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Multimodality Imaging of a Rare Case: Coexistence of Left Circumflex Artery Aneurysm and Coronary-Cameral Fistula

A 19-year-old male patient was admitted with the complaint of exertional dyspnea. His medical history revealed a previous surgical intervention for the management of a coronary-cameral fistula. Physical examination revealed a loud, continuous murmur on auscultation at the mid-to-lower sternal border. Transthoracic echocardiography in the parasternal short-axis (PSAX) view at the aortic valve level demonstrated dilatation of the coronary ostium adjacent to the left coronary cusp (Figure 1A). At the level of the mitral valve in the PSAX view, aneurysmal dilatation of the left circumflex artery (LCx) was identified along the left ventricular posterior wall, extending from the lateral to the right ventricle (RV) (Video 1). Color Doppler imaging revealed a continuous flow from the LCx into the RV throughout the cardiac cycle (Video 2). In the apical 4-chamber view, the aneurysmal course of the LCx beneath the mitral valve (Figure 1B, Video 3) and the color Doppler flow consistent with a coronary-cameral fistula into the RV were also visualized (Video 4). Coronary angiography showed a markedly aneurysmal LCx from the proximal to distal segments, with contrast passage through a narrow fistula draining into the RV (Figure 1C, Video 5). Three-dimensional reconstructed cardiac computed tomography confirmed the markedly aneurysmal LCx originating from the left lateral region of the heart, coursing along the posterior wall, and terminating in the RV (Figure 1D, Video 6).

The incidence of coronary artery aneurysms has been reported between 1.5% and 5%, with the right coronary artery being more frequently affected than the left anterior descending and LCx. Coronary artery fistula is an abnormal communication between a coronary artery and another cardiovascular structure, such as a cardiac chamber, coronary sinus, superior vena cava, or pulmonary artery. The incidence of coronary artery fistulas ranges from 0.1% to 0.2%. As indicated by literature reports, fistulas originating from the LCx are frequently associated with the coronary sinus. In this patient, the coexistence of 2 rare coronary anomalies—LCx aneurysm and fistulous drainage into the RV—was demonstrated. Management strategies for both conditions remain controversial, including surgical repair or catheter embolization. As the patient refused any percutaneous or surgical intervention, close cardiological follow-up was recommended.

E-PAGE ORIGINAL IMAGE

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Video 1: Parasternal short-axis view at the level of the mitral valve showing aneurysmal dilation of the left circumflex artery along the posterior wall of the left ventricle, extending toward the right ventricle.

Video 2: Colour Doppler imaging in the parasternal short-axis view demonstrating continuous flow from the left circumflex artery into the right ventricle throughout the cardiac cycle, consistent with a coronary-cameral fistula.

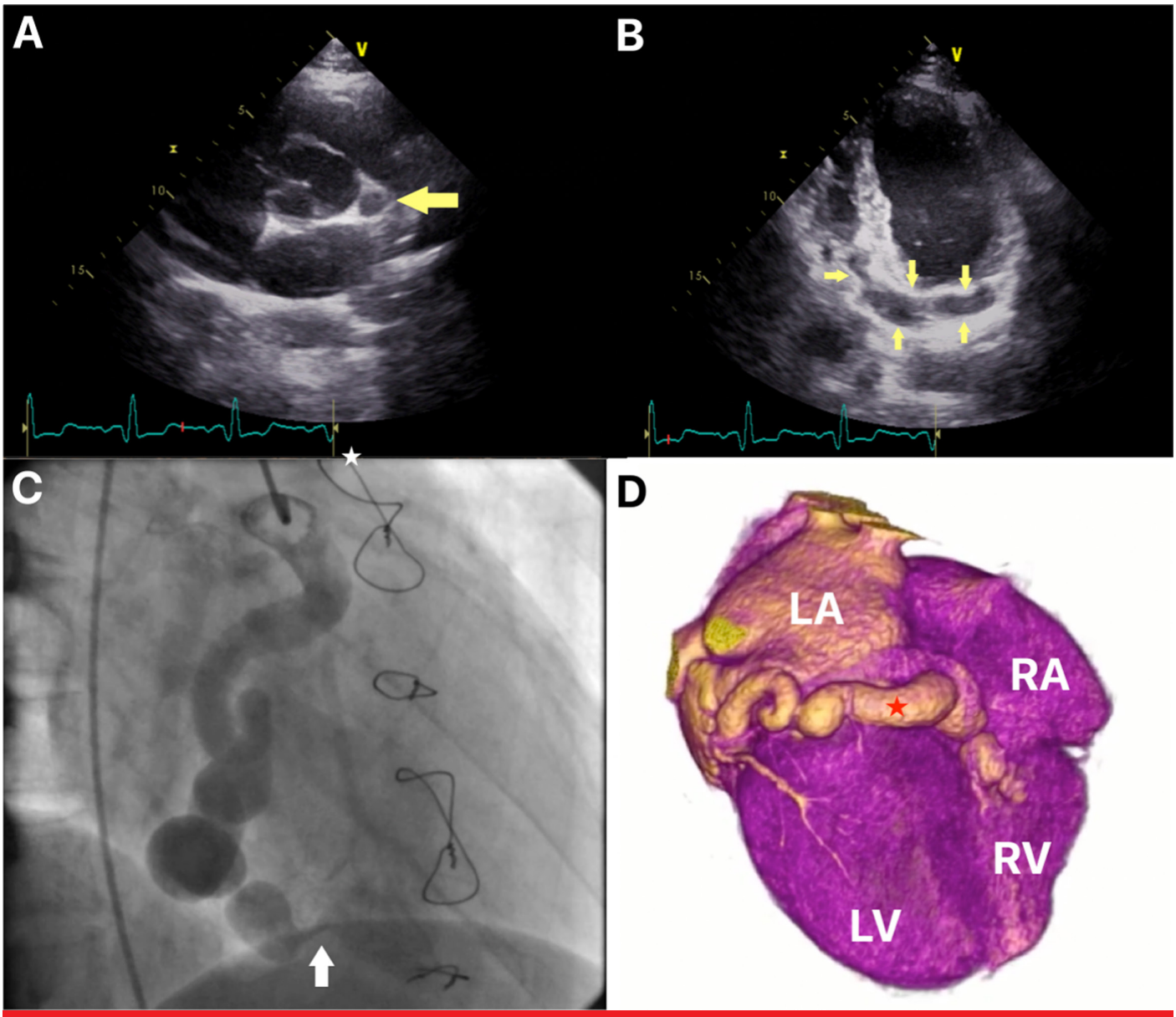

Figure 1. (A) Transthoracic echocardiography in the parasternal short-axis view at the level of the aortic valve showing dilatation of the coronary ostium adjacent to the left coronary cusp (yellow arrow). (B) Apical 4-chamber view demonstrating the aneurysmal course of the left circumflex artery beneath the mitral valve (yellow arrows). (C) Coronary angiography revealing a markedly aneurysmal left circumflex artery with contrast passage into the right ventricle via a narrow fistulous tract (white arrow). (D) Three-dimensional reconstructed cardiac computed tomography illustrating the dilated left circumflex artery (red star) coursing along the posterior left ventricular wall and terminating in the right ventricle.

Video 3: Apical 4-chamber view revealing the tortuous, aneurysmal course of the left circumflex artery beneath the mitral valve.

Video 4: Color Doppler in the apical 4-chamber view showing continuous flow from the left circumflex artery into the right ventricle, confirming the presence of a coronary-cameral fistula.

Video 5: Coronary angiography highlighting diffuse aneurysmal dilation of the left circumflex artery from proximal to distal segments with fistulous drainage into the right ventricle.

Video 6: Three-dimensional cardiac computed tomographic reconstruction displaying the aneurysmal left circumflex artery originating from the lateral side of the heart and draining into the right ventricle.