

بِسْمِ اللَّهِ
الرَّحْمَنِ
الرَّحِيمِ



PRIMARY PCI IN STEMI: STATE-OF-ART

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Cardiology departement-mansora university

PPCI in STEMI

12 March 2015



CLINICAL DATA

- E M A B S
- 76 Years
- Type 2 DM
- Obese
- Ex smoker



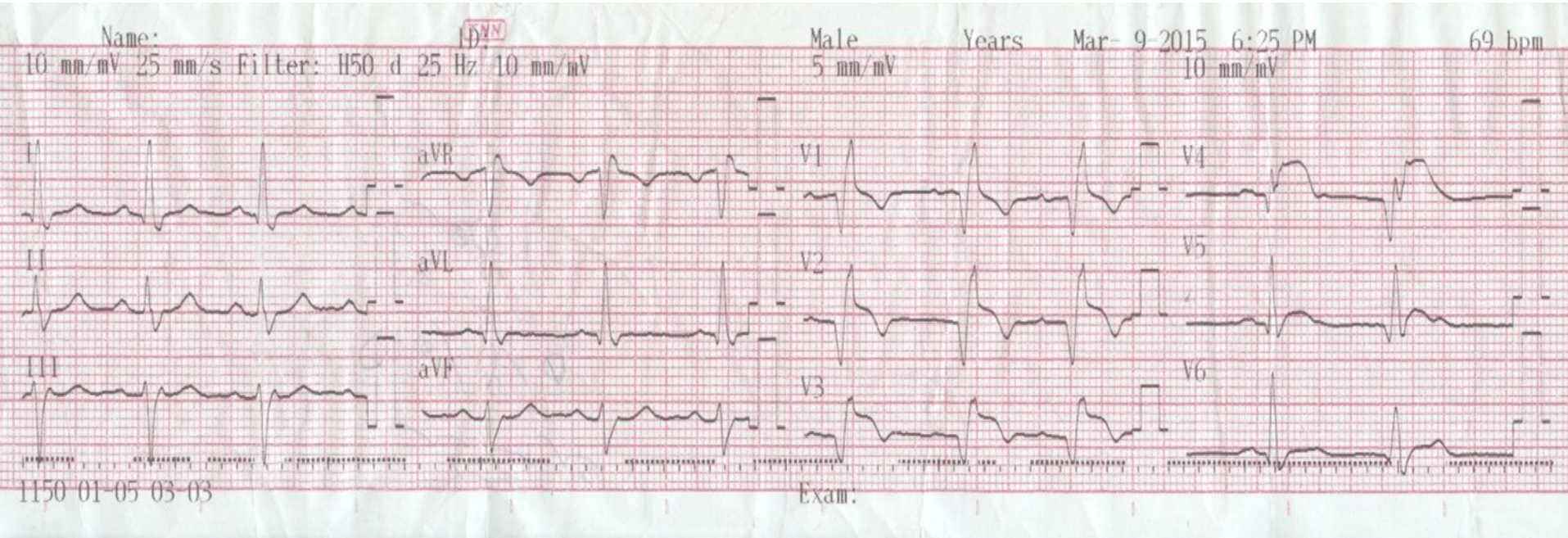
EMERGENCY D

Monday 9 march 2015

- ED
- Acute severe typical prolonged chest pain
- Maintained hemodynamics
- ECG: STEMI (Anterior MI) + RBBB
- ECHO:
 - RSWMA in LAD territory
 - EF 45%



Pre ECG 9 march 2015

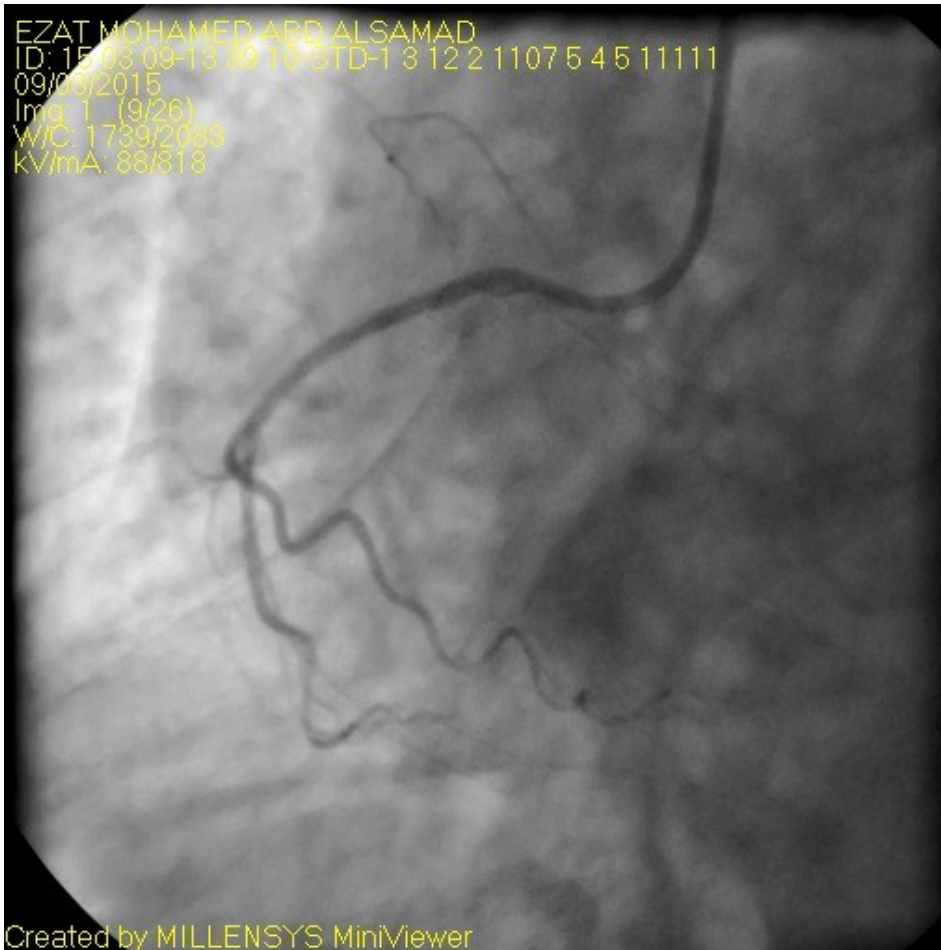


Therapy

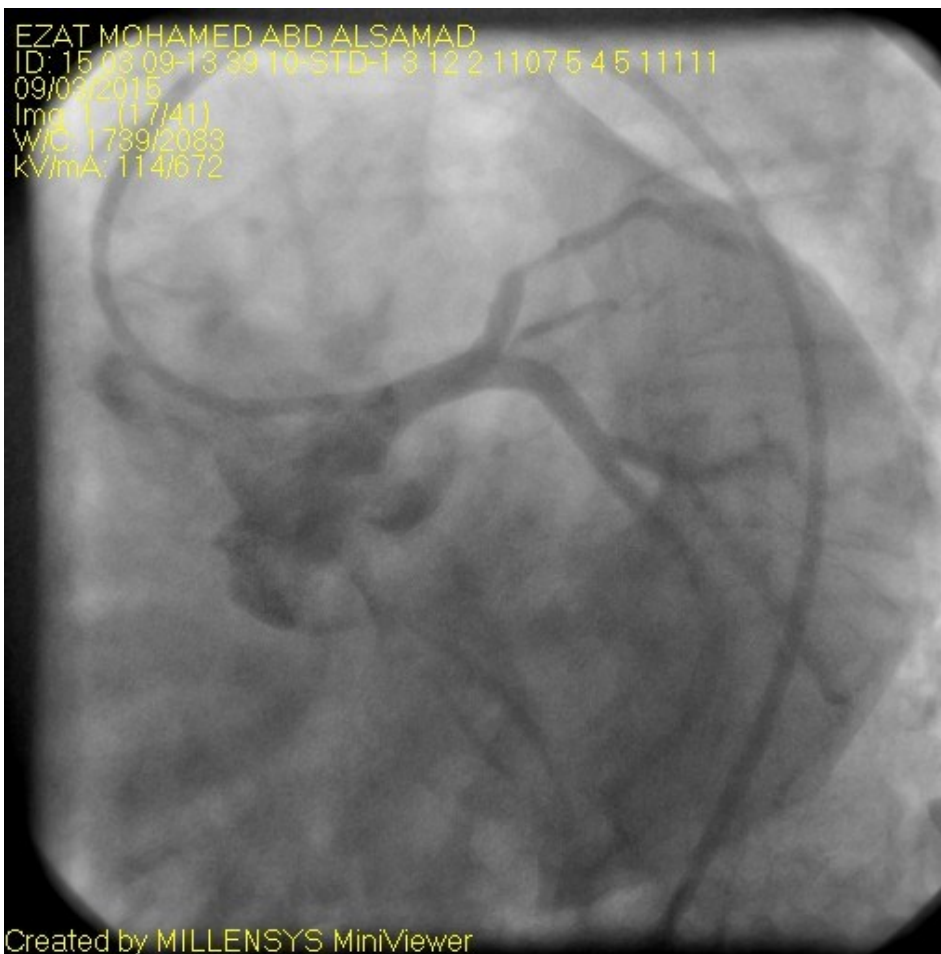
- Pain control
- DAP
- INTERGLIN
- SK not available
- Coronary angiography
- Primary PCI 10 Hours after FMC



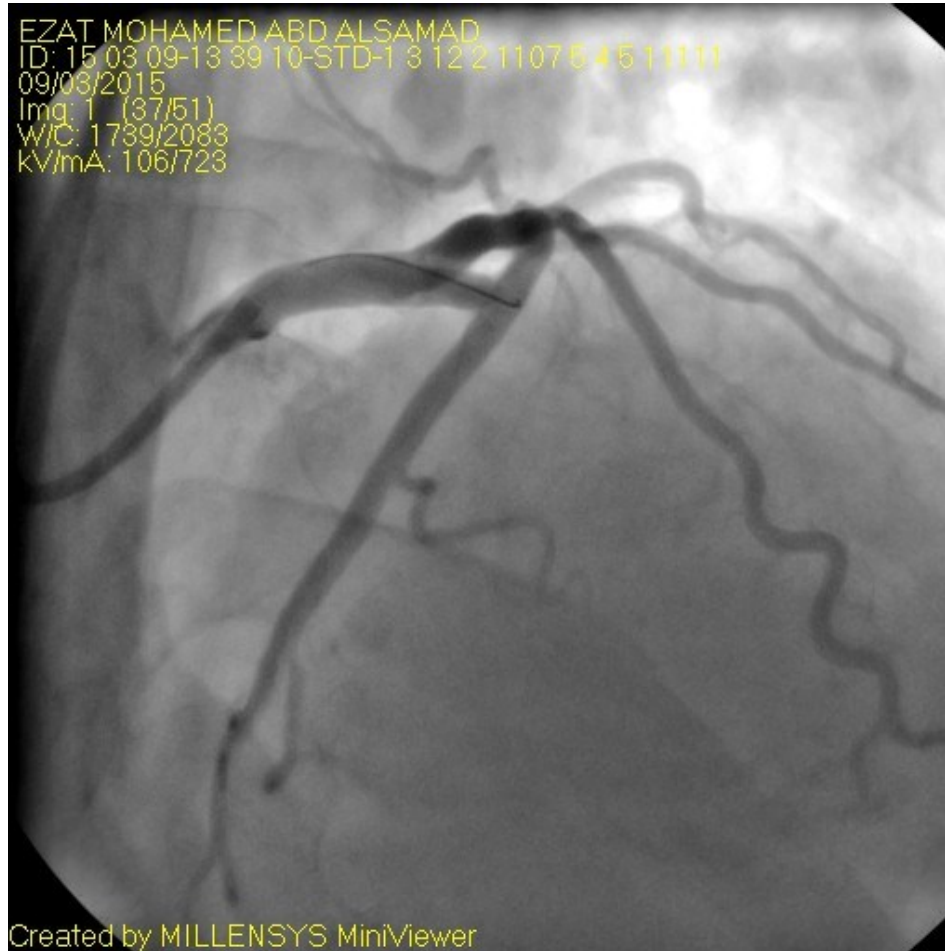
RCA



LEFT SYSTEM spider using guiding XB 4 7F



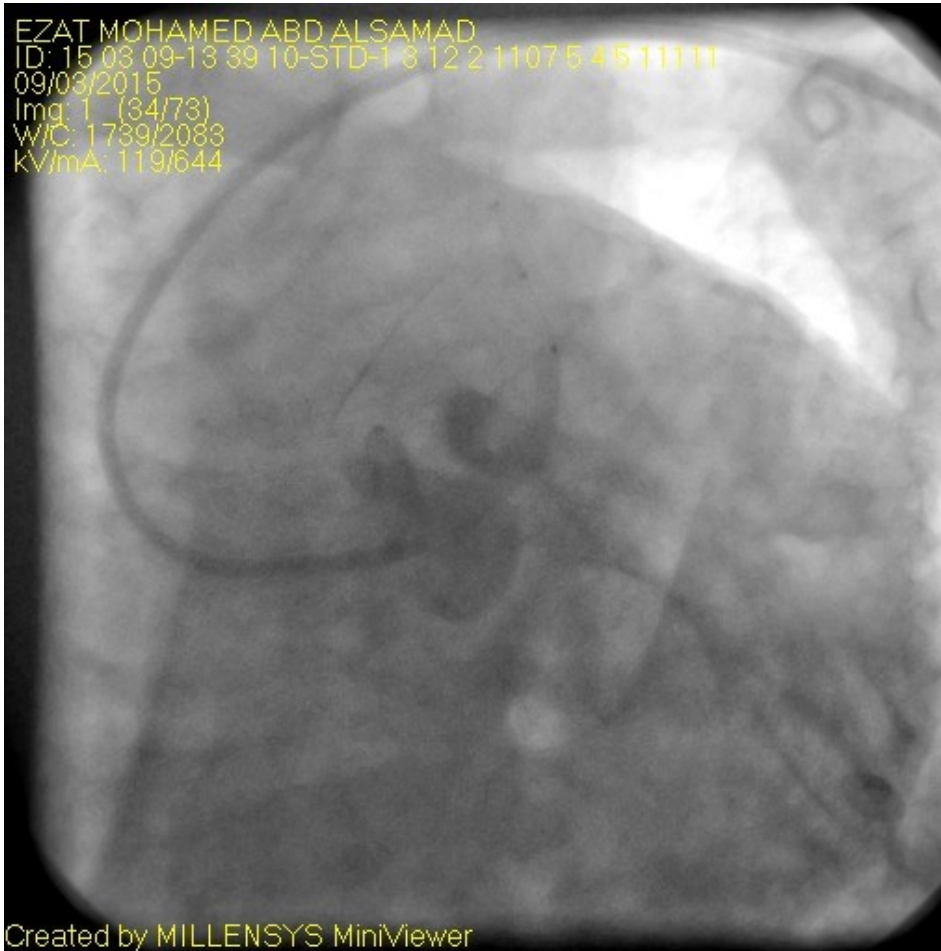
Wiring of the lesion pilot 50



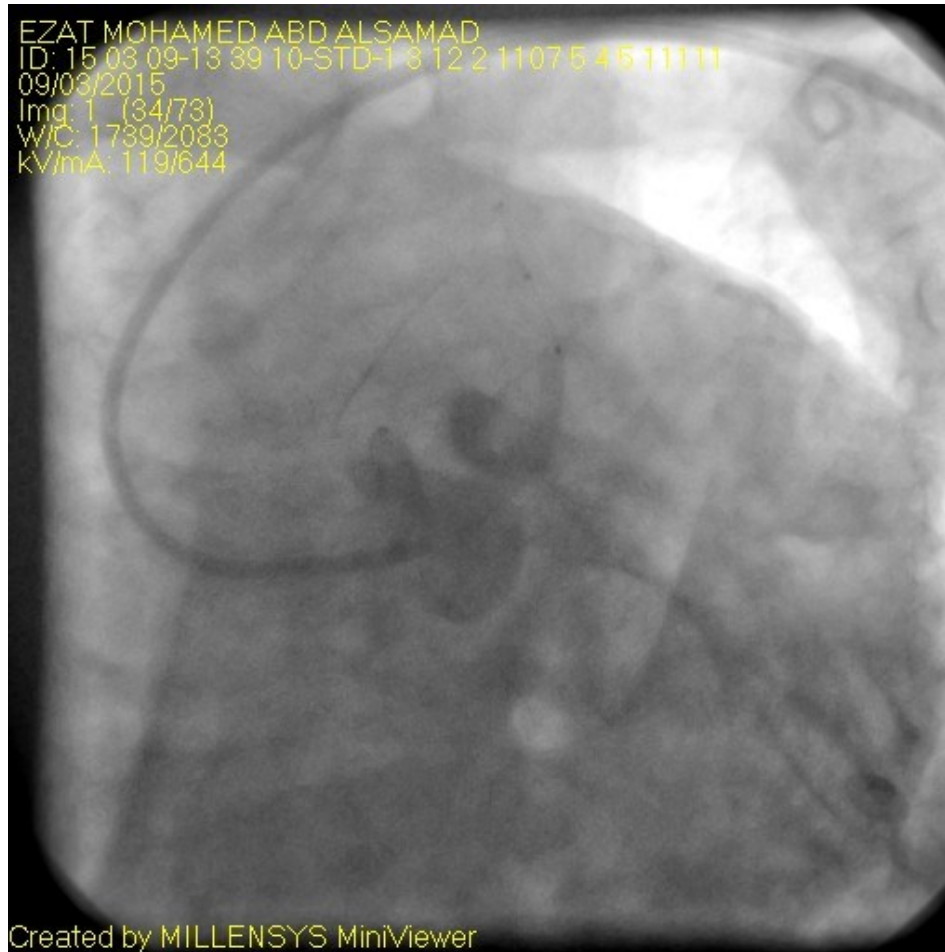
SUPPORT WITH BAALLOON



Where we are ?

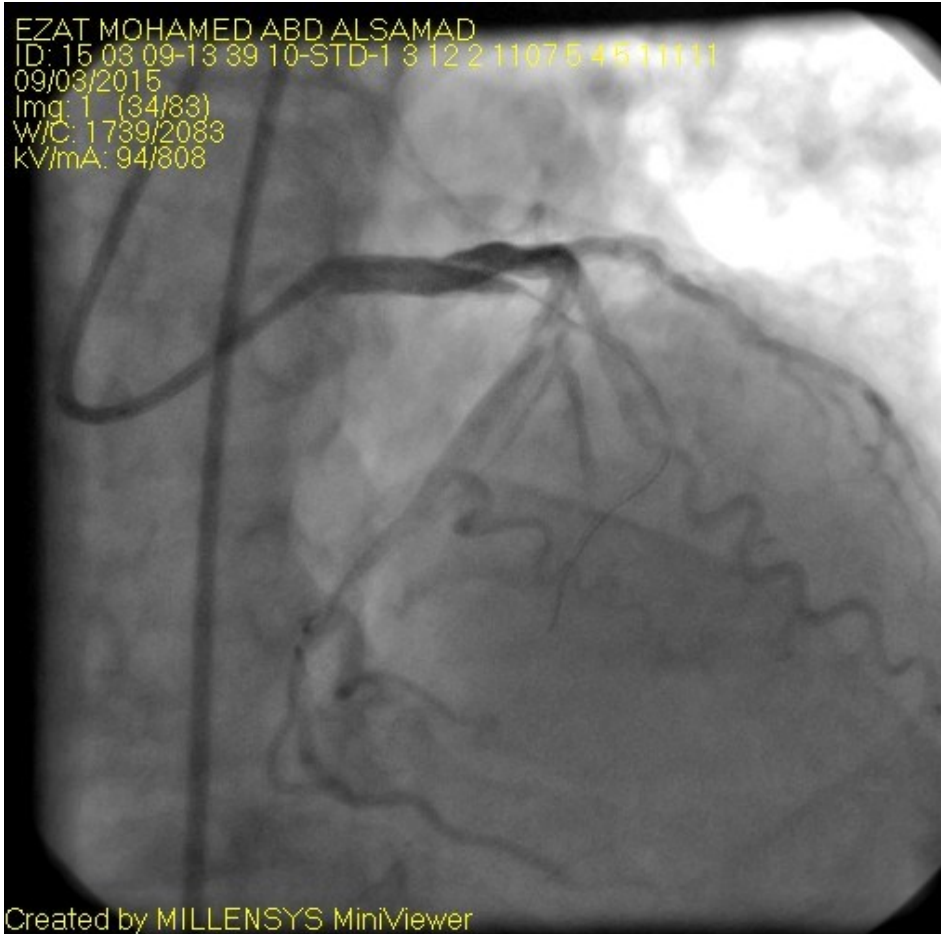


Where we are ?



Where we are ?

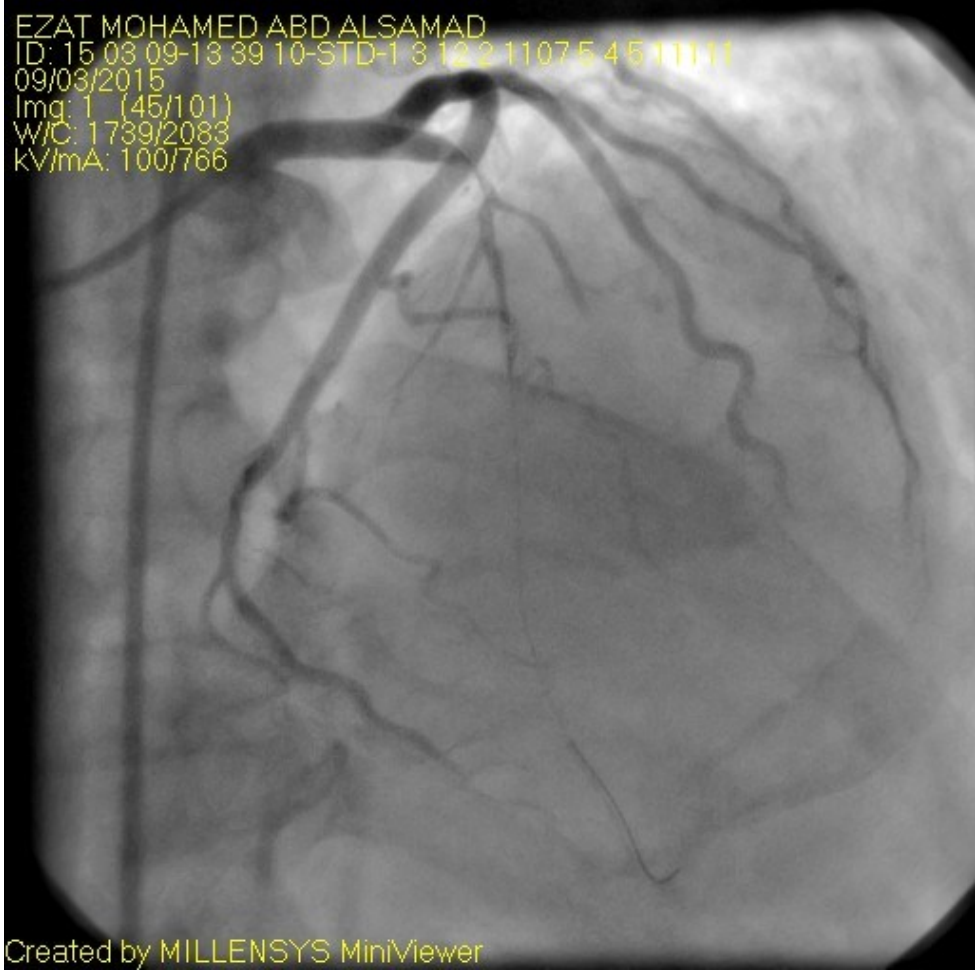
IC intergrlin and NTG

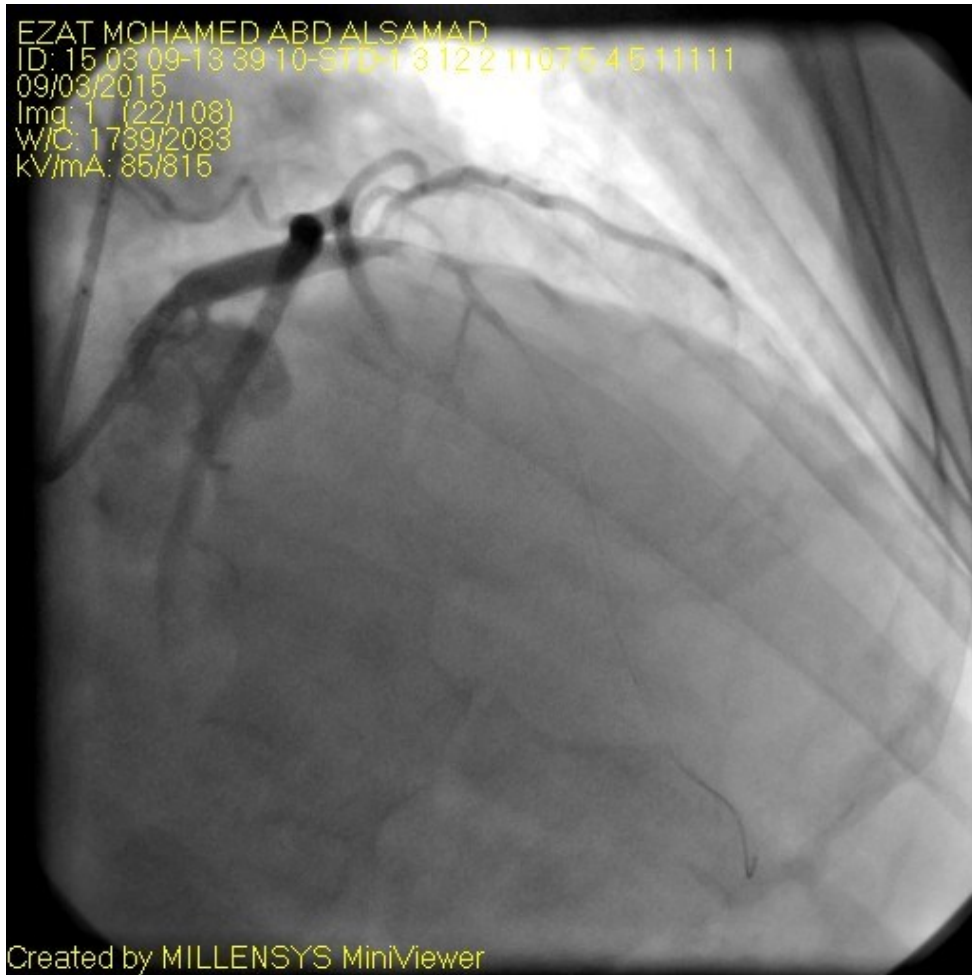


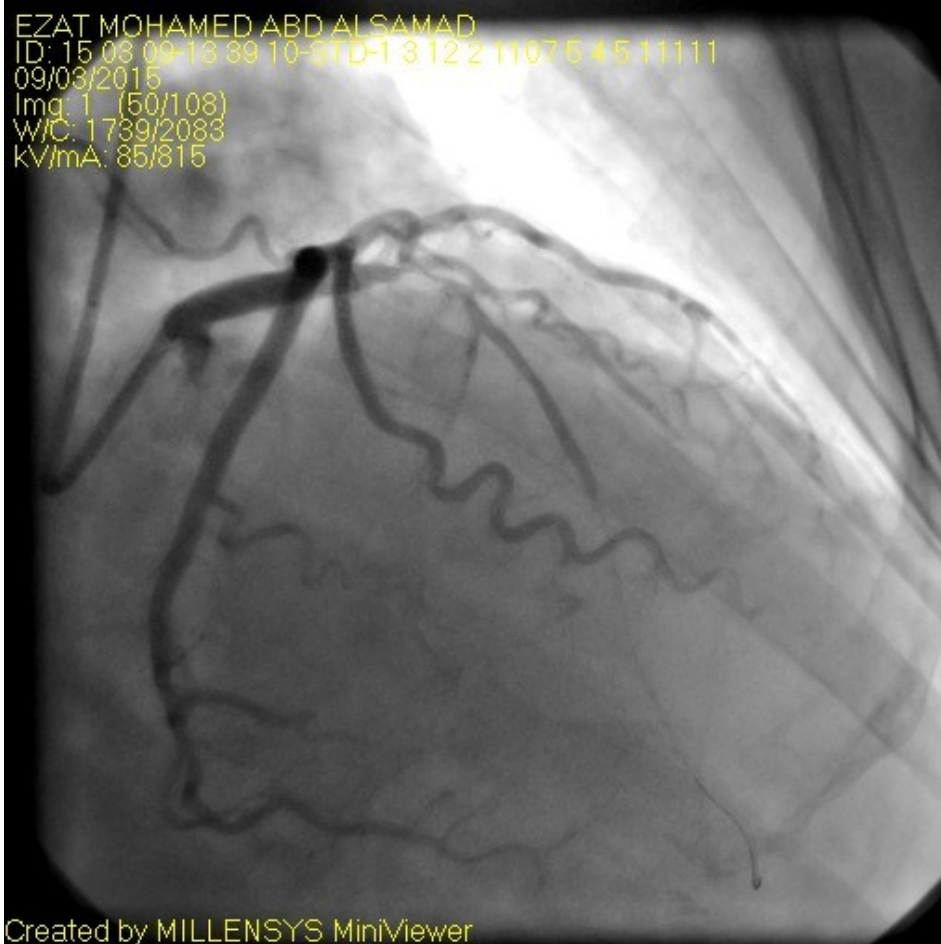
EZAT MOHAMED ABD ALSAMAD
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09/03/2015
Img: 1 (34/83)
W/C: 1739/2083
kV/mA: 94/808

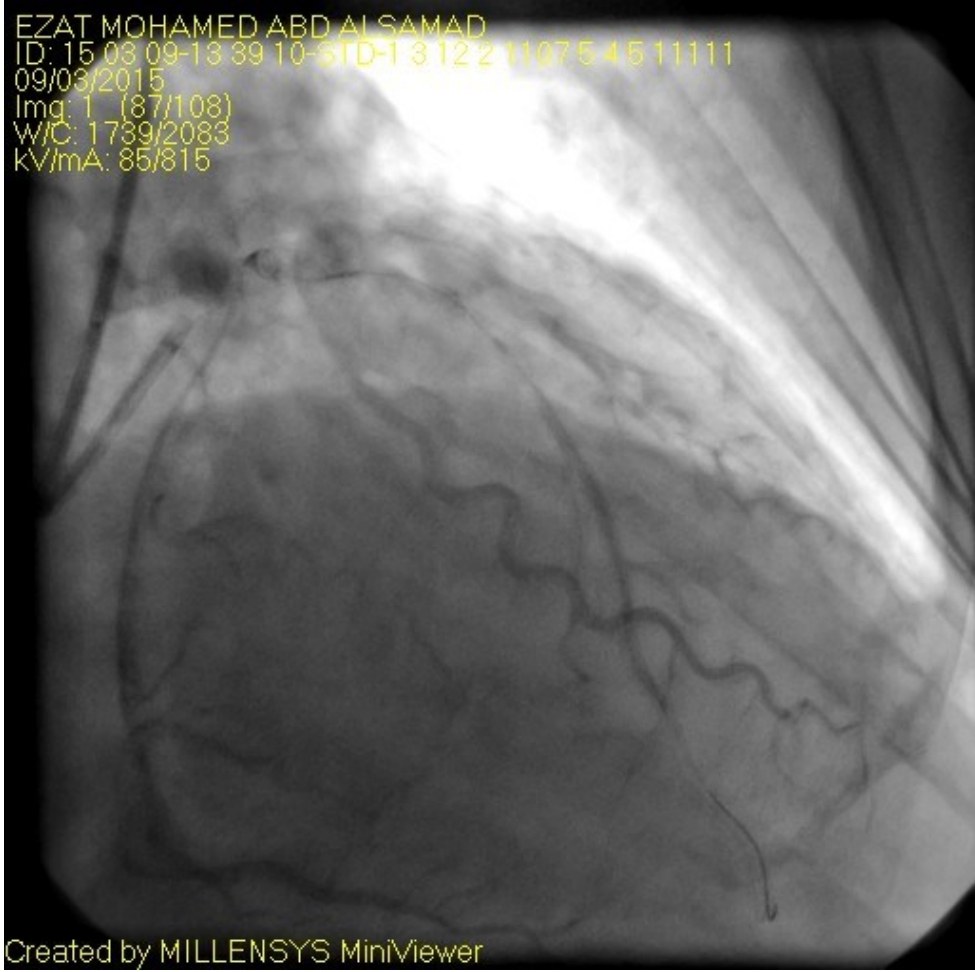
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EZAT MOHAMED ABD ALSAMAD
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09/03/2015
Img: 1 (87/108)
W/C: 1739/2083
kV/mA: 85/815

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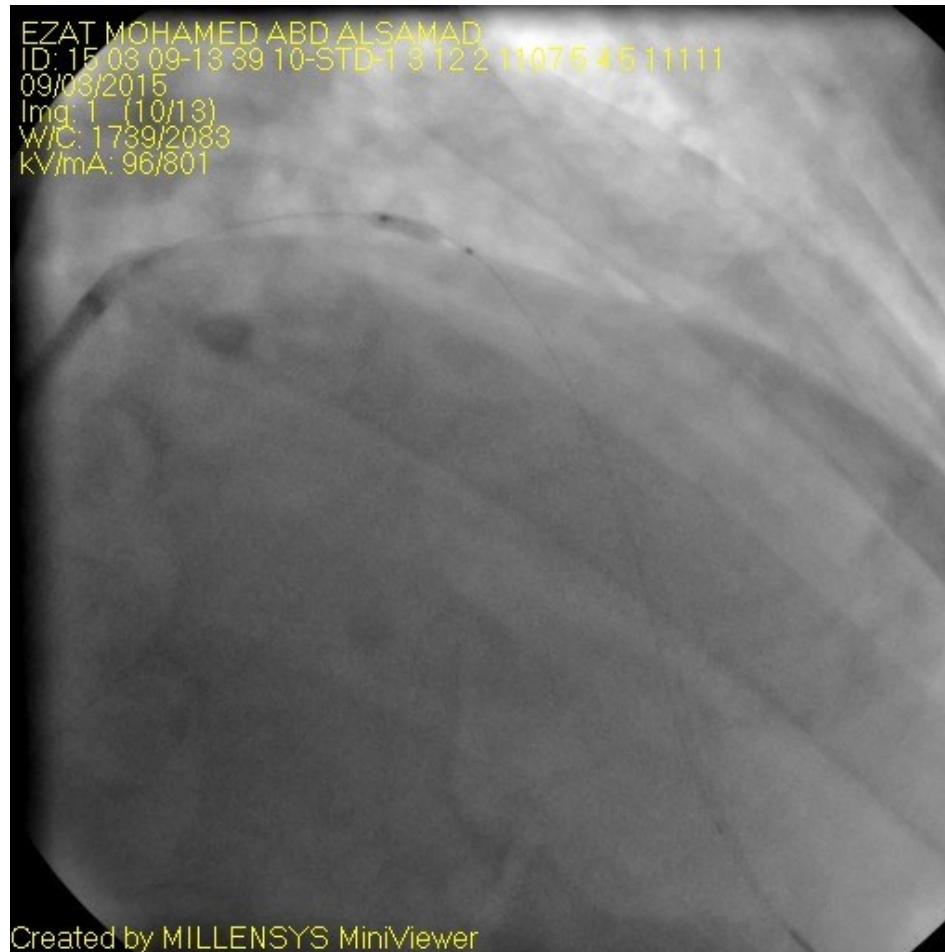


**What to do
?**

**Thrombus Aspiration
or
Balloon Dilatation**



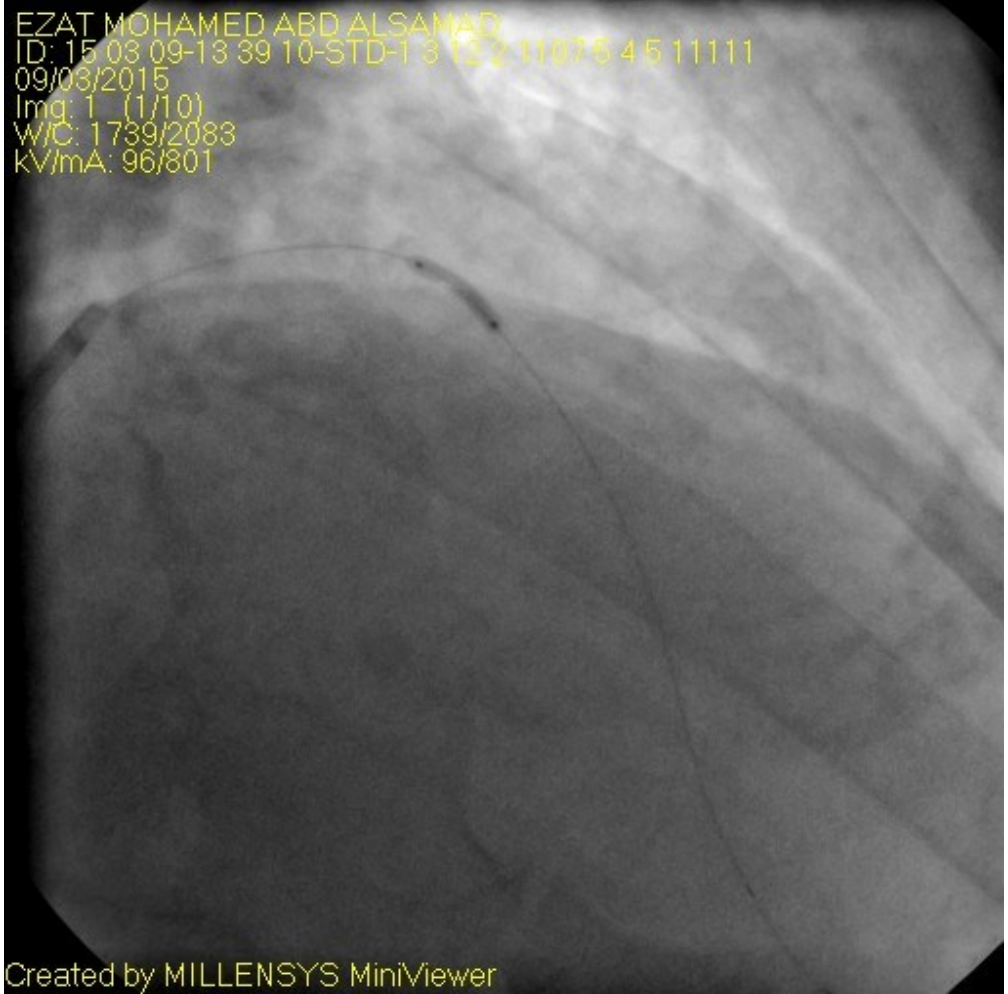
2 × 20 mm

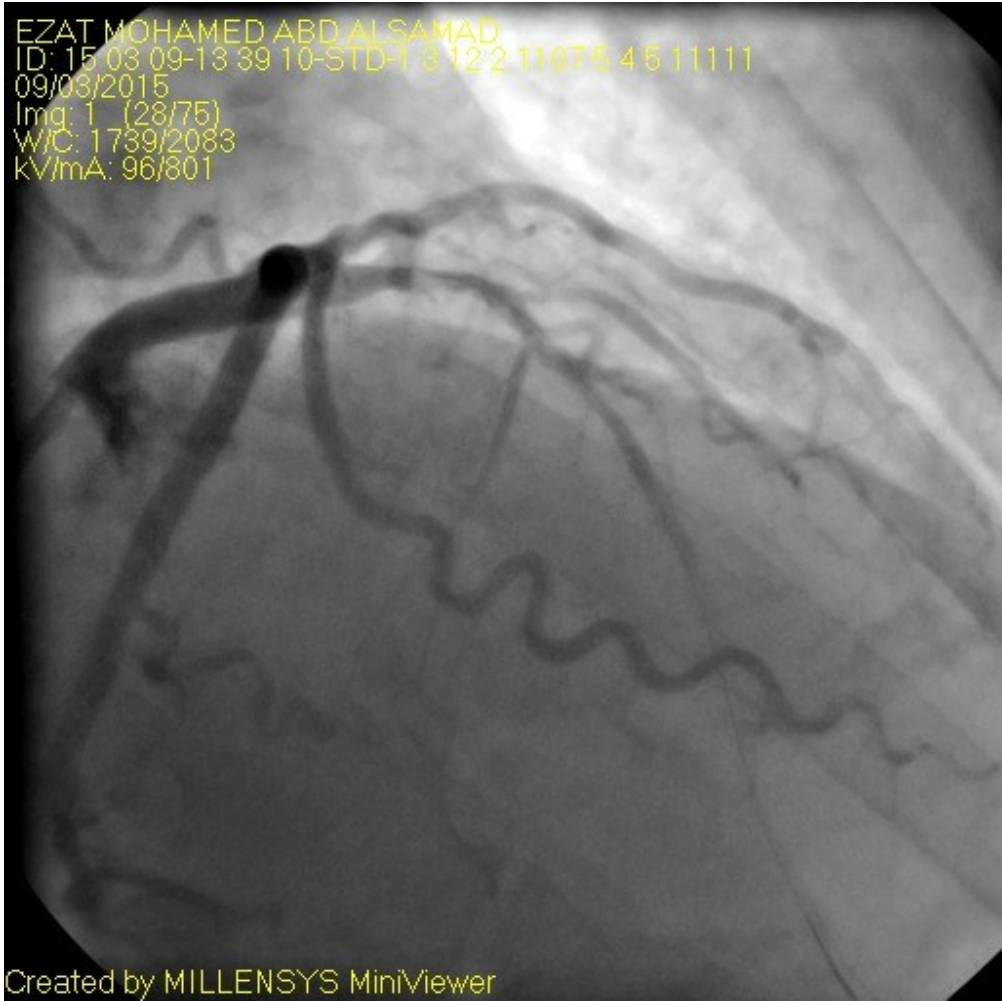


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Img: 1 (1/13)
W/C: 1739/2083
kV/mA: 96/801

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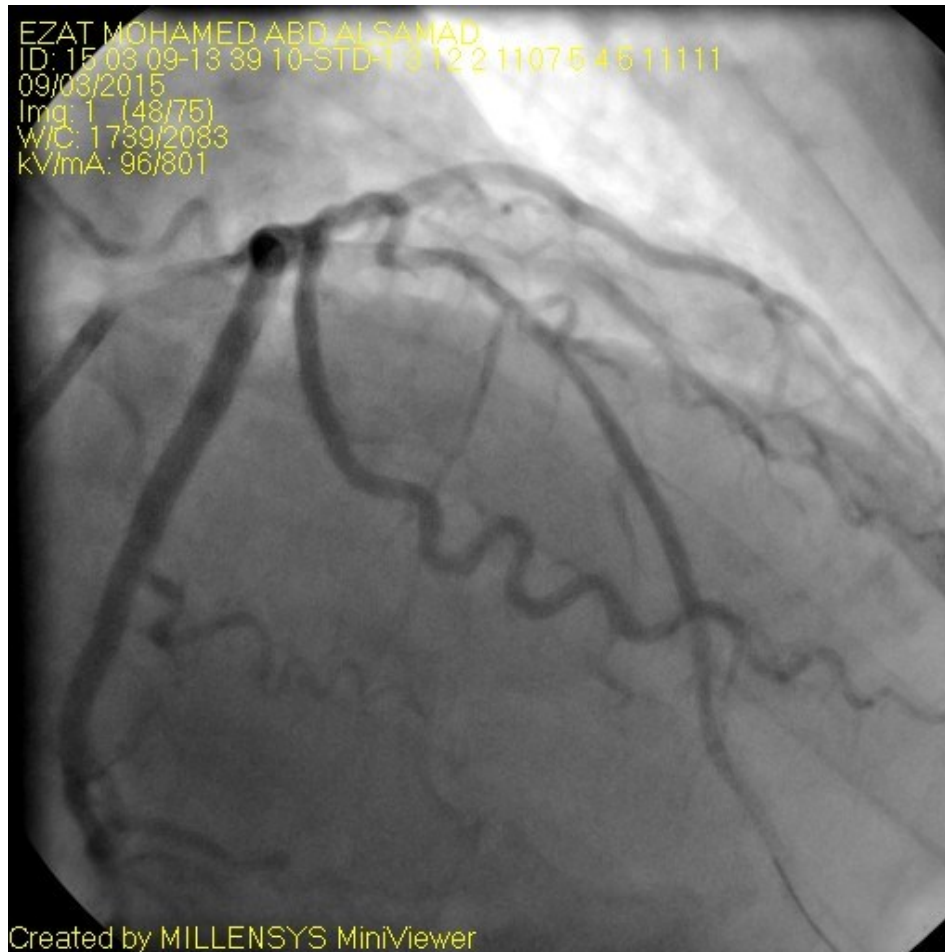


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09/03/2015
Img: 1 (28/75)
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kV/mA: 96/801

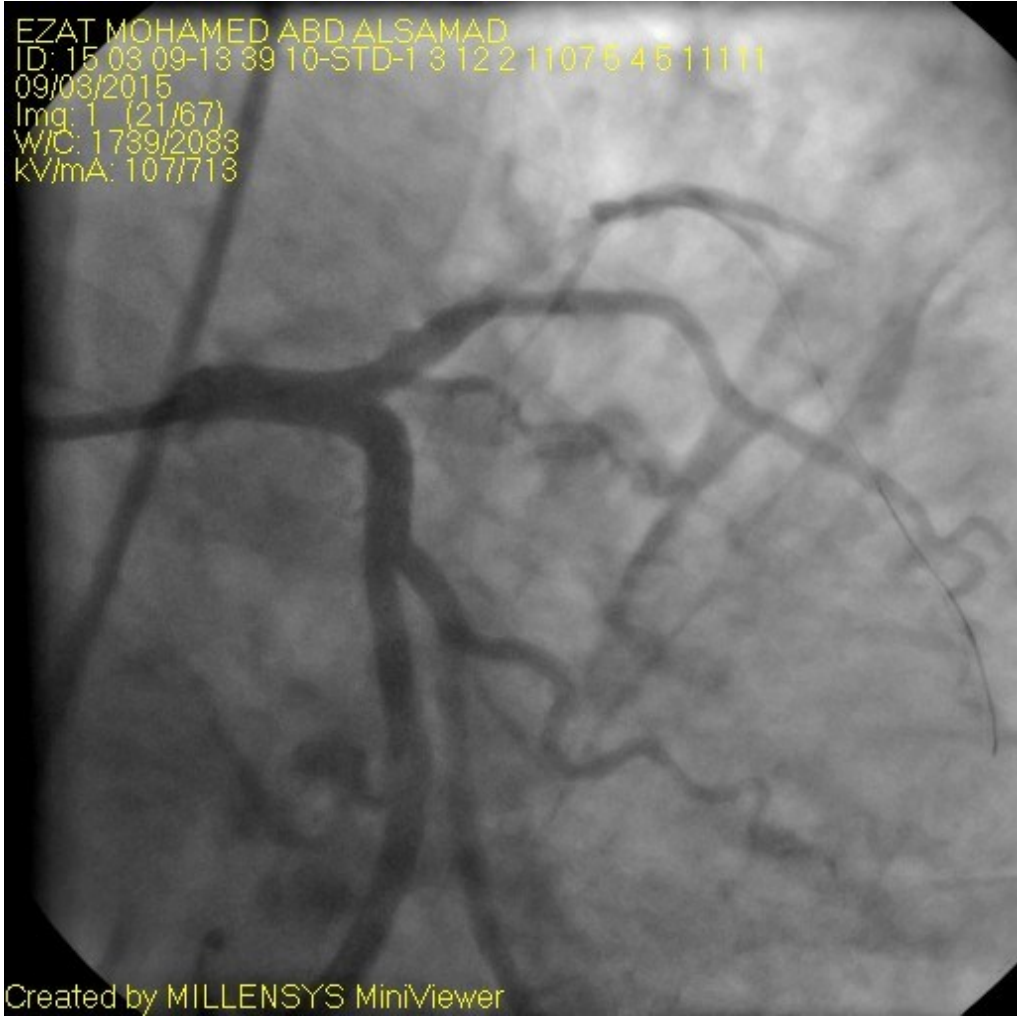


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EZAT MOHAMED ABD ALSAMAD
ID: 15 03 09-13 39 10-STD-1 3 12 2 11075 45 11111
09/03/2015
Img: 1 (21/67)
W/C: 1739/2083
kV/mA: 107/713



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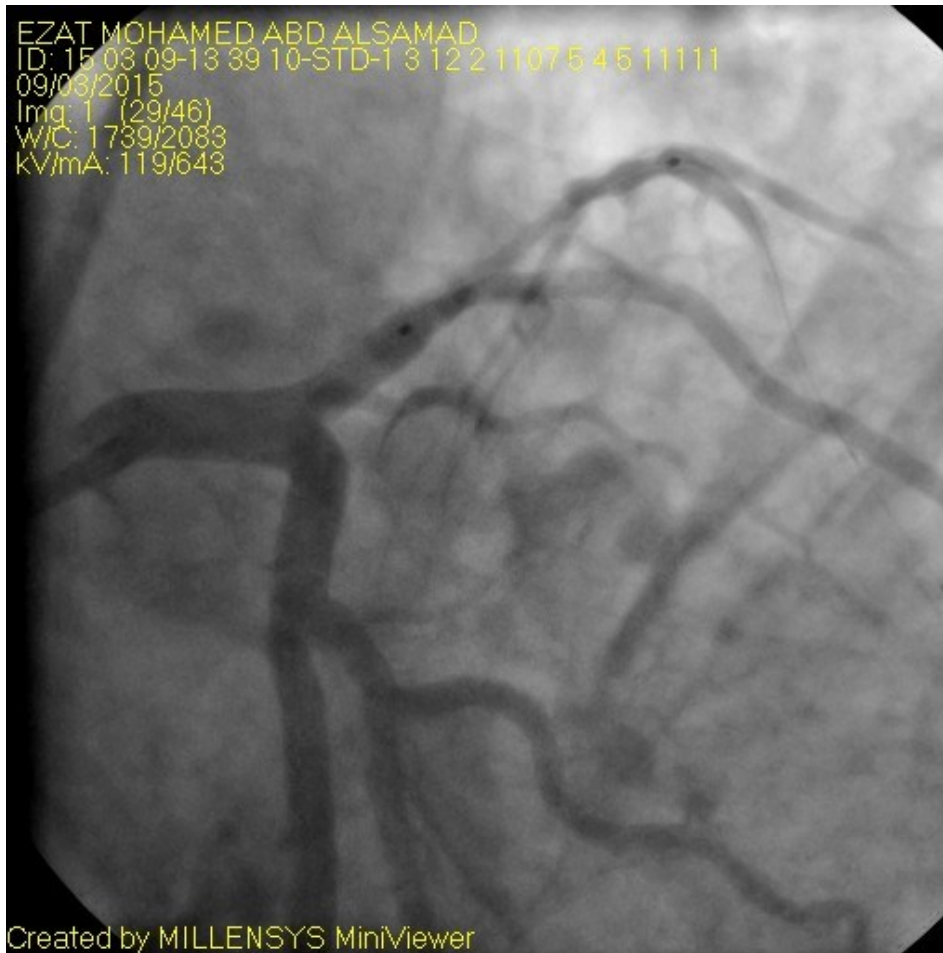


EZAT MOHAMED ABD ALSAMAD
ID: 15 03 09-13 39 10-STD-1 8 12 2 1107 5 45 11111
09/03/2015
Img: 1 (40/67)
W/C: 1739/2083
KV/mA: 107/713

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Endaveor resolute 3.5 × 38

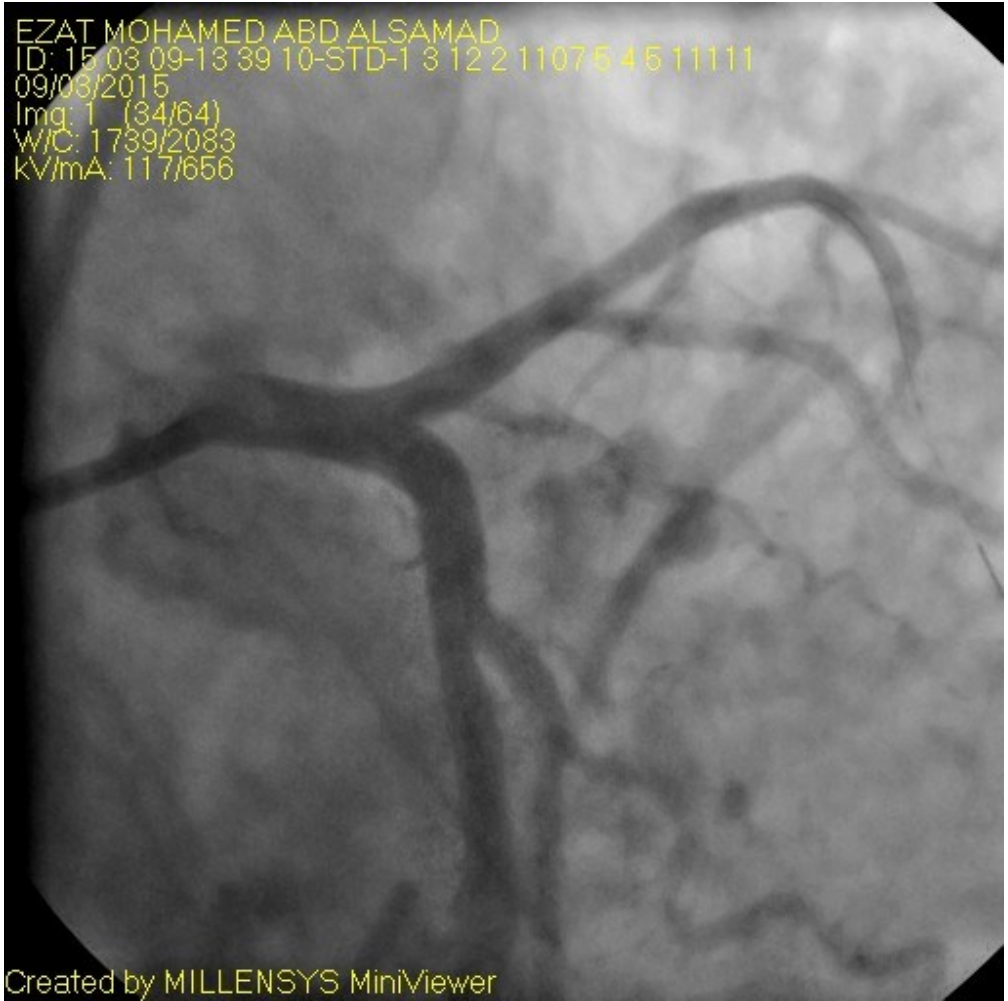




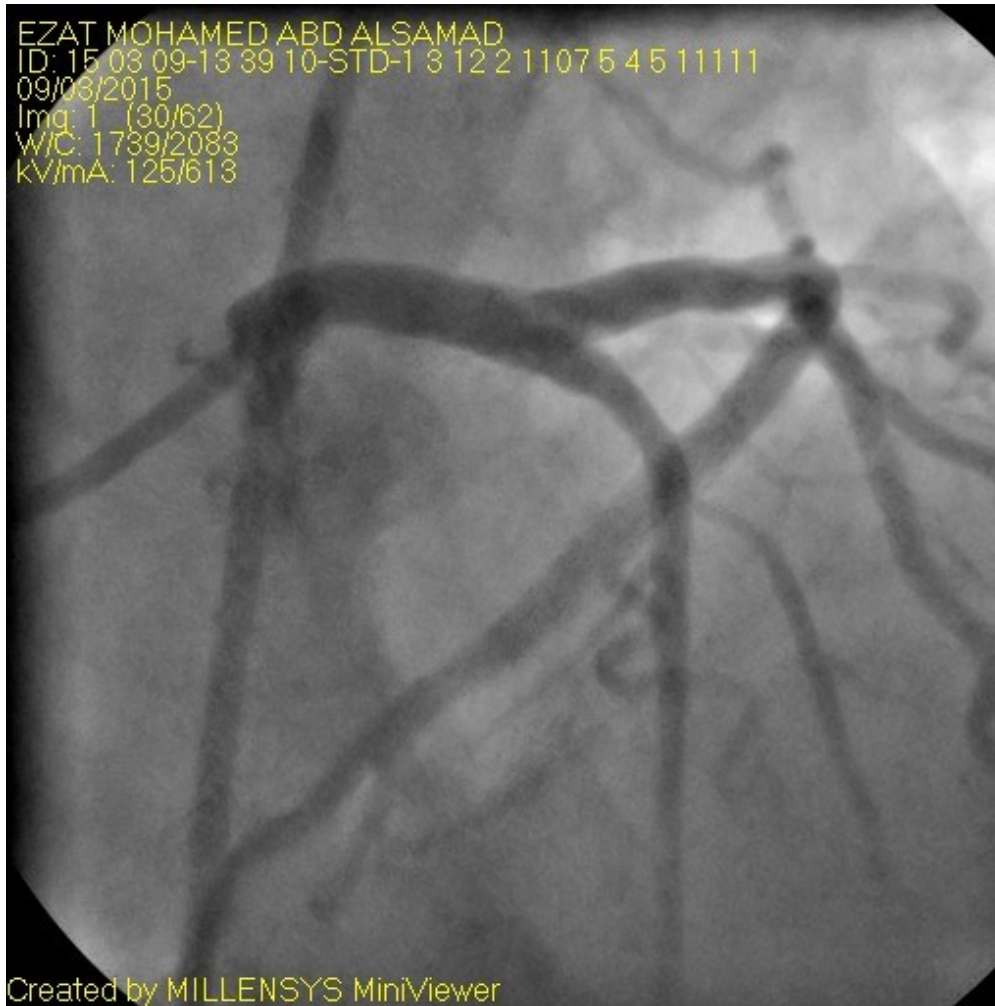
EZAT MOHAMED ABD ALSAMAD
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W/C: 1739/2083
KV/mA: 112/686

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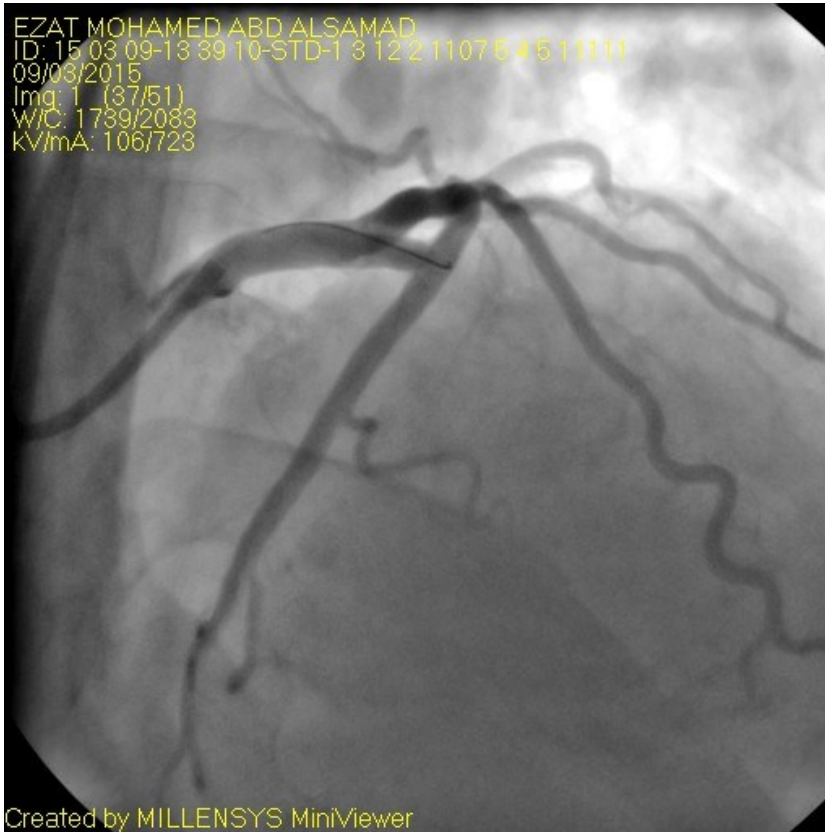
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kV/mA: 125/613

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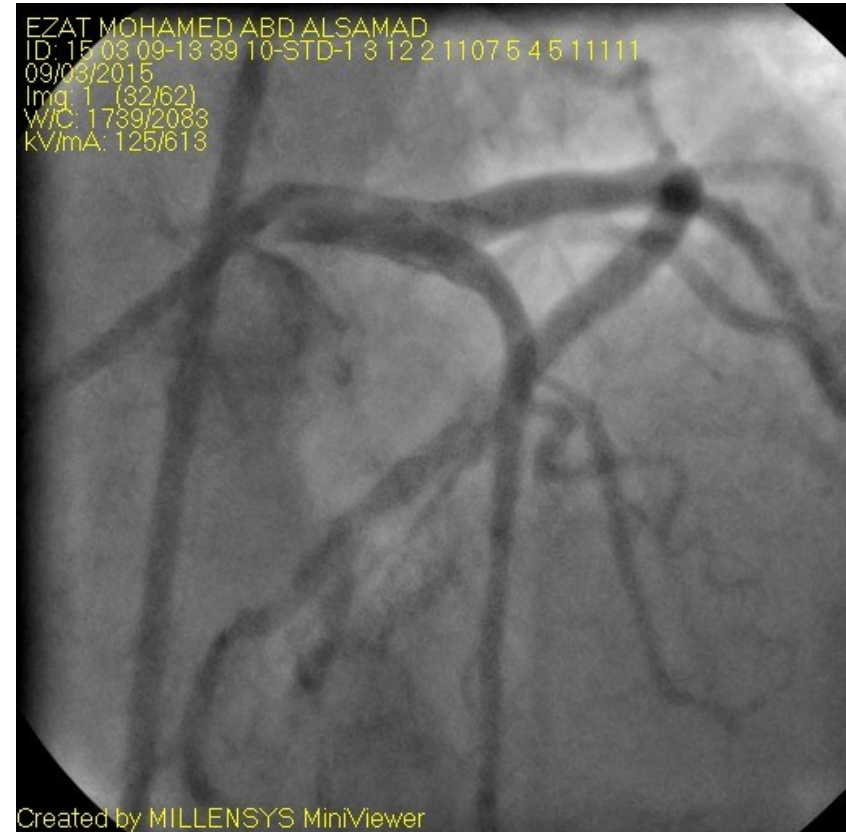


Angiographic success

BASLINE



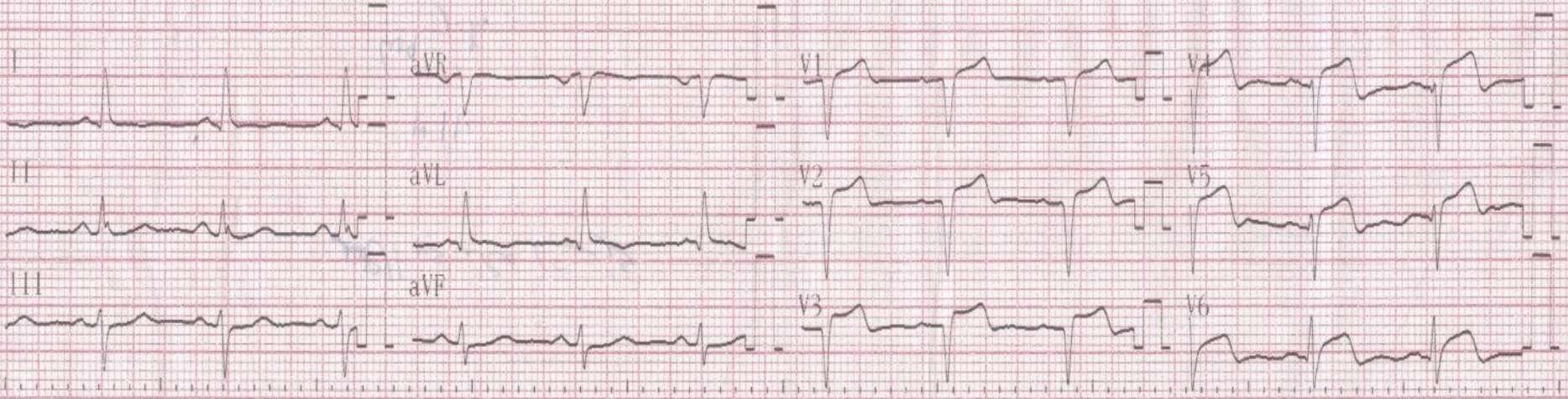
FINAL



Post-PCI ECG

TNN

Name: ID: Male Years Mar 10 2015 2:58 PM 77 bpm
10 mm/mV 25 mm/s Filter: H50 d 25 Hz 10 mm/mV 5 mm/mV 10 mm/mV



1150 01-05 03-03

Exam:

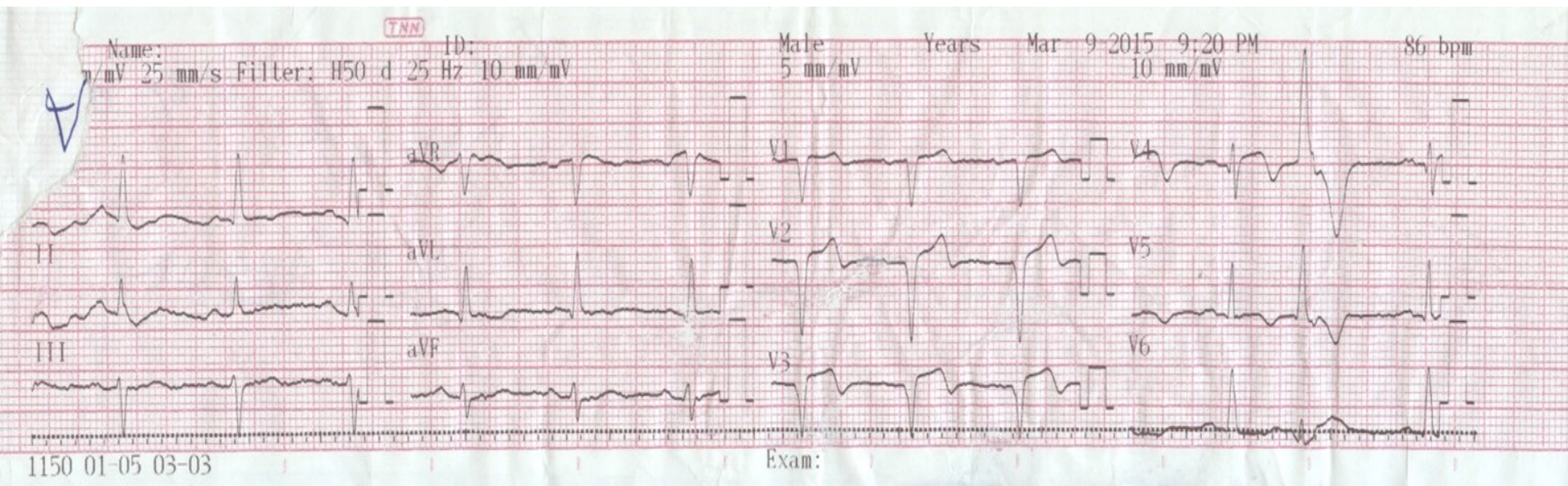


Post-PCI course

- Pain-free
- Stable hemodynamics
- Electrically stable
- ST resolution and disappearance of RBBB
- Maintained LV dimensions and function
- Discharge at 72 hours
- Clinical success

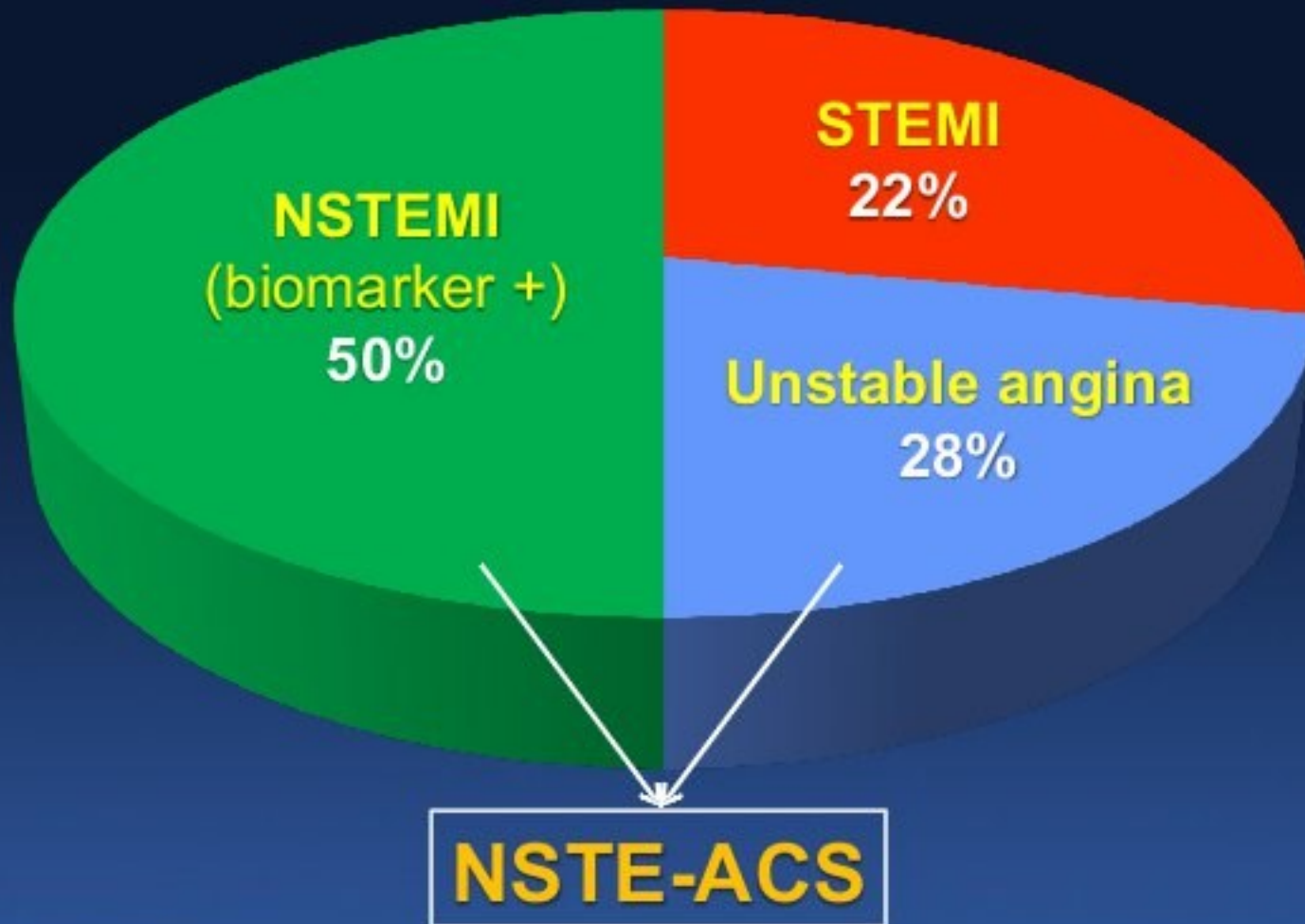


Pre-discharge ECG



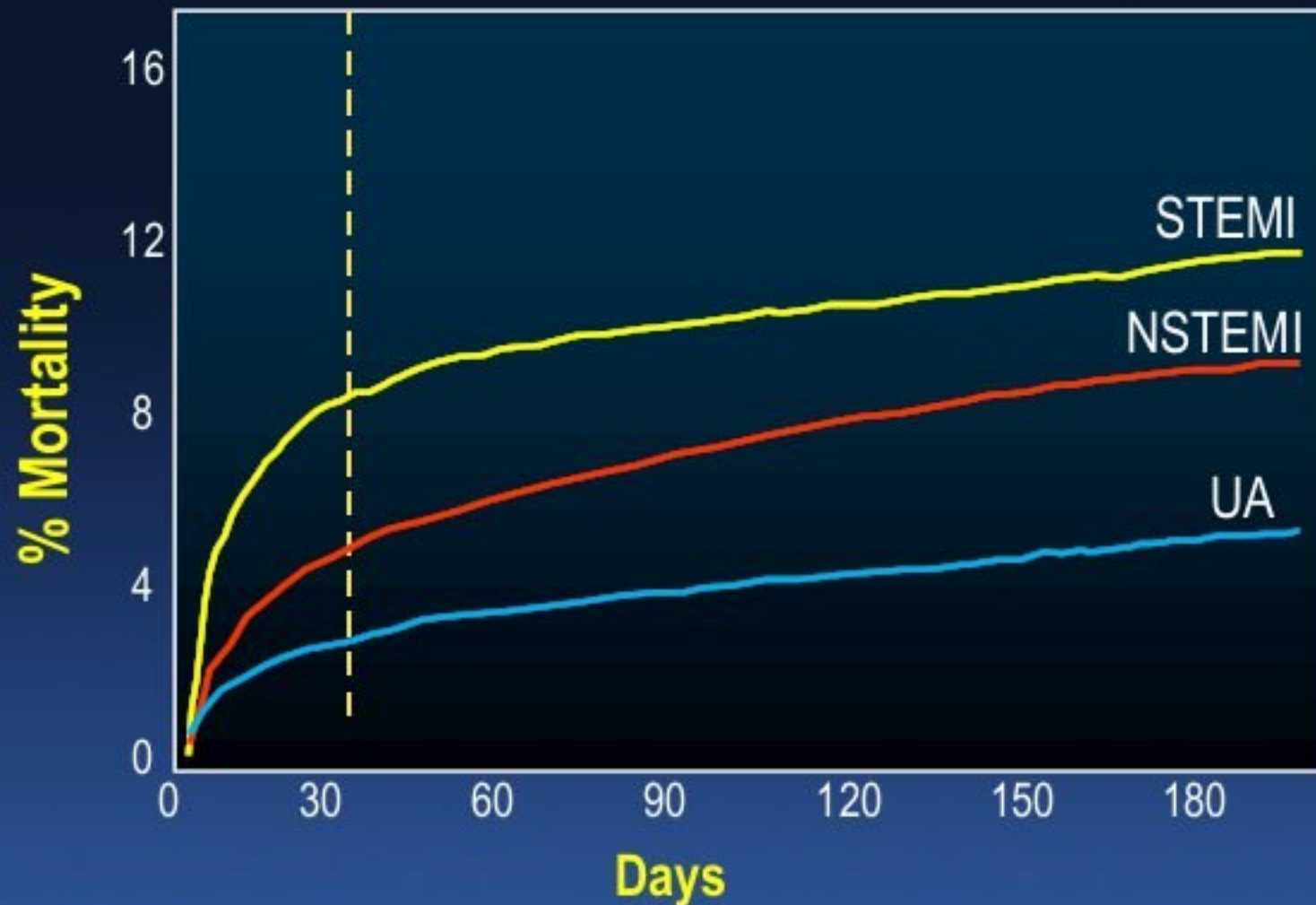
Acute Coronary Syndromes

1.41 million hospital admissions for ACS in 2010

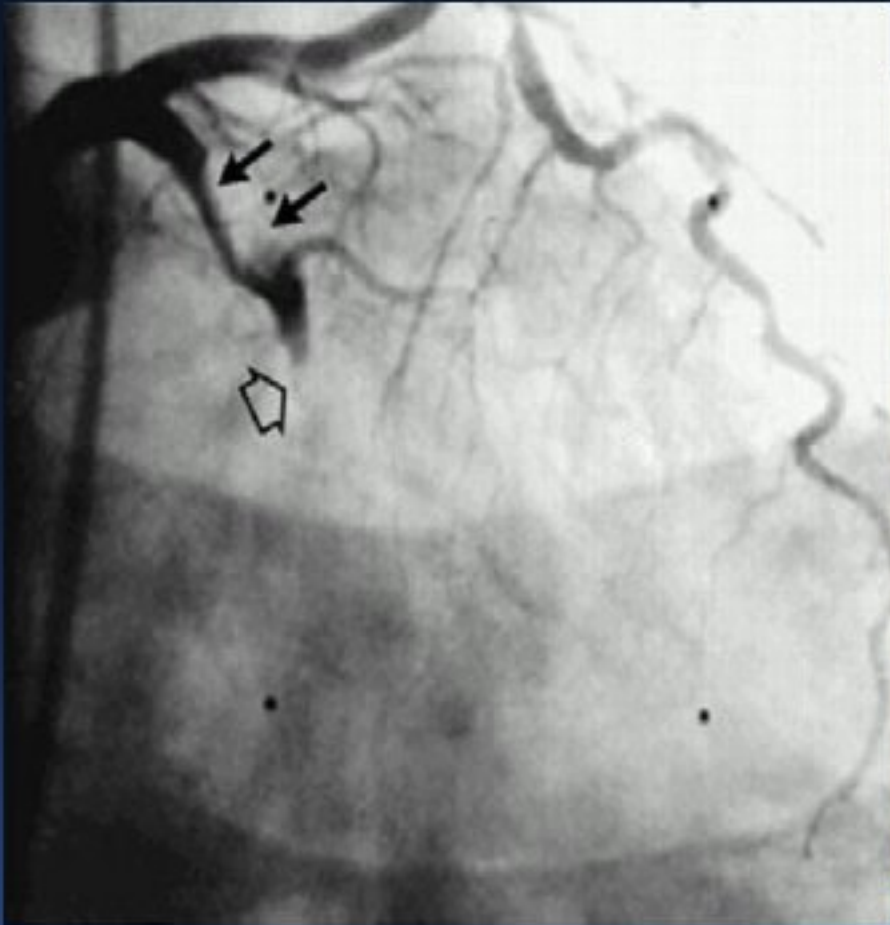


Mortality in Acute Coronary Syndromes

Death from admission to 6 mos (GRACE n=43,810)



AMI: Pathophysiology



Ruptured plaque with occlusive thrombus

Treatment of Acute Coronary Thrombosis: **The reperfusion wars**

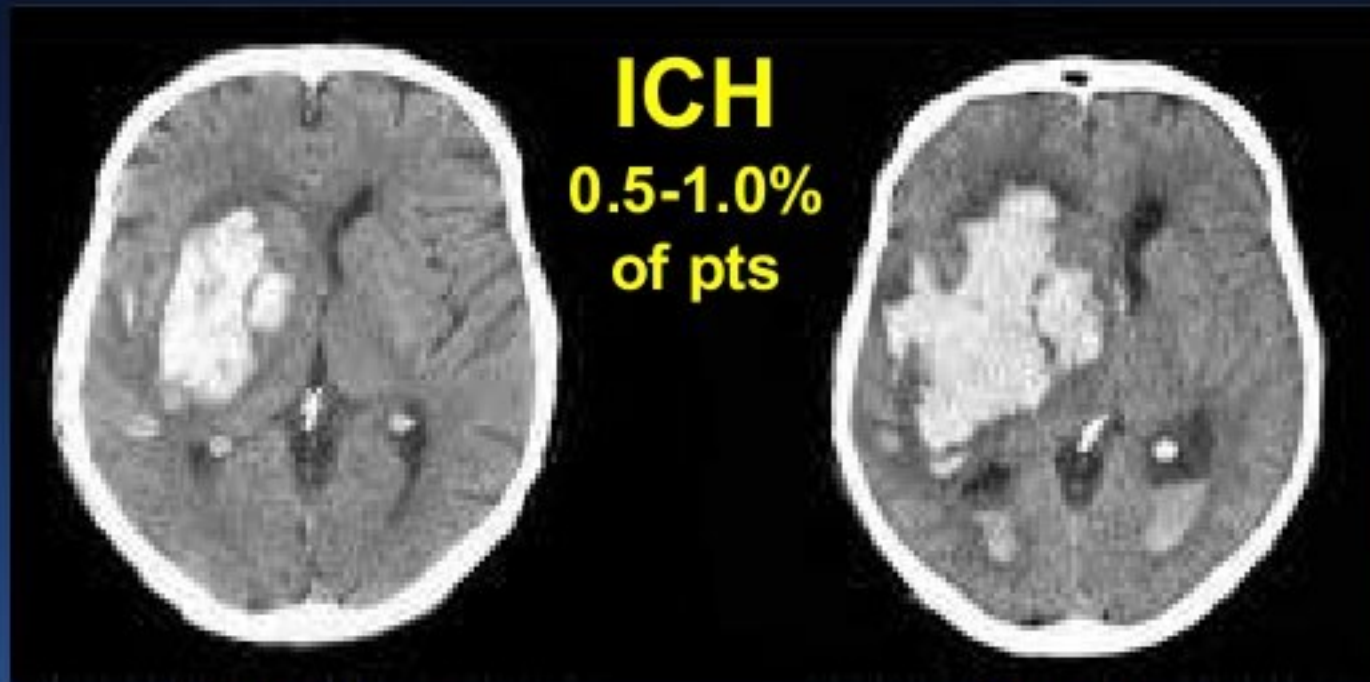


Fibrinolytic therapy

Did save lives compared to placebo, **BUT**

- At best, restored TIMI 3 flow in 55% (rt-PA), +
- ↑ Incidence of recurrent ischemia and reinfarction

+



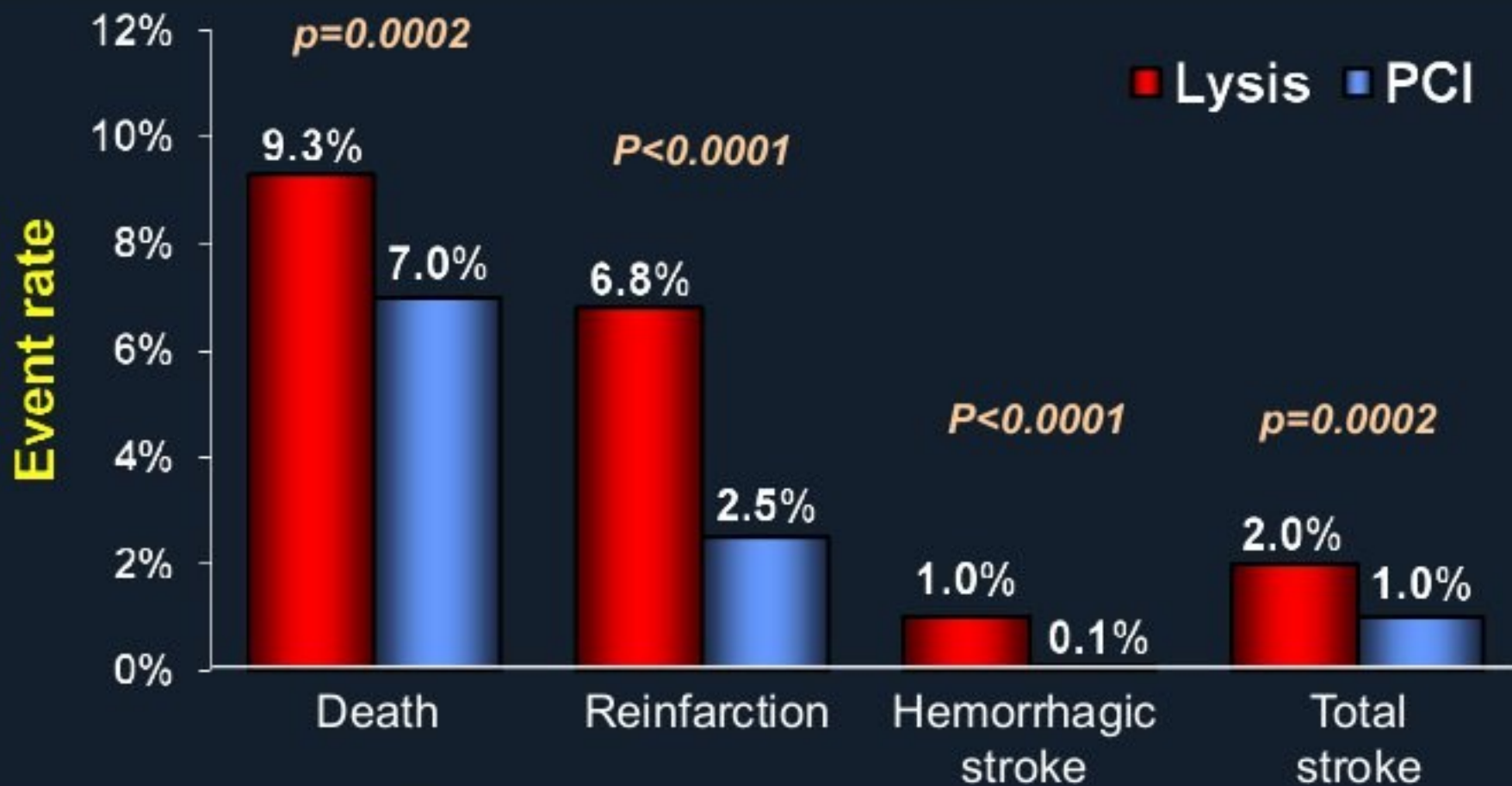
ICH
0.5-1.0%
of pts

2 hours
after t-PA

6 hours
after t-PA

From PAMI to 23 RCTs of PCI vs. Lysis

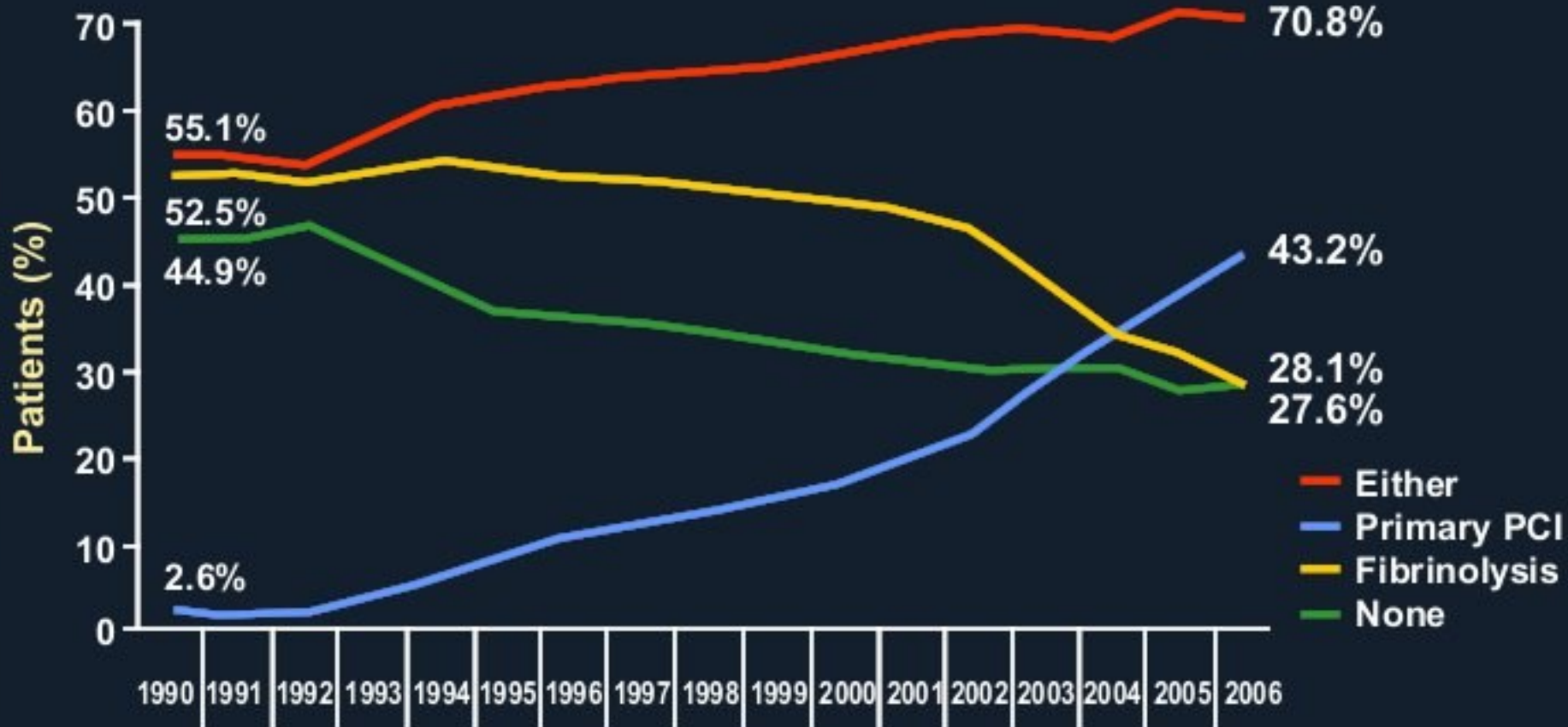
N = 7,739



NRMI: Evolution in Reperfusion

774,279 reperfusion eligible STEMI pts at 2,157 hospitals from 1990-2006

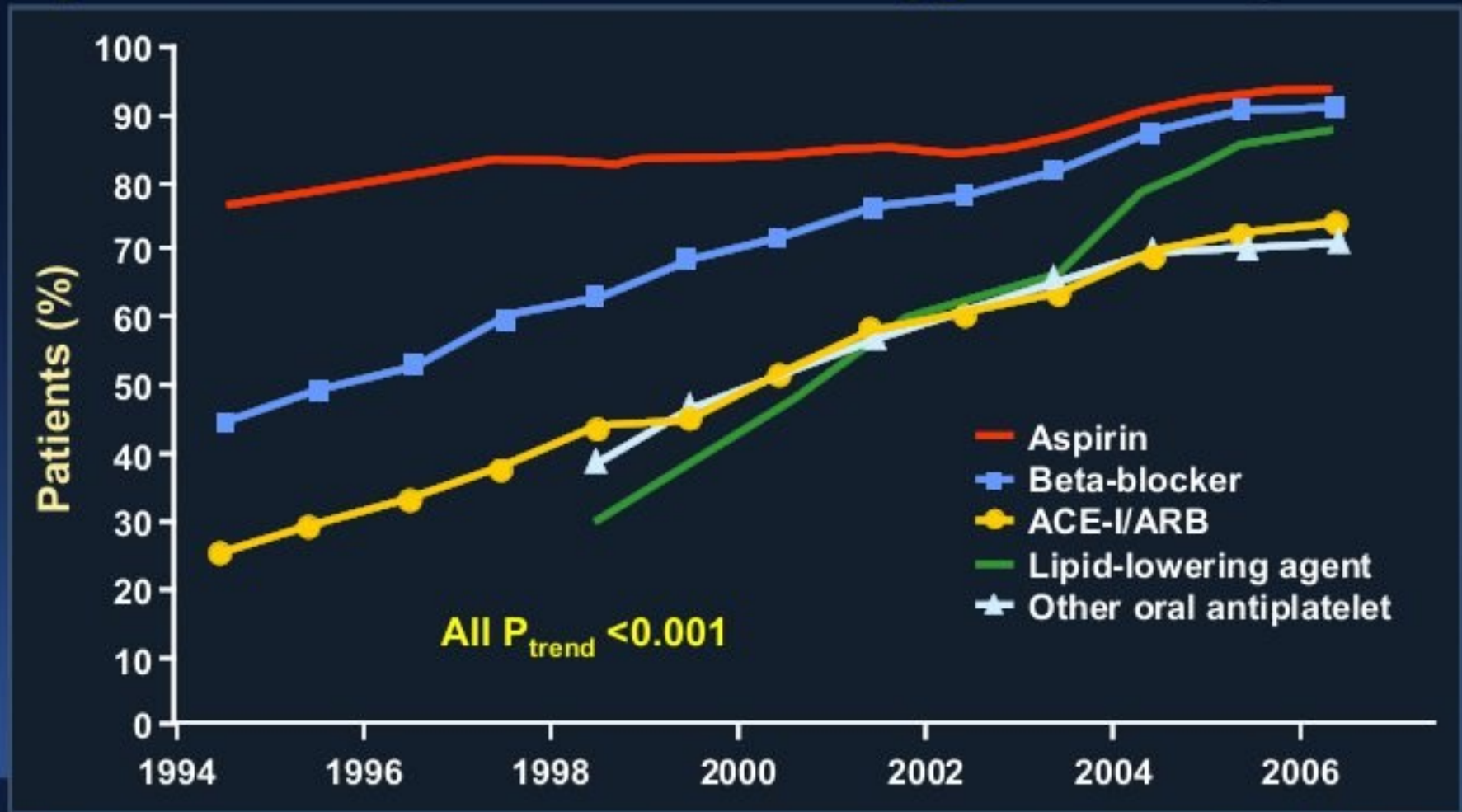
Type of Reperfusion Therapy



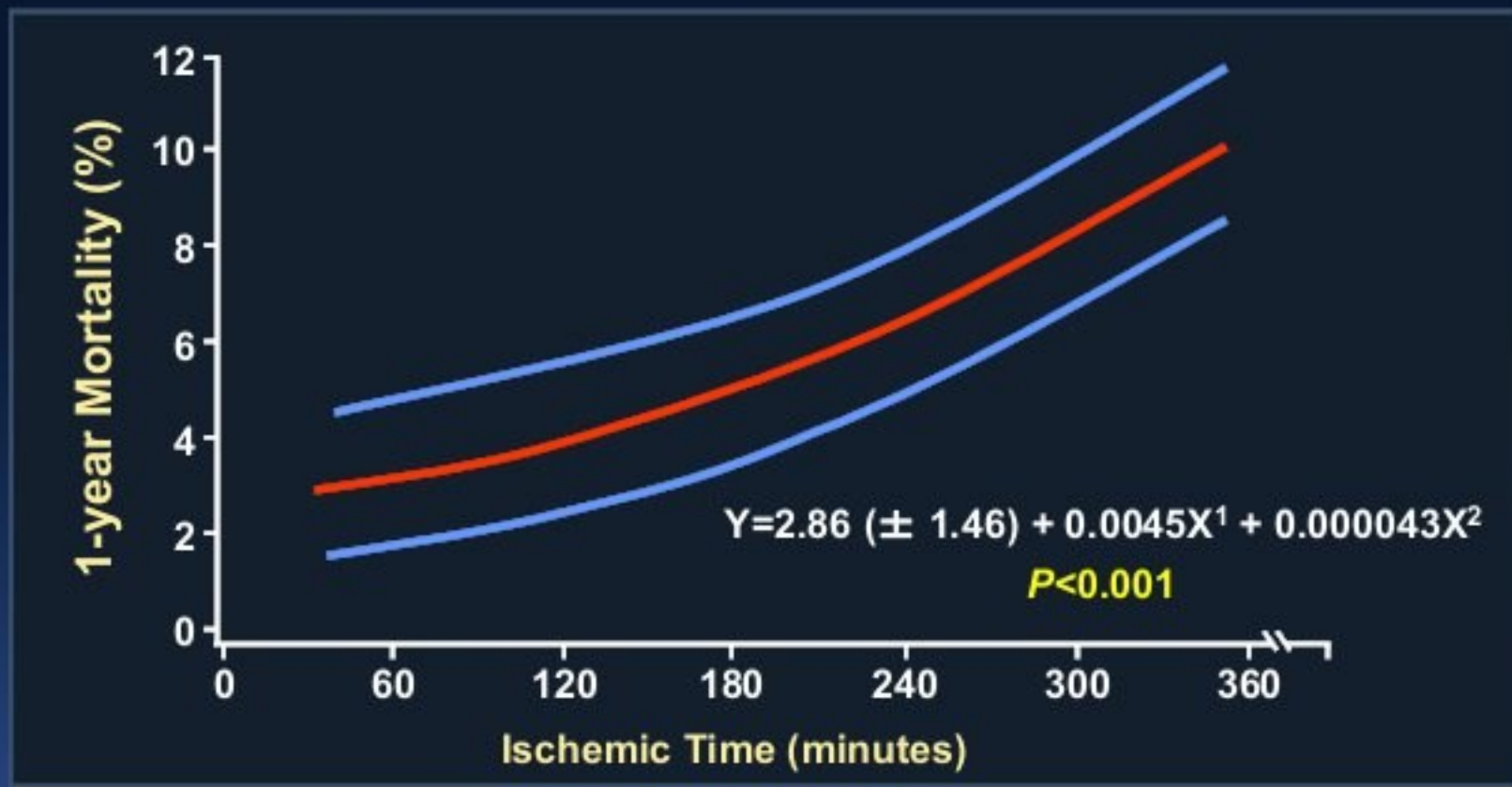
NRMI: Evolution in Reperfusion

1,146,609 STEMI pts at 2,157 hospitals from 1990-2006

Improvements in Medical Therapy: Discharge Meds



Time from Symptom Onset to Treatment Predicts 1-year Mortality after Primary PCI



The relative risk of 1-year mortality increases by 7.5% for each 30-minute delay

Evolution of Primary PCI

Device

PTCA



Bare metal stents



Drug-eluting
stents

Drugs

Heparin



Heparin + GPIIb/IIIa



Bivalirudin +
ADP antagonists

STEMI Success has Plateaued!

Remaining challenges in STEMI reperfusion therapy

- Further reductions in DBT (apparently) not beneficial
 - Symptom time to first medical contact unchanged
- Suboptimal salvage of myocardium
 - Reperfusion success only ~65%
 - In part due to distal embolization
 - Reperfusion injury
- Mortality remains high in cardiogenic shock and out-of-hospital cardiac arrest
- Ongoing inflammation → high rates of non-culprit lesion-related events

Therapies to Enhance Myocardial Recovery

Epicardial Reperfusion/ Systems of care

Regionalization of STEMI care
Pre-hospital ECGs
Pre-hospital cath lab activation
Bypass non-PCI hospital
Bypass PCI-hospital ED
Onsite primary PCI team

Microvascular integrity/ function

Thrombus aspiration
Intracoronary abciximab
MGuard stent
Adenosine
Sodium nitroprusside
Ca²⁺ channel blockers

**Myocardial
Reperfusion/
Recovery**

Cell Therapy

Autologous endothelial/bone
marrow progenitor cells
Cardiac stem cells

Cardioprotection

Pre- and post-ischemic conditioning
Non-infarct related artery reperfusion
Mechanical LV unloading
Cyclosporine
Mitochondrial targeting peptides
Losmapimod
Exenatide
Nitric oxide
Supersaturated oxygen
Hypothermia

Microscopic distal emboli and no reflow



**TIMI 3 flow
with absent
micro-
vascular
perfusion**



Approaches to **Thrombus** in STEMI

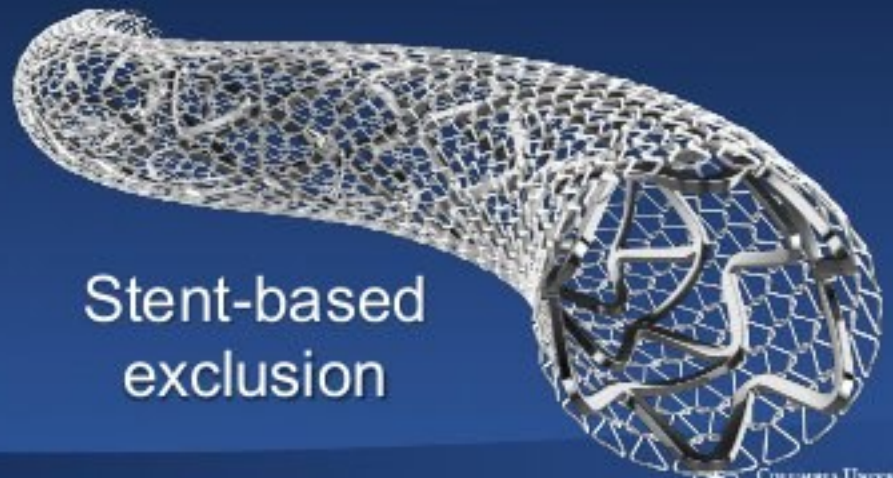
All promising, none yet definitive



Aspiration



Intralesion GPIIb/IIIa

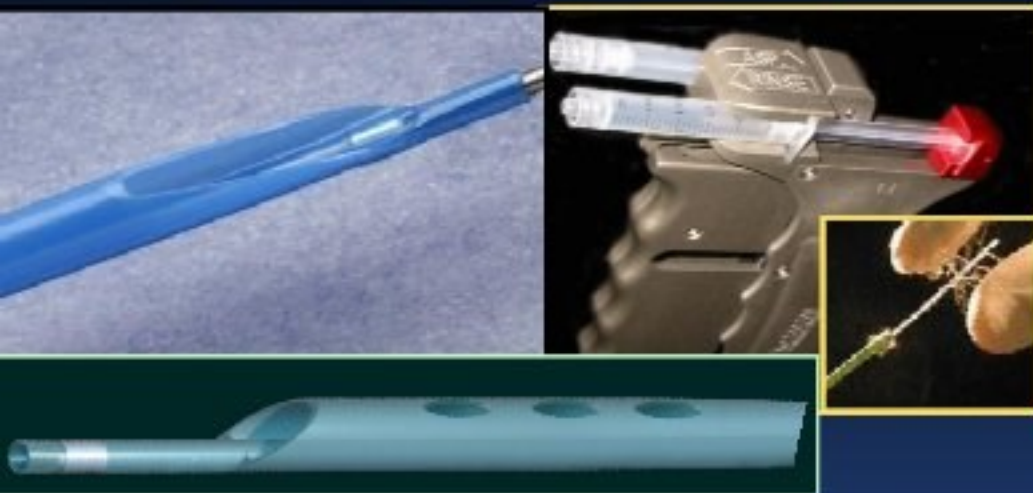


Stent-based
exclusion

Mechanical Approaches to Thrombus

Thrombus aspiration

(Rinspirator, Pronto, Export, Rescue, Diver CE, etc.)

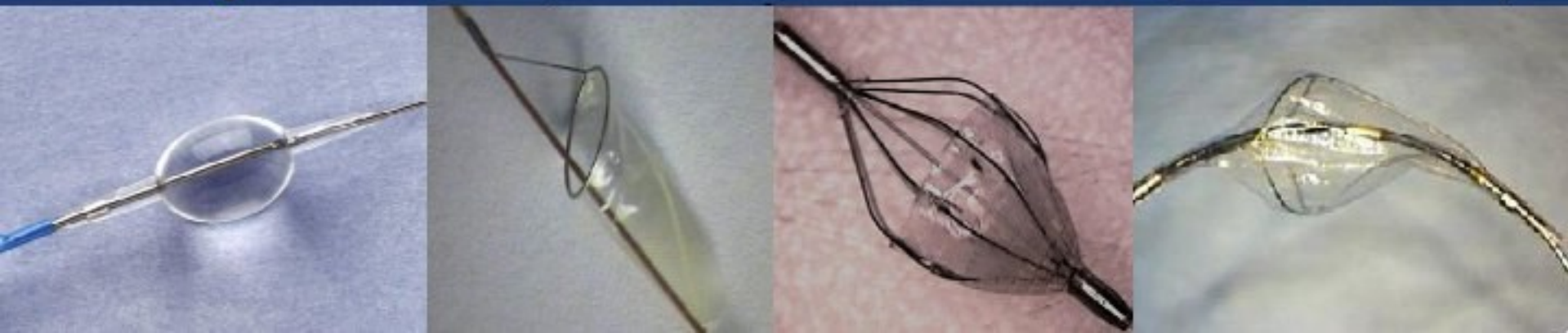


Thrombectomy

(AngioJet, X-Sizer)



Distal protection (GuardWire, FilterWire, AngioGuard, etc.)



Distal Protection and Thrombectomy in AMI

**Macroscopic embolic debris can be
retrieved from >75% of cases**



How effective is manual thrombus aspiration?



Pre Aspiration



Post aspiration

Do whatever it takes to reduce time from symptom onset to ER arrival and time from ER arrival to PCI!



- ↑ Public awareness of MI Sx
 - Chest pain centers of excellence with lower DBTs and excellent outcomes
 - Regional coordination
 - Ambulance ECG telemetry
 - Ambulance/ER CCL activation
 - ICs sleep in hospital
 - Continual QI

Treatment of STEMI

Conclusions

- STEMI comprises ~22% of all ACS admissions; the incidence is falling, and the case fatality rate is also markedly decreasing, explaining much of the survival in pts with coronary heart disease
- Rapid reperfusion with primary PCI saves lives and prevents recurrent ischemia and reinfarction with STEMI – the faster the better! **But there may be diminishing gains...**
- The evolution from PTCA to BMS to DES has reduced recurrent ischemia and restenosis, but not death or MI
- Myocardial salvage is suboptimal in STEMI, and new strategies are required to reduce infarct size

References:

State-of-the-Art in ACS and STEMI

Gregg W. Stone MD, Columbia University
Medical Center Cardiovascular Research
Foundation

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Published by Elsevier Inc.

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ISSN 0735-1097/\$36.00
<http://dx.doi.org/10.1016/j.jacc.2012.11.019>

PRACTICE GUIDELINE

2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction

A Report of the American College of Cardiology Foundation/
American Heart Association Task Force on Practice Guidelines



THANK YOU

مركز تقنية الاتصالات والمعلومات - جامعة المنصورة