THE SPIKE HELMET SIGN RELATED TO IN-HOSPITAL DEATH IN PATIENTS WITH ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION: CASE SERIES

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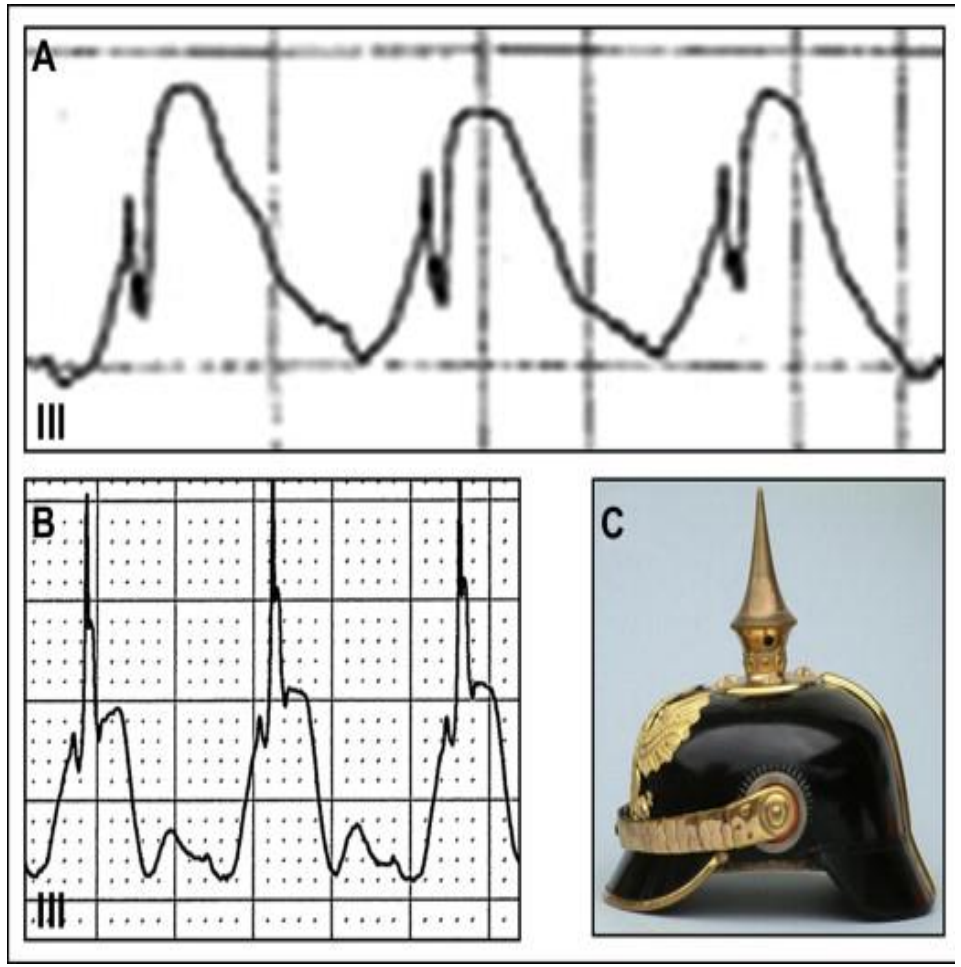
Disclosure

- No conflict of interest

Background

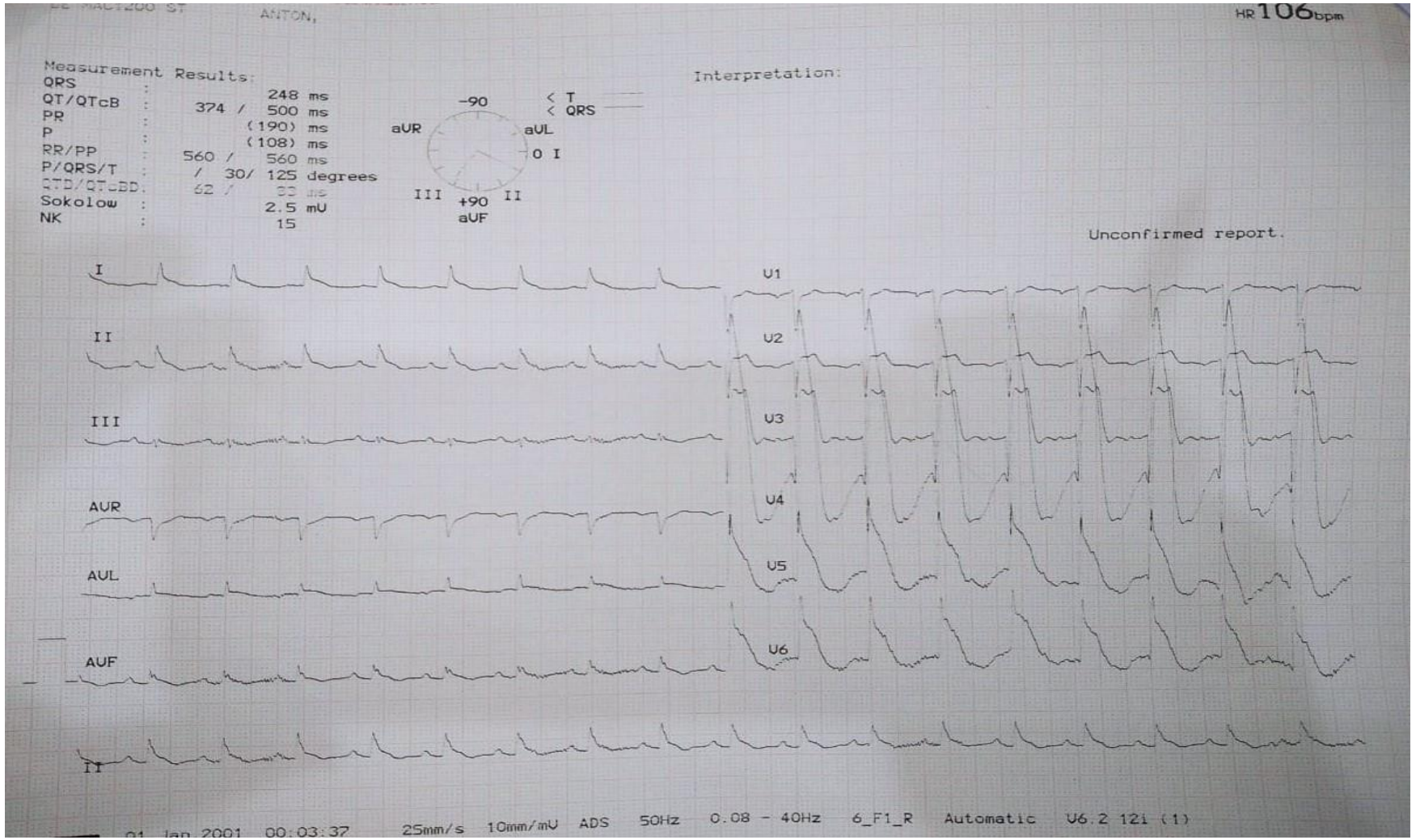
Upsloping ST-segment preceding QRS in electrocardiogram, also known as The Spike Helmet sign (SHs), resembling to German military helmet is usually seen in critically ill patients and associated with high risk in-hospital death.



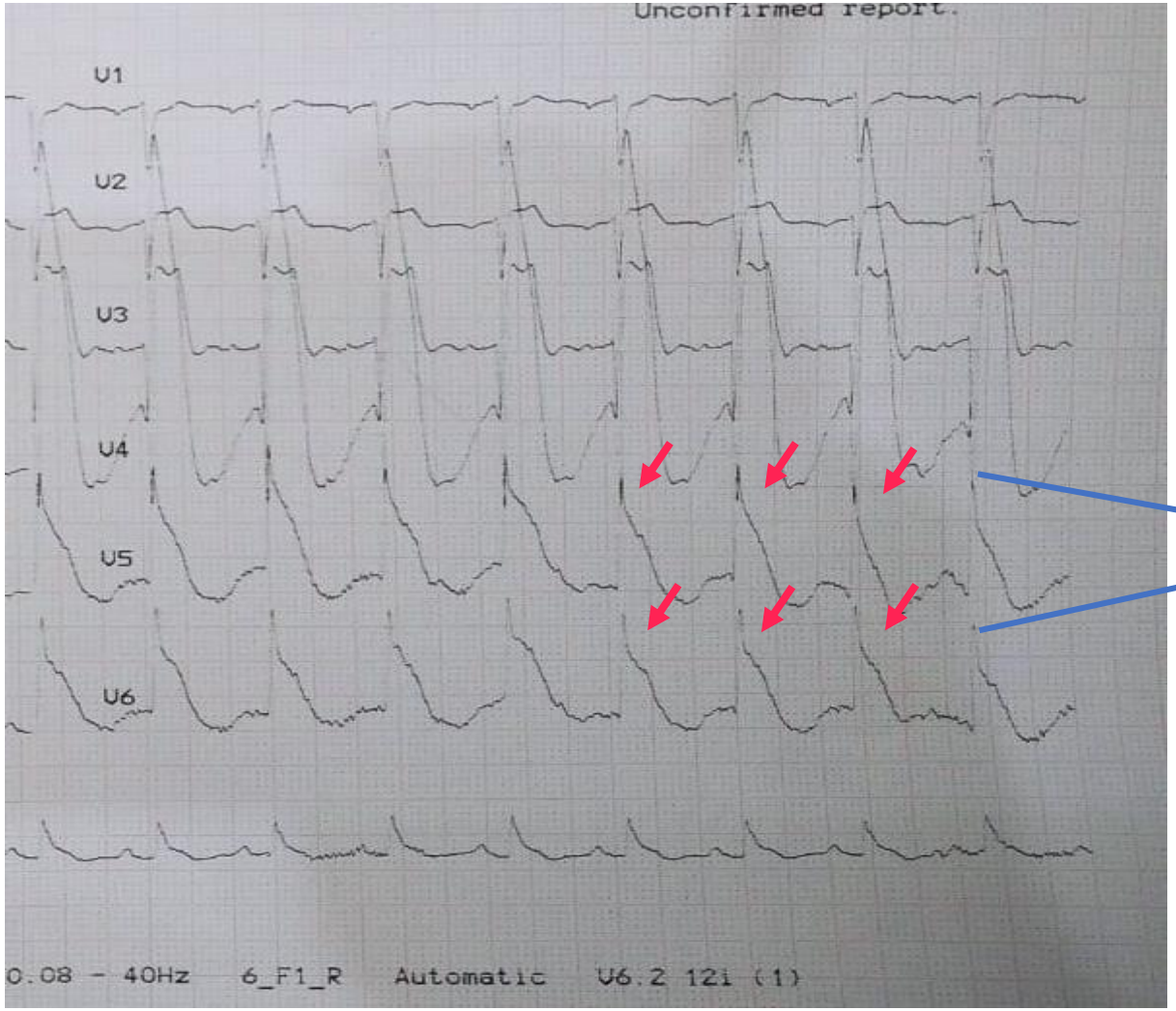
Case 1

- An 80-years-old man with cardiogenic shock preceded by typically infarcted chest pain for 12 hours was admitted to hospital.
- He was agitated with blood pressure in 85/50 mmHg and tachycardia (HR 106 bpm).
- The electrocardiogram showed elevated ST segment at V2-V6, I, AVL with SHS in V5-V6
- Cardiac enzymes: elevated Trop-T and CKMB.
- Previously, he was given 160 mg of Aspirin, 300 mg of clopidogrel, loading of 4000 IU Heparin followed by 700 IU/hr for maintenance dose in another hospital. He was also put on vasopressor therapy with NE 0,2 mcg/kgBW/minute due to hypotensive blood pressure.
- He was diagnosed with acute anterior extensive STEMI Killip IV and proceeded to primary PCI.

ECG

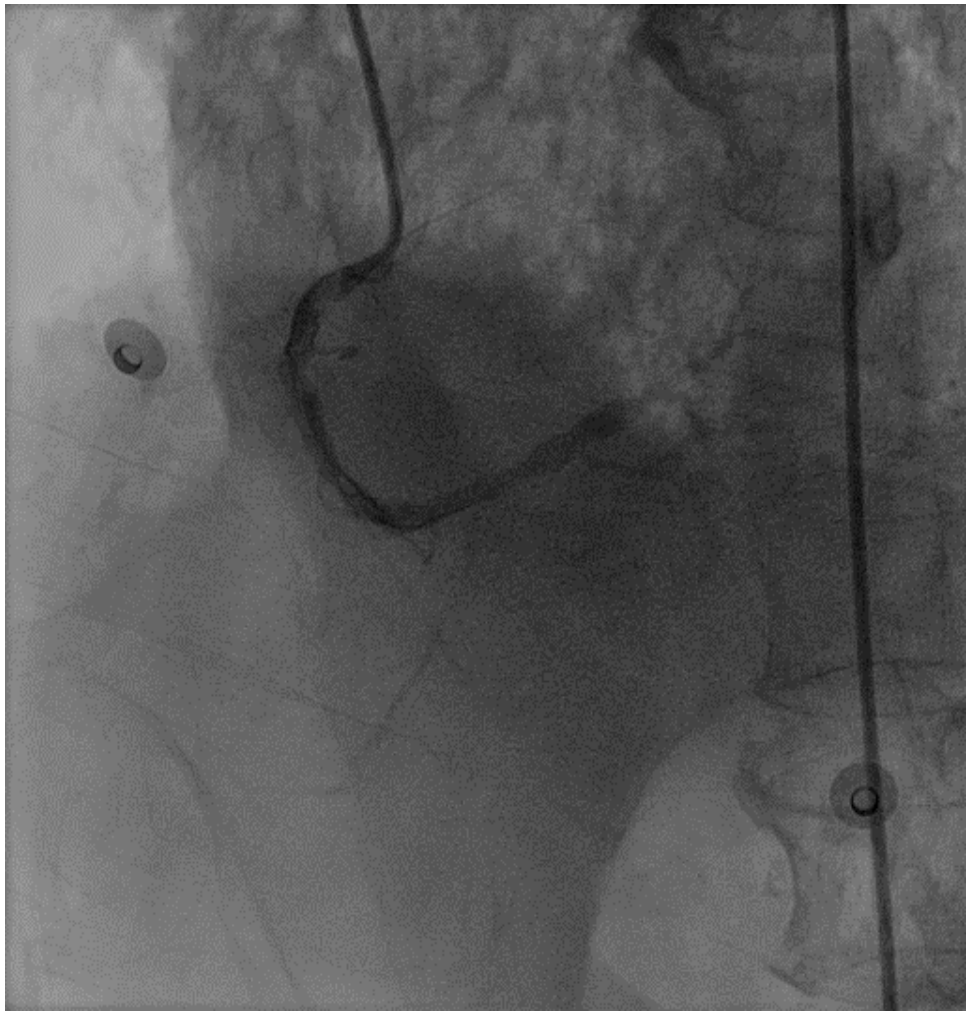

ANTON,
HR 106bpm
Measurement Results:
QRS : 248 ms
QT/QTcB : 374 / 500 ms
PR : (190) ms
P : (108) ms
RR/PP : 560 / 560 ms
P/QRS/T : / 30/ 125 degrees
RTD/QTcBD. 62 /
Sokolow : 2.5 mV
NK : 15
Interpretation:
Unconfirmed report.
I
II
III
AUR
AUL
AUF
V1
V2
V3
V4
V5
V6
II
01 Jan 2001 00:03:37 25mm/s 10mm/mV ADS 50Hz 0.08 - 40Hz 6_F1_R Automatic V6.2 12i (1)

ECG

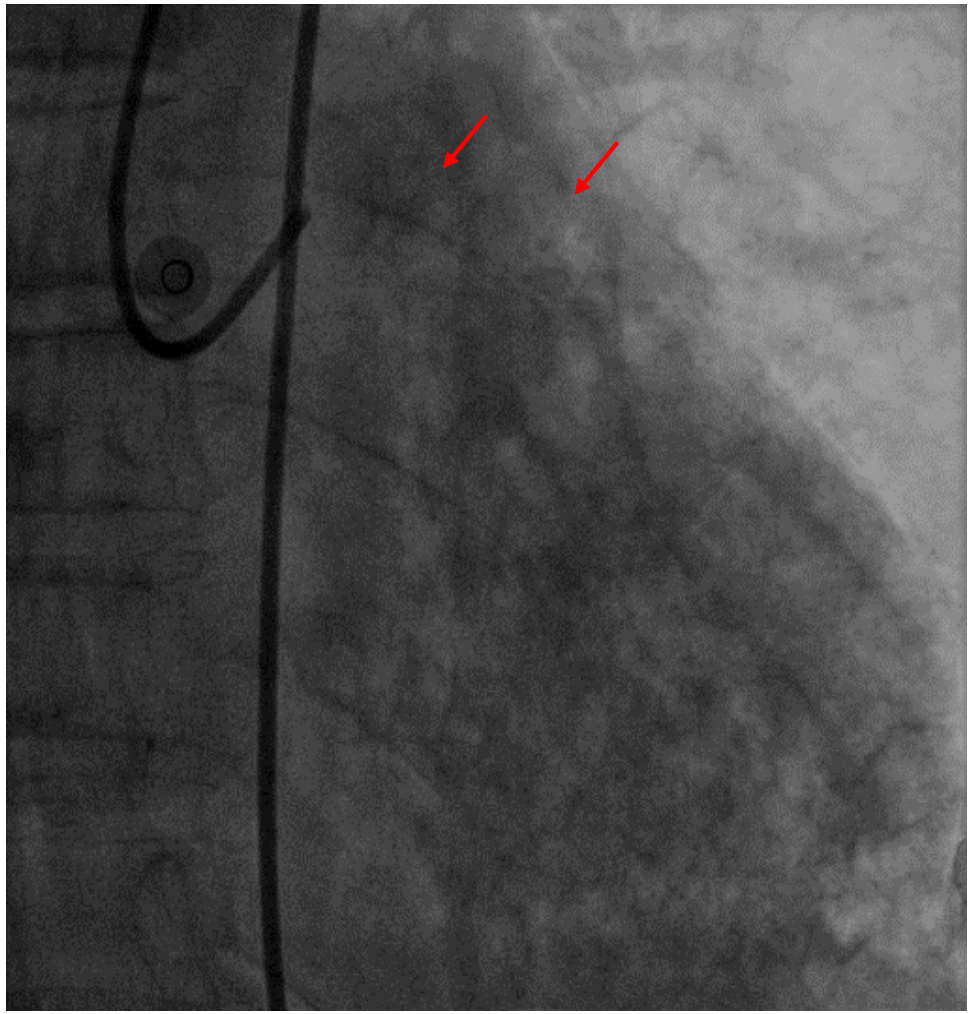


Spike Helmet Sign

Coronary Angiogram

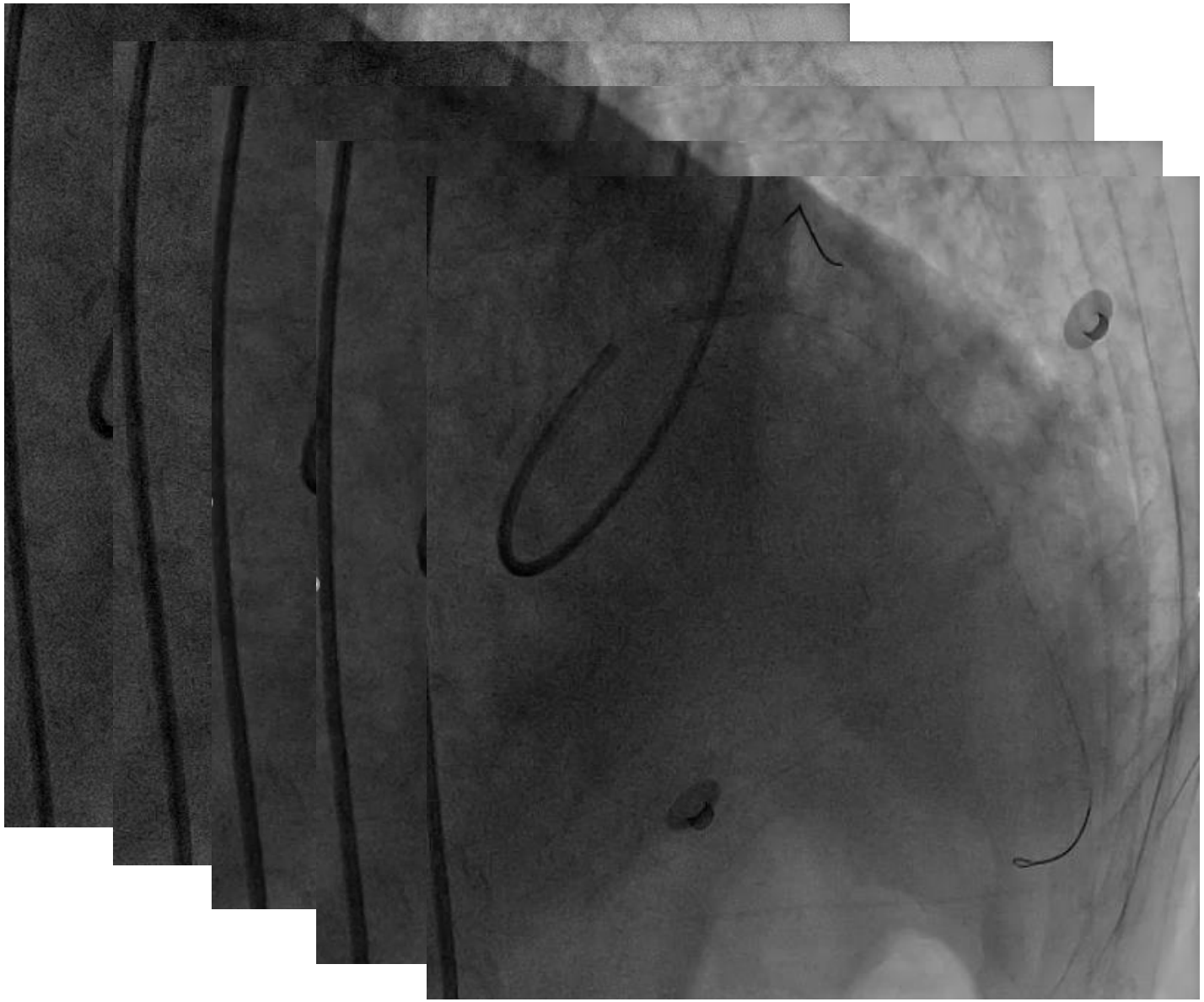


RCA: mild - moderate stenosis



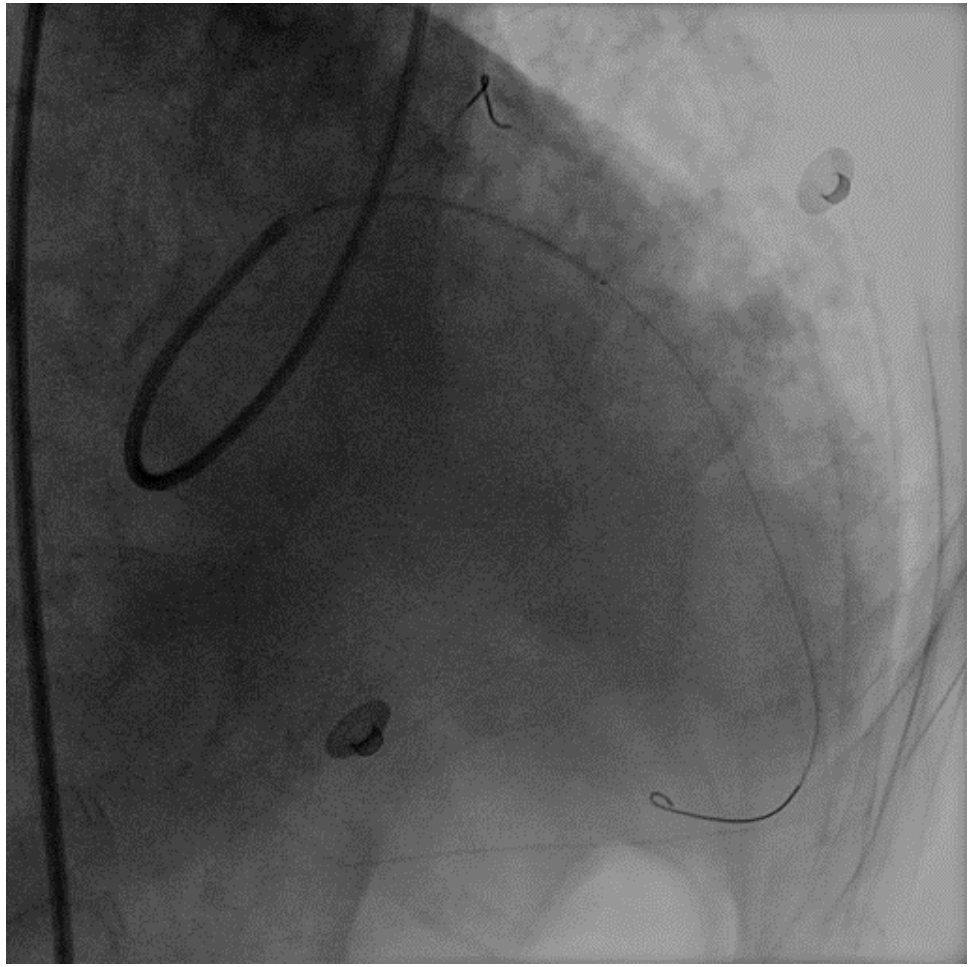
Severe stenosis at distal LM
Critical stenosis at mid LAD, slow flow

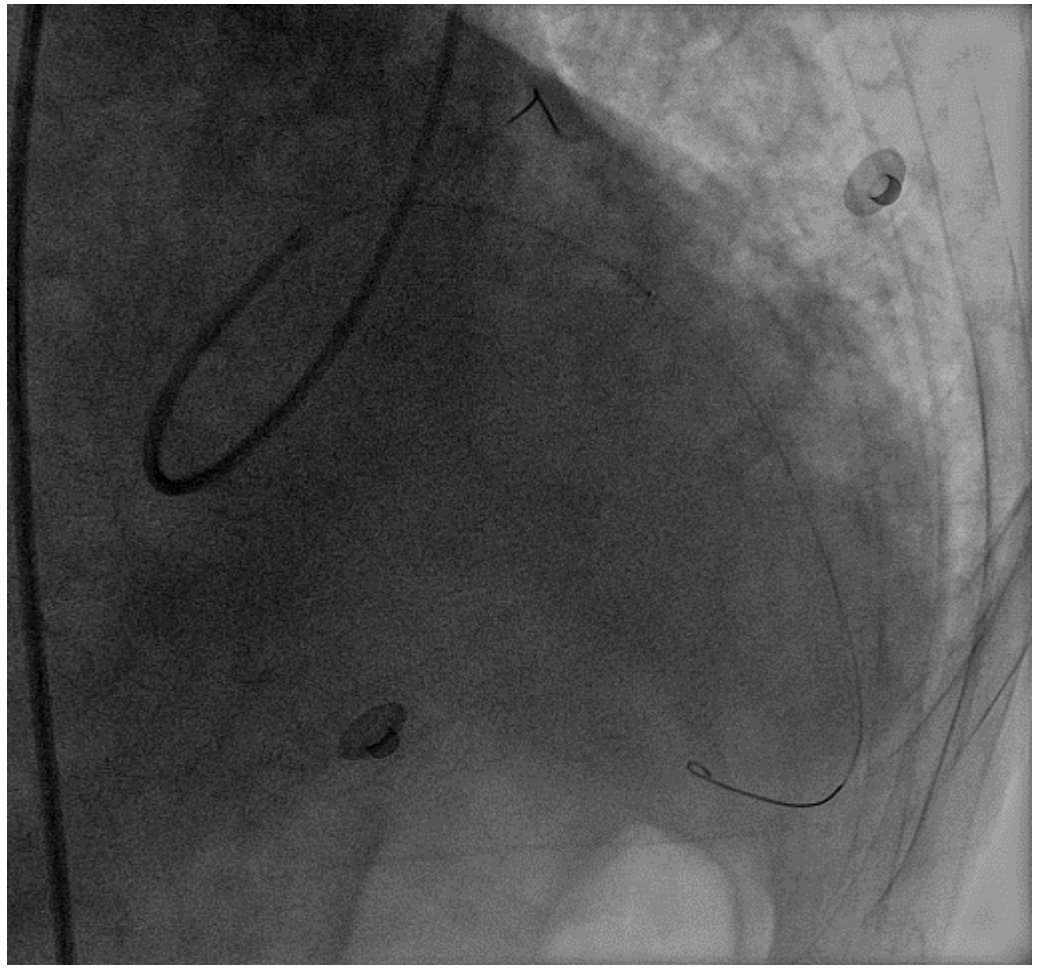
PCI



Predilatation with 2.0 X 20 SC balloon and 3.0 X 15 Scoring NC balloon

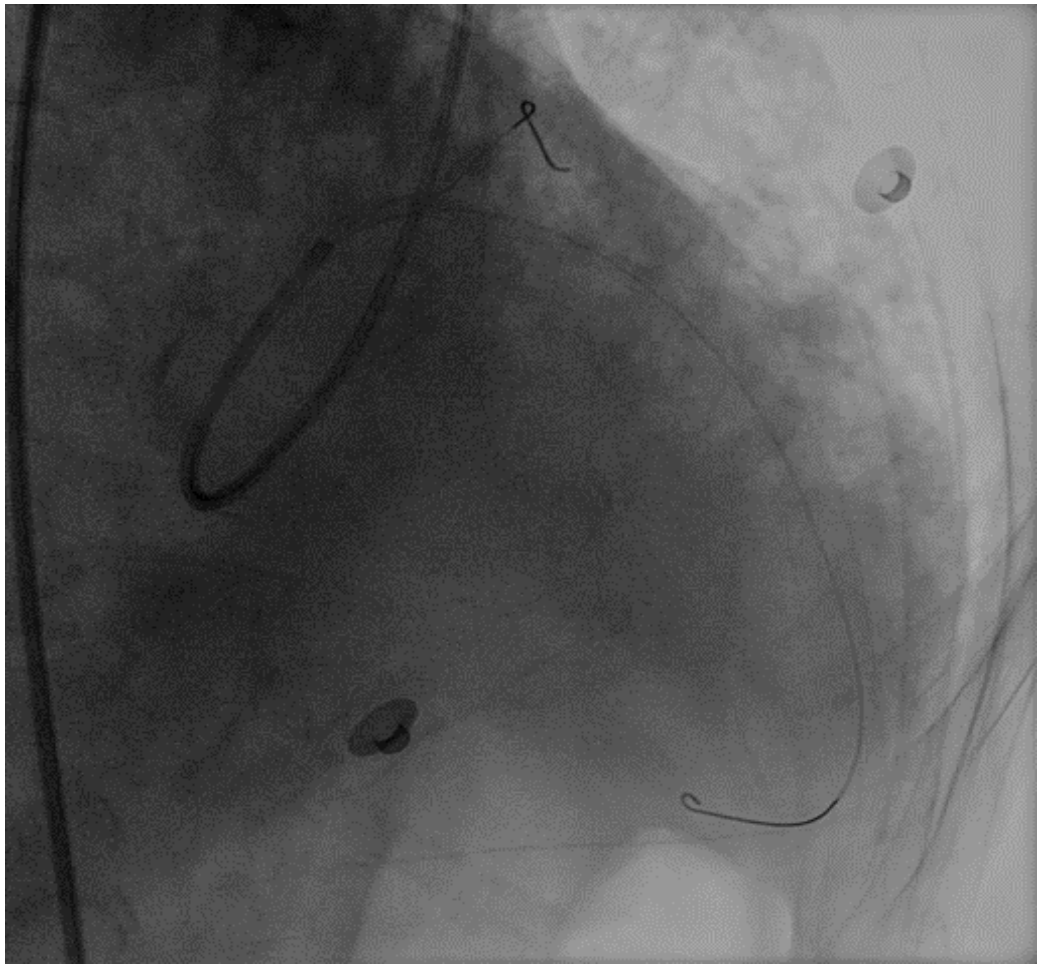
PCI

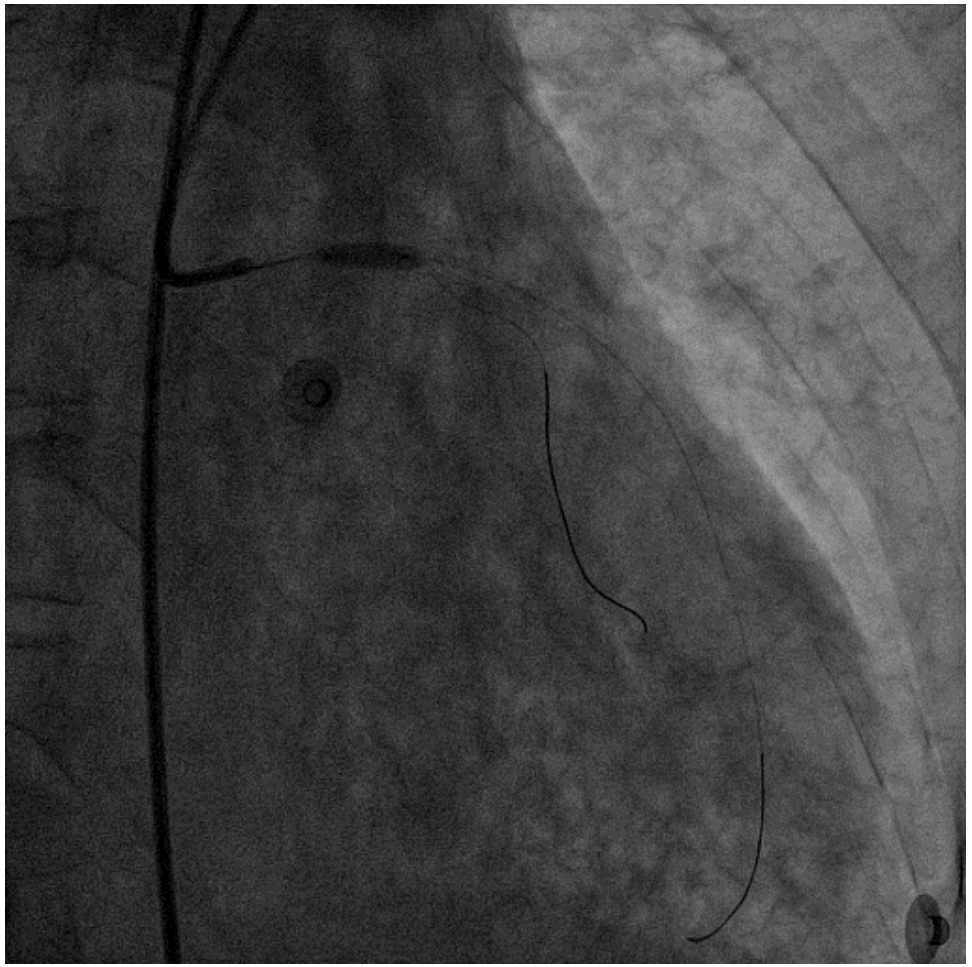




DES 3.0 x 36 mm: pLM - mLAD

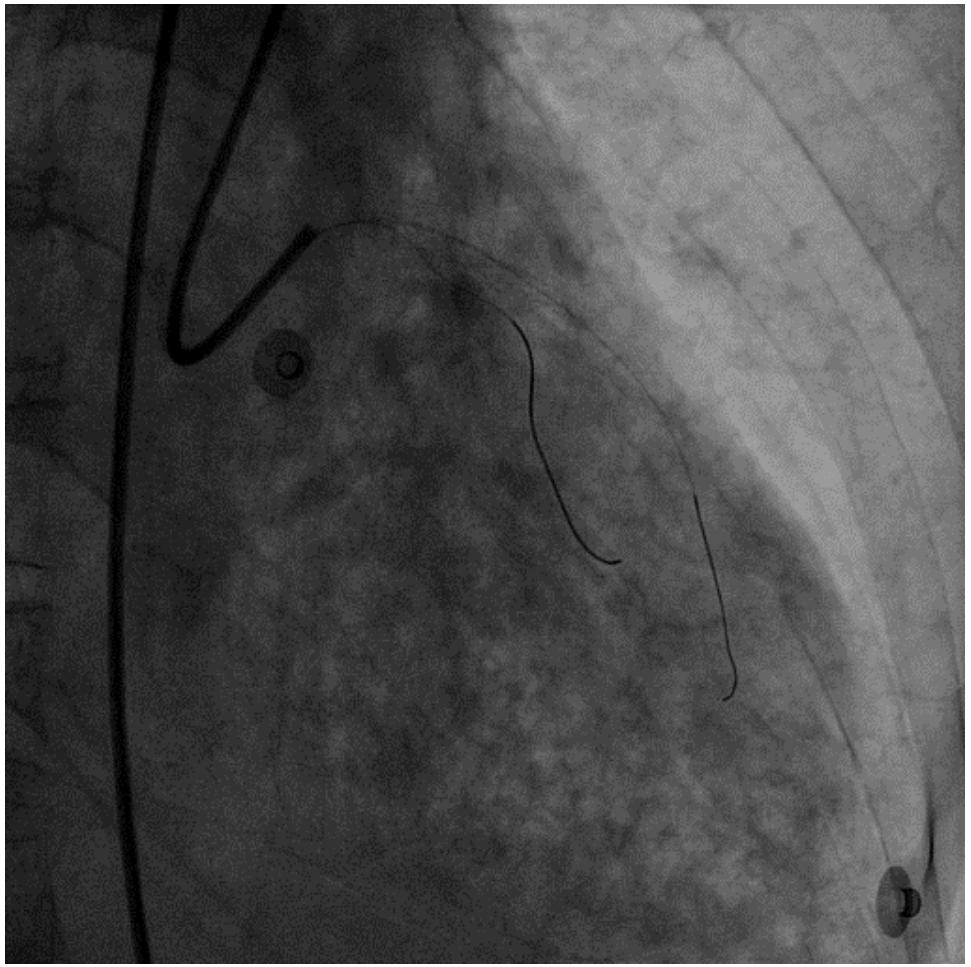
PCI





POT LM with 3.5 x 12 NC ballon -18 atm

Final Result



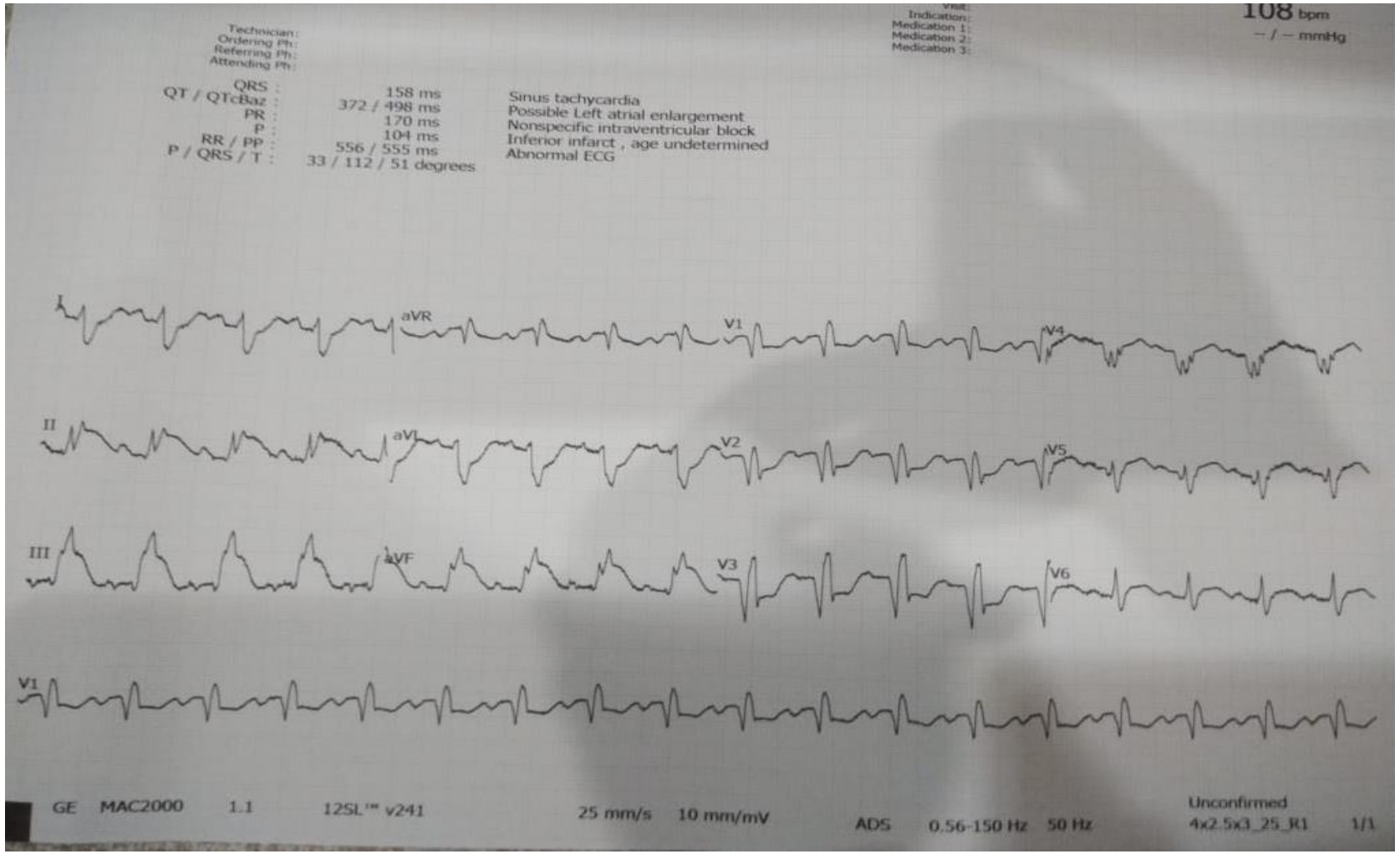
Follow up

One stent had been deployed in pLM to mLAD successfully. Unfortunately, patient was in refractory cardiogenic shock and died in same day to primary PCI

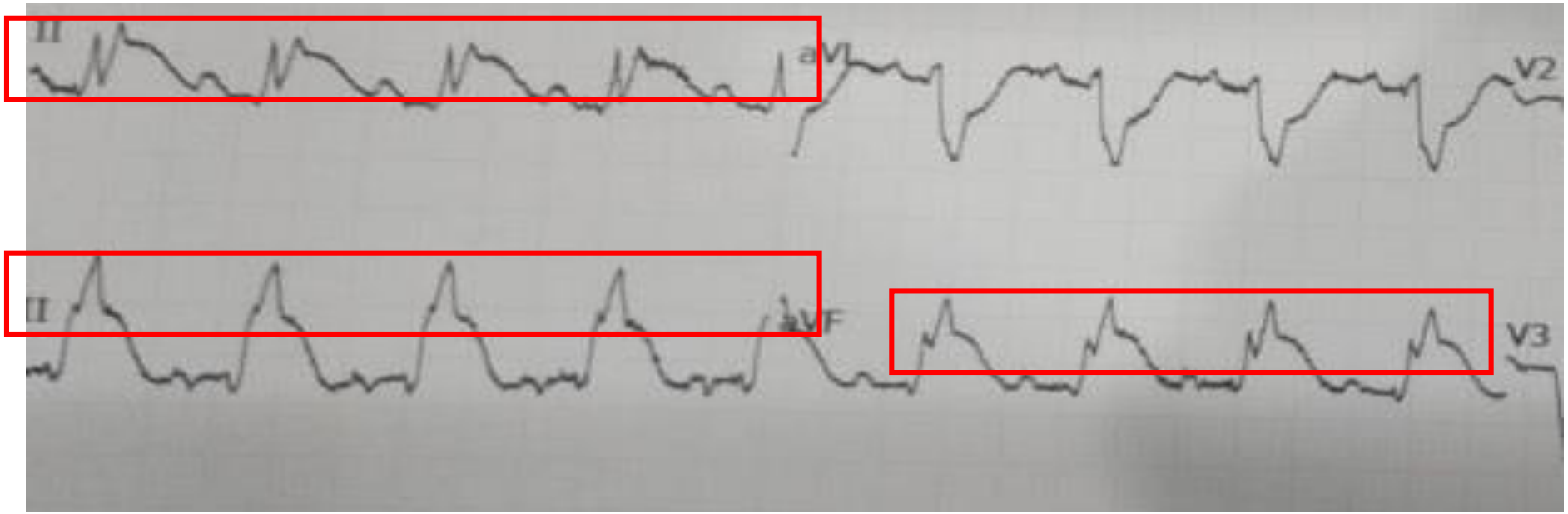
Case 2

- A 52-years-old man presented with acute lung edema following typically infarcted chest pain within 5 hours before admission to hospital.
- He was alert, with blood pressure in 100/60 mmHg and tachycardia (HR 108 bpm).
- His ECG showed elevated ST-segment in inferior leads included Spike Helmet sign (SHs).
- Cardiac markers (CKMB and Troponin-T) were extremely high.
- Chest x-ray showed pulmonary edema.
- He was given 160 mg of Aspirin, 300 mg of clopidogrel, loading of 4000 IU Heparin followed by 700 IU/hr from previous hospital

ECG

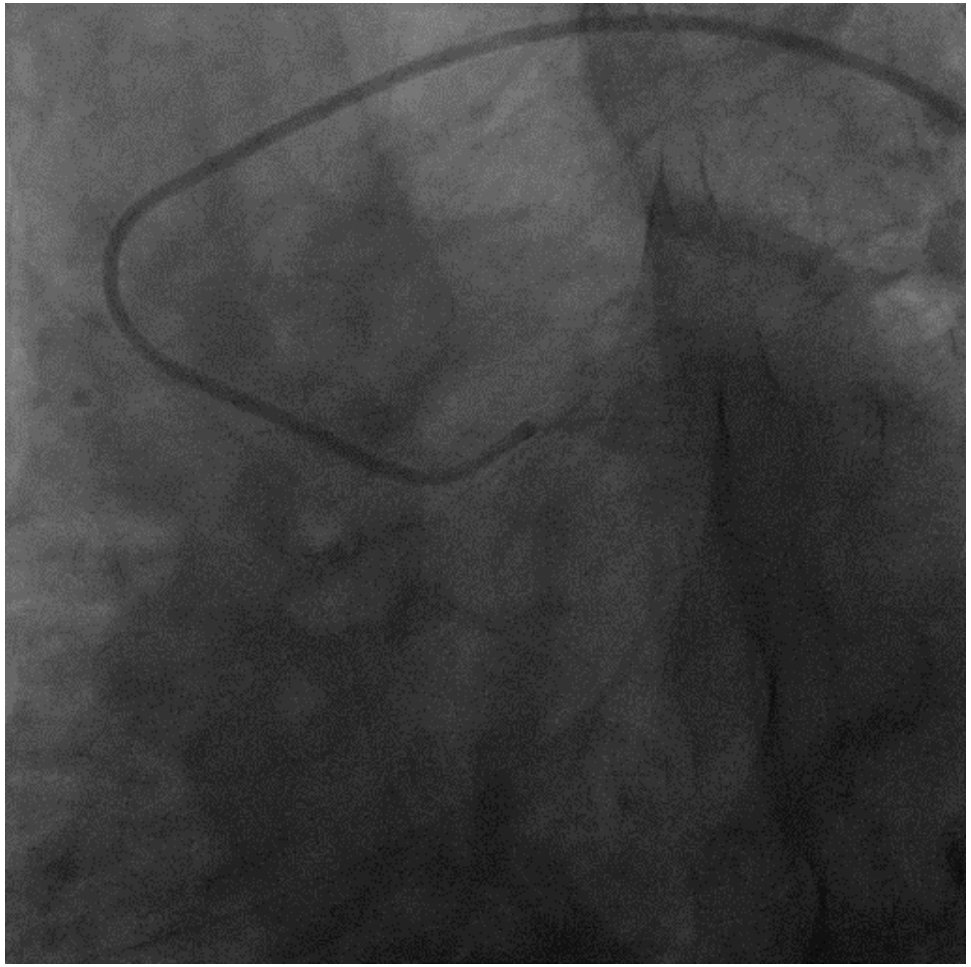

Technician:
Ordering Ph:
Referring Ph:
Attending Ph:
Indication:
Medication 1:
Medication 2:
Medication 3:
108 bpm
-- / -- mmHg
QRS : 158 ms
QT / QTcBaz : 372 / 498 ms
PR : 170 ms
P : 104 ms
RR / PP : 556 / 555 ms
P / QRS / T : 33 / 112 / 51 degrees
Sinus tachycardia
Possible Left atrial enlargement
Nonspecific intraventricular block
Inferior infarct , age undetermined
Abnormal ECG
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
GE MAC2000 1.1 12SL™ v241 25 mm/s 10 mm/mV ADS 0.56-150 Hz 50 Hz
Unconfirmed
4x2.5x3_25_R1 1/1

ECG

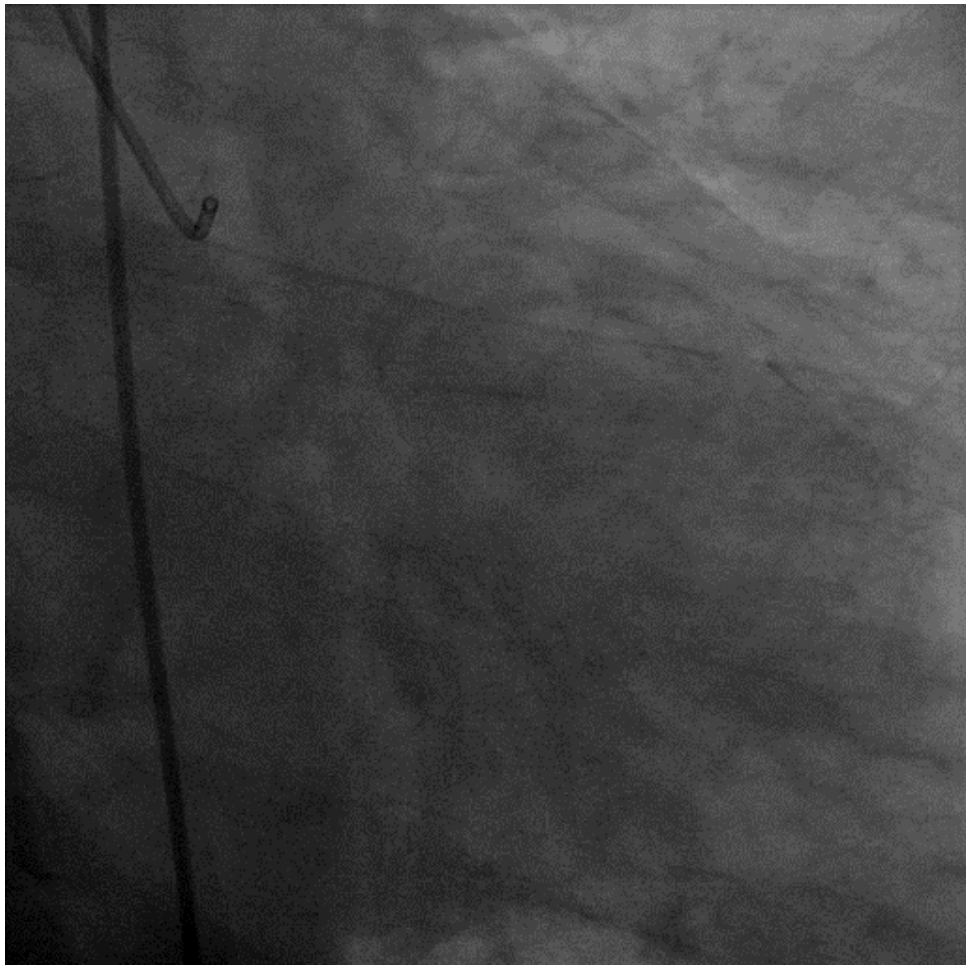


Spike Helmet Sign

Coronary Angiogram

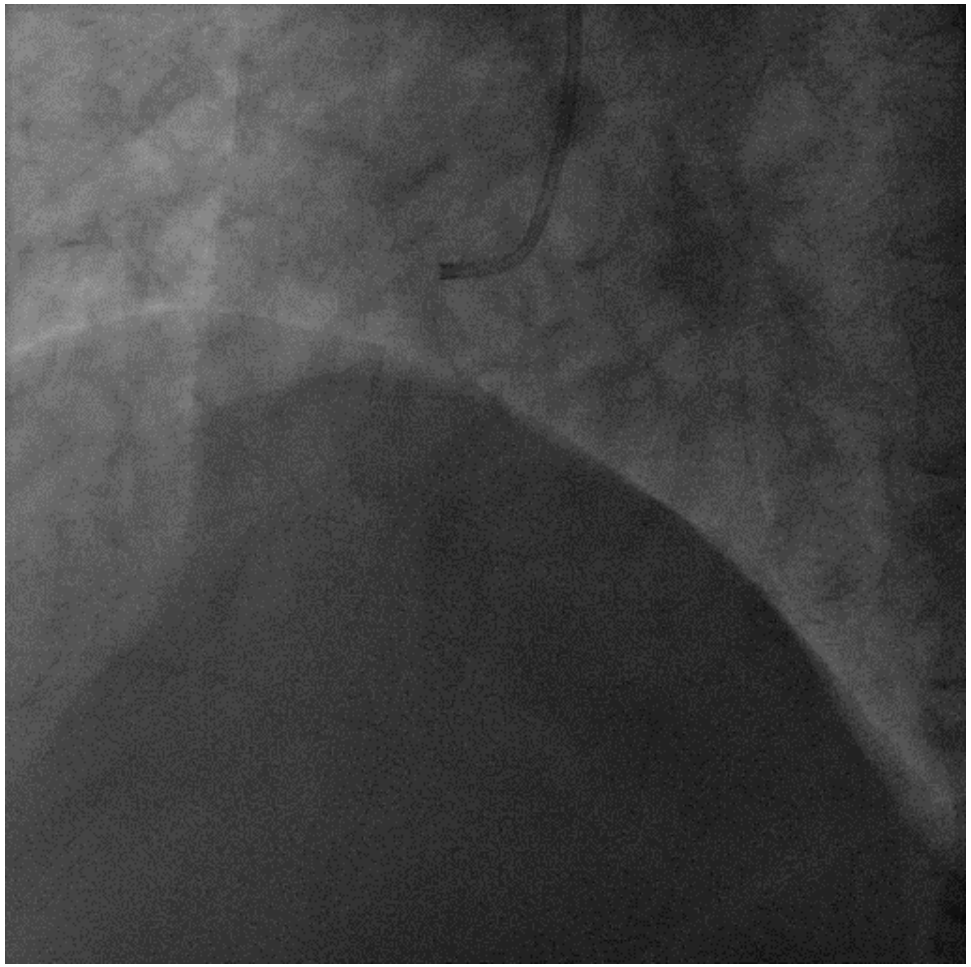


Short LM
CTO osteal LAD

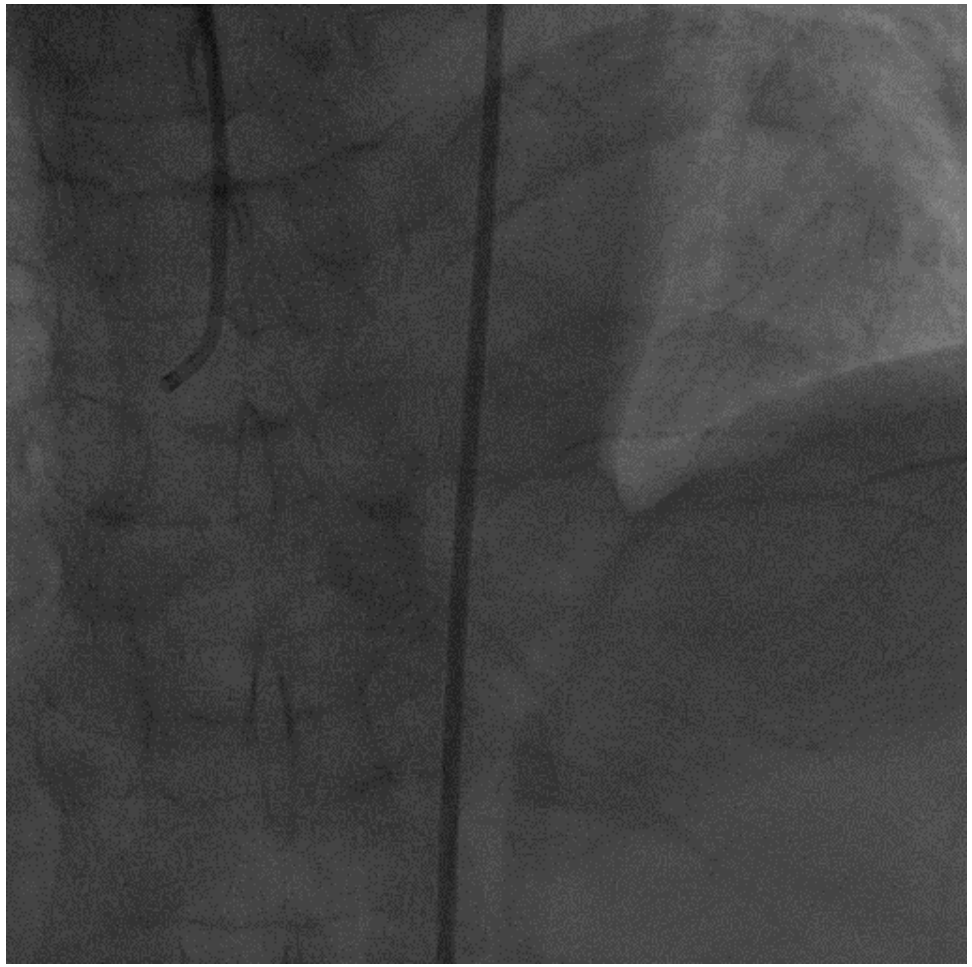


LCx: moderate stenosis mid and distal

Coronary Angiogram

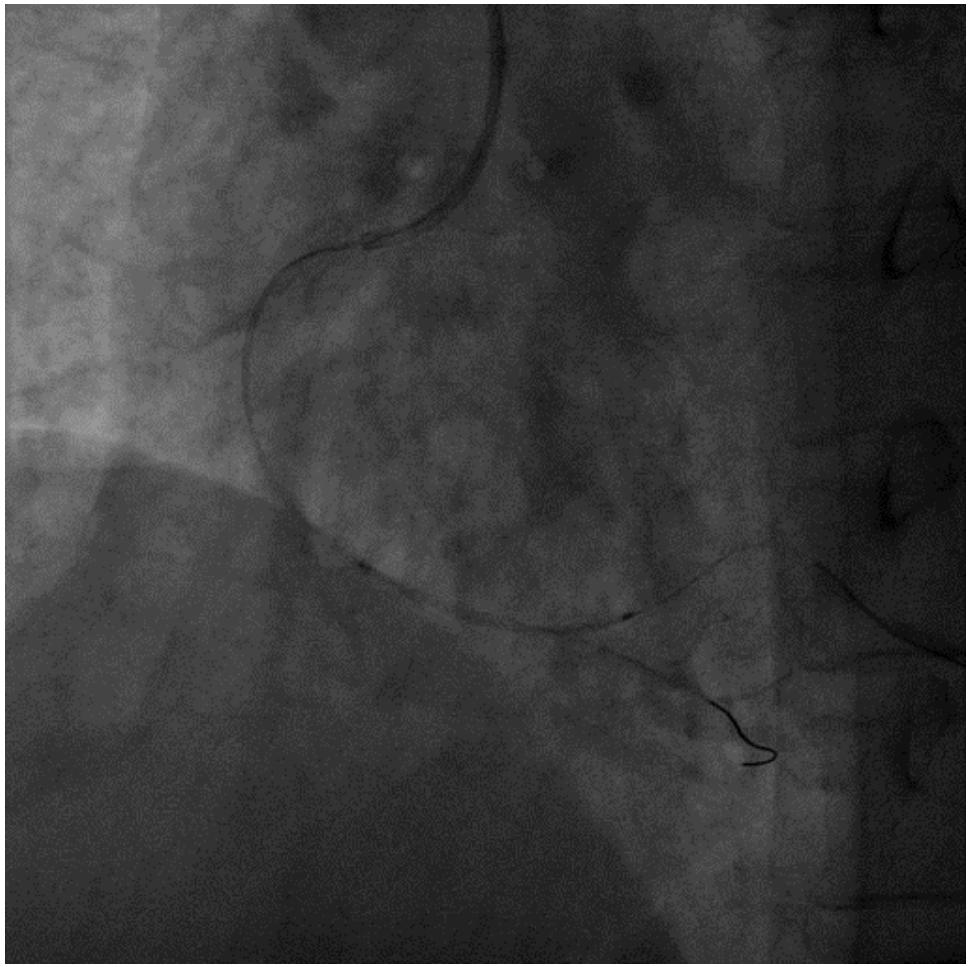


RCA: subtotal occlusion at distal, slow flow

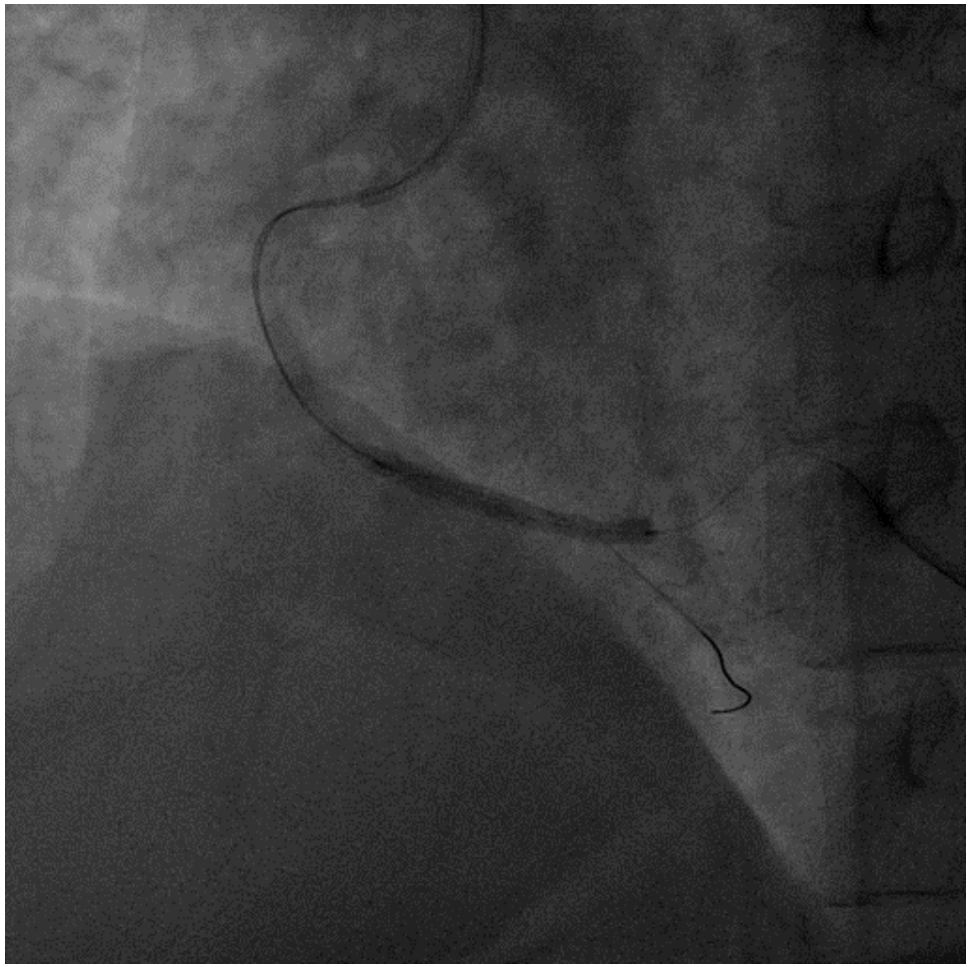


RCA: critical stenosis at proximal

PCI

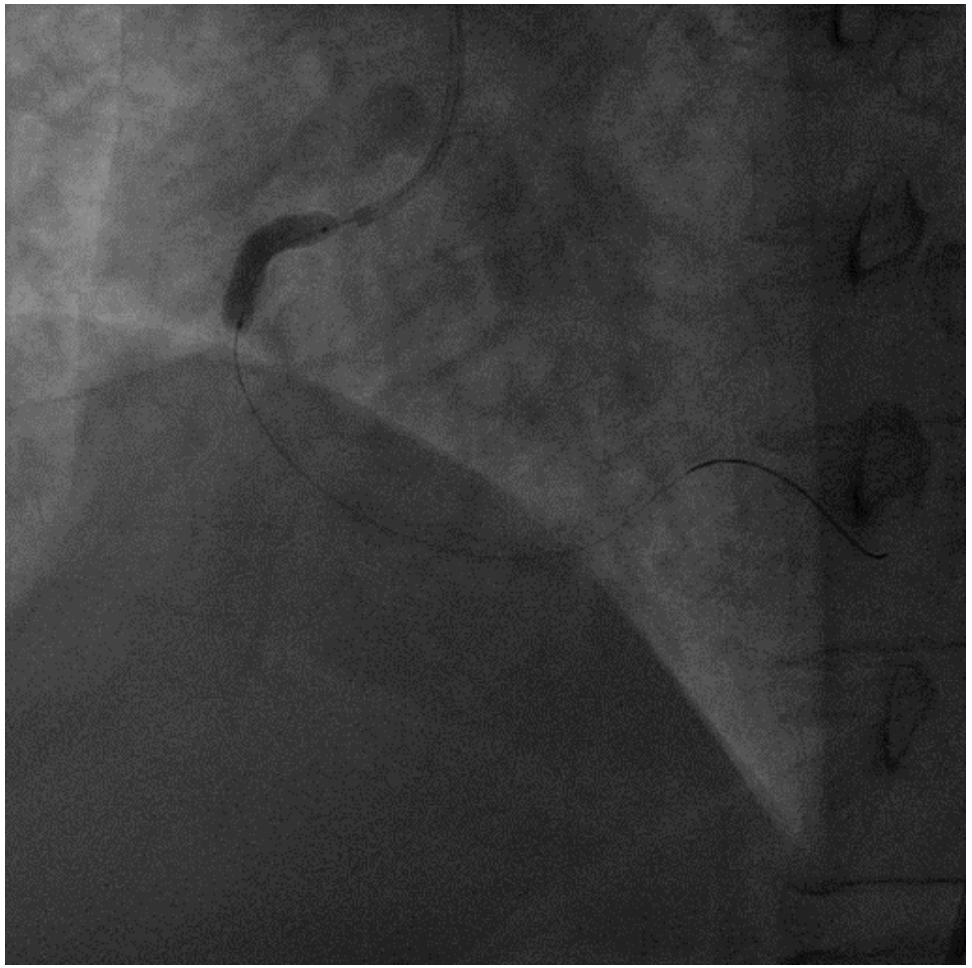


After predilatasion with 2.0 X 20 and 2.5 X 15 SC balloon continue with stenting



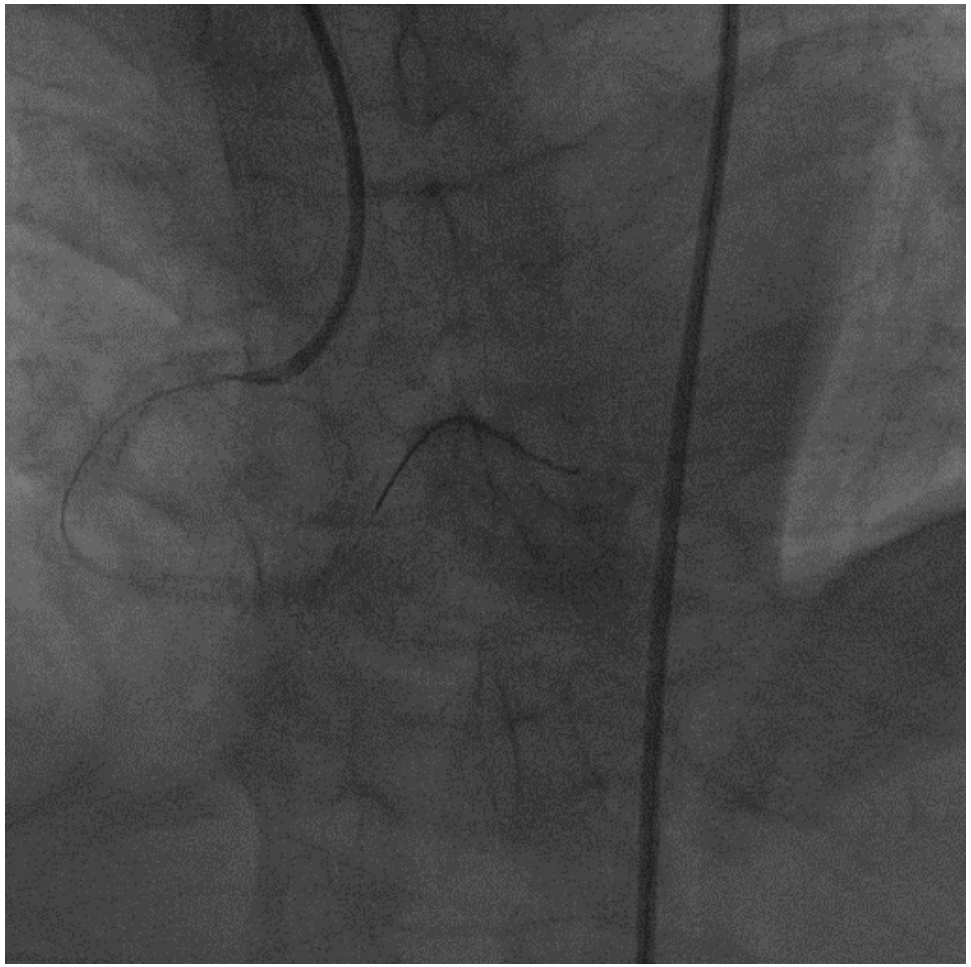
DES 3.0 X 33 -11 atm dRCA - pPLV

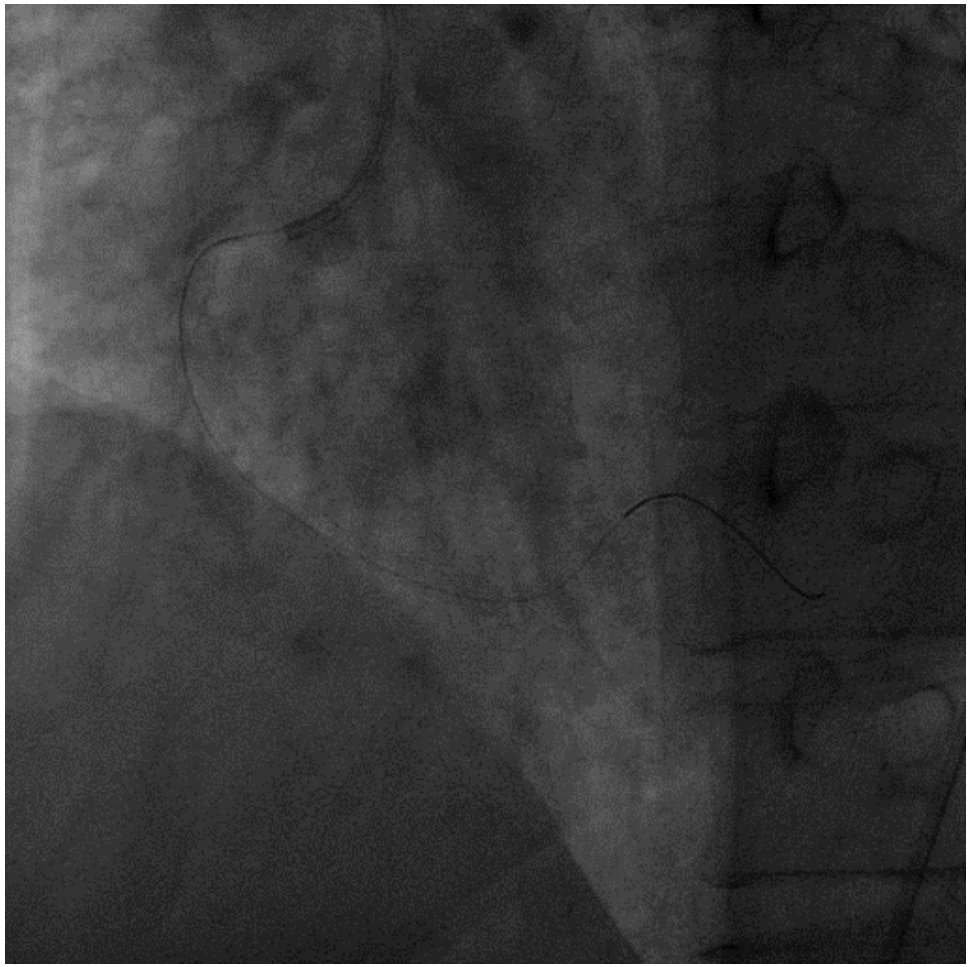
PCI



DES 4.0 X 23 -11 atm

Final Result





Follow up

The patient underwent primary PCI and 2 DES were successfully deployed in RCA.
Unfortunately, this patient also died in third day after primary PCI due to respiratory failure

Conclusion

- These cases show us that Spike Helmet Sign is a predictor of grave prognosis in patients with acute myocardial infarction
- These cases also show us that even after PCI procedures, patients in acute myocardial infarction with spike helmet sign are still in high risk of mortality.
- The presence of Spike Helmet Sign perhaps should alert us more about the possible MACE event after revascularization, thus early Mechanical Circulatory Support (MCS) may be considered in these patients.

Thank you