

## Clinical Image

# Ruptured Noncoronary Sinus of Valsalva Aneurysm Presenting As Sudden Onset Heart Failure

Amit Rout, MD\*; Vivek Lohana; Muhammad Omer Zaman, MD

Division of Cardiology, University of Louisville, Louisville, Kentucky, USA

\*Corresponding author: Amit Rout, MD

University of Louisville, Rudd Heart and Lung Center, Suite 600, Louisville, Kentucky, 40202, USA.

Email: amit.rout@louisville.edu

Received: September 20, 2023

Accepted: October 18, 2023

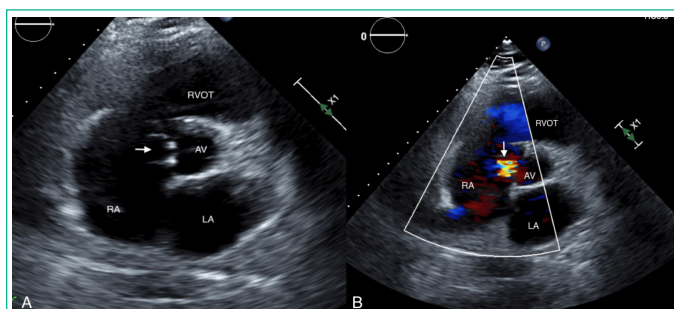
Published: October 25, 2023

**Keywords:** Sinus of Valsalva Aneurysm; Congenital Heart Disease; Acute Heart Failure Exacerbation

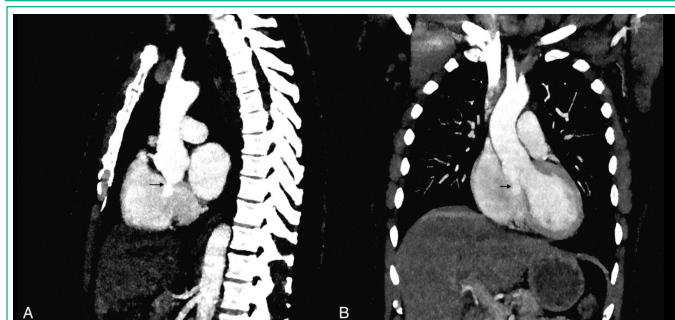
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Sinus of Valsalva Aneurysm (SOVA) is a rare congenital or acquired cardiac anomaly. SOVA can remain undiagnosed till it ruptures and can present as acute heart failure, acute coronary syndrome or cardiac tamponade [1]. The aneurysm usually involves the right coronary sinus and ruptures into the Right Atrium (RA) or Right Ventricle (RV) leading to significant left to right shunting and can subsequently cause acute heart failure. Management involves multimodality imaging to verify anatomy followed by surgical resection and repair [2].

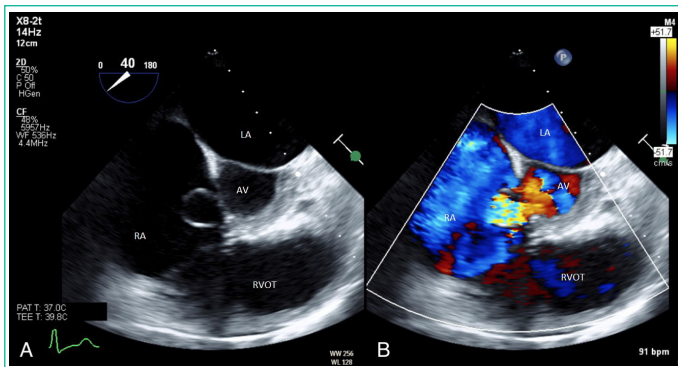
A 60-year-old man with history of hypertension presented with two days of dyspnea. His physical examination revealed continuous murmur, jugular venous distension, and lower extremity edema. Transthoracic echocardiogram revealed preserved left ventricle ejection fraction and a possible SOVA rupture with dilated right atrium and ventricle (Figure 1). A computed tomography aortogram showed SOVA with noncoronary cusp dehiscence into the right side of the heart (Figure 2). A transesophageal echocardiogram showed left-to-right shunt (pulmonary to systemic flow ( $Q_p:Q_s$ ): 2:1) from non-coronary sinus towards the RA. The size of the SOVA was, 0.99 cm at the neck, with length of 1.18 cm and 0.66 cm at the opening into the RA (Figure 3). Cardiac catheterization with coronary angiography showed no significant coronary artery disease, elevated right sided pressures and a step up in oxygen saturation from superior vena cava (43%) to RA (75%) to RV (84%). He underwent successful excision of SOVA and bovine pericardial patch repair with complete resolution of shunt and symptoms (Video 1 and 2).



**Figure 1:** Transthoracic echocardiography with parasternal short axis aortic valve view demonstrating (white arrow) dehiscence of noncoronary cusp (A) with color doppler showing shunting from aorta to the right atrium. (RA: Right Atrium; LA: Left Atrium; AV: Aortic Valve; RVOT: Right Ventricle Outflow Tract).



**Figure 2:** Computed tomography angiography of the chest in sagittal (A) and coronal plane (B) showing sinus of Valsalva aneurysm rupture with contrast extravasation (black arrow) into the right atrium.



**Figure 3:** Transesophageal echocardiography at mid esophageal aortic valve short axis view showing rupture noncoronary sinus of Valsalva aneurysm (A) and with color doppler showing shunting of blood from aorta towards the right atrium. (RA: Right Atrium; LA: Left Atrium; AV: Aortic Valve; RVOT: Right Ventricle Outflow Tract).

### Author Statements

#### Funding

The authors report that no funding was received for this manuscript.

#### Conflict of Interest

The authors declare that they have no relevant conflict of interests.

### References

1. Feldman DN, Roman MJ. Aneurysms of the sinuses of Valsalva. *Cardiology*. 2006; 106: 73-81.
2. Takach TJ, Reul GJ, Duncan JM, Cooley, Livesay JJ, et al. Sinus of Valsalva aneurysm or fistula: management and outcome. *Ann Thorac Surg*. 1999; 68: 1573-1577.