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Coronary artery fistulas in elderly woman

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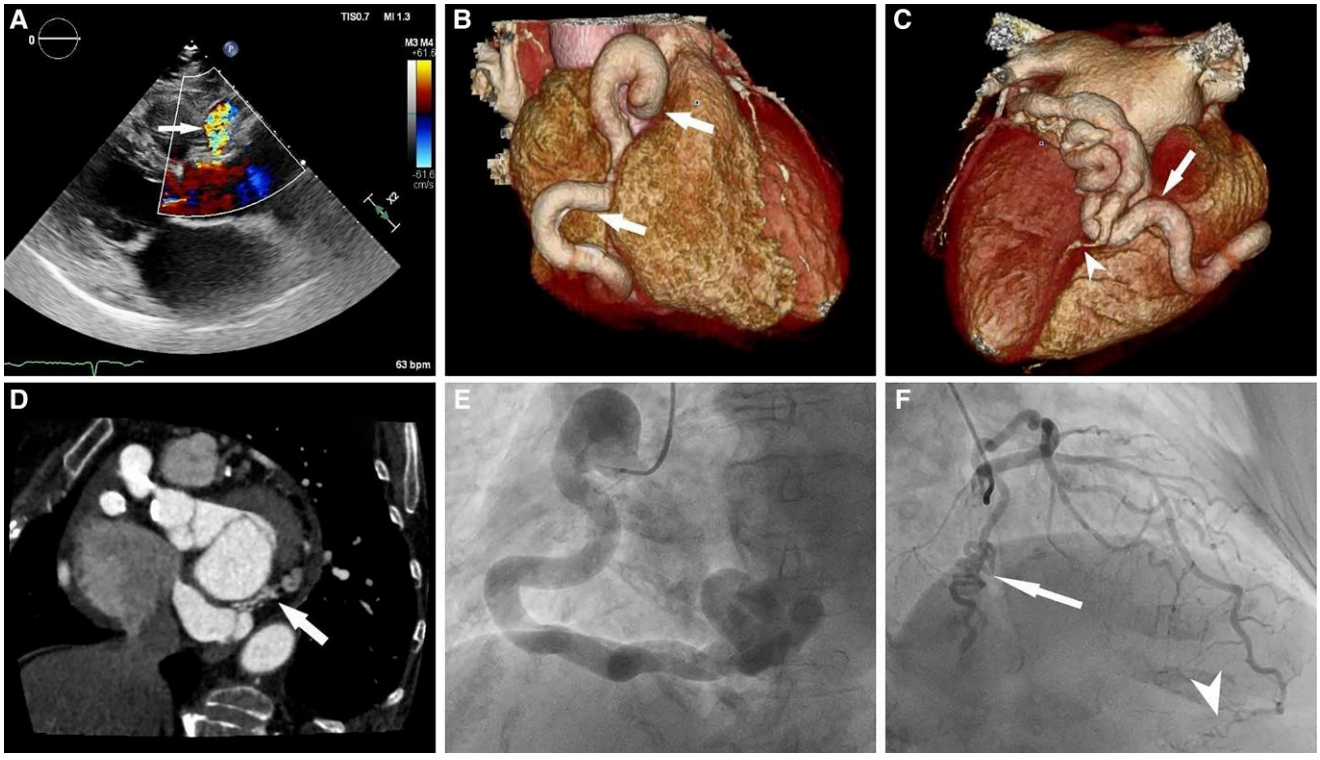

Figure 1 (*A*) Transthoracic parasternal long-axis projection: proximal part of coronary fistula (arrow) computed tomography coronary angiography. (*B*) Three-dimensional re-construction: proximal segment of fistula (arrows). (*C*) Three-dimensional re-construction: mid and distal segment of fistula (arrow), thin posterior descending artery originating from fistula (arrowhead). (*D*) Axial slice: minor fistula from obtuse marginal to the coronary sinus (arrow). (*E*) Large coronary artery fistula from right coronary artery—left anterior oblique projection 40°, cranial 0°. (*F*) Minor fistula from obtuse marginal artery (arrow); collateral artery from left anterior descending artery to posterior descending artery (arrowhead)—right anterior oblique projection −30°, cranial 30°.

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An 80-year-old woman with arterial hypertension presented to the outpatient clinic with several-month history of exertional dyspnoea. On physical examination, there was a loud continuous murmur detected at the level of the second intercostal space. N-terminal prohormone of brain natriuretic peptide level was increased reaching 1375 pg/mL. Echocardiography demonstrated preserved left ventricle ejection fraction (60%) and dilatation of the left atrium (49 mL/m^2). The average transmitral ratio between early mitral inflow velocity and mitral annular early diastolic velocity ratio was 10.5, and the tricuspid regurgitation velocity was not measurable. Colour flow mapping showed a cluster of blood vessels with turbulent flow anteriorly to the right ventricle (*Figure 1A*; see Supplementary material online, *Video A*), leading to the atrioventricular groove and terminating in the right atrium. Mild enlargement of right ventricle with normal function, enlargement of right atrium, and estimated pulmonary to systemic flow ratio of 1.5 indicated a significant left-to-right shunt. Transoesophageal echocardiography confirmed the origin of the structure at the level of the right coronary artery (RCA), and the coronary artery fistula was suspected. Computed tomography coronary angiography confirmed a large fistula of dilated RCA (fistula diameter 17 mm), opening into dilated coronary sinus (*Figure 1B and C*), and another minor fistula leading from obtuse marginal artery to coronary sinus (*Figure 1D*). Proximal part of the posterior descending artery (PDA) was dilated, and severe stenosis of proximal left anterior descending artery (LAD) was suspected. Invasive coronary angiography showed the two fistulas and an epicardial collateral from LAD to the PDA (*Figure 1E and F*; see Supplementary material online, *Videos B–D*), suggesting chronic ischaemia in PDA territory; LAD stenosis was ruled out.

Given the frailty of the patient, low feasibility of transcatheter closure, and the fact that heart failure with preserved ejection fraction (HFpEF) could be the main cause of dyspnoea (The Heart Failure Association of the European Society of Cardiology dignostic score for HFpEF score 5), a conservative approach was decided by the heart team.

Coronary artery fistula is a rare condition (incidence 0.1–0.2%),[1] in most cases incidentally discovered.[1] Multiple fistulas are even less common, present in about 20% of cases.[2] The majority of fistulas are congenital and rarely reported in elderly.[1,2,3] Dyspnoea and right heart dilatation are dominant symptoms and signs.[2] Management is not evidence-based and mostly depends on the heart team discussion considering symptoms, myocardial ischaemia, and ventricular overload.[2] Both surgical and percutaneous interventions could be considered based on tortuosity or dilatation of fistula.[1,2] Observational follow-up is preferred in asymptomatic patients.[1,2]

Supplementary material

Supplementary material is available at *European Heart Journal – Case Reports*.

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Consent: The authors confirm that content for this article has been obtained from the patient in line with COPE guidance.

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Data availability

The data supporting this case study are available from the corresponding authors upon reasonable request.

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