



## Incidental finding of a mass fitting into a patent foramen ovale

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An 88-year-old male with past medical history of hypertension, diabetes, stroke, chronic kidney disease, congestive heart failure and coronary artery disease presented to our emergency room for evaluation of progressive shortness of breath of one-week duration. At presentation he was tachycardic and tachypneic, but his remaining physical examination was unremarkable. His enhanced computed tomography (CT) showed bilateral pulmonary embolism (PE) and lower extremity ultrasound revealed deep venous thrombosis (DVT) of his left popliteal and peroneal vein, for which anticoagulation therapy was started using Enoxaparin. His transthoracic echocardiogram (TTE) showed a dilated right ventricle and an inter-atrial mass. Further evaluation by transesophageal echocardiogram (TEE) revealed a large mass within the patent foramen ovale (PFO) extending into the left atrium, across the mitral valve and into the left ventricular outflow tract (Fig. 1). The differential diagnosis for this mass included a thrombus versus a tumor. However,

his CTA on admission did not show any evidence of any inter-atrial or intra-cardiac mass. Since the inter-atrial mass is a new finding in the setting of an acute DVT and PE, a thrombus crossing the PFO seemed to be the most likely diagnosis. Cardiothoracic surgery team was consulted for surgical pulmonary embolectomy who decided to avoid surgery due to a high revised cardiac risk index score [1]. Enoxaparin was changed to Apixaban for oral anticoagulation therapy and he was discharged to a skilled nursing facility with plans to monitor him closely as an outpatient with a 6-month follow-up TTE. On his 1-month follow-up visit, he was overall doing well with no evidence of any focal neurological deficits and complained of only mild dyspnea on exertion.

Thrombus fitting into PFO is a rare incidental finding on echocardiography. TTE or TEE can establish the diagnosis, while 3D TEE can aid in quantitative assessment of thrombus burden [2]. Surgery in such patients is associated with

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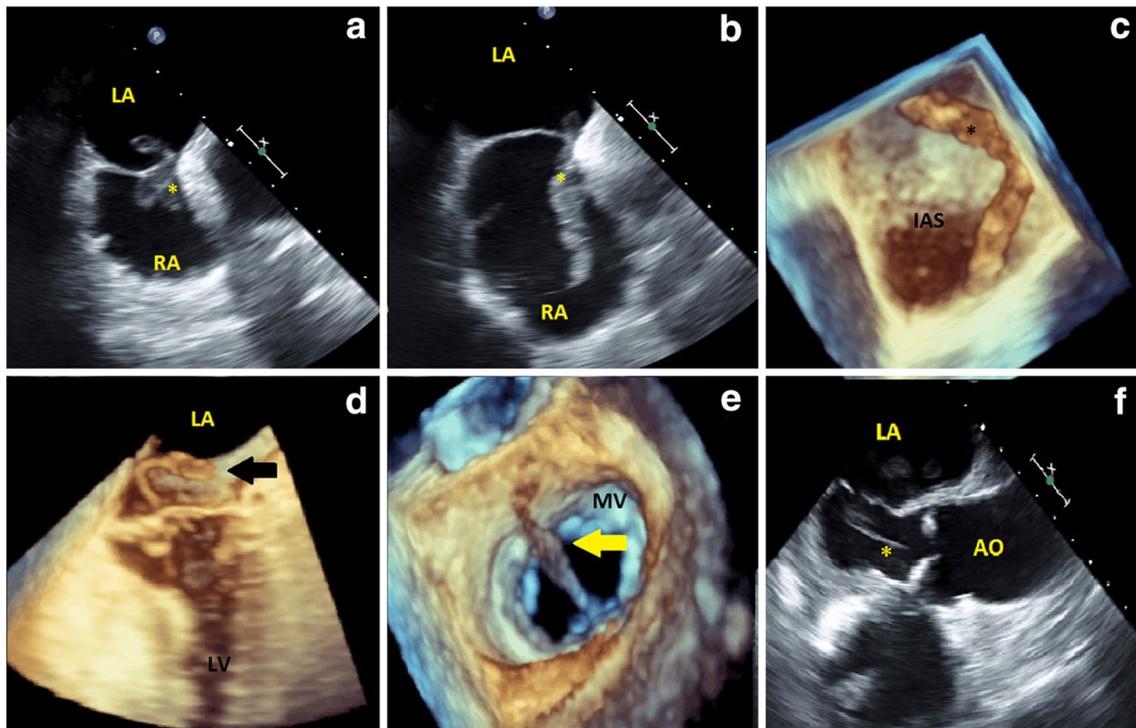
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**Fig. 1** **a, b** 2D TEE showing trapped thrombus (asterisk) within the PFO, **c** 3D TEE view from the left atrium showing thrombus (asterisk) arising from the PFO, **d, e** 3D TEE showing thrombus (leftwards arrow) crossing the mitral valve, **f** 2D TEE showing thrombus (asterisk) reaching the left ventricular outflow tract. *LA* left atrium, *RA* right atrium, *IAS* inter-atrial septum, *MV* mitral valve, *LV* left ventricle, *AO* aorta

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lower incidence of embolic events and sixty-day mortality [3]. However as seen in our case, patients who are at high risk for surgery, but hemodynamically stable, can be managed conservatively with anticoagulation.

### Compliance with ethical standards

**Conflict of interest** Mohammed Andaleeb Chowdhury, Kasi Ramathan, Robert D Grande and John R Letcher declare that they have no conflict of interest.

**Human rights statements and informed consent** All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1964 and later revisions. Informed consent was obtained from all patients for being included in the study.

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