Complications in ACS with Primary PTCA

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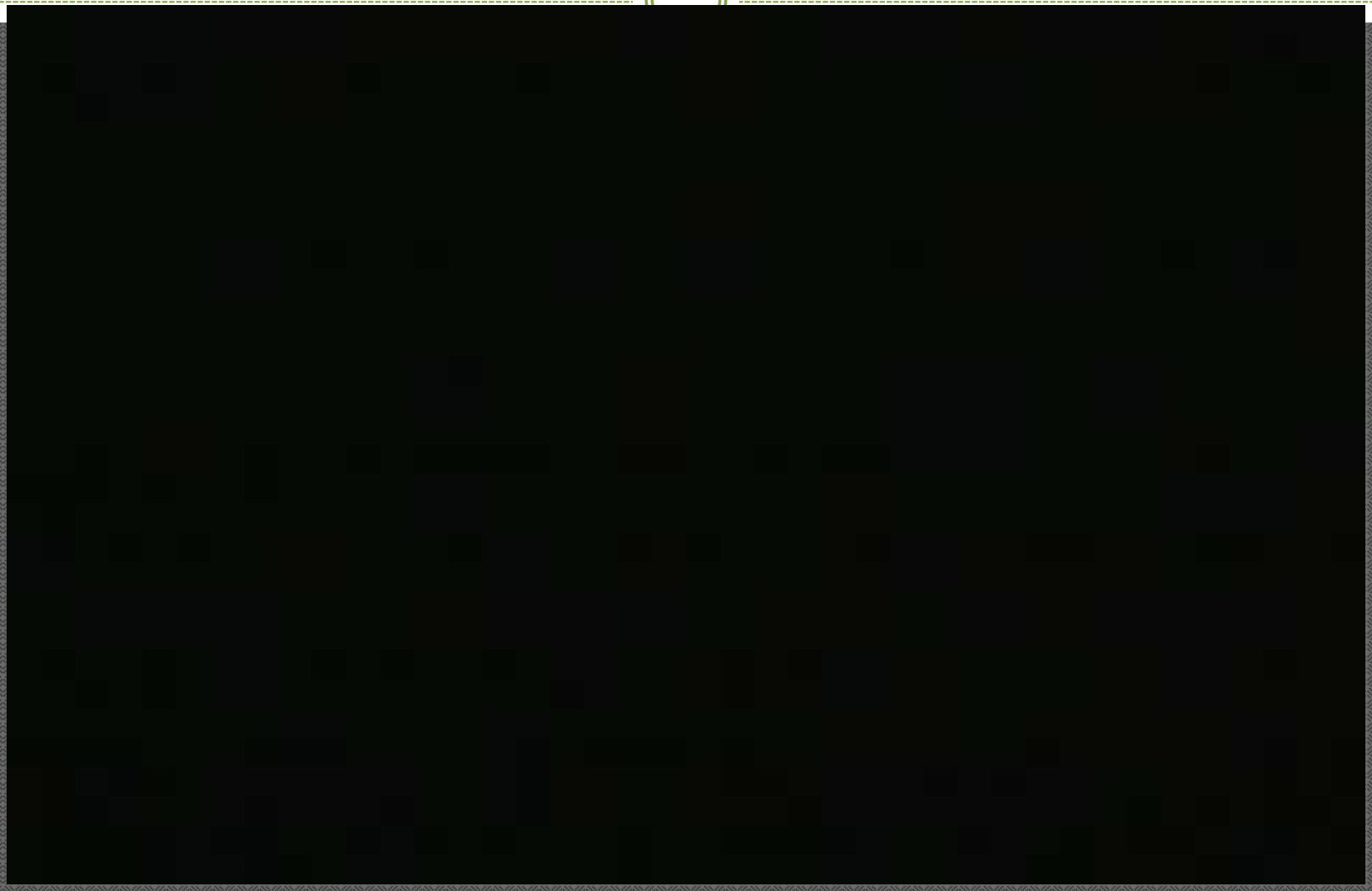
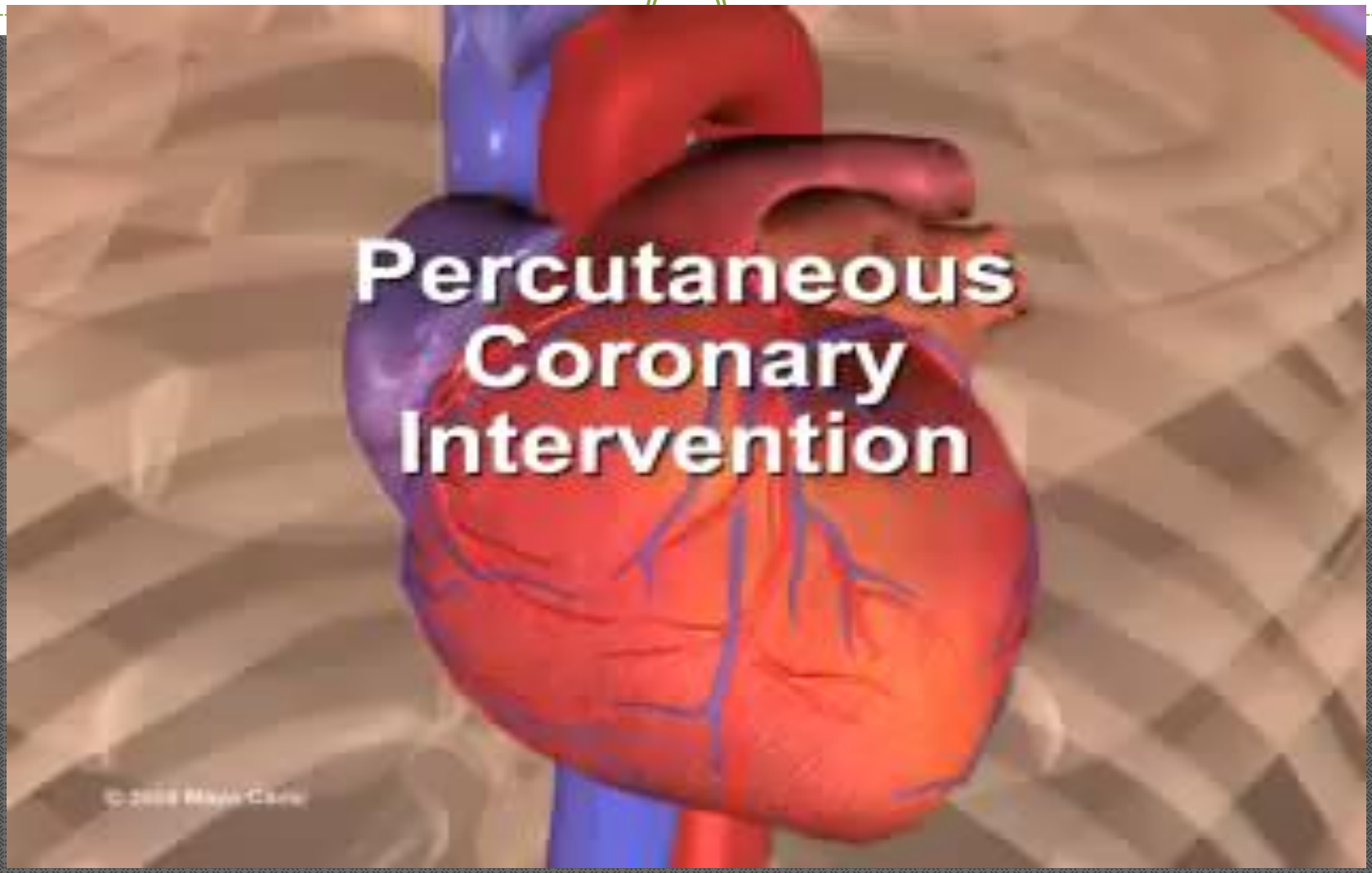
Progression of Atherosclerosis



PTCA technique



ACS- Its Complications

MECHANICAL- VSR, PMR, PSEUDO ANEURYSM

ELECTRICAL-ARRHYTHMIAS, AVB

HEMODYANMICS- CARDIOGENIC SHOCK

FOCAL MYOCARDIAL- MYOCARDIAL STUNNING, HIBERNATION, EDEMA

Mechanical Complications

- VSR- occurs between 3-7 days after MI
- PMR- occurs between 2-7 days
- Pseudo aneurysm- occurs after one week.
- Treatment: inotropes, IABP, TPI, vasodilators
- Prognosis: worst with PMR, VSR, and aneurysm.

Electrical Complications

- Non fatal Arrhythmias: Reperfusion arrhythmias, occational VPC, junctional rhythm, 1st degree AVB, 2nd degree Mobitz type-I.
- Treatment: Observe and treat.
- Fatal Arrhythmias: VF, VT, T wave alternans,
- Treatment: DC shock, Anti Arrhythmic drugs, like amiodarone, lidocaine, adenosine, etc

Hemodynamic Complications

- Cardiogenic Shock: Tachycardia, urine out <30 ml/hr,
- Persistent hypotension for >30 min, Less than SBP-80mmhg.
- Bilateral lungs crackles and rales
- Pulmonary edema
- Saturation <85%
- Severe LV dysfunction

Myocardial dysfunction

- Myocardial stunning, hibernation, edema, increased level of hCRP, TNF-alpha, IL-1, IL-6, PAI-1, cardiac troponin level, CD-40 ligand, and BNP
- Effects of myocardial dysfunction: slow flow, no flow and acute stent thrombosis.
- Treatments: ACEI, Statins, Antiplatelets, anticoagulants, inotropes, aldosterone receptor blocker, IABP, Impella device, and GP2b3a Inhibitors.

When to intervene in ACS?

- In STEMI- door to ECG in 15 min.
- Door to thrombolytic in 30 min.
- Door to balloon in 60 min.
- Primary PTCA in 90 min
- On going chest pain,
- Persistent STE
- Viable myocardium in the culprit vessel supplying area.

When not to intervene?

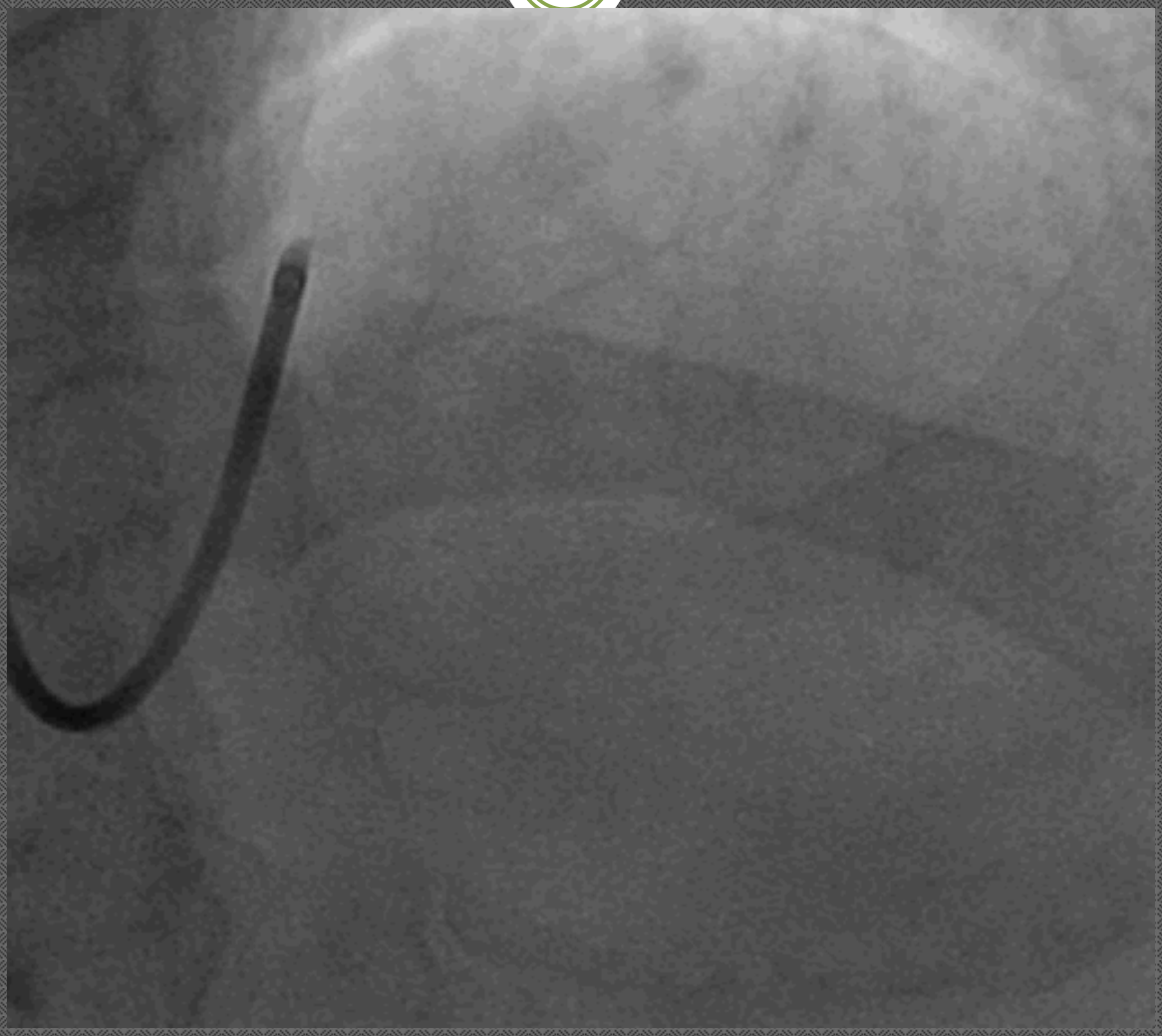
- Cardiogenic shock with WP more than 24 hrs
- ECG- T wave variant
- Fresh RBBB and LBBB with shock
- Increased creatinine with shock
- Hba1c more than 9
- Arrhythmias and shock
- Where the effective , skilled and experienced team is not available.

SCD- male with STEMI-WP 3 days

Case -1, 63 yr/male STEMI, AWMI

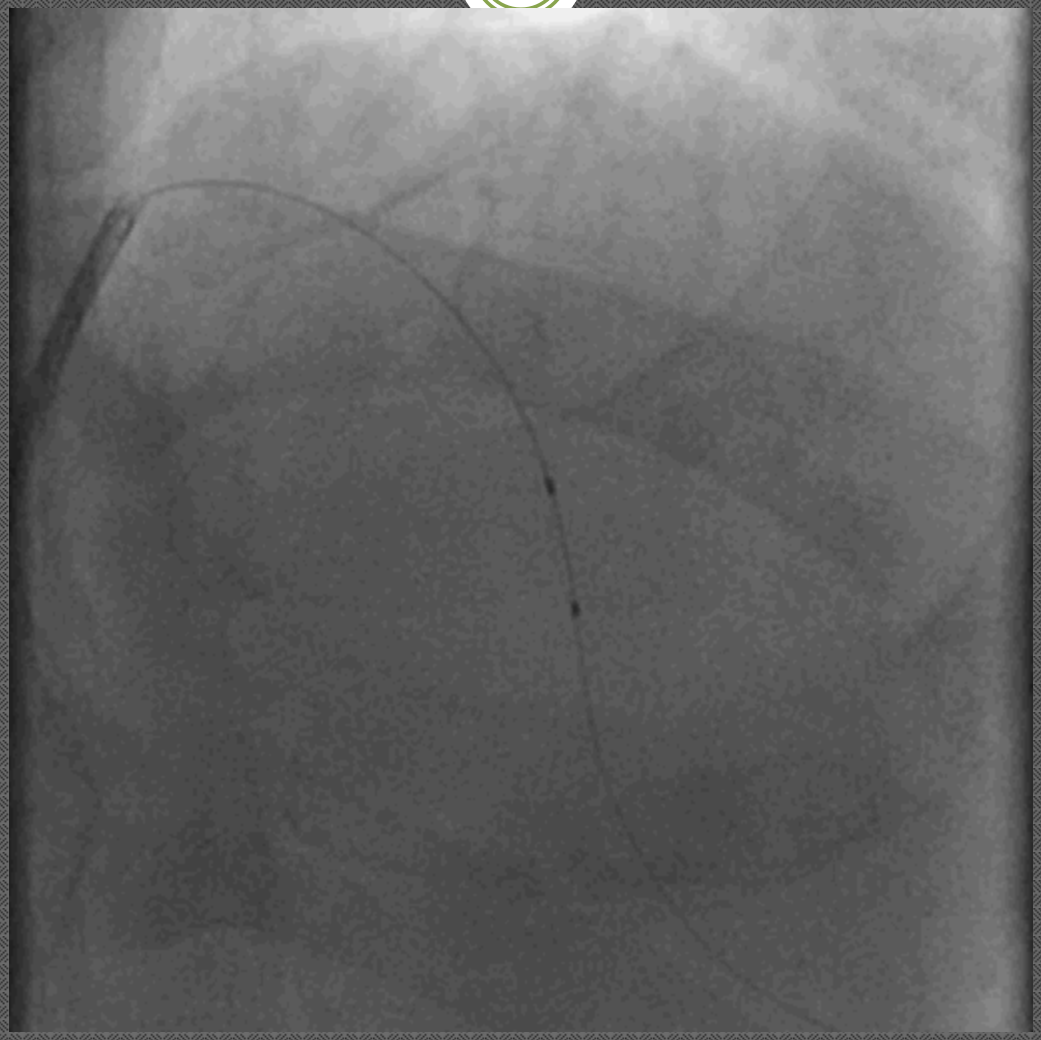
- History: DM for 20 yrs, HTN-20 yrs, not on proper treatment.
- ECG- ST elevation in V1-V5 more than 10mm
- HR-105/min, O2-95%, RR-24/min, lungs- clear, SBP-100mmhg, RBG-75 mg/dl, Cr-3.5/mg/dl,
- WP more than 8 hrs.
- On going chest pain is present.

LAD- 100% occlusion

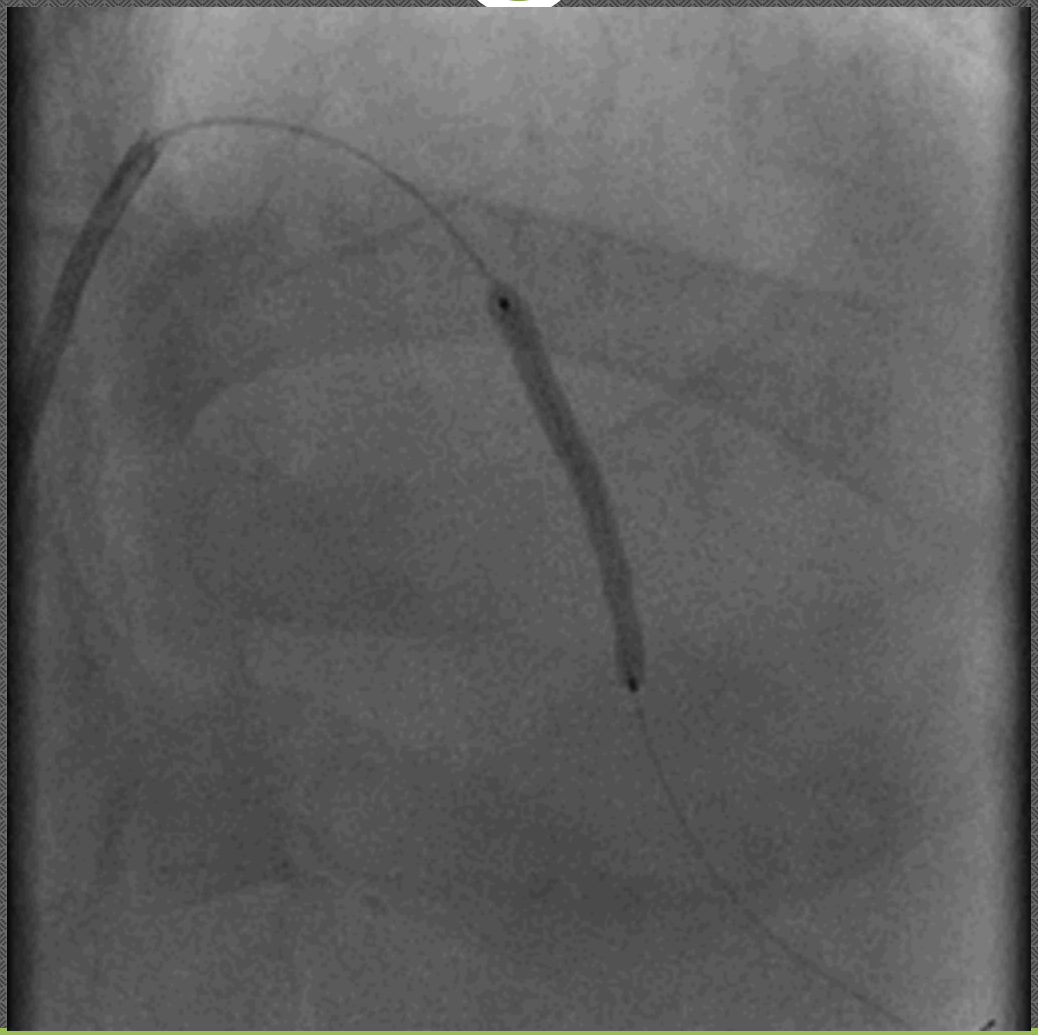


LAD wiring only with fluro

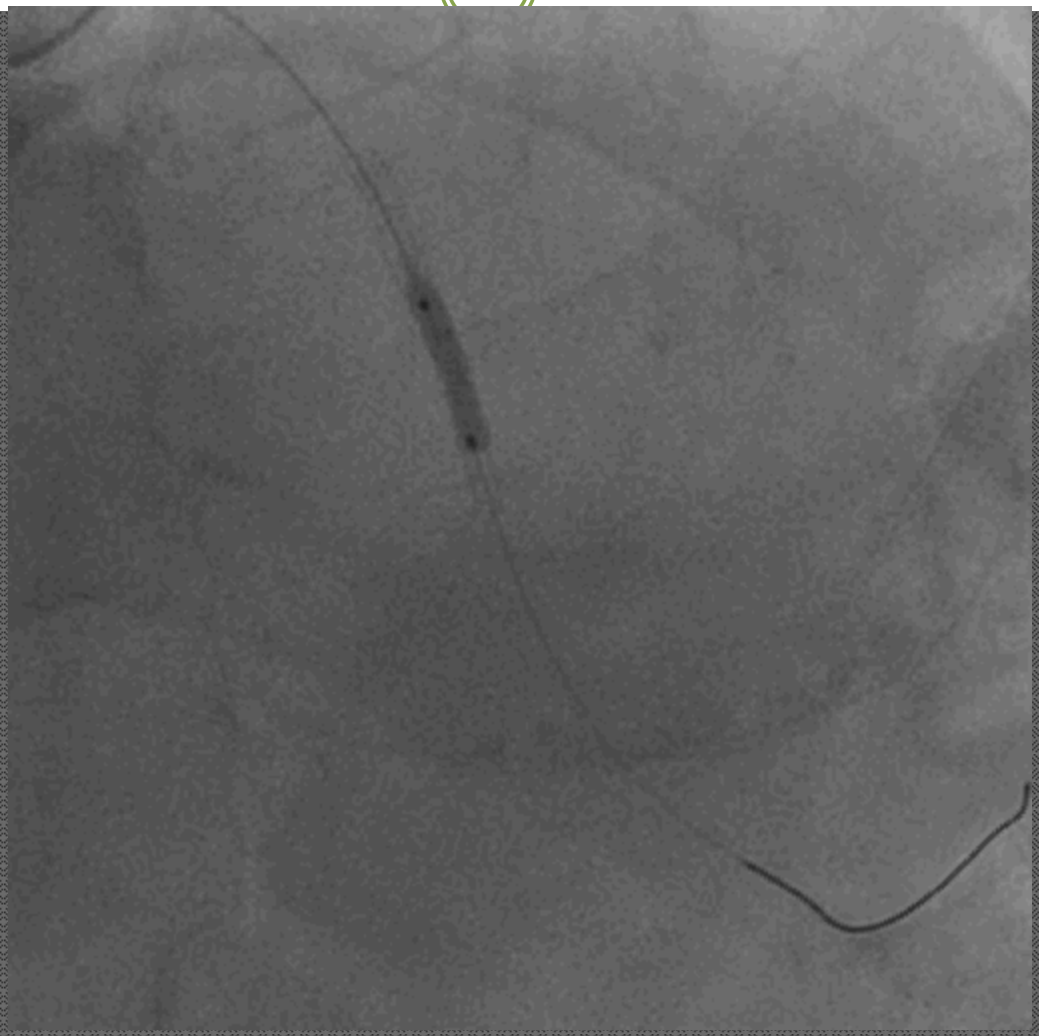
LAD wiring with predilatation



Deployment of Stent



Post Dilatation inside stent

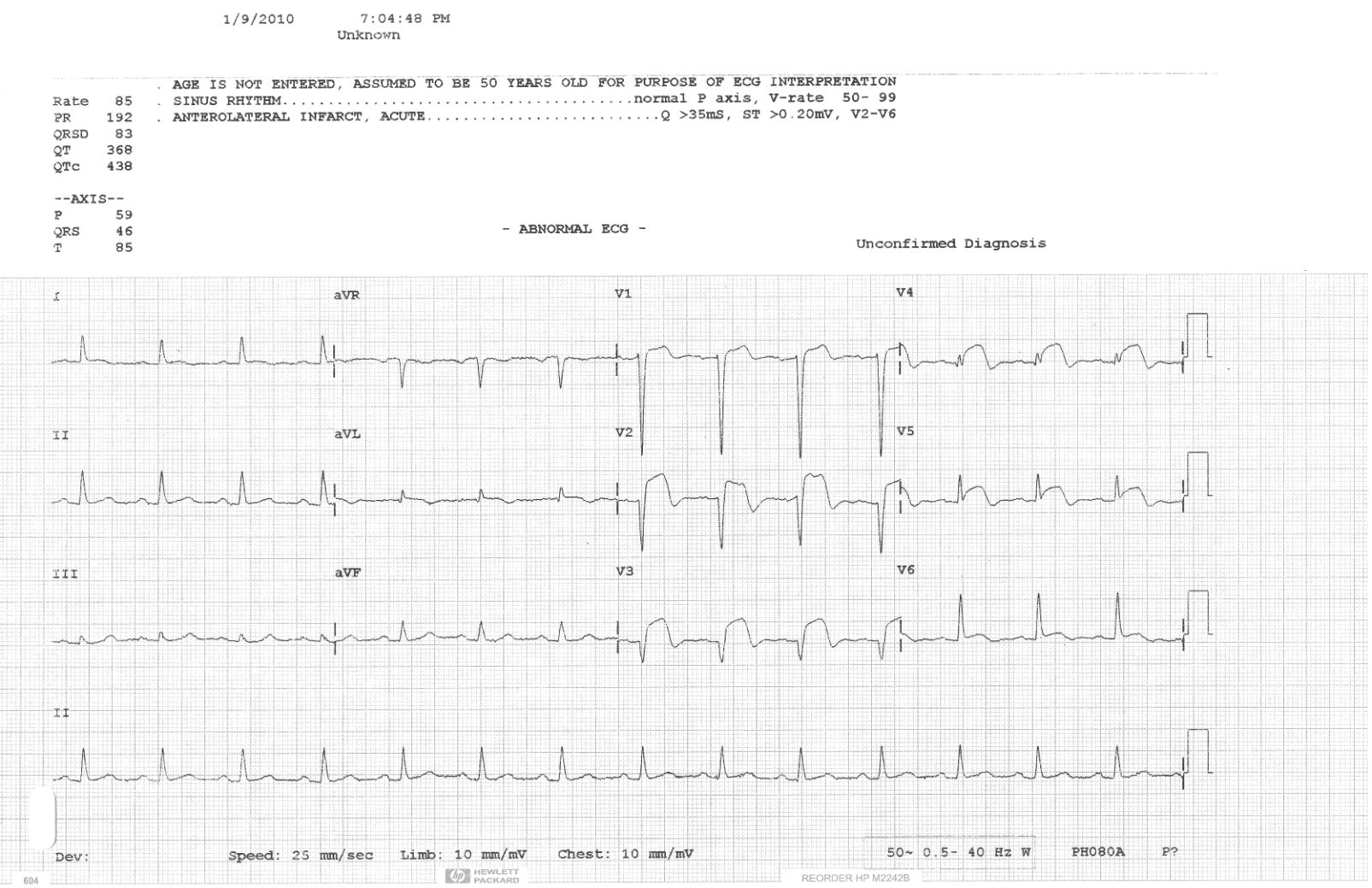


Final result of LAD stenting

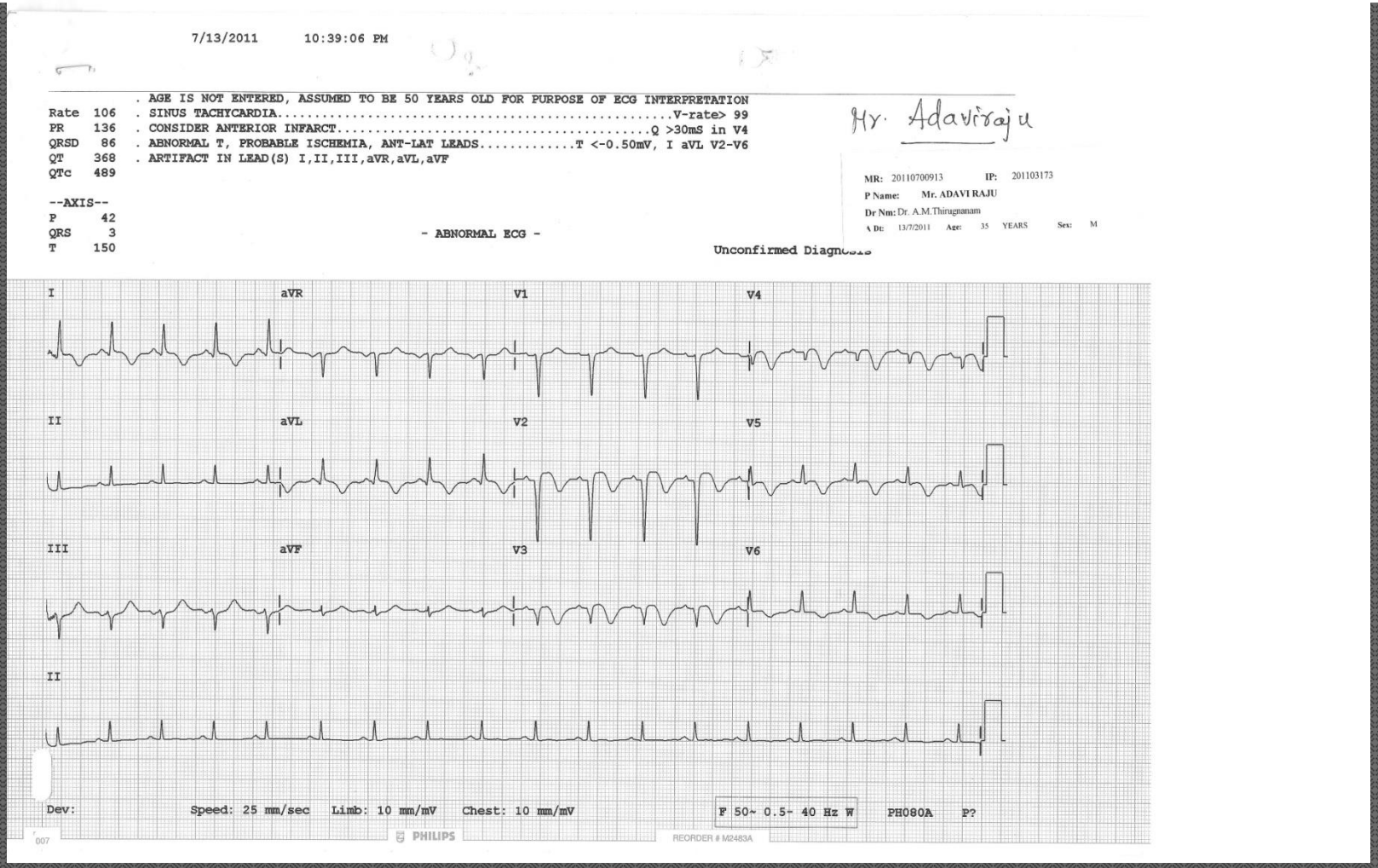
Case-2, 32/male, No DM, No HTN

- Came on 3rd day after chest pain.
- BP-110/80mmhg, HR-110/min,
- Lungs- clear, O2-96% at room air,
- ECG-ST elevation in V1-V5.
- Echo-45%, with moderate LV dysfunction.
- C/O- weakness, sweating, persistent chest discomfort, nausea and palpitation.

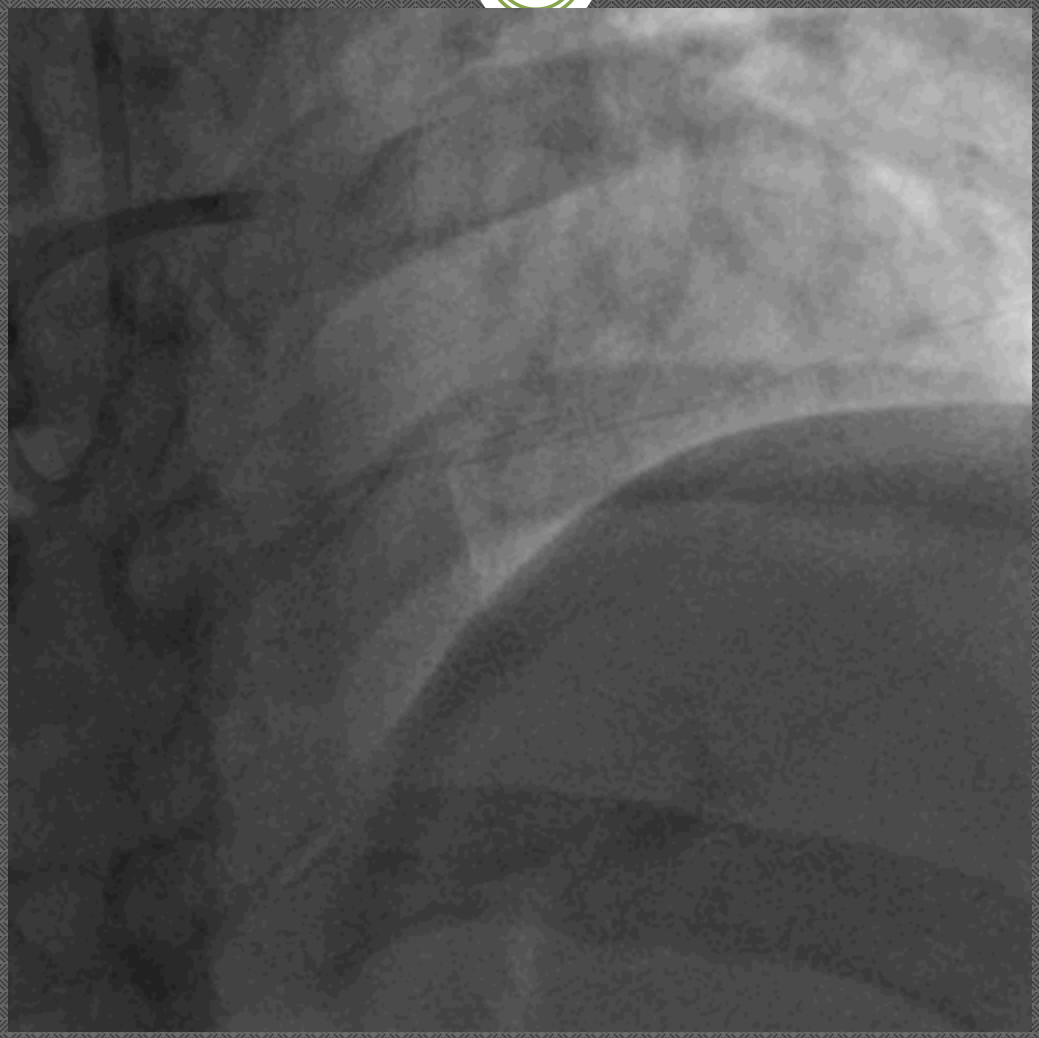
ECG- ST elevation in V1-V5



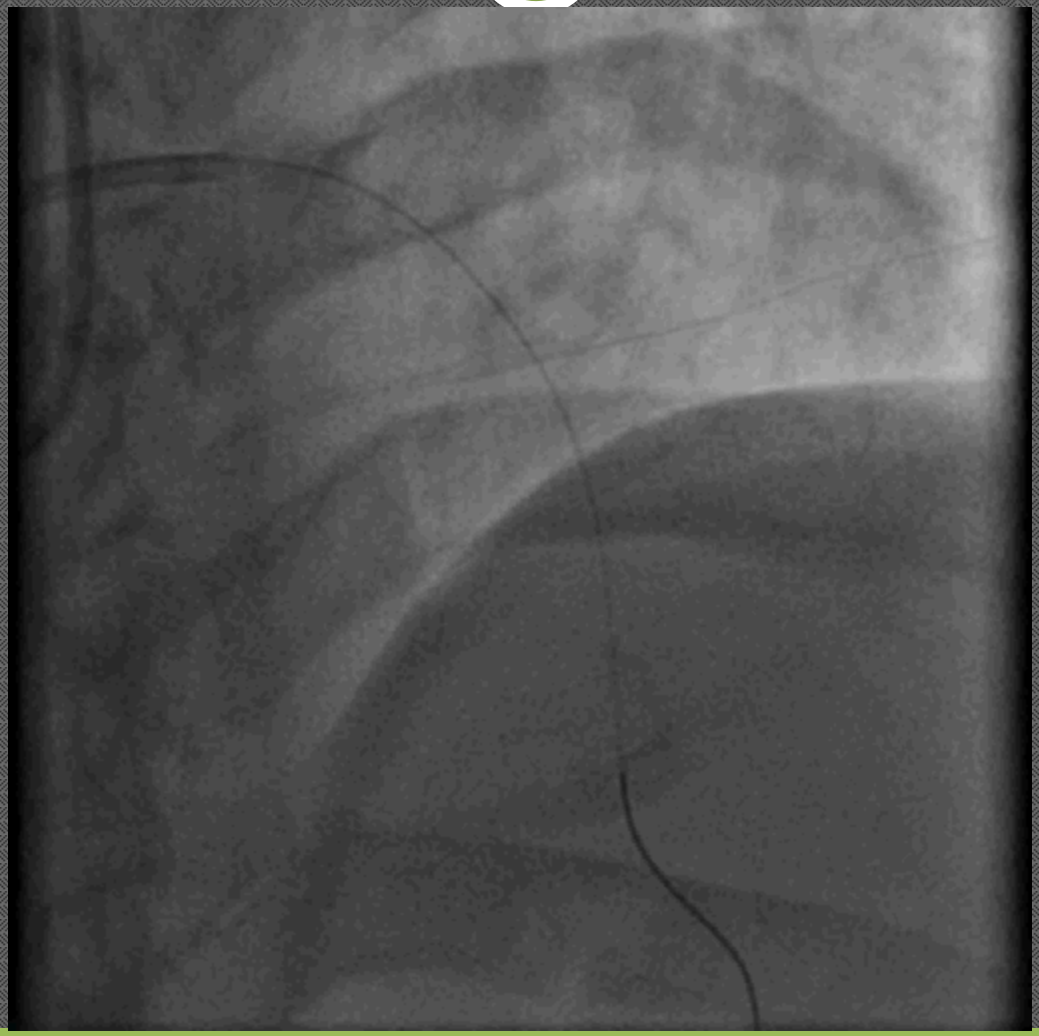
2nd ECG before PTCA



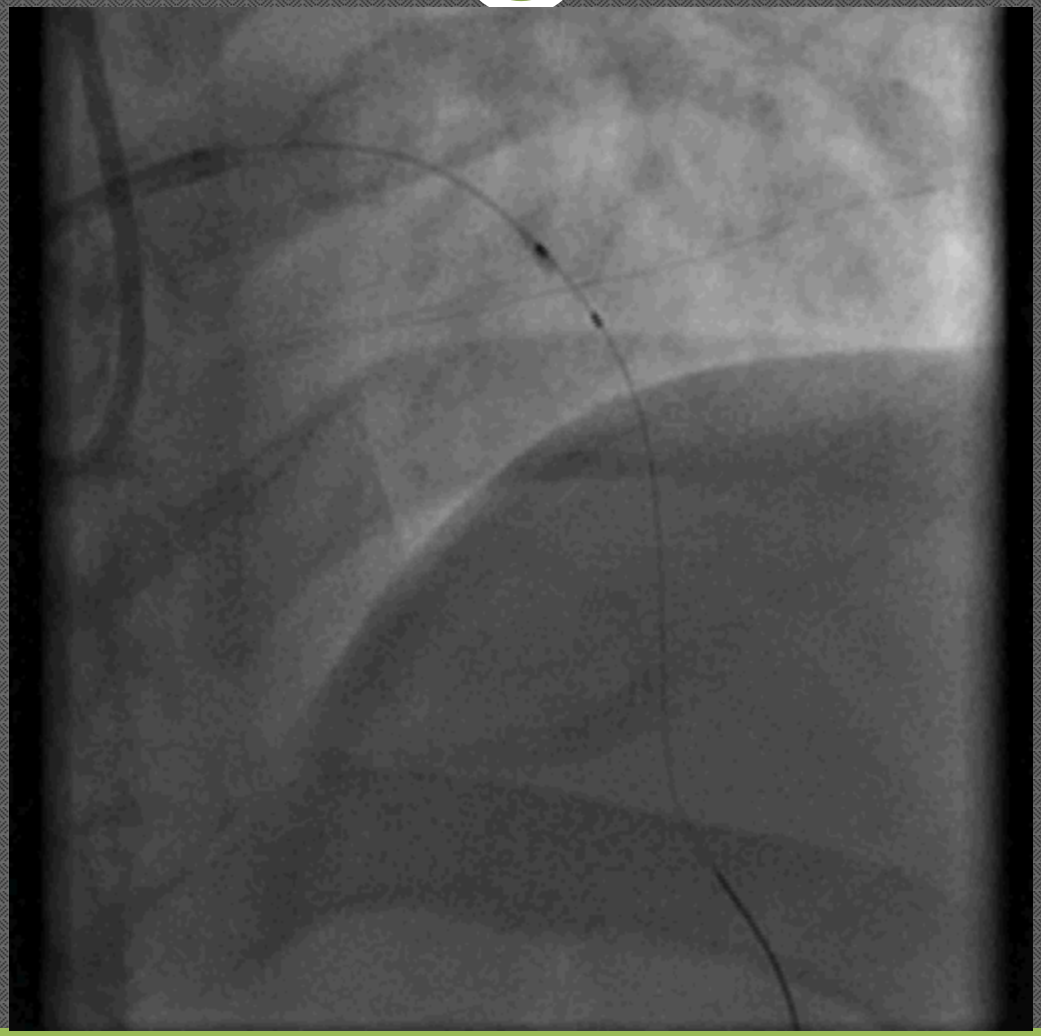
LAD total occlusion



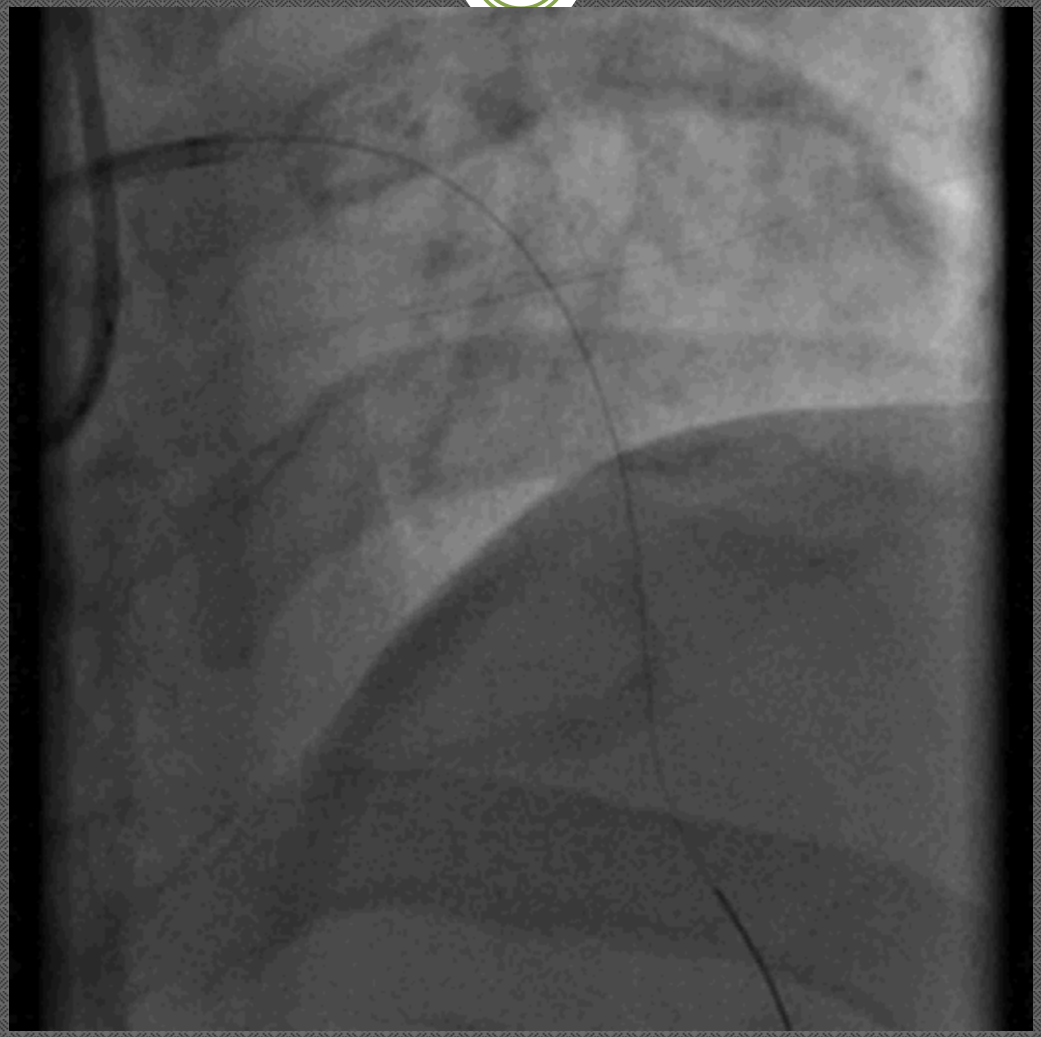
LAD wiring



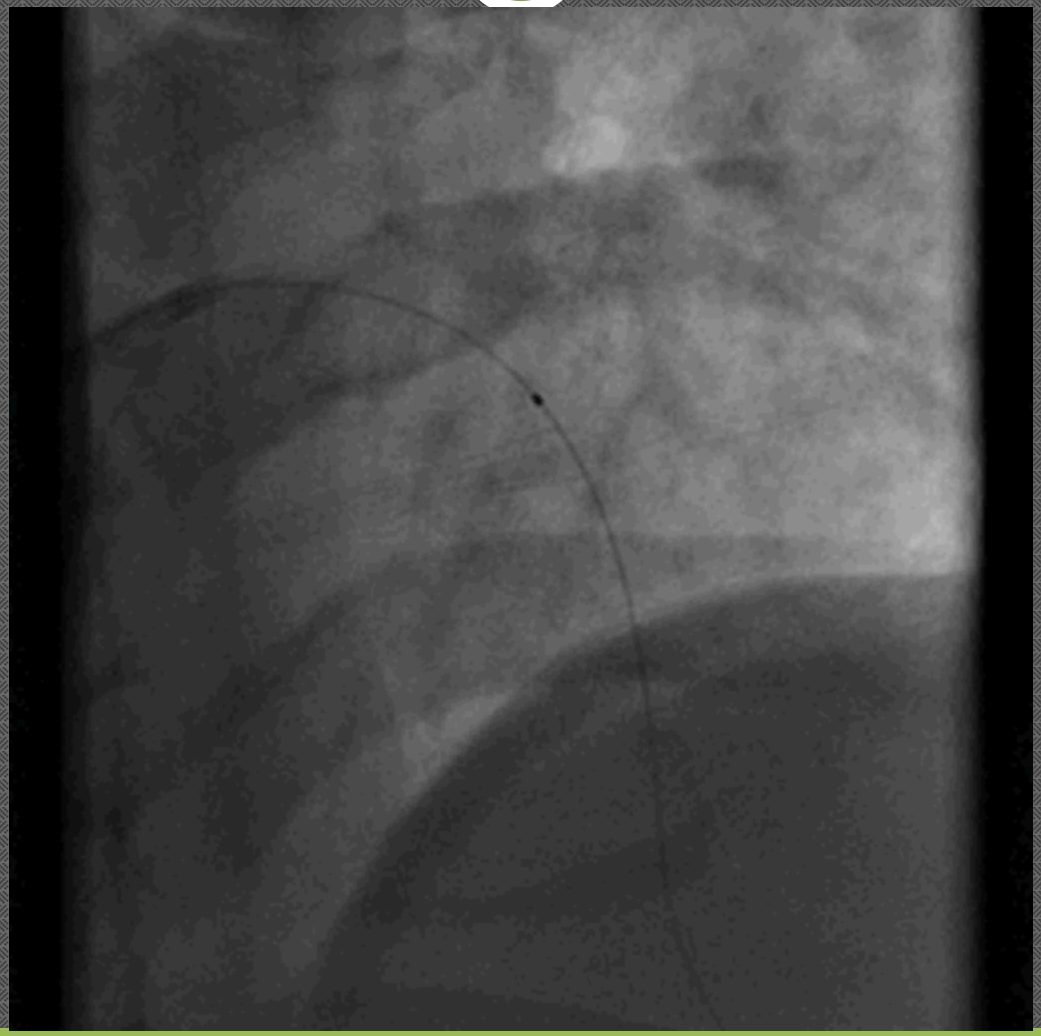
Predilatation with balloon



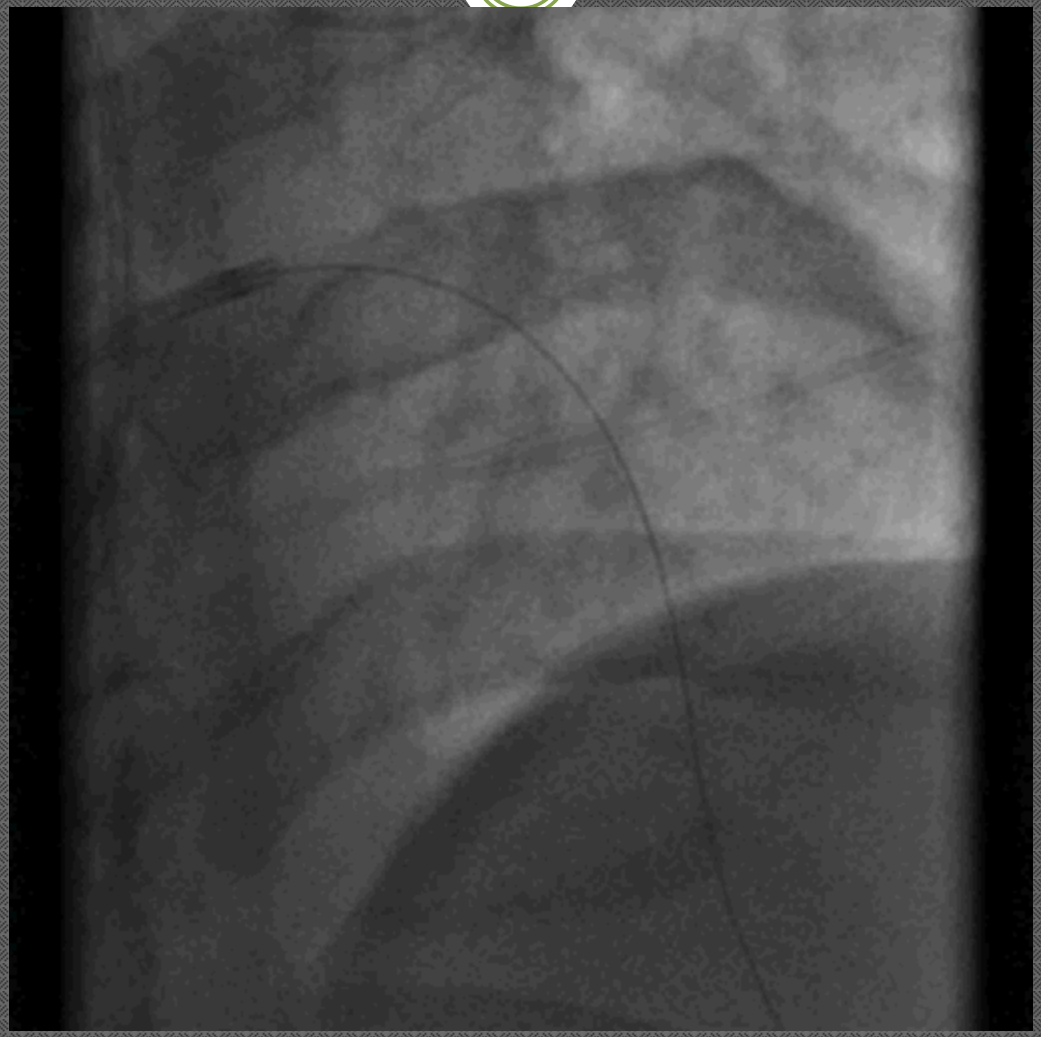
No flow after Predilatation



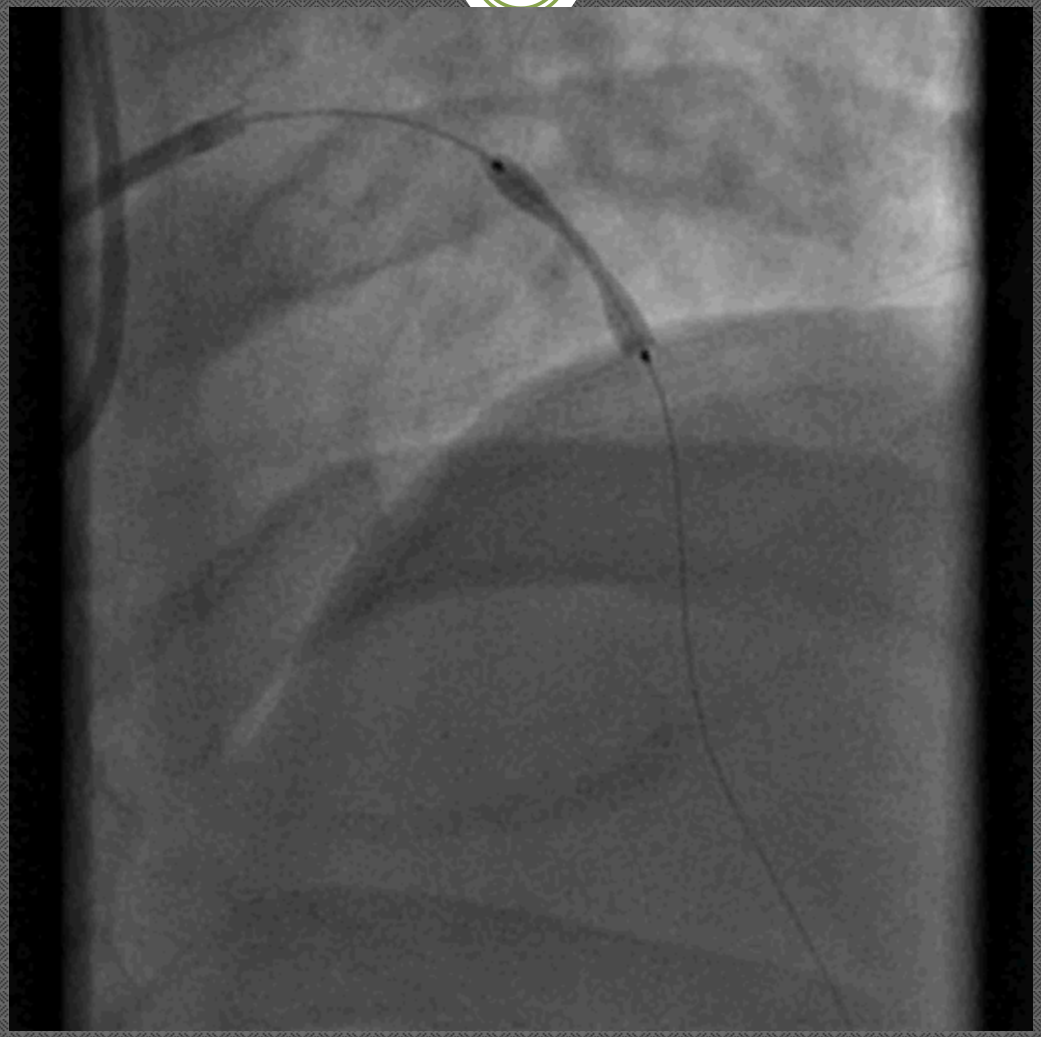
Using Thrombus Extraction Catheter



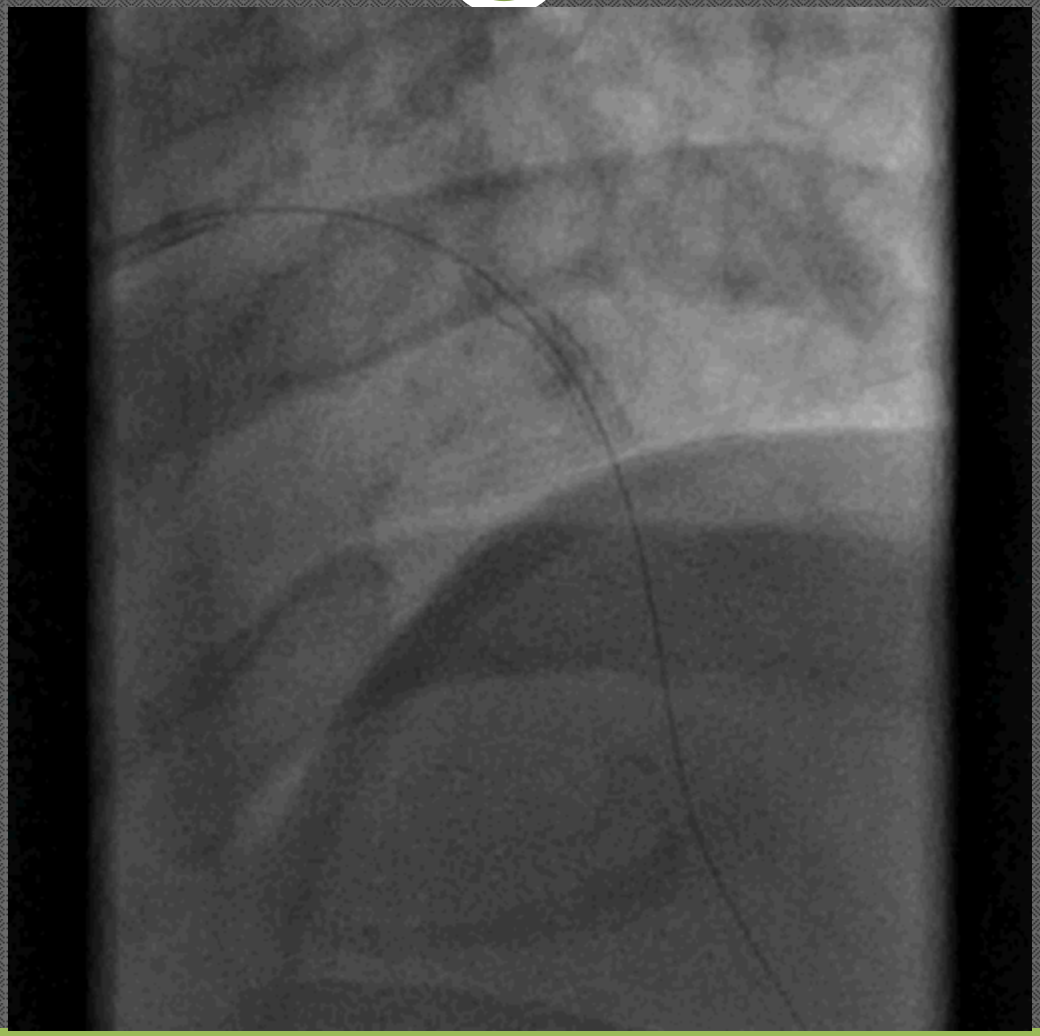
TIMI-III flow after TEC



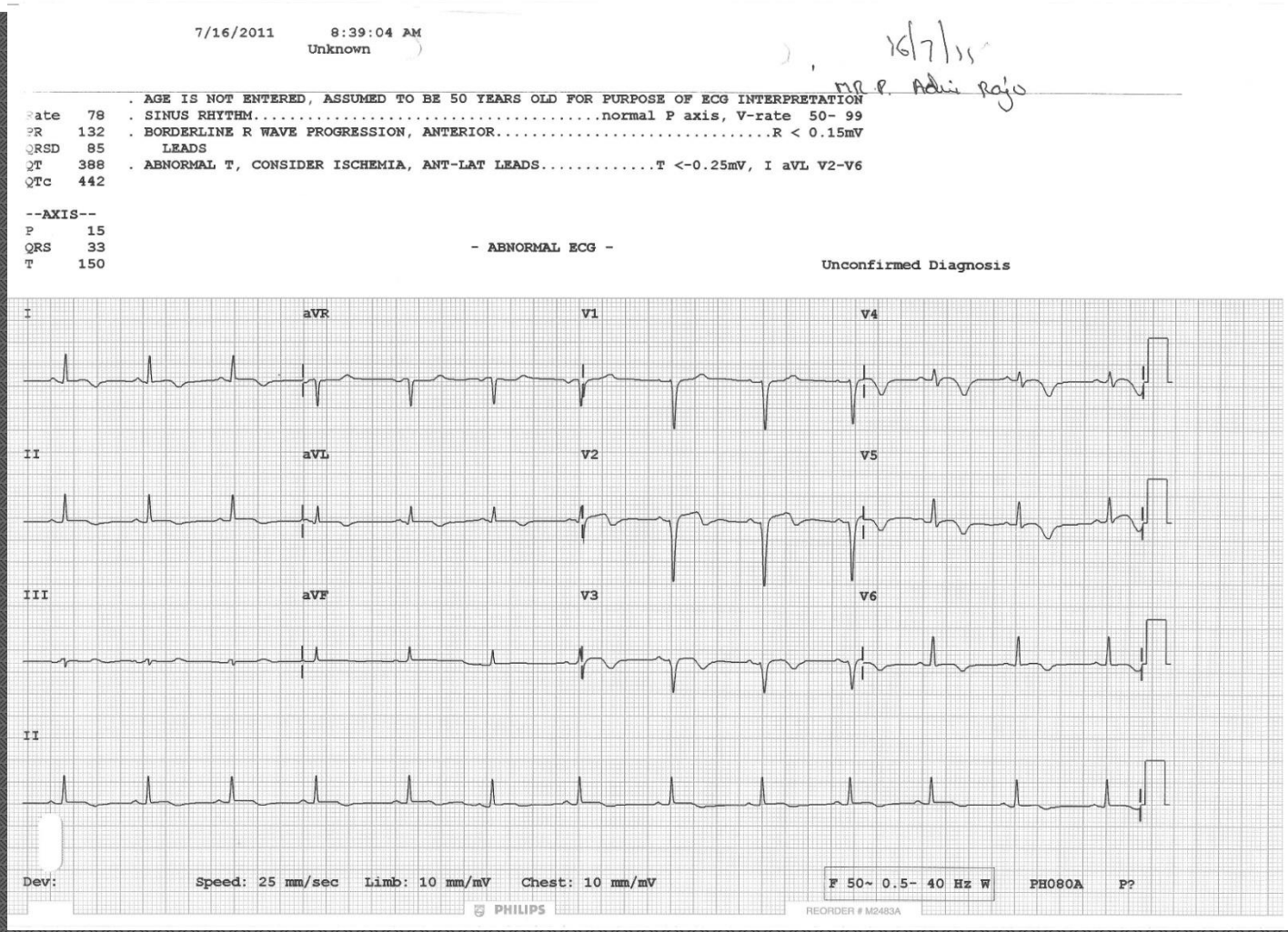
Deployment of stent



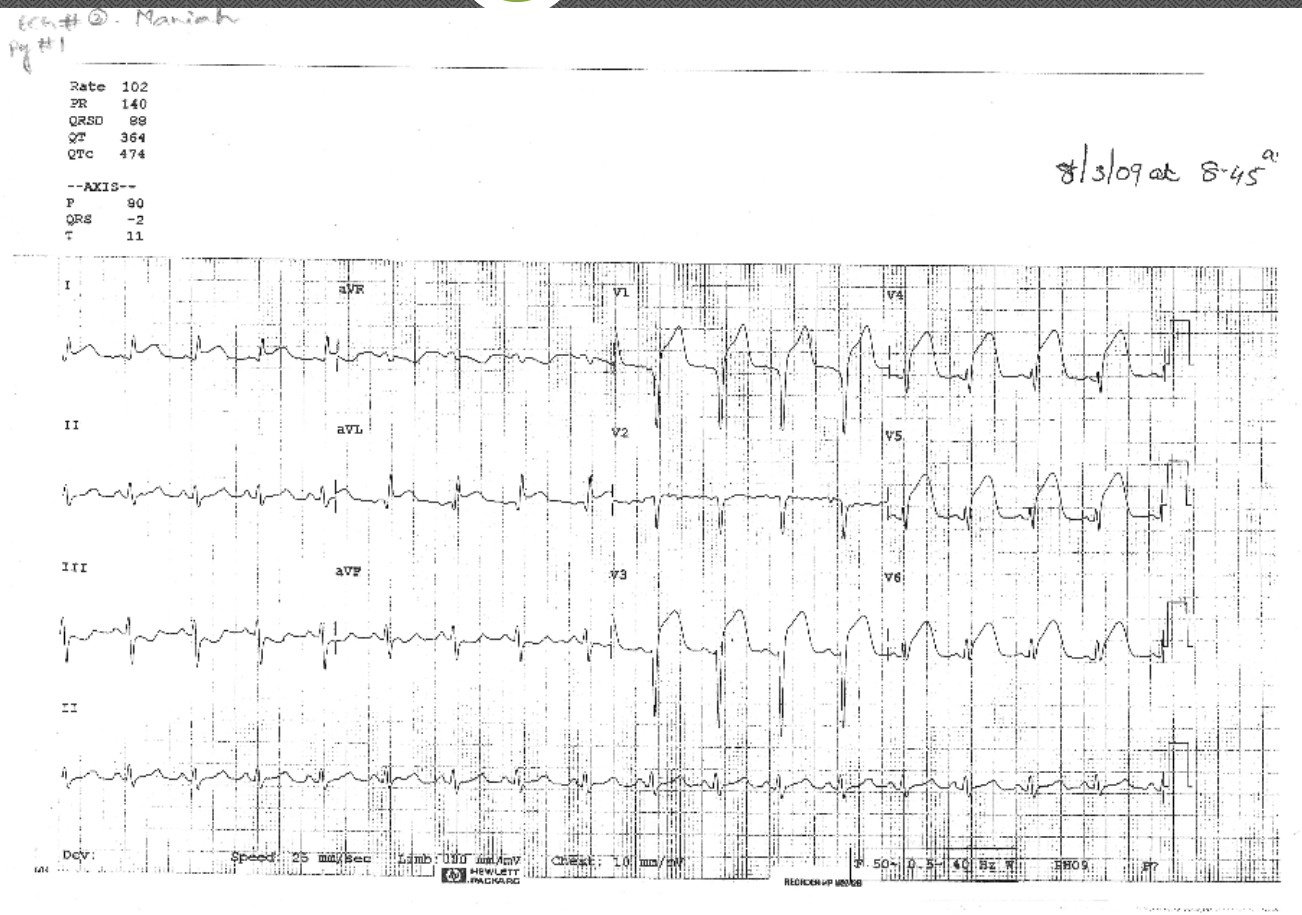
Final results



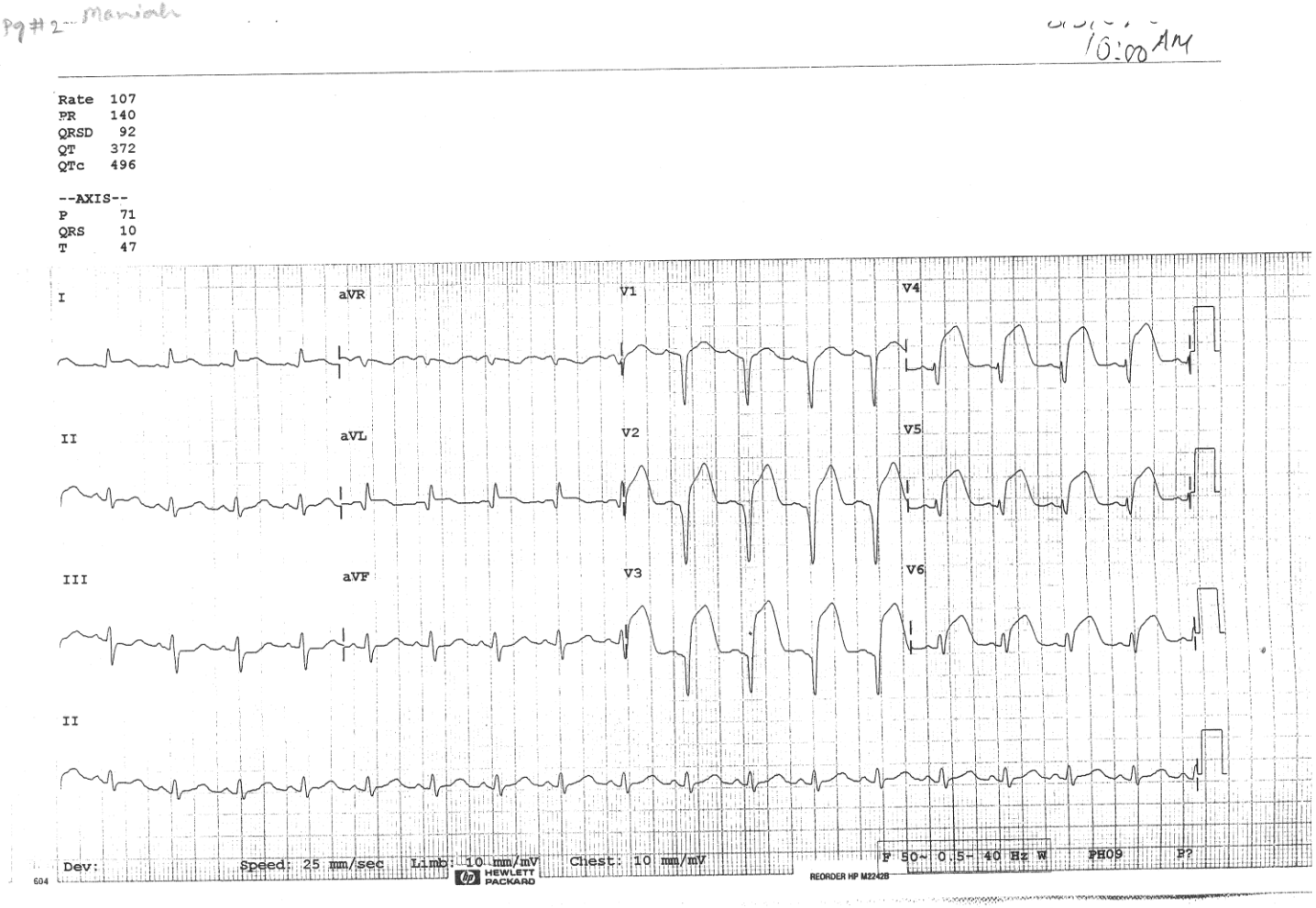
3rd ECG after PTCA



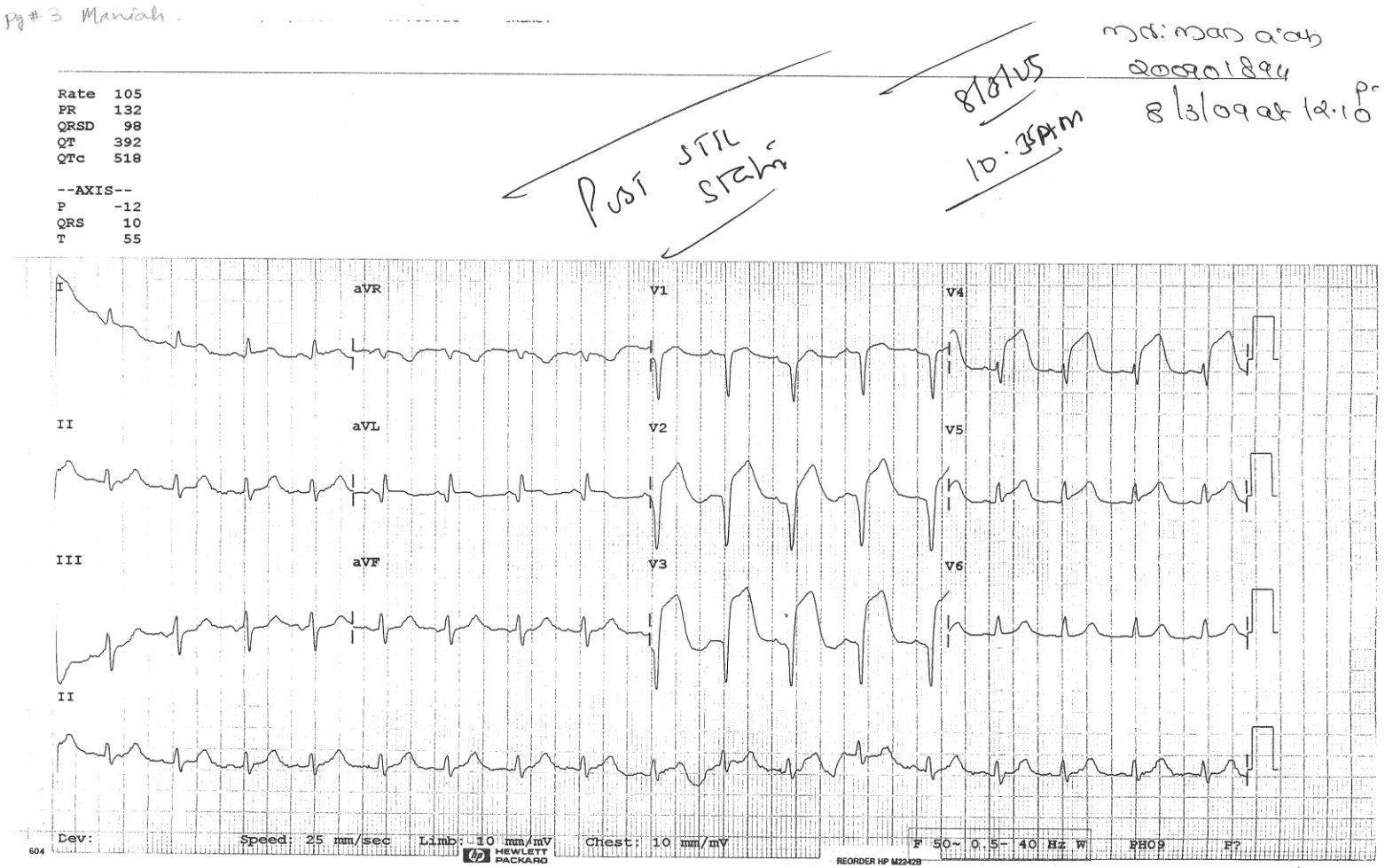
Case-3 Evolution of ECG changes in MI ECG1



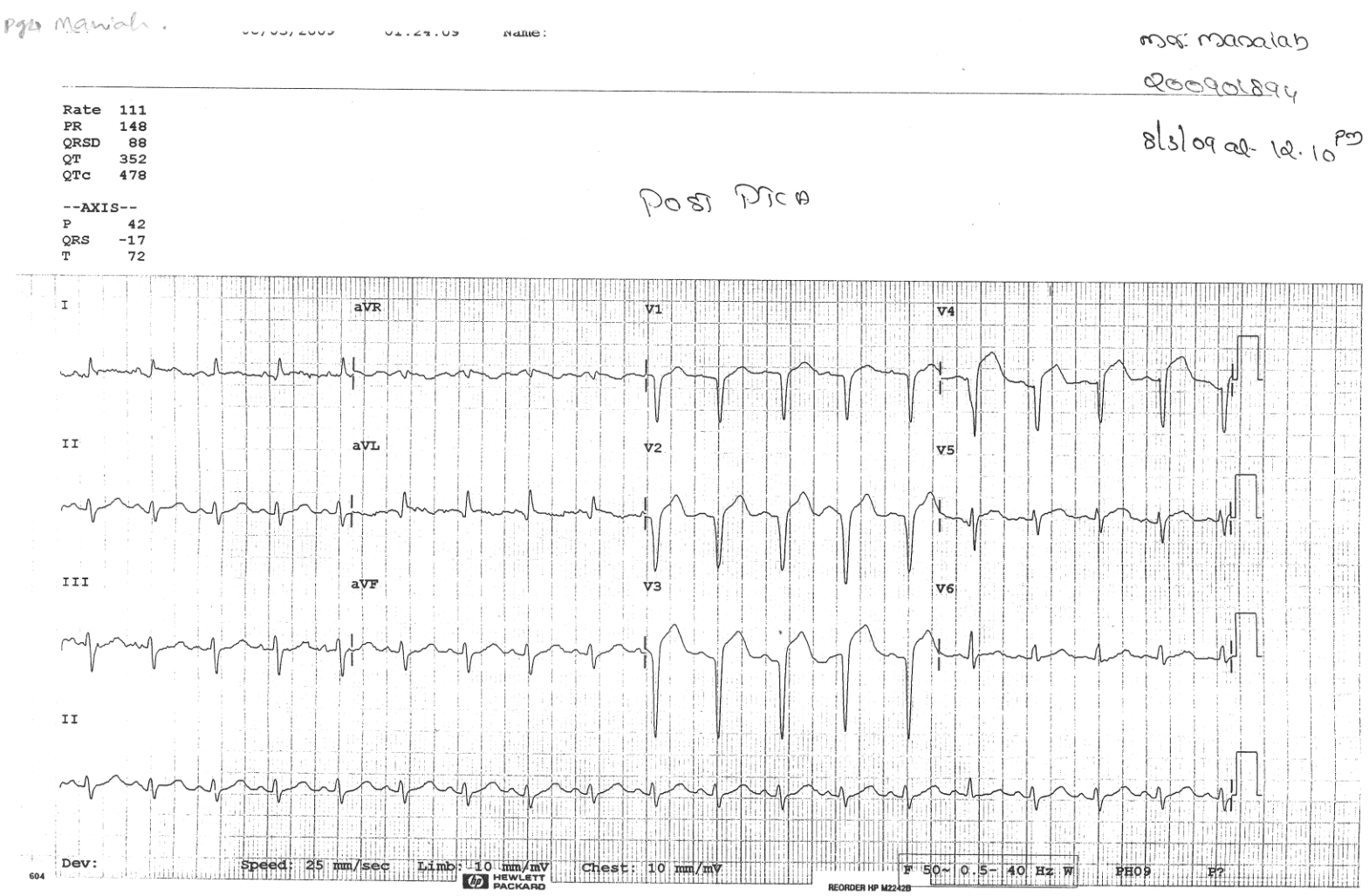
ECG-2


Pg#2--Manual
10:00 AM
Rate 107
PR 140
QRSD 92
QT 372
QTc 496
--AXIS--
P 71
QRS 10
T 47
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
Dev:
Speed: 25 mm/sec
Limb: 10 mm/mV
Chest: 10 mm/mV
HEWLETT PACKARD
F 50~ 0.5- 40 Hz W
PH09
P?
REORDER HP M2242B
604

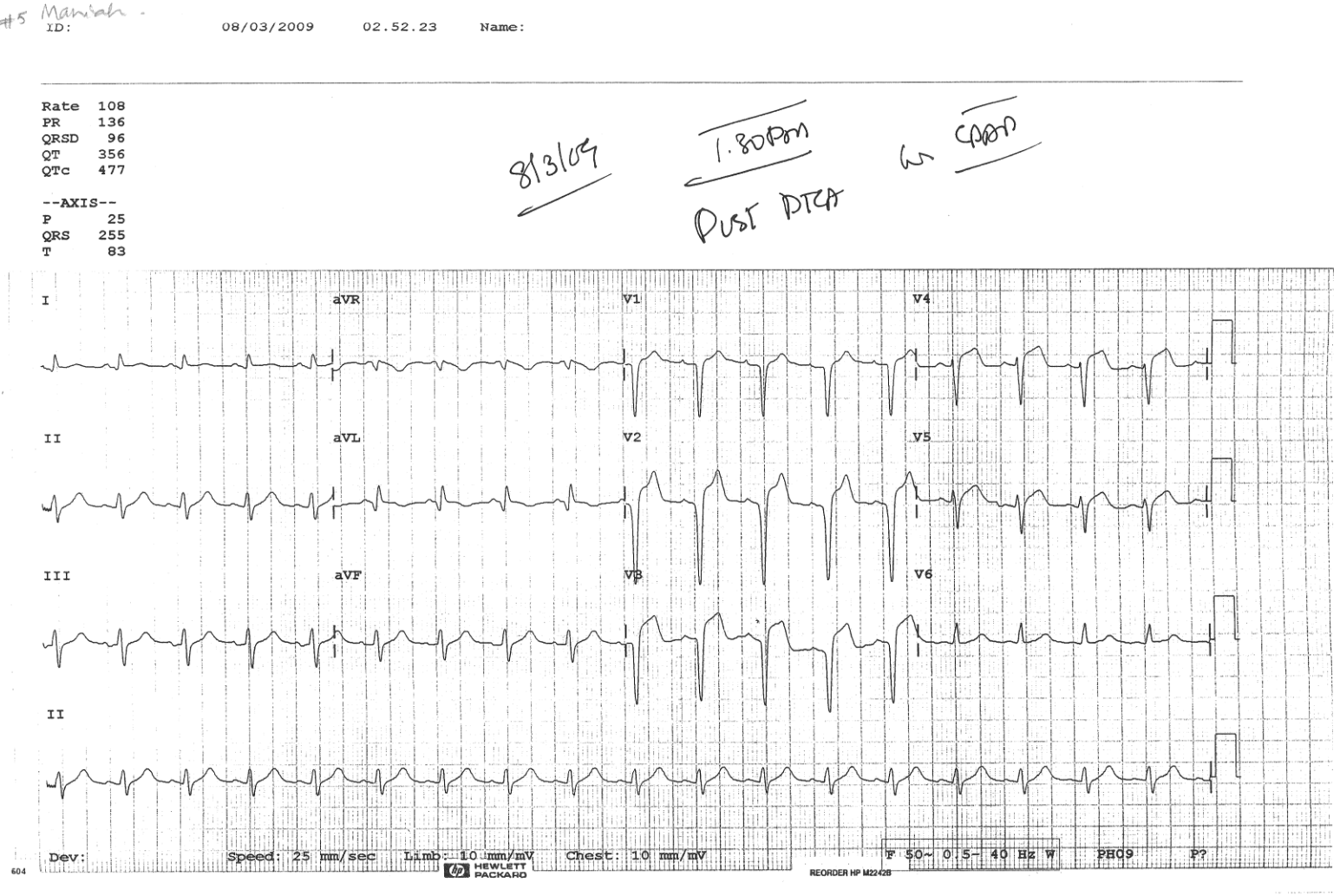
ECG-3, after STK



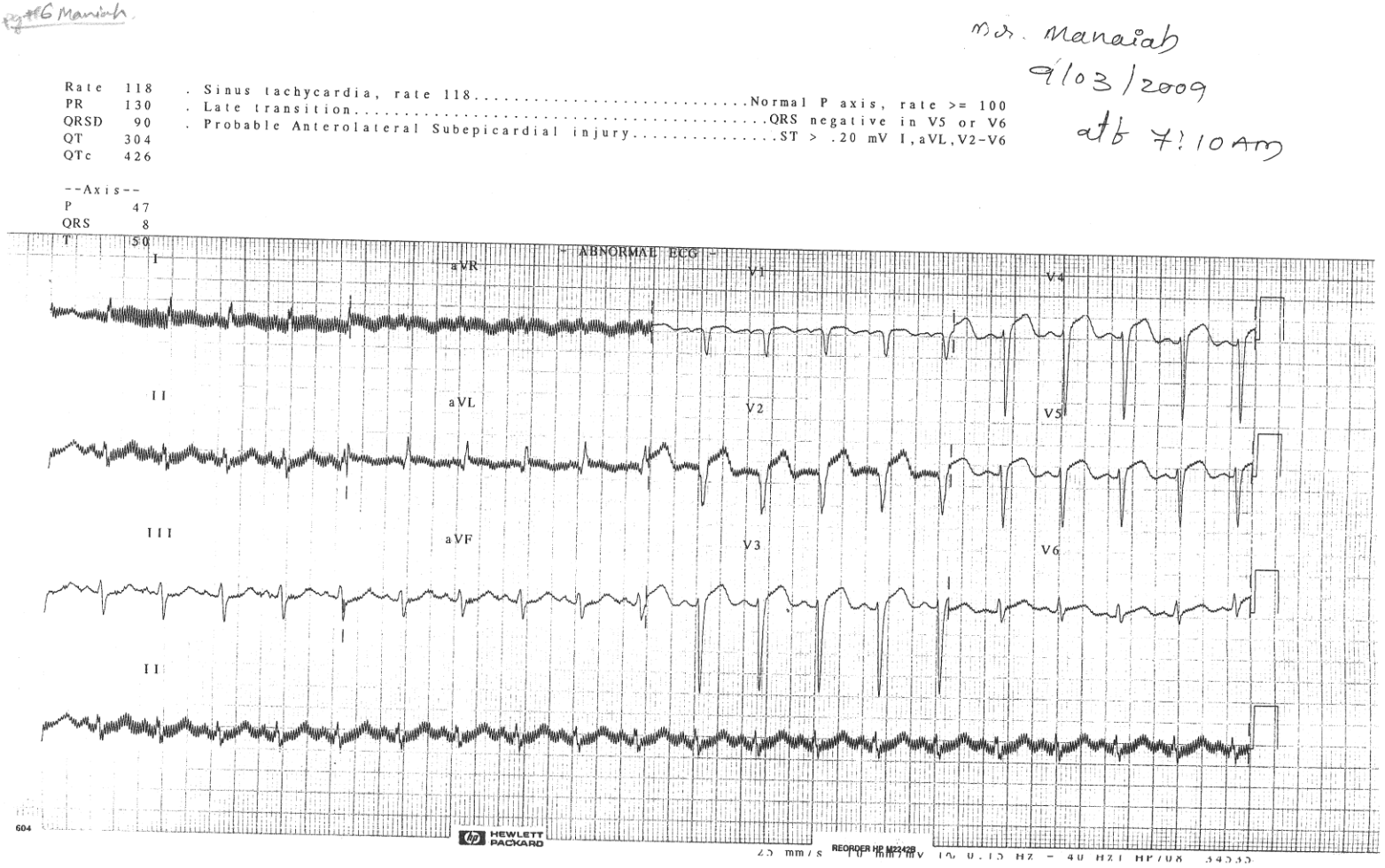
ECG-4, after PTCA



ECG-5, PTCA 2nd day



ECG-6,


pg#6 Manaiah
Mr. Manaiah
9/03/2009
atb 7:10 AM
Rate 118
PR 130
QRSD 90
QT 304
QTc 426
. Sinus tachycardia, rate 118.....Normal P axis, rate >= 100
. Late transition.....QRS negative in V5 or V6
. Probable Anterolateral Subepicardial injury.....ST > .20 mV I,aVL,V2-V6
--Axis--
P 47
QRS 8
T 50
- ABNORMAL ECG -
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
604
HEWLETT PACKARD
25 mm/s 10 mm/mV 1A 0.15 Hz - 40 Hz HP708
REORDER HP M2242B

Impella Device in High Risk PTCA

IABP device in Current scenario

Shall we believe still the thrombolytic?

- In ACS with STEMI and NSTEMI, Primary PTCA or rescue PTCA is the only option.
- Thrombolytic gives only 40% perfusion in TIMI-II
- Most of the MI related complications occurs only in thrombolytic regime and delay in treatment.
- Non diabetic, non hypertensive and non smoker young individual still have some benefits of thrombolytic.

What are the benefits of Primary PTCA?

- Decreases morbidity and mortality
- Reduces and prevents complications
- Prevents future CHF
- Reduces hospitalization
- Reduces treatment costs

Home taking messages

- Early recognition of STEMI
- Early mobilization
- PTCA with in 60 min Prevent mortality
- No substitute treatment is available for ACS except primary PTCA.
- Advanced cardiac devices in high risk PTCA will reduces mortality and morbidity.
- If cath lab is not available, treat only with effective measures.