

What is new in the Treatment of STEMI?

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Part 2

- Summary of newer antithrombotic and antiplatelet agents in STEMI
- Role of thrombectomy in PPCI
- Multivessel disease and STEMI
 - Culprit artery vs multivessel PCI?

Antiplatelet and Anticoagulant Therapy with Primary PCI

Standard of care has been:

600-mg clopidogrel loading

followed by

UFH + GP IIb/IIIa inhibitor

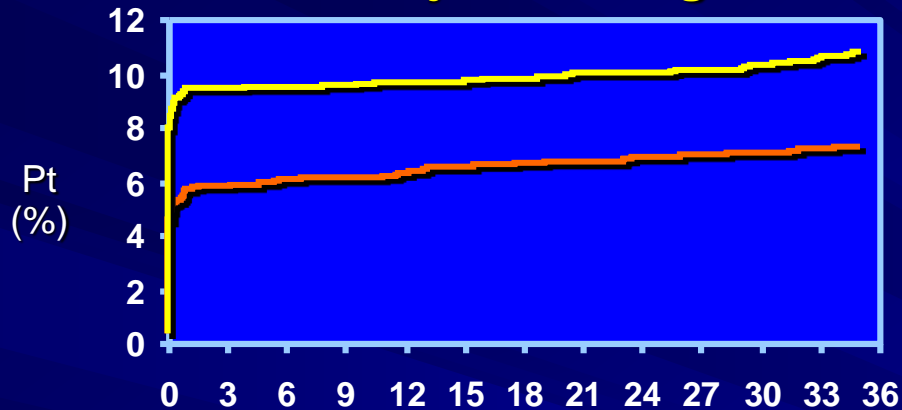
What is Role for New Agents?

- Bivalirudin (Angiomax) – direct thrombin inhibitor
 - Alternative to UFH and GP IIb/IIIa inhibitors
- Prasugrel (Effient) – thienopyridine
 - Alternative to clopidogrel (ACS and PCI)
- Ticagrelor (Brilinta) – non thienopyridine
 - Alternative to clopidogrel (ACS and PCI)

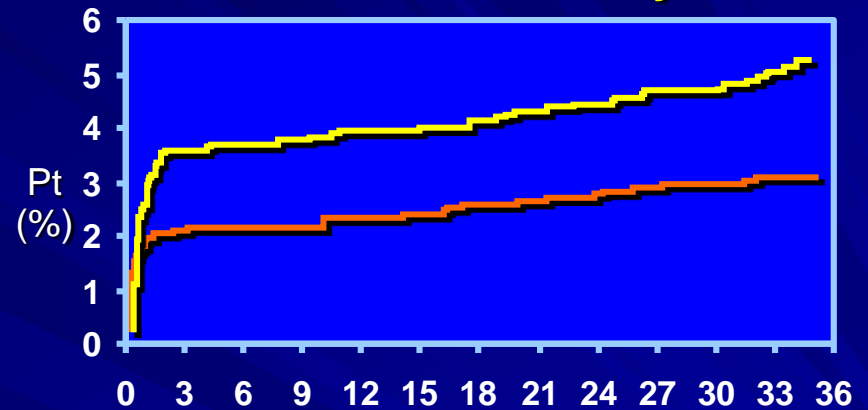
HORIZONS-AMI

3-year Results

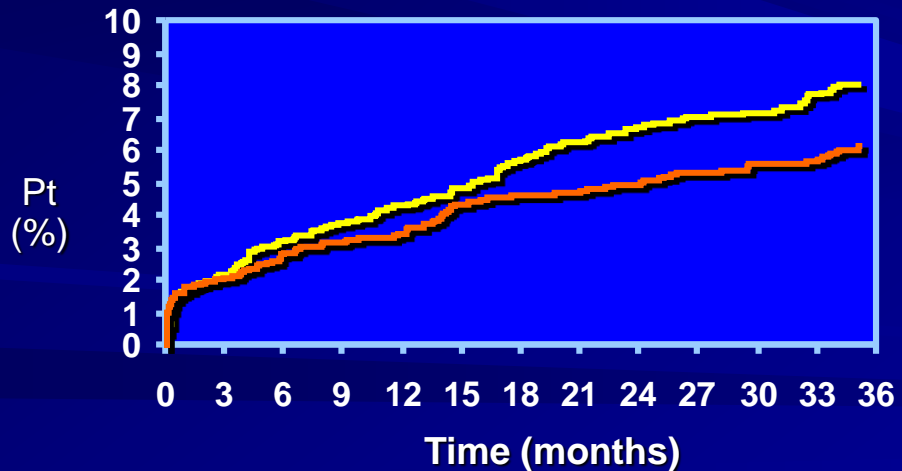
Major Bleeding



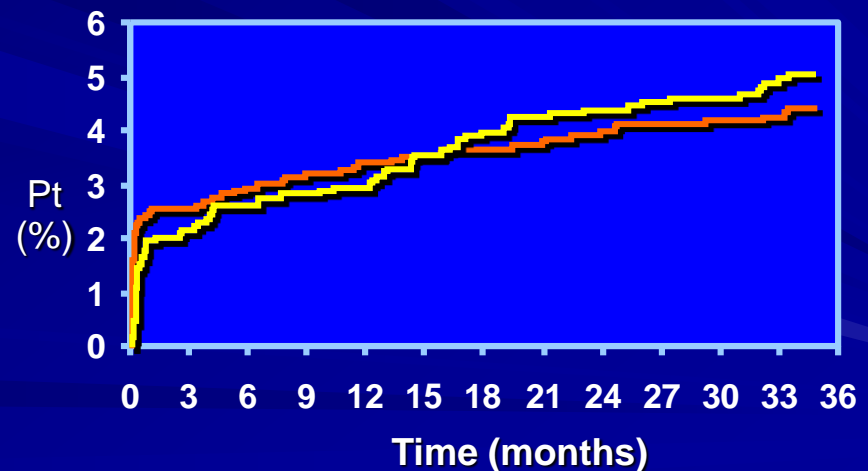
Cardiac Mortality



Reinfarction



Stent Thrombosis



Stone GW: Lancet, 2011



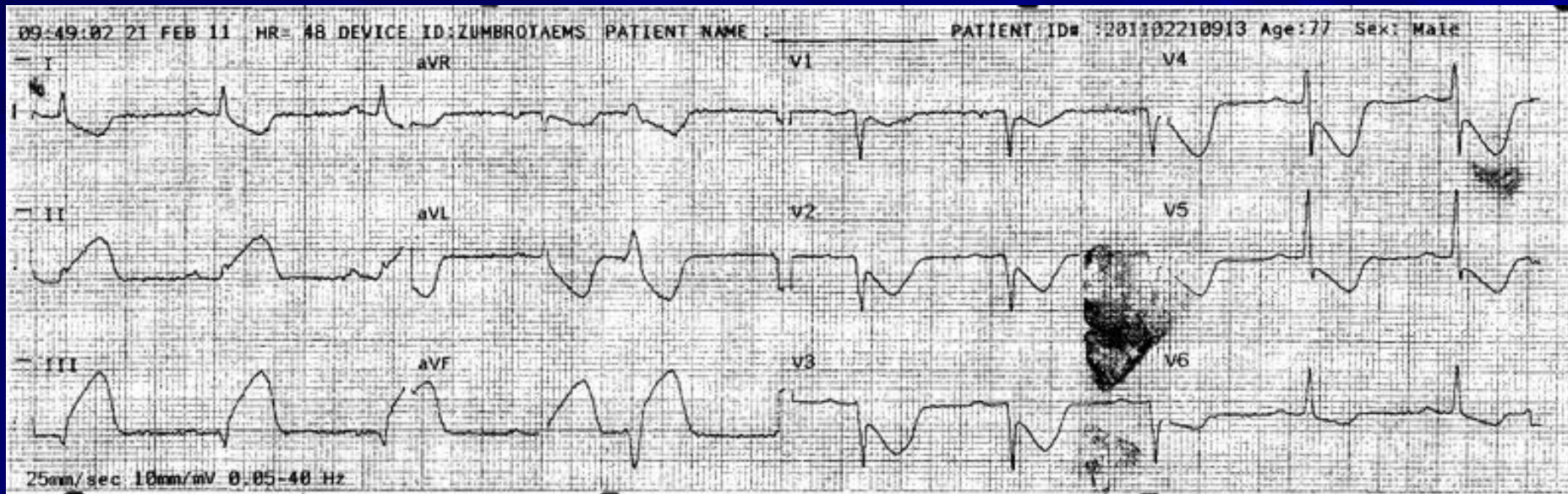
— Heparin plus a GPI
— Bivalirudin monotherapy

Prasugrel: 2009 ACC/AHA Guidelines

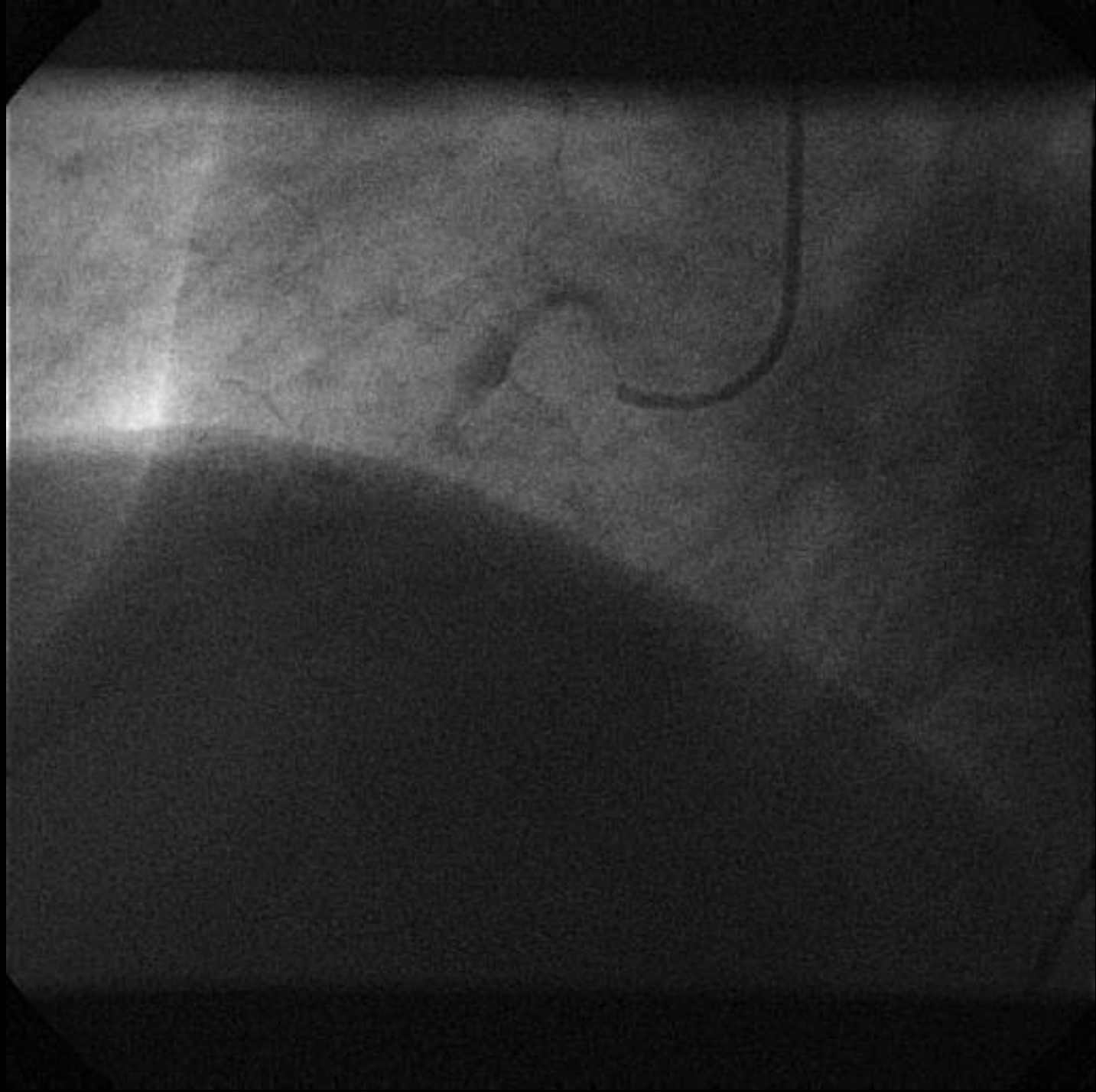
- Alternative to clopidogrel *
 - Uncertainty of net benefit over clopidogrel
- FDA black box warnings
 - ***Prior CVA or TIA*** – absolute contraindication
 - Low body weight (<60 kg) or >75 yrs – caution
- Higher risk of CABG-bleeding
 - Stop 7 days prior to CABG

New European Guidelines 2010

STEMI			
Antiplatelet therapy			
	ASA	I	B
	Clopidogrel ^f (with 600 mg loading dose as soon as possible)	I	C
	Prasugrel ^d	I	B
	Ticagrelor ^d	I	B
	+ GPIIb–IIIa antagonists (in patients with evidence of high intracoronary thrombus burden)		
	Abciximab	IIa	A
	Eptifibatide	IIa	B
	Tirofiban	IIb	B
	Upstream GPIIb–IIIa antagonists	III	B
Anticoagulation			
	Bivalirudin (monotherapy)	I	B
	UFH	I	C
	Fondaparinux	III	B



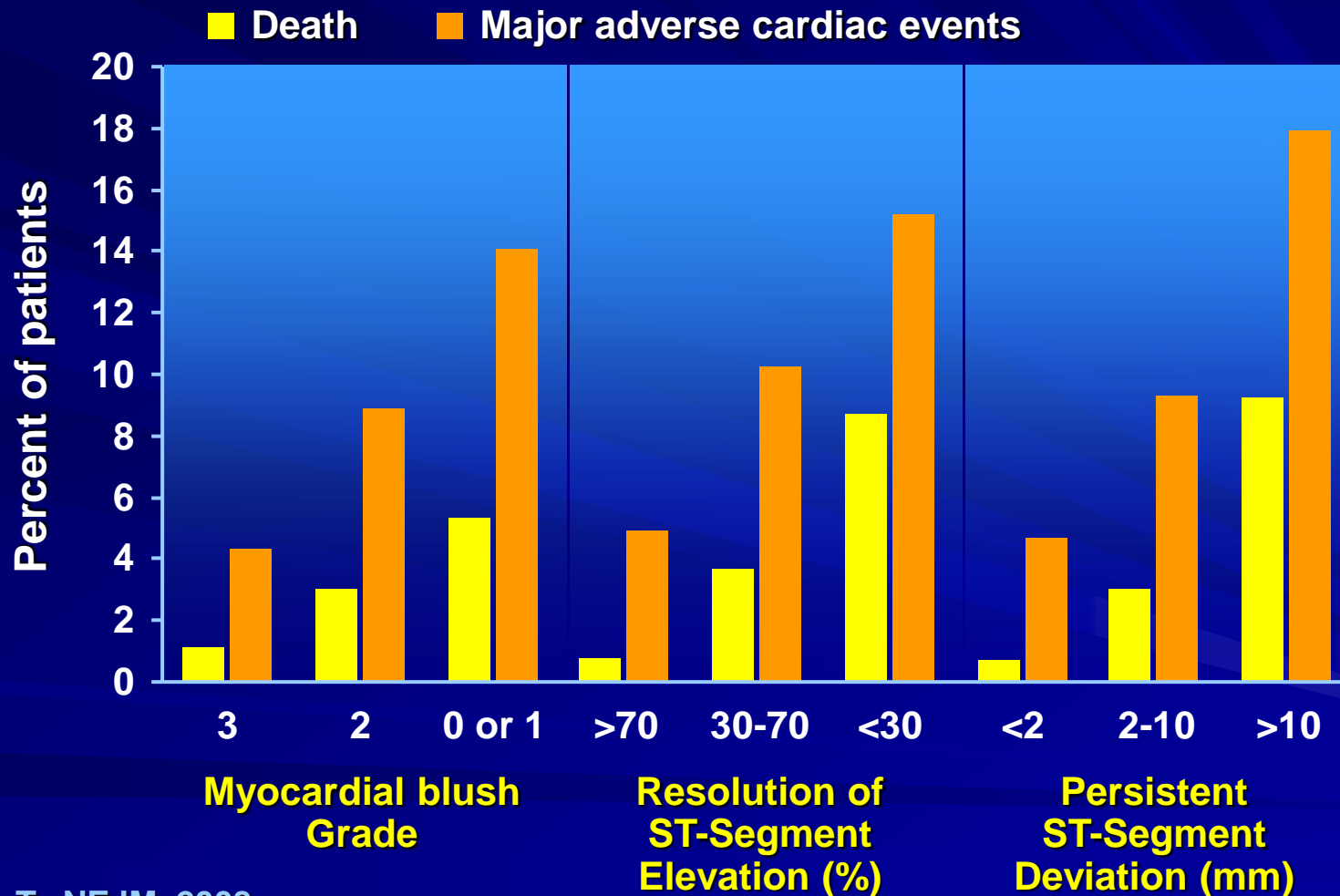
STEMI on Prehospital ECG



Balloon or Thrombectomy First?

TAPAS Results

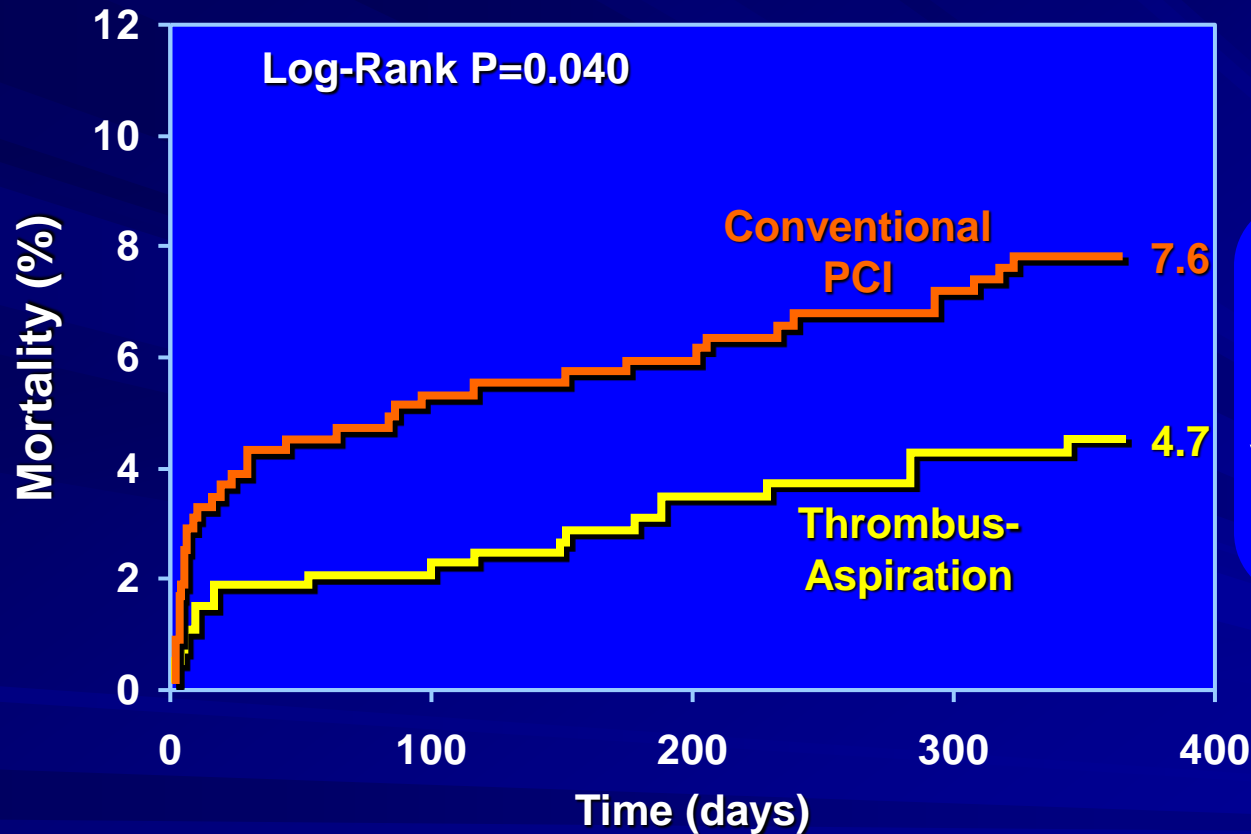
Importance of Myocardial Perfusion



Svilaas T: NEJM, 2008

TAPAS Study

Lower 1-Yr Mortality with Aspiration



Routine thrombectomy prior to PCI:

Visible thrombus - 50%
Patent vessel - 40%

Vlaar P: NEJM, 2008

Aspiration Thrombectomy

Summary of Evidence

TAPAS trial (manual aspiration): better myocardial reperfusion and 1-year survival

Svilaas T: NEJM 2008 and Vlaar PJ: Lancet 2008

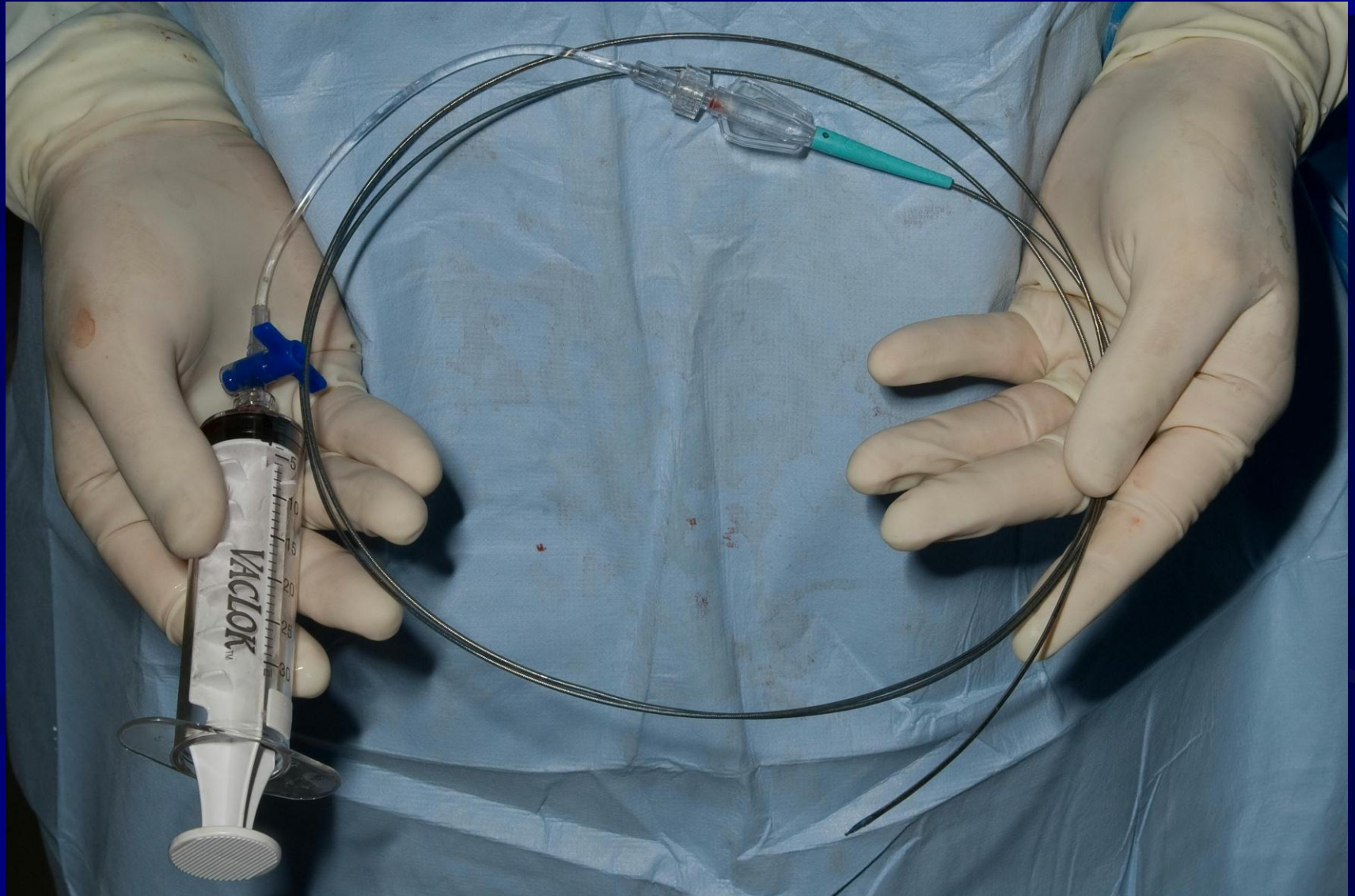
Meta analyses: lower mortality and MACE, but survival benefit only if *manual aspiration*

Bavry AA: EHJ 2008 and Burzotta F: EHJ 2009

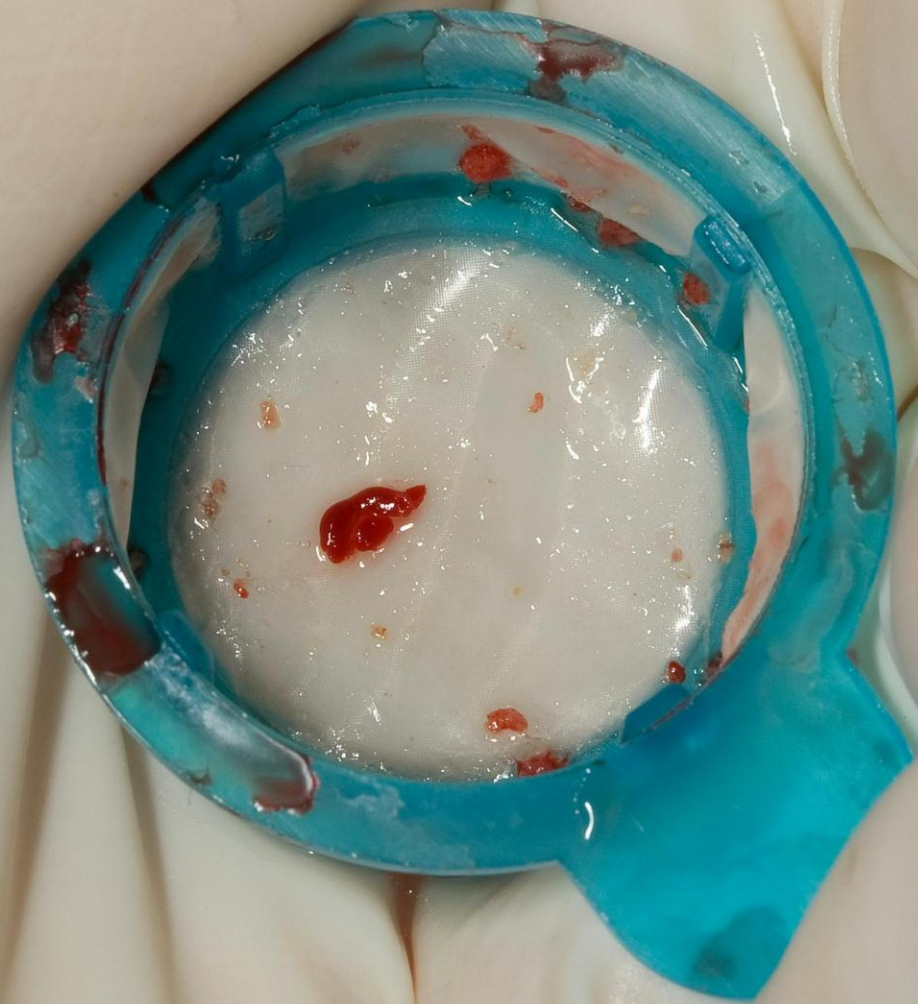
ACC/AHA 2009 and ESC/EACTS 2010

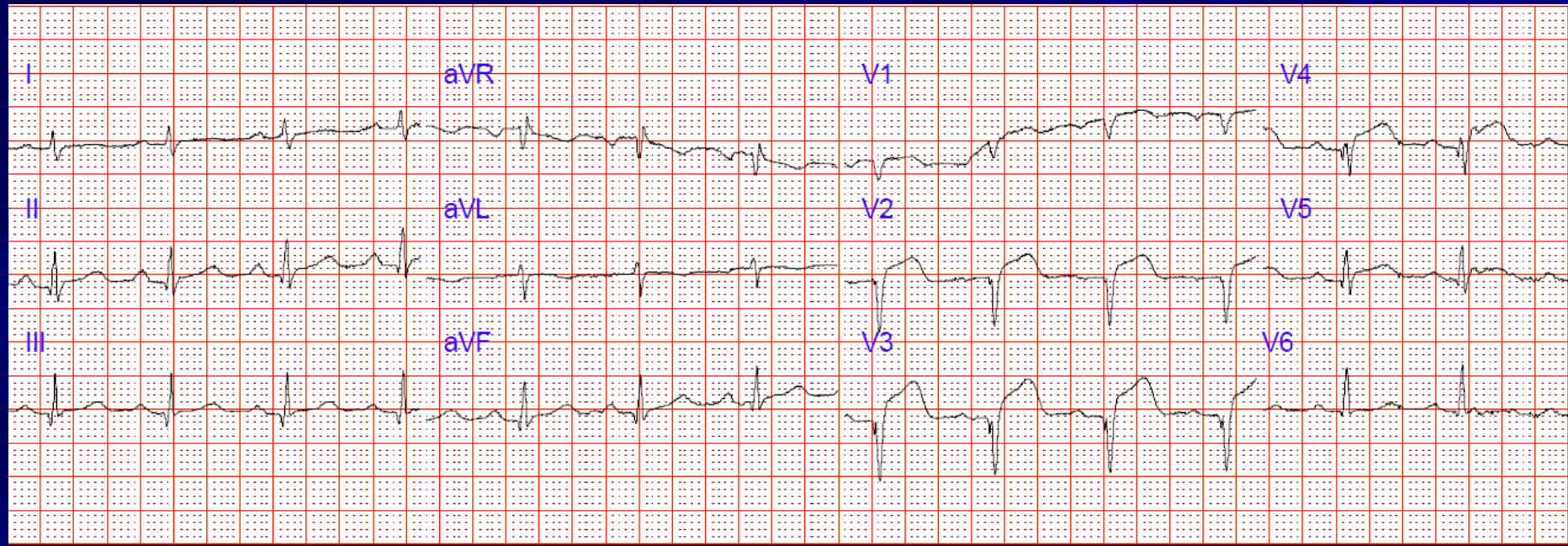
Class IIa recommendation

KEEP IT SIMPLE!

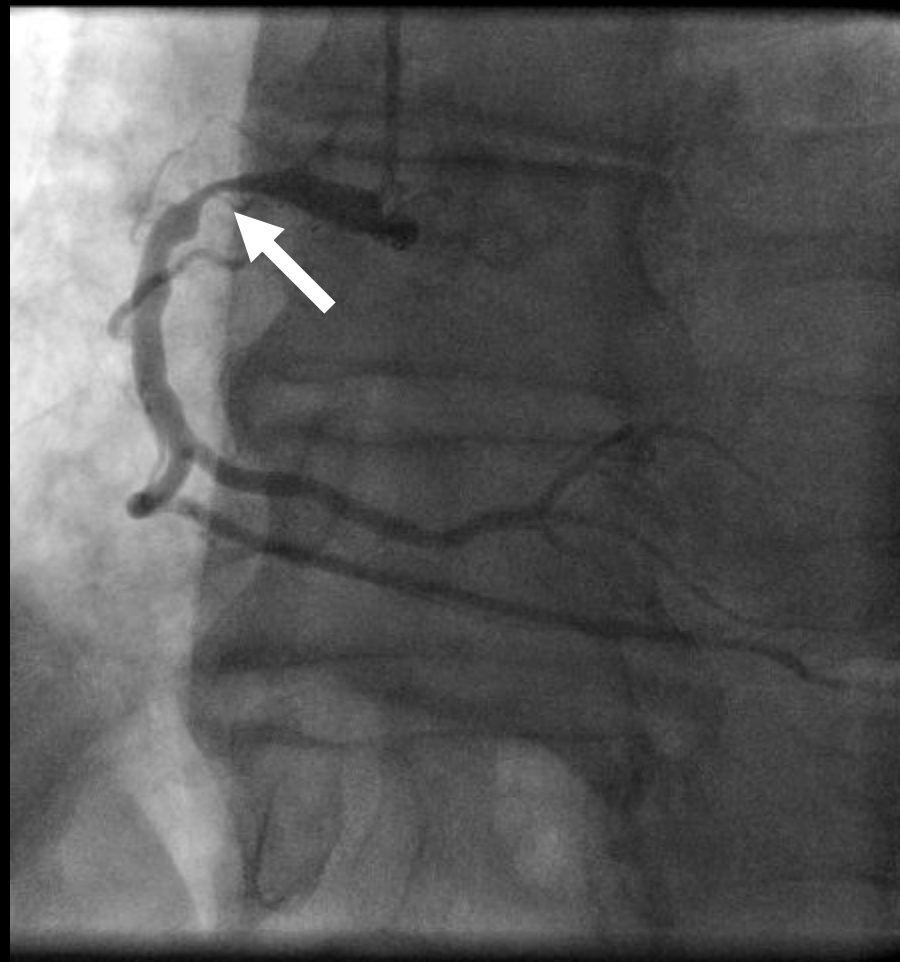
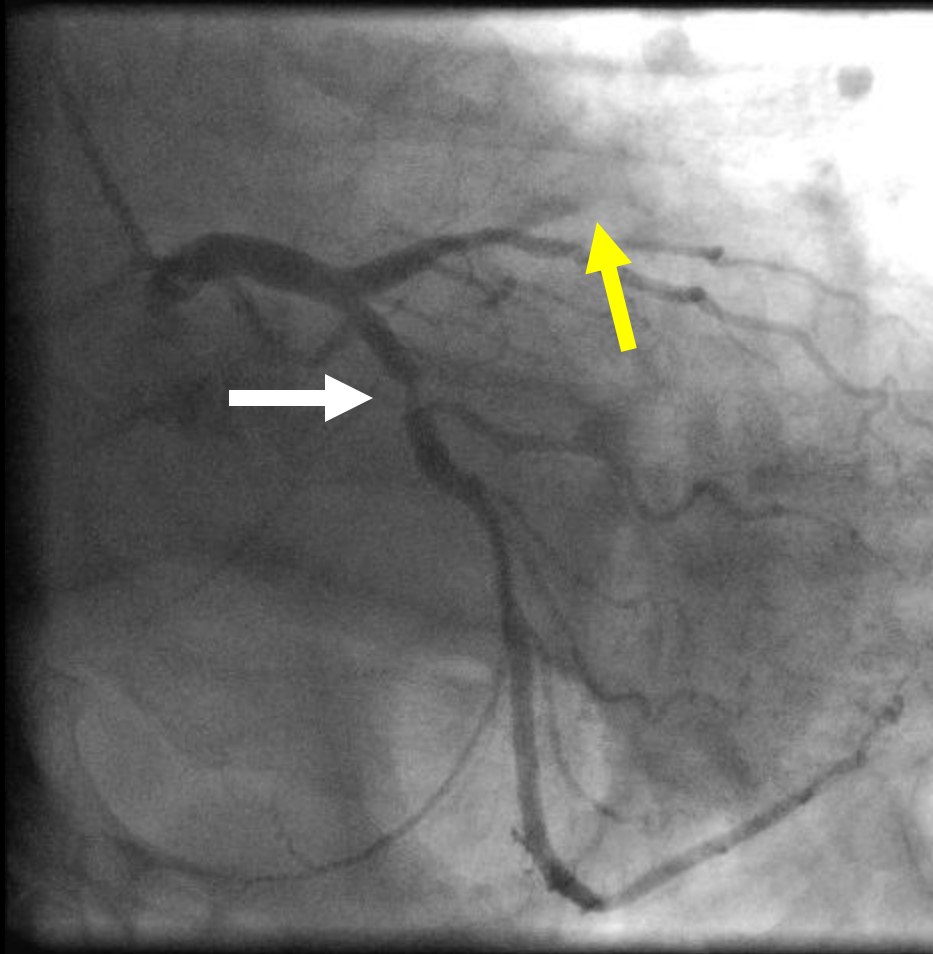


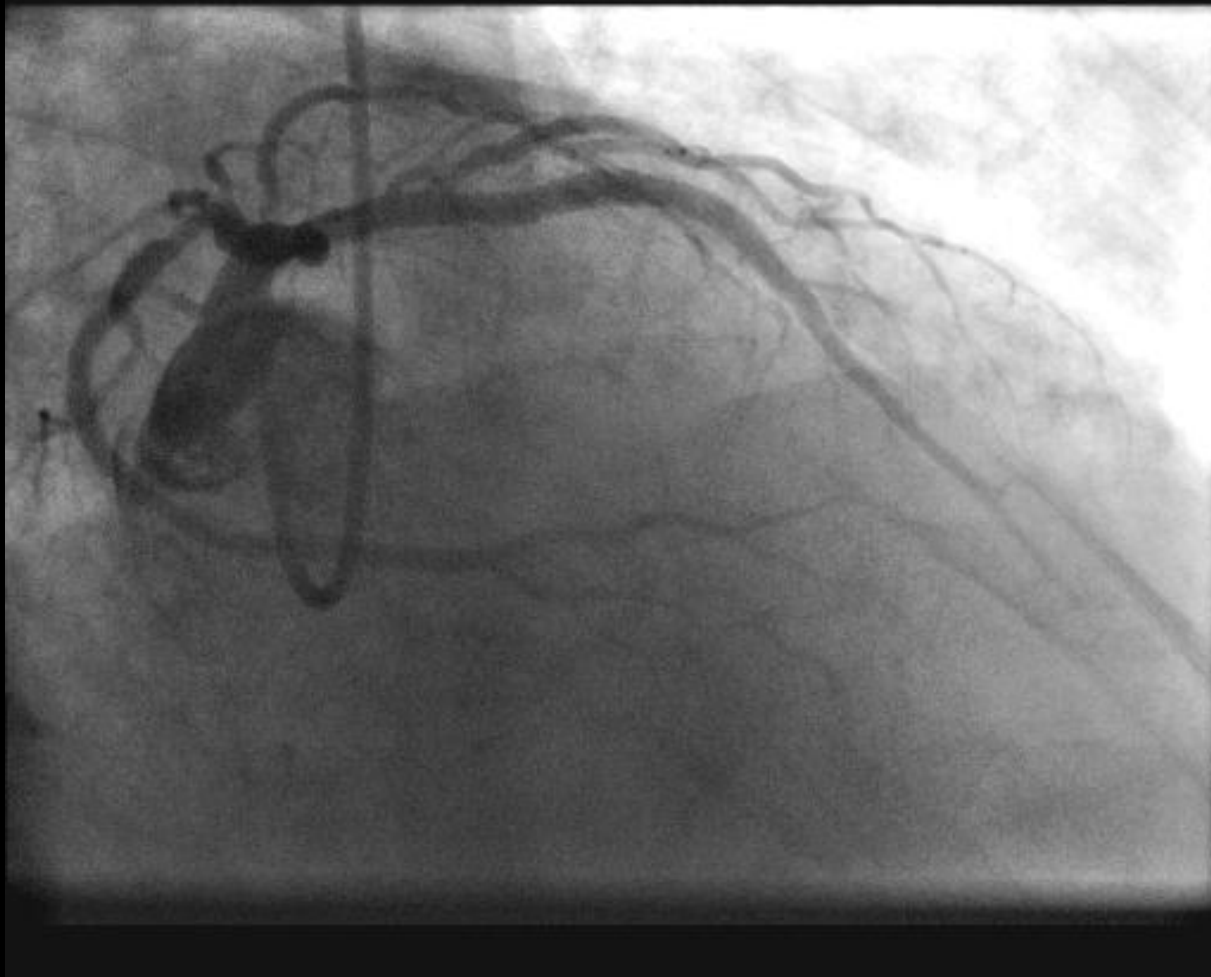






STEMI on Prehospital ECG



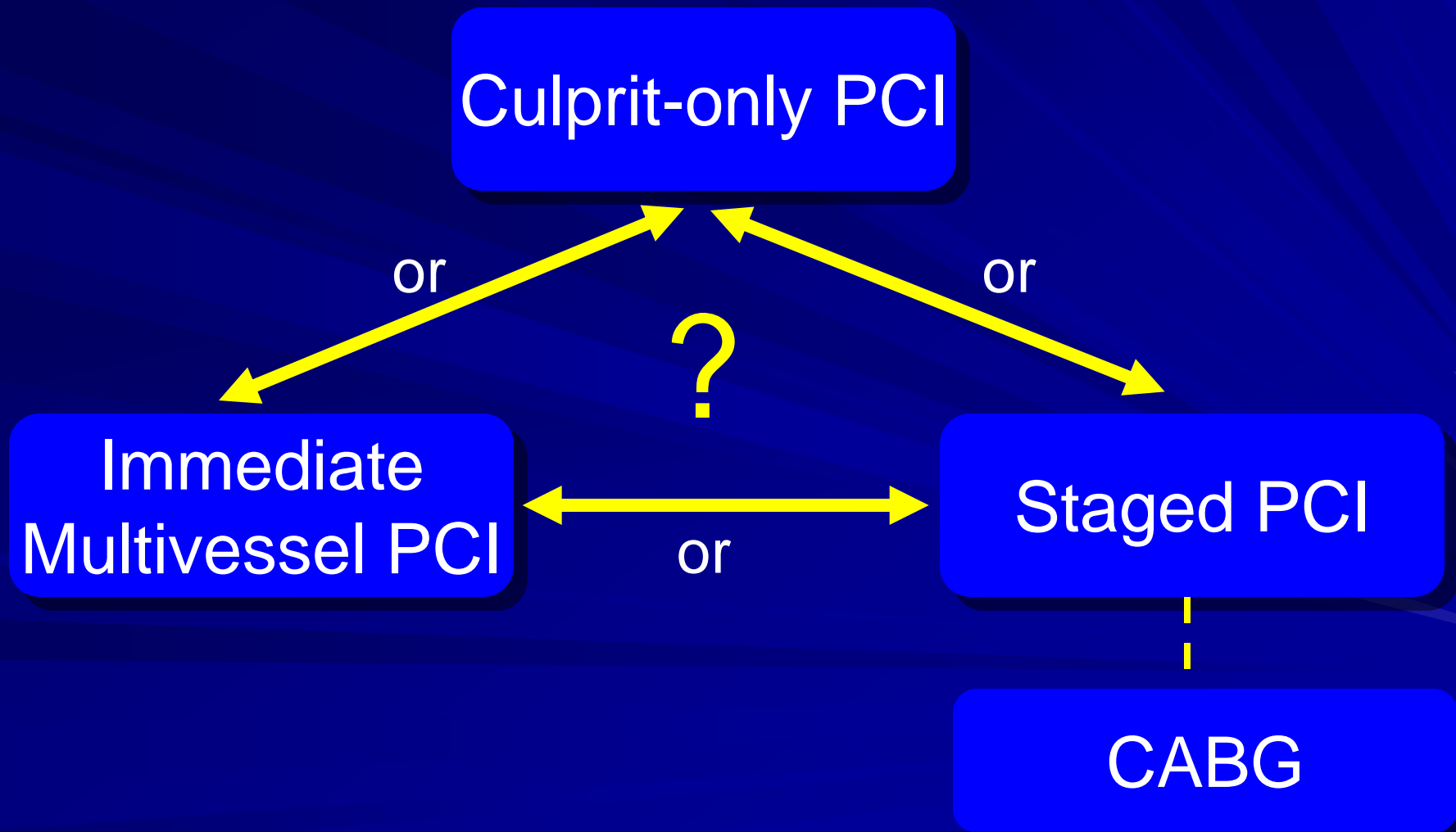


But what to do with LCx and RCA lesions?

PPCI in STEMI with Multivessel Disease

- Prevalence 50-60%
- Mortality higher than single vessel disease
- Immediate non-culprit artery PCI
 - Worse outcome
 - Unsupported by ACC/AHA guidelines (class III)
 - No adequately powered RCT to challenge
 - “Permitted” if shock
 - Performed in 10-15%

PPCI and Multivessel Disease Treatment Options



Performance of Immediate MV-PCI

HORIZONS-AMI: 18.5% had MV-PCI
8% immediate MV-PCI
only 1.5% were in shock

APEX-AMI: 2201 pts had MVD
10% had immediate MV-PCI
only 1% Killip class IV

New York State Registry: 4024 pts had MVD
13% had immediate MV-PCI
only 4.4% hemodynamic compromise

Outcome after Immediate MV-PCI

HORIZONS-AMI:

Higher mortality vs. staged MV-PCI

APEX-AMI:

Higher mortality vs. culprit-only PCI

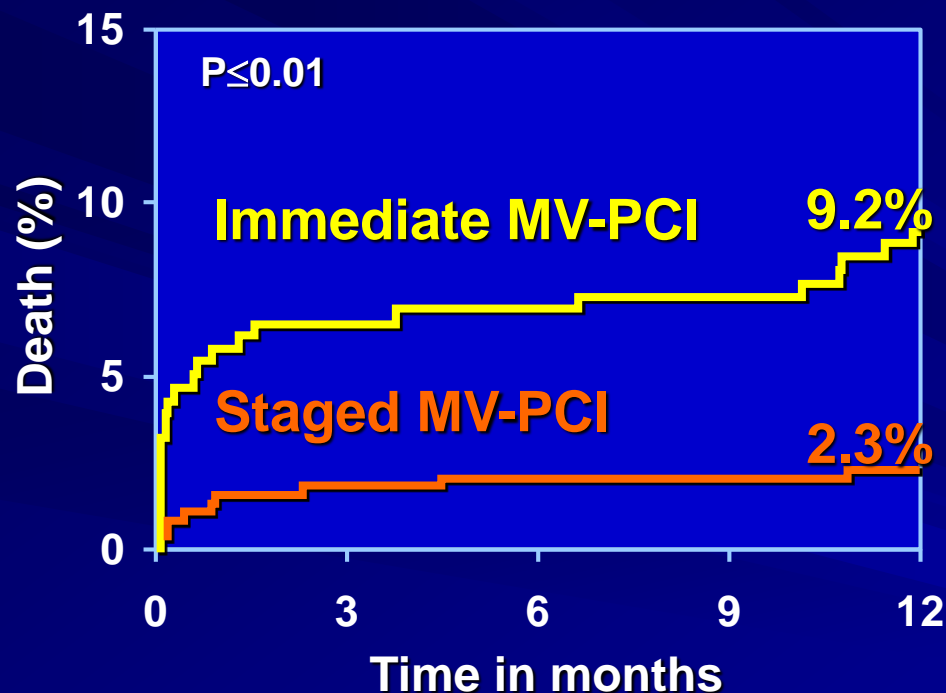
New York State Registry:

Higher mortality vs. staged MV-PCI

Survival higher in staged PCI vs. culprit-only PCI

Immediate vs Staged Multivessel PCI

HORIZONS-AMI Trial



No. at risk

Immediate	275	252	251	248	224
Staged	393	383	380	377	347

Staged MV-PCI

Median 30-days

Immediate MV-PCI

- ↑ mortality
- ↑ cardiac mortality
- ↑ stent thrombosis
- ↑ bleeding

Independent predictor
of 1-yr mortality

Kornowski R: JACC 2011

2011 Meta Analysis (>40,000 patients)

Culprit-only PCI vs. MV-PCI
34% lower mortality*

Staged PCI = the superior strategy



Culprit-only PCI
mortality is 3x higher



MV-PCI
mortality is 5x higher

Why Worse Outcome with MV-PCI during PPCI in STEMI?

- Unstable hemodynamics; low LVEF
 - A PCI challenge at any time
- Prothrombotic and inflammatory state
 - Risk of stent thrombosis
 - Vasoconstriction
 - Systemic endothelial dysfunction
- More contrast use in high risk PCI - AMI
- “Double (or more) jeopardy” if complications
- “Middle of the night” – rushed?

Cardiogenic Shock with AMI and MVD

Meta analysis

3248 pts

**Culprit-only PCI
vs. MV-PCI**

-32%

Mortality

1999 SHOCK trial

302 pts

85% MVD

38% had CABG

Only 11 pts had MV-PCI

Summary

In STEMI patients with MVD undergoing PPCI:

Immediate MV-PCI of non-culprit lesions is strongly discouraged

A deferred, staged-PCI strategy for MVD should remain the standard approach

Insufficient evidence to change guidelines but await properly designed and adequately powered randomized trials