

Images in
Cardiovascular Medicine



Coronary Cameral Fistula With Giant Aneurysm

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A 67-year-old woman, with a history of atrial fibrillation (AF), was admitted due to 3-hour acute retrosternal chest pain and palpitations. A continuous cardiac murmur was identified during the physical examination; the electrocardiogram (ECG) revealed AF and anterior ST-segment depression.

Transthoracic echocardiography showed an anomalous structure originating from the left coronary cusp (LCC) (**Figure 1**). No right-side chamber dilatation/dysfunction was found.

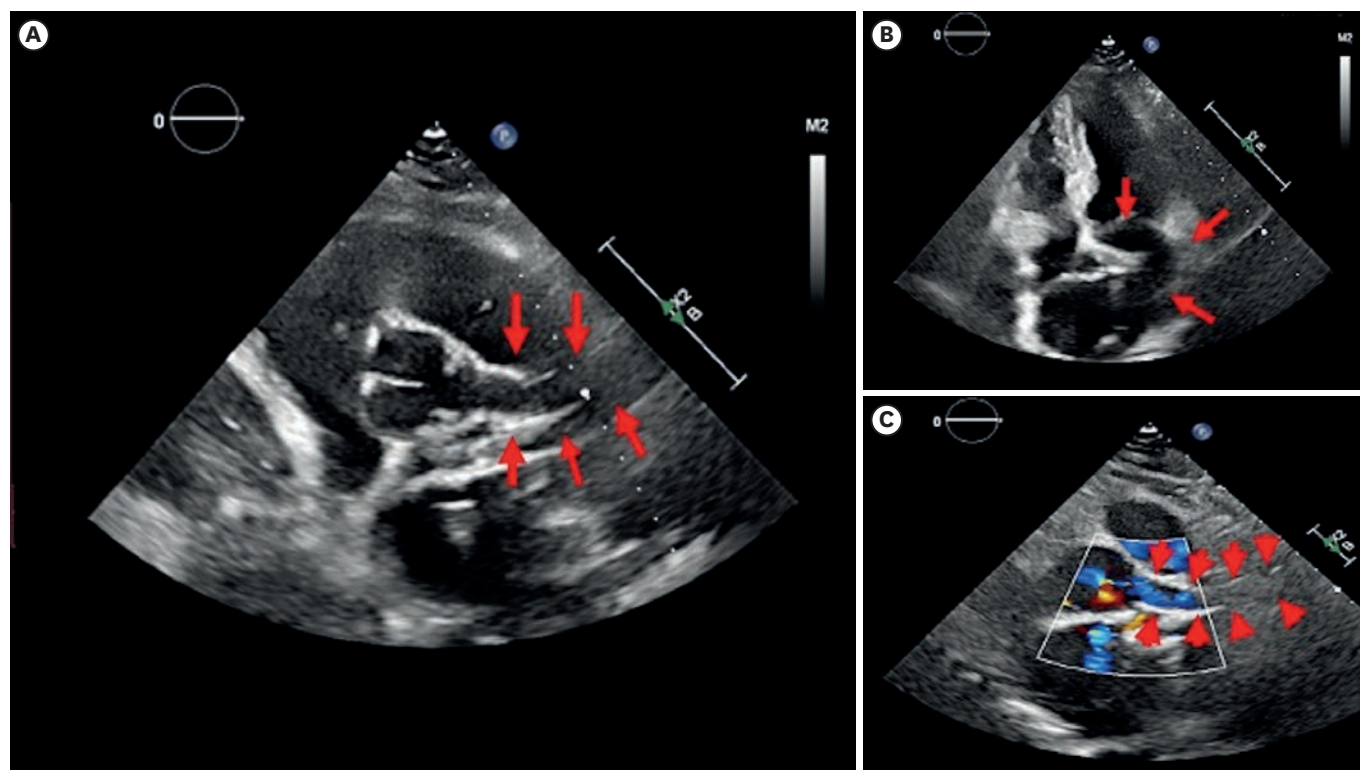


Figure 1. The transthoracic echocardiogram parasternal short axis (A) and apical 4-chamber view (B) showed an anomalous structure (red arrows) connecting from the aortic cusp. Color Doppler short-axis view (C) showed flow from the aortic cusp into an abnormal tract while the normal left coronary artery is not seen, indicating an anomalous origin of the left coronary artery.

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Conflict of Interest

The authors have no financial conflicts of interest.

Data Sharing Statement

The data generated in this study is available from the corresponding author upon reasonable request.

Author Contributions

Conceptualization: Tommasino A; Data curation: Casenghi M; Formal analysis: Giovannelli F, Rigattieri S; Project administration: Berni A; Software: Santucci S; Supervision: Barbato E; Validation: Barbato E; Writing - original draft: Tommasino A, Pittorino L.

ECG-gated coronary computerized tomography angiography revealed a coronary cameral fistula (CCF) arising from LCC and draining into the right atrium, with a diameter of 4.27×5.32 cm at the largest aneurysmal portion (**Figures 2 and 3**).

Coronary angiography confirmed the CCF originating from the LCC. Both the left anterior descending and left circumflex arteries emerged from the fistulous tract (**Figure 4**). For selective cannulation, a JL4 along with a Guidezilla II Guide Extension Catheter (Boston Scientific, Marlborough, MA, USA) was used (**Figure 5**).

The right heart catheterization demonstrated a mildly significant left-to-right shunt (Qp:Qs ratio of 1.7) with a significant oxygen step-up (20%), without pulmonary hypertension.

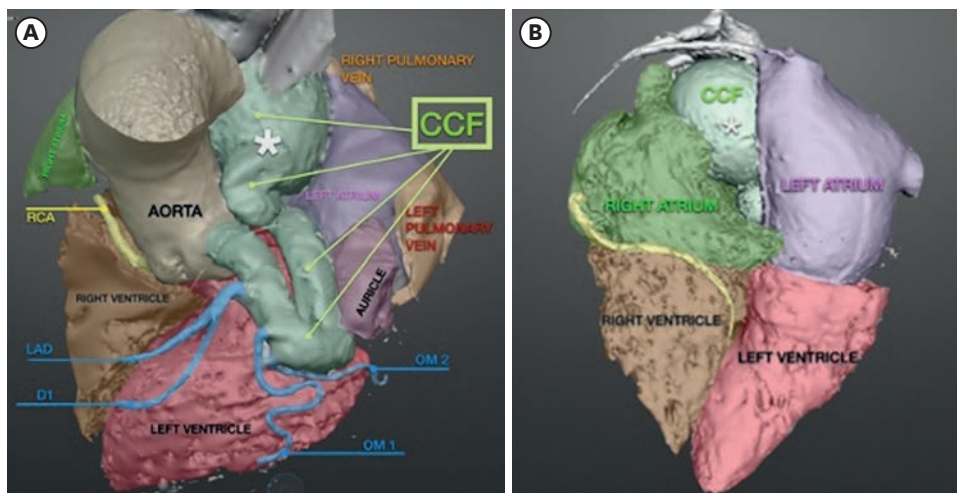


Figure 2. Electrocardiogram-gated coronary computerized tomography angiography volume-rendered images (A, frontal view) show a dilated vascular structure (green) arising from the left coronary sinus and terminating into the RA. The LAD, D1, left circumflex and its OM branch (all blue) arise from the dilated anomalous tract. The posterior view (B) of the volume-rendered image showed the aneurysmal dilatation (*) before it terminates in the RA. CCF = coronary cameral fistula; D1 = diagonal branch; LAD = left anterior descending artery; OM = obtuse marginal; RA = right atrium; RCA = right coronary artery.

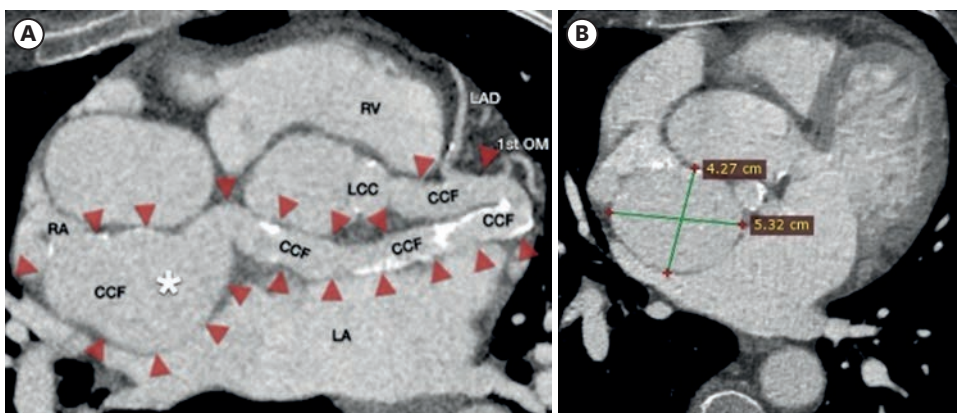


Figure 3. Electrocardiogram-gated coronary computerized tomography angiography curved multi-planar reconstruction (A) clearly showed a dilated anomalous vessel (red arrows) from the LCC to the RA. LAD and OM branches emerge from the fistulous tract. Note the aneurysmal dilatation (*) near the RA. Trans-axial image (B) highlights the aneurysmal dilatation of the anomalous vessel, which is measured to have a maximum diameter of 4.27×5.32 cm. CCF = coronary cameral fistula; LAD = left anterior descending artery; LCC = left coronary cusp; OM = obtuse marginal; RA = right atrium; RV = right ventricle.

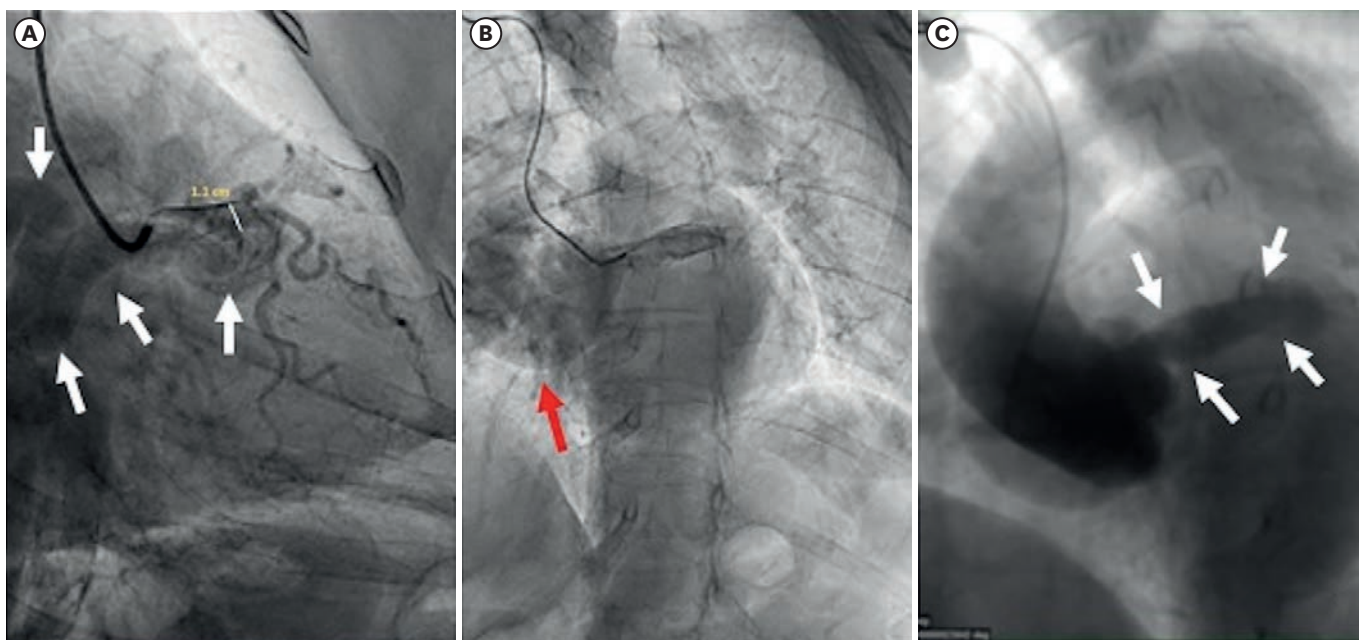


Figure 4. Invasive coronary angiography left anterior oblique projection view (A, B) showed a large anomalous vessel (white arrows in A) originating from the left coronary cusp and draining into the RA. The left main coronary artery was dilated, measuring 1.1 cm (white line in A). An aneurysmal extension (red arrow in B) of this anomalous vessel is observed before it enters the RA. Aortography (C) clearly showed the vessel's origin of the left coronary sinus (white arrows in C) and its drainage into the RA, confirming coronary-cameral fistula. RA = right atrium.

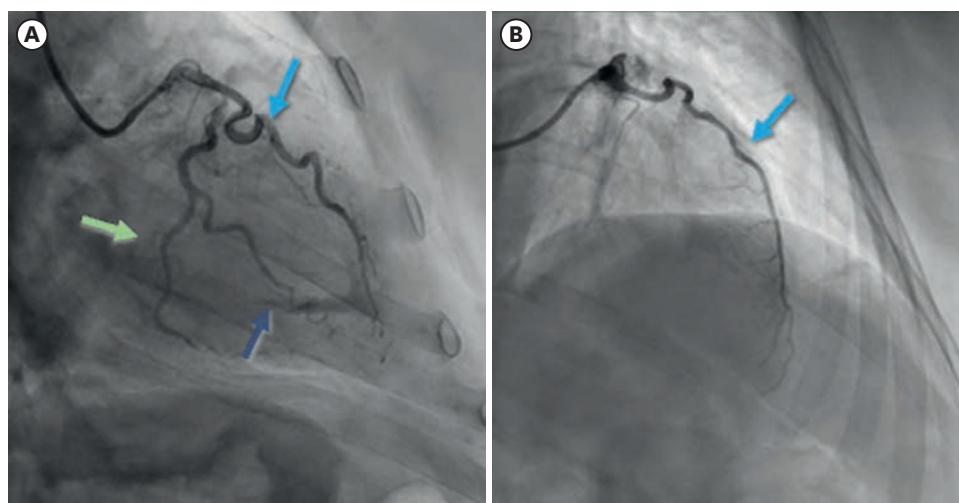


Figure 5. Selective angiography: (A) right caudal projection; (B) cranial anteroposterior projection in dilated fistulous tract showed left anterior descending artery (blue arrow), left circumflex artery (green arrow) and obtuse marginal branch (dark blue arrow). No significant atherosclerotic lesions were observed of all vessels.

Congenital CCF is a rare vascular anomaly, with a prevalence of 0.08.³⁾ CCF can lead to heart failure due to volume overload, AF and ventricular tachyarrhythmias. Large CCFs can cause chronic myocardial ischemia through coronary steal. A left-to-right shunt is often observed.²⁾ However, if the shunt is not significant, many patients may remain asymptomatic. Due to its rarity, there is no consensus on the treatment of CCF.³⁾ In this case, given the mild shunt and the absence of significant symptoms, close medical follow-up was scheduled.

The patient has provided written informed consent for the publication of the manuscript.

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