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## Triple vessel spontaneous coronary artery dissection in the young patient: A case report

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### Abstract

*In late years spontaneous coronary artery dissection (SCAD) had emerging as a non-atherosclerotic cause of acute coronary syndrome (ACS).*

We report an interesting case of a young male patient presenting to an emergency with substernal chest discomfort with positive troponin and electrocardiogram changes consistent with NSTEMI.

Percutaneous Coronary Intervention (PCI) was initiated following ACS PROTOCOL, which found a critical three-vessel spontaneous coronary artery dissection (SCAD) that Cardiothoracic Surgery is recommending FOR Coronary Artery Bypass Grafting (CABG).

The clinical status of the patient had a full recovery with cardiac rehabilitation and was discharged on postoperative on day five with outpatient follow-up.

Our aim is to incorporate this interesting case report into the current literature and help improve early diagnosis and treatment based on current recommendations.

**Keywords:** Triple vessel spontaneous coronary artery dissection, CABG

### Introduction

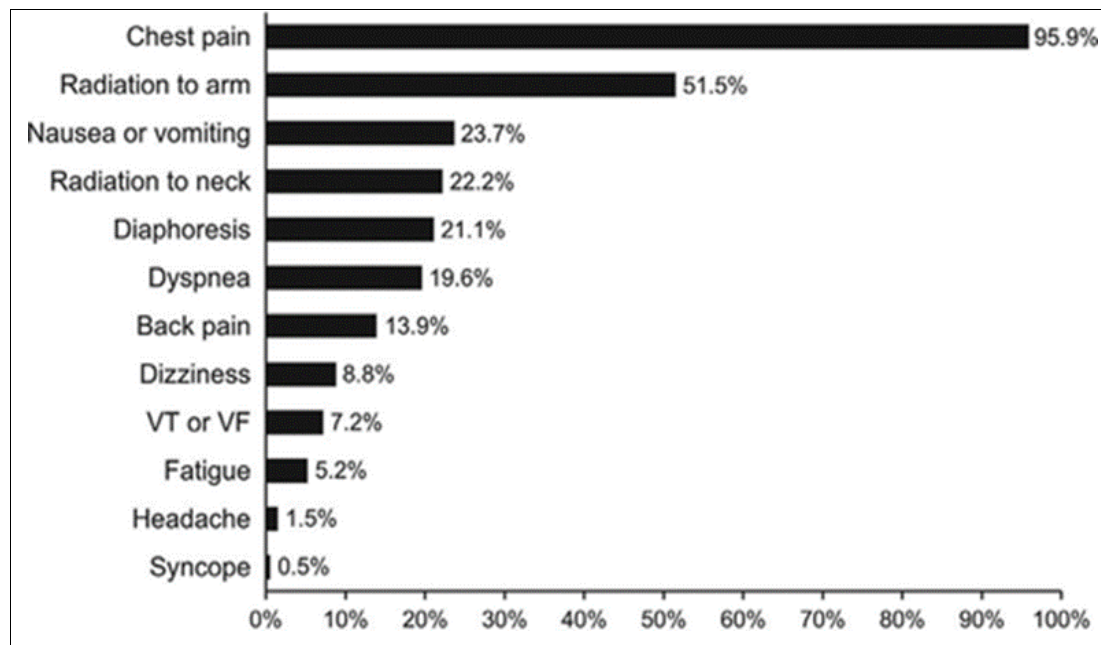
Spontaneous coronary artery dissection (SCAD) is simply found that had tearing in the wall of the coronary artery that is not related to atherosclerosis or iatrogenic which gives a presentation based on the severity of blocking the artery <sup>[1]</sup>.

The first case report was documented in 1931, Spontaneous coronary artery dissection (SCAD) is incredibly to recognize which is an underdiagnosed condition so the number of the case still uncertain, basically due to the many cases of young patients are being Missed to investigations which unlikely to be suspected in this such group of age even when the symptoms are typically found it, insufficient centers had availability of Percutaneous coronary intervention (PCI) and lack of clinician <sup>[2]</sup>.

It is Each one of The main coronary arteries and its branches can be a victim of dissection, there are found the left anterior descending artery (LAD) had the majority of cases (32%–46% of cases) and also seen in 9% to 23% of cases in Multivessel artery. The disruption of blood flow will have an impact on the perfusion of myocardial cells, which will result in infarction. The severity of the clinical presentation is broad from asymptomatic to myocardial infarction to cardiac mortality, and is correlated with the degree and number of arteries <sup>[3]</sup>.

As evidenced by the paragraph shown down, the most common presenting symptom is chest pain (95.9%), and generally all symptoms are consistent with the atherosclerotic acute coronary syndrome (ACS), also seen there are found 26% to 87% of patients had ST-Segment Elevation Myocardial Infarction (STEMI) and 13% to 69% non-ST-segment elevation myocardial infarction (NSTEMI) <sup>[4]</sup>.

Therefore, it is necessary to link the contributing factors, such as heavy exercise, intense emotional stress, labour and delivery, intense Valsalva-type activities, recreational drugs, and intense hormonal therapy with Predisposing factors such as fibromuscular dysplasia (FMD), pregnancy, multiparity, connective tissue disease, and chronic inflammatory conditions. Despite that, it is still difficult to make an early diagnosis.



**Fig 1: Symptoms**

### Case Presentation

33-year-old male patient Presented to Emergency Department complaining of severe intermittent retrosternal chest pain, Heavy in nature with no relieving or aggravating factors. The pain was not radiating and was associated with sweating, Nausea, and shortness of breath NYHA class 4. He has a history of well-controlled primary Hypertension by lifestyle modification, and poorly controlled Type 2 DM due to medication in compliance. He is an active cigarette smoker with a history of smoking 15 pack-year. He is overweight with a BMI of 32 and he has a strong family history of valvular heart disease. His brother died after he had valvular heart disease, also his sister has valvular heart disease.

On examination, he was fully conscious, and fully oriented,

oxygen saturation maintained on room air, normotensive.

-he has alopecia 2\*2 cm other physical examinations were unremarkable

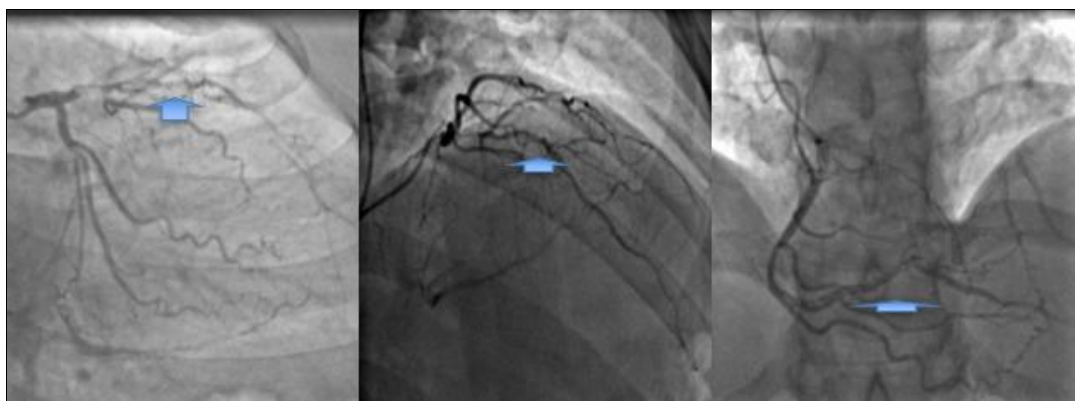
### Investigations

ECG Showed: Normal sinus rhythm, mildly inverted T wave in V4-V6.

Laboratory tests were normal except for an elevated serum troponin level 0.2.

### Echocardiogram

1. Normal Echocardiogram.
2. All cardiac valves are normal in structure and function.
3. There is no evidence of ischemic, primary valvular, hypertrophic, or pulmonary heart disease.



**Fig 2: Cardiac catheterization**

### Cardiac catheterization

1. The left anterior descending demonstrated tortuosity, spontaneous dissection p-LAD with severe 90% p-LAD stenosis along large D1 at mid-LAD extensive dissection with subtotal occlusion with TIMI II distal flow across 2nd long D2, an occlusion, and chronic occlusion. Pre-TIMI flow was 2.
2. Proximal, proximal to mid, mid, distal, and mid to distal left anterior descending coronary artery showed

99% stenosis and 95% stenosis.

3. The circumflex coronary artery revealed irregularities, occlusion, total occlusion, and LCX showed total occlusion after large OM1 OM2 with extensive dissection extending along OM3 with large-sized vessels. Pre-TIMI flow was 0.
4. Mid, mid to distal, distal, and the entire circumflex coronary artery showed 100% stenosis.
5. The right coronary artery showed tortuosity, occlusion,

chronic occlusion, and RCA dominant vessel giving collaterals to LAD through septal collaterals and RV branches. Pre-TIMI flow was 1.

### Treatment

Coronary Artery Bypass Grafting (CABG) is the best modality for the patient.

### Follow up

Discharged patient on day five postoperative had progressively a good recovery through short and long-term post-operative care through outpatient visiting in addition to cardiac rehabilitation

### Discussion

In Vancouver, the cohort study found that 168 patients with Spontaneous coronary artery dissection (SCAD) had high troponin levels in the majority of patients: the median level seen was 6 µg/L (normal, < 0.05 µg/L), in the opposite of the mean peak creatine kinase level (normal, 25–250 IU/L) in young women with Spontaneous coronary artery

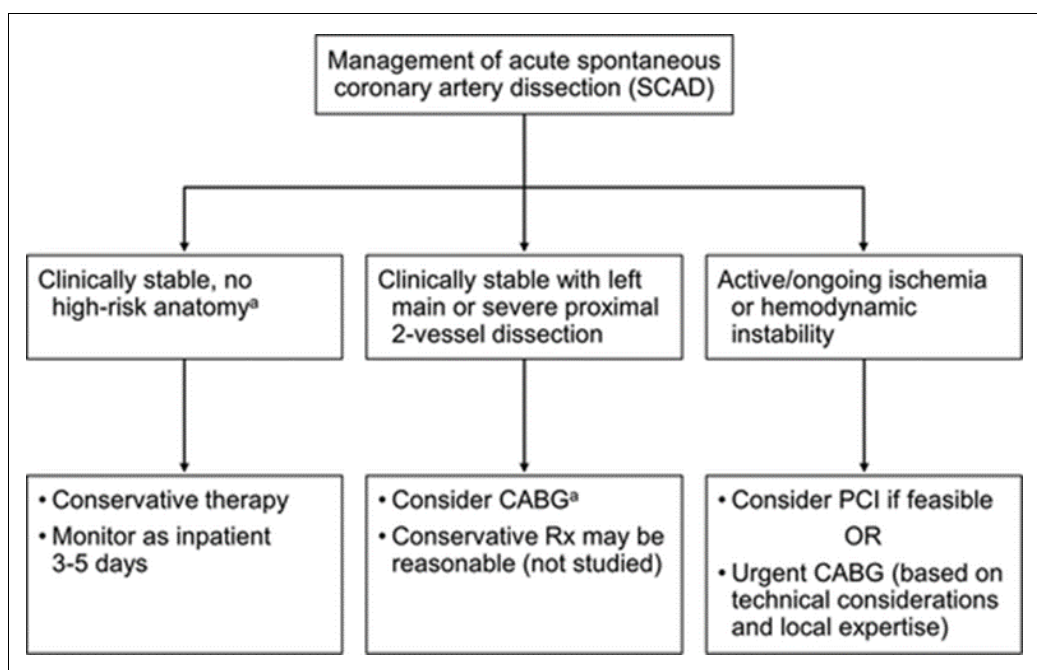
dissection (SCAD) showed lower than in patients without Spontaneous coronary artery dissection (SCAD) [5].

Another interesting cohort study In Japan found that echocardiography OR early angiography in 63 patients with Spontaneous coronary artery dissection (SCAD), had ABNORMAL IN left ventricle wall motion with preserved ejection fraction [6].

In Australia, there is a retrospective cohort study of 1,332 patients with non-ST-elevation acute coronary syndromes or STEMI who underwent coronary angiography, 21 patients (1.6%) had SCAD, making us difficult to identify and distinguish from other ACS due to *The low incidence of it* [7].

The Alternative diagnoses will include takotsubo syndrome, which can be seen on an echo by looking for a left ventricle balloon

There are shown down in paragraph different modalities of treatment for SCAD which are conservative management, percutaneous coronary intervention (PCI), and A coronary artery bypass graft (CABG).



**Fig 3:** Different modalities of treatment for SCAD

If the patient is clinically stable and a triple vessel is identified in the angiogram. CABG is the best modality for him based on upon algorithm.

there is also an interesting study-based systematic review in 1,369 patients of 17 observational studies comparing medical therapy vs. invasive therapy with scad with 95% having ACS at presentation and follow-up from 4 months up to 3 years showing no significant differences in mortality in the analysis of 8 studies and recurrence of SCAD in the analysis of 8 studies with repeat revascularization in the analysis of 9 studies [8].

### Conclusion

Spontaneous coronary artery dissection (SCAD) is a rare but life-threatening disorder in a young patient, so needs to be early recognized in the differential diagnosis of chest pain and risk factors to do early a coronary angiogram once is suspected.

### Conflict of Interest

Not available

### Financial Support

Not available

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