Culprit Only versus **Complete Coronary Revascularization During Primary PCI for STEMI**

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DISCLOSURES

None

Case Presentation: Multivessel PCI during STEMI

A 47 y.o male, Heavy smoker, Hypertension,

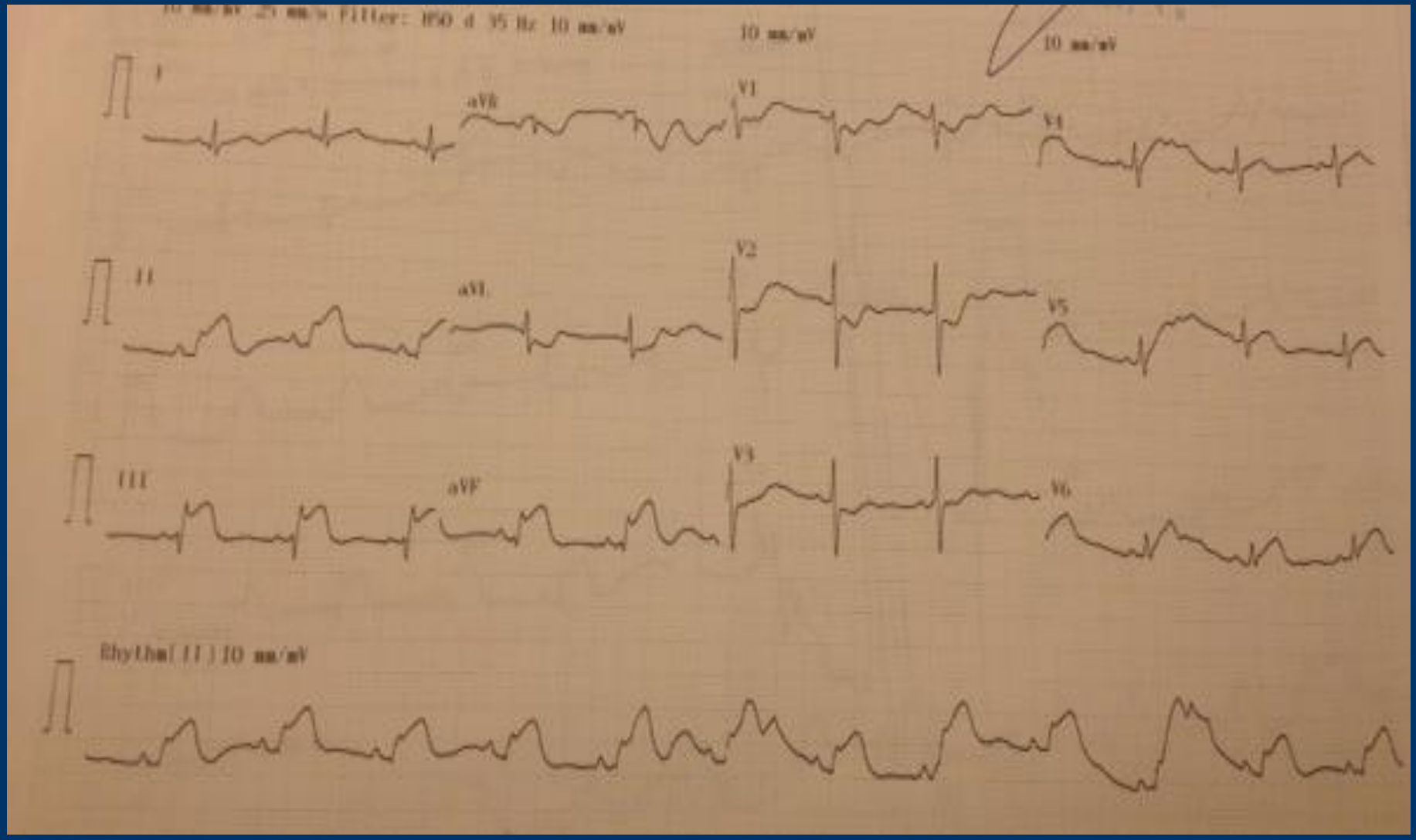
Hyperlipedemia, Family Hx

2 hours chest pain

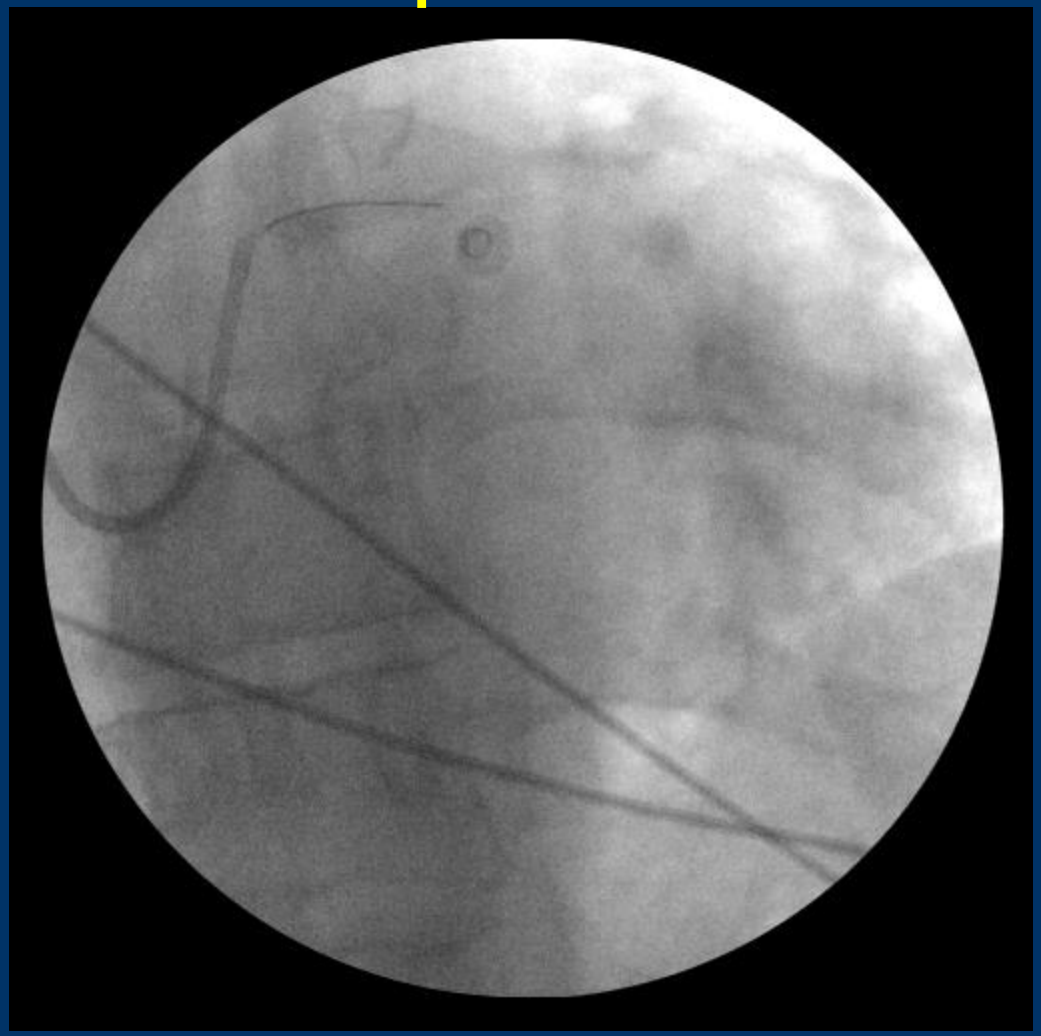
ECG : Acute Infero-Lateral STEMI

Direct admission → special procedure room of ICCU

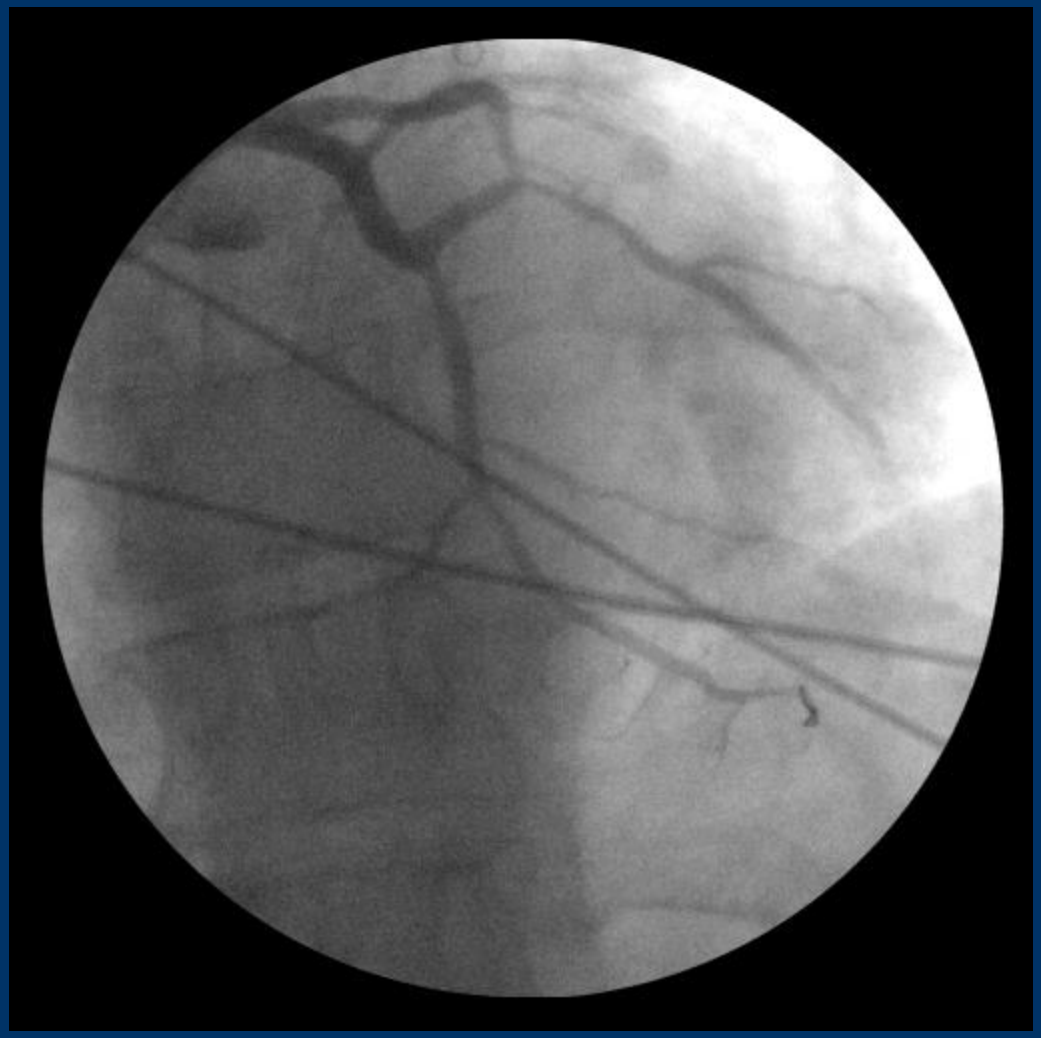
STEMI Inferolateral



Left System Angiography – Total CX , Fresh thrombus → Culprit??

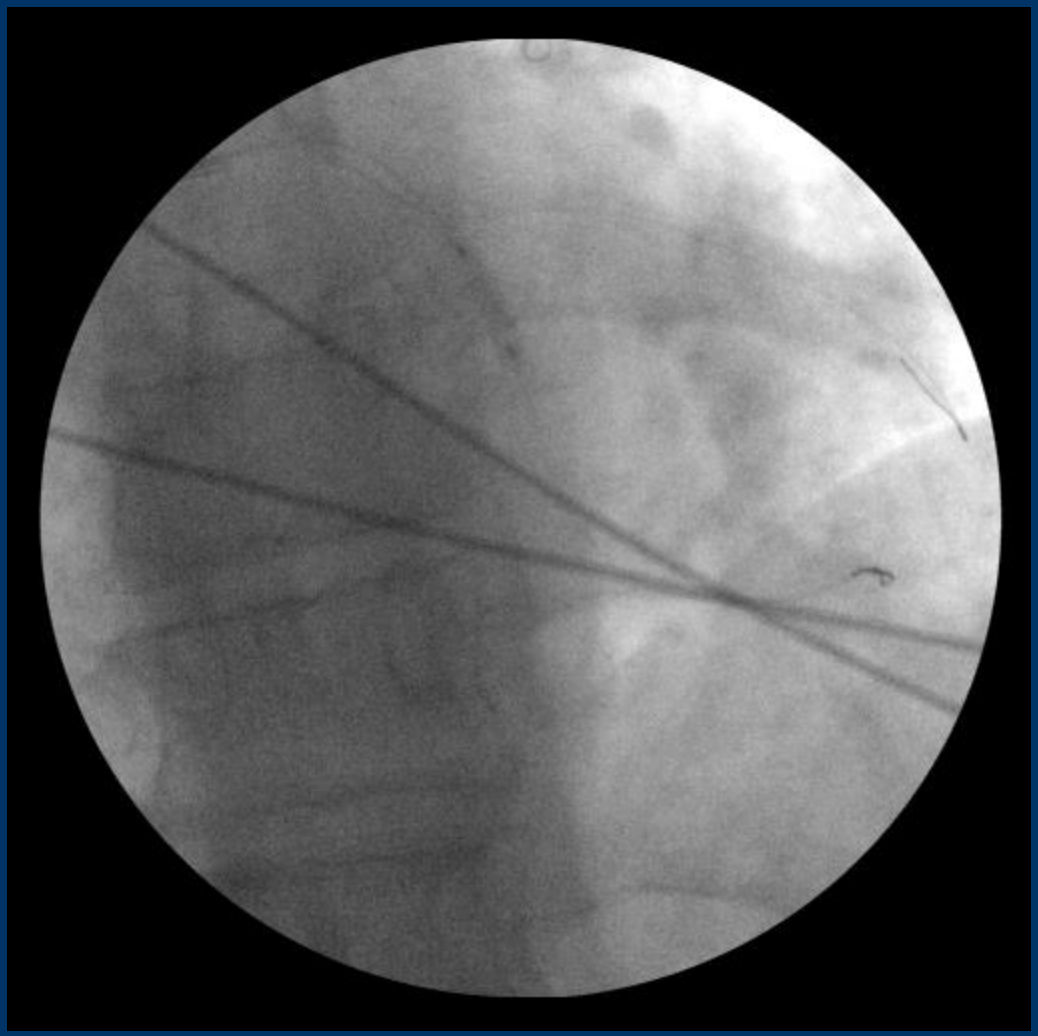


CX Stenting



M1 Stenting

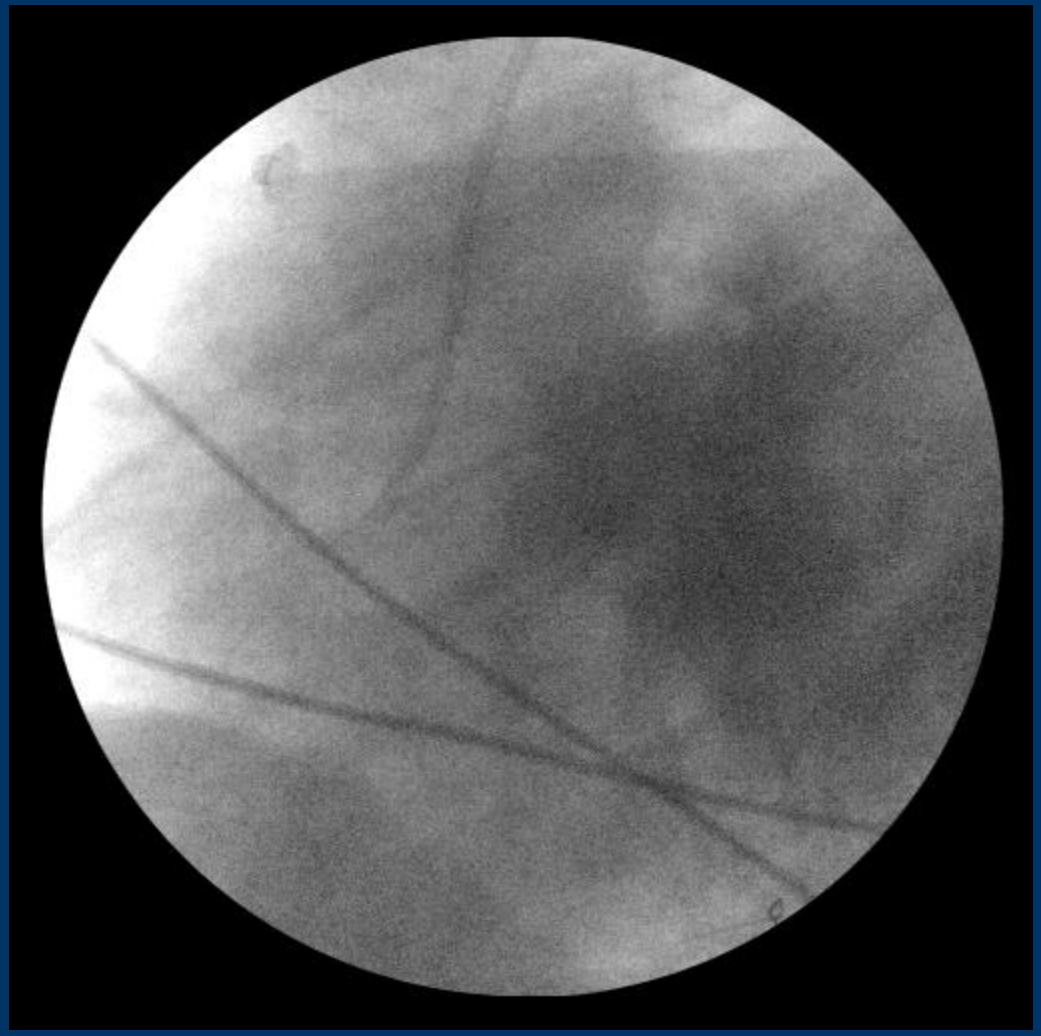
Balloon to Mid CX



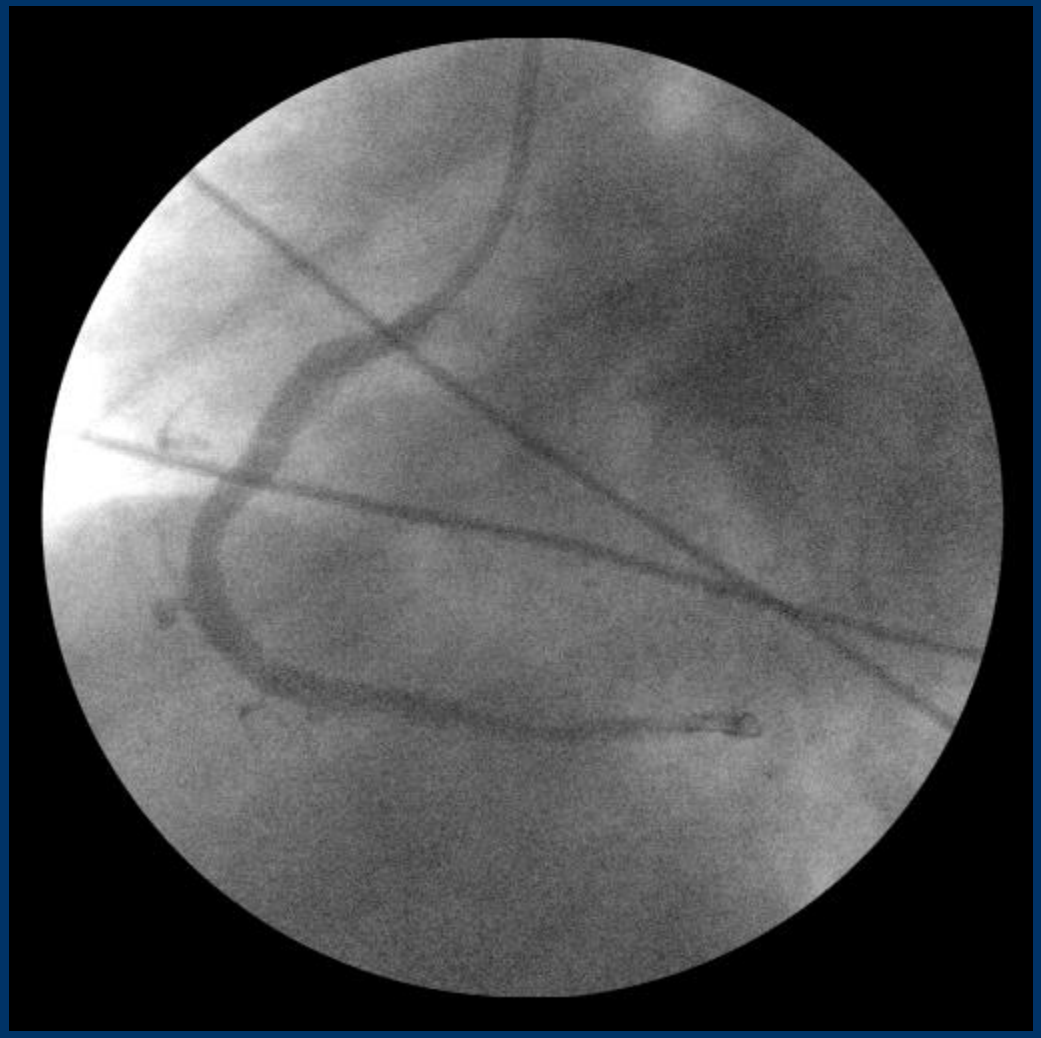
Result after Balloon to CX

Successful Stenting of CX and M & Kissing Balloon

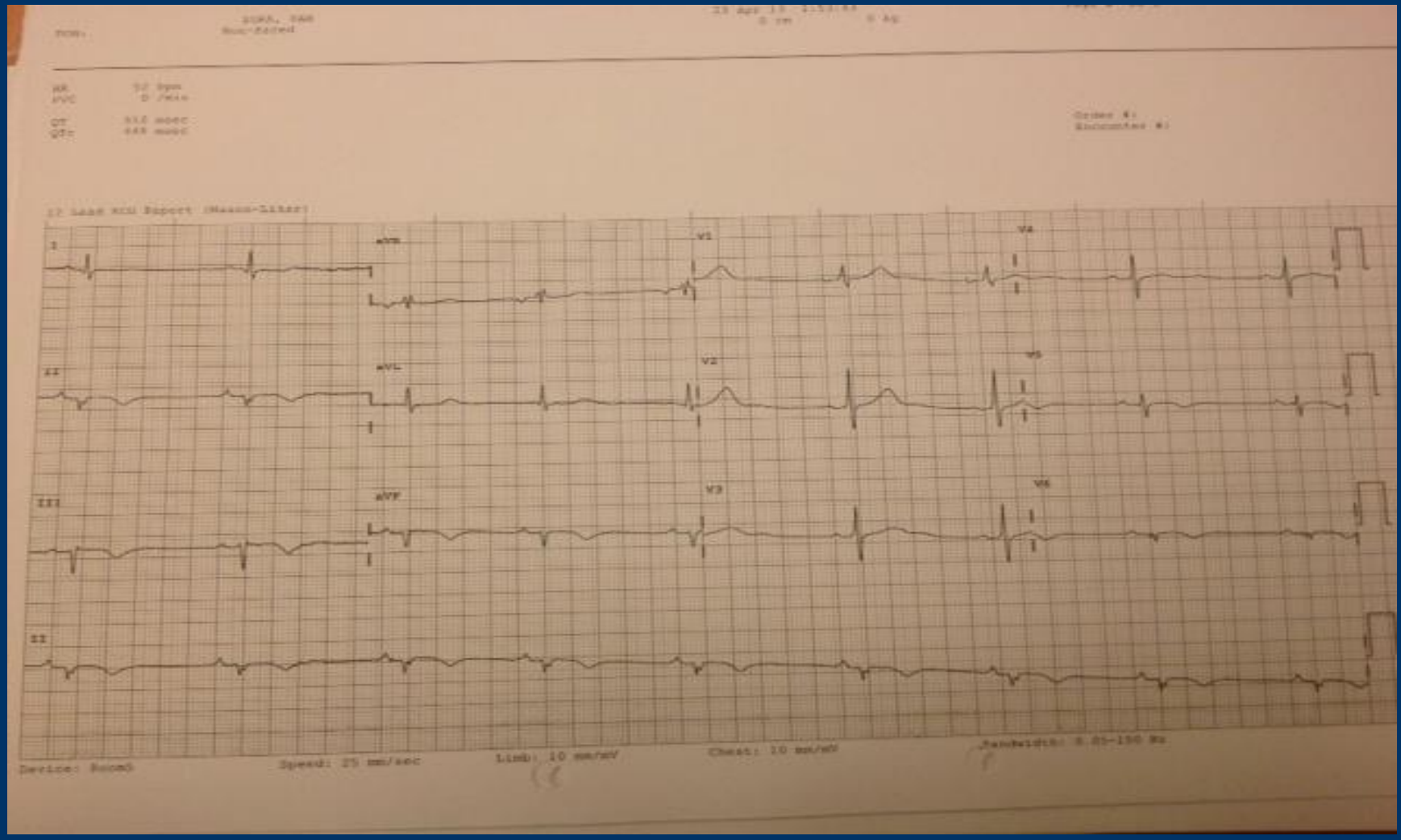
Still ST elev. : RCA - Ruptured Plaque → Another Culprit??



Patent RCA after Stenting
Immediate ST Resolution



Immediate ST resolution after ? double Culprit and non Culprit PCI



Background

Non-culprit Treatment during Primary PCI

Why to Perform

- Prevent reinfarction
  - non-culprit vulnerable → may become future culprit
- Patient already on (routine) anti-coagulants
  - Protected from ischemic complications
- Improve hemodynamics
  - Improved contraction of non-infarct territory
  - (Indicated in cardiogenic shock)
- Decrease the need for repeat procedures
  - Morbidity & cost

Current Guidelines Recommendations

AHA/ACCF/SCAI (STEMI 2004 , PCI 2011)

"PCI should not be performed in a noninfarct artery at the time of primary PCI in patients without hemodynamic compromise"

(Class III, level of Evidence B)

EHS (STEMI 2003)

No specific recommendation

EHS (PCI 2005, 2011)

"With the exception of cardiogenic shock, PCI for STEMI should be limited to the culprit stenosis"

(Class IIa, level of evidence B)

(based on Corpus RA et al)

Summary of Current Evidence:

1. Multi vessel PCI during primary PCI for STEMI is feasible.
2. Retrospective analyses generate contradictory results and recommendations.
   - **Overall deleterious** – recommending culprit only
     Roe (AJC 2001) , Corpus (AHJ 2004), Kornovski (JACC 2011),Vlaar (JACC 2011)
   - **Overall equivalent** – still recommending culprit only.
     Di Mario (IJCI 2004), Sethi (CCI 2011).
   - **Overall beneficial** – recommending multivessel especially of high risk patients.
     Qarawani (IJC 2008), Zbigniew (AHJ 2007), Politi (Heart 2010)

Overall Poria Experience

Methods:

- Retrospective database, angiographic and echocardiographic analysis of 491 patients with STEMI and multivessel CAD treated by primary PCI .

Multi-vessel PCI for AMI – Poria Experience (submitted)

- Primary PCI for STEMI: n= 925 pts (2/2001 – 10/2011)

- Multivessel disease : n= 491 (53%)pts

  - Complete revascularization – 341(69.5%)pts
  - Culprit only – 150 (30.5%) pts.
- Echocardiography performed before and post PCI
- Reasons for culprit only:
  - Operator decision (60%)
  - Another STEMI arriving… (24%)
  - High contrast volume (16%)

Clinical characteristics

	Complete(n=341)	Culprit (n=150)	P value
Male	64%	61%	NS
Mean age	66±3 y.o	67+4y.o	NS
Previous CABG	11%	10%	NS
Prior MI	25%	27%	NS
Smoker	61%	57.5%	NS
Hypertension	37.8%	38.5%	NS
Hyperlipidemia	14.6%	15.4%	NS
Diabetes	12.3%	15.4%	NS

Procedural characteristics

	Complete(n=341)	Culprit(n=150)	P value
IRA			NS
LAD	51%	52%	
CX	18.8%	19.2%	
RCA	30.2%	30.8%	
Graft	4.2%	3.8%	NS
IABP	13.7%	11.5%	NS
PCI of IRA			NS
PTCA	6.3%	7.7%	
Stenting	91.6%	94.3%	
Unsuccessfull	2.1%	0	

PCI Results

	Complete (341)	Culprit (150)	P value
Successful PCI	334pts (98%)	148pts (98.6%)	NS
Timi 3 flow	293 pts (86%)	127pts (85%)	NS

Complete Revascularization - Drawbacks

	Complete(n=341)	Culprit (n=150)	P value
Procedure Time	83±27	40±15	0.01
Transient Renal Dysfunction(RD)	29(8.5%)	6(4%)	0.01

Results: In hospital MACE and Mortality

	Complete (n=341)	Culprit (n=150)	P value
In hospital reinfarction	17 (5%)	15 (10%)	0.01
Reccurent Ischemia	19 (5.6%)	17 (11.3%)	0.02
Acute heart failure	19 (5.6%)	21 (14%)	0.01
In Hospital ReIntervention	32 (9.4%)	39 (26%)	0.01
In-hospital MACE	**55(16.1%)**	**53(35.3%)**	**0.01**
Length of hospitalization (days)	4.45±1.27	7.6 ±2.1	0.01
Culprit Segment Wall Motion Improvement	40% (104/260)	33% (37/112)	0.07
Non Culprit Segment Wall Motion Improvement	15% (51)	0%	0.01
In Hospital Mortality	**4.1% (14/341)**	**4% (6/150)**	**0.9**

Predictors of in hospital MACE- Univariate model

	HR	CI 95%	p Value
Culprit only	1		
Complete vs Culprit	0.45	0.3 -0.8	0.003
Diabetes	1.8	1.4-2.3	0.04
Hypertension	0.95	0.9-1.08	0.7
LVEF before PCI<40%	1.1	0.95-1.2	0.8
Killip class	1.8	1.5-2.9	0.04
Anterior MI	3.2	2.2-4.5	0.03
Timi flow 3 before PCI	0.8	0.72-0.94	0.03
Baseline RD	1.9	1.7-2.3	0.03
Improvement in WMA in culprit territory	0.2	0.15-0.3	0.02

Multivariate analysis - p**redictors of in hospital MACE**

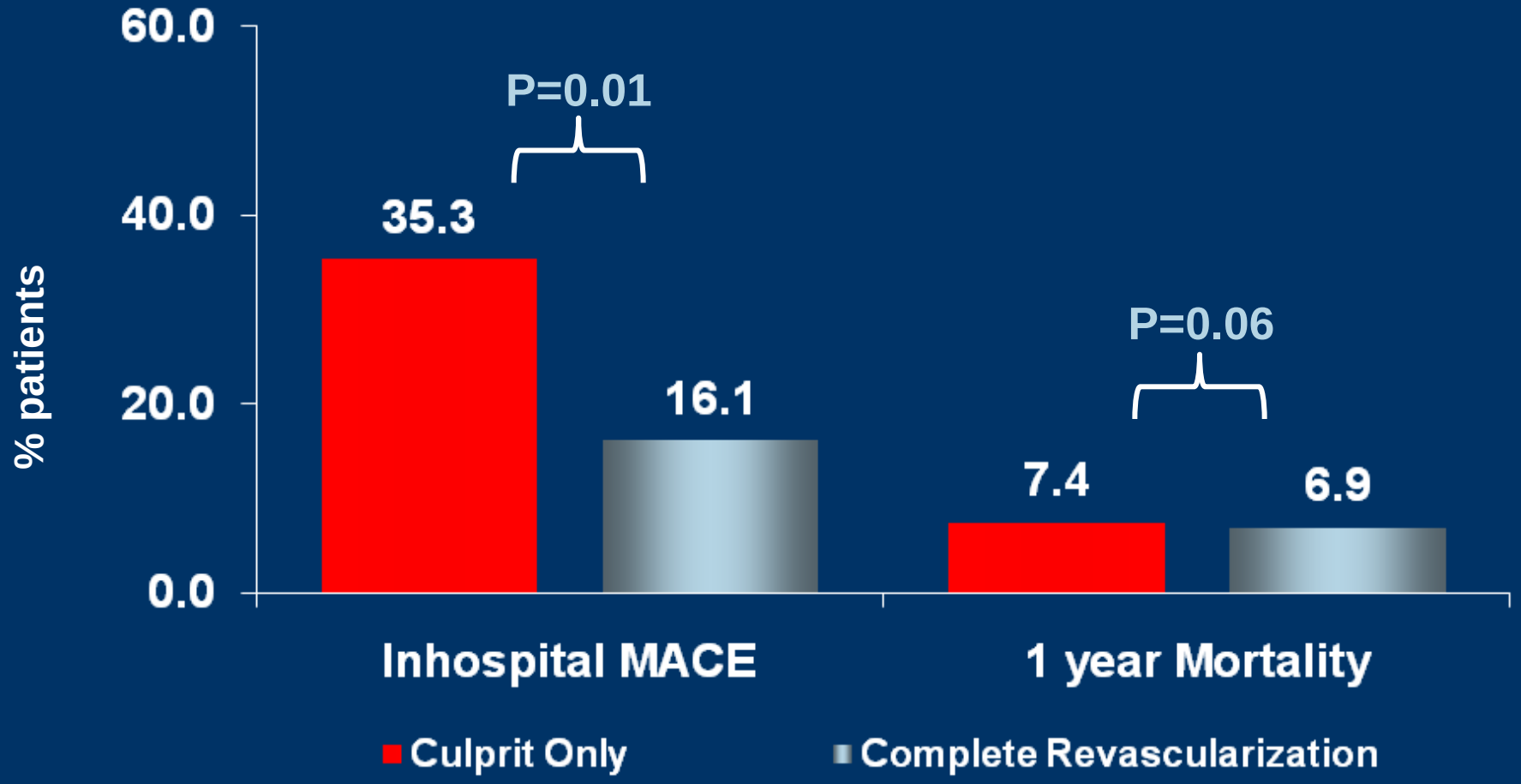
1 Culprit artery only (OR **1.468** (CI 1.12-3.03), p=0.001)

2 Baseline renal failure (OR **1.98** (CI 1.31-2.93), p=0.029)

3 Anterior wall MI (OR **3.2** (CI 2.8-5.6),P=0.027)

4 ↑ Wall motion
in culprit territory (OR **0.2** (CI 0.04-0.89),P=0.035)

Complete vs. Culprit only: in hospital MACE and 1 year Mortality



Poria MC experience:

- **Complete (vs. culprit only) revascularization during primary PCI for STEMI**
- **is feasible and safe**
  - **Advantage:** improved immediate clinical course
  - **Disadvantage:** prolonged procedure
    renal dysfunction

Recommendation

- Need for prospective multicenter randomized study
- Meanwhile the decision should be left to the operators' discretion

Thank you