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# Short Communications

## An Unusual Atrial Mass

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**Summary:** Giant coronary artery aneurysm is a rare manifestation of coronary artery disease. This patient presented at echocardiography and was successfully managed by surgical resection.

**Key words:** coronary aneurysm

### Introduction

Coronary artery ectasia including aneurysmal disease is uncommon, its incidence varying between 0.2 and 4.9% depending on the method used to establish the diagnosis. Etiologies include atherosclerosis, congenital, trauma, infection, connective tissue disorders, polyarteritis nodosa, and Kawasaki disease. Aneurysmal dilatation occurs when the arterial dilatation seen usually is between two to four times the diameter of the normal coronary artery. Giant coronary artery aneurysms (> 8 mm) are rare.[1–5] We discuss the case of a patient with giant circumflex coronary artery aneurysm that presented in a novel way.

### Case Report

A 57-year-old Caucasian male lorry driver was due to undergo repair of an inguinal hernia. He was known to have dilated cardiomyopathy, and preoperative assessment included echocardiography, demonstrating moderate left ventricular function and a mass in the left atrium. He was therefore referred to our unit for further assessment.

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Apart from discomfort from his hernia, the patient was asymptomatic, denying chest pain, breathlessness, or palpitation. Three years previously atrial fibrillation had been diagnosed; direct current (DC) cardioversion failed to reestablish sinus rhythm, and he was subsequently managed with a regimen of warfarin and digoxin. Apart from a fractured sternum 8 months previously, he was well. His coronary risk factors were smoking and a strong family history for coronary disease. Examination revealed a healthy normotensive male in atrial fibrillation at a rate of between 60 and 100 beats/min. Venous pressure, cardiac auscultation, and the remaining physical examination were normal. His resting electrocardiogram (ECG) showed atrial fibrillation, left-axis deviation, and a lateral digitalis effect. Posteroanterior chest x-ray was normal.

Transthoracic echocardiography suggested a large immobile spherical mass in the left atrium. This was cystic and without evidence of flow within it. Transesophageal echocardiography (TEE) demonstrated a large, thick-walled, calcified mass that initially seemed to arise from the posterior wall of the left atrium (Fig. 1). Further imaging demonstrated it to lie outside the left atrium and to compress it. There was also marked compression of the pulmonary artery posteriorly (Fig. 2). Spontaneous echo contrast was "swirling" in a clockwise direction within the cavity, which was lined with laminar thrombus. Color-flow mapping demonstrated a narrow jet of low-velocity flow entering the mass anteriorly and coursing around the lateral wall consistent with the motion of the spontaneous contrast (Fig. 3). The left and right atria were dilated. Left ventricular systolic function was moderate, and there were no abnormalities of valvar structure or function.

Contrast computed tomography scanning demonstrated a large aneurysmal vascular structure in the middle mediastinum with apparent arterial connection from the left circumflex coronary artery. The mass contained patchy calcification and compressed the right pulmonary artery and the left atrium.

Right and left heart catheterization was performed via the right femoral artery and vein. A large round calcified lesion was demonstrated posterior to the ascending aorta. Left ventriculography demonstrated moderate global impairment of systolic function. Biplane aortography was normal. Selective coronary arteriography of the left coronary artery (Fig. 4) demonstrated very large ectatic coronary arteries with a 6 cm aneurysm arising from the proximal portion of the circumflex artery. Late after the coronary injection, a large tortuous ve-

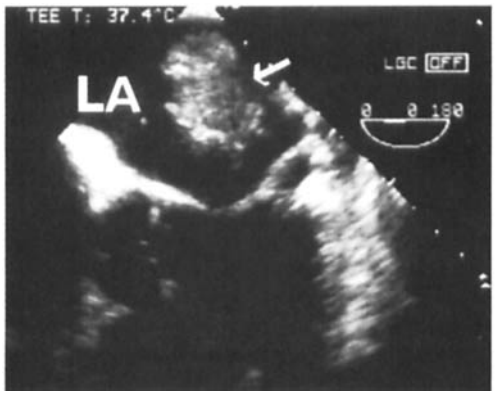


FIG. 1 Transesophageal echocardiographic 4-chamber view demonstrating an apparent mass in the left atrium (arrowed).

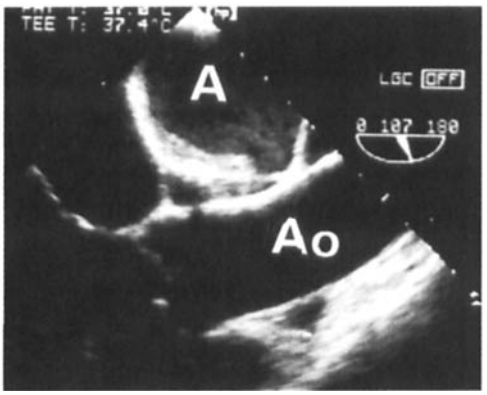


FIG. 2 Transesophageal echocardiographic long-axis image demonstrating a large cystic cavity (A) posterior to the descending aorta (Ao). This contains spontaneous echo contrast or "smoke" and some laminar thrombus.

nous structure was seen anterior and to the right of the aneurysm, possibly communicating with the left atrium. Right coronary arteriography showed a dominant vessel with mild ectasia in its proximal third and similar milder change distally. There was an unusual early tortuous branch that crossed the midline to act as a feeder vessel to the aneurysm. There was no evidence of atherosclerotic coronary artery disease or further aneurysms.

At surgery, a 6 cm aneurysm was found arising from the proximal circumflex artery at the back of the transverse sinus and abutting the roof of the left atrium. Cardiopulmonary bypass was instituted and the aorta and pulmonary artery were divided. The aneurysm was opened and found to contain some thrombus. The proximal circumflex artery was divided and oversewn at the proximal end. The proximal obtuse marginal artery was ligated just as it emerged onto the lateral wall of the heart and the area was bypassed with saphenous vein graft. A third vessel originating from the aneurysm appeared to be a venous connection with the superior vena cava; this was ligated.

The patient made an uncomplicated postoperative recovery and remains well 8 months later.

Pathologic examination of the specimens removed at surgery revealed histologically normal coronary arteries despite a macroscopically abnormal appearance.

## Discussion

While aneurysmal disease of the coronary arteries is well recognized, neither giant circumflex aneurysm nor its echocardiographic presentation have been previously described. Coronary ectasia may be defined as dilatation of a portion of the coronary artery to more than 1.5 times the diameter of the adjacent normal segment. A discrete dilated segment is termed aneurysmal; it may be sacular or fusiform; however, when the dilated segment involves a large portion of the artery, the term ectasia is more appropriate. The incidence of aneurysmal and ectatic disease varies between 0.2 and 4.9%, with coronary angiography being the most sensitive method of detection. The right coronary[6, 7] and the left anterior descending

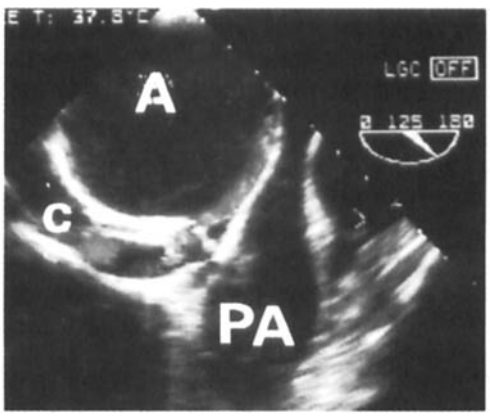


FIG. 3 The aneurysm (A) is compressing the pulmonary artery (PA). Doppler color-flow mapping demonstrates the dilated circumflex artery to be communicating with the aneurysm.

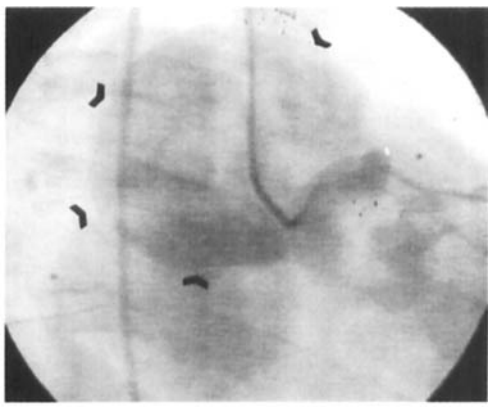

FIG. 4 Selective catheterization of the left coronary system. The aneurysm (arrowed) is seen filling late after the coronary injection.

artery[8,9] are the most frequently reported sites. Etiologies include atherosclerosis, congenital, trauma, and Kawasaki disease. In this case, the coronary artery was histologically normal, making an atherosclerotic or connective tissue disorder unlikely. Instead, the most likely cause is trauma to a congenitally ectatic artery sustained at the time of his sternal fracture. Disruption of the arterial adventitia and media allowed discrete progressive dilatation of the artery. Alternatively, instead of affecting the artery, the trauma may have involved a congenital coronary atrioventricular fistula, which would explain the venous connection to the superior vena cava. Dilatation then occurred by the same mechanism.

The natural history of aneurysmal disease is not clear, partly because of the tendency to operate on large lesions on a prophylactic basis. Distal embolization is a potential complication of ectatic coronary disease. A recent study demonstrated that in 31 patients with ectasia but no coronary stenoses, nearly 40% had evidence of previous myocardial infarction, presumably as a result of in situ thrombosis and distal embolism. Most cardiologists anticoagulate patients with marked ectasia to decrease the risk of such events. Surgical resection, often with bypass grafting, is often recommended if the aneurysm exceeds three to four times the normal vessel caliber, although no data exist to suggest that aneurysmal rupture occurs. Previous reports of giant aneurysms included surgical resection, usually with successful outcome. Although more common in men, no other risk factors predict that the development of ectasia and survival with or without coronary surgery is the same as for the general population with ischemic heart disease. Diagnosis by echocardiography is rare; of 93 patients with cardiac masses studied by TEE, none had aneurysmal disease.[10]

Coronary aneurysmal disease is increasingly recognized during noninvasive study.[7] This case demonstrates the potential severity of coronary aneurysmal dilatation, its novel presentation, and its successful management by resection at cardiac surgery.

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