

# Left Ventricular “Pseudo-Pseudoaneurysm”:

An Unusual Case of Focal  
Left Ventricular Noncompaction

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**A** 48-year-old man underwent coronary angiography for evaluation of moderate, substernal, pressure-like chest pain, which lasted 30 minutes at rest with no relieving factors. The patient’s cardiac biomarker levels and electrocardiographic results were normal, as was the coronary angiogram. A left ventricular (LV) angiogram revealed normal LV systolic function, but it also revealed a contrast-filled, ring-shaped structure (Fig. 1) in the inferior wall, outside the LV cavity, that raised concern about a possible LV pseudoaneurysm. In comparison with diastole (Fig. 1A), systole revealed thinning of the ring-like structure upon enlargement of the central filling defect (Fig. 1B), which suggested the presence of contractile myocardium in and around the ring. Multimodality imaging with use of cardiac computed tomographic angiography (CTA) and transesophageal echocardiography (TEE) helped to define the nature (i.e., focal LV noncompaction) and extent of this ring-shaped structure. The cardiac CTA—at maximal intensity projection with multiplanar reconstruction—showed the intramyocardial location of the contrast-filled ring, which structure was larger in diastole (Fig. 2A) than in systole (Fig. 2B). The septal location of the multiple intramyocardial recesses was apparent in the cardiac CTA (Fig. 3). A volume-rendered cardiac CTA of only the contrast-enhanced cavities showed the spatial relationship of the intramyocardial recess, which traversed the posterior ventricular septum toward the apex and the anterior of the septum (Fig. 4). A hook-like area of contrast medium was noted in the septum as it moved toward the apex and pointed anteriorly. Repeat TEE confirmed the posterior septal location of these multiple interconnecting intramyocardial recesses and cisterns, with contractile myocardium around them. Again, compared with the diastolic frame (Fig. 5A), the systolic frame (Fig. 5B) showed di-

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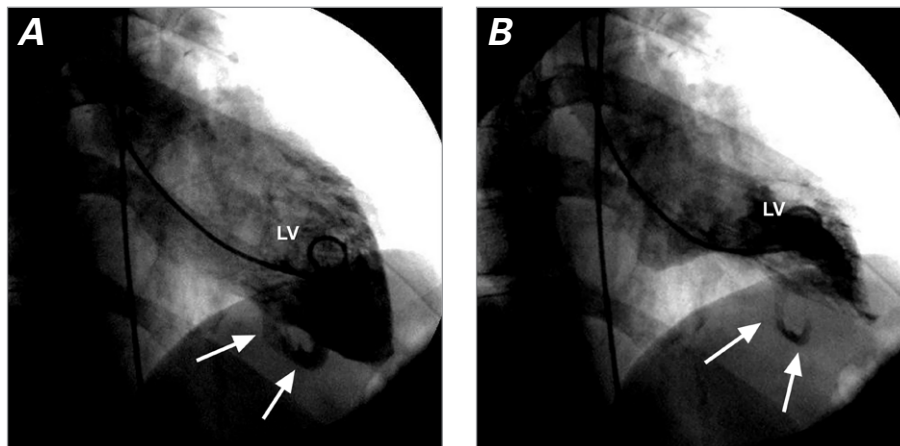
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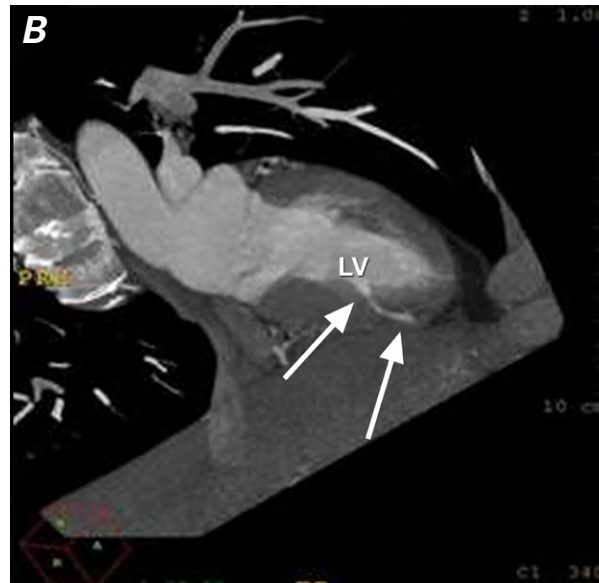
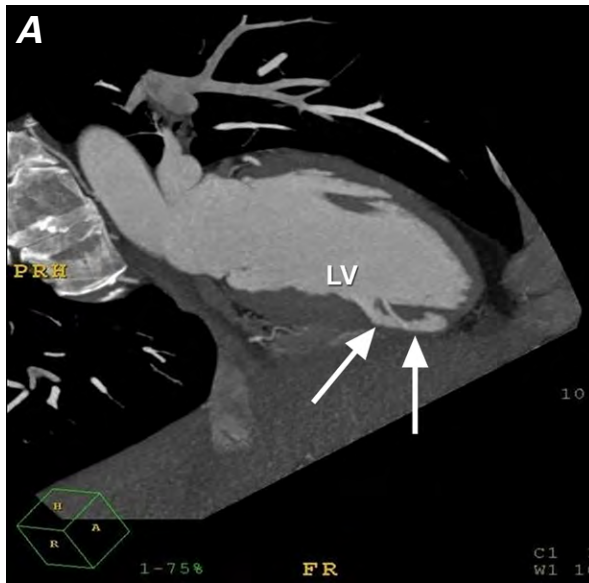
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**Fig. 1 A)** A left ventricular angiogram in diastole (right anterior oblique view) shows a contrast-filled, ring-like structure outside the left ventricular cavity, close to the inferior wall. **B)** In systole, thinning of the ring and thickening of the central filling defect suggest the presence of contractile myocardium in and around the ring. The arrows point toward the contrast-enhanced ring.

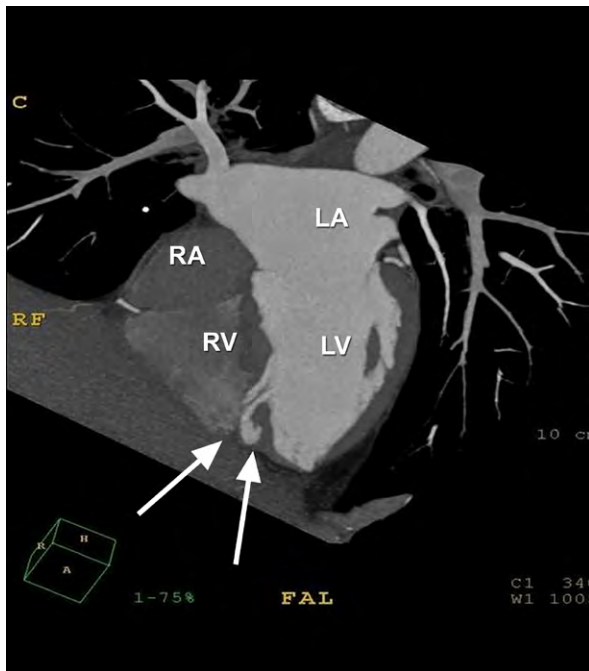
LV = left ventricle

[Supplemental motion image is available for Figure 1A and B.](#)



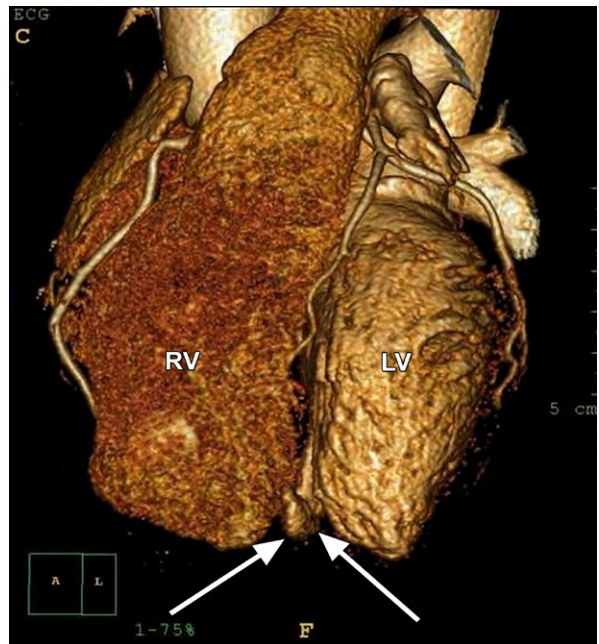
**Fig. 2 A)** Cardiac computed tomographic (CT) angiogram of the left ventricle with use of 10-mm CT-slice-thickness reconstruction in maximal intensity projection and multiplanar reconstruction to simulate the appearance of a left ventricular (LV) angiogram in the right anterior oblique view during cardiac catheterization. Note the communication of the contrast-filled LV cavity with the contrast-filled intramyocardial recess, which gives the appearance of a ring in the left ventricle. This ring-shaped intramyocardial recess is bigger in diastole (75% phase). The arrows point toward the recess. **B)** Cardiac computed tomographic angiogram with maximal intensity projection and multiplanar reconstruction in systole (37.5% phase) shows the intramyocardial course of this recess with systolic thinning that suggests surrounding contractile myocardium. The arrows point toward the ring.

LV = left ventricle



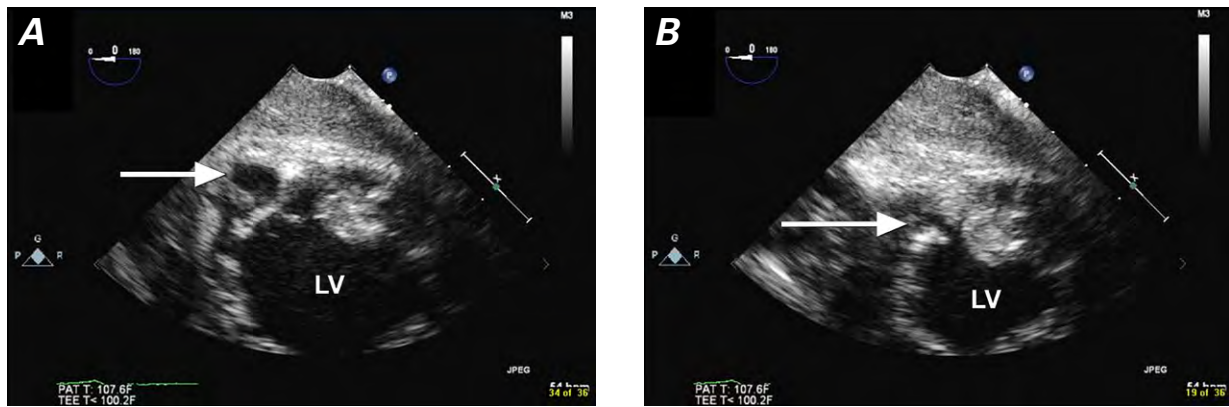
**Fig. 3** Cardiac computed tomographic angiogram with maximal intensity projection and multiplanar reconstruction (4-chamber view) shows the location of the recess in the ventricular septum. The recess traverses the septum toward the apex and then passes anteriorly. The arrows point toward the contrast-enhanced ring.

LA = left atrium; LV = left ventricle; RA = right atrium; RV = right ventricle



**Fig. 4** Volume-rendered cardiac computed tomographic angiogram of only the contrast-enhanced cavities shows the spatial relationship of the intramyocardial recess in the posterior ventricular septum traversing toward the apex and then anteriorly. There is no extracardiac diverticulum. The myocardial density has been removed, so that only the contrast-opacified part of the cavity is highlighted. The arrows point toward the contrast-enhanced ring.

LV = left ventricle; RV = right ventricle



**Fig. 5** **A)** Transesophageal echocardiogram (transgastric view) in diastole shows the intramyocardial and intertrabecular recesses and cisterns (arrow) in the posterior ventricular septum. **B)** Transesophageal echocardiogram (transgastric view) in systole shows normal contractile myocardium and reduction in the sizes of recesses and cisterns (arrow). These findings indicate focal left ventricular non-compaction.

LV = left ventricle

minished size of the recesses and cisterns. Over one and one-half years of follow-up, the patient has done well.

### Comment

The differential diagnosis of contrast-medium appearance outside the LV cavity as seen on an LV angiogram should include a true aneurysm, a pseudoaneurysm, a “pseudo-pseudoaneurysm,” and a diverticulum. Pseudo-pseudoaneurysm (the false appearance of pseudoaneurysm) of the LV has been reported in other clinical settings.<sup>1,2</sup> The intramyocardial location of these multiple interconnecting recesses and cisterns within contractile myocardium, as we noted upon viewing multimodality imaging that included TEE and CTA,

helped to clarify what had looked like a single ring-like structure on the LV angiogram—and this supported the diagnosis of focal LV noncompaction.<sup>3</sup> Unlike diverticula, these recesses become smaller in systole. The prognosis and prevalence of focal noncompaction is not well known.

### References

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