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## Case Report

# Percutaneous coronary intervention in a patient with single coronary artery

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## ABSTRACT

Coronary artery anomalies are found in 1–5% of all coronary angiograms. Single coronary artery is a rare congenital anomaly. The prevalence of the anomaly is 0.024–0.066% of the general population and percutaneous coronary intervention in this anomaly is performed infrequently. The highest incidence of this condition is reported from India. We report a case of a 55 year old patient of anterior wall ST elevation myocardial infarction with L1 group of single coronary artery who underwent successful angioplasty and stenting to left anterior descending artery. The unique features and inherent risks of percutaneous coronary intervention to single coronary artery are discussed.

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## 1. Introduction

A single coronary artery (SCA) is a rare congenital anomaly. Reports of SCA with acute myocardial infarction (AMI) are sparse and percutaneous coronary intervention (PCI) in such situations are not only few in number but also technically challenging and potentially catastrophic. We report a case of L1 variety of SCA with anterior wall AMI with successful PCI to left anterior descending artery (LAD).

## 2. Case report

A 55 year old male presented to our hospital with history of chest pain for past 3 days. He was a chronic smoker, non diabetic and non hypertensive. His family history was unremarkable. At admission, his heart rate was 100 bpm and BP

was 110/80 mm Hg. ECG showed ST elevation in lead I, aVL, V1–V6 with complete RBBB. Echocardiogram showed hypokinesia of the anterior wall with an ejection fraction of 40%. Coronary angiography (Fig. 1) was performed using the traditional Judkin's method angiography of left coronary artery revealed a normal left main coronary artery (LMCA) which divided into LAD and left circumflex artery (LCx). The LAD was occluded in the mid portion. The LCx was a dominant vessel which coursed within the left atrioventricular groove, crossed the crux of the heart and continued in the right atrioventricular groove as the right coronary artery (RCA). Attempts to engage the right coronary catheter to the right coronary ostium were futile and aortography (Fig. 2) displayed the absence of the right coronary ostium. CT coronary angiography (Fig. 3) confirmed the presence of single coronary artery with LCx continuing in the course of the RCA. The patient was subjected to percutaneous coronary intervention. Left main coronary artery was engaged with LAUNCHER 6F guide

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**Fig. 1 – Angio 1 – angiography showing LMCA origin & its course.**

catheter. The lesion was crossed with a balanced middle weight soft guide wire and it was stented with a drug eluting stent with subsequent TIMI 3 flow distally (Fig. 4). The patient had an uneventful course after the intervention and was discharged in stable condition after 3 days.

### 3. Discussion

Coronary anomalies may occur in 1% to 5% of patients undergoing coronary arteriography.<sup>1</sup> An isolated single coronary



**Fig. 2 – Angio 2 – aortogram showing single coronary artery.**



**Fig. 3 – CT Angio 2 – CT angiography showing single coronary artery.**

artery is a solitary coronary vessel arising from the ascending aorta, giving rise to the major coronary branches and thus nourishing the entire heart. In effect, both the right coronary artery and the left main coronary artery arise from a single aortic sinus.<sup>2</sup> They are seen in 0.3% to 1.3% of patients undergoing coronary angiography<sup>1</sup> and in 0.17% of routine autopsy studies. In the younger age groups, they may be responsible for 4% to 15% of cases of sudden death.<sup>3,4</sup> The prevalence of this anomaly is 0.024 to 0.066% in the general population.<sup>5</sup> They reportedly constitute <3% of all coronary anomalies.<sup>6</sup> The highest incidence (i.e. 8.8% of all coronary anomalies) was reported from India.<sup>7</sup> Shirani and Roberts



**Fig. 4 – Post PCI Angio – angiography showing recanalization of LAD.**

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