

## IMAGES IN CARDIOLOGY .....

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## Aneurysm of coronary–pulmonary artery fistula diagnosed non-invasively by contrast echocardiography and multi-detector computed tomography

A 58 year old asymptomatic woman was referred to our medical centre for evaluation of heart murmur. A Levine grade II/VI continuous heart murmur was audible at the left midsternal border. Chest x ray showed prominence of the left atrial border and echocardiography (panel A) revealed a large cystic mass (53×51 mm) in front of the main pulmonary artery. An abnormal feeder vessel appeared to supply the cystic mass from the left coronary artery. However, no colour Doppler signal was obtained from the giant aneurysm because of very slow turbulent flow. Intermittent imaging with ultra-harmonic contrast echocardiography (Philips 5500, panel B) after intravenous bolus injection of Levovist (300 mg/dl×3 ml) demonstrated the dilated coronary fistula followed by enhancement of the giant aneurysm, which had a diameter of 55 mm. Reconstructed three dimensional images from four-slice computed tomography using Aquillion (Toshiba, Tokyo) (helical pitch; 1.5)

(panels C and D) and coronary arteriography demonstrated that the coronary–pulmonary artery (PA) fistula originated from the conus branch and that the left anterior descending coronary artery drained into the main PA via the aneurysm. Left-to-right shunt flow through the coronary PA fistula was of a small magnitude ( $Q_p/Q_s = 1.2$ ). The patient underwent successful surgical resection of the aneurysm and closure of the coronary fistula.

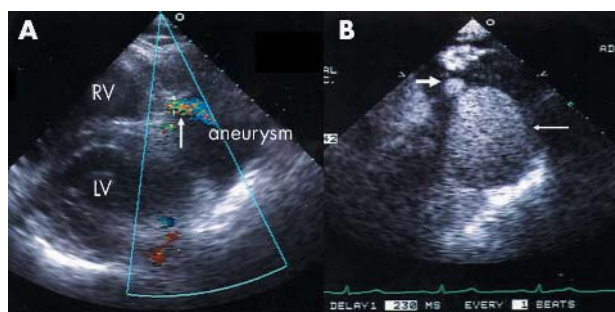
Newly developed contrast echocardiography and multi-detector computed tomography were suitable non-invasive modalities to visualise detailed anatomy and pathological blood flow in the coronary–PA fistula aneurysm.

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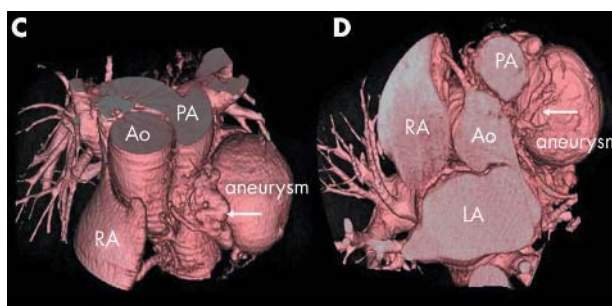
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Transthoracic echocardiography (short axis view) shows an abnormal vessel (arrow) draining from the left coronary artery into the giant aneurysm on colour Doppler imaging (panel A). Contrast echocardiography shows enhancement of the dilated coronary fistula (bold arrow) followed by that of the aneurysm (thin arrow (panel B)). The entire aneurysmal cavity was enhanced by ultra-harmonic intermittent mode. LV, left ventricle; RV, right ventricle.



The cranial reconstructed image from multi-detector computed tomography shows the dilated fistula partly originating from the conus branch (panel C). The caudal image demonstrates another fistula from the left anterior descending artery draining into the aneurysm (panel D). PA, main pulmonary artery; Ao, ascending aorta; RA, right atrium; LA, left atrium.