

# Septal bounce illustrated on coronary angiogram

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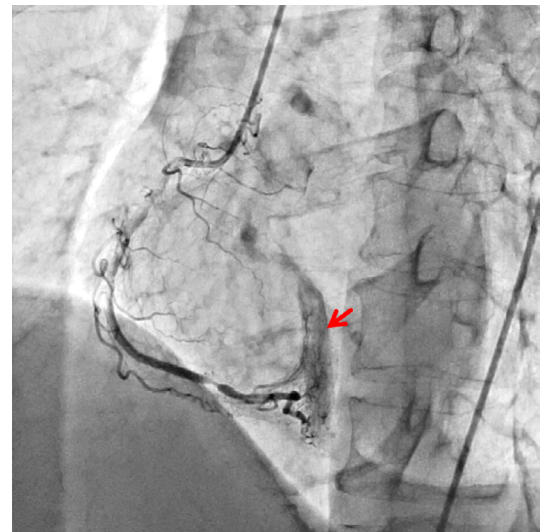
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## DESCRIPTION

Septal bounce is a manifestation of exaggerated respirophasic ventricular interdependence, a hallmark of pericardial constriction.<sup>1-3</sup> Conventionally, the septal bounce is detected on echocardiogram and MRI. In this brief report, we demonstrate septal bounce on coronary angiogram.

A 63-year-old man presented with a 6-month history of progressive pedal oedema and exertional dyspnoea. He had pulmonary tuberculosis for which he was treated with antitubercular therapy for 6 months. On examination, jugular venous pressure was elevated with prominent 'y' descent and the pericardial knock was audible at the apex. An exaggerated respiratory variation in transmitral flow was evident on transthoracic echocardiogram. CT demonstrated thickened, calcified pericardium and stenosis in the right coronary artery. Cardiac catheterisation confirmed rapid filling, equalisation of both right and left ventricular diastolic pressures and ventricular interdependence. Coronary artery angiogram confirmed stenosis detected on CT angiogram. Interestingly, an intense septal blush following right coronary artery angiogram illustrated septal bounce (video 1). The interventricular septum moved towards the left ventricle (figure 1) during inspiration while it shifted towards the right ventricle during expiration (figure 2). The motion of the diaphragm indicated the phase of respiration.

Pericardial constriction is characterised by exaggerated respirophasic ventricular interdependence consequent to fixed cardiac volume and



**Figure 1** Right coronary angiogram showing septal blush and an exaggerated movement of the ventricular septum (red arrow) towards the left ventricle during inspiration. Lower diaphragm indicates inspiration.

non-transmission of changes in thoracic pressure to the cardiac chambers. During expiration, the left ventricle is preferentially filled owing to a favourable transmitral flow pattern. The right ventricle, on the other hand, preferentially fills during inspiration. This, in turn, results in exaggerated early diastolic shift of the interventricular septum towards the left ventricle during inspiration with



**Video 1** Right coronary angiogram with intense septal blush showing septal bounce with the position of the diaphragm indicating inspiration (figure 1) and expiration (figure 2). Note late filling of the left ventricle indicating the presence of coronary cameral fistula.



**Figure 2** Right coronary angiogram during expiration showing a much reduced leftward shift of the ventricular septum (red arrow) during expiration. The higher position of the diaphragm marks expiration.



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the reverse happening during expiration (figures 1 and 2). This characteristic movement of the septum is commonly known as septal bounce.<sup>1,2</sup> Of necessity, septal bounce can exist only in the setting of an intact ventricular septum and is absent in cases with a non-restrictive ventricular septal defect.<sup>4,5</sup>

A high temporal resolution and easy availability of echocardiography make it the preferred imaging modality to detect septal bounce. MRI is also equally useful. Conventional coronary angiography, on the other hand, has a relatively lower temporal resolution. In addition, limited visualisation of septal motion makes it difficult to establish septal bounce. In the index case, however, the intense septal blush, possibly related to coexistence

of coronary artery disease, pericardial constriction and coronary cameral fistula (video 1), permitted demonstration of septal bounce on coronary angiogram.

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### Learning points

- ▶ Septal bounce is a manifestation of exaggerated respirophasic ventricular interdependence, a hallmark of pericardial constriction.
- ▶ The septal bounce, although conventionally seen on echocardiogram and MRI, can also be illustrated on coronary angiogram.

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