The 44th Annual International Congress of the
EGYPTIAN SOCIETY OF CARDIOLOGY
CardioEgypt2017

20-23 February 2017

Peripartal STEMI

Tarek Abdel-Hameed Kafafy, MD, PhD, FESC

Lecturer of Cardiology

Assiut University

Case # 1

EGYPTIAN SOCIETY OF CARDIOLOGY
CardioEgypt2017

- A 27 years old female patient, housewife, non-smoker.
- Not known to be diabetic or HTN.
- No previous cardiac problems.
- Married, has 4 children.
- **Delivery by C-section** from 13 days.
- No previous contraception or hormonal therapy.

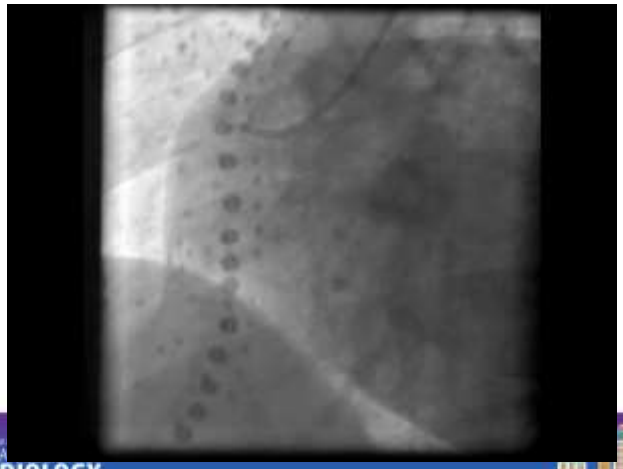
- **Complaint:** Typical chest pain 2 hrs.
- **Examination:**
  - **Pulse:** 110bpm, regular, average, equal on both sides, intact peripheral pulsations.
  - **BP:** 110/70 mmHg
  - **Chest and Heart:** CF
  - **Abdomen-pelvis:** Incision of C-section.

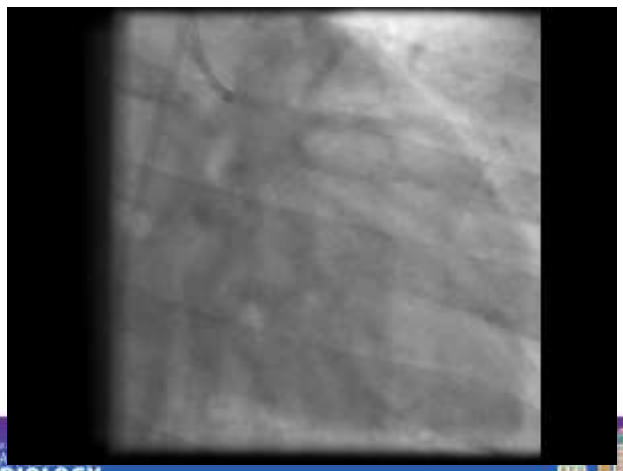
- **ECG:**
  - ↑ ST in I, AVL, V5-V6
  - ↓ ST in II, III, AVF and V1-V4.

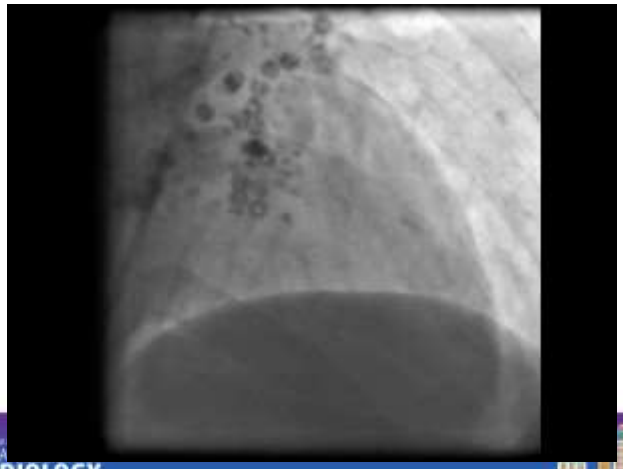
- **Echocardiography**
  - Bed-side echocardiographic assessment showed hypokinesia of apex with good overall LV systolic function, EF= 60%.

ESC 2011

Recommendations	Class[a]	Level[b]
ECG and troponin levels should be performed in the case of chest pain in a pregnant woman.	I	C
Coronary angioplasty is the preferred reperfusion therapy for STEMI during pregnancy.	I	C
A conservative management should be considered for non ST-elevation ACS without risk criteria.	IIa	C
An invasive management should be considered for non ST-elevation ACS with risk criteria (including NSTEMI).	IIa	C


EGYPTIA
CARDIOLOGY
CardioEgypt2017

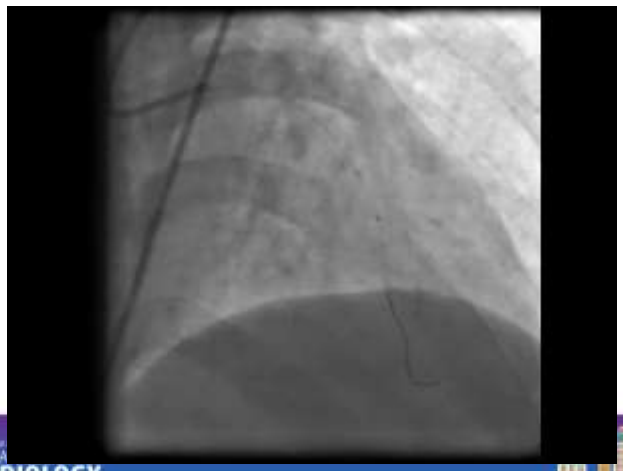

EGYPTIA
CARDIOLOGY
CardioEgypt2017

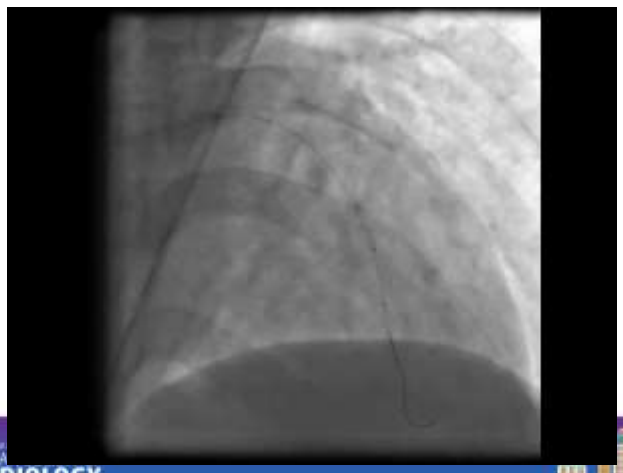


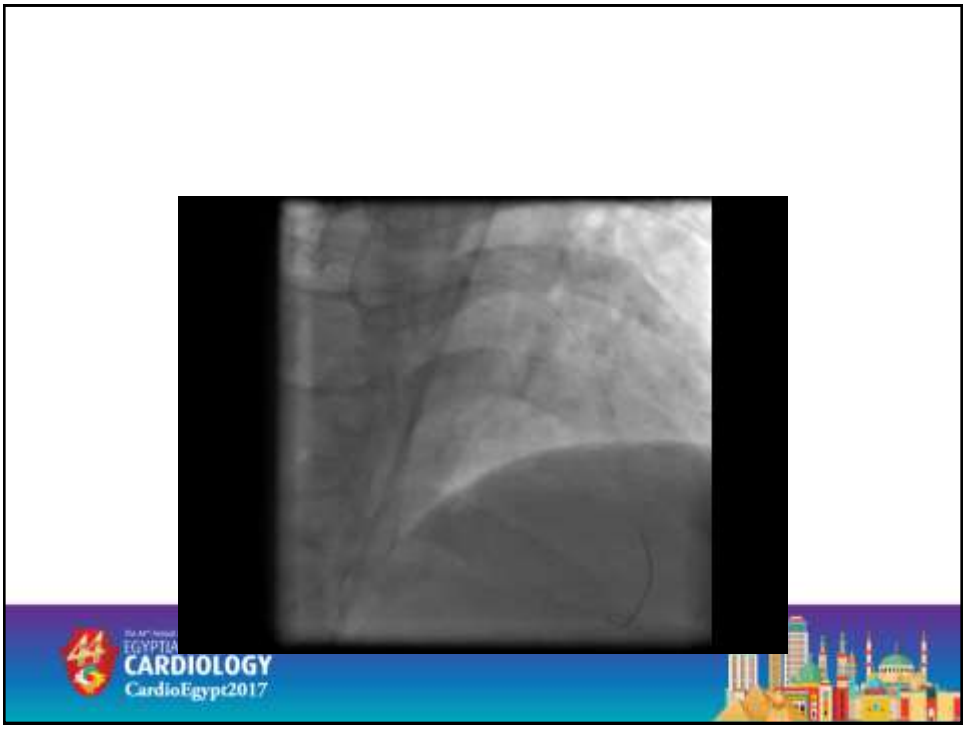
Which is the culprit?

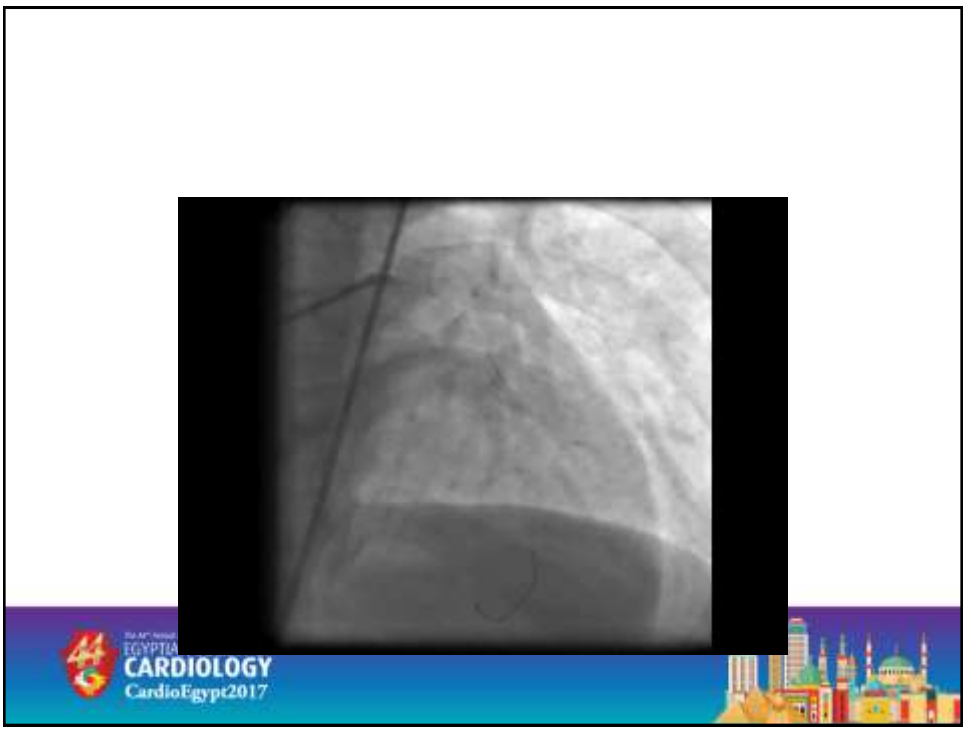
- LAD or LCX??
- What to do next?
- How about thrombus aspiration?

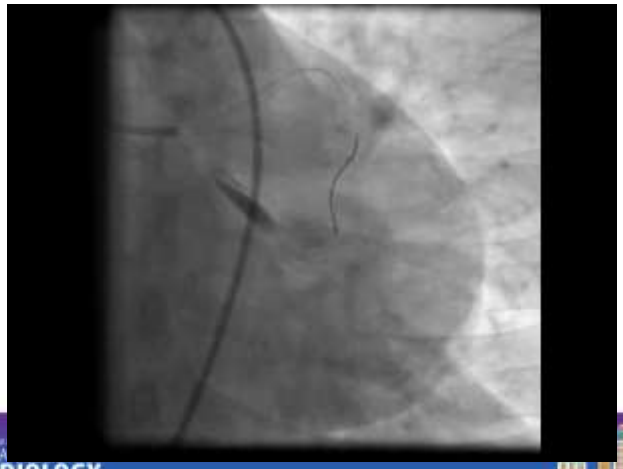
EGYPTIAN SOCIETY OF CARDIOLOGY
CardioEgypt2017


EGYPTIA
CARDIOLOGY
CardioEgypt2017


EGYPTIA
CARDIOLOGY
CardioEgypt2017


EGYPTIA
CARDIOLOGY
CardioEgypt2017


EGYPTIA
CARDIOLOGY
CardioEgypt2017



P-SCAD!!

Definition:

- SCAD is defined as a non-traumatic and non-iatrogenic separation of the coronary arterial walls, creating a false lumen.
- This separation can occur **between the intima and media** or **between the media and adventitia**, with intramural hematoma (IMH) formation within the arterial wall that compresses the arterial lumen, decreasing antegrade blood flow and subsequent myocardial ischemia or infarction ***(Saw J, Can J Cardiol 2013)***.

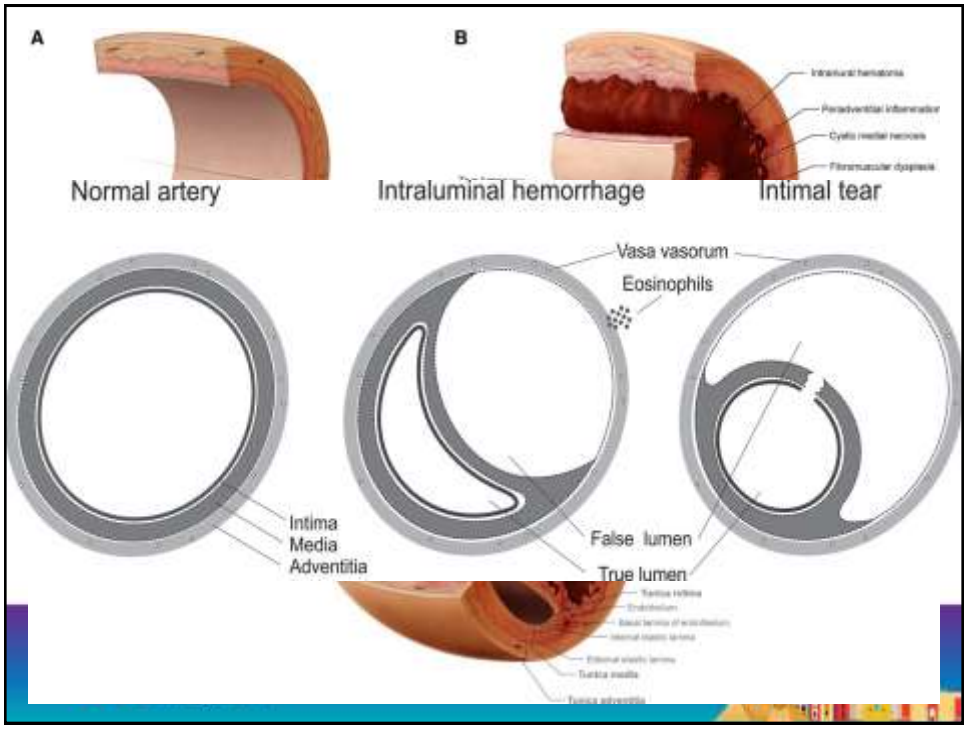
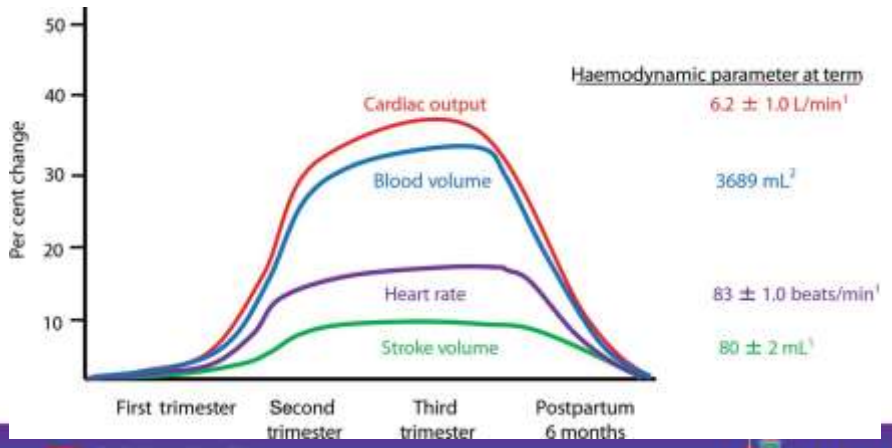
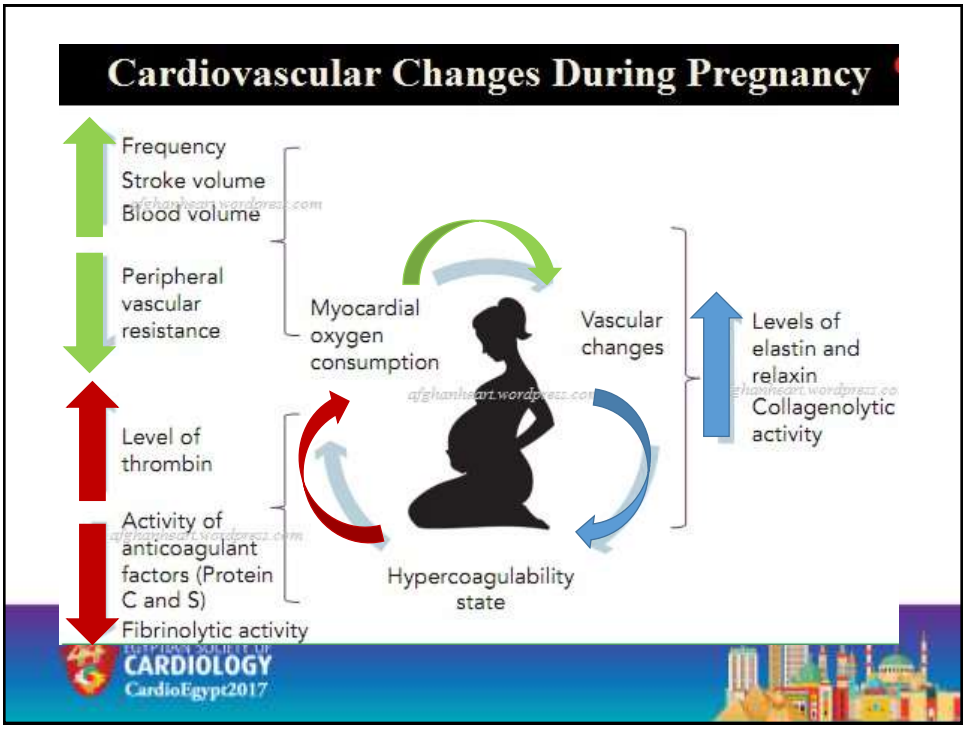


Table 1 Etiology of non-atherosclerotic SCAD
Predisposing arteriopathy
Fibromuscular dysplasia
Pregnancy: history of multiple pregnancy, peri-partum
Connective tissue disorder: Marfan's syndrome, Ehler Danlos syndrome, cystic medial necrosis, fibromuscular dysplasia
Systemic inflammation: systemic lupus erythematosus, Crohn's disease, polyarteritis nodosa, sarcoidosis
Hormonal therapy
Coronary artery spasm
Idiopathic
Precipitating stress events
Intense exercise (aerobic or isometric)
Intense emotional stress
Labor & delivery
Intense Valsalva-type activities (e.g., severe repetitive coughing, retching/vomiting, bowel movement)
Cocaine, amphetamines, met-amphetamines, beta-HCG
SCAD, spontaneous coronary artery dissection.

Cardiovascular changes during pregnancy





P-SCAD!!

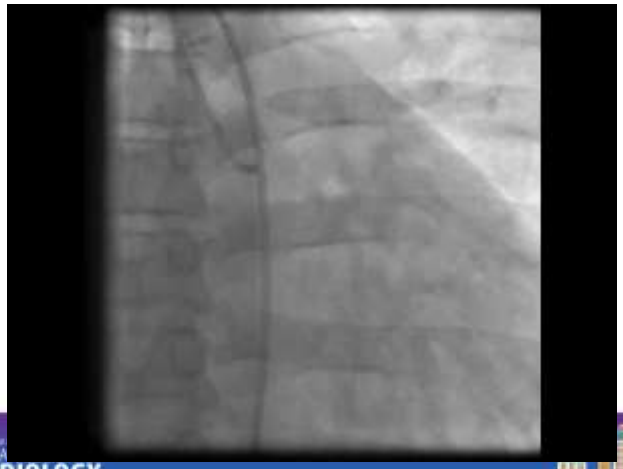
What to do next?

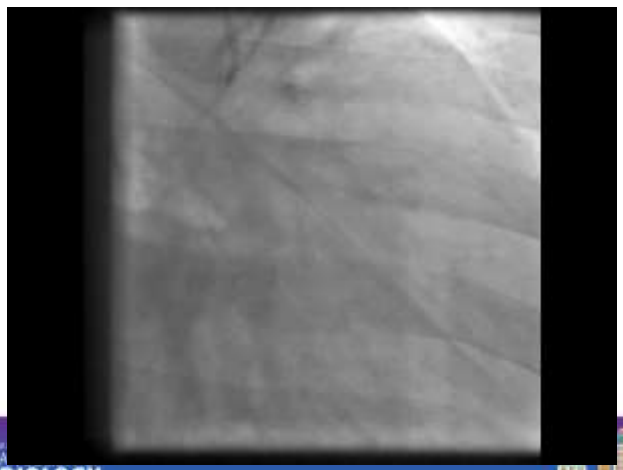
- **Patient was hemodynamically stable.**
- **Decision to stop at this point.**
- I.V. high bolus dose **Tirofiban**, then maintaining infusion for 24 hrs.
- **Clopidogrel** 75 mg, and **aspirin** 100mg.
- **Close observation** in the CCU and **second look** later during index hospitalization.

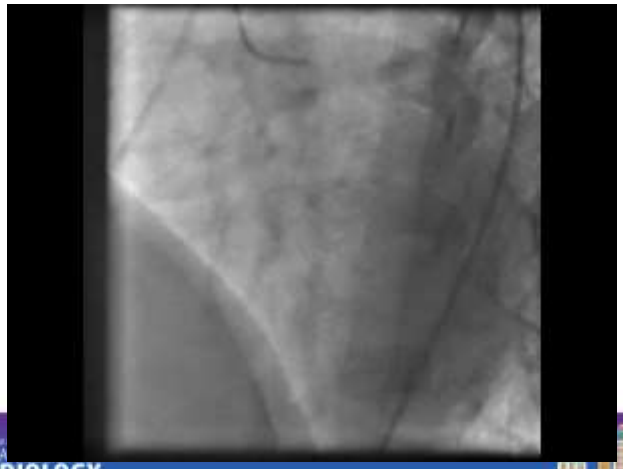
- **Immediately after primary PCI** her echo showed severe RWMA in the infero-postero-lateral and apical territory with EF 40%.
- **Follow up echocardiography** next day revealed improving wall motion with residual hypokinesia of apical and mid lateral wall and LVEF of 54% by Simpson's.

- **Lab investigations:**
  - CK: 1481 → 3147→ 577 U/L
  - CK-MB: 96→ 106 U/L
  - LDH: 252 U/L
  - CBC: TLC:16.9 HB:12.4 PLT:433
  - Electrolytes: K:4.2 Mg:2.2 Na:135
  - RBG: 5.8 mmol/L
  - S. urea: 7.1 mmol/L S. creatinine: 100.56 umol/L
  - TC: 150 mg/dl LDL-C: 98 mg/dl HDL-C: 50 mg/dl

Four days later

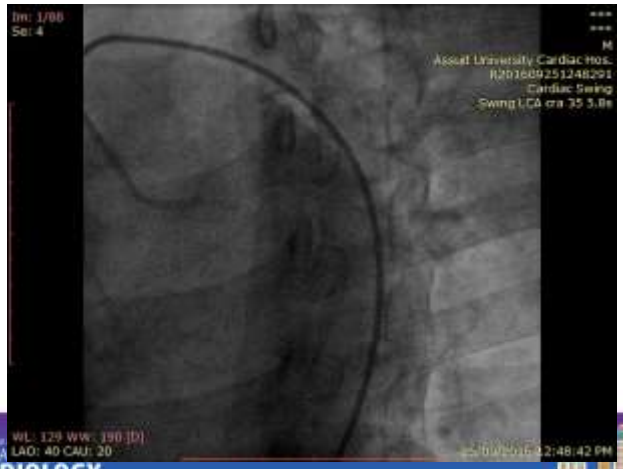

EGYPTIAN
CARDIOLOGY
CardioEgypt2017


EGYPTIAN
CARDIOLOGY
CardioEgypt2017



- **Hospital course:**
  - Smooth recovery, rehabilitation.
- **Medications:**
  - Aspirin 100 mg od
  - Clopidogrel 75 mg od
  - Bisoprolol 5 mg od
  - Enalapril 5 mg od
- **Scheduled for follow-up after 3 months.**

Three months later



EGYPTIAN SOCIETY OF CARDIOLOGY
CardioEgypt2017

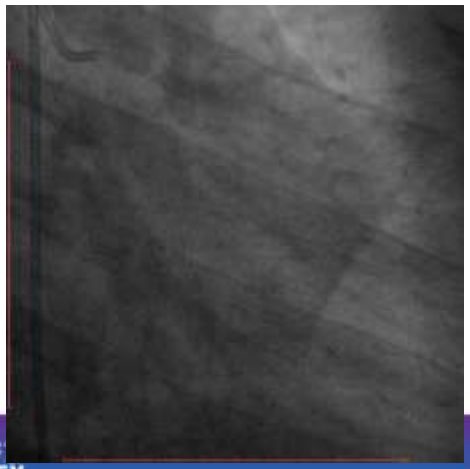
Case # 2

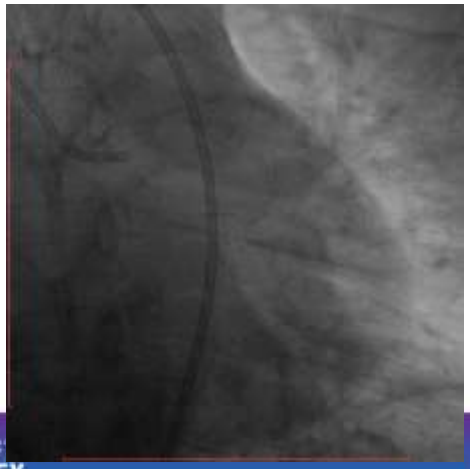
EGYPTIAN SOCIETY OF CARDIOLOGY
CardioEgypt2017

- A 33 years old patient. A mother of 3 children.
- Had normal uncomplicated vaginal delivery 3 days ago.
- Not known to be diabetic.
- Hx of pre-eclampsia from 10 years
- Since then she became HTN on regular ttt.
- No relevant family history.
- No special habits.

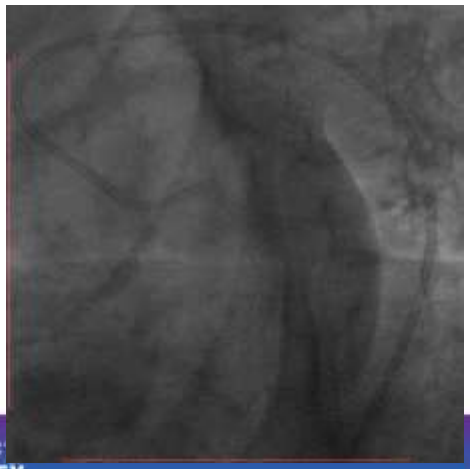
- **Complaint:** Patient presented 3 days post-partum by persistent typical chest pain of 18 hours duration.
- **Examination:**
  - **Pulse:** 75 bpm, regular, average, equal on both sides, intact peripheral pulsations.
  - **BP:** 120/80 mmHg
  - **Chest and Heart:** CF
  - **Abdomen:** Involuting uterus.

- **ECG:** Extensive anterolateral STEMI.
- **Bed-side echo:** RWMA in apex with EF= 50%.
- **Decision:** Primary PCI

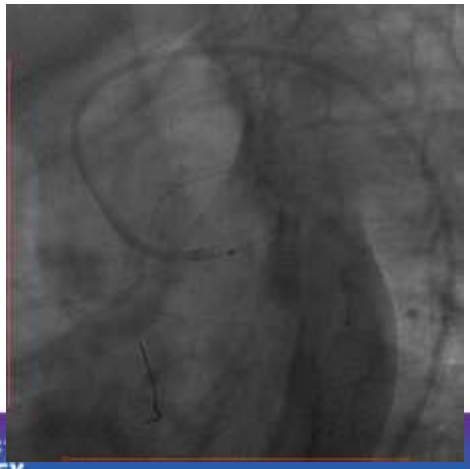




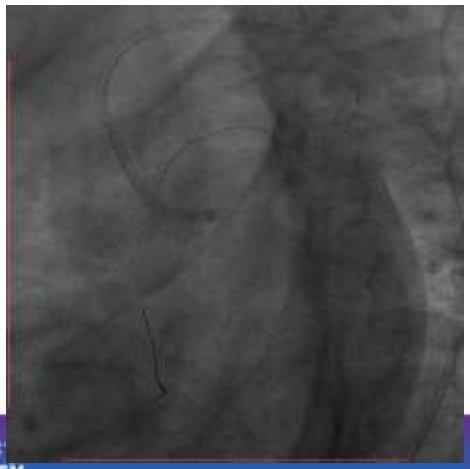
EGYPTIAN SOCIETY
CARDIOLOGY
CardioEgypt2017



EGYPTIAN SOCIETY
CARDIOLOGY
CardioEgypt2017

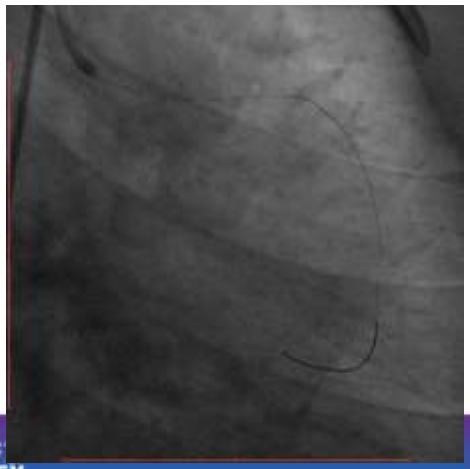


EGYPTIAN SOCIETY
CARDIOLOGY
CardioEgypt2017



EGYPTIAN SOCIETY
CARDIOLOGY
CardioEgypt2017


EGYPTIAN SOCIETY
CARDIOLOGY
CardioEgypt2017


EGYPTIAN SOCIETY
CARDIOLOGY
CardioEgypt2017

- **ECG:** Extensive anterolateral STEMI.
- **Decision:** Primary PCI

- **Defer stenting**
- **Start I.V. GP IIb-IIIa Inhibitors (Tirofiban)**
- **Second look 3 days later.**

- **Lab Investigations:**

➢ **CK: 976-373-123-88**

➢ **CK-MB: 183-89-35-36**

➢ **Tn: 1.1- 8.5**

➢ **Hgb: 11.9 WBC: 10.9 PLT: 225**

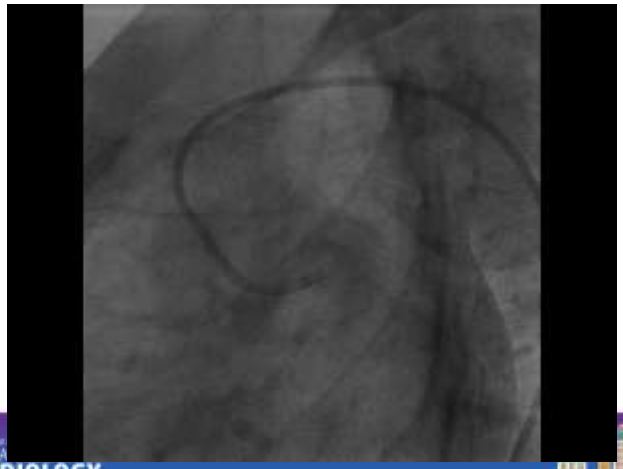
➢ **S. creatinine: 0.8**

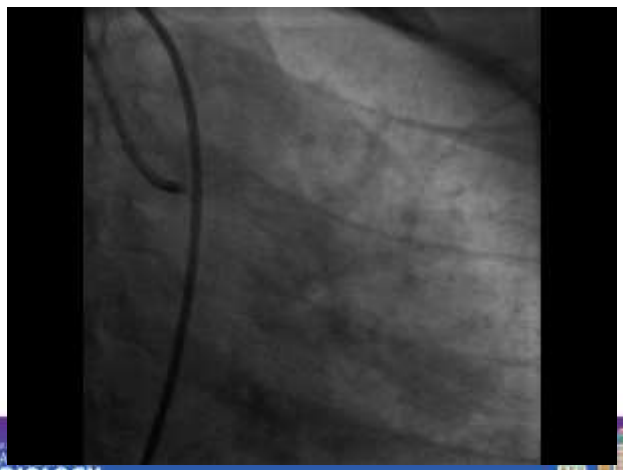
➢ **TC: 171 LDL: 83 HDL: 65 TG: 110**

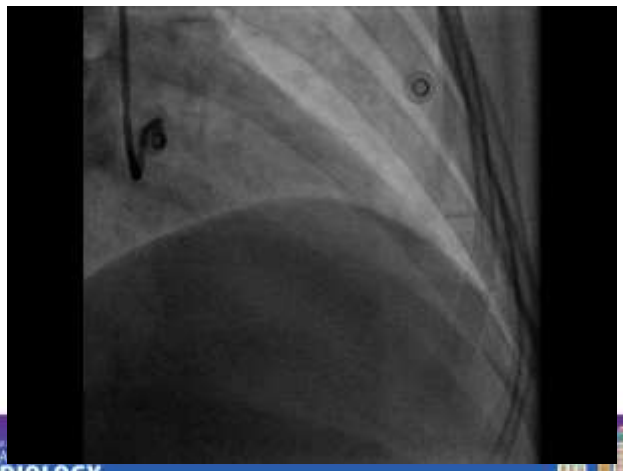
➢ **Liver function tests: Normal**

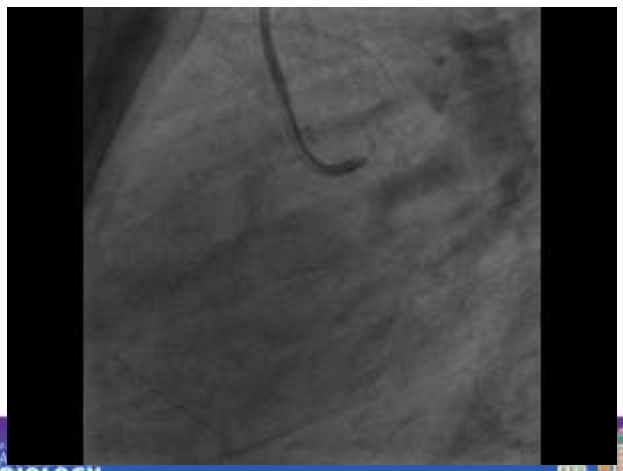
- **Echocardiography:**

IHD, hypokinesia of apex, and EF= 56%


EGYPTIA
CARDIOLOGY
CardioEgypt2017


EGYPTIA
CARDIOLOGY
CardioEgypt2017


EGYPTIA
CARDIOLOGY
CardioEgypt2017


EGYPTIA
CARDIOLOGY
CardioEgypt2017

- **Hospital course:**
  - Uneventful, except from mild vaginal bleeding and hematuria, which necessitated stopping the GP IIb-IIIa Is prematurely, but not other antiplatelets.
  - Didn't necessitate blood transfusion.
- **Medications:**
  - Aspirin 100 mg qd
  - Clopidogrel 75 mg qd
  - Bisoprolol 5 mg qd
  - Lisinopril 5 mg qd
  - Atorvastatin 40 mg qd

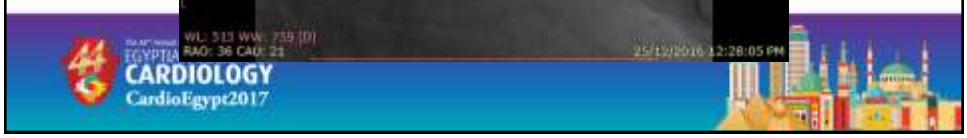
Case # 3

- A 30 years old housewife, has 3 children.
- Had normal uncomplicated vaginal delivery 3 months ago.
- Not known to be diabetic or hypertensive.
- No history of previous cardiac problem.
- Non-smoker, not known dyslipidemic.

- **Complaint:** Typical chest pain 3 hrs.
- **Examination:**
  - **Pulse:** 90bpm, regular, average, equal on both sides, intact peripheral pulsations.
  - **BP:** 125/85 mmHg
  - **Chest and Heart:** CF.
  - **Abdomen-pelvis:** CF.

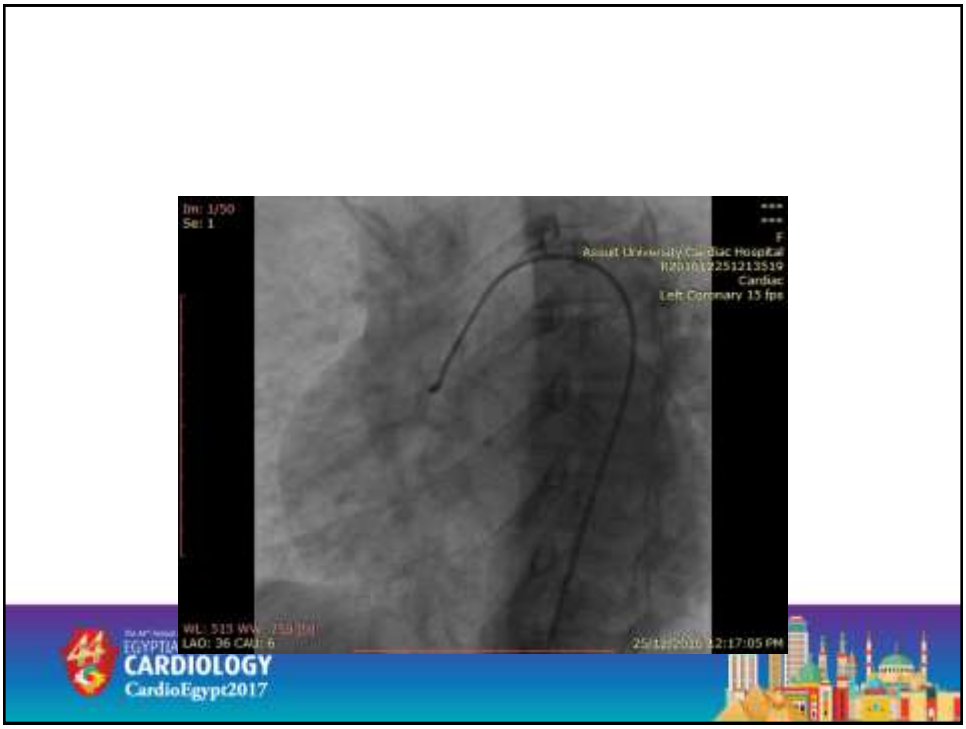
- **ECG:**
  - ↑ ST in II, III, AVF.

- **Echocardiography**
  - Bed-side echocardiographic assessment showed hypokinesia of basal-mid inferior wall with good overall LV systolic function, EF= 65%.




Im: 1/53
Se: 5
F
Cardiac
Left Coronary 15 fps
LAO: 41 CAU: 26
25/12/2016 12:28:27 PM
EGYPTIAN
CARDIOLOGY
CardioEgypt2017


Im: 1/65
Se: 7
F
Cardiac
Left Coronary 15 fps
RAO: 42 CRA: 33
25/12/2016 12:29:29 PM
EGYPTIAN
CARDIOLOGY
CardioEgypt2017


Im: 1/50
Se: 1
F
Assuit University Cardiac Hospital
Cardiac
Left Coronary 15 fps
LAO: 36 CAU: 6
25/12/2016 12:17:05 PM
EGYPTIA
CARDIOLOGY
CardioEgypt2017

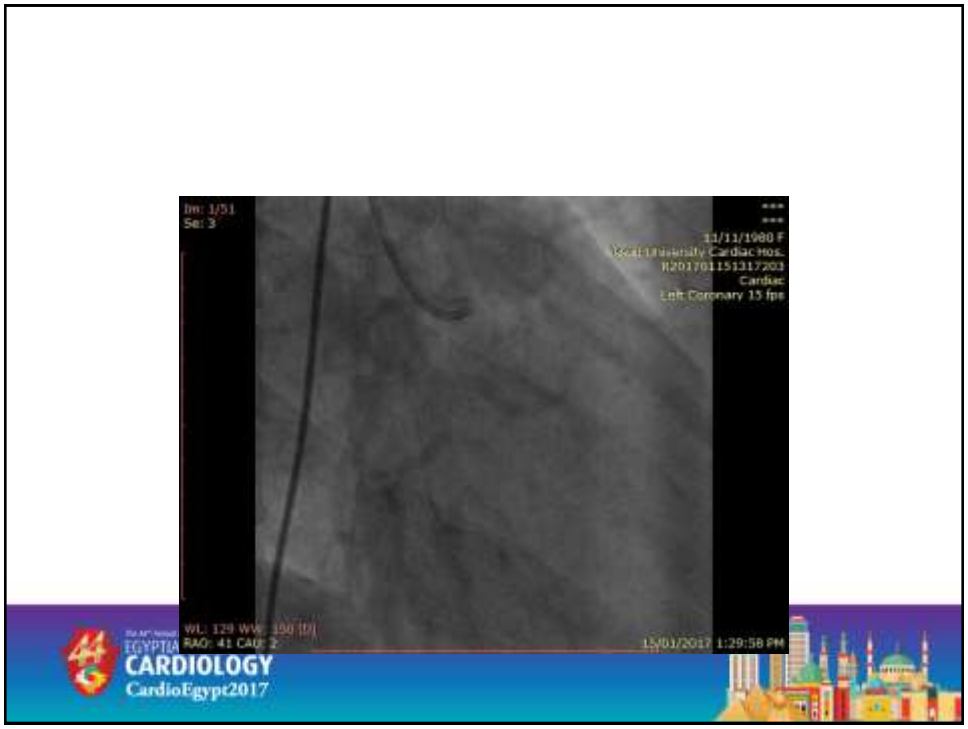

Im: 1/63
Se: 3
F
Assuit University Cardiac Hospital
Cardiac
Left Coronary 15 fps
LAO: 36 CAU: 6
25/12/2016 12:18:46 PM
EGYPTIA
CARDIOLOGY
CardioEgypt2017

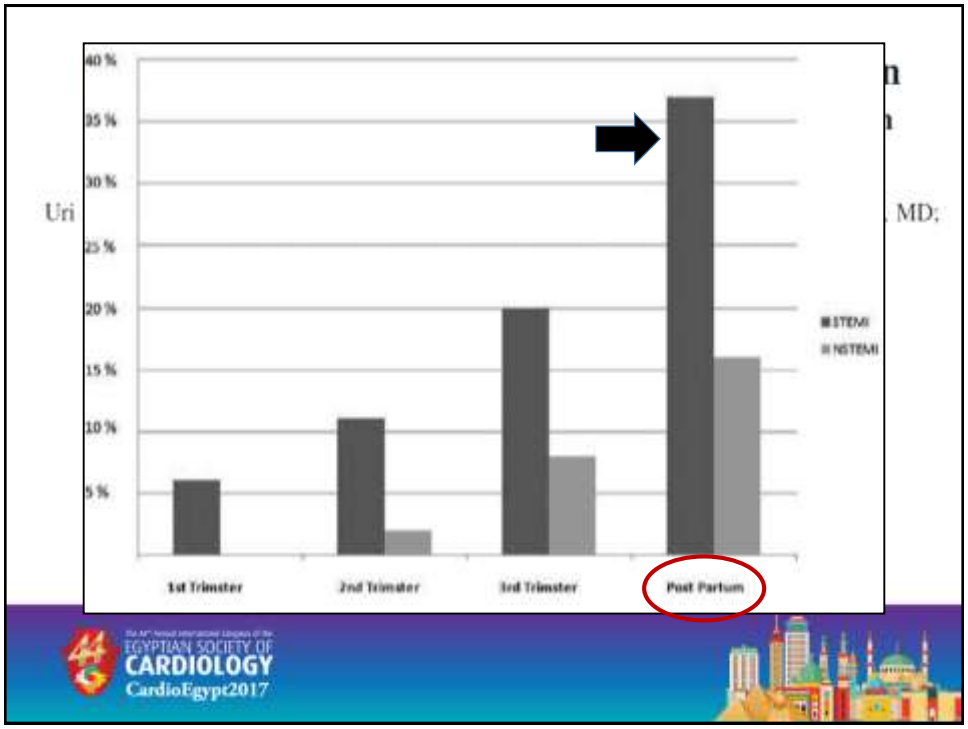
- **Patient was stable.**
- **Decision was to defer PCI.**
- I.V. high bolus dose **Tirofiban**, then maintaining infusion for 24 hrs.
- **Clopidogrel** 75 mg, and **aspirin** 100mg.
- **Close observation** in the CCU and **second look** later.
- The patient had an uneventful course, and was discharged on OMT.

Three weeks later


Im: 1/64
Se: 1
11/11/1980 F
Assuit University Cardiac Hos.
R201701151317203
Cardiac
Left Coronary 15 fps
WL: 129 WW: 190 DY
LAO: 40 CRA: 1
15/01/2017 1:29:15 PM
EGYPTIAN
CARDIOLOGY
CardioEgypt2017

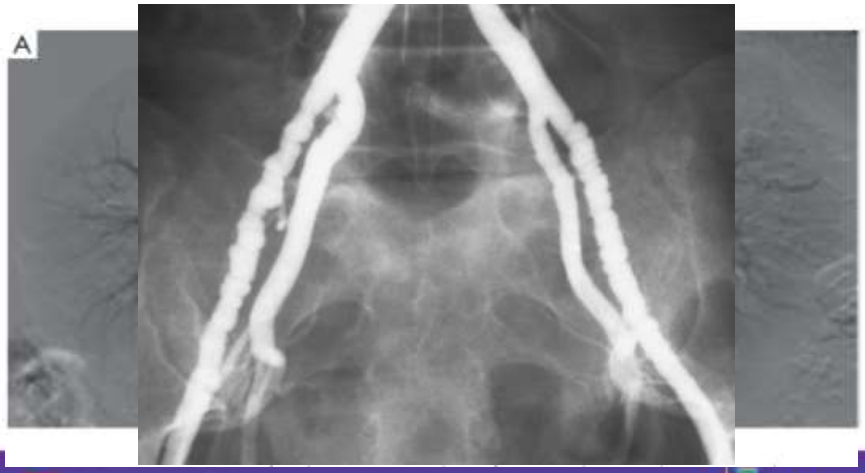

Im: 1/65
Se: 2
11/11/1980 F
Assuit University Cardiac Hos.
R201701151317203
Cardiac
Left Coronary 15 fps
WL: 129 WW: 190 DY
LAO: 30 CRA: 26
15/01/2017 1:29:35 PM
EGYPTIAN
CARDIOLOGY
CardioEgypt2017


Im: 1/51
Se: 3
11/11/1980 F
Left Coronary 15 fps
WL: 129 WW: 190 [0]
RAO: 41 CAU: 2
15/01/2017 1:29:58 PM
EGYPTIAN SOCIETY OF
CARDIOLOGY
CardioEgypt2017

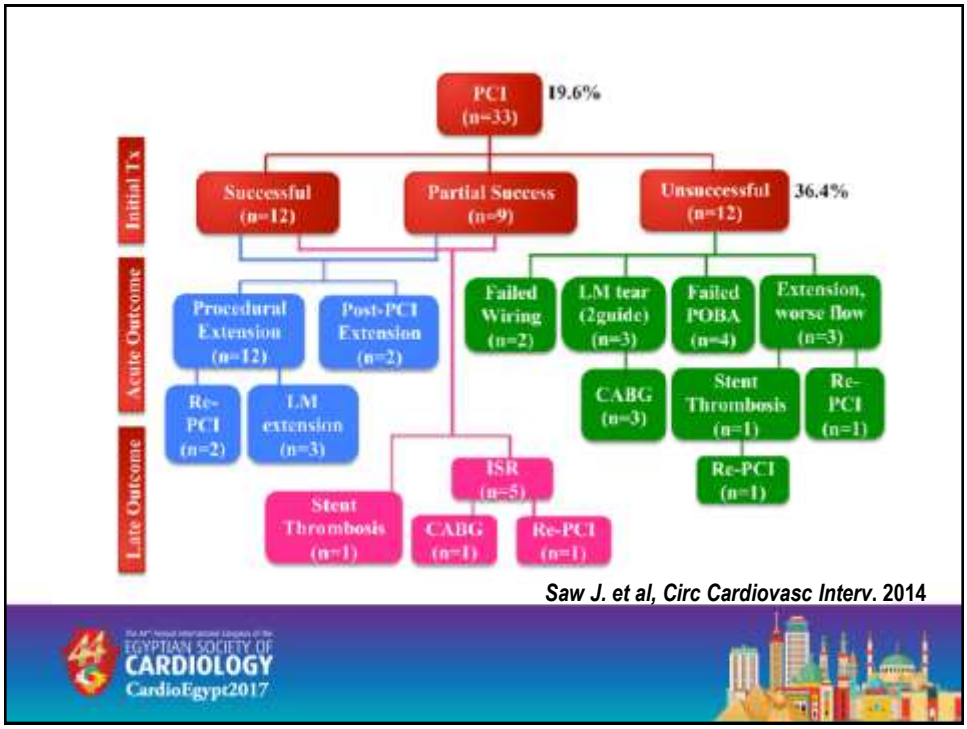

40 %
35 %
30 %
25 %
20 %
15 %
10 %
5 %
STEMI
NSTEMI
1st Trimster
2nd Trimster
3rd Trimster
Post Partum
EGYPTIAN SOCIETY OF
CARDIOLOGY
CardioEgypt2017

Spontaneous Coronary Artery Dissection

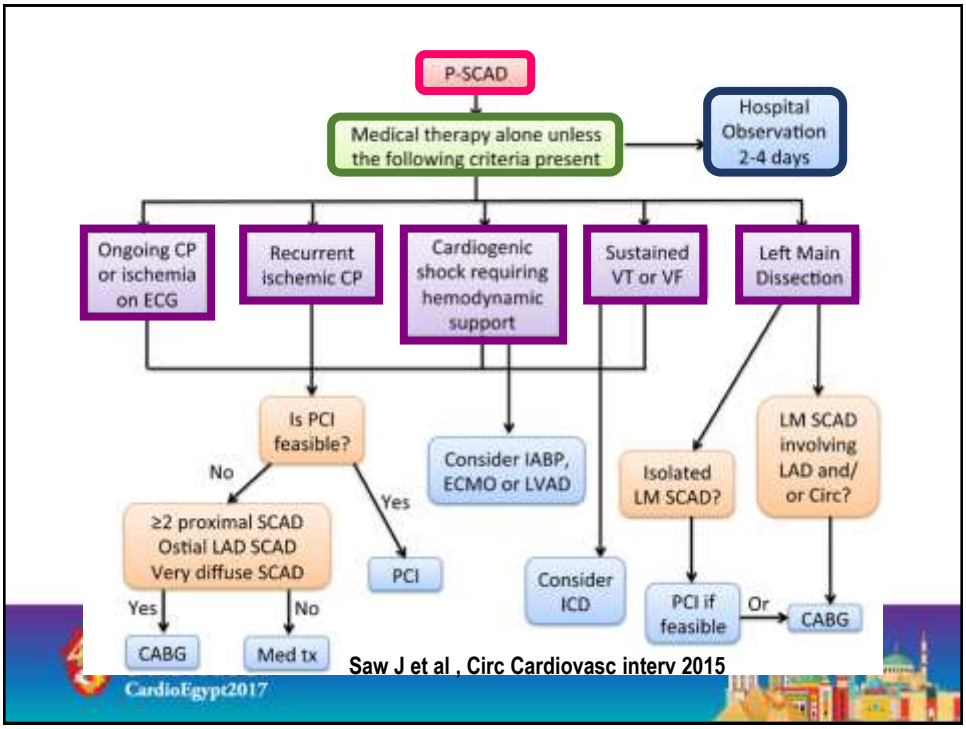
Association With Predisposing Arteriopathies and Precipitating



Saw J. et al, Circ Cardiovasc Interv. 2014



Saw J. et al, Circ Cardiovasc Interv. 2014



Take-home message

- **Pregnancy-related SCAD** is increasingly being recognized as an important cause of acute coronary syndromes in women with few or no conventional risk factors for atherosclerosis and coronary artery disease.
- A **high level of suspicion** should be maintained to ensure timely and appropriate investigation and management.
- **Arteriopathies**, particularly **FMD**, is a frequent finding among patients with SCAD, and shouldn't be overlooked.

Take-home message

- **Urgent angiography** is crucial to establish the diagnosis.
- **Gentle contrast injections** (to minimize propagation of dissection), and consideration of initial **nonselective injections** to visualize the LM.
- **Conservative management** of stable patients with SCAD was proven successful, and is associated with spontaneous angiographic healing.
- Survivors are at risk for recurrent cardiovascular events, including **recurrent SCAD.**