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IMAGES IN INTERVENTION

A Giant Left Main Coronary Artery Aneurysm With Fistula to the Pulmonary Artery, Manifested With ST-Segment Elevation Myocardial Infarction

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A 53-year-old man presented at the emergency department with sudden onset of chest tightness. An electrocardiogram showed ST-segment elevation in leads I, aVL, and V_4 to V_6 with a reciprocal change indicating ST-segment elevation myocardial infarction over the lateral region.

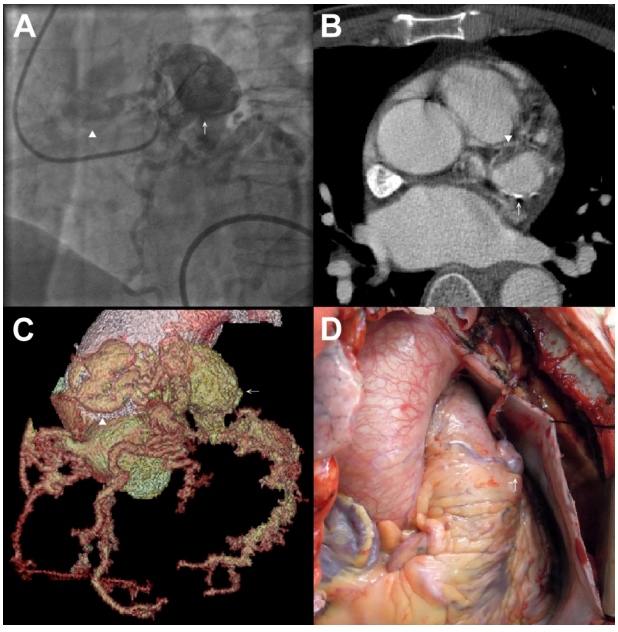

Figure 1. Coronary Aneurysm Images

(A) Angiography demonstrating a giant left main coronary artery (LM) aneurysm **(arrow)** and a fistula to the main pulmonary artery **(arrowhead)** (Online Video 1). **(B)** 64-slice electrocardiography-gated computed tomography showing a giant coronary aneurysm with calcified wall in the LM–left anterior descending coronary artery junction **(arrow)** and a partial filling defect compatible with thrombus formation **(arrowhead)**. **(C)** Reconstruction image showing a giant LM aneurysm **(arrow)** and an arteriovenous malformation **(arrowhead)** connecting to the aneurysm. **(D)** The surgical finding showing the arteriovenous malformation **(arrow)** connected to the main pulmonary trunk.

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Laboratory investigation revealed elevated cardiac biomarkers.

An emergent coronary angiogram (CAG) revealed a giant 3 × 3-cm coronary artery aneurysm (CAA) in the left main coronary artery (LM), extending to the ostium of the left anterior descending coronary artery (LAD), with a suspicious coronary fistula to the pulmonary artery (PA) (Fig. 1A, Online Video 1). A patent, but irregular, LAD, left circumflex artery (LCX), and right coronary artery (RCA) were found, all with Thrombolysis In Myocardial Infarction flow grade 3. Recombinant tissue plasminogen activator and unfractionated heparin were administered. Coronary computed tomography angiography showed a 2.3-cm CAA in the LM–LAD junction, with a calcified wall and a partial filling defect (Fig. 1B). An arteriovenous malformation connecting to the aneurysm was also noted (Fig. 1C). The surgical finding showed the arteriovenous malformation connected to the main PA trunk (Fig. 1D). Coronary artery bypass surgery (CABG) was performed by connecting the left internal mammary artery (LIMA) end to the LAD, and the LIMA shaft to the obtuse marginal branch of the LCX with the right internal mammary artery. Two weeks after CABG, the patient was discharged on anticoagulation therapy.

CAA is an uncommon disease, accounting for 1.5% to 5% of adults undergoing CAG, with approximately 3.5% of these cases involving the LM (1). The combination of a LM CAA and an aneurismal fistula is rare.

The association between CAA and myocardial ischemia was attributed to altered blood flow and hemostasis causing thromboembolization. An additional shunt caused by arteriovenous malformation may further impede the distal coronary flow, as elucidated in a previous report (2).

The standard management of CAA is not well established because of the rarity and unpredictable natural history of this condition. Bypass grafting would provide a retrograde coronary flow toward the LM, and may prevent further thromboembolization to distal vessels.

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Key Words: coronary artery aneurysm ■ coronary fistula ■ myocardial infarction.

APPENDIX

For an accompanying video, please see the online version of this paper.