

# A Very Rare Case of Dual Circumflex Coronary Arteries with Acute Myocardial Infarction

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**Abstract:** Coronary artery anomalies are uncommonly found in the general population. The most frequently found anomalies are left circumflex artery (LCX) with a separate origin of the left descending coronary artery (LAD), followed by a left circumflex artery arising from the right sinus of Valsalva or the right coronary artery (RCA). Twin or dual left circumflex coronary arteries are even rarer, with few cases reported in the literature. We report a case of dual circumflex coronary arteries with concomitant inferior wall myocardial infarction.

**Keywords:** Dual left circumflex, coronary anomalies, inferior myocardial infarction, coronary intervention

## 1. Introduction

We report a case of a 79-year-old male patient who was admitted to our centre with a diagnosis of severe aortic stenosis, scheduled for transcatheter aortic valve implantation. Computed tomography angiography revealed dual circumflex arteries: one originating normally from usual bifurcation of the left main coronary artery and an accessory one arising separately from the left main coronary artery stem proximal to the bifurcation.

Coronary artery anomalies are uncommon in the general population, with an estimated incidence of 0.6–1.3% [1-2]. These anomalies are often asymptomatic and discovered incidentally on coronary angiography. A few cases may present with exertional symptoms or even with sudden cardiac arrest. Most common variations involving the left circumflex coronary artery are either a separate origin from the left cusp or origin from the right cusp or RCA [3-4]. A much rarer variation involves twin or dual left circumflex coronary arteries, originating separately from both the left and right coronary systems [5]. We present a case of twin left circumflex coronary arteries along with inferior wall myocardial infarction.

## 2. Case

A 60-year-old female presented to us with a history of chest pain 2 days ago. She had no prior history of coronary artery disease or other comorbidities. On examination, her pulse rate was 40/min and blood pressure was 80/60 mmHg. Her ECG revealed ST-segment elevation in inferior leads with complete heart block (CHB). She was immediately taken up for coronary angiography in view acute inferior wall STEMI with CHB and hypotension. Temporary pacemaker was inserted and intravenous fluid was started for stabilization. Coronary angiography of the left system revealed normal left main artery, no significant stenosis in LAD and a short circumflex coronary artery [Fig 1]. Angiography of the right system revealed proximal RCA 100% blockage and a long circumflex arising from right coronary artery [Fig 2]. Angioplasty of RCA was performed. There was difficulty in wiring the RCA as the workhorse wire kept on moving in LCX. However, after deeper intubation of RCA, successful wiring was done and a 3\*30 mm drug eluting stent was deployed with restoration of TIMI III flow [Fig 3]. Sinus rhythm was restored and TPI was

removed. Rest of the hospital course was uneventful and the patient was discharged on 4<sup>th</sup> day without any complications.

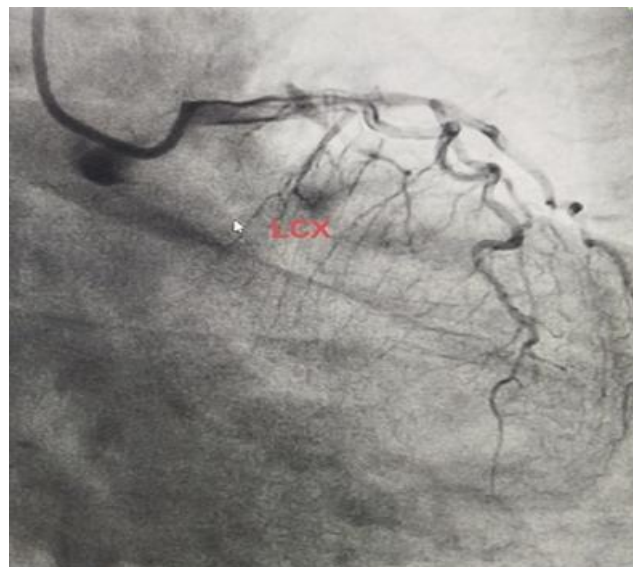
## 3. Discussion

The anomalous origin of the LCx artery from the right coronary artery or from the right sinus of Valsalva was first described by Antopol and Kugalin in 1933 [6]. Its incidence is 0.37%. There have been only few cases of twin LCX reported previously.

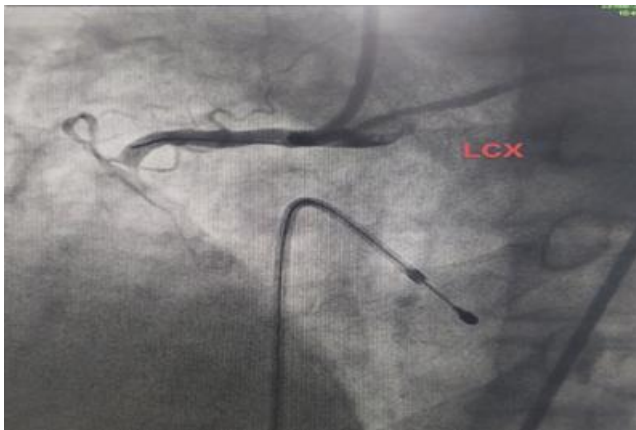
Our patient presented with inferior wall myocardial infarction due to occlusion of RCA in the presence of twin LCX. The case highlights difficulty in coronary intervention in the presence of dual LCX. There was difficulty in coronary wiring which was overcome by deeper engagement of the catheter.

## 4. Conclusion

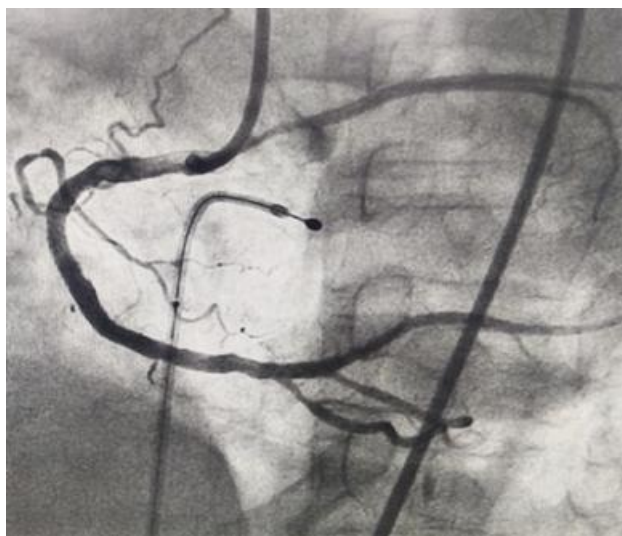
Twin or dual LCX is rare coronary anomaly. In most cases it is asymptomatic, though it may present with acute or chronic coronary syndrome. Coronary intervention in such cases may be challenging and specialized manoeuvres may be required to perform it safely.



**Figure 1:** Angiography showing short LCX arising from left system



**Figure 2:** Angiography showing proximal RCA 100% occlusion with anomalous LCX from RCA



**Figure 3:** Opened up RCA after successful coronary intervention

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