



Transesophageal echocardiographic imaging of an aortic intramural hematoma: characterizing the crescent

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Acute aortic syndromes (AASs) encompass a diverse range of clinical presentations with a highly variable incidence. In addition to the use of non-echocardiographic imaging modalities (e.g., computed tomography angiography), transesophageal echocardiography (TEE) could play a role in surgical decision making.

A 46-yr-old male patient presented with a history of sudden chest pain radiating to his back. He underwent emergency surgery to address the presumptive diagnosis of type A AAS. Intraoperative TEE examination, however, revealed an intramural hematoma (IMH), a less common form of AAS. The International Registry of Aortic Dissection reported that only 5.7% of non-traumatic AASs fulfil the criteria for an IMH.¹

The IMH is best described as atypical aortic dissection without an intimal tear resulting from medial vasa vasorum hemorrhage. Typical TEE imaging of an IMH generally depicts *crescentic* thickening of the aortic wall of $> 7 \text{ mm}$ ²; normal aortic wall thickness is $< 3 \text{ mm}$ ³ (Figure A). The intimal flap and false lumen in a typical aortic dissection are usually absent— as was evident on our patient's TEE images. Instead, the aortic wall shows mixed echogenicity,

with predominant echo-densities interspersed with echolucencies (Figure A, B).

In cases of suspected AAS, thorough echocardiographic evaluation of the entire aorta should be undertaken. Our patient showed an IMH extending from the ascending aorta up to the arch. The TEE images also revealed a discrete area of ulceration, implicating a penetrating atherosclerotic ulcer as the origin of the IMH (Figure B). Interestingly, the patient had undergone coronary artery stenting a few months earlier, suggesting that the IMH could have resulted from an iatrogenic intimal injury in the setting of ascending aortic atherosclerosis.

Imaging is often compounded by close differentials – particularly in the context of an IMH – that may be difficult to characterize and differentiate from other echocardiographic masqueraders (e.g., atheromatous plaque, thrombosed false lumen, mural thrombus). The crescentic shape, smooth intimal surface, and mixed echogenicity distinguish an IMH from the cobblestone shape, echo-dense, and undulating surface of atheromatous plaque. A thrombosed false lumen often has a spiral course, irregular intimal surface, and varying degrees of calcification, whereas a mural thrombus has a semi-

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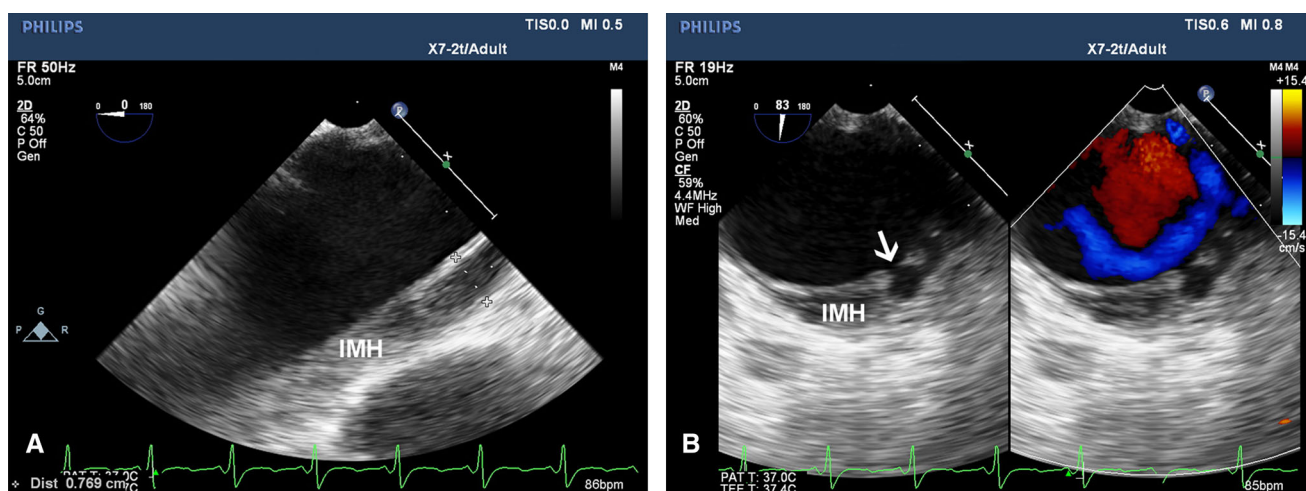


Figure (A) Two-dimensional transesophageal echocardiography performed with an X7 2t Philips ultrasound probe and machine (iE33 model; Philips, Bothell, WA, USA). This upper esophageal, long-axis image depicts an intramural hematoma (IMH) in the distal aortic arch, measuring > 7 mm in thickness. (B) Aortic arch, short-axis view shows a penetrating ulcer overlying the IMH (denoted by an

arrow). Colour Doppler imaging shows the absence of a false lumen, differentiating IMH from a more typical aortic dissection. In addition, the aortic thickening has a crescentic shape with mixed echogenicity, both of which are distinctive features of an IMH. 2D = two dimensional; TEE = transesophageal echocardiography

circular shape and an irregular surface. Moreover, it is usually found within an aneurysm.

Conflicts of interest None declared.

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