

MINI-FOCUS ISSUE: IMAGING

ADVANCED

IMAGING VIGNETTE: CLINICAL VIGNETTE

# Left Ventricular Pseudoaneurysm

## Unexpected Finding in a Patient Who Presented With Bacterial Endophthalmitis



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### ABSTRACT

A large left ventricular pseudoaneurysm was discovered in a patient who presented with bacterial endophthalmitis 1 year after medically treated *Staphylococcus aureus* mitral valve endocarditis. After medical therapy, the patient underwent cardiac surgery uneventfully. We present a rare finding of a pseudoaneurysm complicated with a very late ocular septic event. (**Level of Difficulty: Advanced.**) (J Am Coll Cardiol Case Rep 2021;3:932-4) © 2021 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

A 69-year-old man with diabetes presented with acute endophthalmitis 1 year after medically treated *Staphylococcus aureus* mitral valve endocarditis. *S aureus* was isolated from vitreous fluid, while blood cultures were sterile, and the patient had neither clinical nor laboratory signs of systemic infection. Head and abdominal computed tomography (CT) showed no signs of septic emboli. In searching for the source of ocular embolism, transthoracic echocardiography (TTE) and transesophageal echocardiography (TEE) were performed. The examinations did not reveal any vegetations, but a hypoechogenic cavity behind the left atrium (**Figures 1A and 1B, Videos 1 and 2**) with a color-flow signal from the left ventricle (LV) through a narrow opening posterior to the mitral annulus. Cardiac CT angiogram demonstrated a large LV pseudoaneurysm with a 2.5-cm wide orifice at the posteromedial mitral annulus and a 7 × 3 × 3 cm sac extending up to the right atrium (**Figures 1C and 1D**). Posterior descending artery arising from the left circumflex artery (LCX) was compressed between the left atrium and the pseudoaneurysm (**Figure 1D, Video 3**). The patient experienced no chest pain, whereas T-wave inversion in leads I and aVL was noted.

The patient was treated with intravitreal and intravenous antibiotics and vitrectomy. After antibiotic treatment cardiac surgery was performed. Surgical inspection revealed no signs of infection on the pseudoaneurysmatic sac (**Figure 1E**), the orifice, or the mitral valve. The pseudoaneurysmatic orifice was closed with a patch (**Figure 1F, Video 4**) and mitral annuloplasty and bypass grafting of the LCX were performed. The case is presented with patient consent.

We present a rare complication of infective endocarditis—a LV pseudoaneurysm, which was incidentally discovered in a patient with bacterial endophthalmitis. We presume that incompletely healed mitral valve endocarditis led to the formation of the pseudoaneurysm, which remained clinically silent until the patient suffered an ocular septic embolism. Despite negative blood cultures before starting antibiotic treatment, *S aureus* has been identified as a causative organism in both endocarditis and endophthalmitis. Most probably

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the LV pseudoaneurysm was a residual focus of infection that caused septic embolism. Due to its size and unusual location at the posteromedial side of the mitral annulus (1), it also compressed the posterior descending artery, leading to sub-clinical myocardial ischemia.

In our case, the pseudoaneurysm was visualized on TTE, which has otherwise low sensitivity to detect pseudoaneurysms (1). TEE was useful to better visualize and exclude possible vegetations on the mitral valve and pseudoaneurysmatic orifice. CT angiogram, however, showed the perivalvular extensiveness of the pseudoaneurysm and its relation to the surrounding structures. The extent of coronary compression was visualized using coronary angiography.

This case demonstrates the complexity of infective endocarditis that may complicate with a LV pseudoaneurysm when incompletely treated (2). Although LV pseudoaneurysm can be clinically silent for a long time, it may complicate with septic events or compression of adjacent structures. Multi-imaging modalities as complementary techniques are crucial to better understand the characteristics of the pseudoaneurysm before planning the surgical treatment (2).

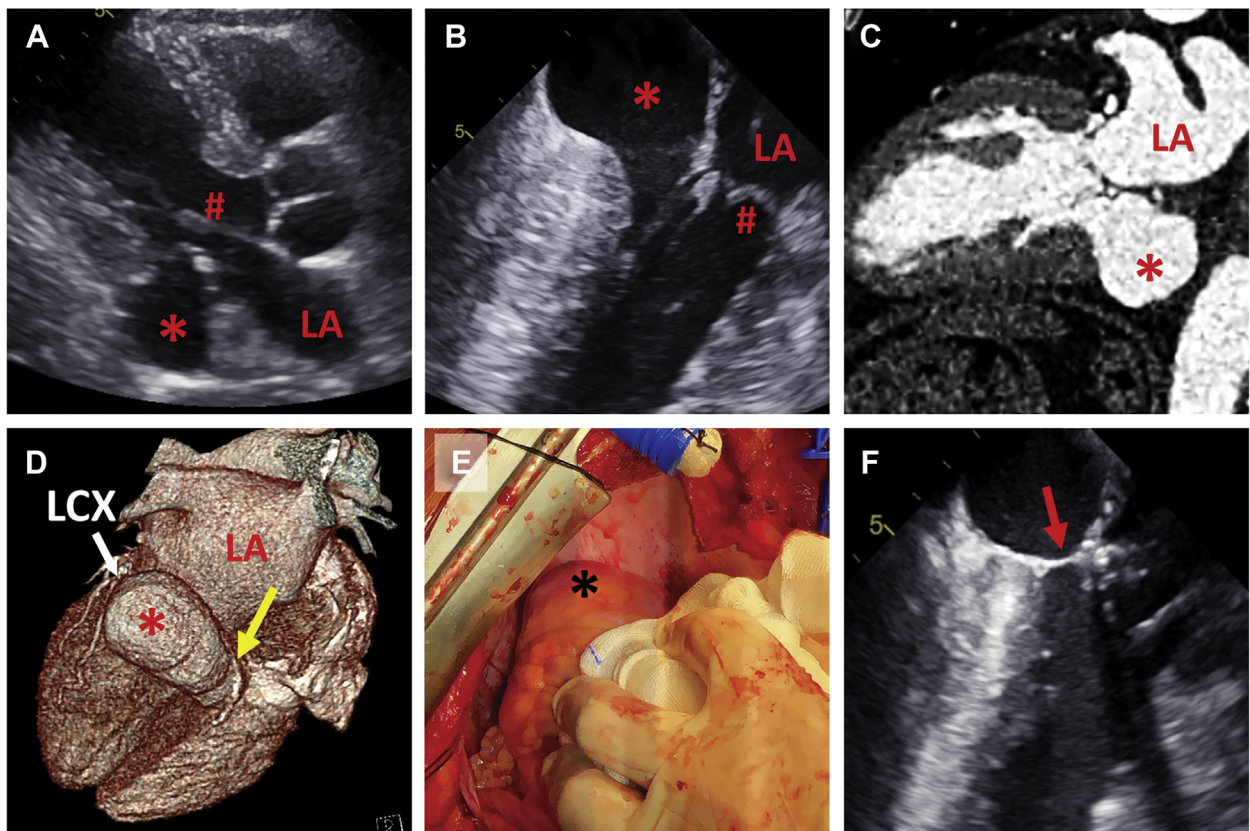
**ABBREVIATIONS  
AND ACRONYMS**

- CT** = computed tomography
- LCX** = left circumflex artery
- LV** = left ventricle
- TEE** = transesophageal echocardiography
- TTE** = transthoracic echocardiography

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**FIGURE 1** Left Ventricular Pseudoaneurysm



Transthoracic echocardiography (TTE) (A) and transesophageal echocardiography (TEE) (B) demonstrate a hypoechoic cavity (asterisk) behind the left atrium (LA) communicating with the left ventricle (LV) at the posterior mitral annulus. Cardiac CT angiogram shows a large left ventricular pseudoaneurysm (asterisk) with an orifice at the posteromedial mitral annulus (C, D). The posterior descending artery (D, yellow arrow) arising from the left circumflex artery (LCX) is compressed between the left atrium and left ventricular pseudoaneurysm (asterisk). Surgical inspection showing pseudoaneurysmatic dilation of the left ventricle (E, asterisk). TEE demonstrates a patch that was used to close the pseudoaneurysmatic orifice (F, red arrow). #Anterior mitral leaflet

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**KEY WORDS** computed tomography, echocardiogram, endocarditis, left ventricular pseudoaneurysm

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 **APPENDIX** For supplemental videos, please see the online version of this paper.