

IMAGES IN INTERVENTION

Thrombus in the Aorta

Late Complication After Percutaneous Closure of Ruptured Sinus of Valsalva Aneurysm



Robert Sabiniewicz, MD, PhD,* Jarosław Meyer-Szary, MD,* Piotr Siondalski, MD, PhD,†
Magdalena Kołaczowska, MD, PhD,† Rafał Gałąska, MD, PhD‡

A 35-year-old woman with no past medical history presented after experiencing 6 months of progressive fatigue (New York Heart Association functional class II). Diagnostic 2-dimensional echocardiography (2DE) revealed a 7-mm hemodynamically significant noncoronary ruptured sinus of Valsalva aneurysm into the right atrium. Work-up revealed a normal coagulation profile and no comorbidities. Percutaneous closure of the aneurysm was performed uneventfully via femoral access using the self-expandable ADO 9-PDA-004 (AGA Medical Corporation, Golden Valley, Minnesota) (4/6/10 mm). The aortic retention disc was deployed with full contact with minimal residual shunt post-procedure (**Figures 1A and 1B, Online Video 1**). The patient took aspirin for 6 months. Follow-up 2DE at 0, 1, 3, 6, and 12 months documented proper implant placement without residual shunt or thrombosis.

Nearly 2 years later, the patient underwent popliteal endarterectomy for acute thromboembolism. Evaluation with 2DE revealed a massive (13 × 16 × 37 mm) thrombus originating at the noncoronary sinus of Valsalva (**Figures 2A to 2D, Online Video 2**). No aortic regurgitation, aortic stenosis, or residual

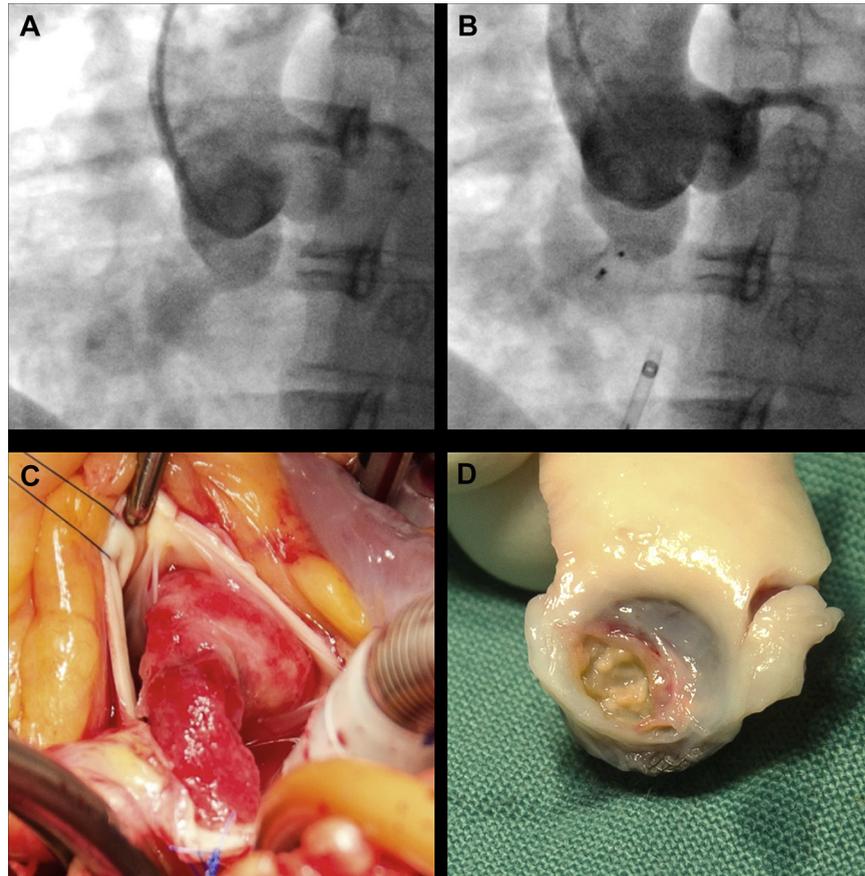
shunt at the site of the device was detected. The thrombus and the device were surgically extracted, and the noncoronary sinus of Valsalva was reconstructed uneventfully, with no shunt or aortic valve dysfunction on follow-up 2DE. Pathological evaluation of the extracted specimen (**Figures 1C to 1D, Figures 2D to 2H**) revealed proper endothelialization of the device on the right-atrial side and a thrombus with a well-organized fibrous nucleus originating at the aortic disc of the implant, consistent with a chronic process lasting approximately 3 to 6 months. A hypercoagulable state is suspected.

REPRINT REQUESTS AND CORRESPONDENCE: Dr. Jarosław Meyer-Szary, Department of Pediatric Cardiology and Congenital Heart Diseases, Medical University of Gdansk, M. Skłodowskiej-Curie 3a, 80-210 Gdansk, Poland. E-mail: jmeyerszary@gumed.edu.pl.

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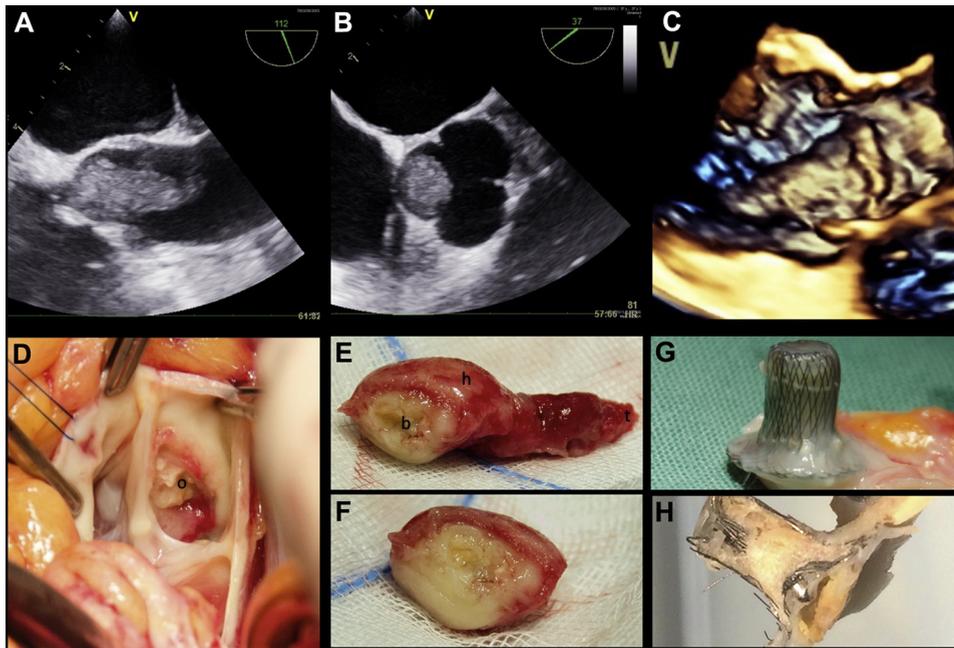
APPENDIX For supplemental videos and their legends, please see the online version of this article.

From the *Department of Pediatric Cardiology and Congenital Heart Defects, Medical University of Gdansk, Gdańsk, Poland; †Department of Cardiac & Vascular Surgery, Medical University of Gdansk, Gdańsk, Poland; and the ‡Department of Cardiology, Medical University of Gdansk, Gdańsk, Poland. All authors have reported that they have no relationships relevant to the contents of this paper to disclose.

FIGURE 1 Fluoroscopic and Surgical Findings

Fluoroscopy of the shunt through ruptured sinus of Valsalva aneurysm (A) and the effect of device implantation (B). Thrombus in situ (C). Aortic side of the sinus with the site of origin of the thrombus (D). See [Online Video 1](#).

FIGURE 2 Echocardiographic and Surgical Findings



Transthoracic echocardiography revealed a massive thrombus at the noncoronary sinus of the Valsalva at the short (A) and longitudinal (B) axis and 3-dimensional (C) ([Online Video 2](#)). (D) The origin (o) of the thrombus in the noncoronary sinus at the time of surgery. (E) The base (b), head (h), and a tail (t) of the thrombus. (F) Cross section at the head level revealing a fibrous nucleus. (G) Properly endothelialized device from the right-atrial side. (H) Cross section of the device.