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Clinical Image
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# Spontaneous Pan-Coronary Artery Dissection in a Marijuana Abuser

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## Keywords

Spontaneous coronary artery dissection; Dissection flap; Medial haematoma; Percutaneous coronary intervention

## Clinical Image

Spontaneous Coronary Artery Dissection (SCAD) is a rare condition, usually presenting as an acute coronary syndrome, in young or middle-aged women, and is often associated with high systemic estrogen levels such as pregnancy or oral contraceptive use. A 33-year-old male presented with evaluation of left-sided retrosternal chest discomfort and sweating three days back. He was chronic tobacco chewer for past twelve years, and started smoking marijuana for past nine months. His electrocardiogram demonstrated ST elevation and T wave inversion in II, III and aVF with reciprocal changes in precordial leads suggesting acute inferior wall myocardial infarction. Echocardiogram revealed mild regional wall motion abnormality involving right coronary artery territory with normal systolic function. The patient was treated with aspirin, clopidogrel, rosuvastatin, metoprolol, and low molecular weight heparin. Coronary angiography was performed after informed consent through right transfemoral approach which showed a radiolucent linear defect suggestive of a spontaneous intimal dissection involving distal segment of the Left Anterior Descending artery (LAD), proximal diffuse dissection of left circumflex (Figure 1), and mid right coronary artery up to its crux (Figure 2). All three arteries had Thrombolysis in Myocardial Infarction (TIMI) grade III flow. Given the pan-coronary dissection (all three coronary arteries) and clinical stability, tread mill test was performed to look for reversible ischaemia which was negative. He was managed conservatively, advised lifestyle modification including cessation of tobacco and marijuana and discharged in stable condition.

Spontaneous Coronary Dissection (SCAD) is a rare cause of acute coronary syndrome, having estimated incidence of 0.07-1.1% [1]. It typically affects young or middle-aged females with mean age in third and fourth decade, commonest presentation during peripartum period. The other triggers are vigorous exercise, marathon race, cocaine abuse, prolonged retching, and connective tissue disorders as Ehlers-Danlos syndrome, Marfan syndrome, and cystic medial degeneration. LAD is the most commonly involved but involvement of all coronary arteries and multi-vessel dissections have been reported although exceedingly rare [2].

The common trigger is a mismatch between increased hemodynamic shear forces on the coronary arterial wall and/or decreased endovascular integrity which results into intimal tear, thereby allowing blood entry into the media resulting into medial hematoma. This leads compromised blood

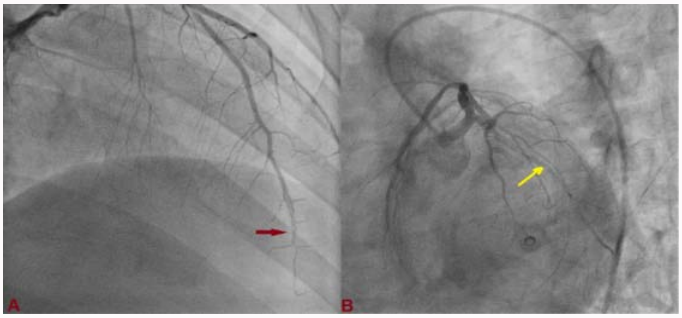


**Figure 1:** Coronary angiography showing a radiolucent linear defect suggestive of a spontaneous intimal dissection involving distal segment of LAD (red arrow, A); proximal diffuse dissection of LCx (yellow arrow, B).

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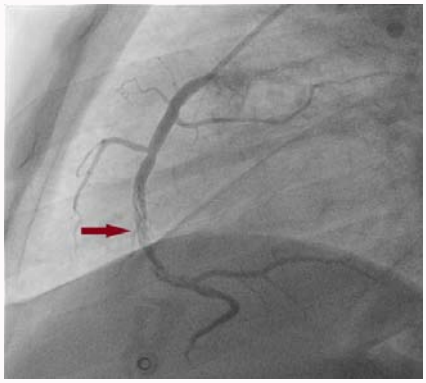

**Figure 2:** Coronary angiography showing a radiolucent linear defect suggestive of a spontaneous intimal dissection of mid right coronary artery up to its crux.

flow in the true lumen of the vessel which may result into ischemic or infraction if sufficiently compromised. It leads into myriad of complications including acute coronary syndrome, arrhythmia, and sudden death. Dissection flap is sine qua non of SCAD; other findings are two separate communicating lumens, multiple dissecting lines, and coronary aneurysm communicating with the lumen. Beside conventional catheter based angiography, other diagnostic modalities are Intravascular Ultrasound (IVUS), Optical Coherence Tomography (OCT), and Multi-Detector Computed Tomography (MDCT).

There are no guidelines regarding optimal treatment of this condition which may be conservative, Percutaneous Coronary Intervention (PCI), and surgical revascularization. Treatment is guided by the clinical symptoms, extent and location of the dissection, and the hemodynamic status of the patient. Conservative medical therapy is reasonable in cases of distal dissection with preserved coronary flow.

PCI is reasonable in acute cases with proximal dissection (of major epicardial vessels) and arterial occlusion in order to restore coronary perfusion and hemodynamic stability. Challenges of PCI are wiring through true lumen, inadvertent cannulation of the false lumen and coronary perforation/occlusion, precise localization of the site and extent of dissection, displacement of intramural hematoma either proximally or distally by the stent resulting into further luminal occlusion. IVUS and OCT may offer great help though later is better than former. One may deploy multiple stents, distal to proximal, covering the entire dissected segment taking future risk of in stent restenosis, or stent the entry point of the dissection to seal the intimal defect and let the hematoma heal on its own. Furthermore, superiority of one over another (drug eluting stents over bare metal stents) has not been demonstrated as drug eluting stents may impair arterial healing. Surgery is usually restricted to hemodynamically unstable cases where PCI has failed or is deemed impossible (such as multi-vessel long segment dissection with good distal segment suitable for bypass).

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