



POLISH HEART JOURNAL

Kardiologia Polska

The Official Peer-reviewed Journal
of the Polish Cardiac Society
since 1957

Online first

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ISSN 0022-9032

e-ISSN 1897-4279

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Article type: Clinical vignette

Received: October 10, 2024

Accepted: November 27, 2024

Early publication date: December 6, 2024

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Right atrial mass successfully managed with the FlowTriever® System: First Polish experience

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Right heart masses (RHMs) pose a significant risk for complications due to their potential for distal embolization [1]. While most RHMs are thrombotic, neoplastic or infectious origins must also be considered. Currently, there are no established guidelines for RHM management,

leaving clinicians with limited treatment options [2]. Anticoagulation alone often fails, and systemic thrombolysis is reserved for hemodynamically unstable patients with concomitant pulmonary embolism. Surgical removal, though the standard, carries substantial risks. In this context, percutaneous transcatheter techniques have emerged as minimally invasive alternatives. The FlowTrieve® System, a large-bore aspiration device, offers advantages over other percutaneous systems. It eliminates the need for an extracorporeal circuit and incorporates the FlowSaver® technology, which filters and reinfuses aspirated blood.

We report the case of a 41-year-old female admitted due to a right atrial (RA) mass. She had a history of a breast carcinoma treated with surgery and chemotherapy administered via a central venous port, which was removed one month prior. The port was considered a likely source of RA mass formation. The patient was hemodynamically stable on admission, without clinical signs of pulmonary embolism or deep vein thrombosis. Transthoracic echocardiography identified a hyperechogenic mass attached to the RA free wall (Figure 1A). Magnetic resonance imaging confirmed a spherical mass measuring 16 × 14 × 10 mm, located 14 mm from the inferior vena cava — RA junction with imaging characteristics suggestive with thrombus rather than a neoplastic lesion (Figure 1B). However, as no mass resolution was achieved during 2 weeks of full-dose enoxaparin anticoagulation (Figure 1C) together with the history of malignancy in the patient raising concerns about the true nature of the lesion, the Pulmonary Embolism Response Team (PERT) composed of an interventional cardiologist, cardiac surgeon, and transesophageal echocardiographer recommended RHM's removal. Given the high surgical risk due to the prior chest irradiation, percutaneous approach was endorsed. Using the right femoral vein access, obtained under ultrasound guidance, and the Intri24 intravascular sheath, the FlowTrieve® system consisting of the Trieve24 and the Trieve20Curve catheters was deployed *via* “mother-and-child” technique (Figure 1D–E). The catheters were advanced under fluoroscopic and transesophageal echocardiographic guidance to the RA and directed towards the mass. As the structure adhered widely to the RA wall, precise catheter alignment was required, and several attempts to aspirate the mass using the FlowTrieve® large bore syringe were needed before its successful evacuation (Figure 1F; Supplementary material, *Videos S1* and *S2*). No procedural or post-procedural complications occurred. The total blood loss was limited to less than 100 ml. Vascular access site closure was achieved using a Z-suture and manual compression. The patient was mobilized on the first post-procedural day and discharged on the second. Histopathological examination confirmed the thrombotic nature of the retrieved material (Figure 1G). Patient remains stable with no recurrence of RHM.

In this case, the FlowTrieve® System provided a safe and effective minimally invasive alternative to surgical embolectomy for the removal of a RA mass. This approach significantly reduced hospitalization time and minimized blood loss, underscoring its potential role in the management of RHMs.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/polish_heart_journal.

Article information

Acknowledgments: The authors would like to acknowledge the contribution of Doctor Lucyna Rudnicka-Sosin from the St. John Paul II Hospital in Krakow in histopathological characterization of the structure *ex vivo*.

Conflict of interest: None declared.

Funding: None.

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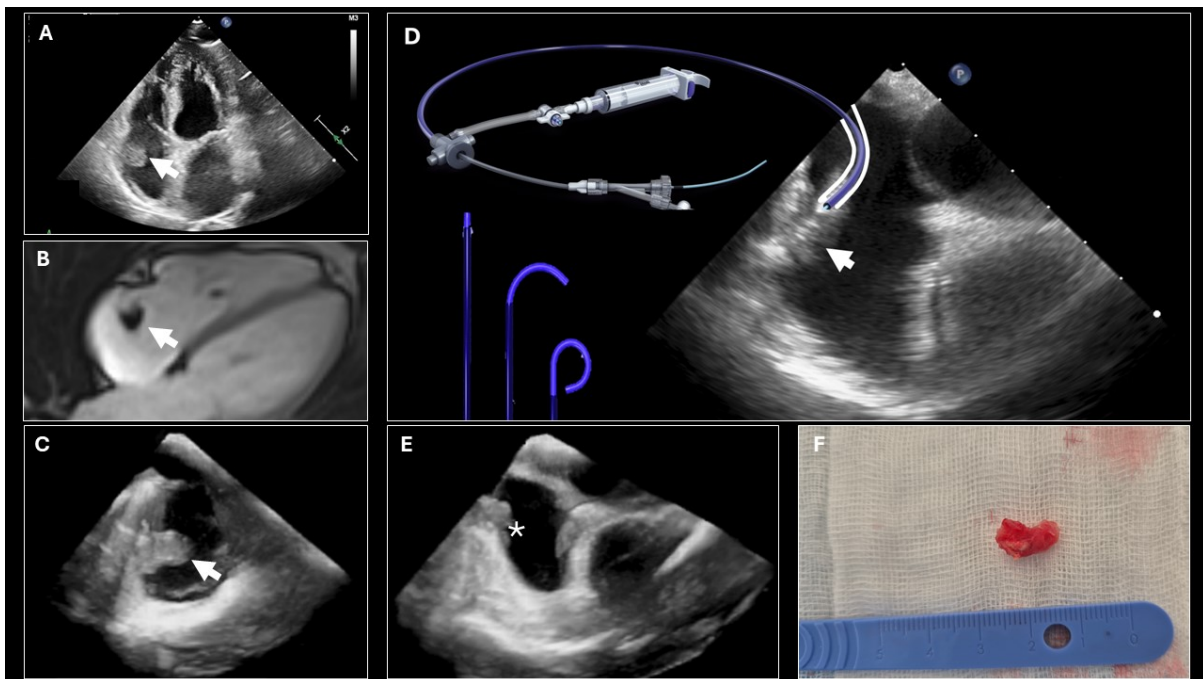


Figure 1. **A.** Transthoracic echocardiography showing hyperechogenic structure (arrow) of $16 \times 13 \times 9$ mm in size attached to the free wall of the right atrium (RA). **B.** Magnetic resonance imaging (MRI) post contrast images revealed well-delineated spherical structure (arrow) linked to the infero-lateral RA wall with MRI characteristics consistent with thrombus rather than a neoplastic mass. **C.** Transesophageal echocardiography (TEE) showing persistent hyperechogenic structure (arrow) in the RA despite 2 weeks of anticoagulation. **D.** TEE showing the FlowTrieversystem introduced to RA and positioned towards the hyperechogenic structure (arrow) during thrombus aspiration. The FlowTrieversystem consists of Trierer20Curve catheter inside Trierer24 catheter modifiable reach. **E.** TEE showing RA free from the hyperechogenic structure. **F.** The evacuated thrombus of 13 mm in size before histopathological examination, which confirmed thrombotic nature of the retrieved material