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# ***Transient Ischemic Dilatation on Nuclear Study – FFR and IVUS Guided Left Main Stenting***

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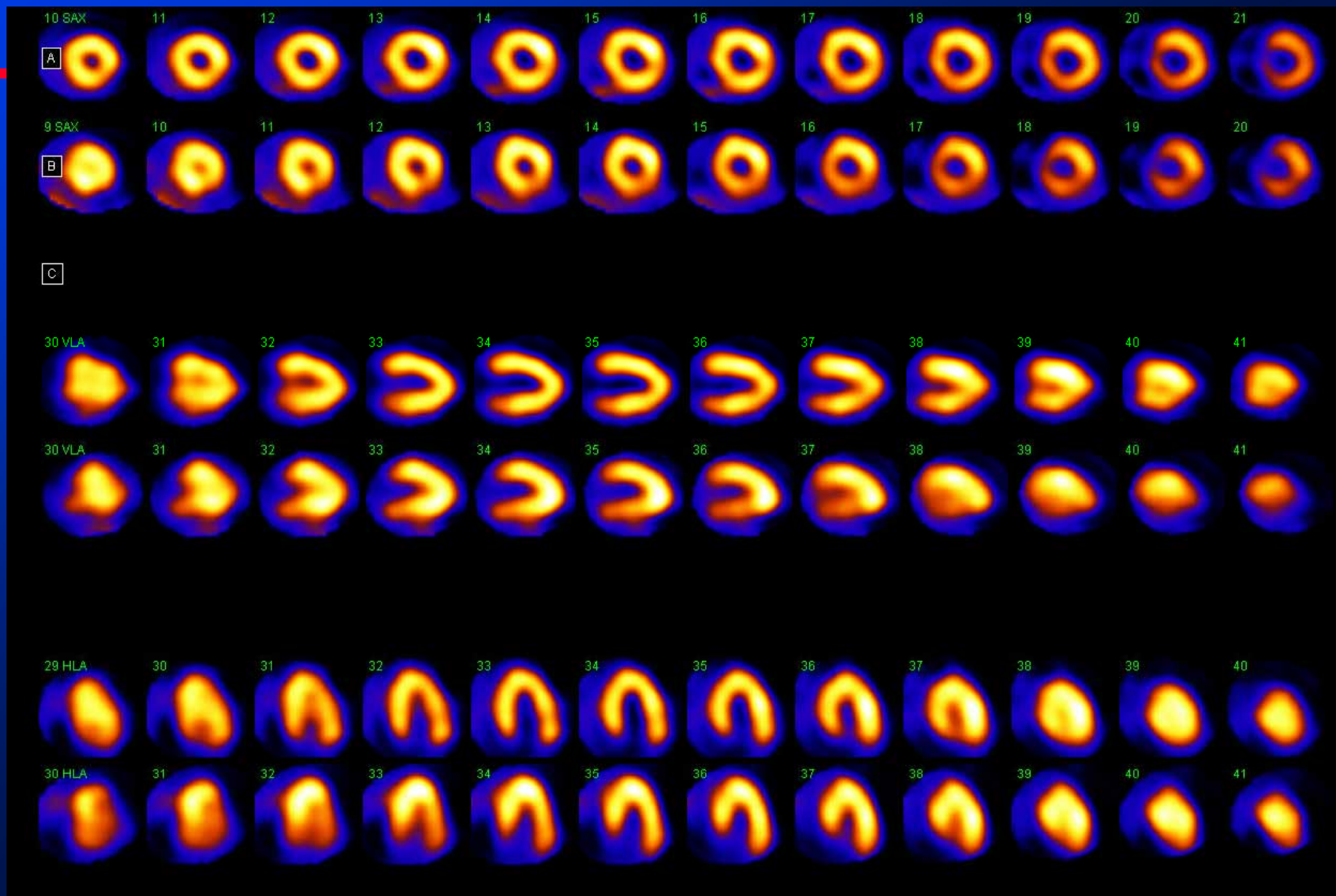
Tan Tock Seng Hospital, Singapore

December 2013

# *History - I*

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- 66 year old Malay lady – diabetes, HTN, lipids
- Prior stent in the mid RCA
- Underwent dobutamine myocardial perfusion study for symptoms of dyspnea on exertion



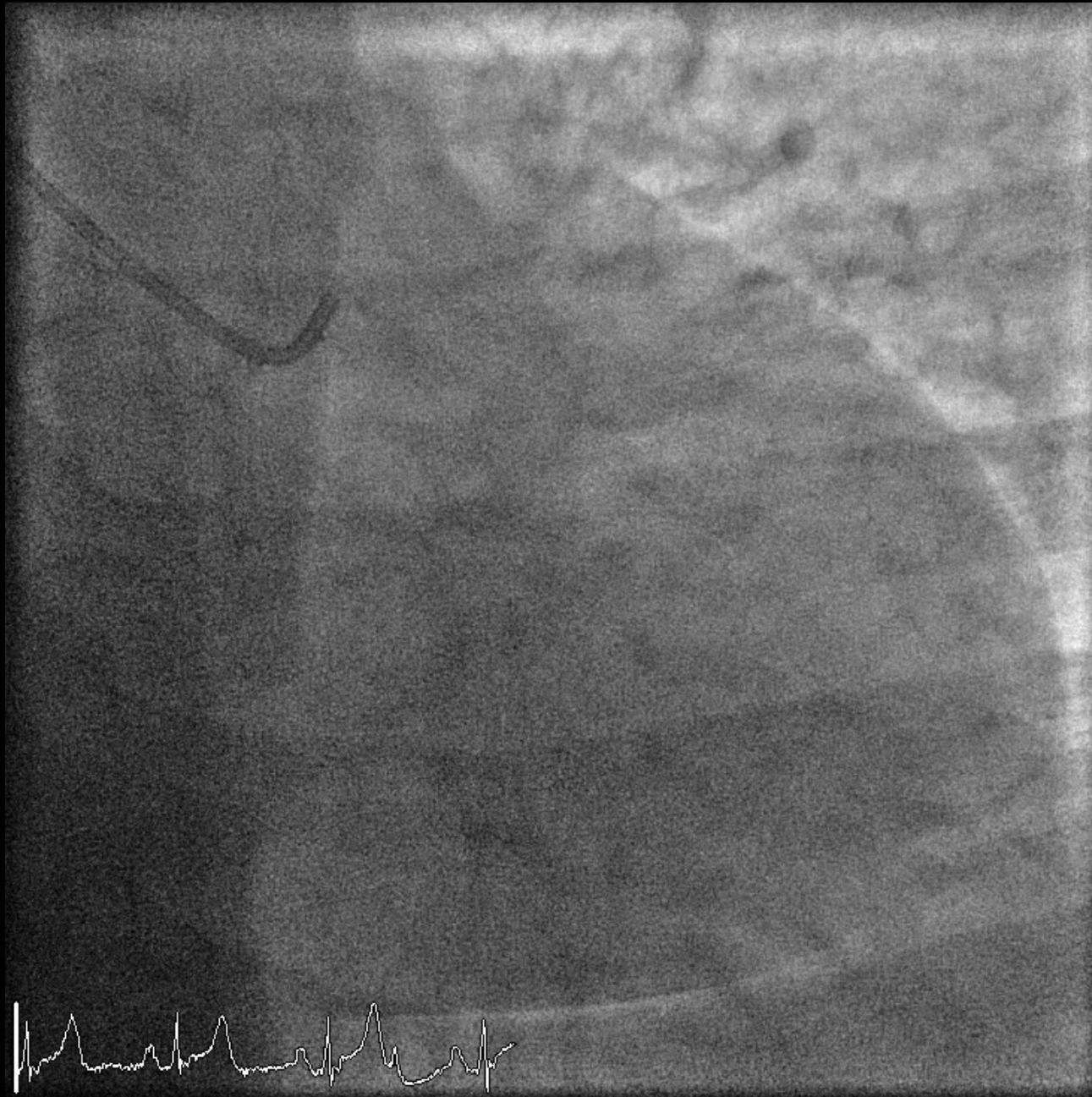
**TID ratio 1.56**

**Gated EF > 60%**

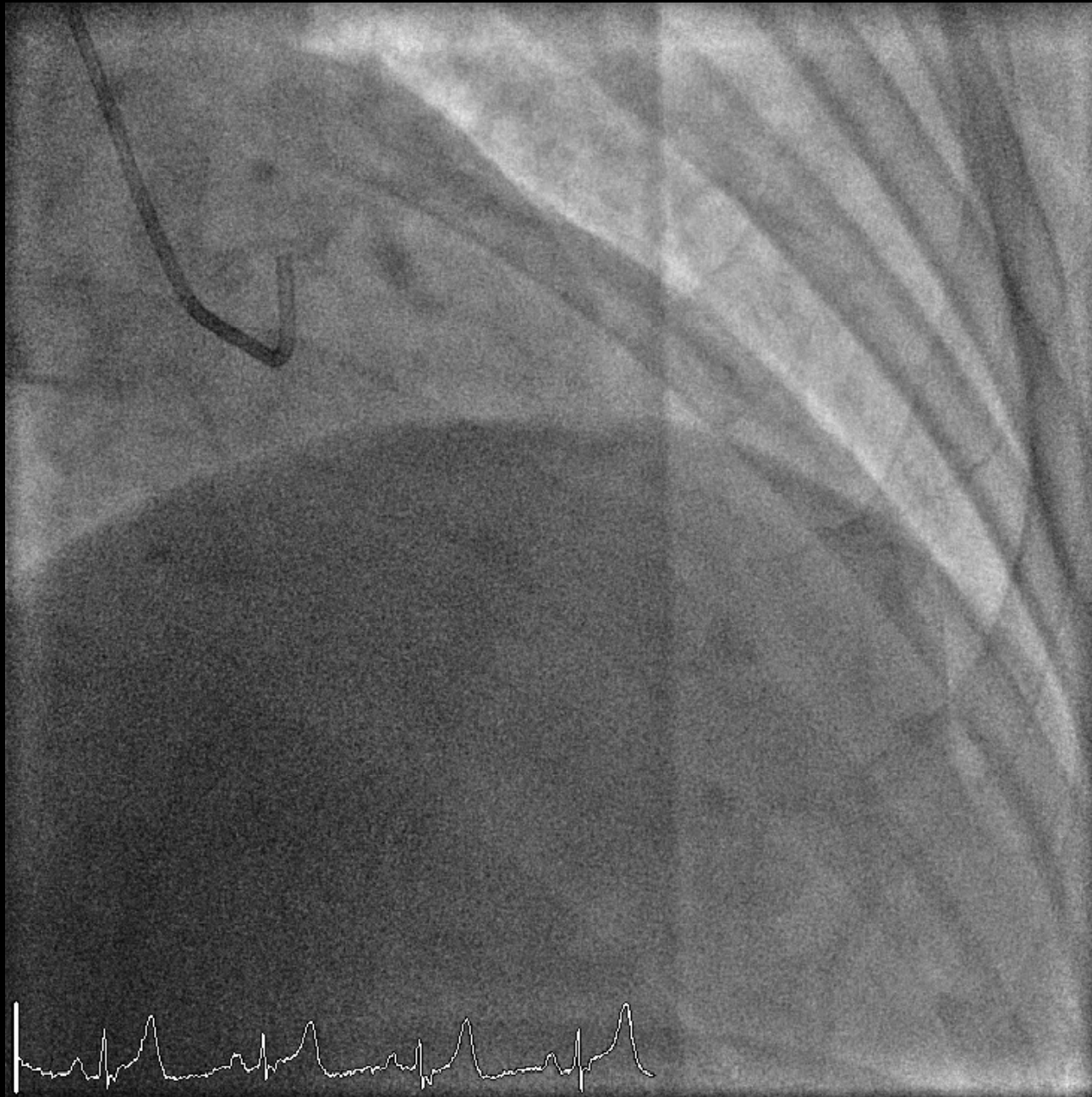
# *History - II*

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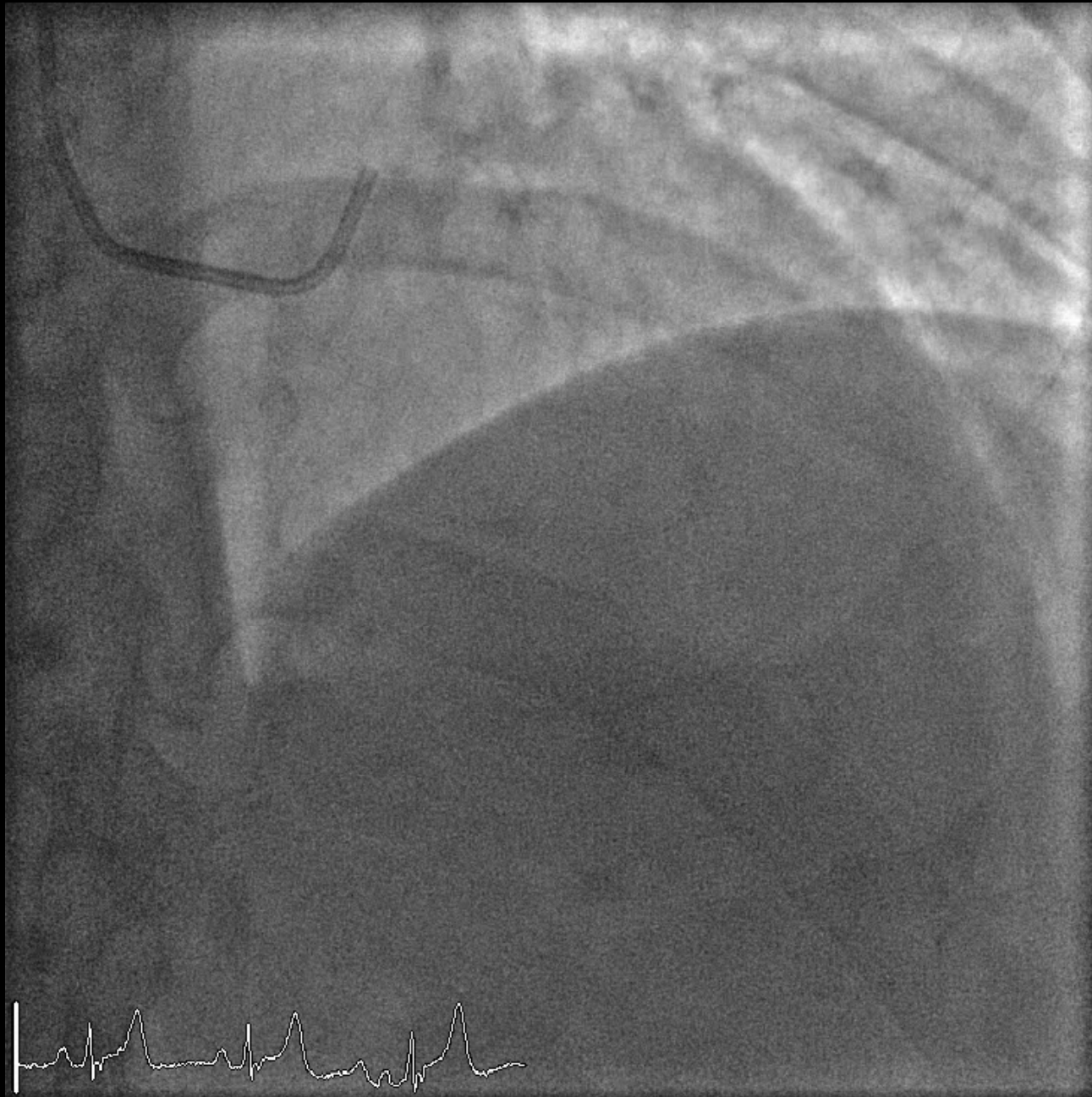
- Due presence of T1D and symptoms, patient was brought to catheterization laboratory



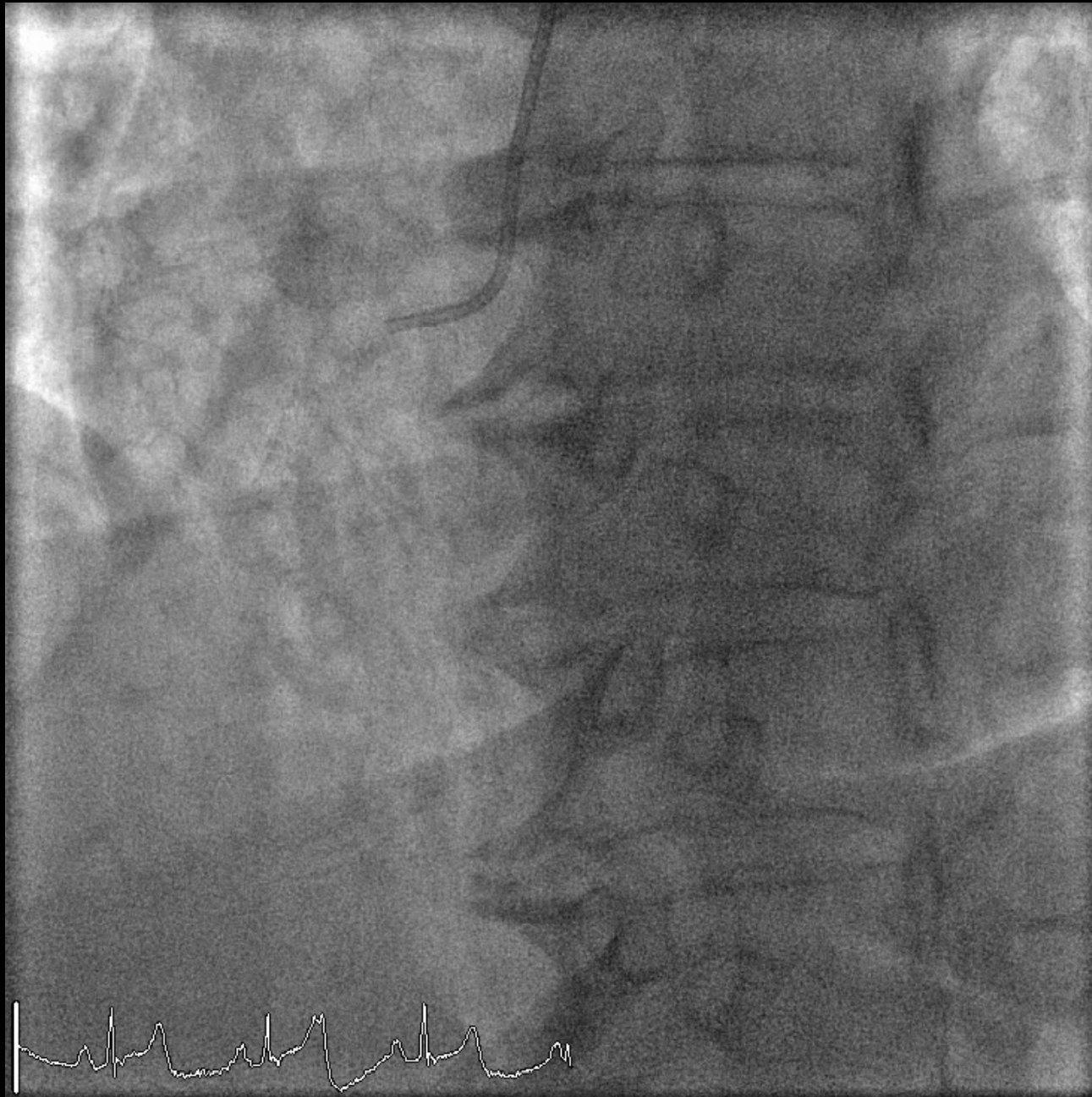
- Right radial approach
- Intraarterial UFH 2000 U+ NTG 200 mcg
- 6F JL 3.5, JR4 diagnostic



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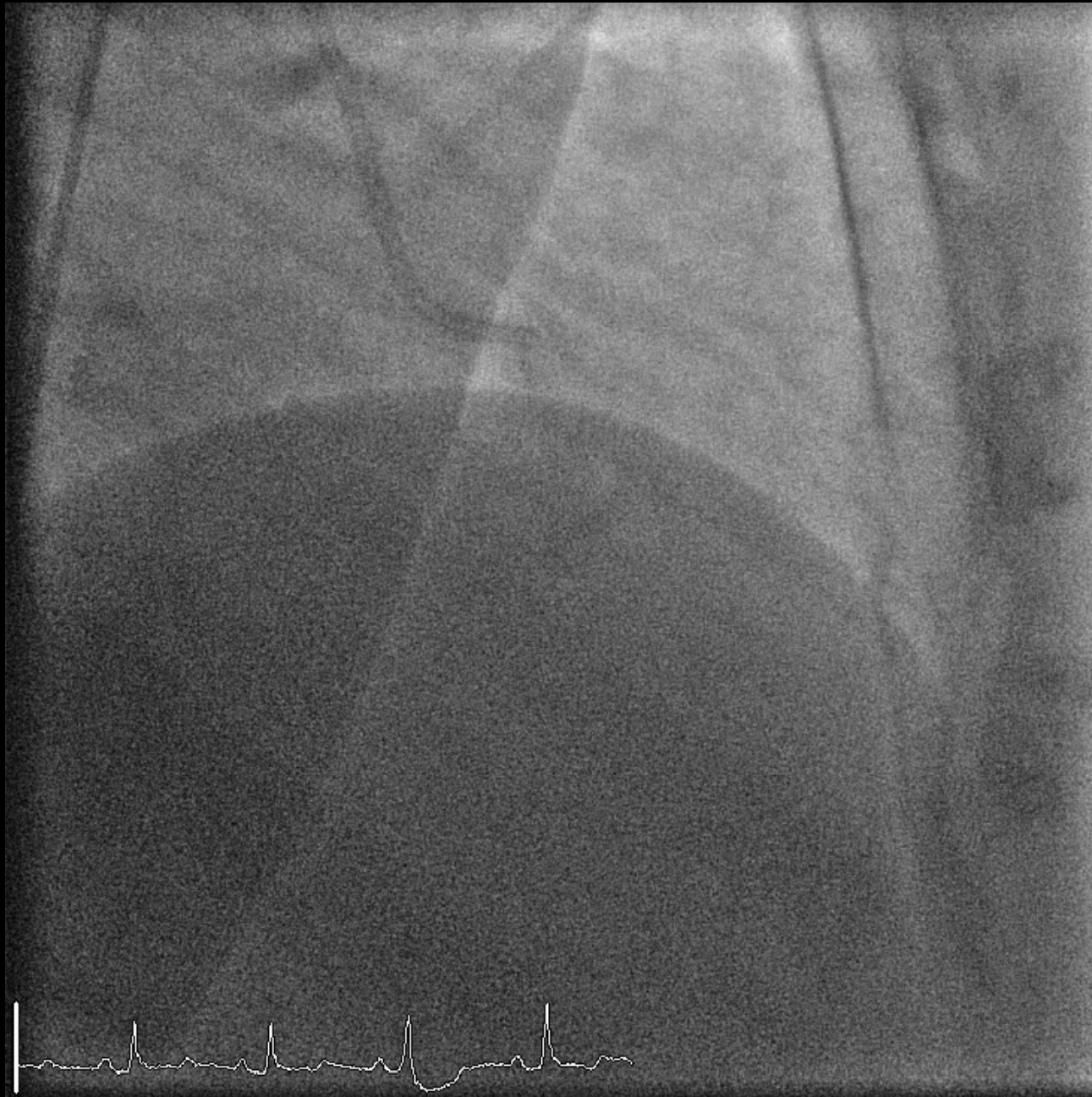


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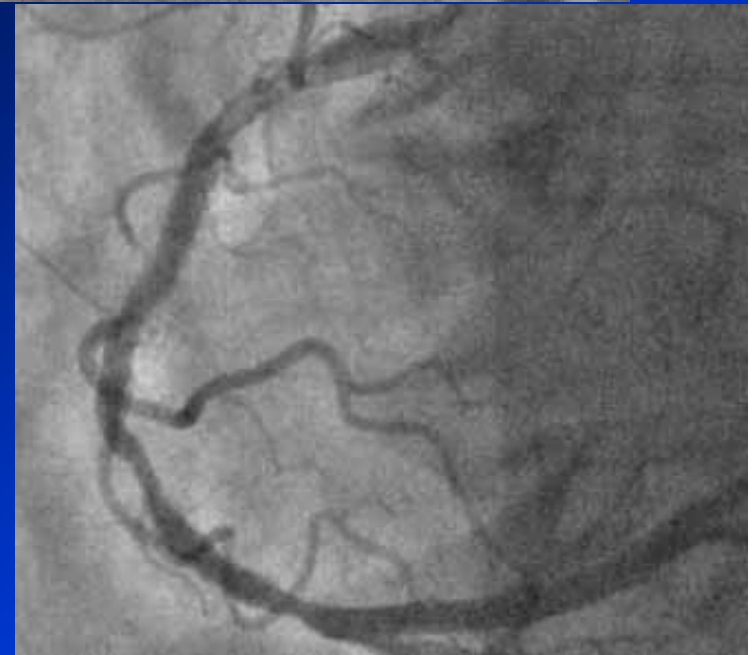


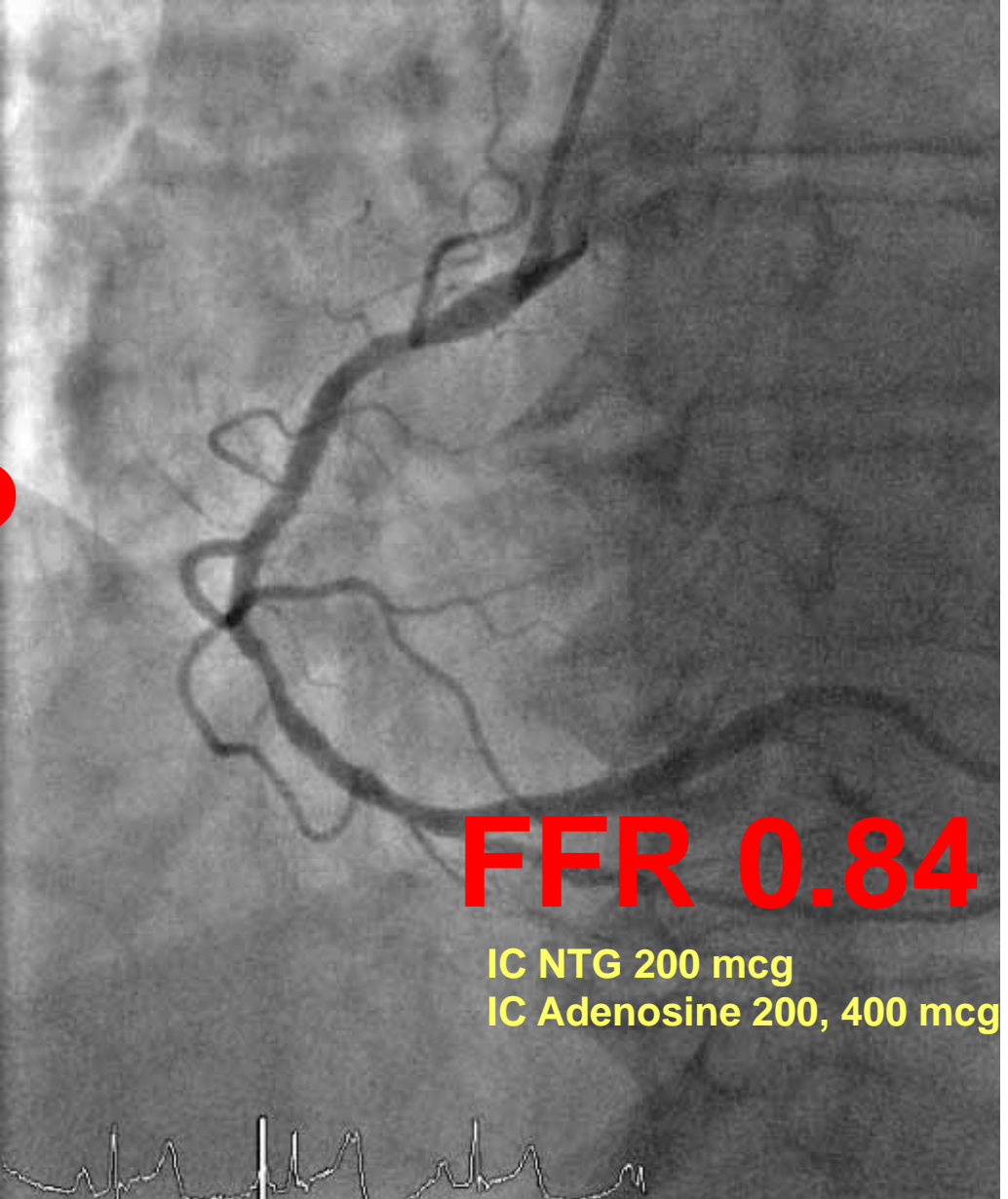
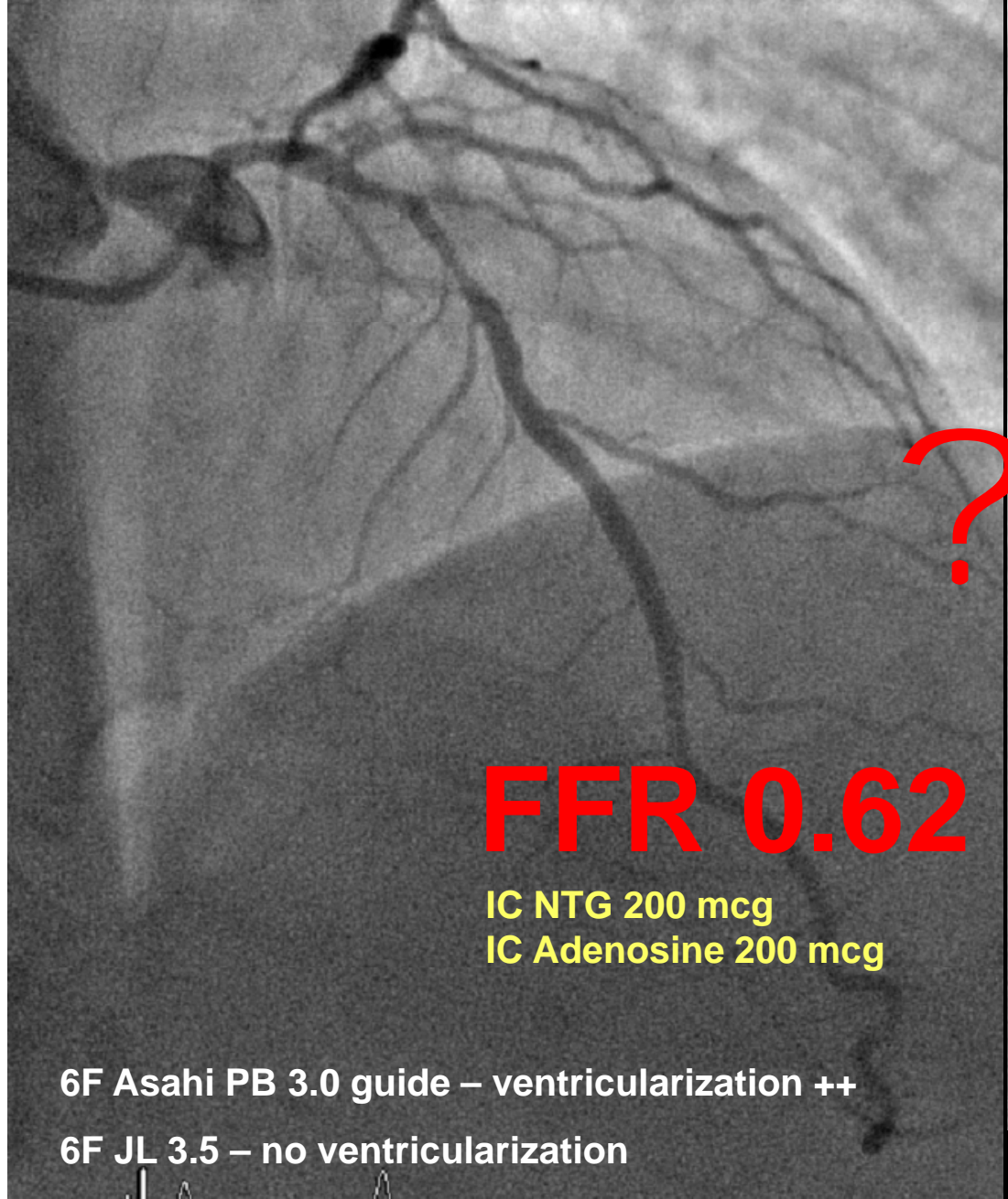
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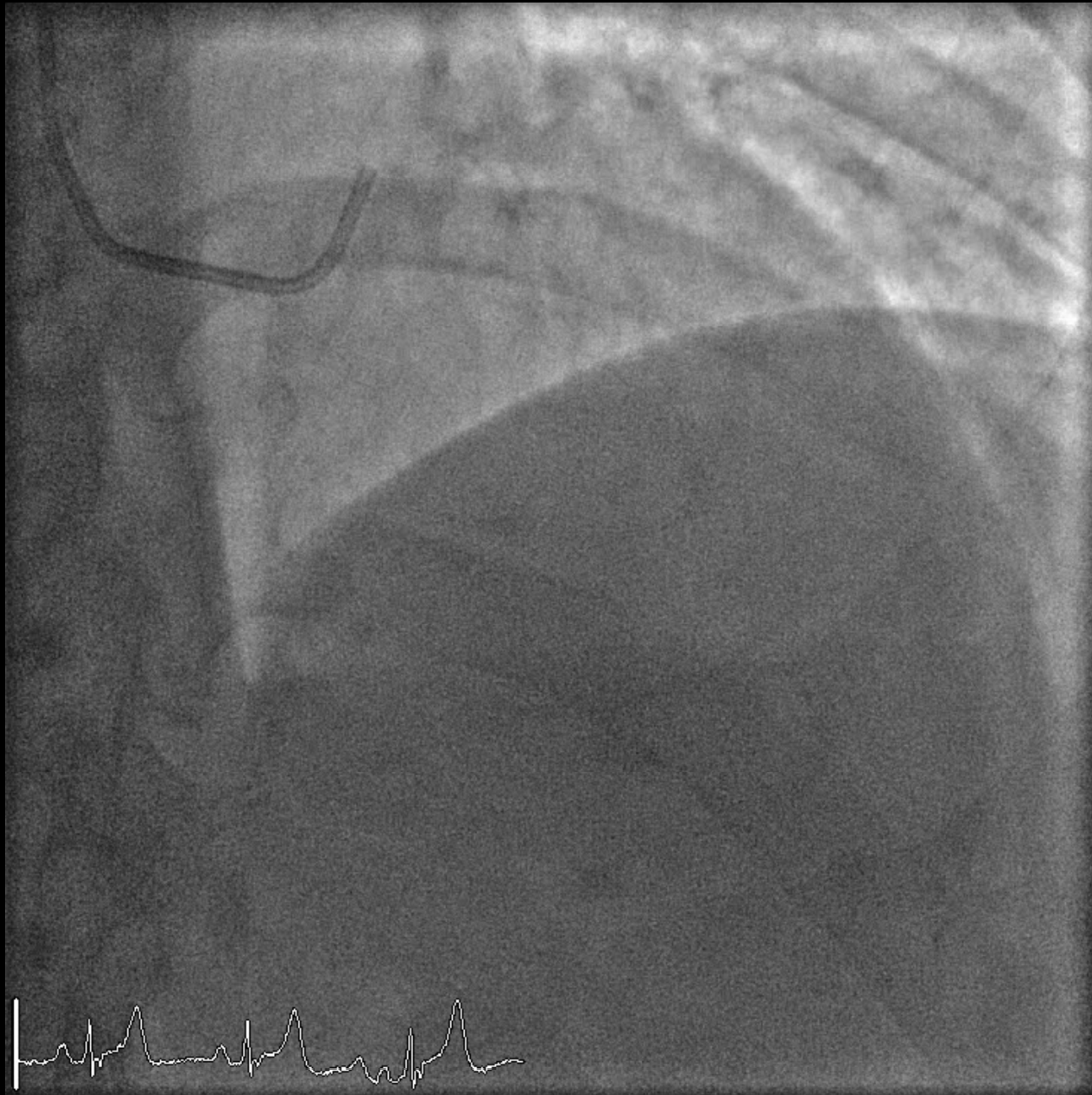
# *What would you do ?*

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- A. Stent the RCA only
- B. Stent the LAD only
- C. Stent both the RCA and LAD
- D. Functional assessment
- E. CABG







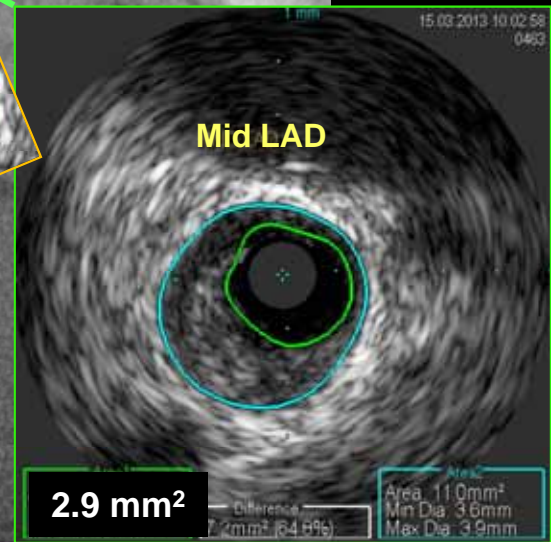
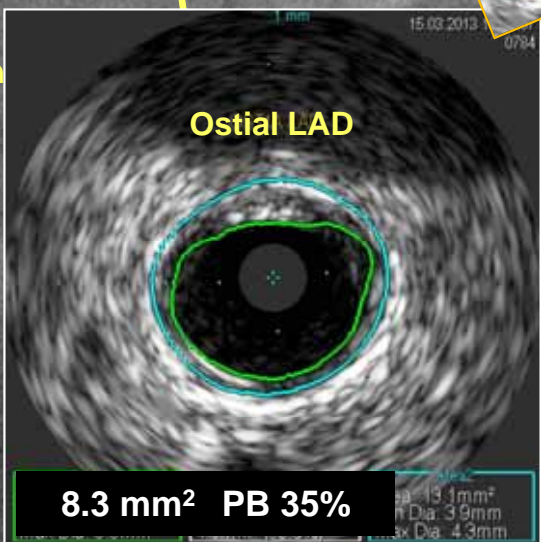
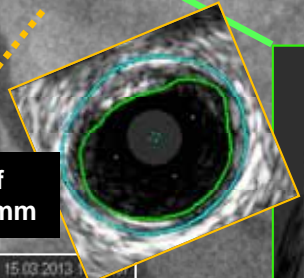
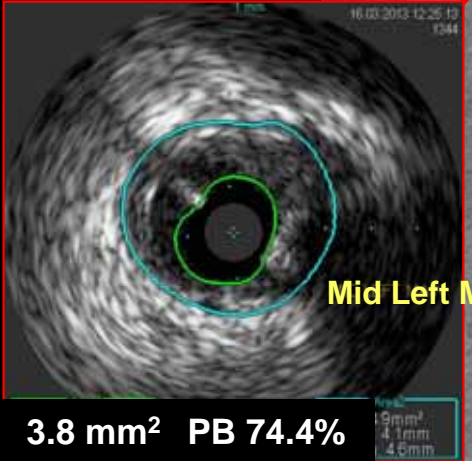
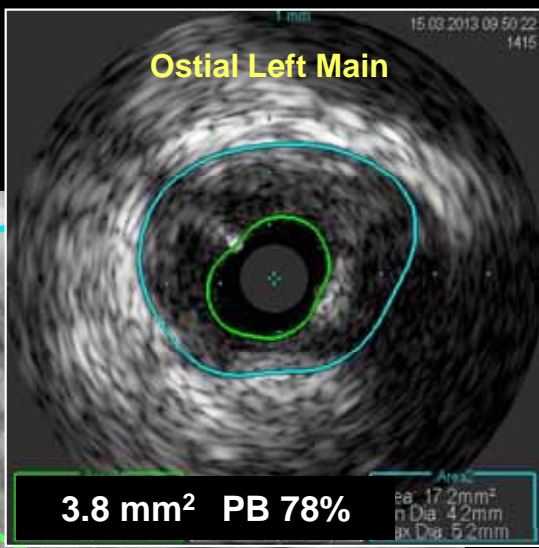
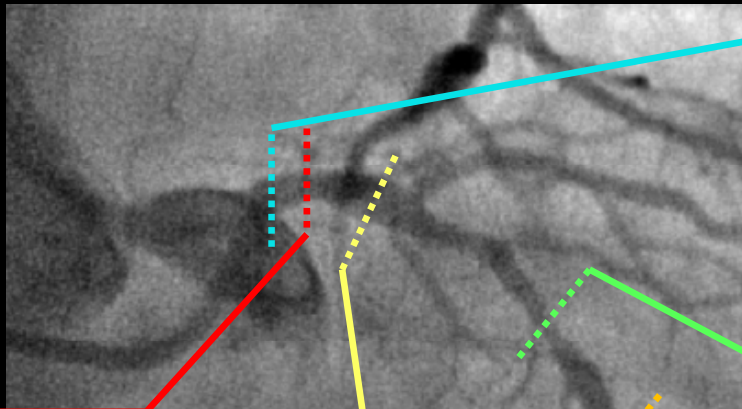
**Recap**

# *Now that LAD FFR is +ve, what would you do ?*

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- A. Stent the prox-mid LAD
- B. Stent the LAD and left main
- C. IVUS then decide
- D. CABG





# *What would you do ?*

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- A. Stent the prox-mid LAD
- B. Stent the LAD and left main
- C. CABG

# Decision Making & Strategy

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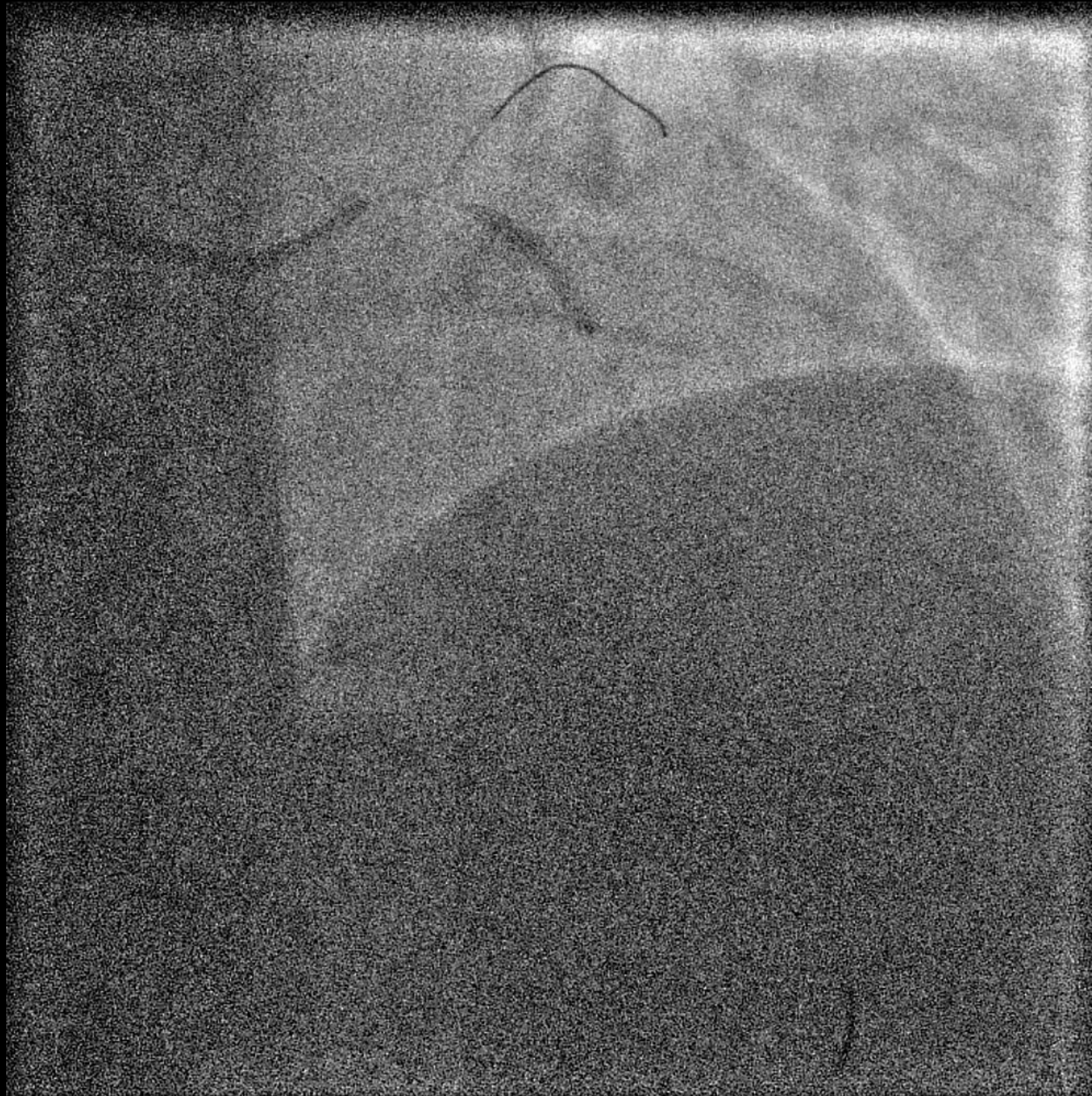
- In view of significant left main disease CABG considered – patient absolutely not keen
- In view of large plaque burden in left main and high likelihood of patient returning with progression, decided to stent all the way to the left main
  - Another option would have been to stent the LAD and recheck FFR
  - As LCx relatively small, simple cross-over technique



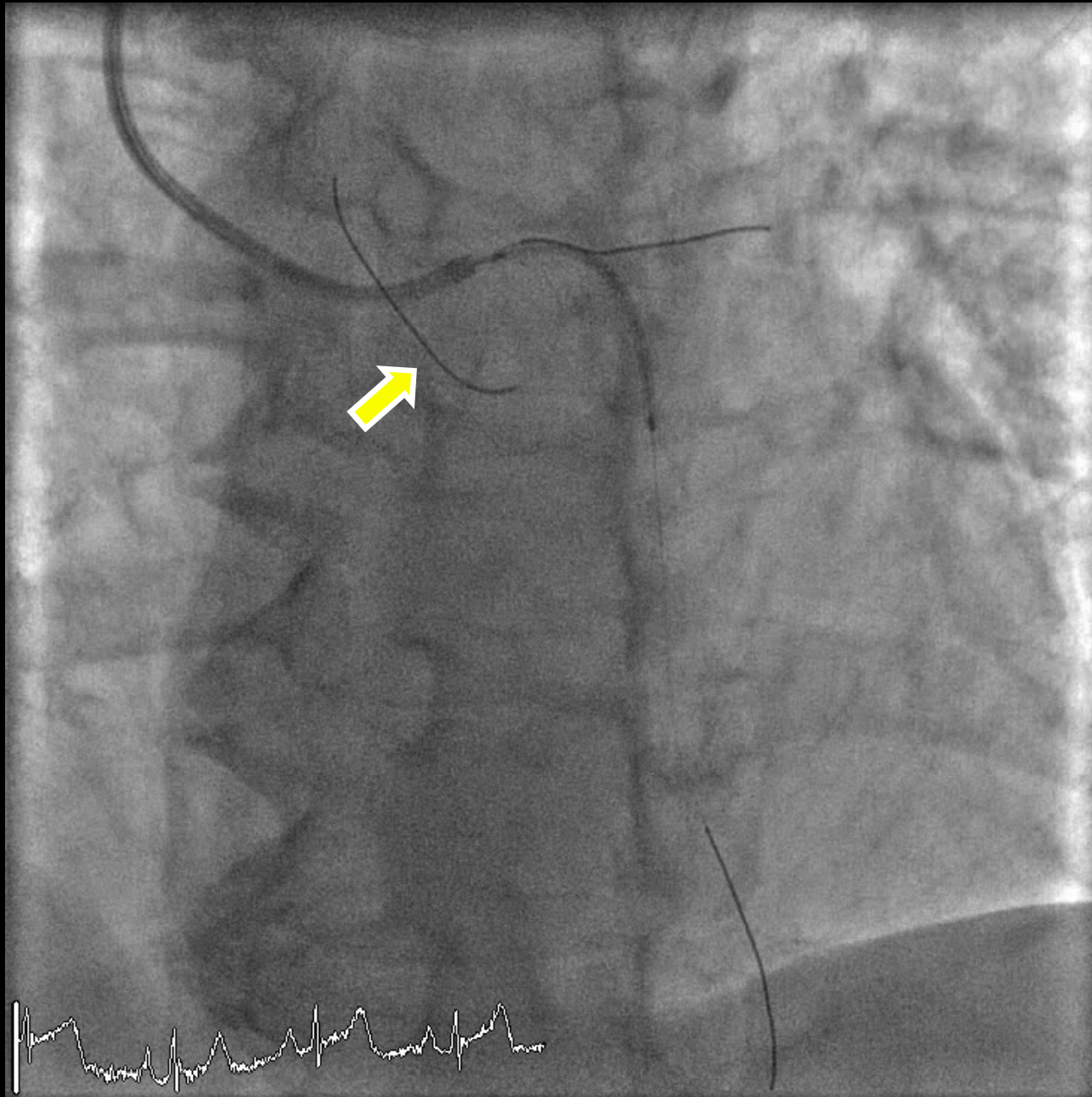
# *Pharmacology*

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- Ticagrelor 180 mg loaded
- Additional UFH given intra-arterially



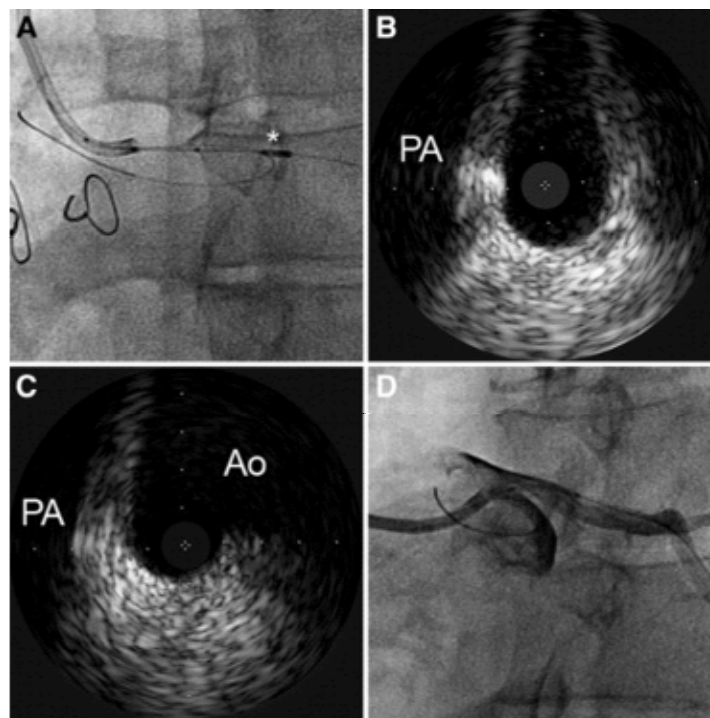
- Pressure wire swapped for Runthrough floppy
- LCx wired with Sion wire
- LAD and left main dilated with
  - Trek 2.25 x 15
  - NC Trek 3.5 x 15



- Xience 3.5 x 38 mm DES deployed from ostium of LM to mid LAD
- Used “sepal” wire technique
  - Additional wire in aorta to prevent guide from being “sucked in” during stent withdrawal
- LAO cranial view

## From: Optimizing Outcomes During Left Main Percutaneous Coronary Intervention With Intravascular Ultrasound and Fractional Flow Reserve: The Current State of Evidence

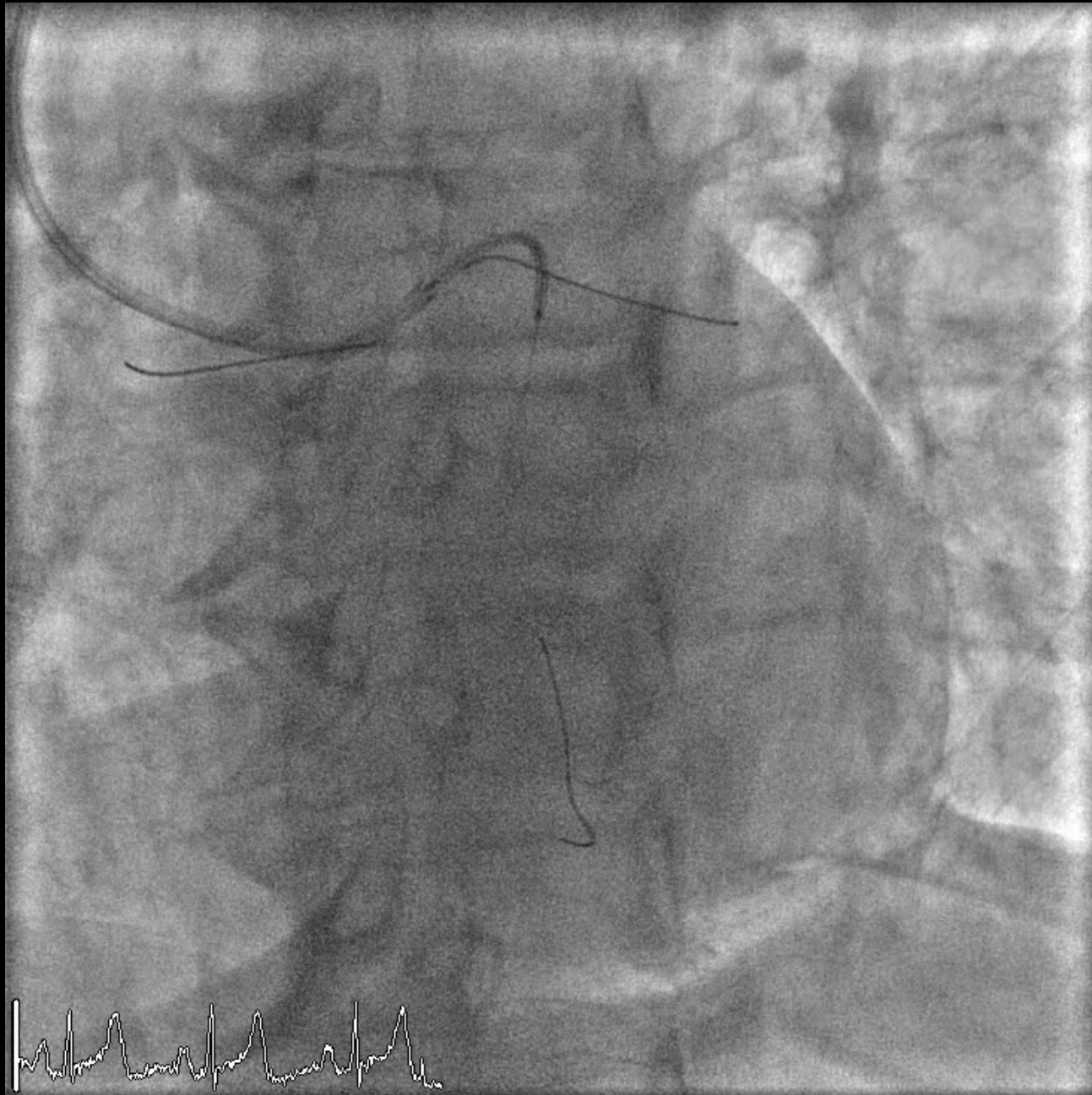
J Am Coll Cardiol Interv. 2012;5(7):697-707. doi:10.1016/j.jcin.2012.02.018



### Figure Legend:

#### “Sepal” Wire Technique

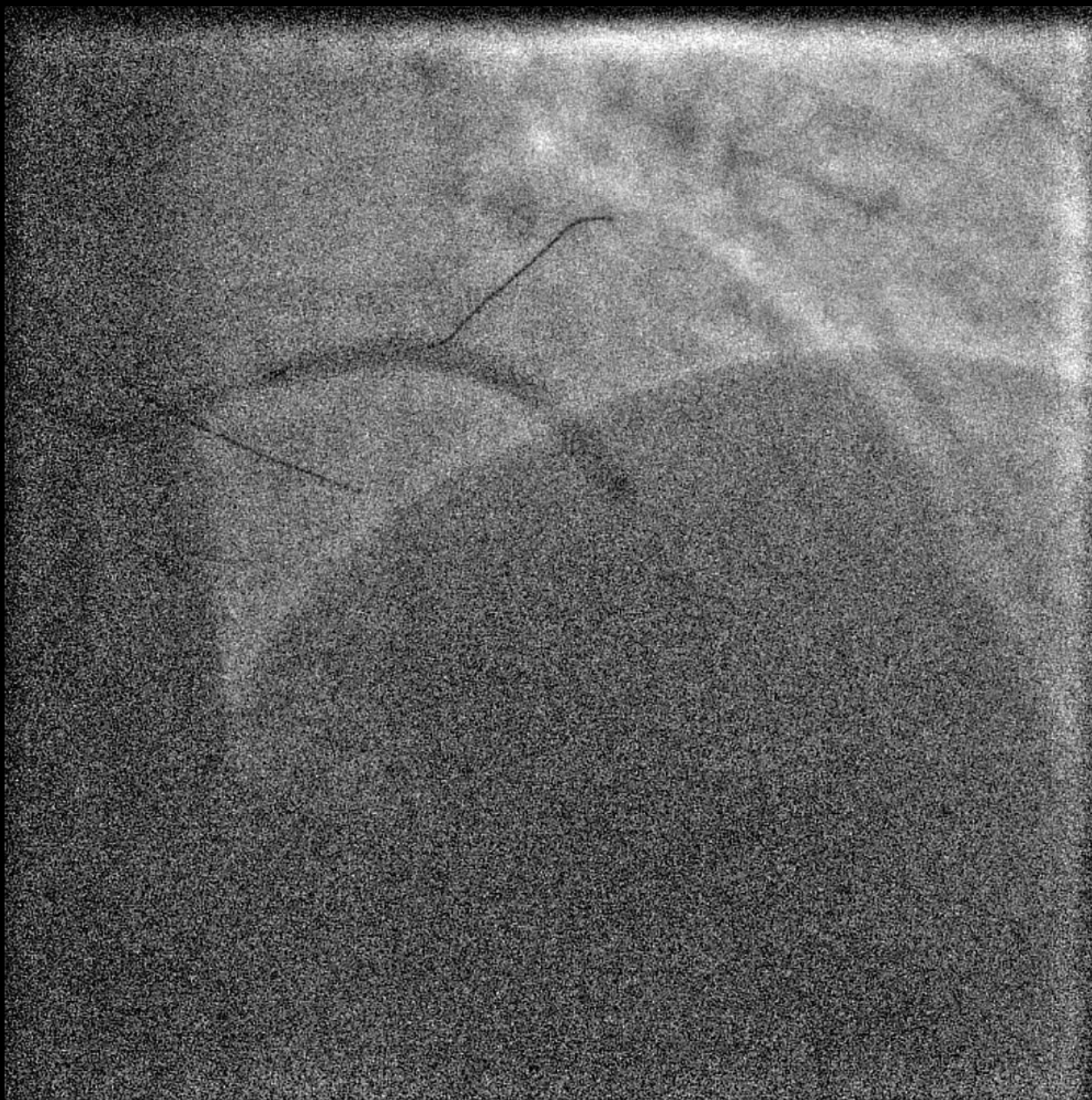
The “Sepal” wire technique for aorto-ostial left main coronary artery (LMCA) stenting in a patient who presented with syncope and was found to have extrinsic LMCA compression by the pulmonary artery (PA). (A) An additional workhorse coronary guidewire seated within the aortic (Ao) cusp (“Sepal” wire), with intravascular ultrasound marking of the true ostium taking place (white asterisk). (B) The slit-like compression of the LMCA from the PA; (C) the aorto-ostial region of the LMCA. The “Sepal” wire enables the guiding catheter to be withdrawn from the LMCA ostium, and Ao cusp injection allows identification of relevant anatomical landmarks. Additionally, fine positioning of the stent can be undertaken, because the anchor provided by the “Sepal” wire prevents the guiding catheter from being “sucked” into the LMCA when one pulls back with the stent to cover the ostium (D shows optimal positioning of the stent according to intravascular ultrasound marking).



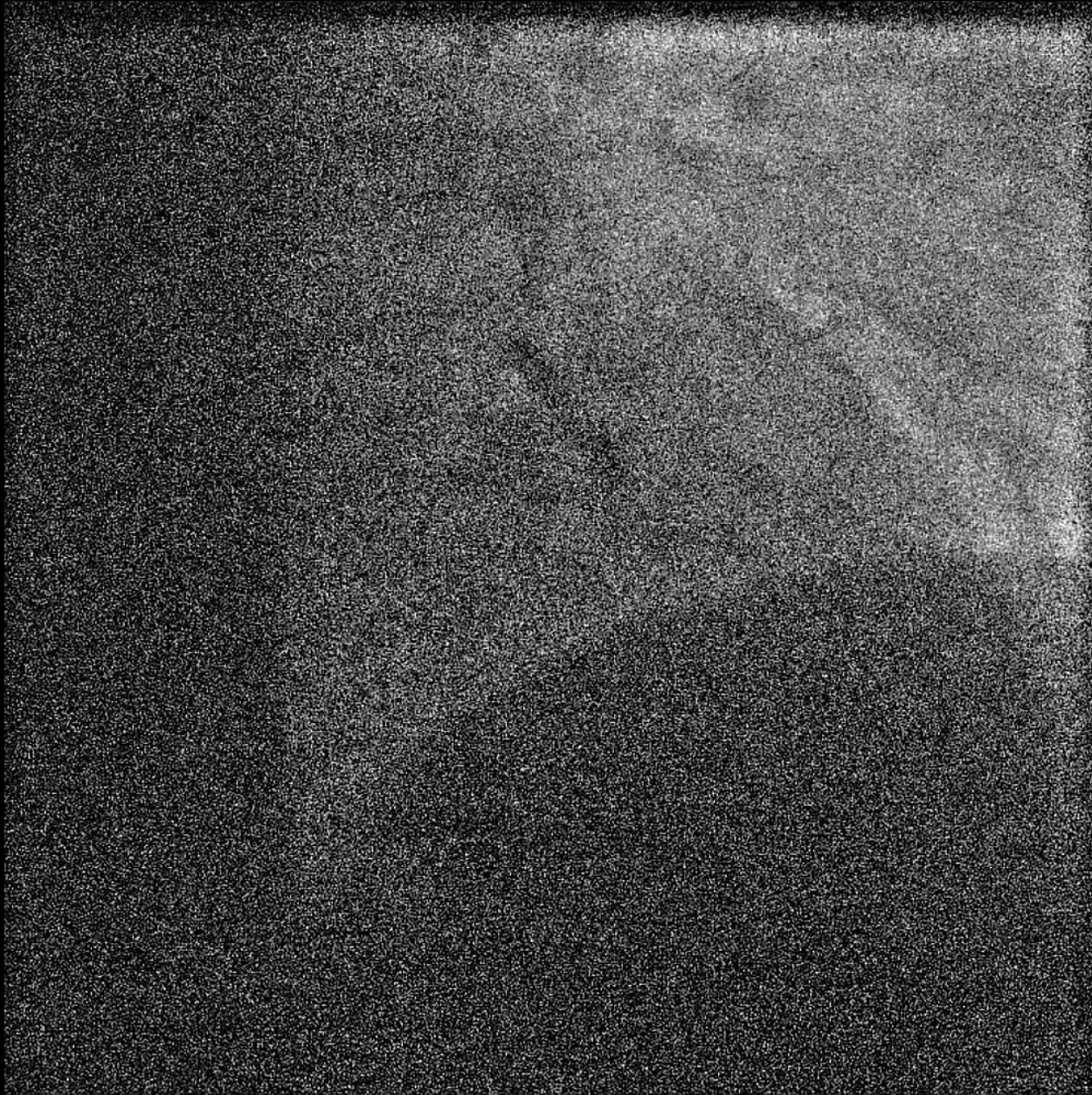
- LAO view



- AP cranial view

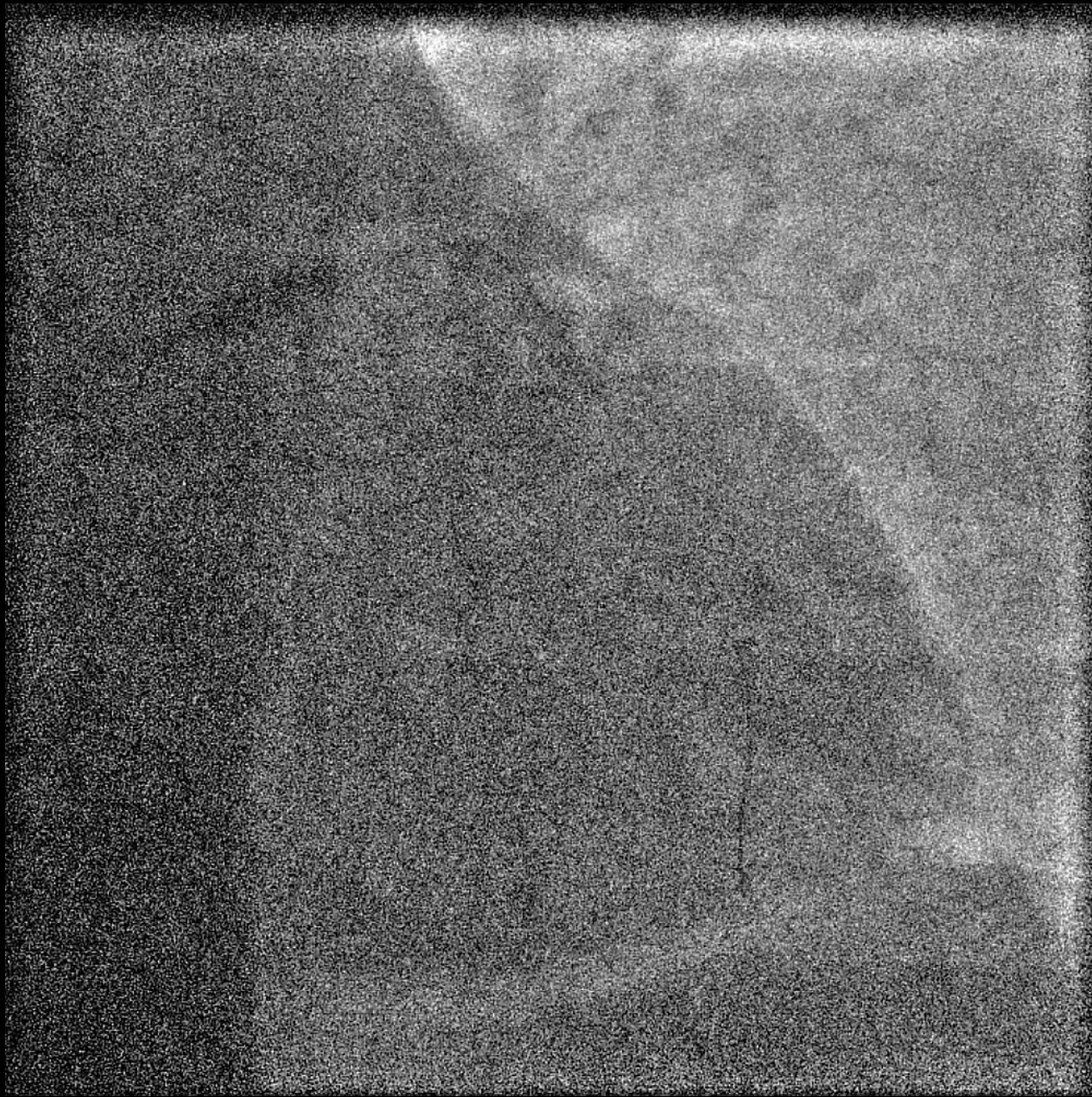


- Stent deployment

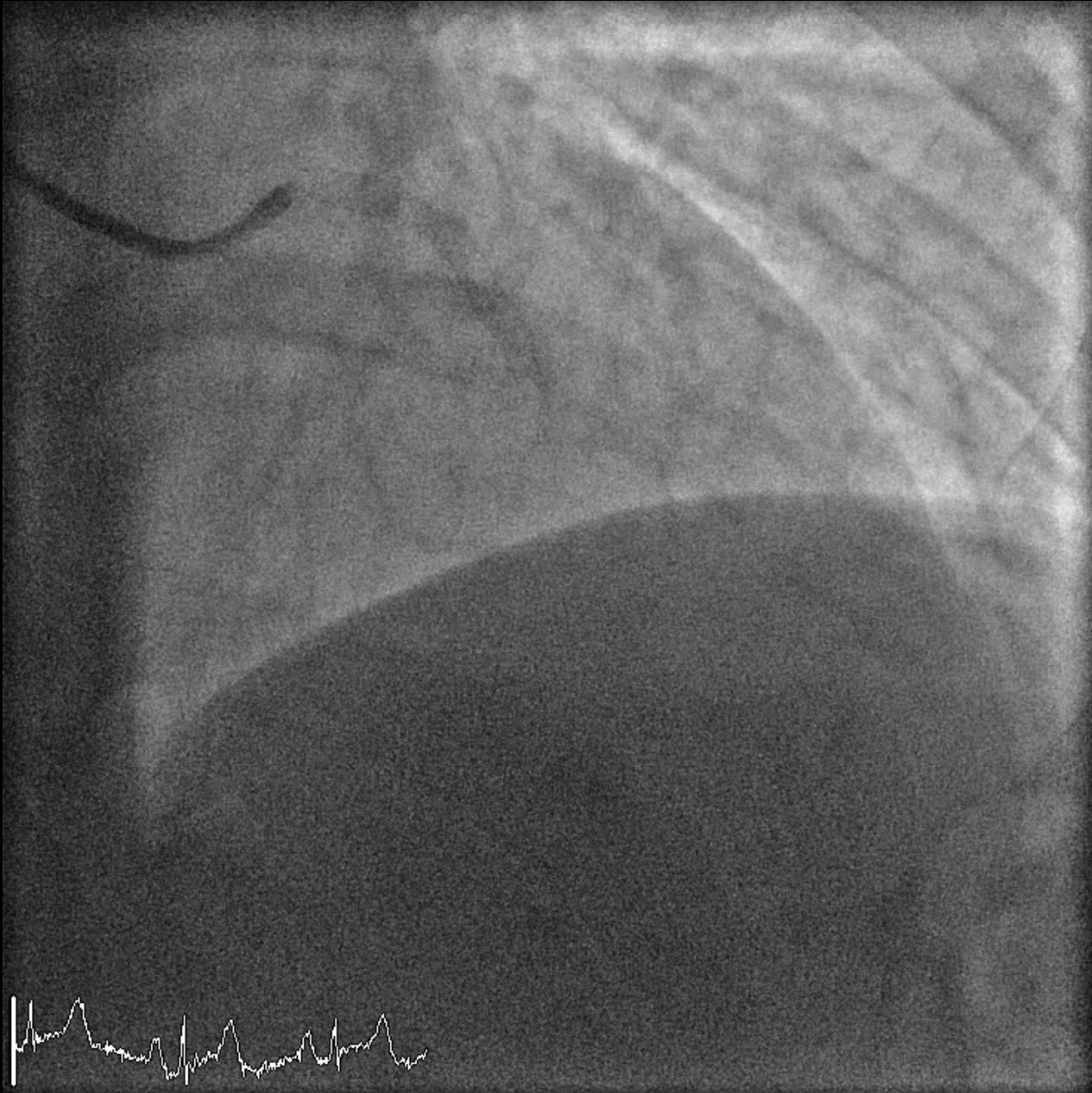


- Post dilated with 3.5 mm NC
- Note: wire in aorta kept in place to prevent guide jamming into ostial stent

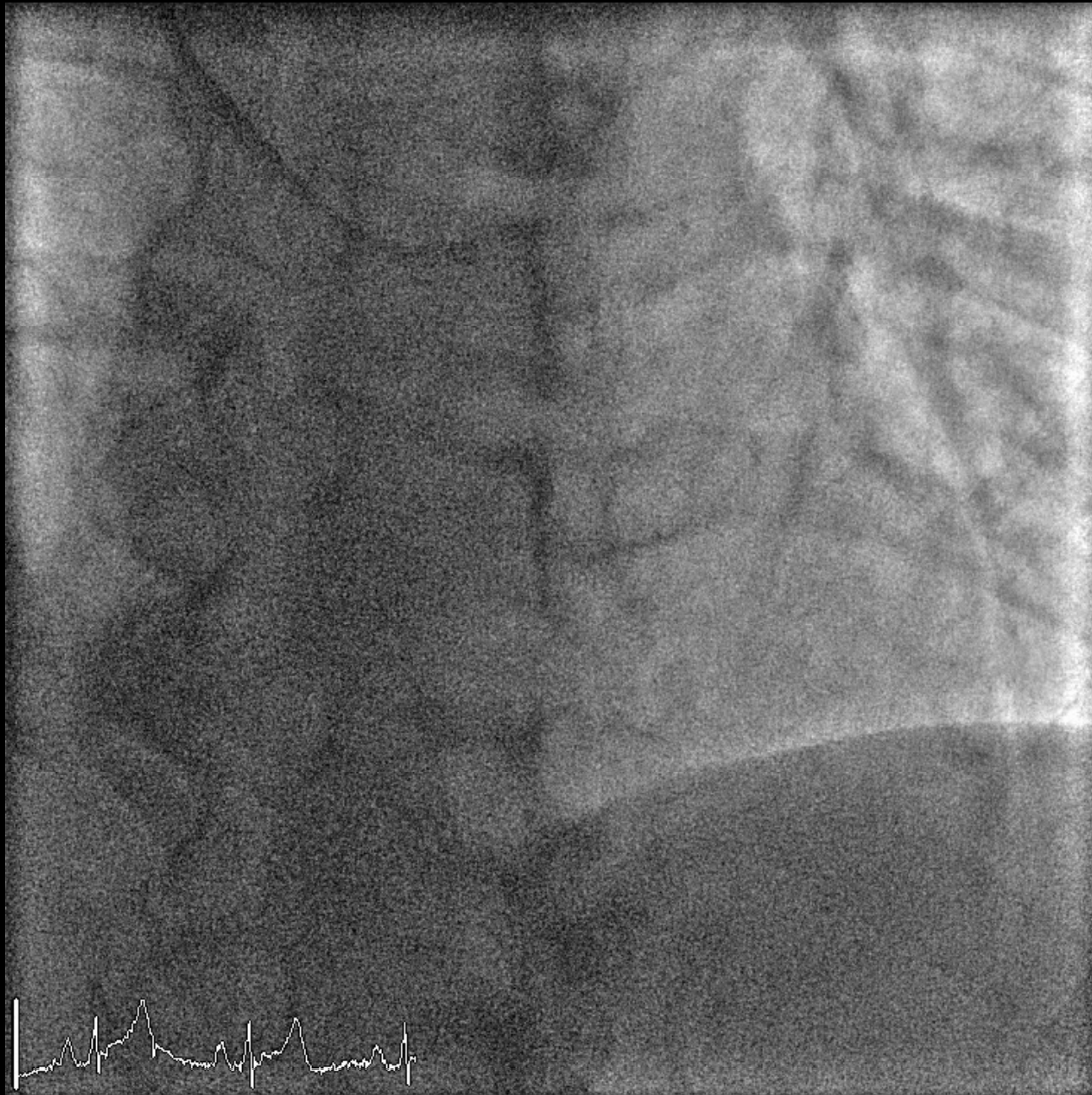




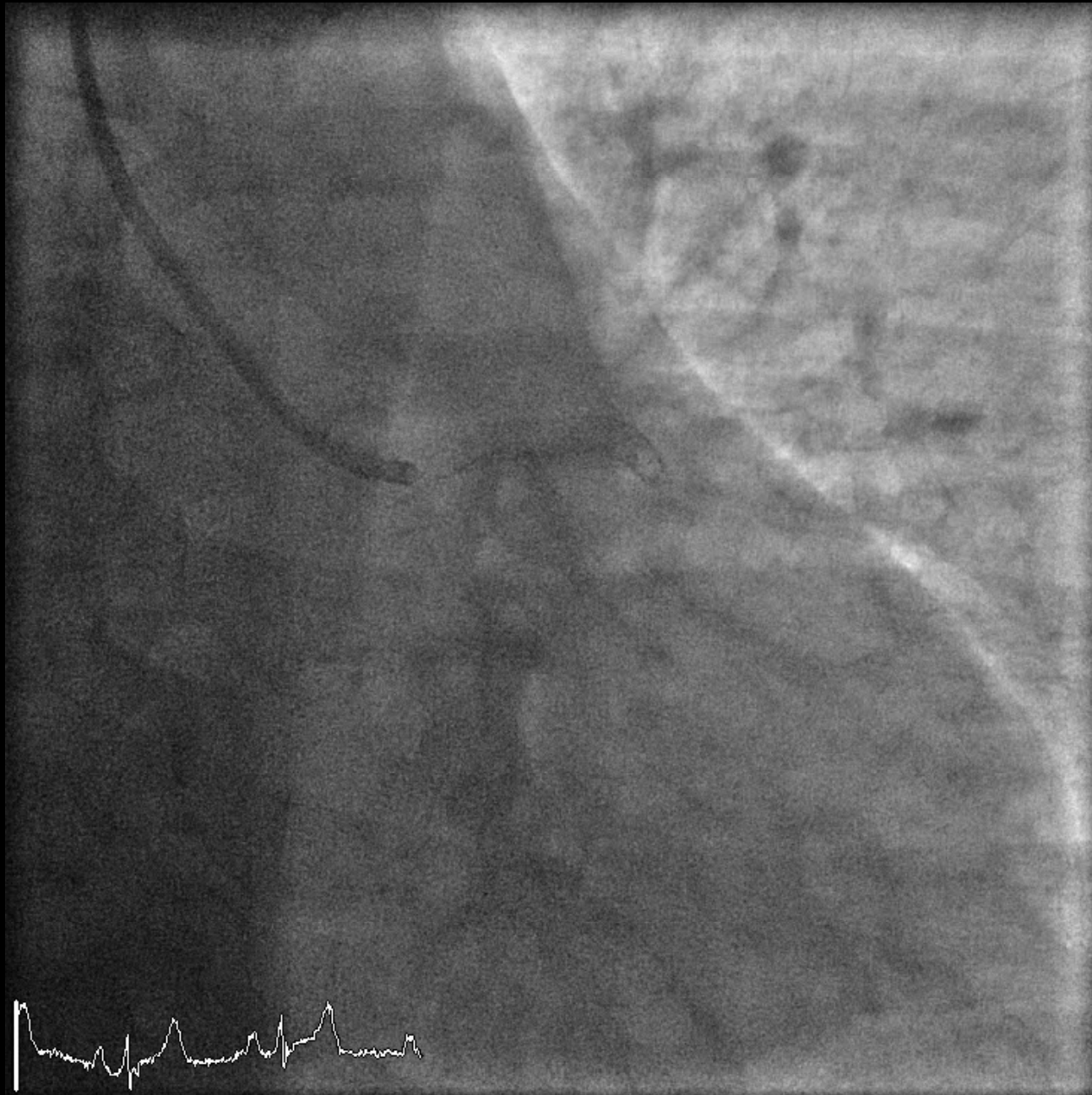
- Proximal stent post dilated with NC Trek 4.0 x 12 balloon



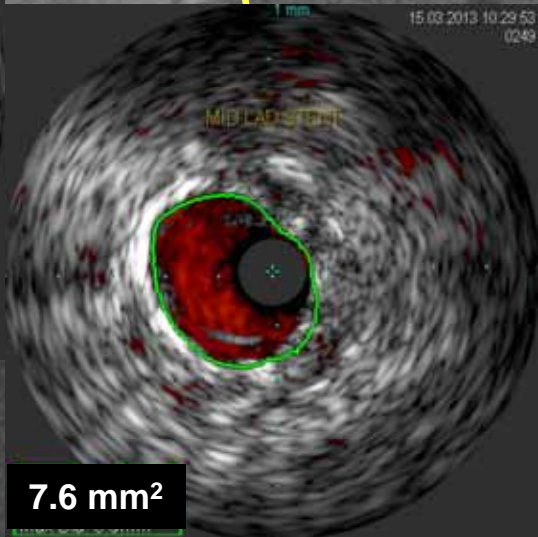
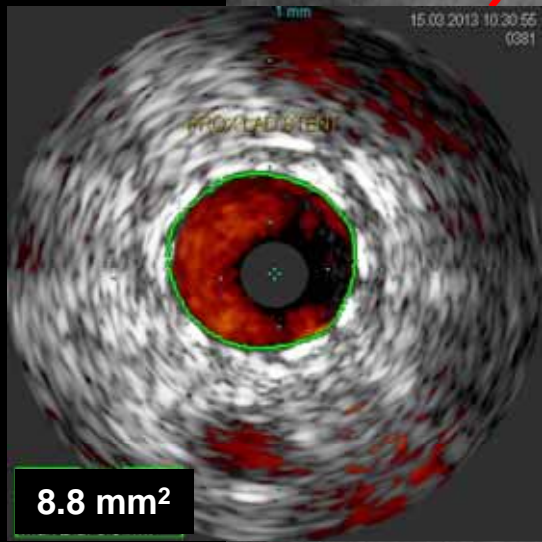
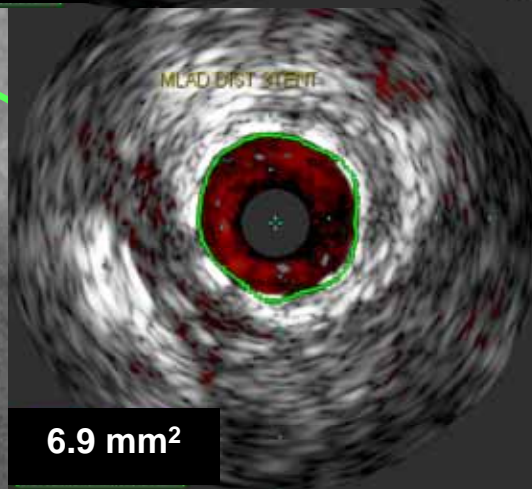
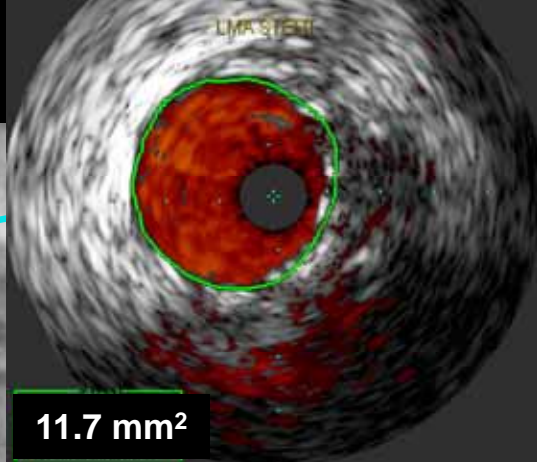
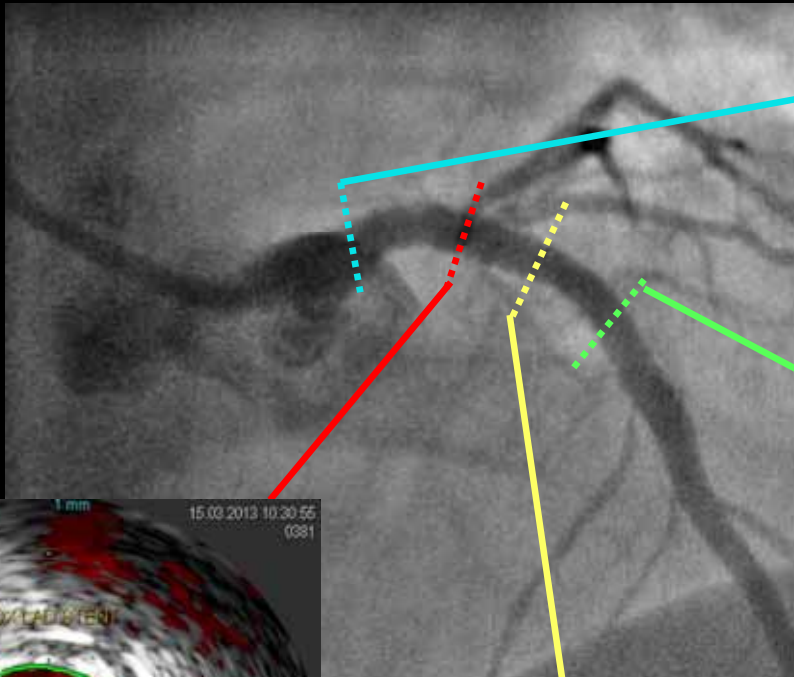
- Final



- Final



- Final



# Conclusions - I

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- Transient ischemic dilatation on SPECT imaging points towards severe ischemia and/or multivessel disease
- In the absence of a perfusion defect TID is less specific but merits serious evaluation

# Conclusions - II

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- FFR provides conclusive assessment of the functional significance of disease
  - It evaluates the left main and LAD as a “UNIT” and computes the total flow loss over the lesion
- IVUS provides immaculate structural data on vessel size and degree of plaque
  - In this case, extensive plaque in the left main was not so evident on angiography
- IVUS provides excellent assessment adequacy of stent deployment

# Conclusions - III

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- IVUS and FFR provide mutually exclusive and complimentary information
- The simple rule remains .....
  - FFR is to decide whether or not to intervene
  - IVUS is to decide how to best treat
- In the above case IVUS found extensive left main plaque
  - IVUS enabled more “complete” treatment