LAD/D1 Bifurcation Stenting in SCAD

Dr Sarat Kumar Sahoo, M.D., D.M
Consultant Interventional Cardiologist
Apollo Reach Hospital
Karimnagar, Telangana, India
**Introduction**

- SCAD is defined as a nontraumatic and noniatrogenic separation of the coronary arterial wall by intramural hemorrhage and the resultant creation of a false lumen.

- SCAD is a rare non atherosclerotic cause of ACS.

- Incidence - 0.1 to 0.4% of all ACS.

- Important cause of ACS in young women (upto 25% of all ACS in women less than 50yrs)

- **Mechanisms:** 1) intimal tear, medial dissection and creation of false lumen  
  2) Disruption of intra – arterial vasa vasorum, IMH

- **Etiology:** 1) Predisposing arteriopathy -(a) atherosclerotic SCAD  
  (b) NA – SCAD – peripartum arteriopathies, multiple previous pregnancies, connective tissue disorders, systemic inflammatory conditions, coronary spasm. Idiopathic arteriopathies.

  2) Precipitating stress – intense exercise, intense emotional stress, labor and delivery, intense Valsalva type activities, sympathomimetic drugs and intense hormonal therapy.

- **Presentation:** Chest pain, ACS, VT/VF, SCD.
SAW angiographic SCAD classification:
- Type-1 - (29%) (multiple radiolucent lines, a false lumen, contrast staining and late contrast clearing). Longitudinal filling defect representing the radiolucent intimal flap. There is often contrast staining of the arterial wall with appearance of double lumen.

- Type-2 - (67%) (diffuse stenosis of varying severity) Diffuse long smooth tubular lesion due to hematoma with no visible dissection plane resulting complete vessel occlusion. Lesions are typically more than 30mm in length with abrupt change in vessel diameter between normal and diseased segments. Involves predominantly mid to distal segments.

- Type-3 - (4%) (mimic atherosclerosis) multiple focal tubular lesions due to intramural hematoma that mimic atherosclerosis. IVUS or OCT is required for diagnosis of Type-3. CAG suggestive features; long lesions (11 -20mm); hazy or linear stenosis; absence of atherosclerotic changes.

IUVS or OCT is helpful in the diagnosis of Type 2/3 SCAD.

- LAD most commonly affected, with multiple dissections in up to 22-25% cases.
- More common in mid to distal segments involving side branches.
Diagnostic algorithm for SCAD

1. High clinical index of suspicion for SCAD
2. Early coronary angiography
3. Type 1 SCAD (arterial wall stains)?
   - Yes: Give IC nitroglycerin, then:
     1. Perform OCT or IVUS
     2. Repeat angiogram in 4-6 weeks
   - No: Type 2 SCAD (diffuse and smooth stenosis)?
4. Type 2 SCAD (diffuse and smooth stenosis)?
   - Yes: Perform OCT or IVUS
   - No: Type 3 SCAD (mimics atherosclerosis)?
5. Type 3 SCAD (mimics atherosclerosis)?
   - Yes: Perform OCT or IVUS
   - No: SCAD
Case History

- R/72 Yrs/Male
- Anterior Wall MI, Delayed Presentation
- ECG – evolved Anterior Wall MI
- Echo – RWMA of LAD, EF - 40%
- CAG – Proximal LAD dissected and involving D1 Origin
- LAD/D1 Bifurcation Stenting by Culotte Technique using 3.5X33 & 3.5X33 DES
ECG

Rate: 59, Age not entered, assumed to be 50 years
Sinus rhythm
PR: 153, Anterolateral infarct, age indeterminate
QRS: 99, Abnormal T, consider ischemia, lateral
QT: 424, QTc: 420

P-axis: 40
QRS: 13
T: 102

12 Lead; Standard Placement

Unconfirmed Diagnosis

Device: OPD/002 Speed: 25 mm/sec Limb: a/mV Chest: 10.0 mm/mV
CAG

Dissection of Proximal LAD extending into Diagonal Ostium, TIMI II Flow in LAD and Diagonal
PROCEDURE

Diagonal crossed with Rinato and LAD crossed with Gaia 2 wire

LAD predilated with 2.0X10 mm Balloon
Diagonal predilated with 2.0X10 mm Balloon

LAD predilated with 3.0X15 mm Balloon
PROCEDURE

CAG after predilatation

3.5X33 mm DES was deployed from Proximal LAD to Diagonal
PROCEDURE

LAD was rewired and Diagonal stent struts were opened with 2.0x10mm Balloon

3.5X33 mm DES was deployed from Proximal LAD to Mid LAD through Diagonal stent
PROCEDURE

LAD stent deployed

D1 rewired and LAD stents struts opened by 2.0x10 mm balloon
PROCEDURE

Final Kissing Balloon Dilatation

Repot
Take Home Message

- Management of SCAD is like other causes of CAD-Conservative/medical therapy.
- Revascularization
  - Complete vessel occlusion
  - Ongoing ischemia
  - LM
  - Recurrent chest pain
  - Hemodynamic instability
  - Sustained VT/VF
- PCI is preferable-challenging, success rate is less than 50%
  - Technical difficulties
    - negotiating the guidewire into true lumen
    - dissection or hematoma extension
    - side branch occlusion
    - stent placement can result in hematoma propagation and loss of vessel
    - conservative approach to stent implantation is preferred with stenting of the proximal segment to seal the dissection entry.
    - in case of side branch involvement, two stent strategy is preferred.
    - requires OCT/IVUS
    - DES/BVS
- CABG
  - LM dissection
  - PCI unsuccessful
- Prognosis
  - 1yr and 10yr mortality is 1.1% & 7.7% respectively.
  - Excellent in hospital and long term survival with a significant risk of future SCAD events (average rate of 5% per year)
THANK YOU