

## Objective

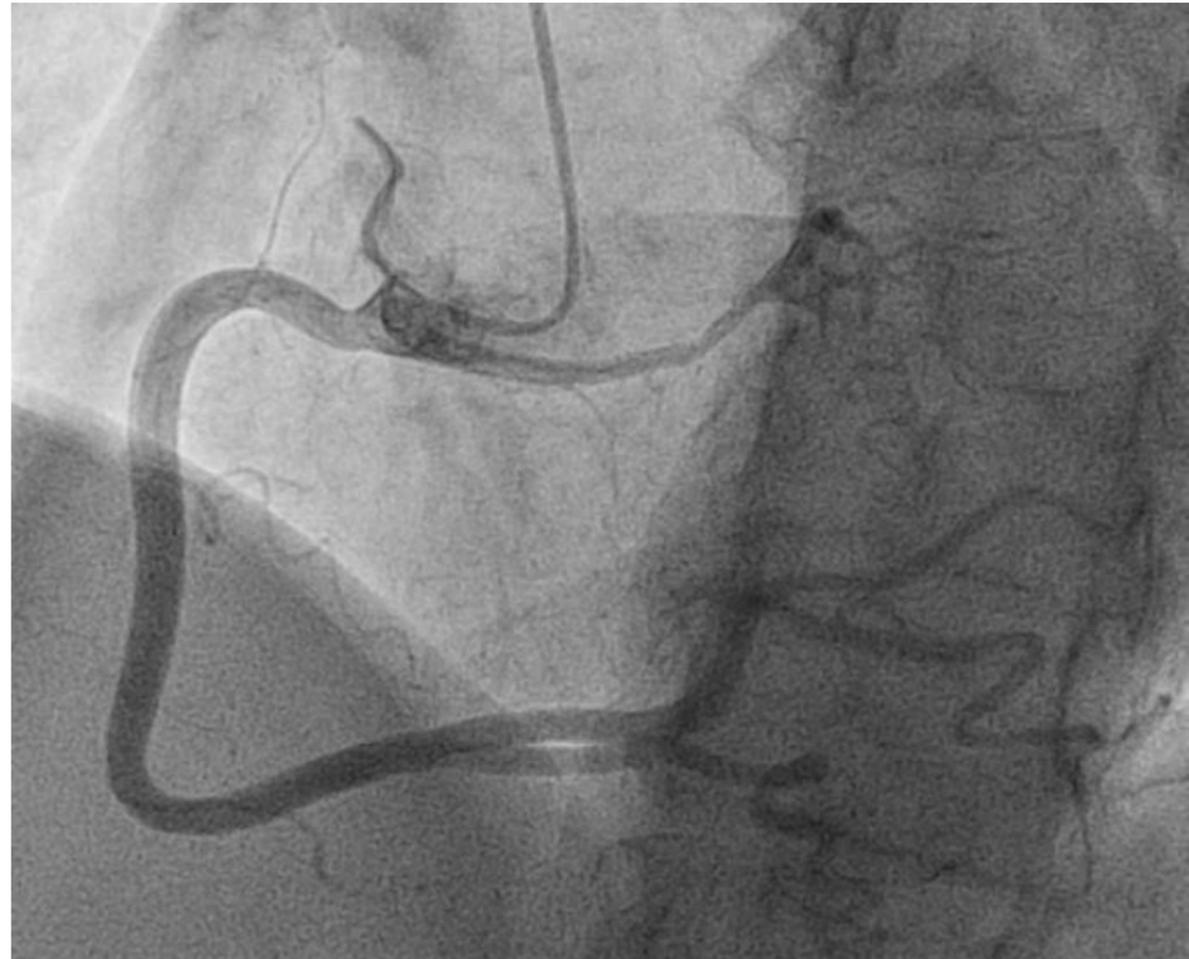
To describe a rare case of an anomalous left coronary artery with inter-arterial course in a previously asymptomatic middle-aged patient.

## Introduction

The incidence of coronary anomalies in young victims of sudden cardiac death is estimated at 4-15% (1). The incidence of coronary anomalies in adults undergoing routine autopsy is about 1% (1). The incidence of the left main coronary artery (LCA) arising from the right coronary cusp of Valsalva has been investigated in multiple studies and has been reported as 0.15% (1), 0.03% (2), 0.017% (3), and even as low as 0.003% (4). After emerging from the right coronary cusp of Valsalva, there are four routes that the LCA may take. The LCA coursing between the aorta and pulmonary artery is classically considered the most dangerous and placing patients at the highest risk of sudden cardiac death (5). To our knowledge, no studies have been published regarding how many patients with this type of coronary anomaly are asymptomatic late into adulthood. Here, we present the case of a 63-year-old female with the LCA arising from the right coronary cusp of Valsalva and taking a malignant course between the aorta and pulmonary trunk. This patient remained asymptomatic throughout her life up until one week prior to presenting in the clinic.

## Case Presentation

We present a case of a 63-year-old female with a history of hypertension and a single episode of atrial fibrillation who presents after an episode of left parasternal chest pressure/tightness that radiated to her back, neck, and left arm. This episode occurred while she was working in her yard. The patient had recurrent chest pain associated with shortness of breath that relieved with rest for approximately one week prior to her office visit. The patient had a normal EKG. The patient underwent left heart catheterization given new, abrupt onset typical angina symptoms that revealed an anomalous left main coronary artery arising from the right cusp. The catheterization revealed a super dominant right coronary artery supplying the inferior as well as the lateral wall. There was no evidence of atherosclerotic CAD. The patient had a follow up CTA of coronary arteries with two weeks later. That confirmed an anomalous left anterior descending artery with intra-arterial course. The patient is currently awaiting a CT surgery evaluation.



## Discussion

Coronary anomalies are a rare phenomenon with a high incidence of sudden cardiac death in younger age populations. It is even rarer to find a case of the LCA arising from the right coronary cusp, taking malignant course between the aorta and pulmonary trunk. In such instances, sudden cardiac death at a young age is common. Our patient remained asymptomatic until presenting with chest pressure/tightness and associated shortness of breath at the age of 63. Her coronary artery anomaly was identified on coronary angiography and confirmed with CTA. Guidelines recommend intervention in cases of anomalous LCA with interarterial course irrespective of symptoms because of increased risk of sudden death in these individuals. These cases most often require CT surgery for correction.

## Conclusions

Although rare, asymptomatic middle-aged patients may present with anatomic anomalies of the coronary arteries.

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## References

- Angelini P, Villason S, Chan AV, Diez JG. (1999) Normal and anomalous coronary arteries in humans. In: Angelini P, ed. *Coronary Artery Anomalies: A Comprehensive Approach*. Philadelphia: Lippincott Williams & Wilkins; 27-150.
- Yuksel, S., Meric, M., Soyulu, K., Gulel, O., Zengin, H., Demircan, S., Yilmaz, O., & Sahin, M. (2013). The primary anomalies of coronary artery origin and course: A coronary angiographic analysis of 16,573 patients. *Experimental and clinical cardiology*, 18(2), 121-123.
- Yamanaka O, Hobbs RE. (1990) Coronary artery anomalies in 126,595 patients undergoing coronary arteriography. *Cathet Cardiovasc Diagn*. Sep;21(1):28-40. doi: 10.1002/ccd.1810210110. PMID: 2208265.
- Tuncer C, Batyraliev T, Yilmaz R, Gokce M, Eryonucu B, Koroglu S. (2006) Origin and distribution anomalies of the left anterior descending artery in 70,850 adult patients: multicenter data collection. *Catheter Cardiovasc Interv*. Oct;68(4):574-85. doi: 10.1002/ccd.20858. PMID: 16969852.
- Angelini P. (2009). Anomalous origin of the left coronary artery from the opposite sinus of valsalva: typical and atypical features. *Texas Heart Institute journal*, 36(4), 313-315.
- Chapman AR, Hogg D, Miller J, Padfield GJ. (2013) Three coronary arteries arising from the right coronary cusp with a malignant sub-pulmonary course of the left anterior descending artery. *J Cardiol Cases*. 2013 Dec 28;9(3):106-108. doi: 10.1016/j.jccase.2013.11.004. PMID: 30534310; PMCID: PMC6277909.
- Khan M S, Idris O, Shah J, et al. (2020) Anomalous Origin of Left Main Coronary Artery from the Right Sinus of Valsalva: A Case Series-based Review. *Cureus* 12(4): e7777. DOI 10.7759/cureus.7777
- Hirachan A, Maskey A, Prasad Hirachan G, Roka M. (2017) Anomalous origin of left main coronary artery from the right sinus of Valsalva presenting as non ST elevation acute coronary syndrome: A case report. *Egypt Heart J*. Sep;69(3):215-218. doi: 10.1016/j.ehj.2017.02.002. Epub 2017 Mar 9. PMID: 29622979; PMCID: PMC5883490.