Marathwada Medical & Research Institute
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CARDIOLOGY CHRONICLES

15th May 2026 | ISSUE 58

Thrombus in Left Main Coronary Artery

Thrombus in left main coronary artery seen as clear filling defect creates a sense of emergency and panic. And rightly so! When 70% of myocardial perfusion is at risk, anxiety and panic is a natural response. More so because there are no standardised guidelines to treat it. Experience suggests that pharmacological treatment directed at the thrombus is generally successful in tiding over the crisis.

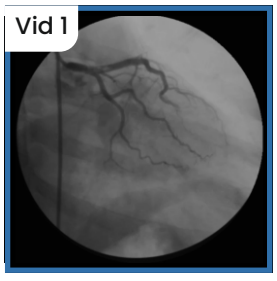
We present three cases of thrombus in the left main. Two of these had thrombus at the left main ostium and one patient had a thrombus in distal LM extending into proximal LAD. All three patients presented with acute coronary syndrome with elevated Troponin and mild LV systolic dysfunction. All the patients were treated with the same protocol. There was complete resolution of thrombus in all three cases.

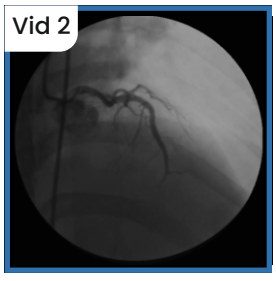
Protocol used: tPA (Actilyse) 5 mg bolus given through the coronary catheter placed at the left main ostium followed by intravenous infusion of 15 mg over next 2-3 hours. This is followed by Injection Enoxaparin 0.6 ml BD for 3 days. Dual antiplatelet therapy is continued for at least 6 months.

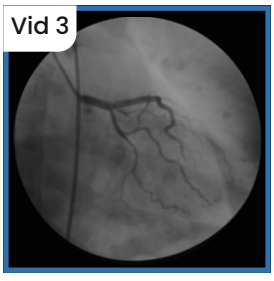
Case 1: A 41 y old doctor presented with chest pain , "T" inversion in anterior precordial leads and elevated Troponin. Risk factors: Hypertension. Angiogram revealed presence of a large filling defect in distal left main and proximal LAD (Video 1) Note distal occlusion of terminal LAD due to distal embolization (Video 2). There was some resolution of thrombus immediately after tPA bolus (Video 3). Angiogram after 24 hours revealed complete resolution of thrombus with TIMI-3 flow (Video 4). Note the opening and restoration of flow in distal LAD (Video 5).

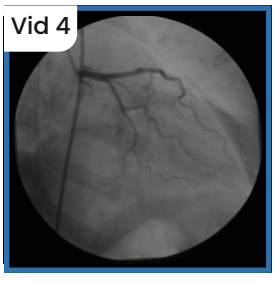
Case 2: A 48 y male smoker presented with chest pain and elevated Troponin. Angiogram revealed a large filling defect at the left mail ostium extending upto the bifurcation (Video 6). tPA was administered and there was complete resolution of thrombus after 24 hours (Video 7).

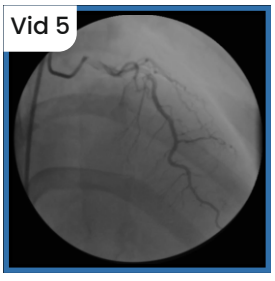
Case 3: A 40 y male smoker presented with ACS and elevated Troponin. His angiogram was done outside and was referred to us for further management. It revealed a large filling defect at the left main ostium (Video 8). There was complete resolution of thrombus after tPA administration (Video 9). An IVUS study revealed complete resolution of thrombus with no atherosclerotic plaque (Fig 1)

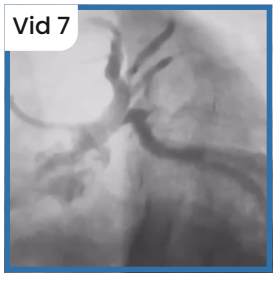


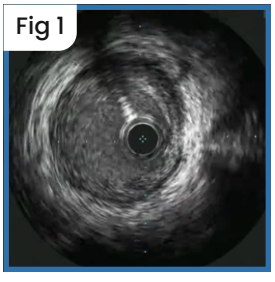












Discussion

Thrombus-seen as a large filling defect-in left main coronary artery without any significant disease anywhere else in the coronary tree rare but high stakes clinical scenario. There is no uniform consensus on treating this entity. The stakes are high due to large quantity of myocardium at jeopardy.

The causes could be:

1. Embolic due to atrial fibrillation or paradoxical embolism
2. Hyper-coagulable states
3. Cocaine abuse
4. Vasospasm with in-situ thrombus.
5. Spontaneous dissection with thrombus

Our cases were characterised by the following:

1. All patients were relatively young
2. Two out of 3 were smokers
3. High thrombus burden
4. All presented as NSTEMI
5. All were hemodynamically stable
6. Bleeding risk was low
7. Thrombophilia work up was negative
8. IVUS-done in one patient-did not reveal any underlying pathology

We don't claim that our protocol is the ultimate answer and many other protocols - which include heparin with or without GP IIb/IIIa inhibitors, thrombus aspiration, hybrid protocols with drugs and thrombus aspiration-have been found to be effective and safe as well. We would like to highlight the following:

1. Avoid being overly aggressive particularly when patient is hemodynamically stable
2. Avoid forceful multiple injections as it can push the thrombus distally
3. Avoid imaging in initial stage as it can push the thrombus distally
4. Thrombus aspiration is a double edged weapon and needs to be used judiciously as it can result in distal migration of thrombus or systemic embolism and stroke
5. Avoid pushing up the dose of tPA as it increases the bleeding risk and "death by enthusiasm". Assess the bleeding risk in every case before administering thrombolytic agent
6. Have a standardised protocol which you are comfortable with and use it consistently
7. Stenting is generally avoided in presence of fresh thrombus. Surgery may be considered in case of progressive ischaemia and hemodynamic compromise