

# A Case Study of Spontaneous Coronary Artery Dissection in 35-Year-Old Postpartum female

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## Abstract

*Spontaneous coronary artery dissection (SCAD) is a rare cause of acute coronary syndrome and sudden cardiac death. This report describes spontaneous coronary artery dissection in a 35-year-old female four days post-partum without identifiable coronary risk factor, complaining of chest pain, treated by thrombotic and anti-ischemic drugs. Successful stenting of the proximal and mid LAD spontaneous dissection was done by 2 bare metal stents with TIMI III flow. This reporting case discusses spontaneous coronary artery dissection, stressing on the possibility of SCAD in every healthy young woman without cardiac risk factors.*

**Key Words:** Coronary artery, SCAD, CABG, LMCA, LAD

## Introduction:

Spontaneous coronary artery dissection (SCAD) is a rare cause of acute coronary syndrome and sudden cardiac death<sup>1</sup>. It should be suspected in every healthy young woman without cardiac risk factors, especially during the peripartum or postpartum periods. It is important to check for a history of drug abuse, collagen vascular disease, or blunt trauma of the chest. Coronary angiography is crucial in the diagnosis of SCAD. intravascular ultrasonography and multislices CT-scan (MSCT) are other diagnostic methods<sup>2</sup>. Generally, there is no consensus on the etiology, prognosis, and treatment of SCAD<sup>3</sup>. Conservative treatment is suggestive for managing stable, asymptomatic patients. Stents have been implanted successfully in selected cases where the true lumen and false lumens were clearly distinguishable and the dissecting flap did not involve a long segment. Coronary artery bypass surgery (CABG) is recommended when the dissection involves the left main coronary artery (LMCA)

or multiple vessels or when percutaneous intervention fails<sup>2</sup>. This report describes a 35 year old post-partum woman diagnosed as SCAD of left anterior descending artery (LAD), treated successfully by implantation of 2 bare metal stents.

The aim of reporting this case is that in females at prepartum period without identifiable CAD risk factors with ischemic chest pain SCAD should be suspected and considered in the differential diagnosis.

## Case Report

A 35-year Jordanian woman with no identifiable coronary risk factors, and no history of drug abuse, collagen vascular disease, or chest trauma admitted to the Coronary Care Units (CCU) of Jordan University Hospital (JUH) with history of recurrent attacks of retrosternal ischemic chest pain at rest radiated to the left arm of two months duration. Two months earlier (four days post normal vaginal delivery), she was admitted to the CCU of the Prince Eman Hospital in Ajloun, Jordan complaining of

severe ischemic chest pain at rest, diagnosed as ST-elevation anterior myocardial infarction, given thrombolytic (Streptokinase), and maintained on aspirin, B-blocker, statin, and isosorbide dinitrate. Her physical examination at the time of admission to JUH was within normal. Her admission ECG (Figure 1) showed 2 mm ST-elevation in V2 – V4, T-wave inversion in aVR, aVL, V1- V3, and Q-wave in V1- V3.

Serial cardiac enzymes was done and were negative. Fasting blood sugar and lipid profiles were normal. Echocardiography at admission showed mild hypokinesia of the apex, and apical anterior segments with ejection fraction of 50 %. Coronary angiography showed a spontaneous dissection of the proximal, mid left anterior descending artery (LAD), and diagonal artery (D1), while the left main, circumflex, obtuse marginal, and right coronary arteries were normal (Figure 2).

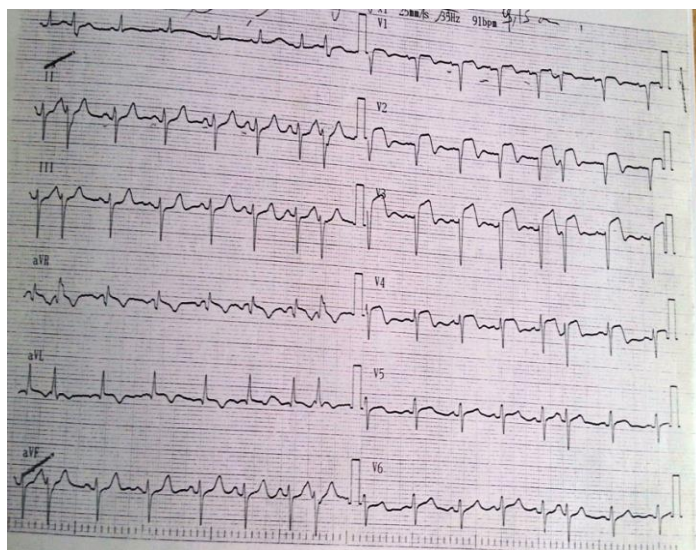


Figure 1: ECG at admission to CCU OF JUH shows 2 mm ST elevation in V2- V4, T wave inversion in aVR, aVL, V1- V3, Q wave in V1-V3

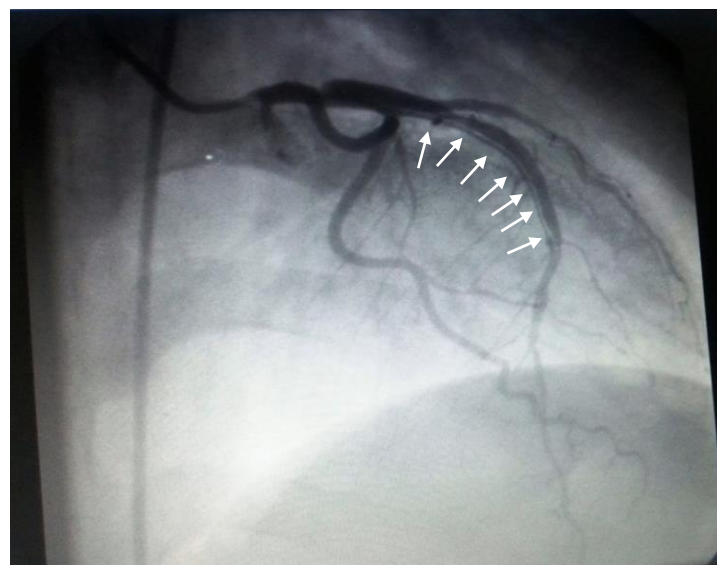


Figure 2: Coronary angiography shows dissection of proximal and mid left anterior descending artery. Successful stenting of the proximal and mid LAD spontaneous dissection was done by 2 bare metal stents of 4 x 15 mm and 2.75 x 18 mm with TIMI III flow without any complication (Figure 3).

The patient was discharged from the hospital one day later in a good health on aspirin, B-blocker, statin, ACE-inhibitors and nitrates. She returned back to the cardiac clinic after 2 weeks free of symptoms.

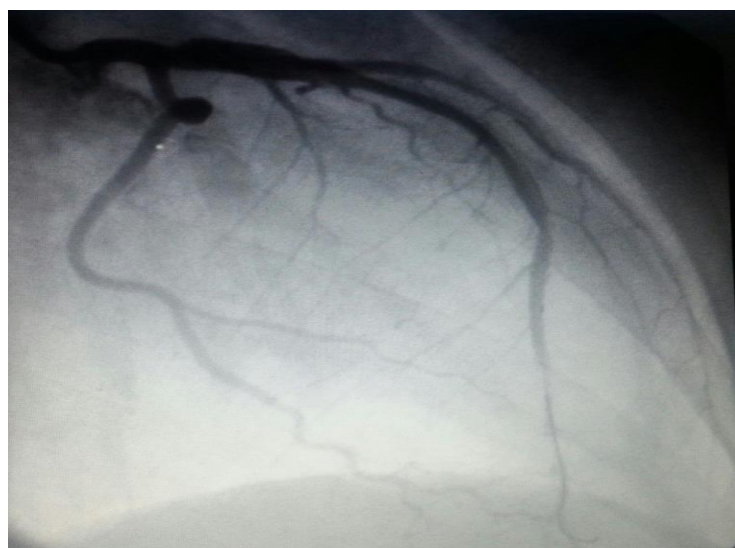


Figure 3: Coronary angiography shows left anterior descending artery after

## Discussion

Acute myocardial infarction (AMI) is uncommon under the age of 40 years, especially among women. This age group accounts for about 5.6% of all cases of AMI. Among them, women (under 40 years) account for just 0.7% of cases. There are identifiable risk factors in most instances<sup>4</sup>. SCAD is a rare entity, mostly recognized in young victims of sudden death. It is the result of an intramural hematoma in the media of the arterial wall that creates a false lumen. Expansion of this lumen through blood or clot accumulation leads to compression of the real lumen and myocardial ischemia. Most reported patients are apparently healthy, young to middle-aged women (68%; mean age, 40 years) without overt risk for coronary artery disease (CAD) and without severe coronary atherosclerosis. In women with SCAD, there is a predilection for left coronary system (84%), whereas in men the right coronary artery is usually affecting (67%)<sup>5</sup>. Overall the LAD artery is affected in 75% of cases, the RCA in 20% of cases, the left circumflex artery in about 4% of cases and the left main coronary artery (LMCA) in < 1% of cases<sup>6,7,8,9</sup>. On the basis of epidemiological data, the condition occurs in one in 20,000 to 30,000 deliveries and has a high mortality rate for both mother and child. The overall mortality is more than 50% at presentation. This improves to 85% survival for patients who survive the acute phase<sup>4</sup>. Peripartum women may be at increased risk on two accounts: changes in blood flow increasing shear stress, and progesterone driven vessels wall changes which may predispose to coronary dissection. However, as dissections also occur in men and non-pregnant women, other factors must also be involved. The integrity of the vessel wall is important and inherited abnormalities such as Ehler-Danlos type VI or Marfan's syndrome and an adventitial eosinophilic infiltrate are also associated with coronary dissection. Other reported risk factors are strenuous exercise and hemodynamic stress<sup>10</sup>. It is also associated with systolic hypertension<sup>11</sup>, the use of oral contraceptive pills<sup>12</sup>, sexual intercourse<sup>13</sup>, and cocaine abuse<sup>14</sup>. There are no guidelines available on the

best treatment of patients with coronary artery dissection. Conservative treatment in the form of aspirin, nitrates, beta blockers and anti-platelet agents has been associated with clinical and angiographic resolution<sup>15,16</sup>. Low molecular weight heparin has been found to be beneficial<sup>17</sup>. Immunosuppressive therapy has been tried because of the presence of eosinophilic inflammatory infiltrates<sup>18</sup>. Ongoing ischemia refractory to medical management should prompt urgent revascularization<sup>19</sup>. Thrombolytic treatment may be effective in lysing a compressing intramural clot but it may also contribute to the expansion of intramural hematoma. Thrombolytic may be useful in arteries where intramural hematoma compressing the true lumen, allowing the latter to reexpand<sup>20</sup>. In the absence of severe left ventricular impairment, symptomatic patients with single vessel dissection not involving the left main coronary artery benefit from primary coronary stenting to decrease the chance of sudden death, reinfarction, and arrhythmias<sup>6,21</sup>. Coronary artery bypass grafting is recommended for patients with dissection involving the left main stem, for patients with ongoing myocardial ischemia refractory to medical treatment<sup>22</sup>. In the case of severe heart failure, bridging to heart transplantation can be the most reasonable choice<sup>5</sup>.

## Conclusion

The case described here shows that spontaneous coronary artery dissection is an important cause of myocardial ischemia and infarction preferentially in young women without overt risk for coronary artery disease. Prompt diagnosis with coronary angiography and treatment with coronary artery revascularization in patients with ongoing myocardial ischemia that is refractory to medical management provides the only means of improving survival in this serious disease. At two weeks follow up the patient was free of symptoms and tolerating well medical management.

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