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Abstract	<p>Congenital coronary anomalies have been extensively studied due to risk of causing physiologic cardiac ischemia. While a majority of individuals exhibit conventional coronary anatomy of the Left Main Coronary (LMCA), Right Coronary Artery (RCA), and sinuses of the valsalvas (RSV), some may exhibit variations in their coronary pathways. These variations can make it difficult to predict when symptomatic complications occur.</p> <p>An 82-year-old male was admitted for acute dyspnea and lower extremity edema following a shoulder replacement procedure. He had a history of Type-2 diabetes, former smoking and hypertension, but had no history of coronary artery disease. An MPS showed decreased perfusion of the inferior wall with an ejection fraction of 74%. Combined left and right heart catheterization revealed anomalous anatomy such that his coronary system was derived from the RCA that originated from the RSV. The RCA appeared ectatic and branched into a disease-free posterolateral, posterior descending system with extension into the posterolateral branches. The first branch off the RCA was a proximally patent LAD, with a 95% high-grade stenosis in the middle and distal ends. The LAD terminated prematurely before reaching the apex. The second branch off RCA was a long and dilated left circumflex artery that had a mid-stenosis of 80%, which also gave rise to three disease-free marginal branches.</p> <p>Given these findings, the patient was diagnosed with anomalous coronary arteries and was referred to cardiothoracic surgeon for surgical management, but remains asymptomatic.</p> <p>Coronary anomalies are uncommon with a prevalence of 0.02-0.05%. Diagnosis may be difficult as it may be hard to determine whether symptoms are a result of advancing age or a coronary anomaly as in this patient. Coronary anomalies are difficult to predict regarding their complications and requires astute clinical suspicion in understanding relevant symptoms and remaining vigilant in detection through angiography and advanced imaging.</p>
Learning Objectives	<ol style="list-style-type: none"> 1) Identify normal and abnormal variants of coronary artery blood flow. 2) Recognize congenital coronary anomalies as a cause of acute myocardial infarction in a patient with no previous history of coronary artery disease. 3) Recommend that further evaluation and management would normally involve prompt referral to cardiothoracic surgery for further surgical treatment.
References and Resources	<p>Cheezum, Michael K., et al. "Anomalous origin of the coronary artery arising from the opposite sinus: prevalence and outcomes in patients undergoing coronary CTA." <i>European Heart Journal-Cardiovascular Imaging</i> 18.2 (2016): 224-235.</p> <p>Ruhela, Manish, Neeraj Chaturvedi, and Dhananjay Singh Shekhawat. "Left Coronary Artery Originating from Right Coronary Sinus—A Rare Coronary Artery Anomaly." <i>American Journal of Medical Case Reports</i> 3.1 (2015): 1-3.</p> <p>Venturini, Elio, and Lucia Magni. "Single coronary artery from the right sinus of Valsalva." <i>Heart international</i> 6.1 (2011): hi-2011.</p> <p>Villa, Adriana DM, et al. "Coronary artery anomalies overview: The normal and the abnormal." <i>World Journal of Radiology</i> 8.6 (2016): 537.</p>

Disclosures

All authors and coauthors have no relevant financial relationships to disclose.

The author does not intend to discuss an off-label/investigative use of a commercial product/device.

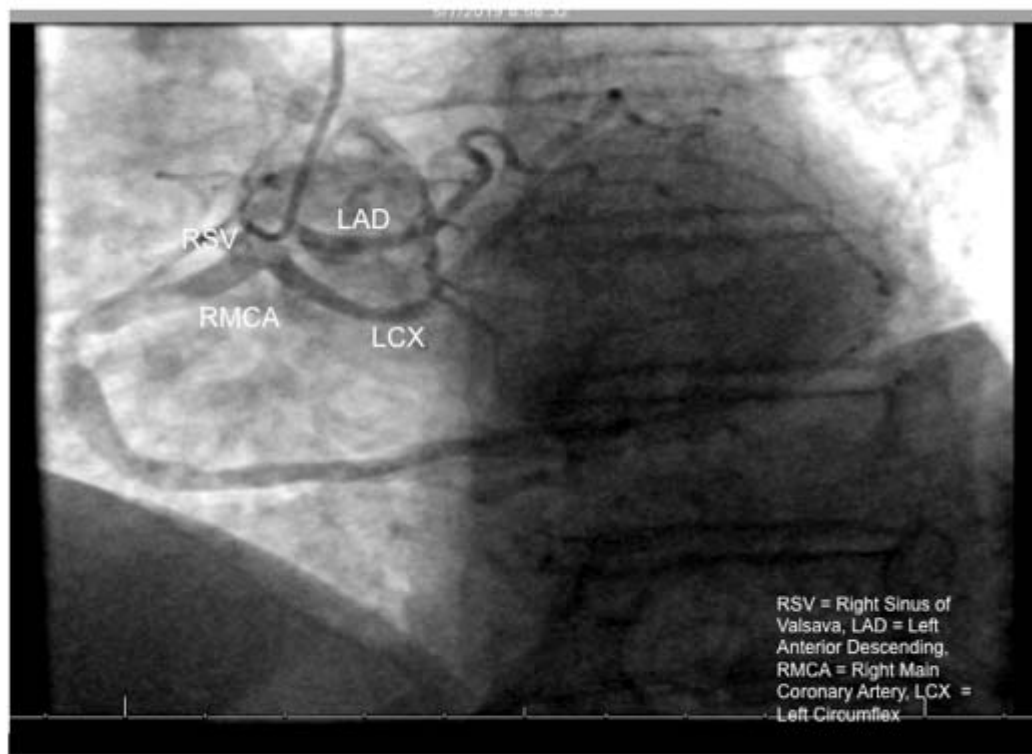


Figure 1: A single coronary artery arising from the RSV and further dividing into left circumflex, left anterior descending and an ectatic right coronary artery.