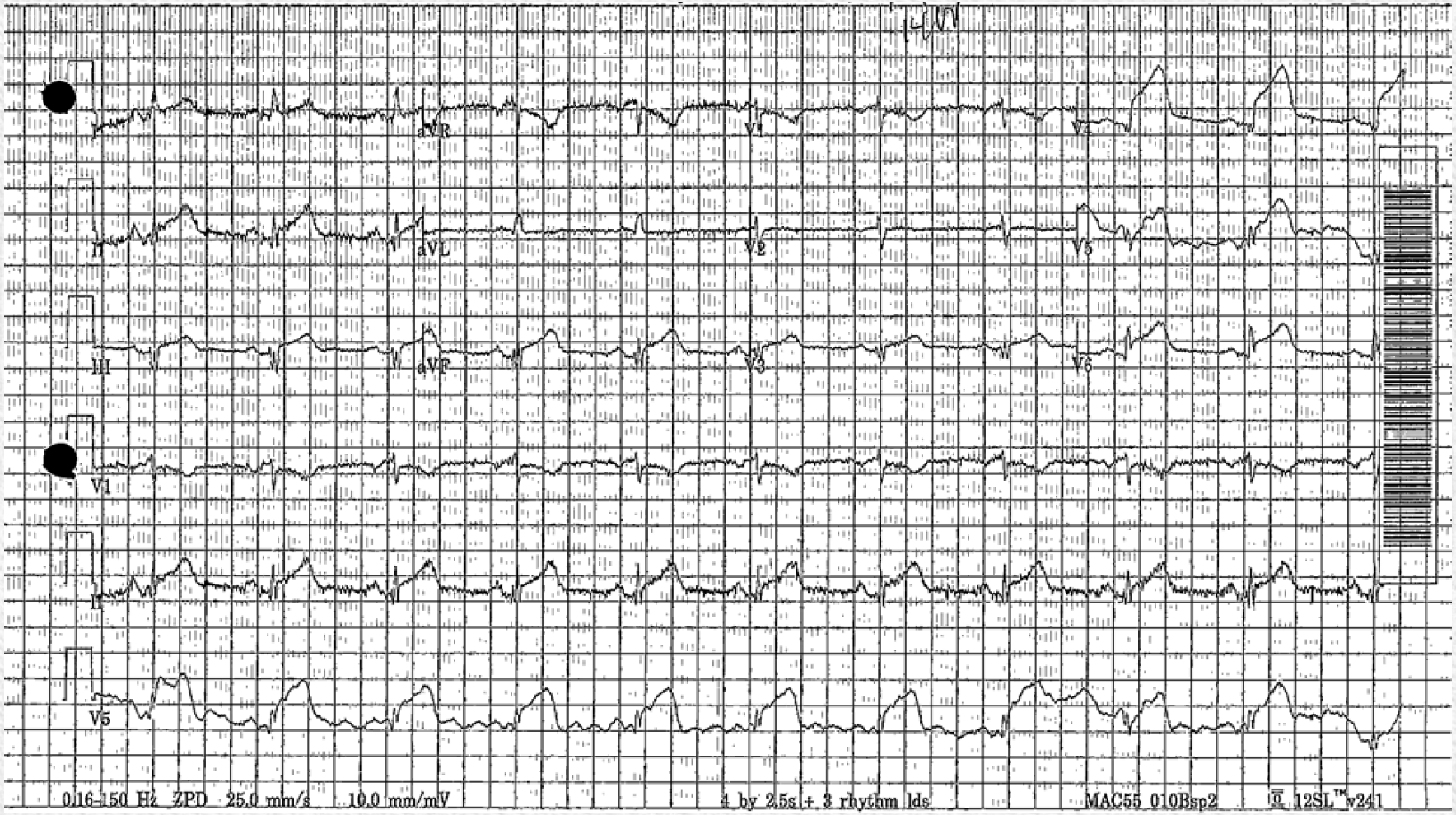
Invasive Vs. Conservative Treatment of SCAD

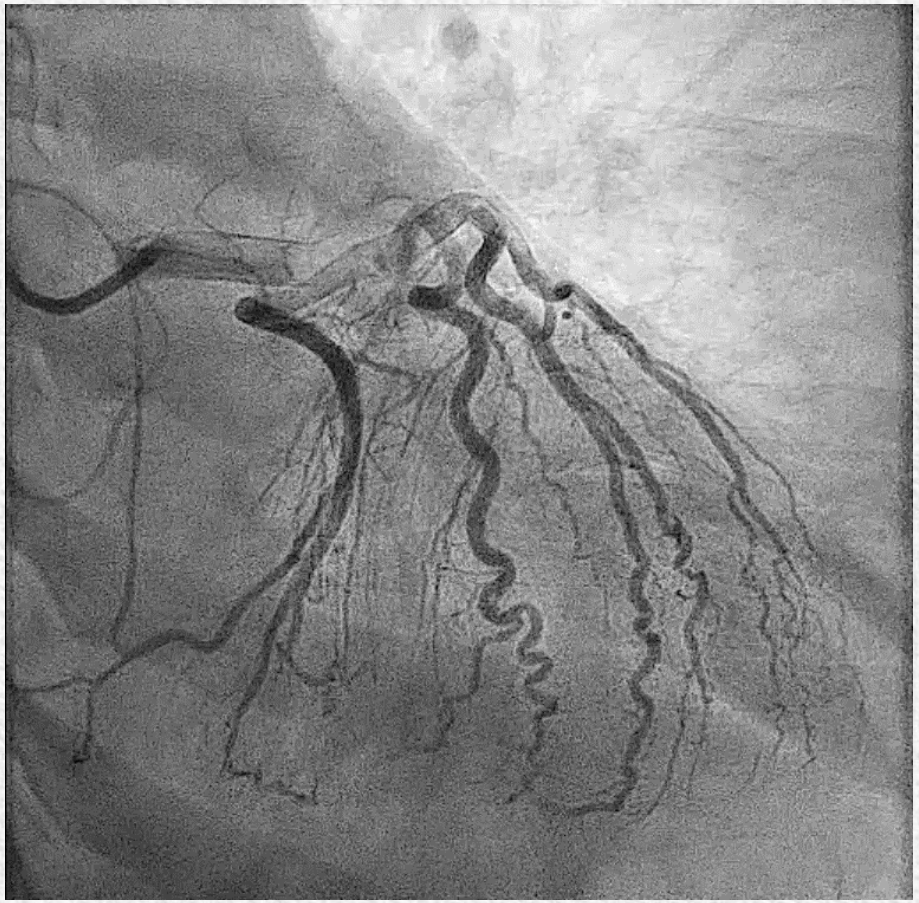
Hayder Hashim MD FSCAI

Associate Porf. Georgetown University

MedStar Washington Hospital Center, USA

48 year old female presented with left sided chest pain that radiates to the left shoulder and diaphoresis





SCAD Definition

- Definition: Separation of the layers of an epicardial coronary-artery wall by intramural hemorrhage, with or without an intimal tear.

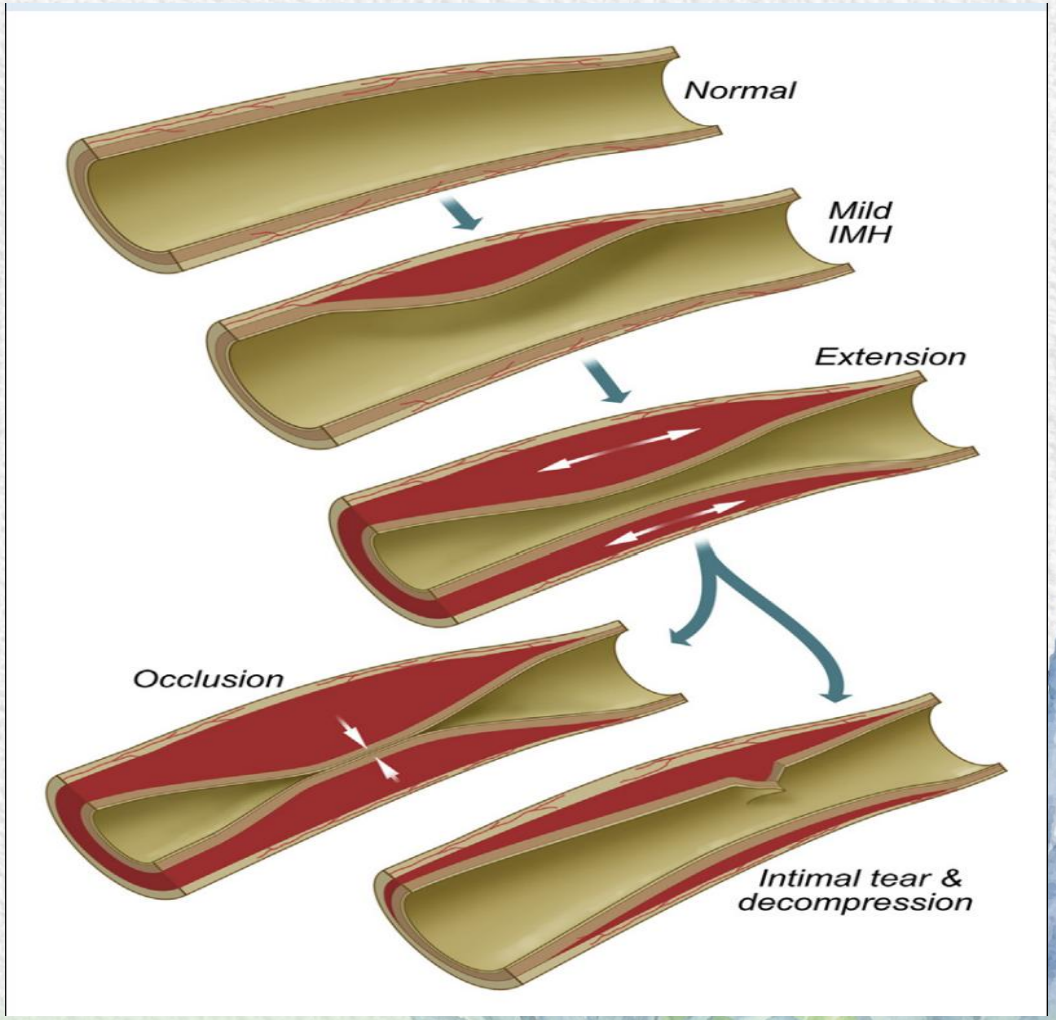
- Not associated with atherosclerosis, iatrogenic injury, or trauma.

Pathophysiology

- Two hypothesis exist

- “**Inside-out”** suggests that blood enters the subintimal space from the true lumen after development of an endothelial-intimal disruption or “flap”

- **“Outside-in**” hypothesis, the hematoma arises de novo in the media, possibly from disruption of traversing micro vessels



Hayes, S, Tweet, M, Adlam, D. et al. Spontaneous Coronary Artery Dissection: *JACC* State-of-the-Art Review. *J Am Coll Cardiol.* 2020 Aug, 76 (8) 961–984

Statistics and Epidemiology

- Women comprise ~90% of SCAD with a mean age of presentation between 44 and 53 years.
- Studies have estimated a prevalence of SCAD as high as 4% of patients presenting with ACS.
- SCAD is the underlying cause of up to 35% of all ACS cases in women less than 50 years of age.

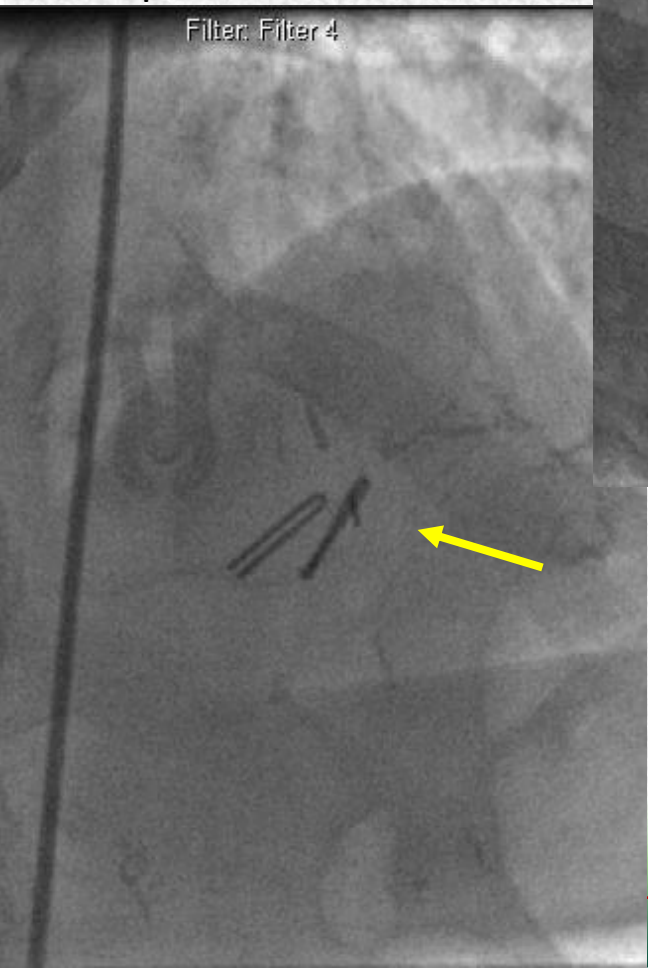
Diagnosis

- Coronary Angiography: Imperfect Gold standard.
- SCAD often occurs in the mid-to-distal coronary arteries with the LAD most commonly affected.
- IVUS vs OCT
- Coronary CTA (proximal SCAD) or to assess healing.

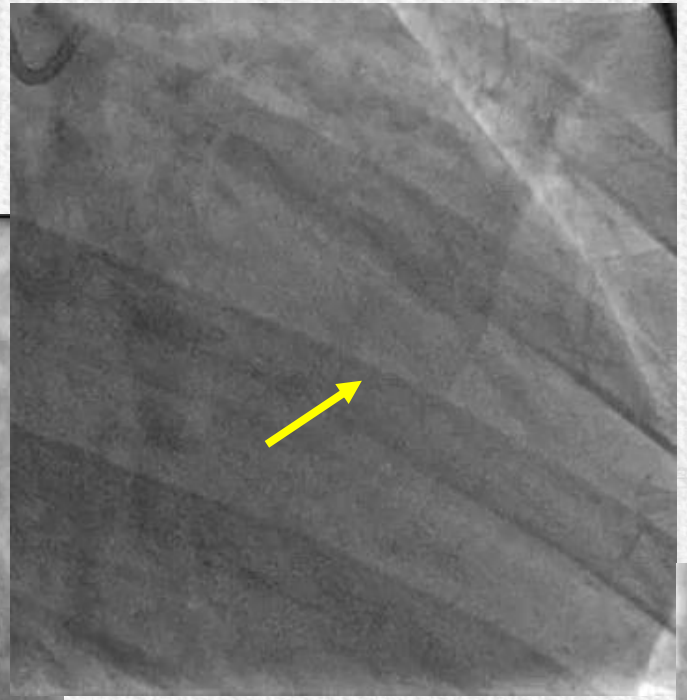
Angiographic SCAD Classification

Type 1

Multiple radiolucent lumen



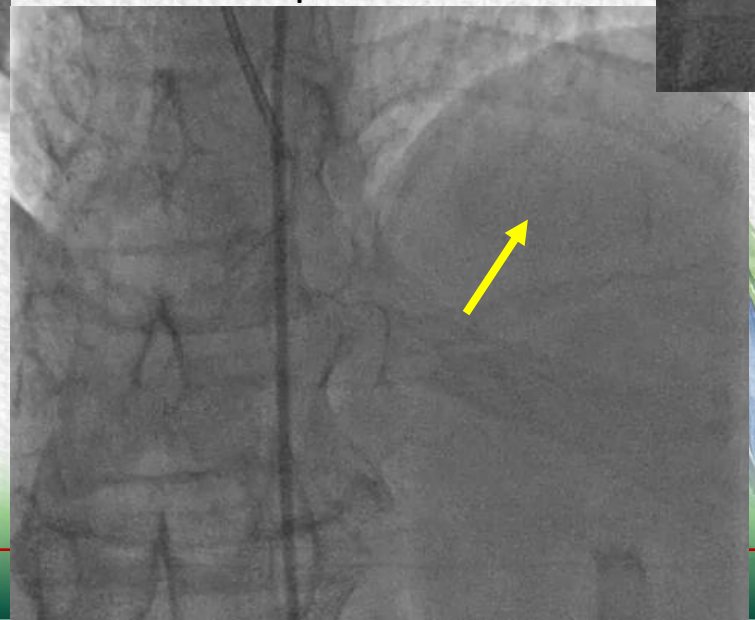
Type 2A



Diffuse stenosis with normal proximal and distal segments

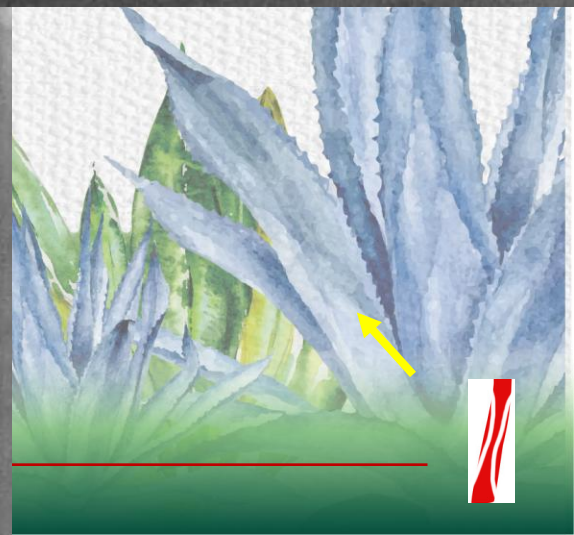
Type 2B

Diffuse stenosis that extends to distal tip of vessel



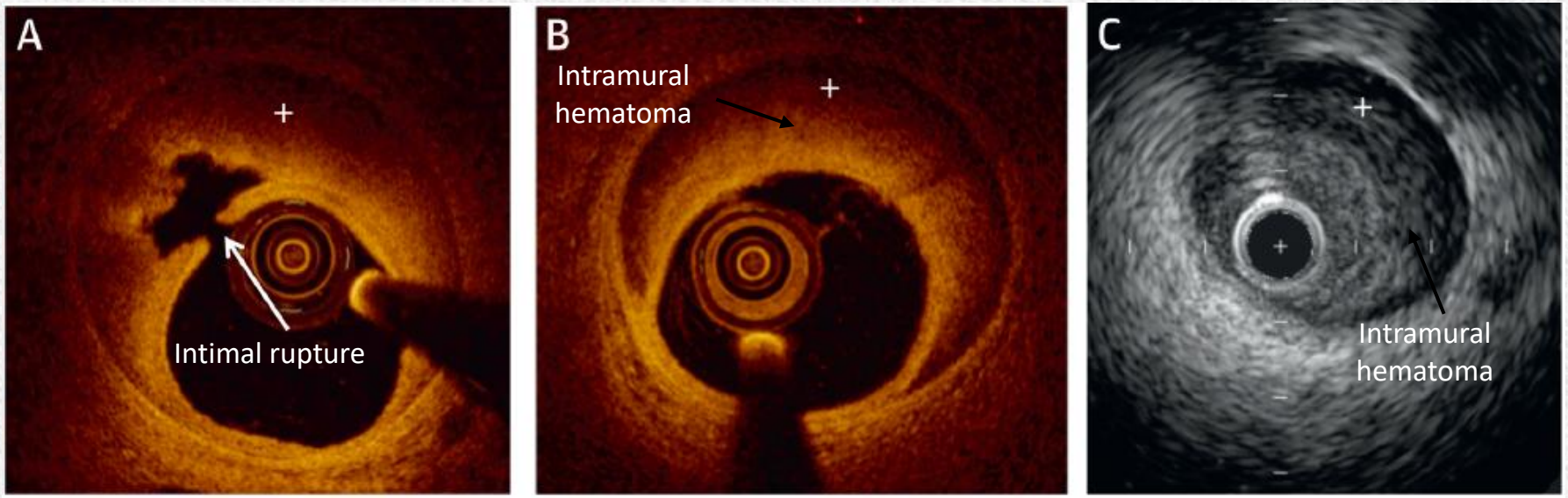
Type 3

Mimics atherosclerosis



Saw J. Cathet CV Interv 2014;84(7):1115-22.
Saw J, et al. JACC 2017 Aug;70(9):1148-58.

Diagnosis of SCAD on OCT/IVUS



OCT:

- Better resolution (10-20 microns)
- Clearly delineate true/false lumen, intramural hematoma, intimal tear, intraluminal thrombi
- Poorer penetration (may not see full extension of hematoma in some areas)

IVUS:

- Lower resolution (150-200microns)
- Can delineate true/false lumen, intramural hematoma, intraluminal thrombi
- May not visualize intimal tear
- Better penetration (can visualize full vessel extent of hematoma)

Alfonso F, et al. JACC 2012;59:1073-9. Saw J, Mancini GBJ, Humphries K. JACC 2016;68:297-312. Song L, et al. Coronary Artery Disease 2016, 27:707–708.

Guidelines
2022 ACC/AHA/SCAI

9.6. Revascularization in Patients With SCAD

Recommendations for Revascularization in Patients With SCAD
Referenced studies that support the recommendations are summarized in Online Data Supplement 22.

COR	LOE	Recommendations
2b	C-LD	1. In patients with SCAD who have hemodynamic instability or ongoing ischemia despite conservative therapy, revascularization may be considered if feasible.[1-5]
3: Harm	C-LD	2. Routine revascularization for SCAD should not be performed.[1-5]

PCI in SCAD

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY VOL. 74, NO. 10, 2019

PUBLISHED BY ELSEVIER

Revascularization in Patients With Spontaneous Coronary Artery Dissection and ST-Segment Elevation Myocardial Infarction

Angie S. Lobo, MD,[a] Stephanie M. Cantu, MD,[b] Scott W. Sharkey, MD,[c] Elizabeth Z. Grey, MD,[c] Katelyn Storey, BA,[c] Dawn Witt, PhD,[c] Gretchen Benson, BA,[c] Ross F. Garberich, MS,[c] Yasuhiko Kubota, MD,[c] C. Noel Bairey Merz, MD,[d] Timothy D. Henry, MD[b,c]

Results

- Retrospective analysis AMI-SCAD vs AMI-ATH at 2 large STEMI centers.

- PCI was pursued in SCAD patients:

1. Ongoing ischemia

2. Proximal or mid-vessel dissection

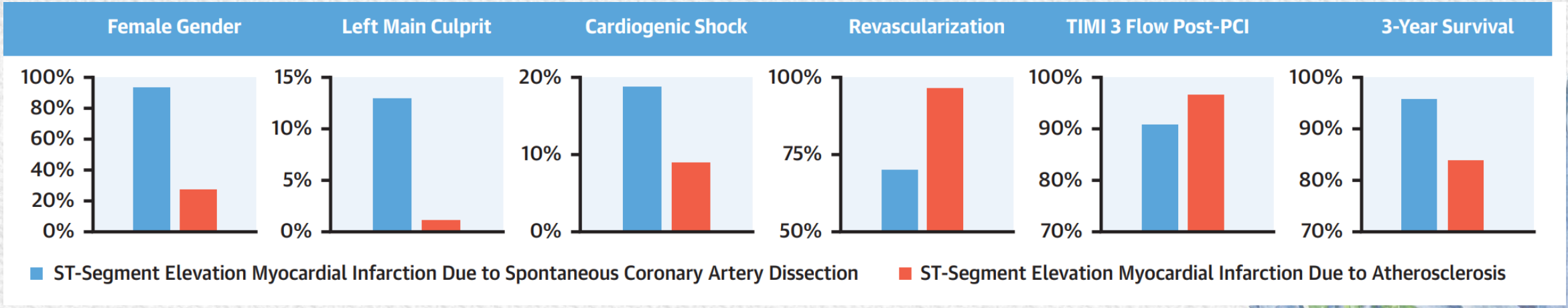
3. Hemodynamic instability, in whom conservative management is an unsatisfactory alternative

TABLE 2 STEMI-SCAD Characteristics With Versus Without Attempted Revascularization

	STEMI-SCAD Attempted Revascularization (n = 37)	STEMI-SCAD Medical Management (n = 16)	p Value
Age, yrs	49.6 ± 10.3	49.0 ± 10.3	0.85
Culprit artery			0.29
Left main	7 (18.9)	0 (0.0)	
Left anterior descending	17 (46.0)	8 (50.0)	
Right coronary artery	7 (18.9)	4 (25.0)	
Circumflex	6 (16.2)	4 (25.0)	
Dissection location*			0.027
Proximal	16 (43.2)	1 (6.3)	
Mid	14 (37.8)	9 (56.3)	
Distal	7 (18.9)	6 (37.5)	
Initial TIMI flow			0.032
0/1	24 (64.8)	5 (31.3)	
2	8 (21.6)	4 (25.0)	
3	5 (13.5)	7 (43.8)	
Initial ejection fraction, %	47.3 ± 14.5	57.2 ± 8.0	0.014
Cardiogenic shock	10 (27.0)	0 (0.0)	0.023
Cardiac arrest	6 (16.2)	2 (12.5)	0.73
PCI stent	30 (81.1)	NA	NA
PCI angioplasty	3 (8.1)		
CABG	4 (10.8)		

Values are mean ± SD or n (%). *The most proximal dissection location was reported.
Abbreviations as in Table 1.

- PCI strategy for STEMI-SCAD is effective in the majority of patients, with technical success only modestly lower than STEMI-ATH.



Medications

- Beta-blockers: Offers an additional benefit of preventing the recurrence of SCAD.
- Antianginals: Nitrates, calcium-channel blockers, and ranolazine.
- Statin: No role. Only if meets guideline criteria for HLD/Primary prevention.
- Antiplatelet: DAPT may be considered during the acute phase of SCAD and for up to 1 year for patients who receive PCI.

Management of SCAD

84% of CanSCAD pts treated conservatively

Spectrum of SCAD Presentation

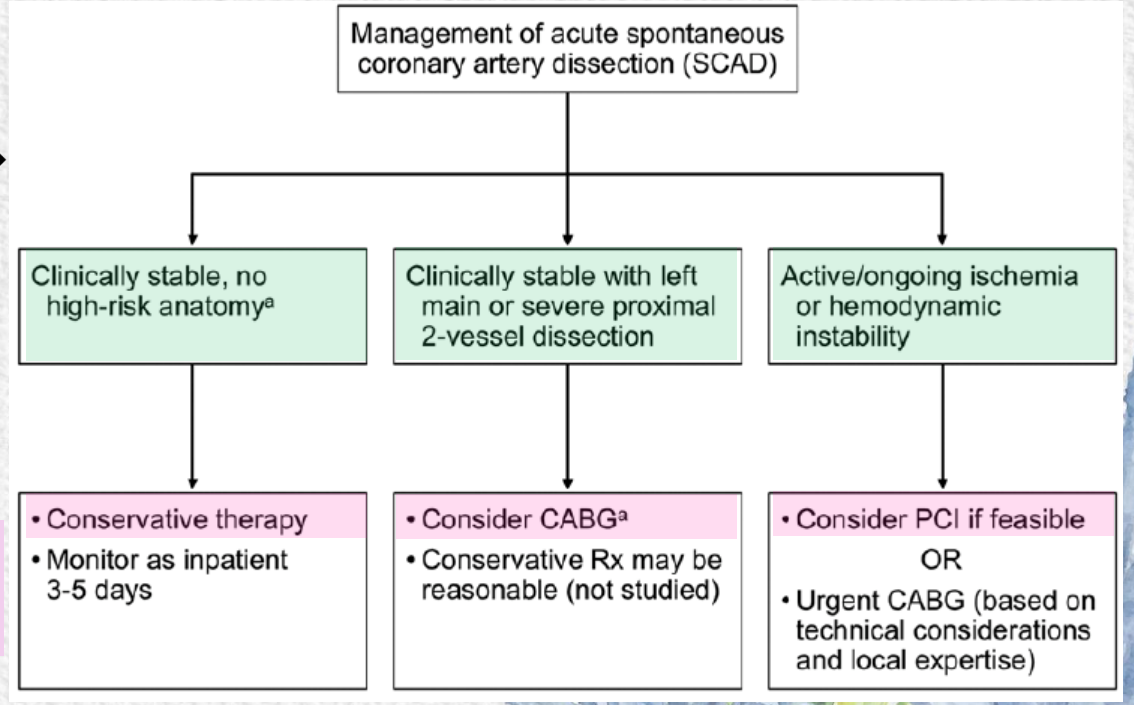
- Small MI, No further CP
- Large MI, Ongoing CP
- Unstable, Cardiogenic Shock
- Cardiac Arrest
- Death

High-risk presentation of death, cardiac arrest, cardiogenic shock, EF<35%, or LM dissection occurred in 7.6% in CanSCAD study

AHA SCIENTIFIC STATEMENT

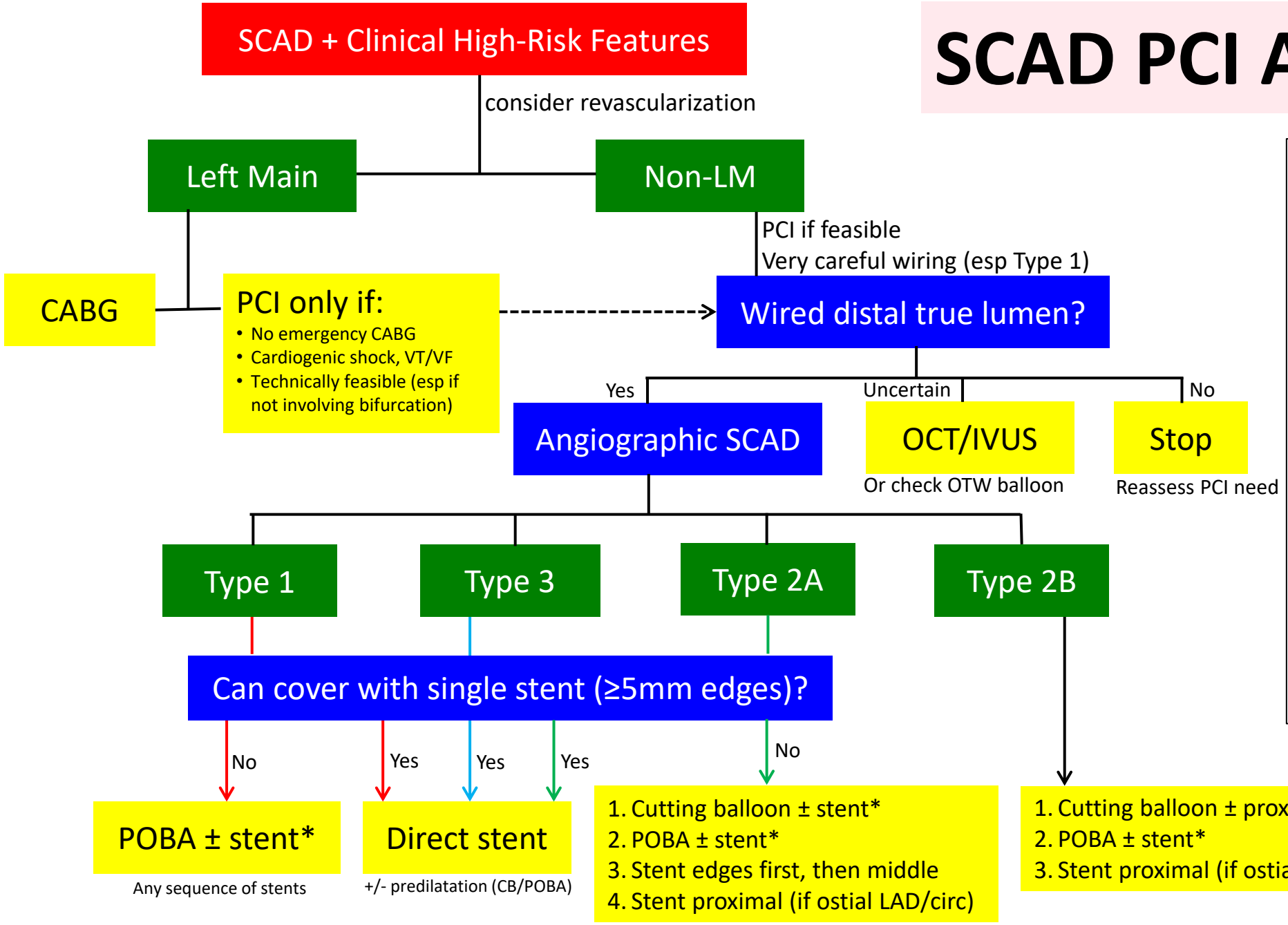
Spontaneous Coronary Artery Dissection: Current State of the Science

A Scientific Statement From the American Heart Association



Saw J, et al. EHJ 2019;40(15):1188-1197. Hayes et al, Circulation 2018;137:e523-e557.

SCAD PCI Algorithm



High-risk Features:
- Ongoing ischemia
- Cardiogenic shock
- Sustained ventricular arrhythmia
- Left main dissection

Options for PCI:
- Wiring only
- POBA ± stent
- Cutting balloon ± stent
- Stenting:
  - Single long stent
  - Either edges first, then middle
  - Proximal first (to avoid retrograde extension)
  - Sequential stenting

*Can avoid stenting especially if normal flow + no residual dissection

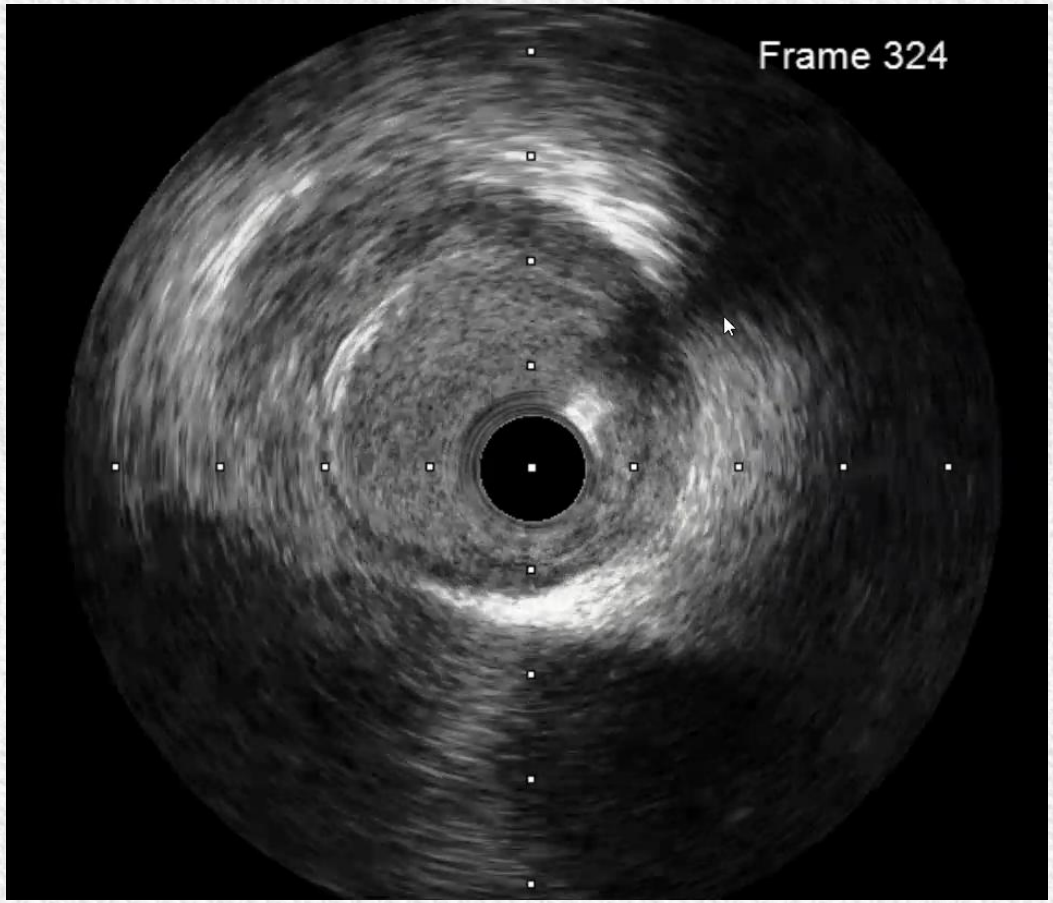
Saw J. EuroIntervention 2019;14:1353-1356.

Prevention

- 18% of patients w/ SCAD develop recurrent MI over a span of 3 to 4 years.

- Avoiding high-intensity endurance training, exercising to the point of exhaustion, and activities that involve a prolonged Valsalva maneuver is thought to be useful.

IVUS



Summary

- In clinically stable pts w/ maintained coronary flow, a conservative management strategy is preferred because of the increased risk of adverse outcomes with revascularization.

- Intracoronary imaging is best reserved for cases of diagnostic uncertainty or where percutaneous coronary intervention (PCI) is required.

- Counseling, risk factor modification, and optimal medical therapy are key for preventing future recurrences.

SOLACI SOCIME'25
MEXICO CITY

Thank you

SOLACI

SOCIME
SOCIEDAD DE CARDIOLOGIA INTERVENCIONISTA DE MEXICO