



## Acute Coronary Syndrome With Anomalous Origin of Left Circumflex From Right Coronary Artery

### KEYWORDS

left circumflex coronary artery, Right coronary artery, coronary angiogram, and cardiac computed tomography

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**ABSTRACT** *An anomalous origin for the coronary artery is a rare congenital condition with an incidence of about 0.17% based on autopsy cases. We present a very unusual case of anomalous origin of Left circumflex artery from Right coronary artery in 56 year old man with H/o HTN and Exertional angina presented with Inferior wall MI. The coronary angiography reveals an ectopic Left circumflex artery from RCA. In this report we attempted to highlight the rarity of this coronary anatomy*

### INTRODUCTION:

Coronary anomalies are found in 0.6% to 1.55% of patients who undergo coronary angiography, and the increasing use of diagnostic coronary angiography is uncovering even more such abnormalities.<sup>(3)</sup> A coronary vessel anomaly of the right coronary artery (RCA) is the most common coronary artery anomaly, with an incidence for the left circumflex coronary artery (LCX) anomaly reported to be 0.37% to 0.7%. The clinical presentation is variable and the abnormality may remain clinically occult or it can have life-threatening consequences, such as myocardial infarction, arrhythmia, or even sudden death. Even if the anomalies are asymptomatic, knowledge of their presence is important at cardiac surgery to avoid inadvertent damage to a vessel with an anomalous course.

### CASE PRESENTATION:

A 56-year-old male smoker presented to emergency department with C/o left sided chest pain since 1 day which is radiating to neck and present even at rest, H/o exertional angina present since 1 month with known hypertensive since 10 yrs. On examination BP was 110/80, pulse rate 80/min, Temp 99F, Spo2-99%, on cardiac examination no abnormality was found. Other system examination was normal. Electrocardiogram was done which revealed ST elevations in the leads of II, III, and aVF. The troponin and the remaining cardiac enzymes were elevated. The patient was suspected as having inferior wall MI and 2D-ECHO was done. 2D-ECHO showed regional wall motion abnormality, mild left ventricular dysfunction and concentric left ventricular hypertrophy. The patient was given anti platelets and statins. He was admitted in the ICCU for percutaneous coronary angiogram. On percutaneous angiogram, anomalous origin of left circumflex artery from right coronary artery and coronary artery disease in right coronary artery distal to left circumflex artery. Stent was placed in the distal right coronary artery with tirofiban. Percutaneous angiography was successful and the patient was discharged in 4days and now he is follow up under cardiologist.

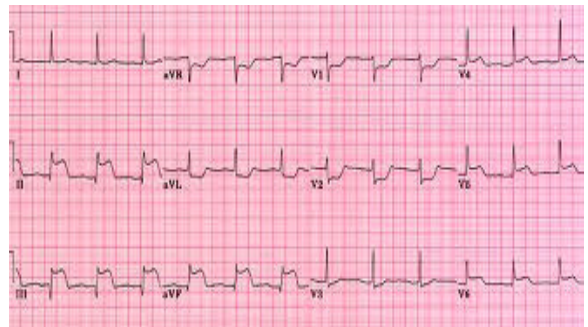


Fig: 1 ECG SHOW IWMI

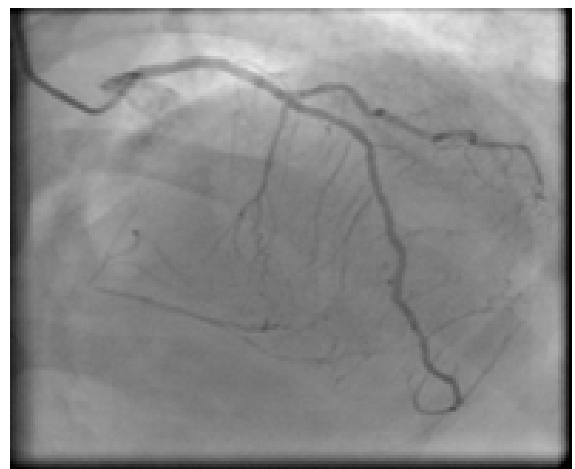
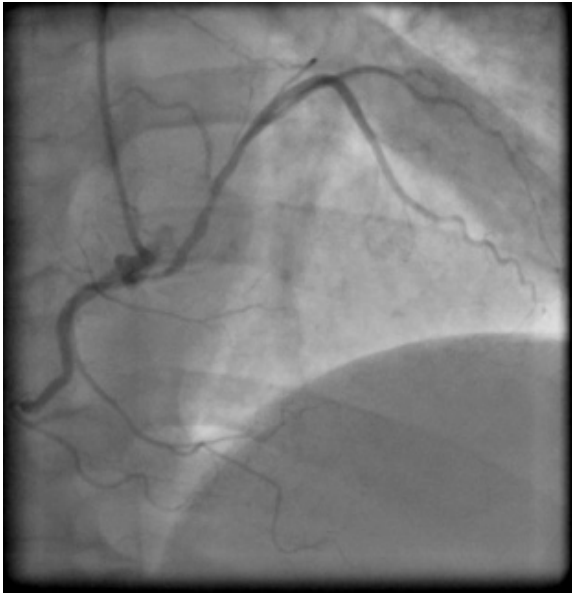
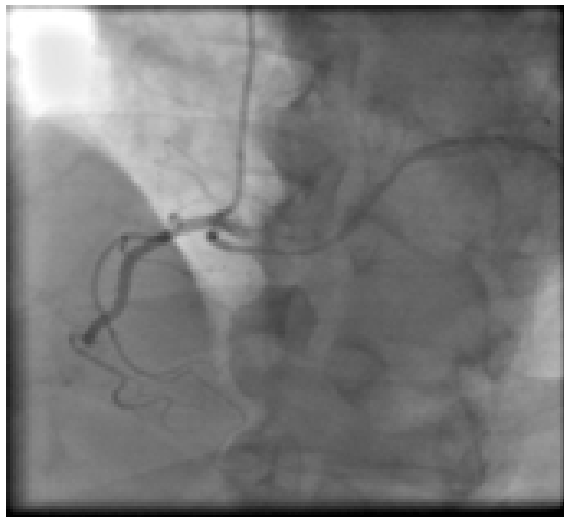


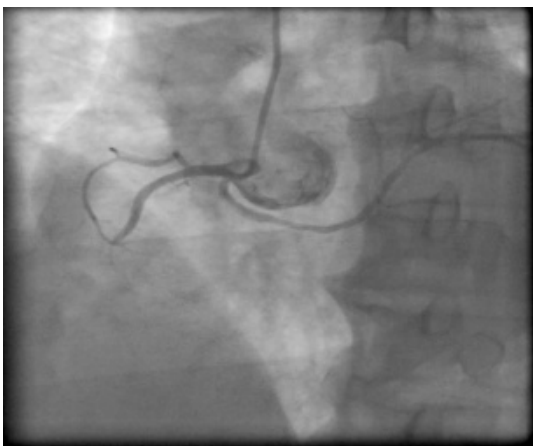
Fig: 2 AP CRAINAL 45°LAD  
Origin from left sinus



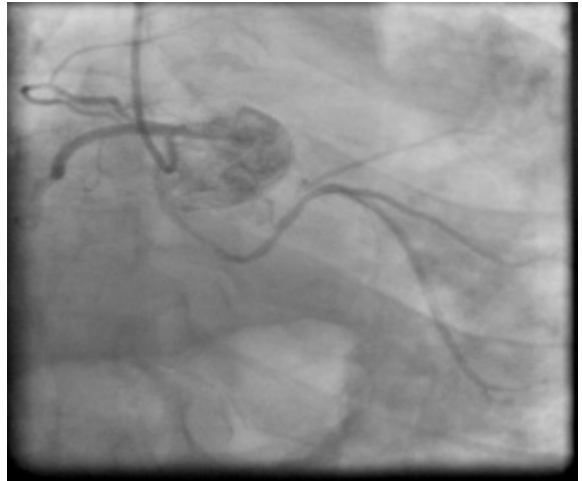
**Fig: 3 AP CRAINAL RO 30°  
LCX origin from RCA**



**Fig: 4 LAO 40° CR 25°  
LCX origin from RCA**



**Fig: 5 LAO 40°  
LCX origin from RCA**



**Fig:6 AP 30°  
LCX origin from RCA**

#### DISCUSSION:

The ectopic origin of LCX is a well recognized variant which is considered the most common coronary anomaly and can be found in approx. 0.37% to 0.7% of all patients. Anomalous origin of the Left circumflex artery from the proximal right coronary artery is one of the most common forms of coronary anomalies and it has been reported in 0.17%- 0.4% of patients undergoing coronary angiography.(2) The coronary vessel anomalies of the LCX originate from the left sinus of Valsalva (55.5%), the RCA (36.9%) and right sinus of Valsalva (25.9%). (5) Although the LCX anomaly is classified as benign and asymptomatic, it can cause myocardial ischemia, and in a few cases sudden death; angina pectoris and myocardial infarction in the absence of atherosclerotic lesions have been reported. These manifestations might be due to repeated compression of the anomalous artery by a dilated aortic root or to unusual angling as a result of the retro aortic course of the LCX, which can compress the coronary ostium and restrict blood flow. In our case, there was a significant lesion identified at distal portion of the RCA, but not at the LCX. Although this anomaly is considered as benign and asymptomatic, and a few cases of MI and angina in the absence of atherosclerotic lesions have been reported. These manifestations might be due to repeated compressions of anomalous artery by dilated aortic root or to unusual angling as a result of retro aortic course of LCX which can compress the coronary ostium and restrict the blood flow. In our case there is a significant lesion identified in RCA but not the LCX. In cases where LCX originates from either RCA or RCS its course is always retro aortic, but not in our case.(6)

#### CONCLUSION:

Various imaging modalities are available for coronary artery assessment. Traditionally, catheter angiography has been used to evaluate the coronary arteries and their anomalies (7); however, it is an invasive technique, and the exact course of the coronaries can sometimes be difficult to determine precisely. This is because angiography provides a 2-dimensional depiction of coronary anatomy and relies on a limited number of imaging planes, in contrast to cardiac computed tomography (CCT), which is noninvasive and has multiplanar capability. (1)

In addition, the acquired imaging data can be post-processed and viewed in any desired plane. Magnetic resonance imaging (MRI) is another noninvasive technique that can depict the course of proximal coronary arteries, but without ionizing radiation exposure or intravenous contrast. However, it is not as widely available as CT, and is limited in the evaluation of the distal coronary arteries, and can be technically challenging to perform. For these reasons, CCT has recently emerged

as the test of choice for diagnosing coronary anomalies. In this article, we review the spectrum of coronary artery anomalies, particularly hemodynamically significant anomalies, as revealed by multidetector CT. (4) Anomalous origins of coronary artery are rare but may cause MI and sudden death. Thus their reliable identification is a matter of paramount importance possibly evaluating the effects of therapeutic intervention. In this report we attempted to highlight the rarity of this coronary anatomy.

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