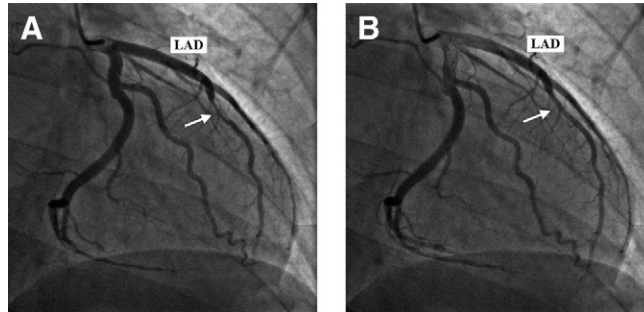


Figure 1. A, Angiographic image of the left anterior descending (LAD) coronary artery during systole (arrow identifies the diagnostic finding). B, Angiographic image of the LAD during diastole (arrow identifies the diagnostic finding).

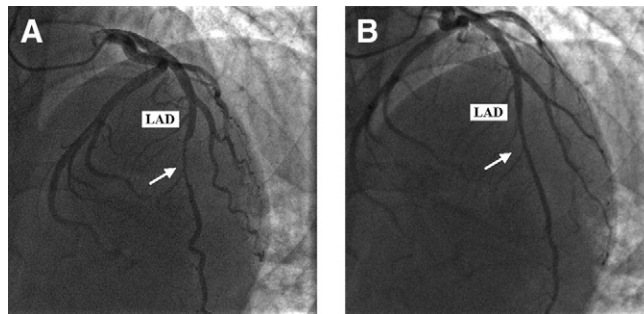


Figure 2. A, Angiographic image of the LAD during systole (arrow identifies the diagnostic finding). B, Angiographic image of the LAD during diastole (arrow identifies the diagnostic finding). Used with permission of George L. Higgins, III, MD, Department of Emergency Medicine, Maine Medical Center, Portland, ME.

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A 46-year-old man presented to the emergency department with generalized weakness, mild confusion, gait instability, and diaphoresis that developed suddenly while he was running in a competitive event. He denied chest pain or shortness of breath. He had no known cardiac risk factors. He prided himself on being aerobically fit. His vital signs were within normal limits, and his clinical examination was unremarkable. His ECG demonstrated T-wave inversions in leads III and aVF, without other dynamic changes. Initial cardiac biomarker results revealed an increased troponin level. Given these findings, he underwent cardiac catheterization, which provided the diagnosis (Figures 1 and 2).

For the diagnosis and teaching points, see page 11.

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(continued from p. 8)

DIAGNOSIS:

Acute coronary syndrome caused by critical myocardial bridging. Coronary angiography revealed no evidence of coronary artery atherosclerosis. The left anterior descending coronary artery appeared normal during diastole but narrowed by 50% during systole, consistent with critical myocardial bridging.

Myocardial bridging is a congenital abnormality that occurs when bands of heart muscle cover a portion of a coronary artery, creating an intramyocardial, or "tunneled," segment. It is characterized angiographically by systolic compression of the tunneled segment, with reversal during diastole, in contrast to the fixed stenosis that is present in atherosclerotic coronary artery disease. Though generally thought to be a benign condition,¹ myocardial bridging has been associated with acute coronary syndromes, arrhythmias (including supraventricular tachycardia and ventricular tachycardia), and sudden death.² Patients often present with atypical or angina-like chest pain, and the diagnosis should be considered in those with myocardial ischemia who do not have traditional cardiac risk factors.³ Treatment for symptomatic patients includes β -blockers (which reduce pulse rate and increase diastolic filling time), calcium channel antagonists, or a combination of both.² Nitrates are contraindicated because they may worsen symptoms through a reflex increase in sympathetic contractility.² Surgery or coronary stenting at the bridge site may be required in refractory cases.²

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