A 63-year-old female was admitted to our emergency service complaining of new onset stroke. The patient’s cranial magnetic resonance imaging was consistent with acute infarction, and electrocardiography showed atrial fibrillation. The patient started oral anticoagulant medical therapy for atrial fibrillation. Transthoracic echocardiography (TTE), from the apical four chamber view, showed normal systolic function and left ventricular wall motion; moderate mitral valve regurgitation; and a large atrial septal aneurysm with a suspected left atrial thrombus. Bilateral carotid ultrasonography was normal. The patient’s heart rhythm suggested permanent atrial fibrillation. Transesophageal echocardiography (TEE) revealed moderate mitral valve insufficiency and a severe aneurysm within the interatrial septum with dense spontaneous echo contrast (SEC), mimicking a thrombus inside the aneurysmal sac (Fig., Video 1, 2, 3). No atrial septal defect, patent foramen ovale, or thrombus inside the left atrial appendage was observed via TEE. The patient was discharged on oral anticoagulant and heart rate reduction therapy for atrial fibrillation. The patient experienced no recurrent stroke or transient ischemic attack under the oral anticoagulant therapy during the three-month follow-up period.

**Figure—** TEE revealed a severe aneurysm within the interatrial septum with a dense spontaneous echo contrast (SEC), mimicking a thrombus inside the aneurysmal sac. *Supplementary video files associated with this case can be found in the online version of the journal.*