



TCTAP 2024

Challenging Case 1:

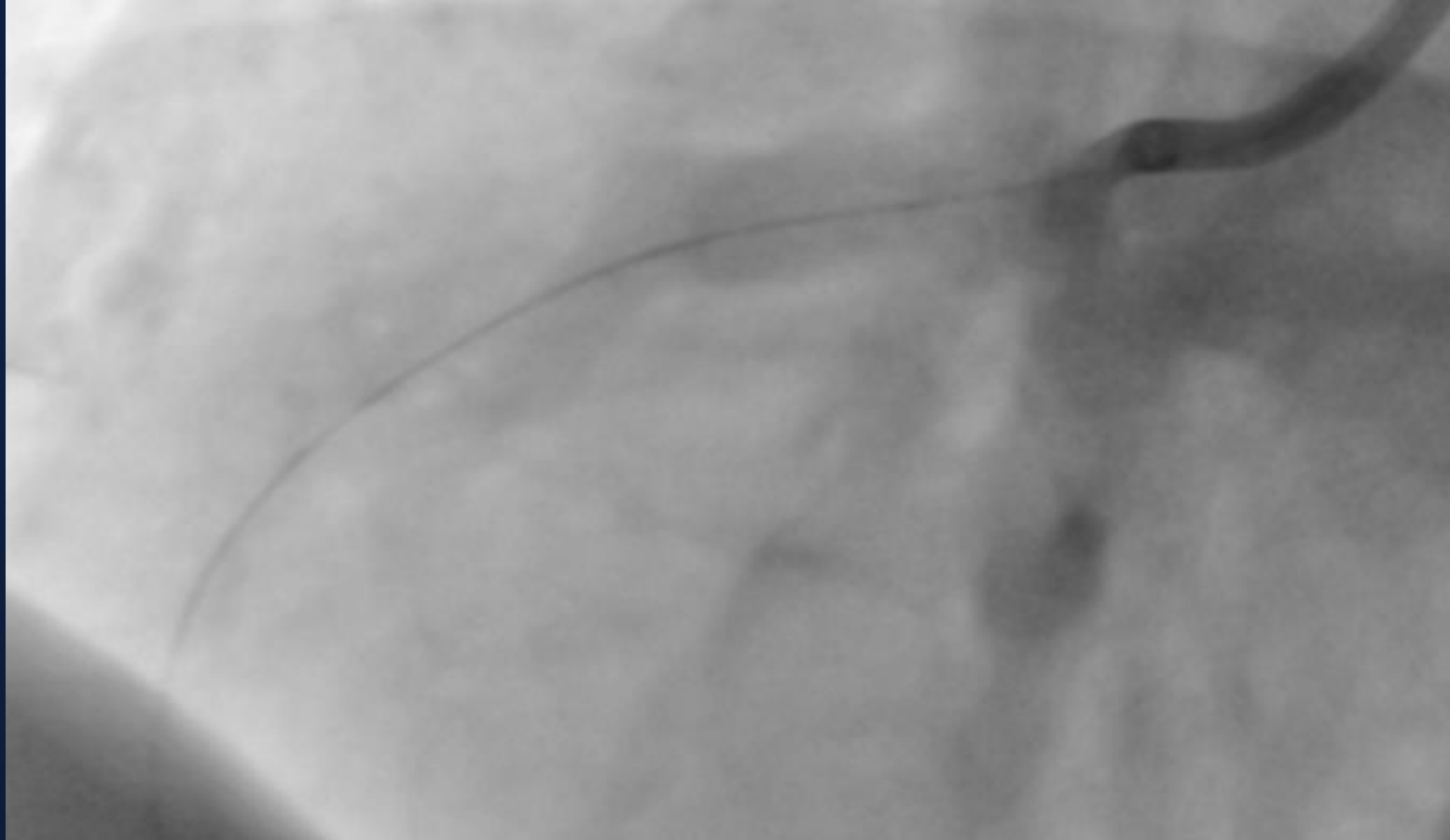
Enemy at the gates

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Disclosure

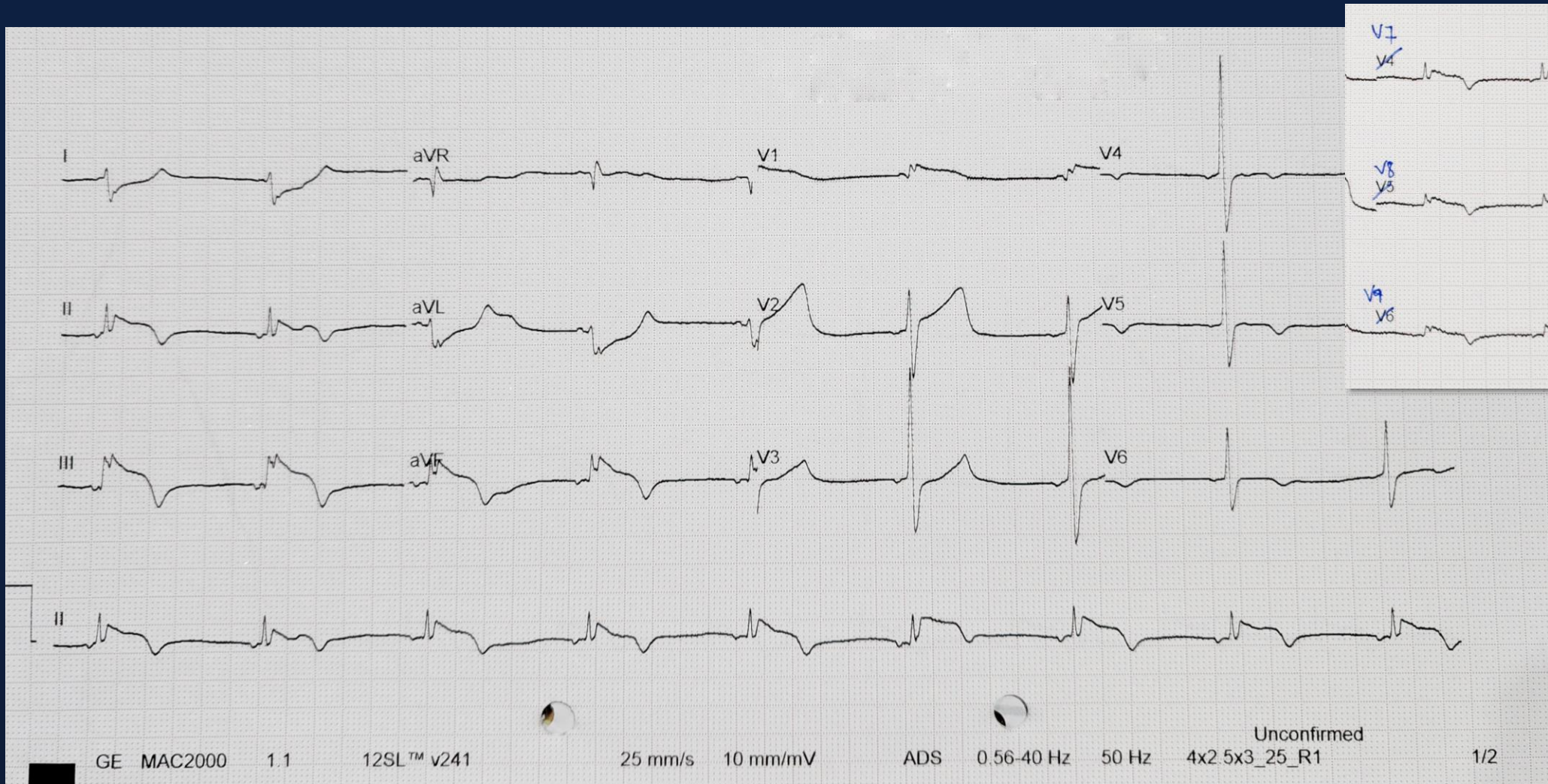
- I have no conflicts of interest to declare.

I was consulted by my colleague.

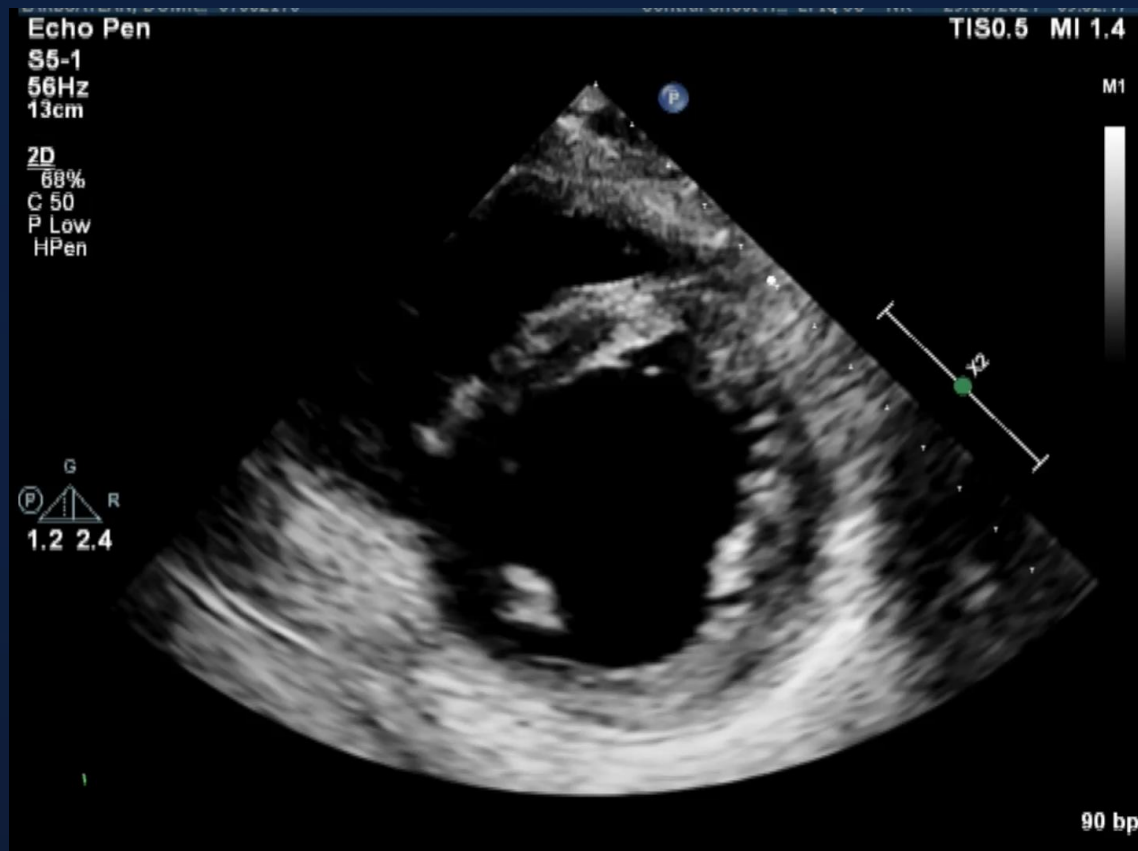


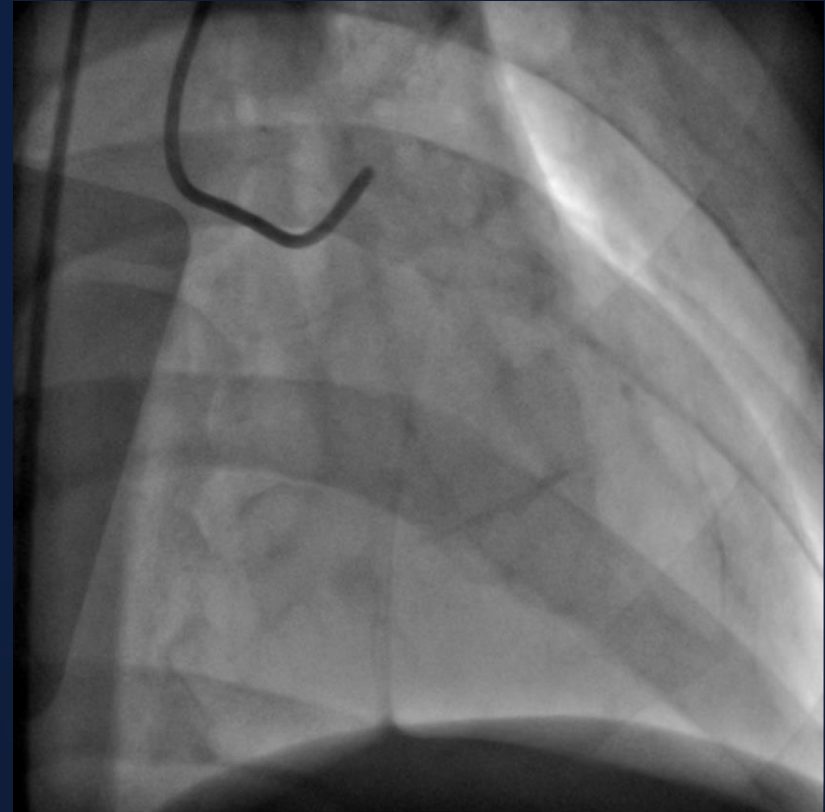
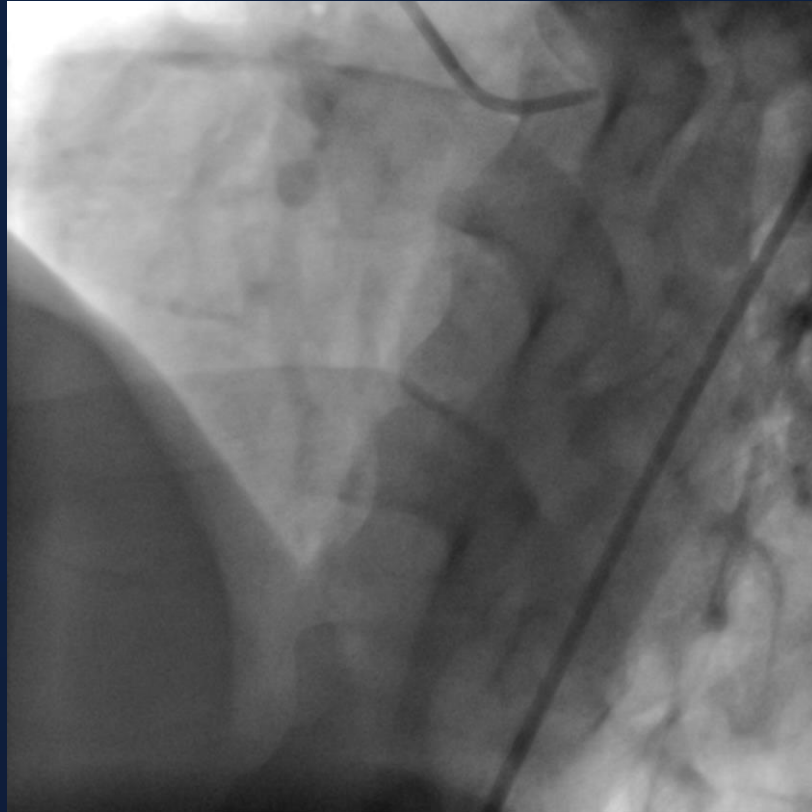
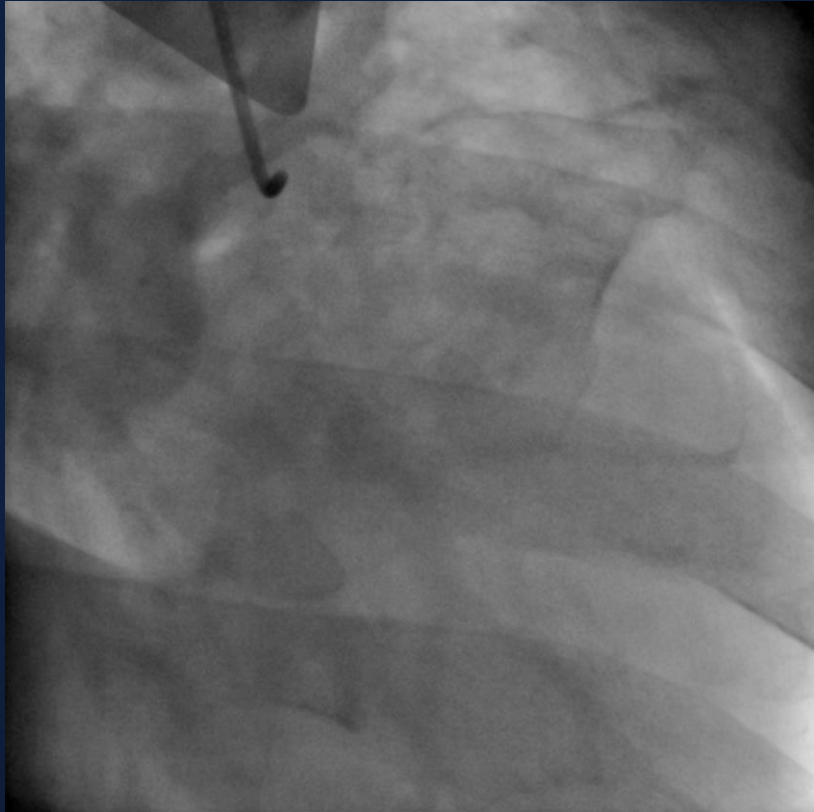
Clinical profile

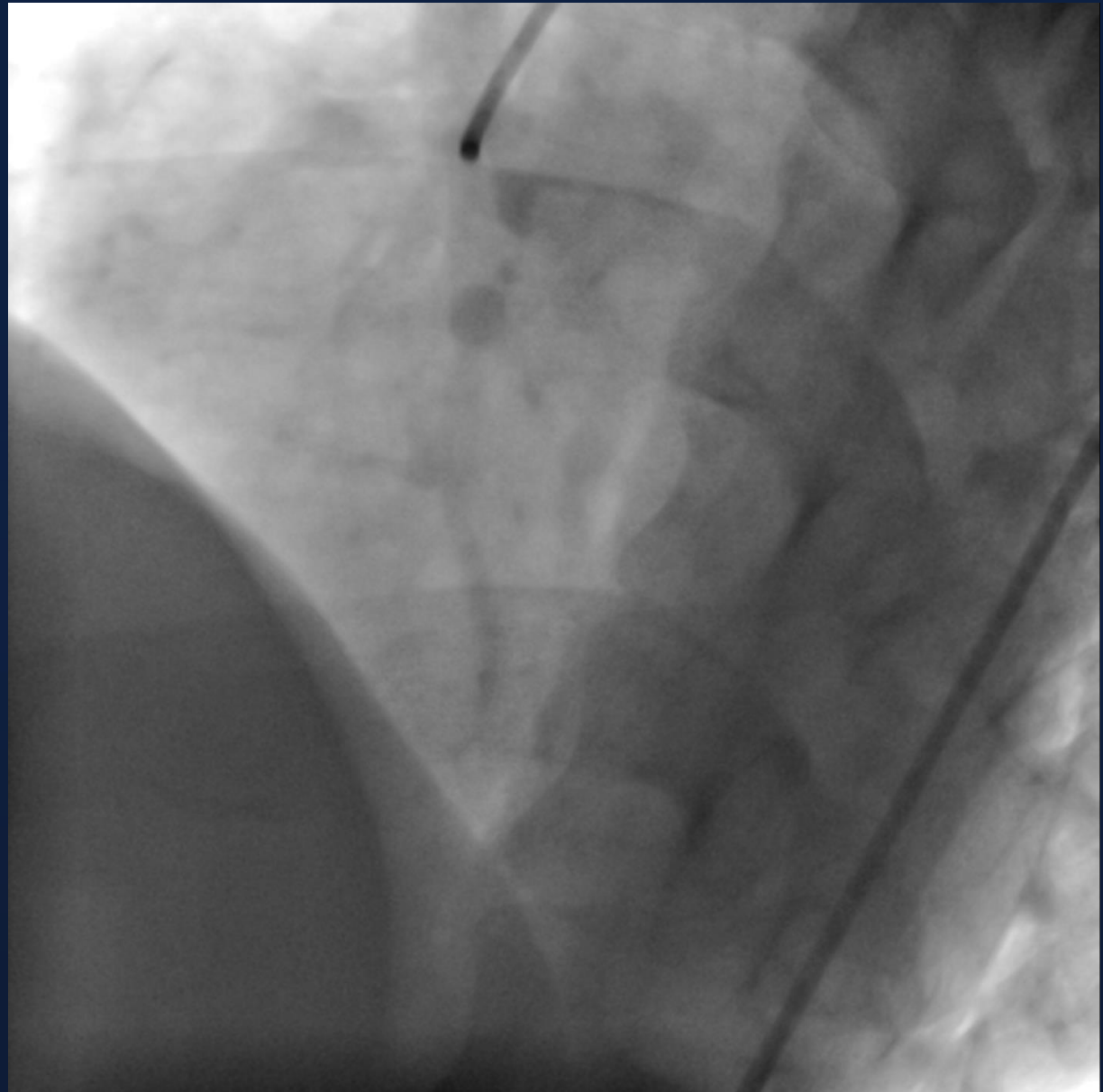
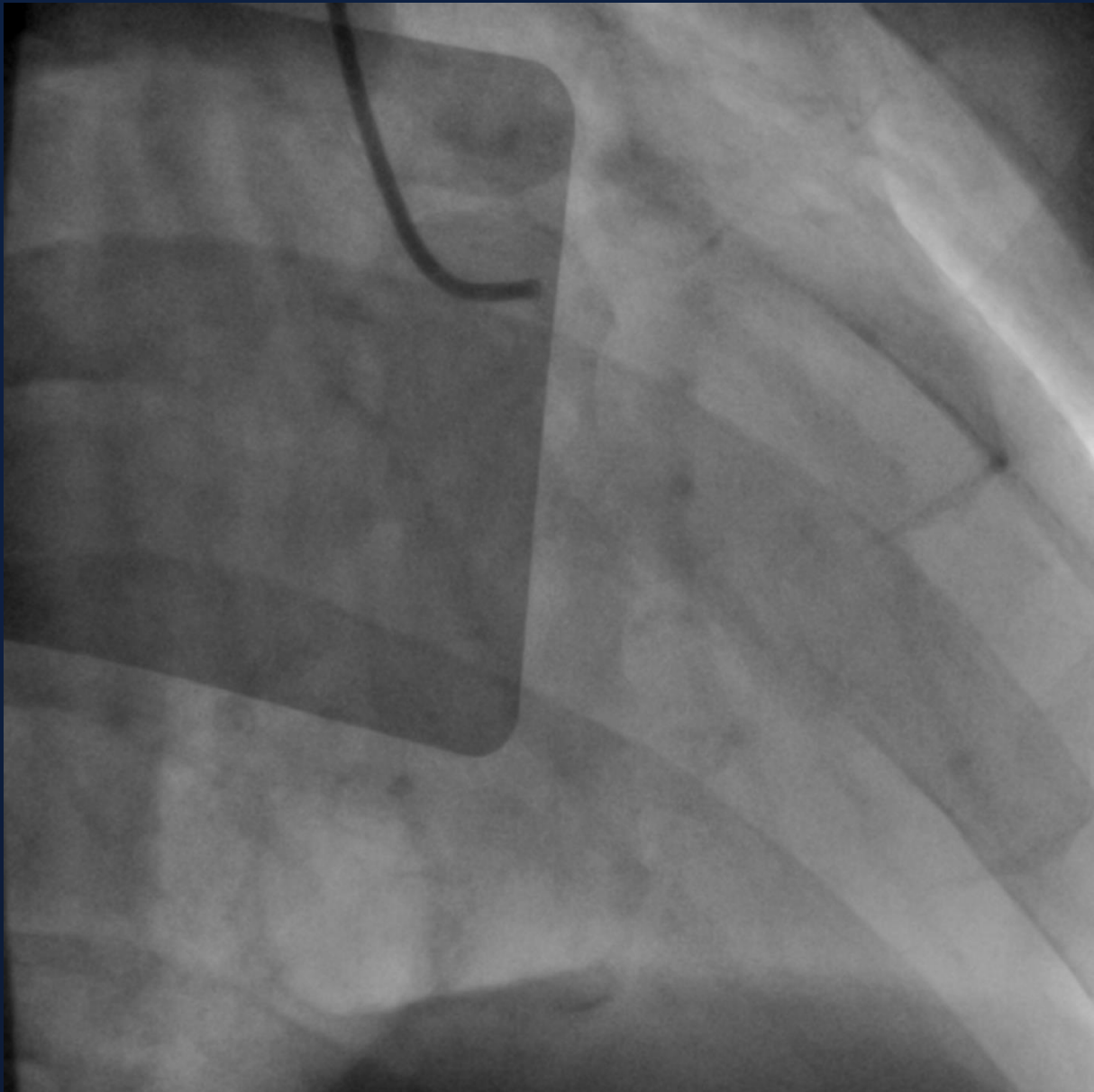
- M 44 y
- ASCVD risk : DM type 2 (loss f/u), Hx amphetamine used
- Clinical presentation :
 - 5 h PTA – acute chest pain and dyspnea
 - Intubation at the first hospital
- V/S :
 - BP 116/79 mmHg, P 60/min
 - Normal S1, S2, no murmur, normal breath sound
- Lab :
 - FBS 663 mg/dl, HbA1C 14%, serum ketone - negative
 - BUN 30.1 mg/dl, Cr 1.08 mg/dl, eGFR 83.03
 - Na 130 mmol/l, K 5.7 mmol/l, Cl 95 mmol/l, CO2 16 mmol/l
 - hsTropT 2623 pg/ml
 - Hct 42%, Hb 14.9 g/dl, Plt 223,000/mm²



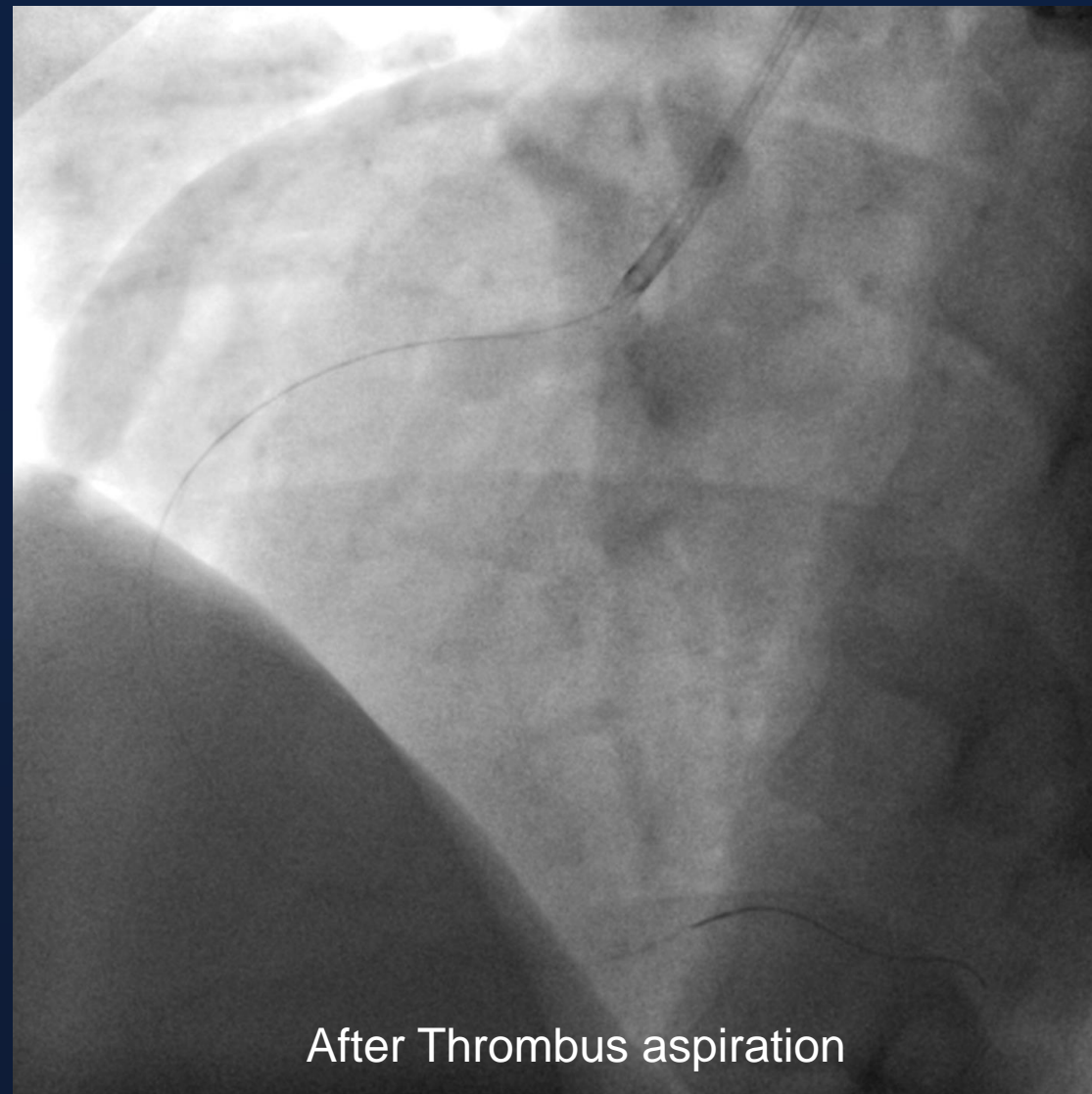
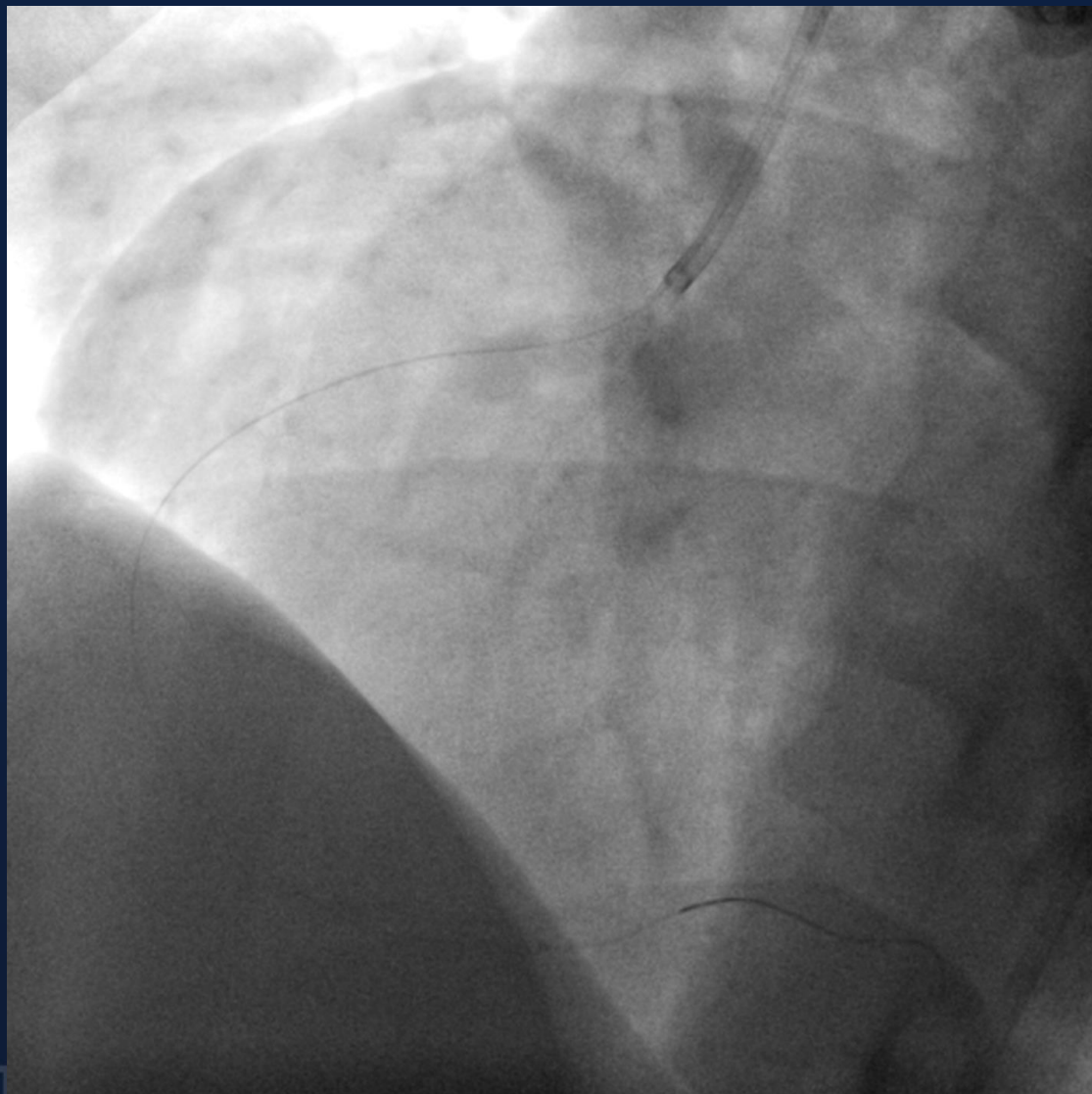
Echo





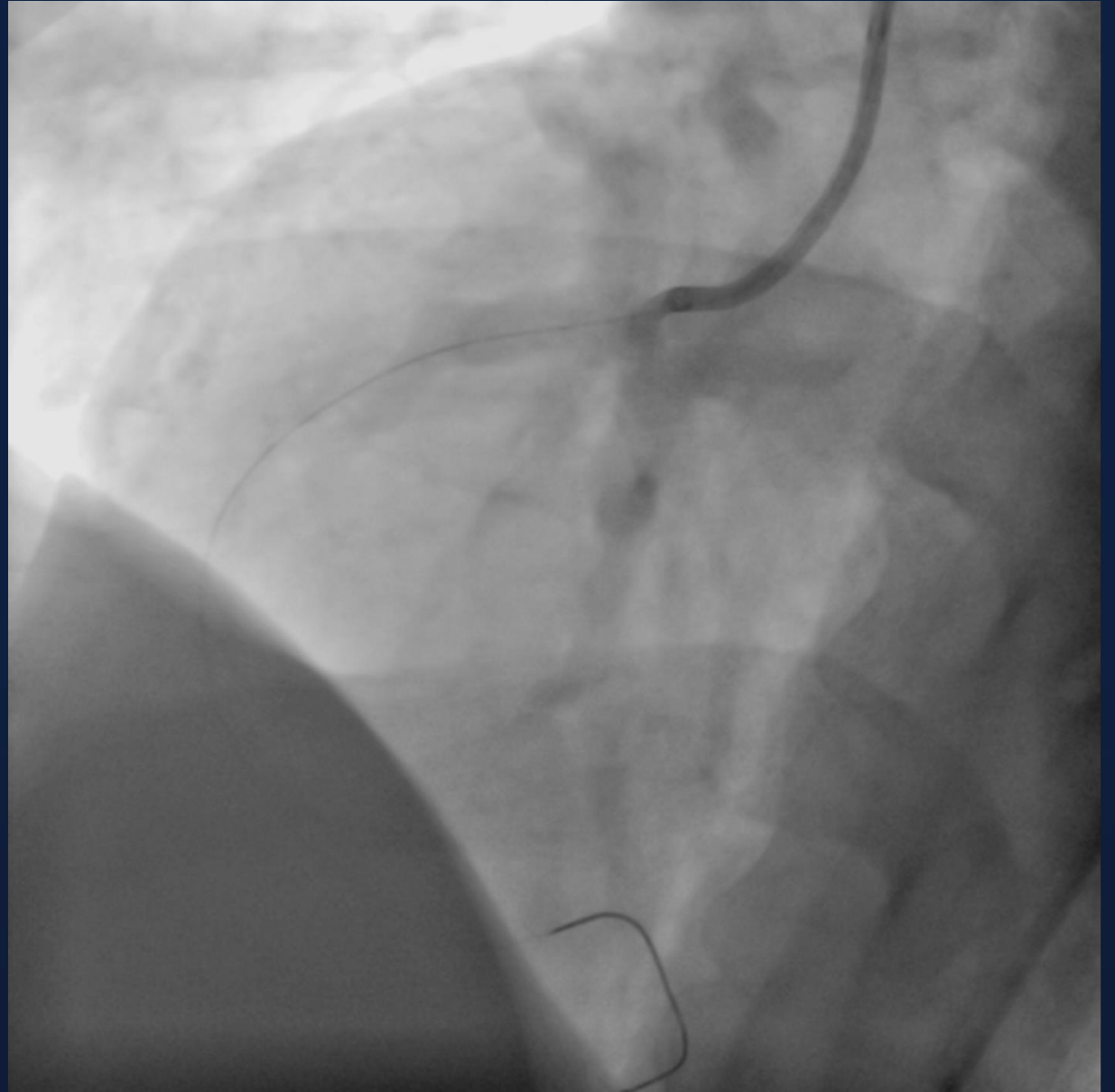
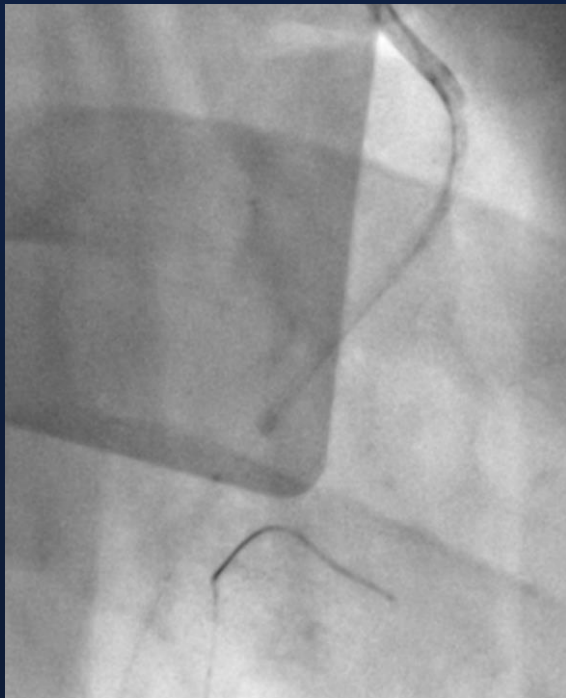
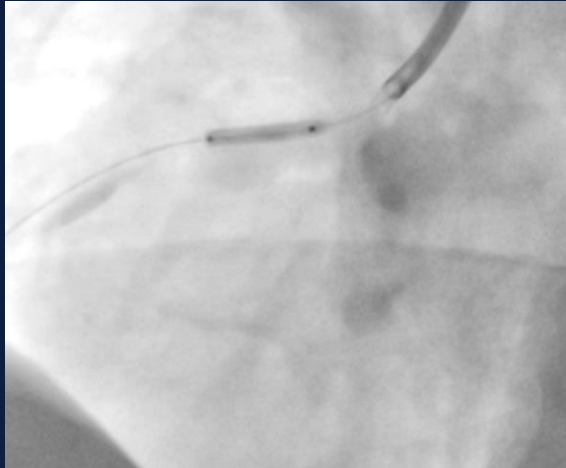


- SAL1 7Fr
- Heparin 6000 u (70 u/kg)



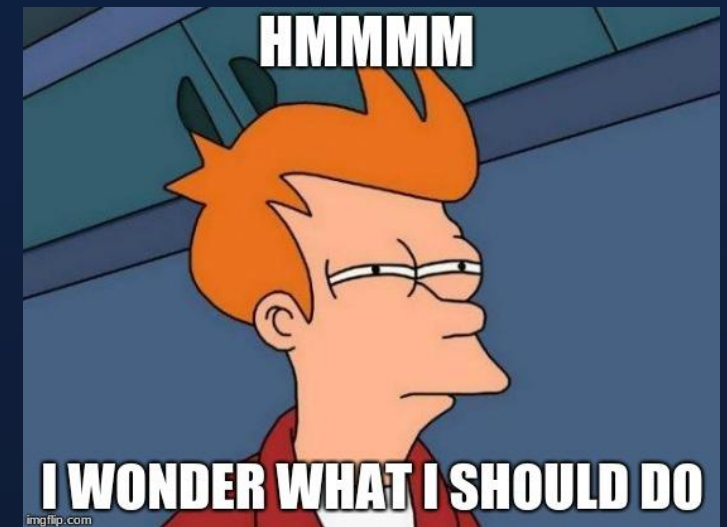
After Thrombus aspiration

- Predilated with SC 2.5 x 15 mm.
- GP IIb/IIIa inhibitor: Eptifibatide
- Aspirated through guide extension catheter (ST 01)
- Norepinephrine and IV load due to hypotension



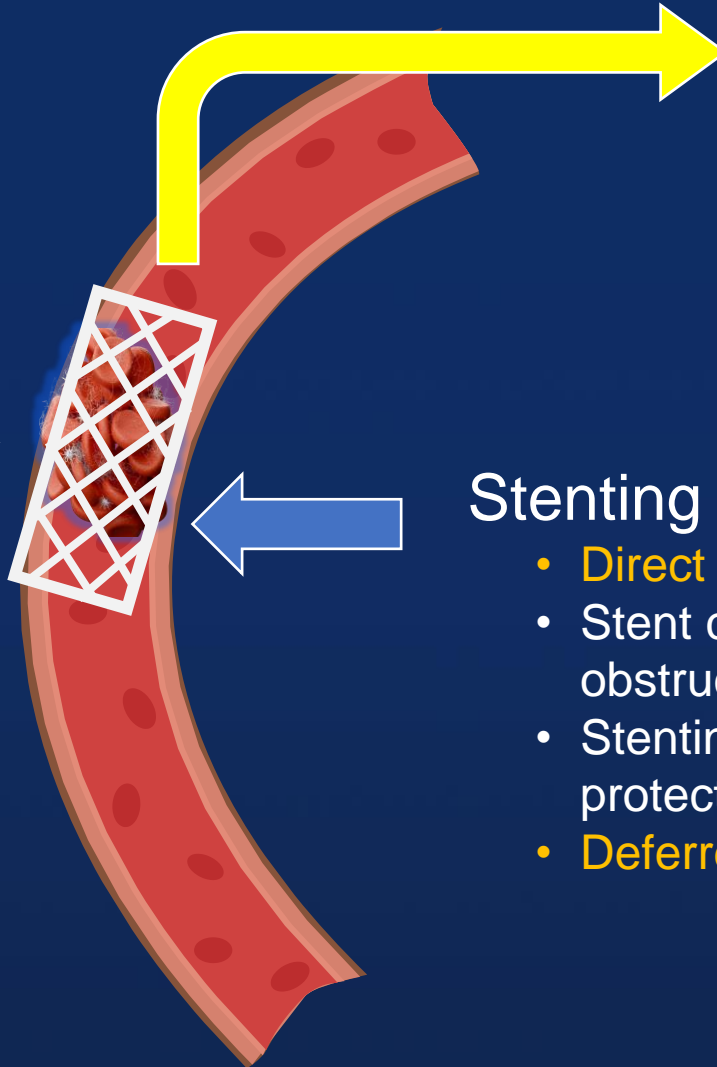
What should we do?

1. Continue thrombus aspiration and balloon dilatation
2. Mechanical aspiration (angiojet, indigo system)
3. IC thrombolysis
4. Excimer laser
5. Direct stenting
6. Deferred stenting
7. Stenting with distal embolic protection device



Medication

- DAPT (potent P2Y₁₂i)
- Anticoagulants
- GP IIb/IIIa inhibitors
- IC Thrombolysis



Thrombectomy

- Manual aspiration
- Mechanical aspiration
- Guide extension catheter
- Deep seated guiding catheter
- Eximer laser

Stenting strategies

- Direct stenting
- Stent cross obstructive thrombus
- Stenting with distal protection device
- Deferred stenting

Table 1: Thrombolysis in MI Grading for Thrombus Burden

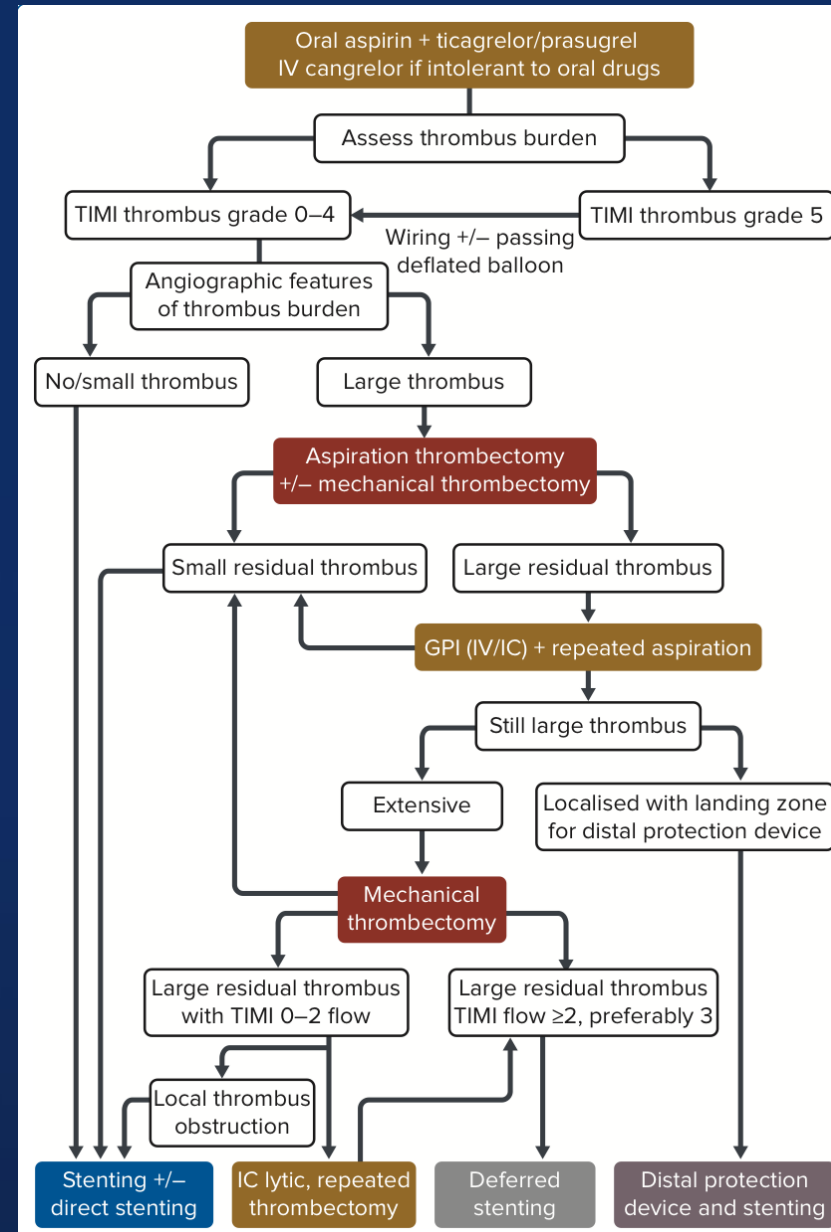
Grade	Characteristics
0	No angiographic evidence of thrombus
1	Possible thrombus: reduced contrast density or haziness, irregular lesion contour, a smooth convex meniscus at the site of a total occlusion suggestive but not diagnostic of thrombus
2	Definite thrombus, with greatest dimensions $\leq 1/2$ the vessel diameter
3	Definite thrombus, with greatest linear dimension $> 1/2$ but < 2 vessel diameters
4	Definite thrombus, with the largest dimension ≥ 2 vessel diameters
5	Total thrombotic occlusion

Source: Gibson et al. 2001.⁵

Table 2: Angiographic Features Indicative of High Thrombus Burden

- Cut-off pattern of occlusion
- Accumulated thrombus of > 5 mm in length proximal to the occlusion
- Reference lumen diameter of the infarct-related artery of > 4 mm
- An incomplete obstruction with an angiographic thrombus with the greatest linear dimension more than three times the reference lumen diameter
- Presence of floating thrombus
- Persistent dye stasis distal to the occlusion

Source: Yip et al. 2002.¹⁰



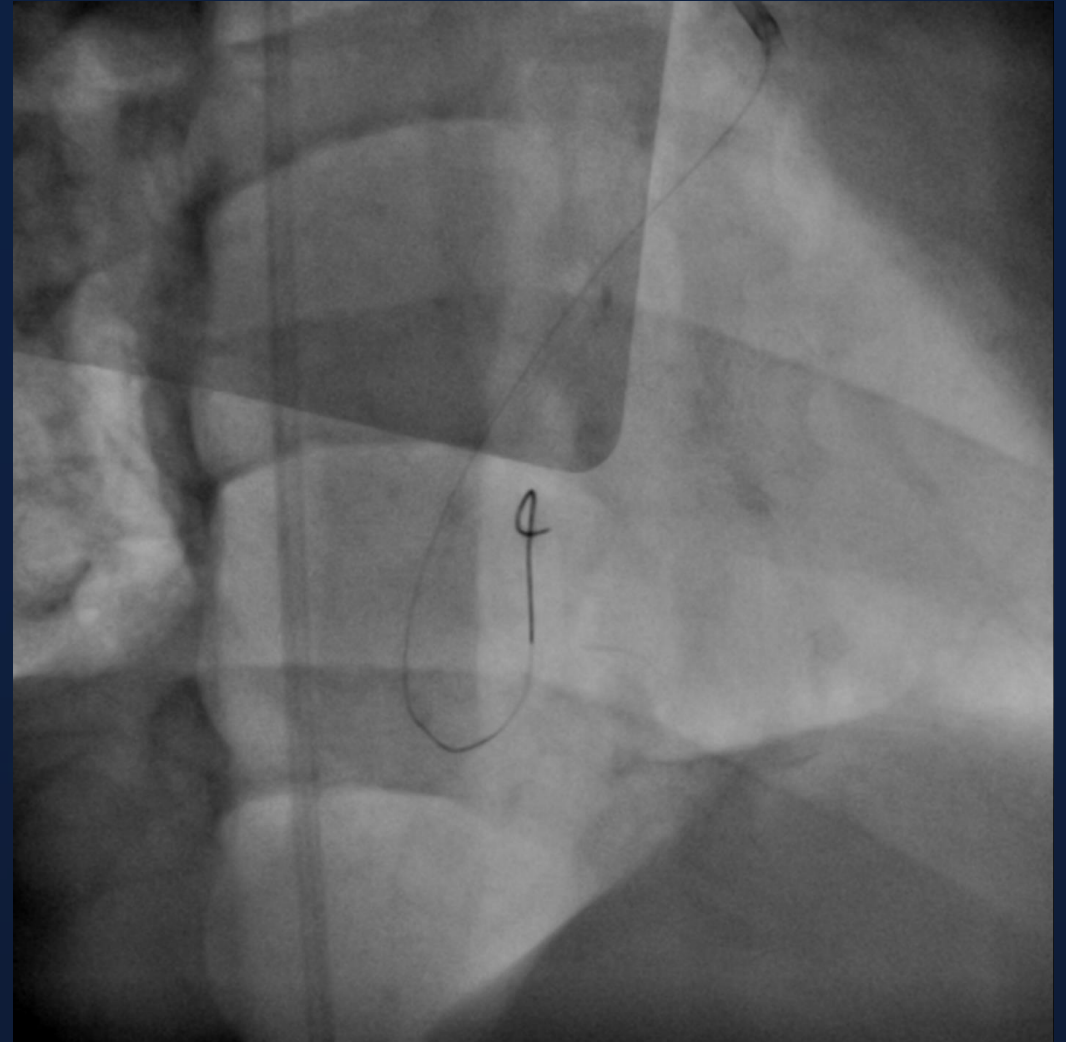
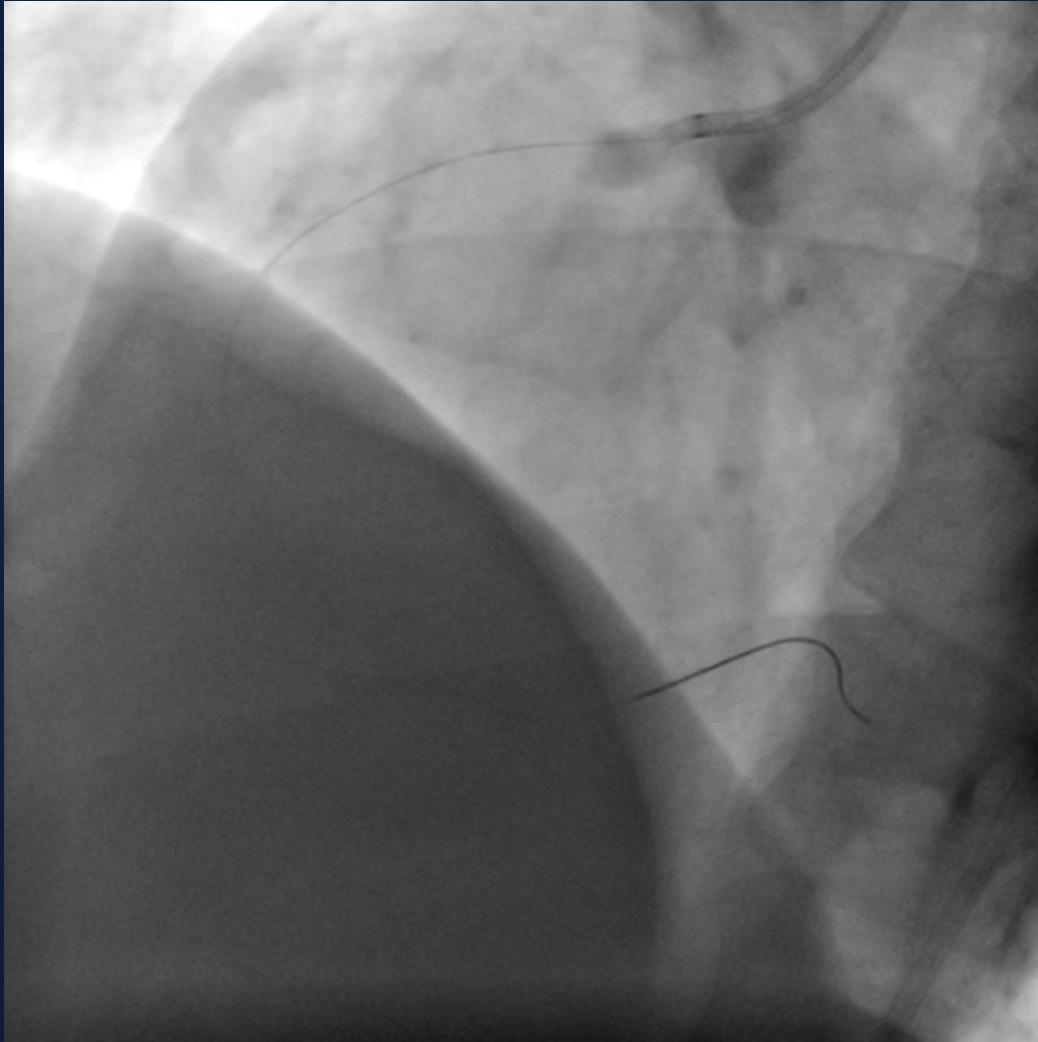
What should we do?

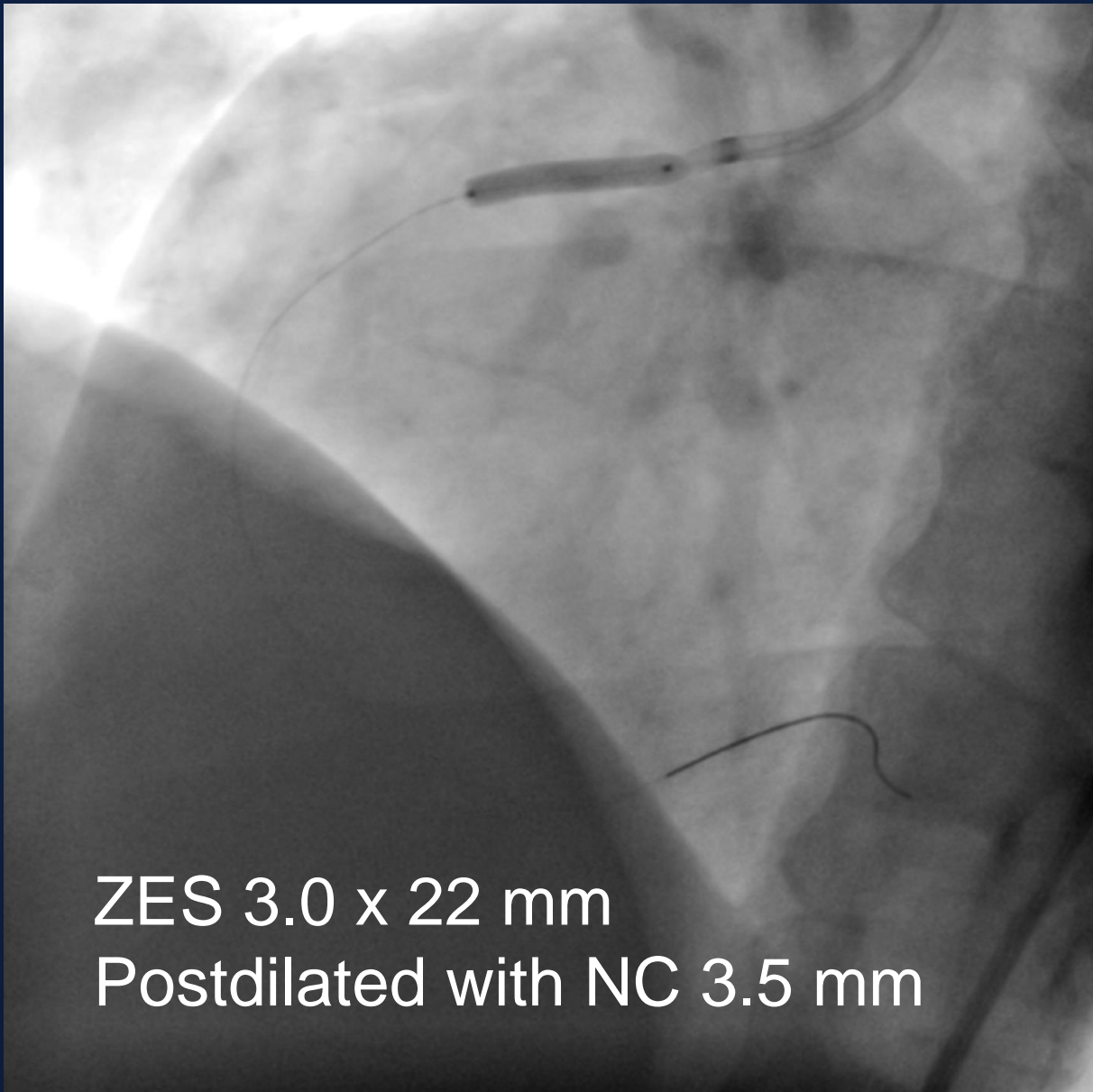
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Intracoronary Thrombolysis

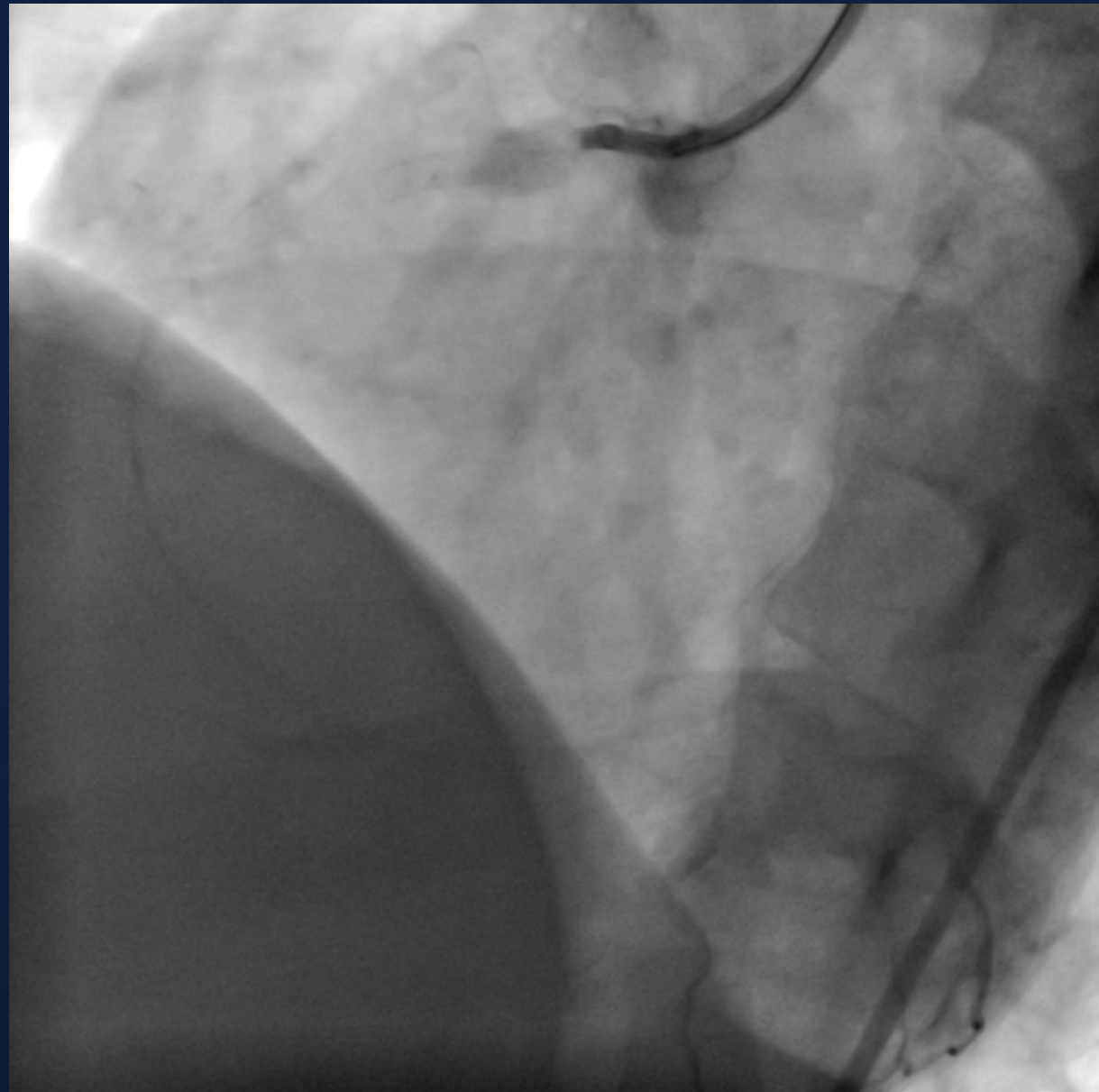
- SK : 250000 IU bolus (Circulation. 1985 Mar; 71(3): 562-70)
- rtPA : 5 mg ic bolus q 5 min, max 1/3 of parenteral dose (30 mg)
(European Heart Journal: Acute cardiovascular Care 2014, Vol. 3(3) 229 - 236)
- TNK : 5 mg ic bolus q 5 min, max 1/3 of parenteral dose (20-25 mg)
(Catheter Cardiovasc Interv. 2005 Nov; 66(3): 327-32)

After TNK 5 mg IC x 2 doses and thrombus aspiration





ZES 3.0 x 22 mm
Postdilated with NC 3.5 mm



Case summary and progression

- Onset 10:30
- FMC 15:41, contact CCIT 16:30, **Transfer time 17:55**
- FMC to Cathlab 18:47 (96 min)
- FMC to wire crossing 19:41 (120 min)
- Total ischemic time 551 min
- Procedure time 123 min (18:47 – 21:50)

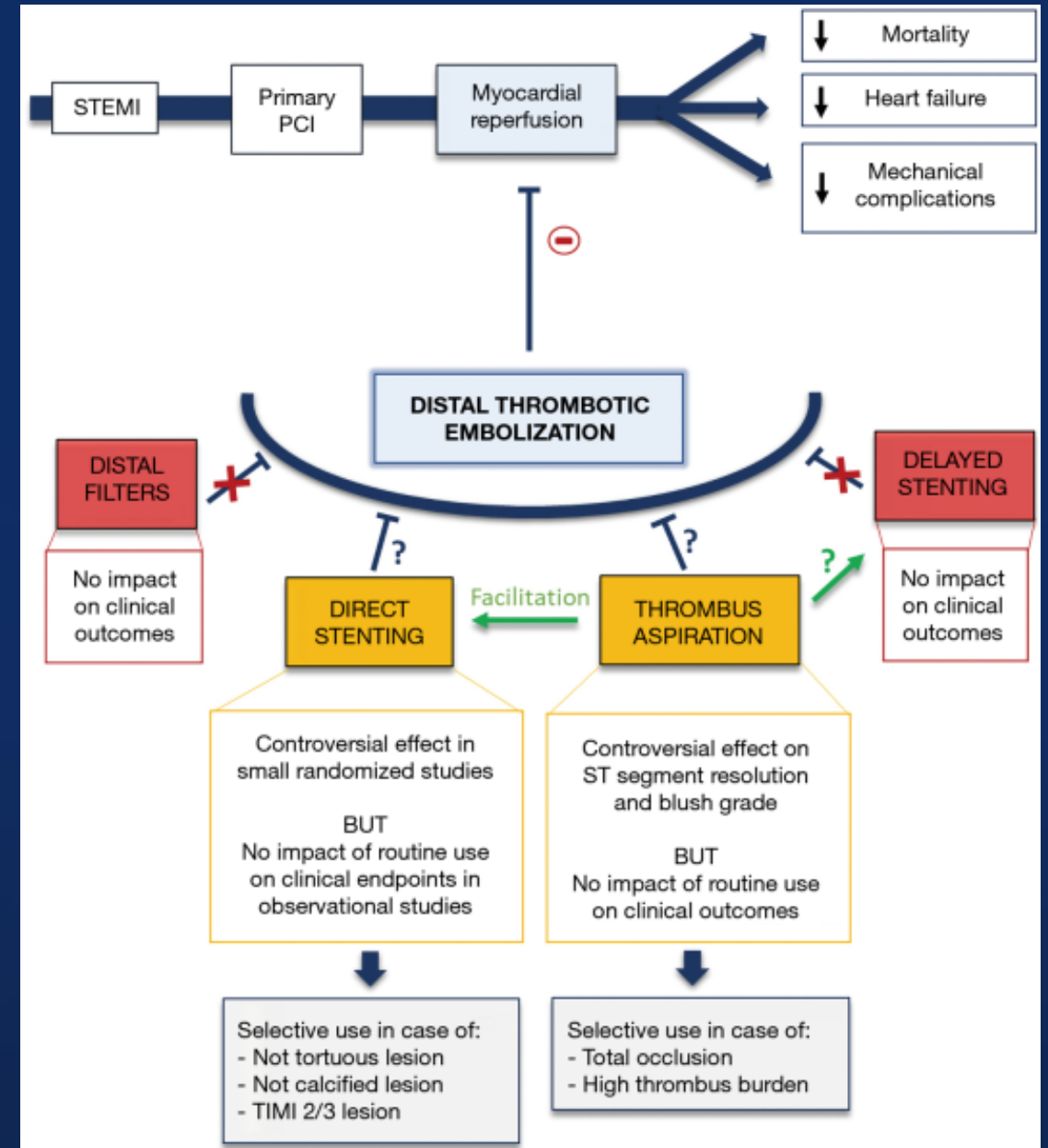
Case summary and progression

- Dx : Inferior wall STEMI
- DVD with successful PCI to RCA with thrombus aspiration, IC thrombolysis and DES
- Plan :
 - DAPT 12 m. then ASA and statin lifelong
 - Enoxaparin sc x 3 d.
 - Medication for LAD lesion
 - GDMT for HFrEF
- UGIB : EGD – mild gastritis

- HM :
 - ASA (81) 1x1 oral pc
 - Clopidogrel (75) 1x1 oral pc
 - Omeprazole (20) 1x1 oral ac
 - Atrovastatin (40) 1x1 oral hs
 - Enalapril (5) 1x2 oral pc
 - Carvedilol (6.25) 0.25x2 oral pc
 - Premixed insulin (70/30) 16-0-10 u ac

Discussion

- High thrombus burden in STEMI
 - Limit flow from thrombus occlusion
 - No Reflow phenomenon
- Prevent No reflow
 - Short door to balloon time
 - Thrombus management
 - High potency antiplatelet
 - Optimal blood glucose
 - Optimal blood pressure



Conclusion

- Thrombus is often the 'enemy' in STEMI management.
- **Evaluation of thrombus burden** is essential to select the proper strategy.
- There are various ways to fight the enemy.
 - **Thrombectomy**: manual or mechanical aspiration, guide extension catheter, deep seated guiding catheter, Excimer laser
 - **Pharmacological agents**: DAPT (**potent P2Y₁₂ antagonist**), anticoagulants, GP IIb/IIIa inhibitors, IC thrombolysis
 - **Stenting strategies**: Direct stenting, stenting with distal protecting device or deferred stenting
- Most of these strategies is not supported by clinical data so used different strategies selectively and appropriately.