

VIRTUAL INTRODUCTION



➤ **For a short introductory video, take out your smart phone, turn on the camera application, aim it at the QR code and follow the link. Or if you can, click [here](#).**

CASE PRESENTATION

CC: Patient is a 50-year-old female who was transferred to our emergency department from an outside hospital for the evaluation of chest pain.

HPI: The chest pain started 12 hours ago during moderate exercise on the treadmill. The pain was 8 out of 10 and caused retrosternal pressure/ tightness that radiated to the neck and left arm. It was associated with dyspnea, diaphoresis, nausea, palpitations, lightheadedness, and self-induced emesis x2 with no relief. At the outside hospital, the patient was found to have a troponin elevation and an EKG with ST depression in the anterior leads. The patient was subsequently transferred to our hospital.

PMH: Anemia, GERD (only takes a PPI), G2P2

SH: Exercises regularly, non-smoker

PE: Vital signs were within normal limits. Class 1 obesity. Patient was anxious, but not in distress. Cardiac, pulmonary, and abdominal exam were unremarkable.

LAB: Troponin #1: 8,215 pg/mL, troponin #2: 14,405 pg/mL; cholesterol 172 mg/dL, triglycerides 35 mg/dL, HDL 62 mg/dL, LDL 103 mg/dL, Urine toxicology negative. CBC and BMP WNL

EKG: No abnormalities (ST Depression resolved)

HOSPITAL COURSE

CARDIAC CATH: Left heart catheterization using intravascular ultrasound (IVUS) identified spontaneous coronary artery dissection involving the mid and distal left anterior descending (LAD) coronary artery (Figure 1). The distal LAD experienced intraoperative occlusion with ST depression which was treated with percutaneous transluminal coronary angioplasty (PCTA).



Figure 1 – Left heart catheterization using intravascular ultrasound (IVUS) identifying dissection. The red star represents the intimal flap separating true and false lumens.

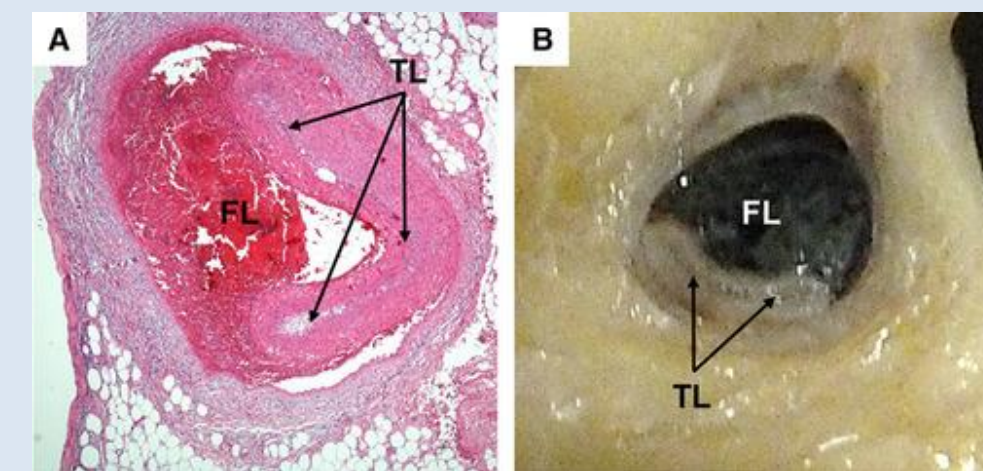


Figure 2 – Pathological appearance of spontaneous coronary artery dissection. Histological (A) and pathological (B) appearances show compression or obliteration of the true lumen (TL; arrows) by hematoma within the false lumen (FL).

TTE: Ejection fraction of 45-50%. Severe hypokinesia of the apical myocardium with grade 2 diastolic dysfunction without any significant valvular abnormalities.

DISCHARGE: The patient's pain resolved post-catheterization. She was diagnosed with Type II myocardial infarction secondary to spontaneous coronary artery dissection and was discharged on dual antiplatelet therapy, statin, beta-blocker, cardiac rehabilitation with exercise limitations, and cardiology follow up with further fibromuscular dysplasia workup.

TAKE HOME POINTS

SCAD is the separation of the coronary arterial wall and the creation of a false lumen that often fills with a hematoma (Figure 2) and occludes the true lumen leading to chest pain, myocardial ischemia, and infarction. SCAD represents between 1-3% of all presenting acute coronary syndromes.

The internist should have a high suspicion for SCAD in woman under the age of 50, as dissection is the etiology of 25% of acute coronary syndrome in this population. Vascular pathology, such as fibromuscular dysplasia, represent the most common risk factor for SCAD.

When percutaneous coronary intervention is attempted, success rates range widely from 50-90% and recurrent cardiovascular events such as MI (16.6%) and repeat SCAD (17%) occurred frequently.

SCAD-specific, low shear stress cardiac rehabilitation is safe and recommended which includes exercise heart rates at 50-70% of maximum, systolic blood pressures <130 mmHg, and minimal weightlifting.

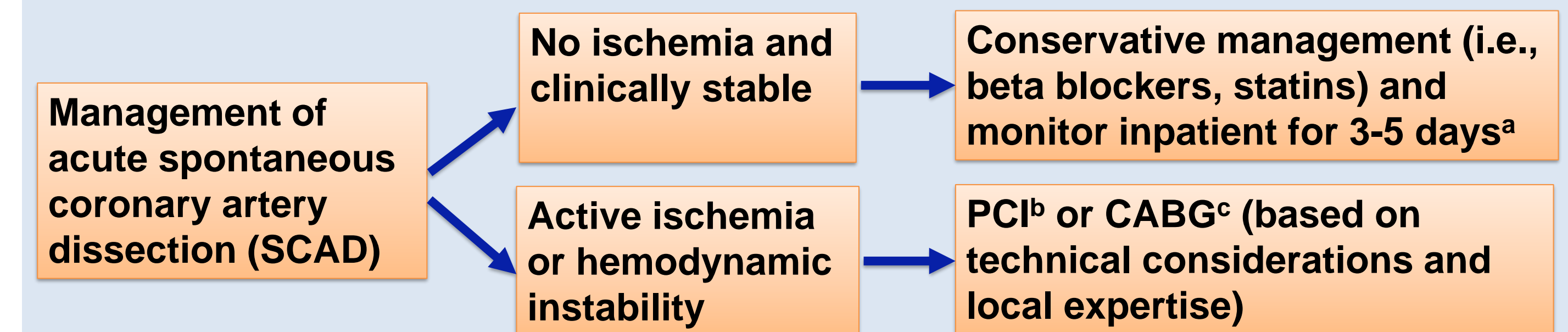


Figure 3 – Management algorithm of acute spontaneous coronary artery dissection;

^aConsider coronary artery bypass graft for left main or 2-vessel dissection

^bPercutaneous coronary intervention

^cCoronary artery bypass graft

REFERENCES

- Garcia-Guimaraes, M. (2020). Spontaneous coronary artery dissection: Mechanisms, Diagnosis and Management. European Cardiology Review. 2020 Feb; 15: e03
- Hayes, HN, et al. (2018) Spontaneous Coronary Artery Dissection: Current State of the Science: A Scientific Statement from the American Heart Association. Circulation. Volume 137, Issue 19, Pages: e523-e557
- Douglas PS, et al. (2020). Spontaneous coronary artery dissection. UpToDate. Accessed Sept 14, 2020