

Acquired left coronary artery fistulae to pulmonary artery and superior vena cava

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DESCRIPTION

A 77-year-old male patient with a history of bioprosthetic aortic valve replacement and a recently diagnosed urothelial carcinoma was referred to our cardiology outpatient clinic due to dyspnoea on mild exertion. A transthoracic echocardiogram revealed a moderate dilation of the left cardiac chambers, mild dilation of the right atria and pulmonary artery (with a normal-sized right ventricle), moderate pulmonary hypertension and severe left ventricle systolic dysfunction with low cardiac output (3.6 L/min). These findings had not been reported at the time of the cardiac surgery. The patient's clinical status progressively worsened with respiratory failure requiring supplementary high flow oxygen. A coronary angiography was performed, excluding coronary artery disease and revealing a large coronary fistula arising from the left anterior descending artery and draining into the pulmonary artery (figure 1). The fistula was producing a coronary *steal* phenomenon, with

significant myocardial ischaemia and systolic dysfunction, leading to heart failure. A cardiac CT confirmed that the fistula was arising from the left anterior descending artery and draining into the pulmonary artery through three different drainage branches. In its path, the fistula communicated with a vascular network. A fistula originating from the circumflex artery and ending in the superior vena cava was also identified (figure 2). Owing to an expected high surgical risk, a percutaneous closure of the larger fistula was scheduled, but the patient went into cardiopulmonary arrest refractory to resuscitation manoeuvres, induced by ischaemia and hypoxia, and died before any invasive treatment could be carried out.

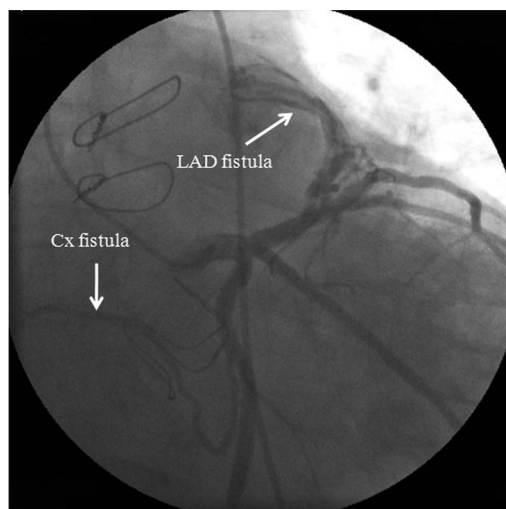


Figure 1 Coronary angiography showing the right anterior oblique view revealing a fistula arising from the left anterior descending artery and another one arising from the circumflex artery. LAD, left anterior descending; Cx, circumflex.

Learning points

- ▶ This case draws attention to a rare cause for dyspnoea and systolic dysfunction after cardiac surgery: coronary fistulae.
- ▶ Coronary fistulae are more often congenital, and only rarely were reported as acquired, due to chest trauma, cardiac surgery or invasive cardiac catheterisation.¹
- ▶ Large coronary fistulae may cause a coronary *steal* phenomenon and ischaemia, or high-output heart failure, and a specific treatment is required.²
- ▶ Cardiac catheterisation allows the diagnosis of large coronary fistulae.³
- ▶ Cardiac CT is the modality of choice for studying fistulae of all sizes. Furthermore, it helps identify their origin and drainage site.³
- ▶ Treatment options include surgical or percutaneous closure, reportedly with comparable success rates. Percutaneous closure avoids morbidities associated to cardiopulmonary bypass or sternotomy; however, multiple fistulae or multiple fistula origins are preferably addressed surgically.



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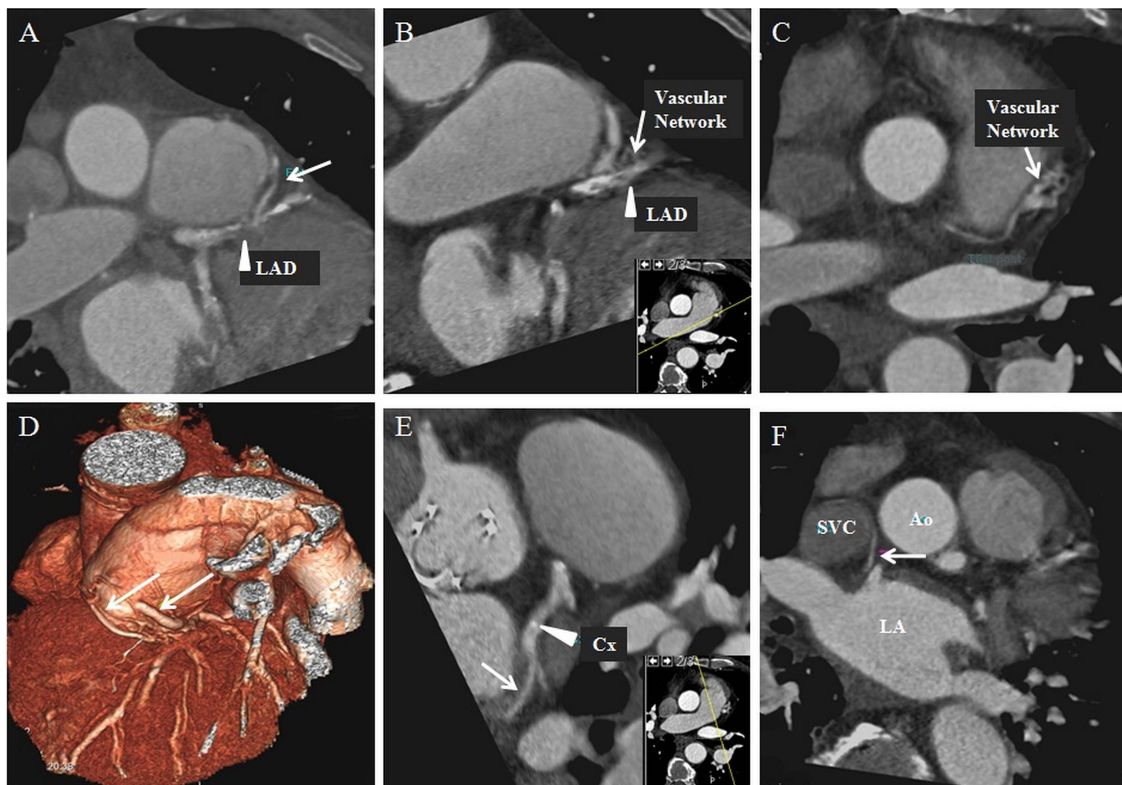


Figure 2 Cardiac CT images in multiplanar reconstruction (A–C, E and F) and volume rendering (D) showing the fistulae, their origin, drainage and the vascular network. (A) Coronary fistula (white arrow) arising from the LAD artery (white triangle). (B) Coronary fistula vascular network (white arrow) next to the LAD artery (white triangle). (C) A fistula emerging from the vascular network with a posterior direction. (D) LAD artery coronary fistulae draining into the pulmonary artery (white arrows). (E) Coronary fistula (white arrow) arising from the Cx artery (white triangle). (F) Cx artery coronary fistula (white arrow) draining into the SVC. Ao, aorta; Cx, circumflex; LA, left atria; LAD, left anterior descending; SVC, superior vena cava.

Contributors Aftook part in patient's guidance and wrote this case report. LVP took part in patient's guidance and reviewed this manuscript. PM performed the coronary angiography and participated in the interpretation of cardiac CT images. RC took part in the acquisition, interpretation and reformatting of cardiac CT images.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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