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## **Surprising echocardiographic qualification for vascular surgery: A “twin heart syndrome”**

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## Surprising echocardiographic qualification for vascular surgery: A “twin heart syndrome”

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Patients admitted for vascular surgery often need preoperative transthoracic echocardiography (TTE) due to multi-morbidity caused by atherosclerosis and hypertension. We present a rare clinical case of echocardiographic finding in a patient qualified for surgery for a thoracoabdominal aortic aneurysm.

A 59-year-old male with hypertension, atrial fibrillation, and a history of nicotine abuse was referred for periprocedural echocardiography before endovascular implanting of T-branch graft for thoracoabdominal aortic aneurysm (confirmed in computed tomography). The patient was referred for TTE due to a newly detected systolic murmur [1]. The standard long-axis parasternal echocardiographic view showed an atypical round-shaped mass with a lumen (11.2 × 9.6 cm with 4.8 × 4.1 cm lumen) localized in the posterior mediastinum (Figure 1A). The ascending aorta was not enlarged in the same view. In the short-axis parasternal view, it looked like a mirror image of the left ventricle, but it was slightly more prominent, and no contractile function could be appreciated (Figure 1B). Left ventricular wall thickening, moderate aortic stenosis, and pericardial effusion were also noted (10 mm). Post-operatively, the patient required treatment in an intensive

care unit due to significant blood loss. After equalizing the hemoglobin level, the patient still required large amounts of catecholamines. Due to the fluid present in the pericardial sac before the procedure, a control TTE was performed. Follow-up echocardiography revealed a pericardial effusion with no signs of cardiac tamponade. The stent graft presented as a hyperechoic scaffold inside the hypoechoic thick layer of clot around the aorta (**Figure 1C–D**). On the 10th day after surgery, the patient was discharged home. After two months, control computed tomography was performed, revealing the hyperechoic stent graft of the 110 mm descending aorta with a thick layer of clot around it (Supplementary material, *Figure S1*).

According to the latest 2024 ESC guidelines for managing peripheral arterial and aortic diseases [2], thoracic aortic aneurysms occur in 5–10/100 000 person-years. In approximately 30% of cases, they are localized in the descending aorta. Giant aortic aneurysms exceeding 10 cm and involving both the thoracic and abdominal aorta, because of the size and localization, mainly cause symptoms like dyspnea or dysphagia [3–5]. Asymptomatic and uncomplicated cases of giant aneurysms such as ours are sporadic. TTE is considered a first-line diagnostic approach for aortic diseases in general. Although echocardiography is crucial for diagnosing ascending aortic aneurysms, it should not be used for assessing the descending aorta alone. The descending aorta aneurysms must be assessed using cardiac computed tomography or magnetic resonance. The aneurysm's TTE images obtained from our patient are not only incidental findings resembling the left ventricle's reflection but also remind us that, despite its extensive dimensions, descending aorta aneurysms may be asymptomatic. We believe that our “twin heart syndrome” proves that echocardiography might sometimes be helpful as a part of multimodal imaging of the descending aorta. Although TTE assessment of descending aorta faces technical difficulties, it may lead to faster aneurysm diagnosis, resulting in quicker management and better outcomes.

### **Supplementary material**

Supplementary material is available at [https://journals.viamedica.pl/polish\\_heart\\_journal](https://journals.viamedica.pl/polish_heart_journal).

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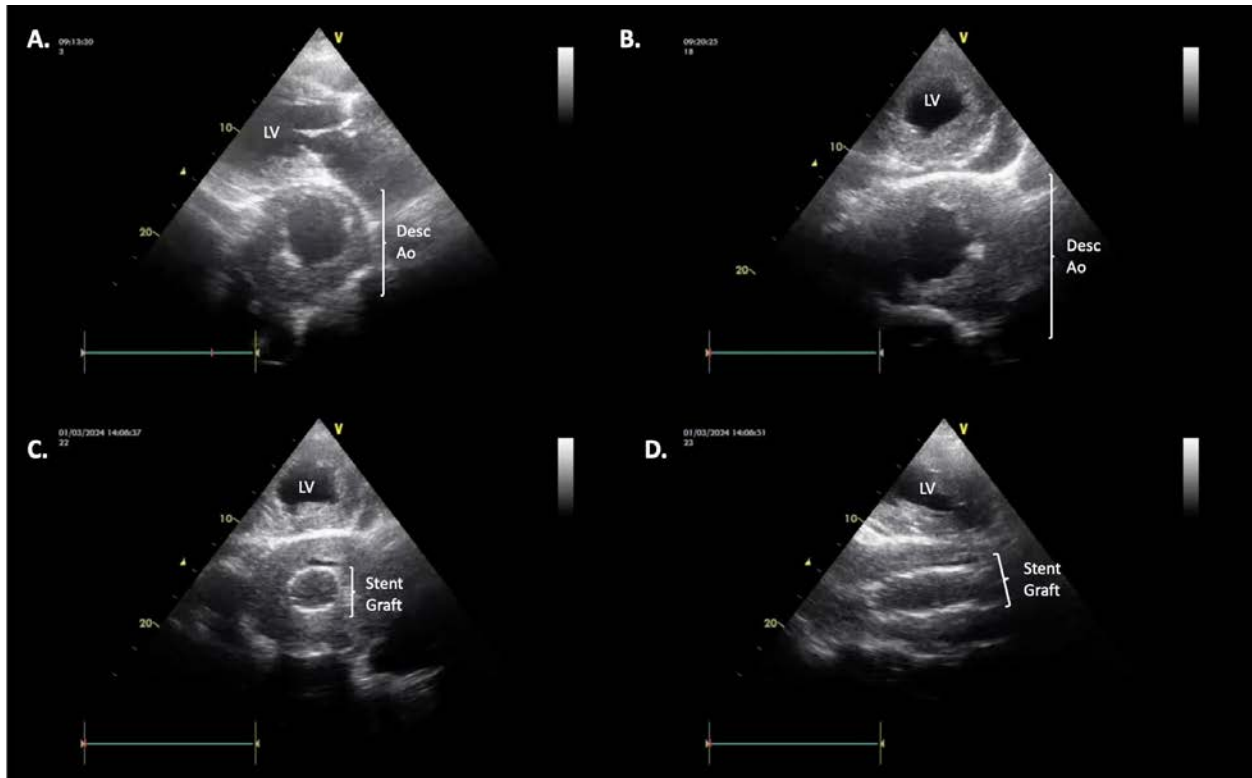
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**Figure 1.** Echocardiography. Parasternal long (A) and short (B) axis view — prior to surgery. Short axis view — after surgery (C). Modified 2 chamber view — after surgery (D)  
Abbreviations: Desc Ao, descending aorta; LV, left ventricle