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IMAGING VIGNETTE

CLINICAL VIGNETTE

# A Mobile Thrombus Adhering to an Intra-Annular Self-Expanding Transcatheter Aortic Valve

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## ABSTRACT

An 81-year-old woman who had undergone transcatheter aortic valve implantation 3 months earlier underwent routine follow-up transthoracic echocardiography, which revealed a mobile thrombus adhering to the bioprosthetic valve. This thrombus differed in morphology from transcatheter aortic valve implantation valve thrombi commonly seen in daily practice. (J Am Coll Cardiol Case Rep 2024;29:102168) © 2024 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/).

An 81-year-old woman with pyoderma gangrenosum and suspected aortitis who was receiving steroid treatment and who had a history of pulmonary embolism during anticoagulant therapy developed very severe aortic stenosis. The suspected aortitis was considered stable because her C-reactive protein level remained within the reference range. Three months earlier, she had undergone transcatheter aortic valve replacement (TAVR) and received a 29-mm Navitor bioprosthetic valve (Abbott Vascular). Transthoracic echocardiography (TTE) performed 3 days and 1 month after the procedure showed no problems with the bioprosthetic valve. At 3-month follow-up, the patient was asymptomatic, but TTE revealed an abnormal structure adhering to the bioprosthetic valve on the left ventricular outflow tract (LVOT) side (**Figure 1A**, Video 1). Because the thrombus occurred in a patient with fragile skin who was receiving a direct oral anticoagulant agent, infectious endocarditis was considered in the differential diagnosis. A detailed evaluation of the abnormal structure and a search for embolism were also necessary. Electrocardiogram-synchronized contrast-enhanced computed tomography (CT) revealed an abnormal structure adhering to the stent part of the bioprosthetic valve on the LVOT/left coronary cusp side. There was no thickening or decreased leaflet mobility (**Figures 1B and 1C**). There was no contrast defect in the thoracoabdominal organs suggestive of thromboembolism. Given that no bacteria were detected in the 3 sets of blood cultures, infectious endocarditis was unlikely, and the abnormal structure was considered to be a thrombus. The patient was started on unfractionated heparin and warfarin. Heparin administration was adjusted to achieve an activated partial thromboplastin time of 50 to 70 seconds, and warfarin administration was adjusted to achieve a prothrombin time/international normalized ratio of 2 to 3. No antibiotics were administered. After treatment was started treatment, the thrombus slowly shrank to approximately 6 × 2 mm on the 21st day. One month later, TTE showed no thrombus (**Figure 1D**, Video 2), but contrast-enhanced CT showed a residual thrombus (**Figures 1E and 1F**). Overall, the thrombus was considered to be improving. Two months after discharge, however, the patient

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**ABBREVIATIONS AND ACRONYMS**

**CT** = computed tomography

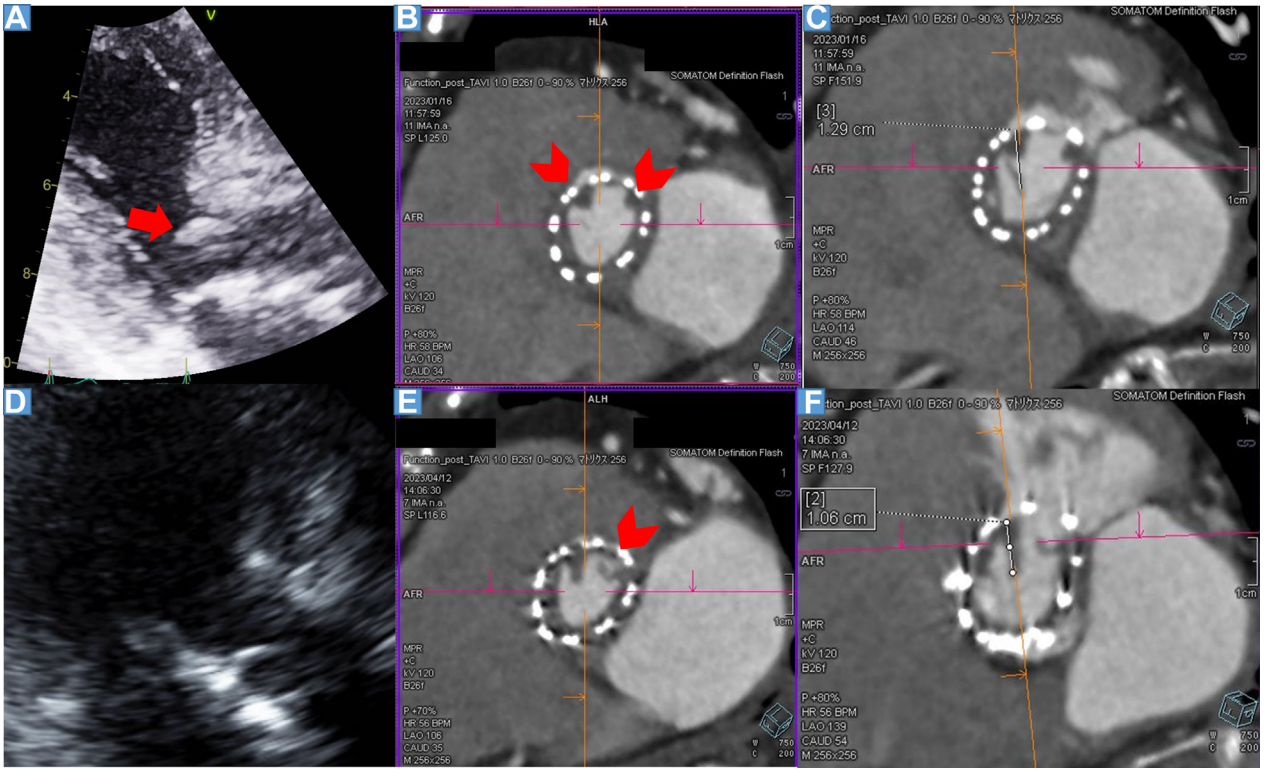
**LVOT** = left ventricular outflow tract

**TAVR** = transcatheter aortic valve replacement

**TTE** = transthoracic echocardiography

presented with dysarthria and received a diagnosis of cerebral infarction. In an earlier study, a previous generation of intra-annular self-expanding valve was found to be particularly prone to thrombus formation.[1] However, the morphology of the thrombus in this case was different from the morphology of TAVR valve thrombi commonly seen in daily practice.[2] In this case, chronic inflammation may have contributed to thrombus formation.[3]

**FIGURE 1 Transthoracic Echocardiography and Electrocardiogram-Synchronized Contrast-Enhanced Computed Tomography Images**




(A) Transthoracic echocardiography image shows an abnormal 13 × 7 mm mobile structure (arrow). (B) Computed tomography image reconstructed in a cross-sectional view intersecting the prosthetic valve shows a thrombus adhering to the stent part of the bioprosthetic valve. The thrombus is particularly developed in the commissural area (arrowheads). (C) Computed tomography image reconstructed along the axis where the thrombus appeared longest shows a thrombus approximately 13 mm in length. (D) Transthoracic echocardiography image 1 month after discharge shows no apparent thrombus. (E) Computed tomography image reconstructed in a cross-sectional view intersecting the prosthetic valve. The thrombus in the commissural area of the left coronary cusp and the right coronary cusp shows no significant changes, whereas the thrombus in the commissural area of the left coronary cusp and the noncoronary cusp has shrunk (arrowhead). (F) Computed tomography image reconstructed along the axis where the thrombus appeared longest shows a thrombus of approximately 10 mm in length, indicating improvement. BPM = beats/min; CAUD = caudal; HR = heart rate; LAO = left anterior oblique; M = matrix; MPR = multi-planar reconstruction; P = phase; TAVI = transcatheter aortic valve implantation.

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**KEY WORDS** aortic stenosis, thrombus, transcatheter aortic valve implantation

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