Case Report ISSN 2771-5906

Trends in Internal Medicine

Left Atrial Aneurysm Presenting as Acute Chest Pain: A Rare Clinical Encounter

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Received: 20 Oct 2025; **Accepted:** 26 Nov 2025; **Published:** 05 Dec 2025

Citation: Mateo-Martínez Eljach, Santiago Bossa-Linares, María Paula Fernández-Camacho, et al. Left Atrial Aneurysm Presenting as Acute Chest Pain: A Rare Clinical Encounter. Trends Int Med. 2025; 5(4): 1-5.

Keywords
Acute Chest Pain, Coronary syndrome, LAA.

Introduction

Left atrial aneurysm—most often referring to a localized or diffuse dilatation of the left atrial appendage (LAA)—is an exceptionally rare structural cardiac abnormality, with little more than a hundred cases reported globally since its first descriptions in the mid-20th century. Despite its rarity, it represents a clinically relevant entity because its presentation ranges widely from asymptomatic incidental findings to life-threatening complications. Congenital variants are believed to arise from dysplasia or agenesis of pectinate muscles or defects of the pericardial sac, whereas acquired forms have been associated with chronic elevation of left atrial pressures, atrial remodeling from valvular disease, inflammatory injuries, or idiopathic degenerative changes [1,2].

Clinically, left atrial aneurysms may be deceptive. Their manifestations vary from palpitations, dyspnea, cough, and compressive mediastinal symptoms to atrial arrhythmias, systemic embolic events, and, less frequently, acute chest pain that mimics ischemic syndromes. This symptom heterogeneity was emphasized in the largest systematic review to date, which summarized 82 reported cases and highlighted how such lesions can be misinterpreted as heart failure exacerbations, coronary ischemia, or even pulmonary pathologies at initial evaluation [3,4]. The potential presence of intraluminal thrombus—favored by stasis within the aneurysmal sac—further increases the risk of cardioembolic complications, mandating prompt recognition and tailored management strategies.

In Latin America, and particularly in Colombia, the epidemiologic understanding of left atrial aneurysm is even more limited. Available information is restricted to isolated case reports or small institutional experiences, reflecting both its low prevalence and the diagnostic challenges posed in emergency settings where structural anomalies are seldom considered early in the differential diagnosis [5]. The scarcity of regional data underscores the importance of documenting cases that present atypically—especially those initially evaluated under the suspicion of an acute coronary syndrome, a scenario increasingly common in emergency departments across the region.

From a diagnostic standpoint, multimodality cardiac imaging plays a central role. While transthoracic echocardiography remains a frequent first step, its acoustic limitations may obscure subtle aneurysmal morphology. Transesophageal echocardiography provides superior structural detail, particularly for characterizing the neck of the aneurysm, defining its communication with the left atrial cavity, and identifying associated thrombus. Cardiac computed tomography offers excellent anatomical delineation, whereas cardiac magnetic resonance enables functional assessment and precise volumetric analysis, facilitating comprehensive anatomical and pathophysiologic understanding [1,3].

Against this background, the present report describes a 67-year-old woman who presented with sudden-onset chest pain and dyspnea, initially prompting evaluation for acute coronary syndrome. Subsequent multimodal imaging unexpectedly revealed a left atrial aneurysm containing intraluminal thrombus, shifting the diagnostic and therapeutic trajectory. This case illustrates a rare

but clinically meaningful cause of acute chest pain, emphasizes the need to broaden diagnostic considerations when coronary studies are inconclusive, and contributes to the limited but growing body of literature on this entity within the Latin American context.

Case Presentation

A 67-year-old woman with a past medical history of long-standing hypertension, type 2 diabetes mellitus, dyslipidemia, obesity class I, and no prior cardiovascular surgeries presented initially to a regional clinic with a one-month history of progressive dyspnea on exertion, orthopnea, bilateral leg edema, and intermittent nocturnal dyspnea. She also described an episode of acute-onset chest pain, which prompted transfer for further evaluation. Her background was otherwise unremarkable for smoking, alcohol, or toxic exposures.

At the referring center, transthoracic echocardiography (TTE) revealed a left ventricular ejection fraction (LVEF) of 39%, with hypokinesia of the inferobasal interventricular septum, raising suspicion for ischemic cardiomyopathy. Given the chest pain episode and regional wall-motion abnormalities, the patient was transferred to a higher-level cardiovascular facility for invasive coronary evaluation.

On arrival, she was hemodynamically stable: blood pressure 111/66 mmHg, heart rate 84 bpm, respiratory rate 16 rpm, and oxygen saturation 99% on ambient air. Physical examination showed grade II jugular venous distension, bilateral lower-extremity edema (grade II pitting), preserved distal pulses, and no pulmonary rales. She denied ongoing chest pain, palpitations, or syncope. Laboratory tests showed elevated NT-proBNP (17,890 pg/mL), mildly increased inflammatory markers, normal hemoglobin, and troponin I between 28–31 ng/L, without dynamic changes.

A chest radiograph obtained on admission demonstrated marked cardiomegaly with hilar congestion and blunting of the costophrenic angles (Figure 1A). Because the radiographic silhouette suggested disproportionate enlargement of the left atrial contour, cross-sectional imaging was pursued. Cardiac magnetic resonance imaging (MRI) revealed a well-defined saccular structure adjacent to the left atrial wall, extending toward the left hemithorax and producing mild mediastinal compression, compatible with a left atrial aneurysm (Figure 1B).

Contrast-enhanced thoracic computed tomography (CT) further delineated a large aneurysmal dilation of the left atrium, with homogeneous contrast filling and clear anatomical borders (Figure 1C). At this stage, differential considerations such as pulmonary artery aneurysm or left ventricular aneurysm were excluded based on anatomical orientation and contrast distribution.

Given suboptimal transthoracic windows, a transesophageal echocardiogram (TEE) was performed, confirming a giant left atrial aneurysm with a distinct neck communicating with the left atrial chamber and a large intraluminal thrombus occupying a substantial portion of the aneurysmal sac (Figure 2). Biventricular systolic function was otherwise preserved on this study.

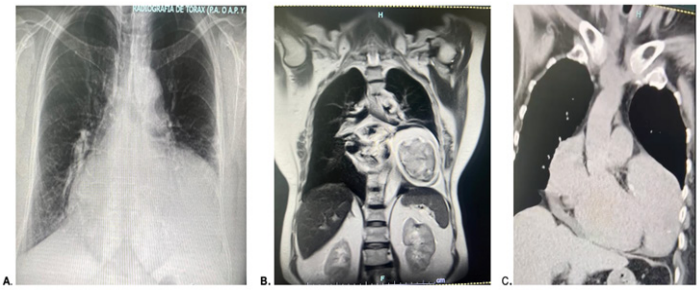

Figure 1: Multimodality structural imaging.

A. **Chest radiograph:** Severe cardiomegaly with left atrial contour prominence and bilateral costophrenic angle blunting.

B. **Cardiac magnetic resonance (coronal view):** Saccular structure arising from the left atrial region, compatible with left atrial aneurysm, extending toward the left thoracic cavity with mild mediastinal compression.

C. **Contrast-enhanced thoracic CT (coronal):** Well-defined aneurysmal dilation of the left atrium with contrast opacification, confirming its anatomical origin.

Coronary artery disease was subsequently ruled out based on clinical stability, nondynamic biomarkers, and lack of ischemic changes on serial electrocardiograms. The patient's acute heart failure decompensation was attributed to the mechanical and hemodynamic consequences of the aneurysmal dilation, further exacerbated by volume overload.

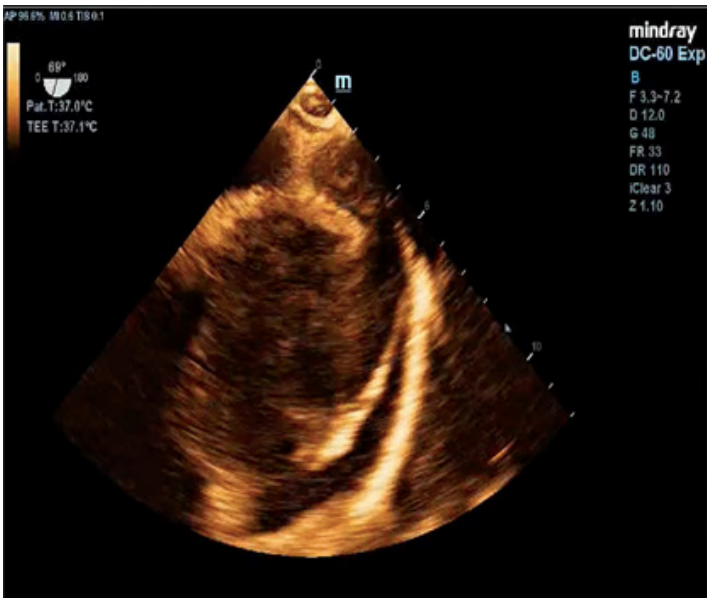

Figure 2: Transesophageal echocardiogram (longitudinal view).
Large left atrial aneurysm with a clear neck communicating with the left atrial cavity and evidence of intraluminal thrombus.

She was managed with guideline-directed medical therapy for acute heart failure, including diuretics, beta-blockade, SGLT2 inhibition, and statin therapy. Given the presence of intraluminal thrombus, apixaban was initiated. Once stabilized, she was discharged with

referral for cardiothoracic surgical evaluation, as elective surgical resection of the aneurysm was deemed the definitive treatment. At the time of discharge, the patient remained clinically stable, normotensive, and free of chest pain or dyspnea, with instructions for early follow-up and surgical planning.

Table 1: Key Clinical Features, Imaging Clues, Diagnostic Triggers, and Management Overview of Left Atrial Aneurysm.

Clinical Features	Imaging Clues	When to Suspect	Management Summary
Dyspnea, orthopnea, edema, occasional chest pain, palpitations	CXR: marked cardiomegaly. TTE: left atrial enlargement. TEE: aneurysmal sac + thrombus. CT/MRI: precise anatomy and extension	Disproportionate cardiomegaly, chest pain with normal coronaries, unexplained atrial thrombus, sac-like structure on CT/MRI	Initial HF therapy + anticoagulation; definitive treatment is elective surgical resection; percutaneous closure only in selected cases

Table of authorship by the present report's authors

Table 2: Comparison of the Present Case with Major Published Reports.

Domain	Present Case	Published Literature
Age	67 years	Most cases younger (20–50 yrs); elderly cases reported but less common
Symptoms	Acute chest pain + HF decompensation	Palpitations, dyspnea, arrhythmias; chest pain less frequent but documented
Rhythm	Sinus rhythm	AF/flutter in ~30–40% of cases
Thrombus	Large intraluminal thrombus	Occurs in both AF and sinus rhythm; size and stasis are major predictors
Imaging	CXR → MRI → CT → TEE confirming aneurysm + thrombus	Multimodality imaging recommended; TEE is gold standard for neck and thrombus
Etiology	Likely acquired or mixed	Mostly congenital; acquired forms related to atrial pressure overload
Management	HF therapy + anticoagulation → planned surgical resection	Surgical aneurysmectomy is standard; percutaneous closure possible in selected cases
Outcome	Stabilized; awaiting surgery	Generally excellent outcomes after surgery; embolic risk persists without intervention

Table of authorship by the present report's authors.

Discussion

Left atrial aneurysm, most often involving the left atrial appendage (LAAA), remains an exceptionally rare structural cardiac abnormality, but recent series have expanded the understanding of its clinical spectrum and prognostic implications. Early descriptions and small case series already highlighted its association with atrial arrhythmias and thromboembolic events, as well as its frequent misclassification as other causes of cardiomegaly or mediastinal masses [1-4]. More recently, a contemporary editorial from *JACC: Case Reports* has summarized current "knowledge and gaps," estimating that just over 100 cases had been reported up to 2021 and stressing the absence of a universally accepted definition or size cut-off for considering the appendage "aneurysmal" [6].

A larger descriptive systematic review of 177 cases has further refined the epidemiologic profile of LAAA, showing a predominance in young to middle-aged adults, with a slight female preponderance, and confirming that most lesions are congenital, presumably related to dysplasia of the pectinate muscles or other atrial muscle bands [7]. Acquired forms, usually in older adults, have been linked to chronically increased left atrial pressures and mitral valve disease [2,4,7,12]. In this context, our 67-year-old patient with long-standing hypertension, diabetes, and heart failure fits within the less frequently described spectrum of older patients in whom LAAA is detected against a background of multiple cardiovascular risk factors, raising the possibility of a mixed or acquired component superimposed on an underlying structural predisposition.

Clinically, the heterogeneity of presentation is striking. In the systematic review by Aryal et al., symptoms at diagnosis included palpitations, dyspnea, atrial fibrillation or flutter, and systemic embolic events; chest pain was far less common but still reported as an initial complaint in a minority of patients [4]. Subsequent reports have expanded this observation: Harland et al. described a giant congenital LAAA presenting with recurrent supraventricular tachycardia and chest pain in a middle-aged woman, while Belov et al. reported chest discomfort in a patient with LAAA and prior thromboembolic disease [3,8,25]. More recently, Yan et al. documented a giant LAAA in a patient with recurrent chest tightness and atrial tachycardia, emphasizing how symptoms may closely mimic ischemic syndromes or primary arrhythmic disorders [9]. Our case adds to this subset by illustrating acute chest pain and decompensated heart failure as the dominant initial presentation, in the absence of documented atrial tachyarrhythmias, which can easily direct the diagnostic workup toward ischemic cardiomyopathy rather than toward a structural appendage aneurysm.

The risk of thromboembolism is a central concern in LAAA. In the 82-case systematic review, the presence of atrial fibrillation or flutter was the only variable independently associated with thrombus formation or embolic events [4]. However, subsequent imaging studies and case reports have demonstrated that relevant thrombus can form even in patients in sinus rhythm, likely due to severe stasis within the aneurysmal sac. Cuenca Castillo highlighted this issue, discussing four-dimensional flow cardiac magnetic resonance data showing high stasis regions within large LAAA despite preserved global atrial contractility, suggesting a substrate for thrombogenesis independent of overt arrhythmia [6,16]. Consistent with these observations, our patient had a large intraluminal thrombus in the aneurysm, yet no documented atrial fibrillation, reinforcing the notion that aneurysm size, morphology,

and flow stasis may be as important as rhythm status in estimating embolic risk.

Multimodality imaging is pivotal for diagnosis and therapeutic planning. Transthoracic echocardiography is often the first modality, but limited acoustic windows can obscure the appendage and lead to underdiagnosis or misinterpretation as a generic atrial enlargement [1,3,12]. Transesophageal echocardiography provides superior spatial resolution for characterizing the aneurysmal neck, defining its communication with the left atrium, and detecting thrombi, and is therefore regarded as the reference echocardiographic technique [1,6,12]. Cardiac CT and MRI offer complementary benefits: both delineate the anatomy, relations to adjacent structures, and mass effect; CT yields high-resolution assessment of the coronary arteries, while MRI provides tissue characterization and quantification of ventricular function [1,3,12,18]. In the present case, this stepwise multimodal approach—from chest radiography to MRI, CT, and finally TEE—was crucial to reorient the diagnostic hypothesis away from ischemic cardiomyopathy and toward a structural left atrial aneurysm with thrombus, thereby reshaping both prognosis and therapeutic strategy.

The spectrum of reported complications mirrors this pathophysiology. Cases have described massive cerebral infarction due to embolism originating in LAAA, refractory atrial fibrillation or flutter driven by the aneurysmal substrate, and even compression of adjacent structures with mitral regurgitation or coronary artery distortion [8-12,18,20]. Pediatric and young adult series underscore that, although many patients are initially asymptomatic, the risk of late arrhythmias and embolic events increases with age and aneurysm growth, prompting most authors to recommend early, often prophylactic intervention even in minimally symptomatic individuals [11-13,18]. From a Latin American standpoint, published experience remains limited to isolated reports, but these mirror the international literature by highlighting presentations with heart failure, embolic phenomena, or atypical chest pain in resource-variable settings, where access to advanced imaging may be inconsistent [5,17].

Regarding management, surgical resection (aneurysmectomy) remains the predominant strategy across series and systematic reviews, with most patients achieving symptom relief and freedom from embolic or arrhythmic events during follow-up [4,7,11,12]. Techniques range from conventional median sternotomy with cardiopulmonary bypass to minimally invasive thoracoscopic or endoscopic approaches, depending on aneurysm size, location, and concomitant valvular or coronary pathology [6,7,11,18]. Nevertheless, contemporary literature also describes alternative strategies in selected high-risk or anatomically favorable cases, including transcatheter occlusion of the aneurysm ostium, hybrid procedures combining ablation and surgical closure, and aggressive rhythm control when atrial tachyarrhythmias predominate [14,19,26]. Kothandam and Ramasamy, for example, reported the first catheter-based closure of a giant LAAA causing recurrent cardioembolism in a patient in whom recent stroke precluded immediate surgery, demonstrating that device closure under multimodal imaging guidance can be a viable option in carefully selected scenarios [14].

In our patient, the presence of a large aneurysmal sac with documented intraluminal thrombus, heart failure decompensation, and preserved biventricular function supported an initial strategy of hemodynamic stabilization and systemic anticoagulation, followed by referral for elective surgical resection as definitive treatment. This approach aligns with the consensus emerging from recent reviews, which favor surgery for large or symptomatic aneurysms, particularly in the setting of thrombus or prior embolic events, while recognizing that long-term anticoagulation alone may be insufficient for durable risk reduction in such cases [4,6,7,10-12,14].

Overall, this case illustrates several key learning points. First, LAAA should be considered in the differential diagnosis of non-coronary chest pain associated with unexplained cardiomegaly or atypical imaging findings, especially when standard coronary evaluation is unrevealing. Second, early deployment of multimodal imaging, including TEE and cross-sectional modalities, is essential to characterize aneurysm anatomy and identify thrombus. Third, even in the absence of atrial fibrillation, large aneurysms with documented stasis or thrombus warrant aggressive management, typically combining anticoagulation with surgical resection. Finally, documenting such cases from Latin America helps to bridge existing epidemiologic gaps and underscores the need for broader awareness of this rare but clinically significant entity in diverse healthcare settings.

References

1. Torres JDA, Gallego JAS, Gonzalez MG. Left atrial appendage aneurysm: case report and literature review. Cureus. 2024; 16: e56280.
2. Qin K, Teng P, Shi L, et al. A rare case of left atrial appendage aneurysm. J Cardiothorac Surg. 2024; 19: 327.
3. Belov DV, Moskalev VI, Garbuzenko DV, et al. Left atrial appendage aneurysm: a case report. World J Clin Cases. 2020; 8: 4443-4449.
4. Aryal MR, Hakim FA, Ghimire S, et al. Left atrial appendage aneurysm: a systematic review of 82 cases. Echocardiography. 2014; 31: 1312-1318.
5. https://ecocardio.com/documentos/retic-web
6. Cuenca Castillo J. Left atrial appendage aneurysm: knowledge and gaps. JACC Case Rep. 2021; 3: 1930-1931.
7. Daralammouri Y, Odeh A, Abuzahra S, et al. Left atrial appendage aneurysm: a descriptive systematic review of 177 cases. BMC Cardiovasc Disord. 2024; 24: 633.
8. Harland DR, Suma V, Muthukumar L, et al. Giant congenital left atrial appendage aneurysm presenting with recurrent supraventricular tachycardia and chest pain. CASE (Phila). 2019; 3: 129-132.

9. Yan W, Xie Y, Cai P, et al. A giant left atrial appendage aneurysm with recurrent chest tightness and atrial tachycardia: multimodal imaging findings. Radiol Case Rep. 2023; 18: 805-808.
10. Li R, Ma F, Guan HX, et al. Giant congenital left atrial appendage aneurysm presenting with acute massive cerebral infarction and refractory atrial fibrillation: a case report and literature review. Front Cardiovasc Med. 2022; 9: 888825.
11. Norozi K, Subasri M, Altamirano Diaz L, et al. Left atrial appendage aneurysm in pediatrics: case study and literature review. Front Cardiovasc Med. 2023; 10: 1211619.
12. Wang B, Li H, Zhang L, et al. Congenital left atrial appendage aneurysm: a rare case report and literature review. Medicine (Baltimore). 2018; 97: e9344.
13. Yakut K, Varan B, Erdoğan İ. Asymptomatic giant congenital left atrial aneurysm. Turk J Pediatr. 2019; 61: 117-119.
14. Kothandam S, Ramasamy R. Planning and execution of catheter closure of a giant left atrial appendage aneurysm causing recurrent cardioembolism. Ann Pediatr Cardiol. 2020; 13: 353-356.
15. Coraducci F, Barbarossa A, Coretti F, et al. Giant aneurysm of the left atrial appendage: a case report. Eur Heart J Case Rep. 2024; 8: ytae099.