AUCTORES
Globalize your Research

Journal of Thoracic Disease and Cardiothoracic Surgery
Adam Arendarczyk *

Open Access

Case Report

Patch Repair of a Ruptured sinus of Valvsalva Aneurysm into the right Atrium in an Unusual Patient: a Simple solution to an Urgent Problem

Adam Arendarczyk [1]*, Krzysztof Wróbel [1], Paweł Czub [1], Wojciech Król [2], Edyta Kostarska-Srokosz [2], Włodzimierz Gierlak [2], Wojciech Braksator [2], Marek Kuch [2]

[1]Department of Cardiac Surgery, Medi cover Hospital, Warsaw, Poland.

[2]Department of Cardiology, Hypertension and Internal Medicine, Medical University of Warsaw; Mazovian Bródno Hospital, Warsaw, Poland.

***Corresponding Author:** Adam Arendarczyk, Department of Cardiac Surgery, Medicover Hospital, Warsaw, Poland.

Received date: July 01, 2025; **Accepted date:** August 06, 2025; **Published date:** September 11, 2025

Citation: Adam Arendarczyk, Krzysztof Wróbel, Paweł Czub, Wojciech Król, Edyta Kostarska-Srokosz, et al, (2025), Patch Repair of a Ruptured sinus of Valvsalva Aneurysm into the right Atrium in an Unusual Patient: a Simple solution to an Urgent Problem, *J Thoracic Disease and Cardiothoracic Surgery*, 6(5); **DOI:10.31579/2693-2156/145**

Abstract

A sinus of Valsalva aneurysm is a rare form of aortic dilatation, statistically more common in the young population. Rupture of a sinus of Valsalva aneurysm into the right heart chambers causes volume overload and a spectrum of clinical symptoms. This condition requires urgent surgical treatment. We present the case of an elderly patient with a rupture of noncoronary sinus of Valsalva aneurysm into the right atrium. Due to the poor quality of the aortic tissue, we opted for sinusoplasty instead of a Bentall de Bono or David procedure. Two bovine patches were implanted and reinforced with a TachoSil® hemostatic patch. This approach led to a shorter operative time and a favorable postoperative outcome.

Keywords: sinus of valsalva aneurysm; aorto-right atrial fistula; sinusoplasty

Introduction

The incidence of sinus of Valsalva aneurysms in the general population is estimated at 0.09%. Approximately 70% of all sinus of Valsalva aneurysms occur in the right coronary sinus, while around 25% arise from the noncoronary sinus [1]. Due to their often asymptomatic nature, these aneurysms are frequently diagnosed only after rupture into a cardiac chamber [2]. Statistically, the most common site of rupture is the right ventricle, followed by the right atrium [3]. Ruptures are most frequently observed in patients between 20 and 40 years of age, with rare occurrences in the elderly population [4].

Case description

We present a case of a 77-year-old patient with a history of partial left nephrectomy due to renal cancer, currently undergoing immunotherapy, and long-term follow-up for aortic root dilatation. The patient was admitted to the hospital with worsening symptoms of heart failure over the preceding month, including dyspnea, peripheral edema, and significant weight gain. On admission, the patient reported dyspnea with minimal exertion. Physical examination revealed marked lower limb edema, ascites, and auscultatory crackles over both lung fields.

Echocardiography revealed a dilated aortic root (50 mm), preserved myocardial contractility, and an ejection fraction of 55%. A significant leak from the aorta into the right atrium was identified (Figure. 1). Computed tomography confirmed contrast leakage from the noncoronary sinus into the right atrium (Figure. 2). An anatomical anomaly was also observed, with the right coronary artery originating just above the ostium of the left coronary artery. Coronary angiography showed no significant stenoses.

Due to the patient's deteriorating condition, urgent surgical intervention was performed. A noncoronary sinusoplasty using a bovine pericardial patch was carried out, and the aortic fistula was closed from the right atrial side (Figure. 3). To prevent hematoma formation between the two layers, a TachoSil® hemostatic patch was placed between the native aortic wall and the patch, achieving a satisfactory result.

The patient was extubated on the first postoperative day. Gradual resolution of peripheral edema and dyspnea was observed, with a weight loss of 10 kg during hospitalization. Postoperative echocardiography and CT angiography confirmed a successful repair (Figure. 4 and 5). The

patient was discharged from the Cardiac Surgery Department on postoperative day 14.

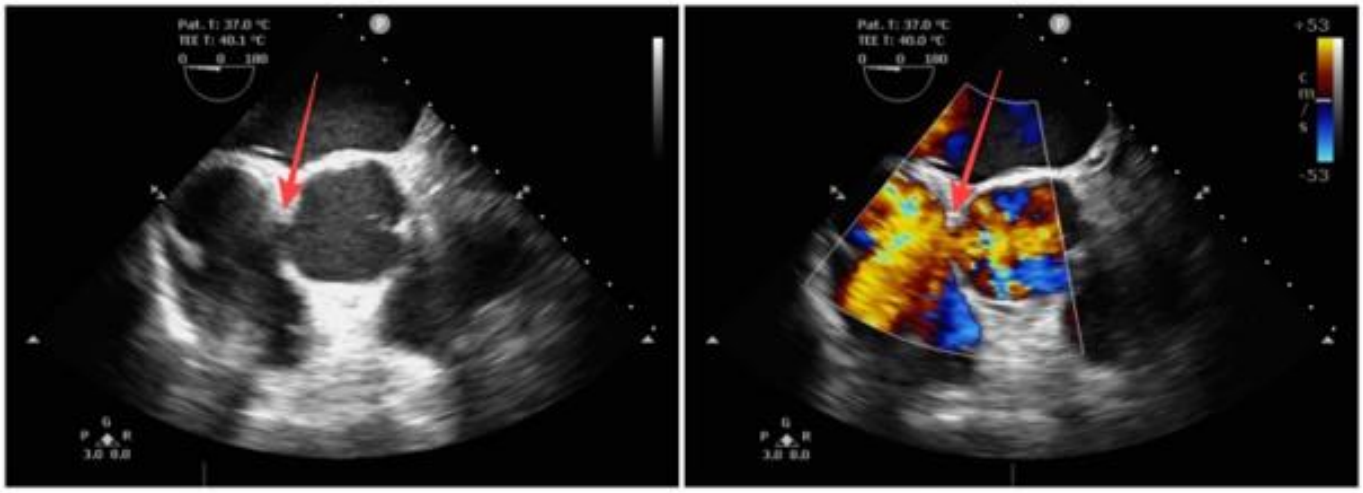

Figure 1: Echocardiographic image before surgery. The arrow indicates the site of the aneurysm rupture into the right atrium.

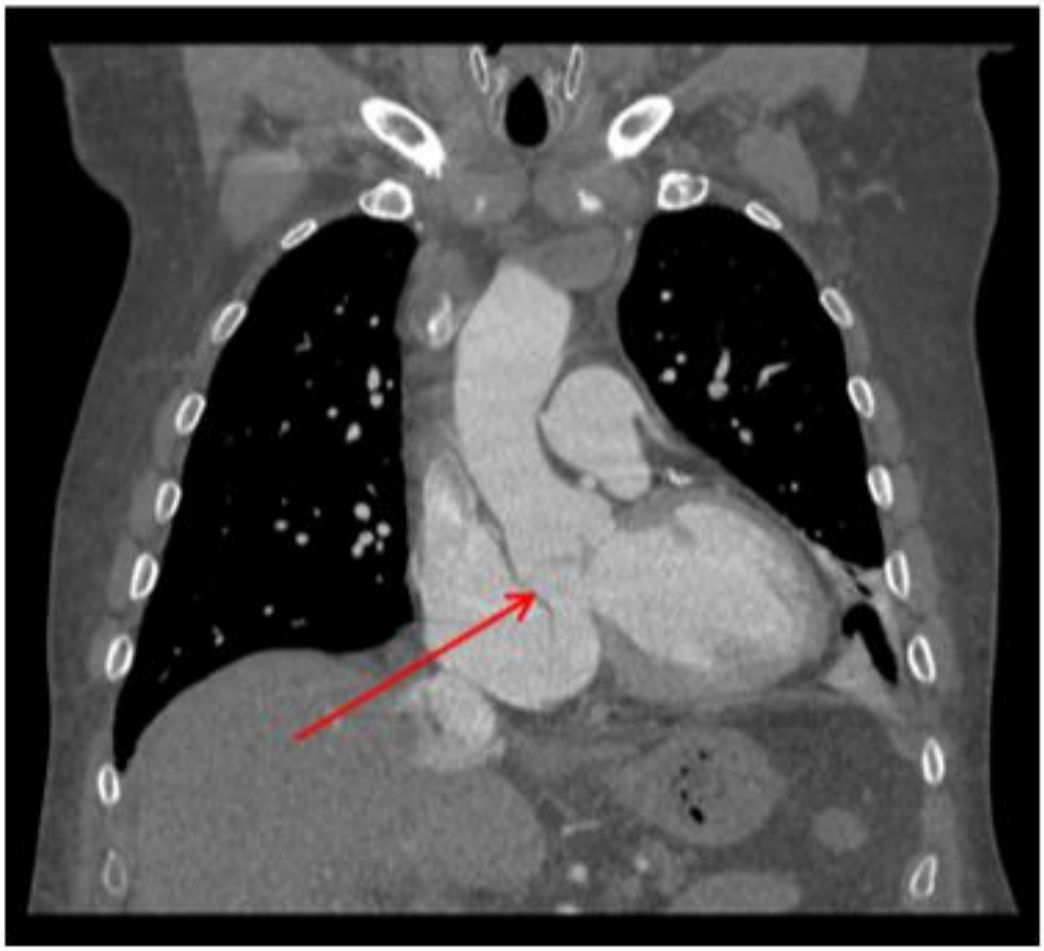

Figure 2: Contrast-enhanced computed tomography scan performed before surgery. The arrow indicates the site of the aneurysm rupture into the right atrium.

Figure 3: Intraoperative image. The arrow points to the biological patch sewn into the anterior sinus of Valsalva. The hemostatic patch was implanted to connect the two layers.

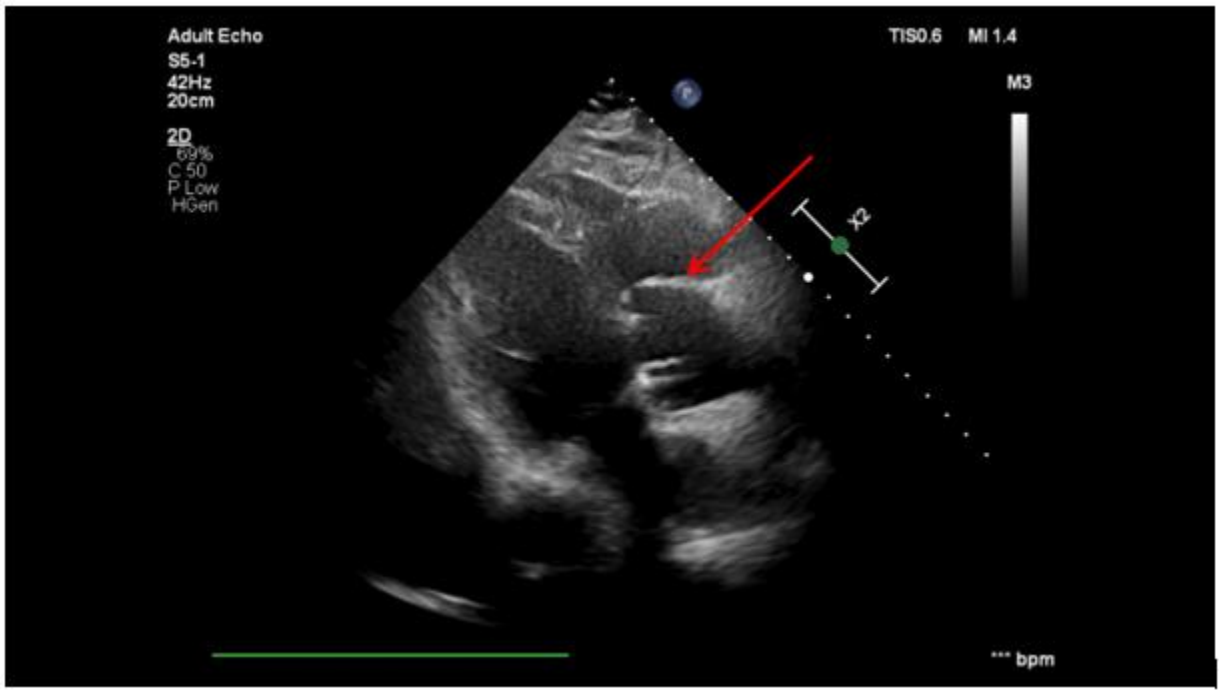

Figure 4: Postoperative echocardiographic image. The arrow points to the site of patch insertion into the sinus of Valsalva.

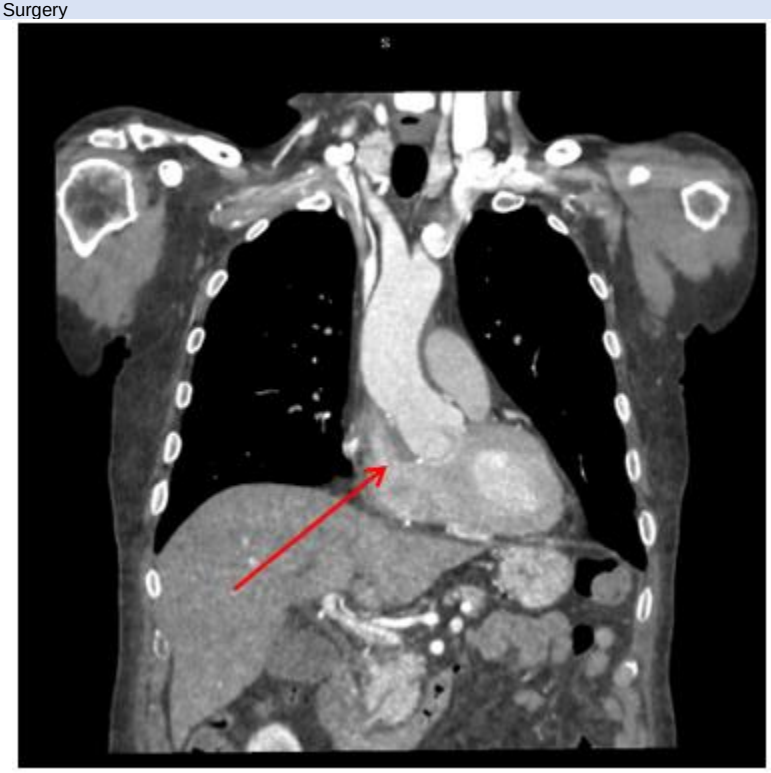

Figure 5: Contrast-enhanced computed tomography scan performed after surgery. The arrow points to the site where the patch was sewn into the sinus of Valsalva.

Discussion

Aneurysms of the sinus of Valsalva may be caused by both congenital abnormalities of the aortic wall structure and acquired factors such as infective endocarditis, atherosclerosis and syphilis [5]. They are frequently associated with other anomalies, most commonly ventricular septal defects and aortic valve insufficiency [6]. The severity of clinical symptoms correlates with the size of the shunt, although asymptomatic cases have also been reported [7]. Surgical repair of a ruptured sinus of Valsalva aneurysm results in a 15-year survival rate of approximately 90% [8]. This case represents an exceptional example of a rapidly developing left-to-right shunt leading to acute heart failure in an elderly patient undergoing cancer immunotherapy. Standard aortic root replacement techniques, such as the Bentall de Bono or David procedure, posed a prohibitively high surgical risk. Therefore, sinusoplasty was chosen as a less invasive yet effective alternative. This case underscores the importance of timely collaboration between cardiologists and cardiac surgeons to ensure rapid diagnosis and surgical management before the onset of multi-organ failure in patients who may initially appear clinically stable.

References:

1. Breatnach CR, Walsh KP. (2018). Ruptured Sinus of Valsalva Aneurysm and Gerbode Defects: Patient and Procedural Selection: The Key to Optimising Outcomes. Curr Cardiol Rep. 20(10):90.
2. Feldman DN, Gade CL, Roman MJ. (2005). Ruptured aneurysm of the right sinus of valsalva associated with a ventricular septal defect and an anomalous coronary artery. Tex Heart Inst J. 32(4):555-559.
3. Weinreich M, Yu P-J, Trost B. (2015). Sinus of Valsalva Aneurysms: Review of the Literature and an Update on Management. Clinical Cardiology. 38(3):185-189.
4. Doost A, Craig JA, Soh SY. (2020). Acute rupture of a sinus of Valsalva aneurysm into the right atrium: a case report and a narrative review. BMC Cardiovasc Disord. 20(1):84.
5. Takach TJ, Reul GJ, Duncan JM, et al. (1999). Sinus of Valsalva aneurysm or fistula: management and outcome. Ann Thorac Surg. 68(5):1573-1577.
6. Yan F, Huo Q, Qiao J, Murat V, Ma SF. (2008). Surgery for sinus of valsalva aneurysm: 27-year experience with 100 patients. Asian Cardiovasc Thorac Ann. 16(5):361-365.
7. Ikeda A, Nakajima T, Konishi T, et al. (2016). Infective endocarditis of an aorto-right atrial fistula caused by asymptomatic rupture of a sinus of Valsalva aneurysm: a case report. Surg Case Rep. 2(1):43.
8. Sarıkaya S, Adademir T, Elibol A, Büyükbayrak F, Onk A, Kırali K. (2012). Surgery for ruptured sinus of Valsalva aneurysm: 25-year experience with 55 patients. European Journal of Cardio-Thoracic Surgery. 43(3):591-596.

DOI:10.31579/2693-2156/145