

## Multimodality assessment of ventricular pseudoaneurysm after non-reperfused acute myocardial infarction

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Cardiac rupture is a frequent fatal mechanical complication of acute myocardial infarction;<sup>1</sup> in exceptional cases, the rupture of the left ventricle forms a pseudoaneurysm, which is characterized by the absence of myocardial tissue in its wall and a relatively narrow neck between the ventricle and the para-ventricular chamber.<sup>2</sup>

A 72-year-old male, with cardiovascular risk factors (smoking, diabetes mellitus type II, age and sex) 2 months ago, had an acute myocardial infarction. He consulted a cardiologist who sent him to our institution for a myocardial perfusion study. The electrocardiogram showed QS pattern with negative inversion of T wave in DII, DII, and AVF (Figure 1). The myocardial perfusion

study demonstrated inferior transmural myocardial infarction, which extended as non-transmural to the inferolateral and inferoseptal walls, without ischemia (Figure 2A, B). The transthoracic two- and three-dimensional echocardiography demonstrated inferior-middle and apical wall akinesia and saccular pseudoaneurysm of 5.6 × 4.7 cm in the basal and middle segments of inferior and inferolateral walls, with entrance orifice of 2.6 × 2.4 cm and pericardial effusion (3A, B, C, D, Clip 1). The MRI revealed inferior myocardial infarction and the presence of pseudoaneurysm with laminar thrombus (Figure 3E-G, Clip 2). The patient was hospitalized and the coronary angiography showed of 70% obstruction of the left anterior

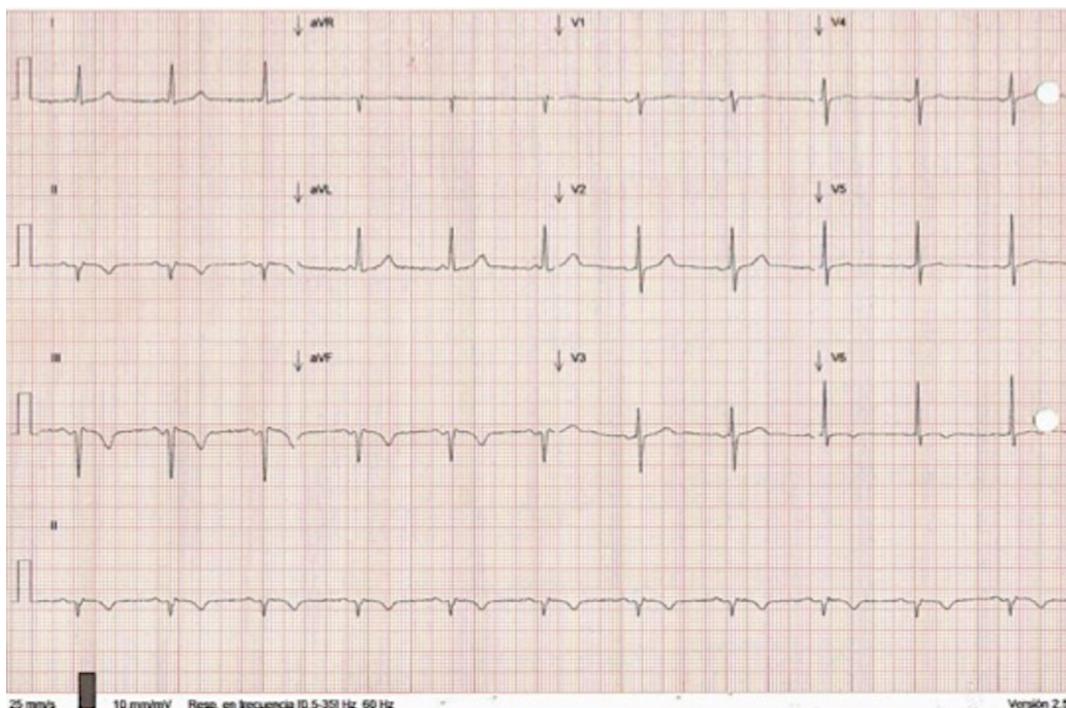
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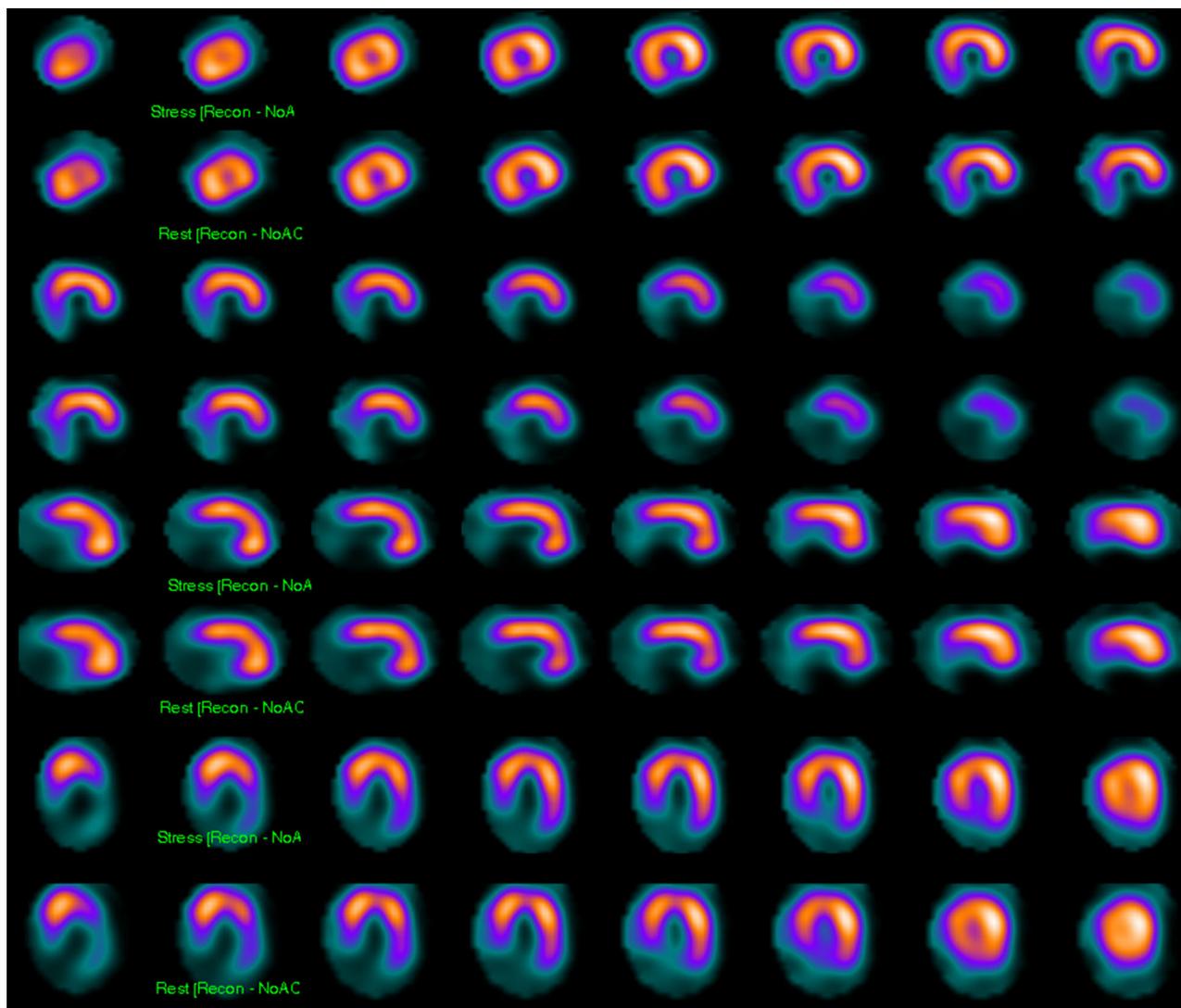
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**Figure 1.** Electrocardiogram in sinus rhythm with a heart rate of 75 bpm. QS pattern with negative inversion of T wave in DII, DII, and AVF is observed.

descending coronary artery in the proximal segment and chronic total obstruction of right coronary artery in its proximal segment (Figure 4A, B). The patient

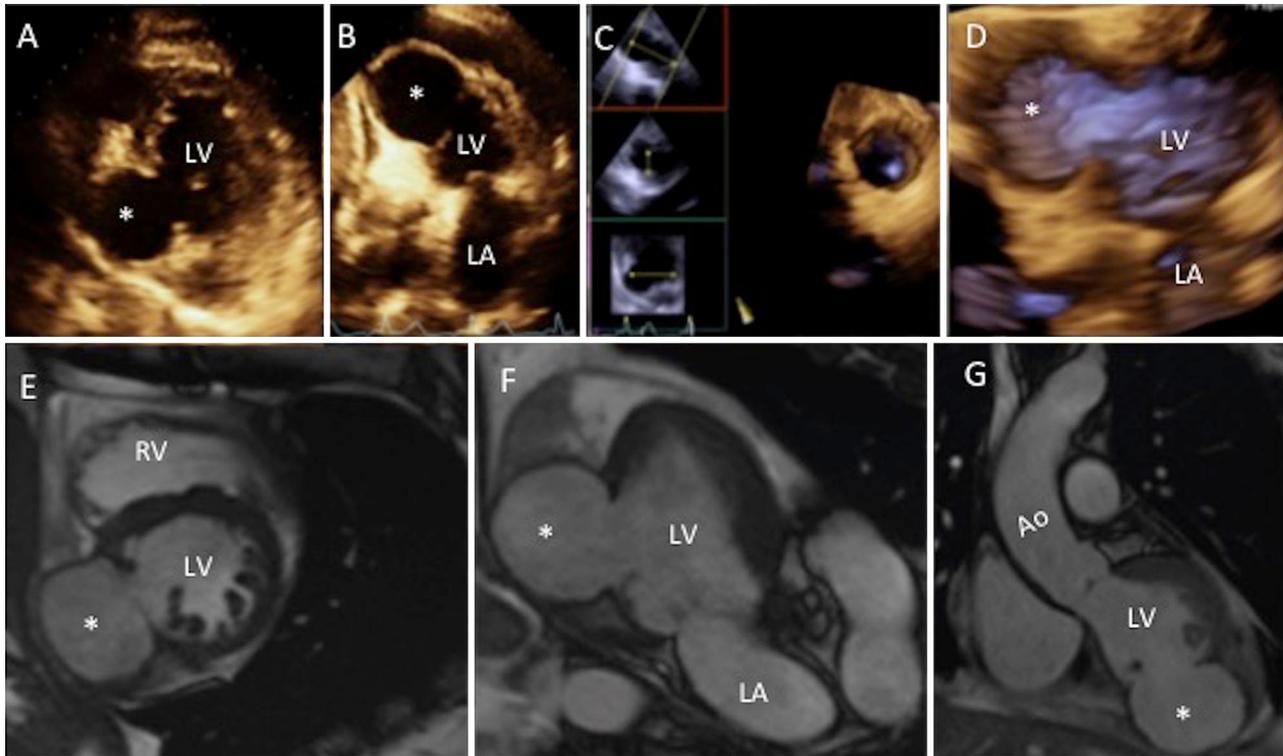
underwent surgical left ventricular reconstruction with Dor's technique and coronary artery bypass grafting of the right and left anterior descending coronary arteries.



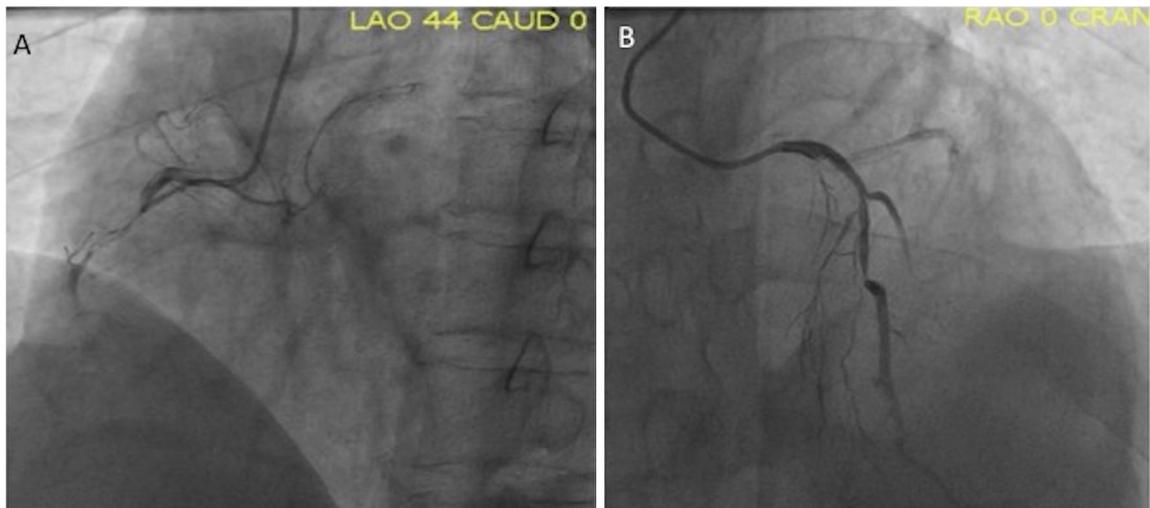
**Figure 2.**  $^{99m}\text{Tc}$ -MIBI myocardial perfusion imaging (stress/rest) of the short-axis, vertical and horizontal long-axis views, showing an irreversible inferior defect without ischemia, which extended as non-transmural to the inferolateral and inferoseptal walls.

The evolution was satisfactory and he was under medical treatment with anti-platelets, beta-blocker, statins, and ECA inhibitors. At the 1 month of follow-up, he was in New York Heart Association functional class I.

The high suspicion index for its recognition, the emergent surgical intervention, and the stabilization made the patient's survival possible.



**Figure 3.** Transthoracic 2D and 3D echocardiogram showing inferior-middle and apical wall akinesia and saccular pseudoaneurysm of  $5.6 \times 4.7$  cm in the basal and middle segments of inferior and inferolateral walls, with entrance orifice of  $2.6 \times 2.4$  cm and pericardial effusion **A, B, C, D**, Clips 1. MRI corroborated these findings, **E, F, G**, Clip 2. *Ao* aorta, *LA* left atrium, *LV* left ventricle, *RV* right ventricle.



**Figure 4.** Cardiac catheterization. **(A)** Left anterior oblique view showing total obstruction of the right coronary artery in its proximal segment. **(B)** In the right anterior oblique view, obstruction of 70% of the left anterior descending coronary artery in its proximal portion is visualized.

## Disclosure

*Erick Alexanderson-Rosas, Oscar Mondaca-Garcia, Hector Zambrano-Guatibonza, Alondra Flores-Garcia, Isabel Carvajal-Juarez, Nilda Espinola-Zavaleta declare that there is no conflict of interest to disclose.*

## References

1. Van Tassel RA, Edwards JE. Rupture of heart complicating myocardial infarction: Analysis of 40 cases including nine examples of left ventricular false aneurysm. *Chest*. 1972;61:104–16.
2. Dachman AH, Spindola-Franco H, Solomon N. Left ventricular pseudoaneurysm. Its recognition and significance. *JAMA*. 1981;246:1951–3.