

IMAGING VIGNETTE

INTERMEDIATE

CLINICAL VIGNETTE

# An Unusual Case of Left Sinus of Valsalva Rupture Into Right Atrium



Zain Ul Abideen Asad, MD,<sup>a</sup> David Huard, MD,<sup>b</sup> Tarun W. Dasari, MD, MPH<sup>a</sup>

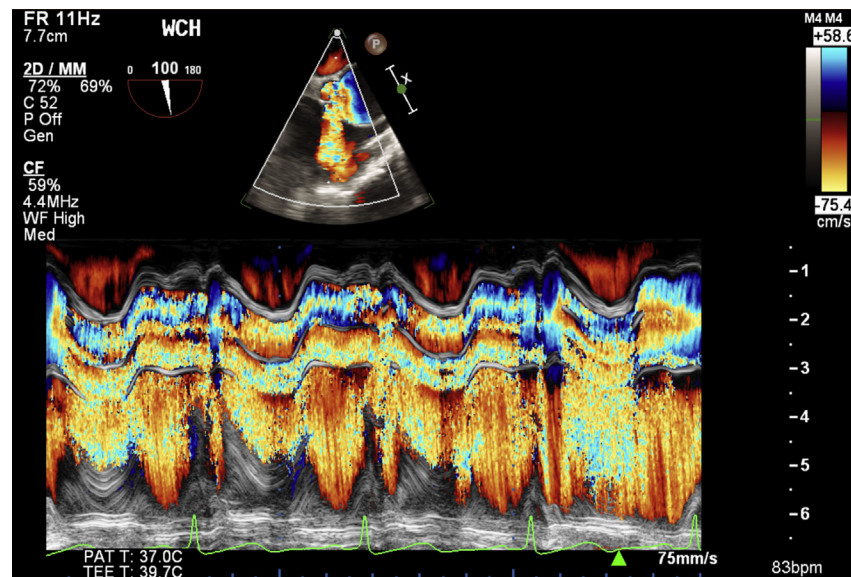
ABSTRACT

A 19-year-old college athlete presented with dyspnea and was found to have left sinus of Valsalva rupture into the right atrium on a transesophageal echocardiogram that was verified on coronary angiogram and computed tomography heart scan. The patient subsequently underwent surgical resection. (**Level of Difficulty: Intermediate.**) (J Am Coll Cardiol Case Rep 2019;1:246-8) © 2019 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/>).

CASE PRESENTATION

A 19-year-old college athlete presented with dyspnea on exertion. She had no previous medical history except childhood asthma. Physical examination was unremarkable along with a normal 12-lead electrocardiogram. An

FIGURE 1 Transesophageal Echocardiogram



Transesophageal echocardiogram color M-mode showing continuous flow through the aneurysm into the right atrial cavity. See Video 1.

From the <sup>a</sup>Cardiovascular Disease Section, University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma; and the <sup>b</sup>Department of Radiology, University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma. The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Manuscript received April 8, 2019; revised manuscript received May 28, 2019, accepted May 29, 2019.

echocardiogram revealed normal biventricular function and valvular anatomy; however, an abnormal diastolic flow was noted along the roof of the atrium. A subsequent transesophageal echocardiogram showed a large aneurysmal sac measuring 30 × 25 mm in the right atrium with a direct communication with the left sinus of Valsalva (Video 1). Color M-mode demonstrated continuous flow through the aneurysm into the right atrial cavity (Figure 1). At this point, we considered a differential diagnosis of acute sinus of Valsalva rupture into the right atrium, chronic fistula between sinus of Valsalva and right atrium, and coronary artery fistula.

**ABBREVIATIONS  
AND ACRONYMS**

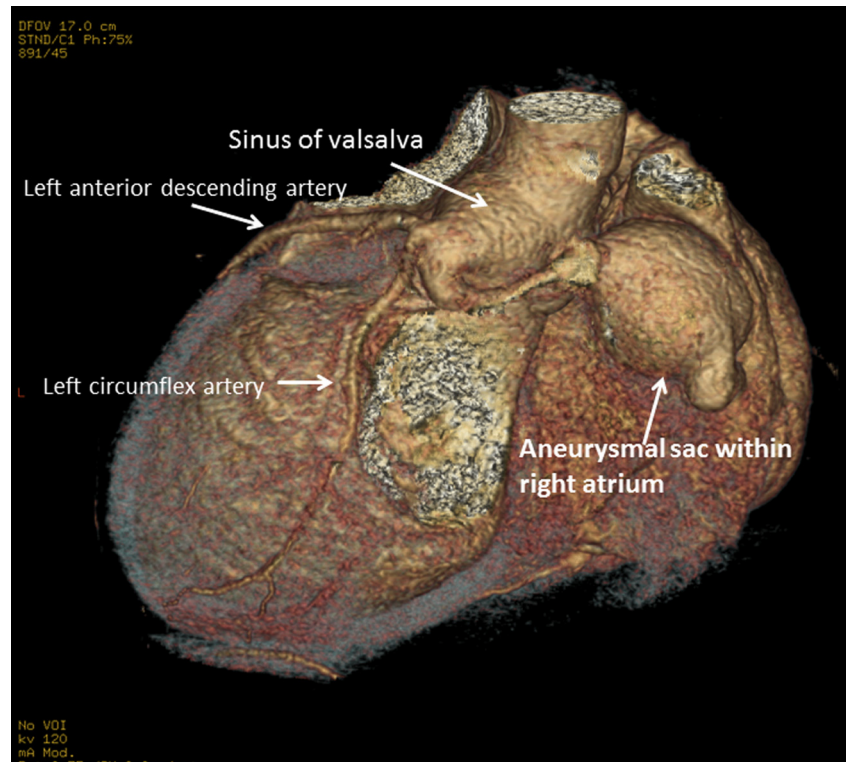
CT = computed tomography

We then referred the patient for coronary angiography that demonstrated a possible fistula between the left sinus of Valsalva/left main coronary artery into the right atrium (Video 2).

Possible surgery was discussed with the patient and a computed tomography (CT) heart scan was obtained pre-operatively. The CT heart scan showed a sinus of Valsalva rupture communicating with the right atrium (Figure 2). Patient subsequently underwent surgical resection. Histopathology of the intra-atrial portion of the aneurysm demonstrated smooth muscle remnants and elastic fragmented tissue leading to a diagnosis of sinus of Valsalva aneurysm rupture.

Left sinus of Valsalva aneurysm rupture into the right atrium is an extremely rare congenital anomaly (1). A multimodality imaging approach is extremely valuable in the management of this condition (2). Treatment for this condition is usually surgical.

**FIGURE 2** CT Heart Reconstruction Image



Computed tomography (CT) heart reconstruction image shows the sinus of Valsalva rupture into an aneurysmal sac in the right atrium. See Video 2.

**ADDRESS FOR CORRESPONDENCE:** Dr. Zain Ul Abideen Asad, Cardiovascular Disease Section, University of Oklahoma Health Sciences Center, Andrews Academic Tower Suite 5400, 800 Stanton L. Young Boulevard, Oklahoma City, Oklahoma 73104. E-mail: [zain-asad@ouhsc.edu](mailto:zain-asad@ouhsc.edu). Twitter: [@ZainAsadEP](https://twitter.com/ZainAsadEP).

---

**REFERENCES**

1. Abdelsalam M, Bachinsky W, Pawluch D, Mumtaz M, Goldman J. Noncoronary sinus of Valsalva aneurysm rupture into right atrium. *Tex Heart Inst J* 2013;40:493-4.
2. Osman F, Qaisar S, Pitt M. Ruptured sinus of Valsalva aneurysm. *Heart* 2005;91:e44.

---

**KEY WORDS** computed tomography, coronary angiography, shortness of breath

---

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