

A Case of Bilateral Coronary-cameral Fistulae Incidentally Identified on Left Heart Catheterization



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ABSTRACT

Coronary-cameral fistula are a rare phenomenon. Fistula have an incidence of 0.08-0.3%^[1,2]. Of those, approximately 5% possess multiple concurrently^[1]. Though many are asymptomatic anginal symptoms may occur. Symptomatic cases underscore need of clinical awareness as work up may support a non-cardiac etiology leading to misdiagnosis. In this case presentation, we discuss a patient with bilateral coronary-cameral fistulae incidentally found during evaluation for new onset heart failure.

INTRODUCTION

Most early cases are asymptomatic^[2]. However, anginal symptoms may occur secondary to a steal phenomenon inducing ischemia. When a fistula from coronary artery to a venous or right-sided cardiac structure blood flow will redirect toward lower resistance in the fistula.

Larger and/or multiple fistulae have higher rates of anginal symptoms. Blood is drawn away from the typical flow pathway and stays within the fistula risking development of myocardial infarction, heart failure, arrhythmias, aneurysm, and endocarditis.

Diagnosis may prove difficult. A screening electrocardiogram (EKG) may only reveal T wave inversions^[3]. Early in the presentation, an echocardiogram may not show any irregularities and further imaging, such as cardiac CT, may be foregone. Left heart catheterization (LHC) is the current the gold standard in diagnosis^[4].

Management is case-by-case as features of the vessel, symptomatology, and patient characteristics are factored into treatment^[5]. The American College of Cardiology and the American Heart Association recommend surgical or transcatheter closure in those with large fistula. Further recommendations include closure for symptomatic cases including unexplained systolic or diastolic dysfunction. Many post-closure cases have shown improved cardiac function including EF^[4].

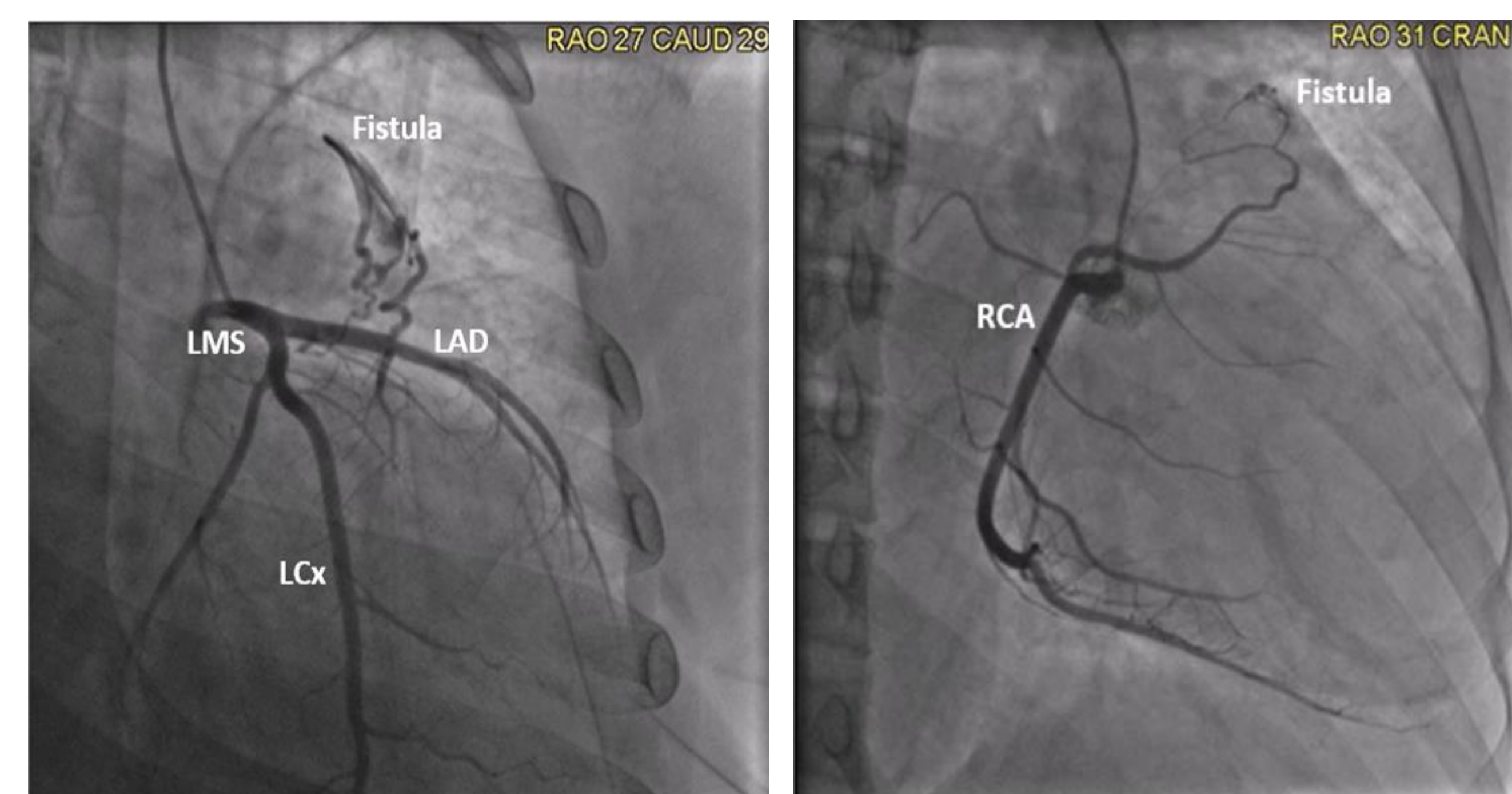
CASE REPORT

A 32-year-old female with past medical history of methamphetamine use initially presented to the outlying facility with gradually worsening shortness of breath and associated generalized weakness. Vital signs revealed hypoxia on room air necessitating two liters via nasal cannula to maintain appropriate saturations as well as tachycardia. Labs remarkable for elevated brain natriuretic peptide (BNP) of 407. Troponin and thyroid stimulating hormone were within normal limits. Chest X-ray was suggestive of interstitial and pulmonary edema with cardiac silhouette appearing appropriately sized.

Echocardiogram revealed EF of 20% and grade 1 diastolic dysfunction confirming suspicions of new onset heart failure. LHC was performed and cardiomyopathy was deemed nonischemic in nature—likely with large contribution from drug use. Incidentally, during the catheterization, the patient was found to possess bilateral coronary-cameral fistulae. Further characterization with cardiac CT revealed one fistula extending from the left anterior descending artery (LAD) to the main pulmonary artery (mPA) and another extending from the right coronary artery (RCA) to the left main coronary artery (LM).

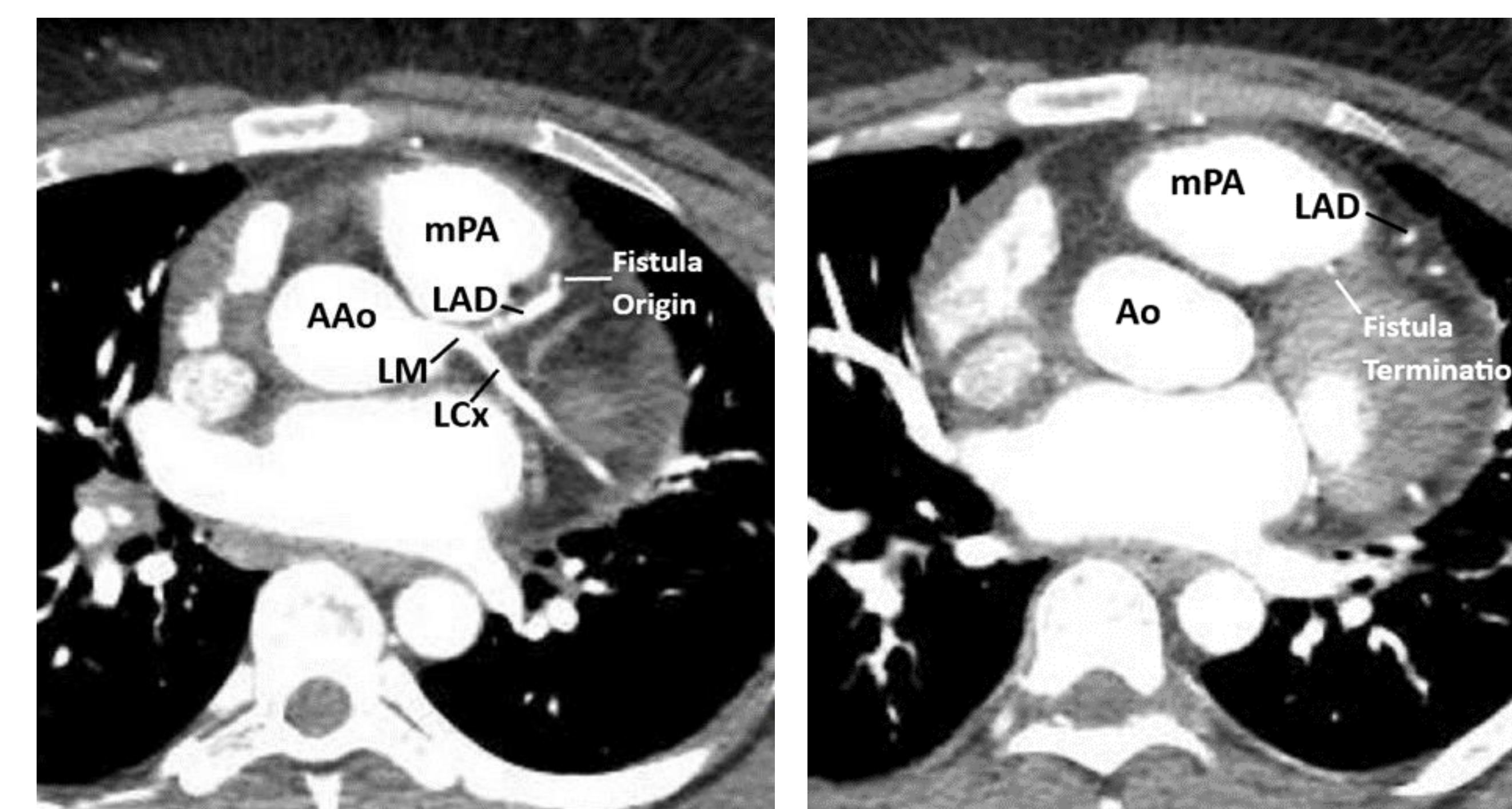
The patient was started on guideline-directed medical therapy (GDMT) with plans for up-titration as tolerated and repeat echocardiogram in three months.

Unfortunately, the patient has yet to have clinical follow up and repeat echocardiogram to evaluate for functional improvement following initiation of therapy.



Images 1 & 2: Left heart catheterization obtained to evaluate etiology of cardiomyopathy. During catheterization, it was incidentally discovered that the patient has bilateral coronary-cameral fistulae.

LM: Left main; LAD: Left anterior descending artery; LCx: left circumflex artery



Images 3 & 4: Cardiac CTA obtained to evaluate the courses of the fistulae identified on left heart catheterization showing origin and termination of fistula from the LAD to the mPA.

AAo: Ascending aorta; mPA: Main pulmonary artery; LM: Left main artery; LAD: Left anterior descending artery; LCx: left circumflex artery

CONCLUSION

With characterization, it was deemed that the patient's cardiomyopathy was likely not due to the fistulae but rather related to her history of methamphetamine use. As such, this patient was initiated on medical therapy with recommendations for close follow up outpatient with repeat echocardiogram in place of surgical closure.

Though uncommon, cameral coronary fistulae do possess symptomatic consequences deserving clinical awareness and suspicion. Additionally, with advancing cardiac imaging finding its place in screenings and diagnostics more cases may be identified necessitating knowledge of presence and treatment indications.

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