A 62-year-old woman with a history of vasospastic angina presented to the emergency room with chest pain. The ECG showed ST-segment elevation in leads V1 through V6. The transthoracic echocardiogram revealed an akinetic left ventricular (LV) apical wall. The coronary angiogram on admission demonstrated normal coronary arteries.

Two weeks later, resting 99mTc-tetrofosmin myocardial single photon emission CT (SPECT) imaging revealed no perfusion defect (Figure 1). The dobutamine stress echocardiogram showed that LV apical wall contractility increased from hypokinetic to hyperkinetic with a low dose of dobutamine. LV electromechanical mapping demonstrated normal unipolar voltage potentials (Figure 2) and reduction of local endocardial shortening (Figure 3) in the LV apical wall.

The LV electromechanical mapping procedure thus permitted online detection of stunned myocardium in the catheterization laboratory.

Figure 1. Resting 99mTc-tetrofosmin myocardial SPECT imaging demonstrates no perfusion defect. Vertical long-axis (left) and horizontal long-axis (right) images.
Figure 2. Right anterior oblique (left) and left anterior oblique (right) views of LV unipolar voltage maps demonstrating normal unipolar voltage potentials throughout LV except for mitral annulus zones. Color scale is set from 2.9 mV (red) to 19.1 mV (blue/purple).

Figure 3. Right anterior oblique (left) and left anterior oblique (right) views of local shortening maps, detecting extent of LV contractility, with hypokinetic zone in apical wall. Color scale is set from 6% (red) to 12% (blue/purple).
Left Ventricular Electromechanical Mapping in Stunned Myocardium
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