

## IMAGE IN CARDIOLOGY

# Mind the gap: A threatening complication after myocardial infarction



## Enfarte do miocárdio complicado com rotura e dissecação aneurismática do septo interventricular

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A 69-year-old man was admitted with chest pain lasting for four days. The electrocardiogram showed ST elevation in the inferior leads, with Q waves and inverted T waves.

He was taken for urgent cardiac catheterization, which showed 3-vessel disease, with thrombotic occlusion of the right coronary artery. Angioplasty with a bare metal stent was performed.

The patient rapidly evolved with cardiogenic shock and a new systolic murmur.

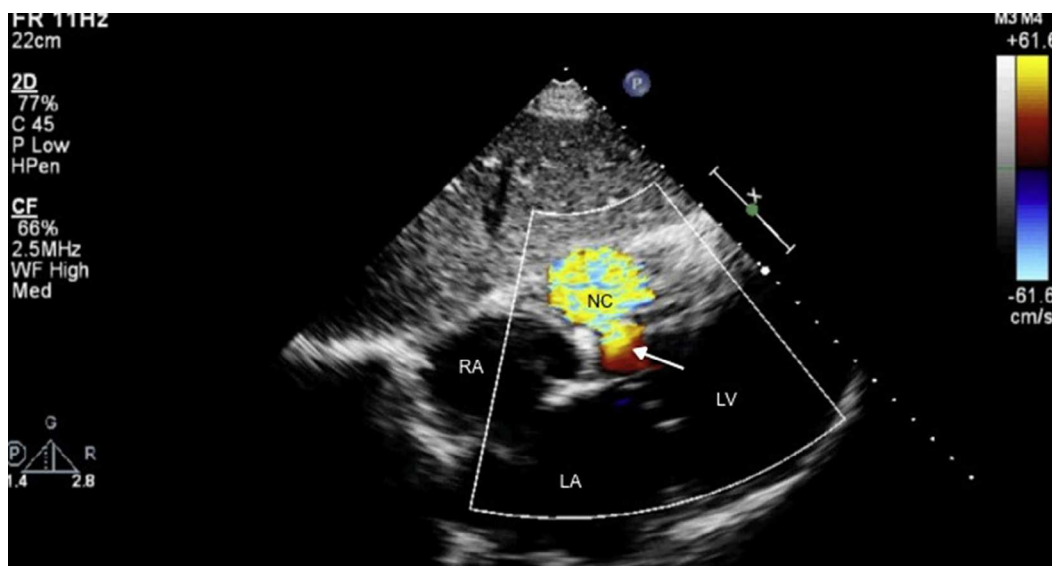
The echocardiogram revealed interventricular septal rupture with an extensive interventricular communication at the level of the posterobasal septum, associated with a serpiginous dissection of the septum, forming a neocavity, with an exit port in the mid-apical area of the right



**Figure 1** Transthoracic echocardiography, subcostal (left) and apical 4-chamber view, zoom on the left ventricle (right). Rupture of the interventricular septum, with septal dissection. LA: left atrium; LV: left ventricle; NC: neocavity formed by the dissection of the interventricular septum; RA: right atrium; RV: right ventricle. Arrow: interventricular septal rupture.

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**Figure 2** Transthoracic echocardiography, subcostal view. After surgery, an interventricular communication remains, with left-to-right shunt. LA: left atrium; LV: left ventricle; NC: neocavity formed by the dissection of the interventricular septum; RA: right atrium. Arrow: interventricular septal rupture.

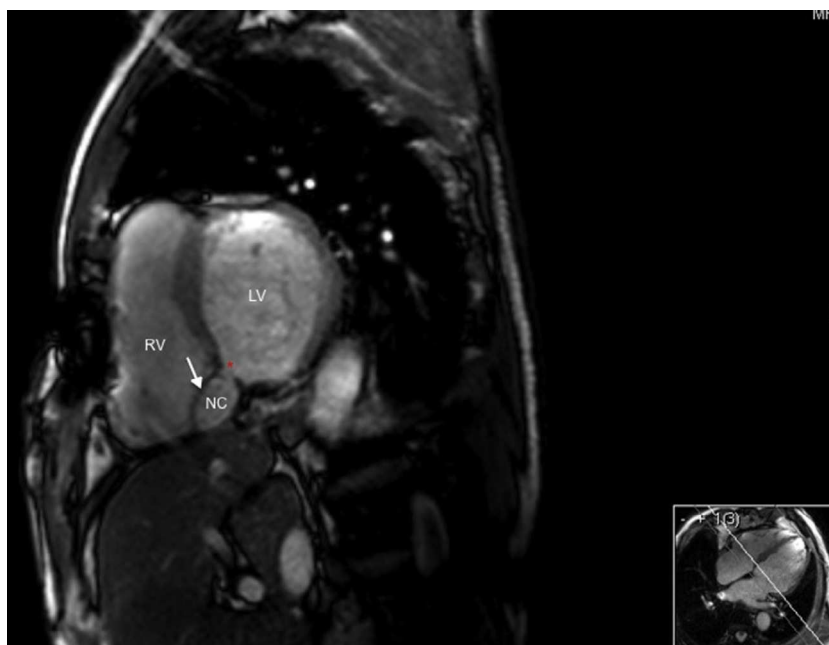
ventricle (Figure 1). Akinesis of the basal half of the inferior and posterior wall was also evident.

An intra-aortic balloon pump was placed and the patient was sent for emergent surgery. The interventricular septal rupture was closed using a pericardial patch and excluding the infarcted area.

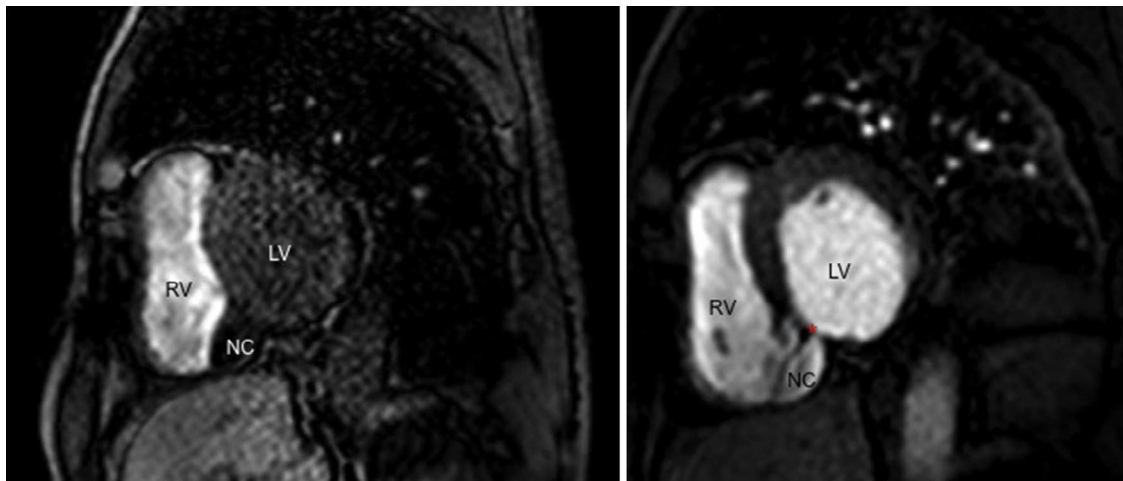
Although the patch significantly reduced the interventricular communication, a residual defect remained, with turbulent left-to-right shunt, draining into a cavity that

corresponded to the aneurysmal dissection of the septum, and that communicated distally with the right ventricle (Figure 2), findings confirmed by cardiac magnetic resonance imaging (Figures 3 and 4).

This is an interesting case of an uncommon and catastrophic mechanical complication of myocardial infarction<sup>1-5</sup> which illustrates the decisive role that echocardiography can play in guiding the heart team through diagnosis and follow-up.



**Figure 3** Cardiac magnetic resonance image from cine balanced steady-state free precession sequences (bright blood), short-axis view at the level of the basal ventricular segments. There is a residual defect in the posterior interventricular septum, communicating with a neocavity formed by the aneurysmal dissection of the septum. LV: left ventricle; NC: neocavity formed by the dissection of the interventricular septum; RV: right ventricle. Arrow: interventricular septal rupture; asterisk: residual ventricular septal defect.



**Figure 4** Cardiac magnetic resonance gadolinium perfusion imaging. Immediately after contrast injection, flow can be seen from the left ventricle into the cavity formed by the interventricular septal dissection, which finally drains into the apical region of the right ventricle. LV: left ventricle; NC: neocavity formed by the dissection of the interventricular septum; RV: right ventricle. Asterisk: residual ventricular septal defect.

## Ethical disclosures

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this study.

**Confidentiality of data.** The authors declare that they have followed the protocols of their work center on the publication of patient data and that all the patients included in the study received sufficient information and gave their written informed consent to participate in the study.

**Right to privacy and informed consent.** The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

## Conflicts of interest

The authors have no conflicts of interest to declare.

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