

# Severe AS with severe CAC

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# Case 1

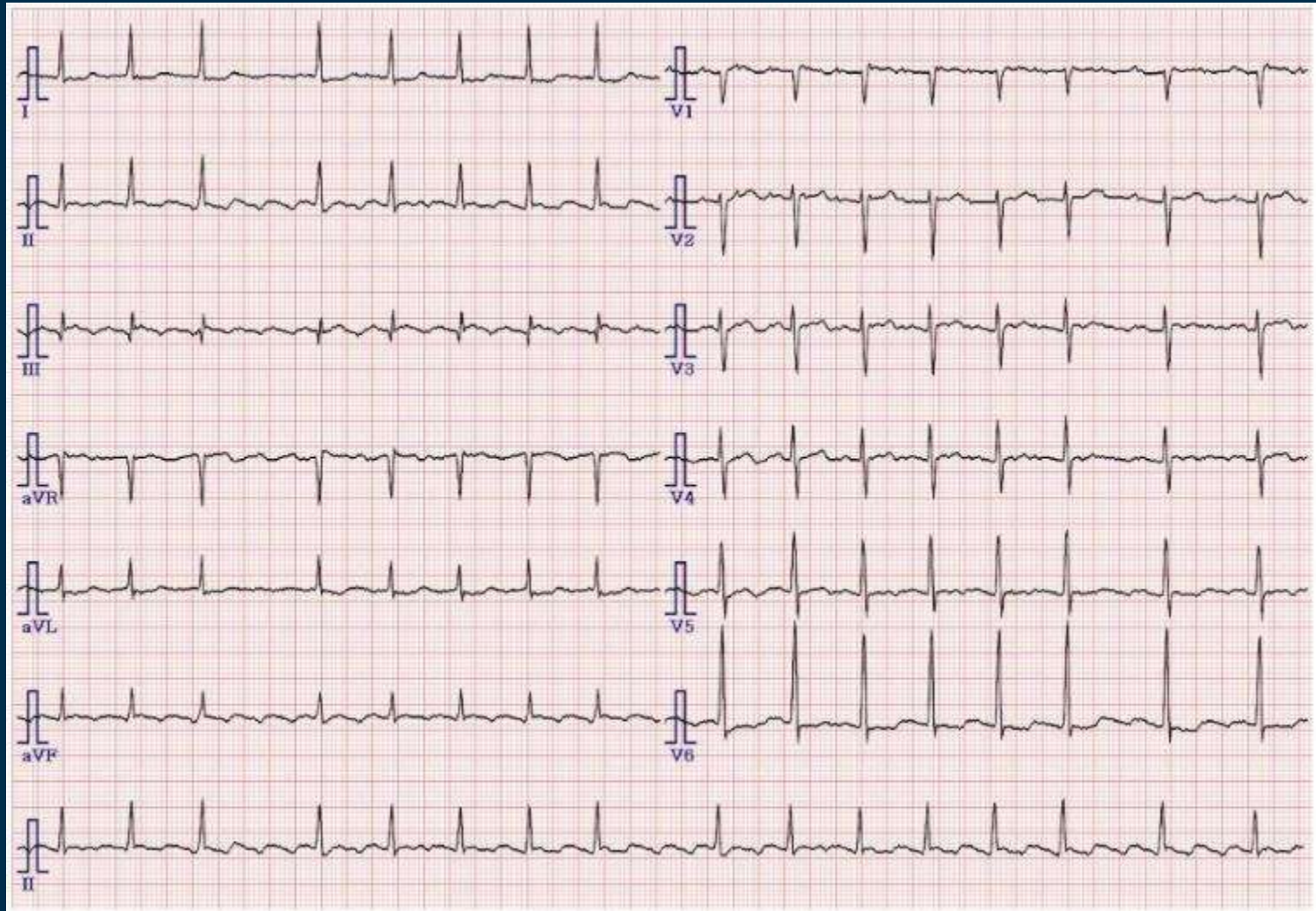
- **F/81, 149 cm, 49 kg, BMI 22.2**
- **Chief complaints**
  - DOE (NYHA IV) : 10-15m walk

## **Medical history**

- **Severe AS (EF 54->28%, Valve area 0.47cm<sup>2</sup>, PG 64/36)**
- **CABG (LIMA to LAD, tRA-OM3-RCA)**
- **NSCLC s/p Keytruda (Partial Response)**
- **Atrial flutter (CHA2DS2-VASc 4, HAS-BLED 3)**



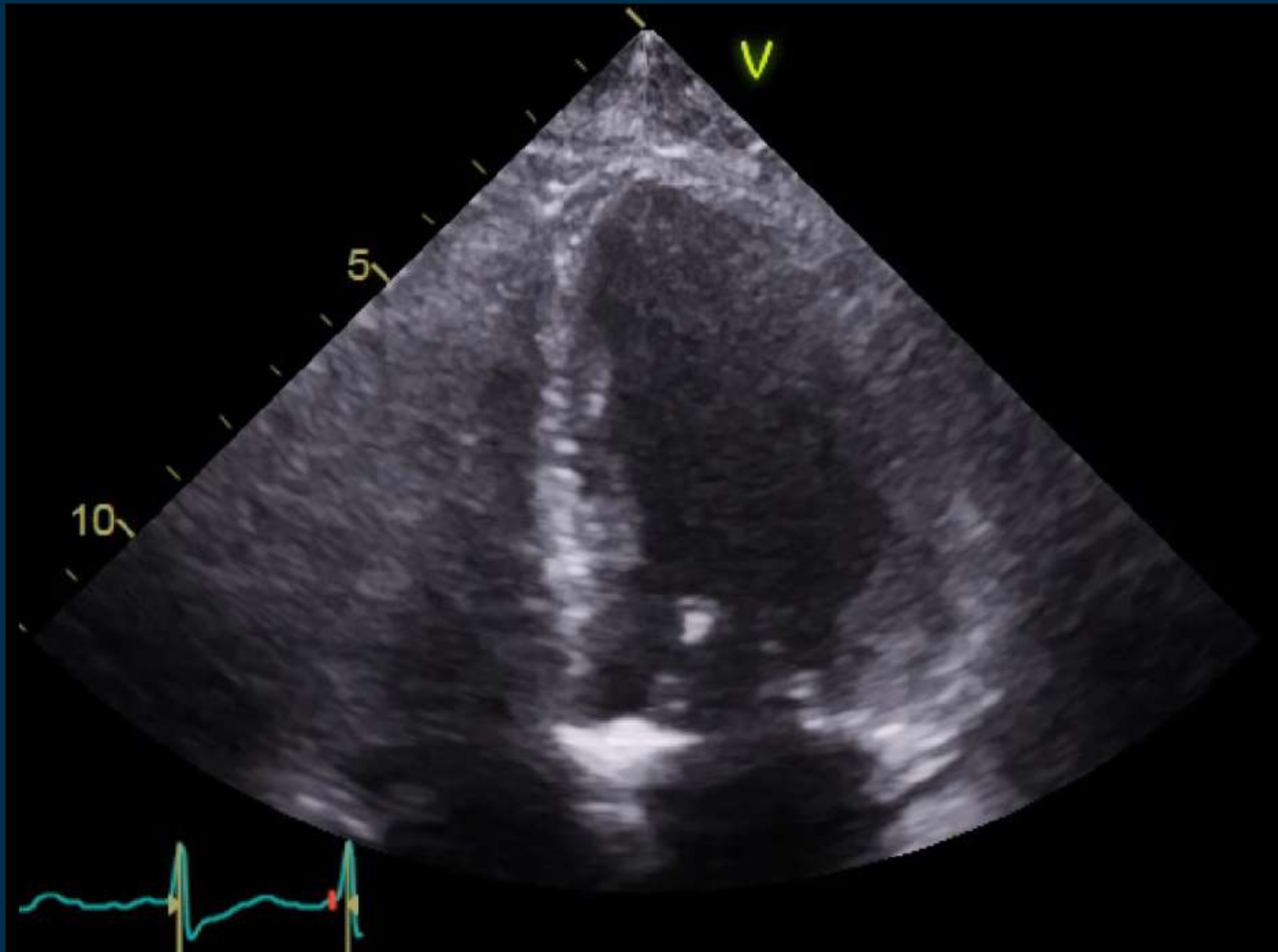
# ECG



**AFL HR 96**



# Echocardiography



**LV EF 28% global wall motion**



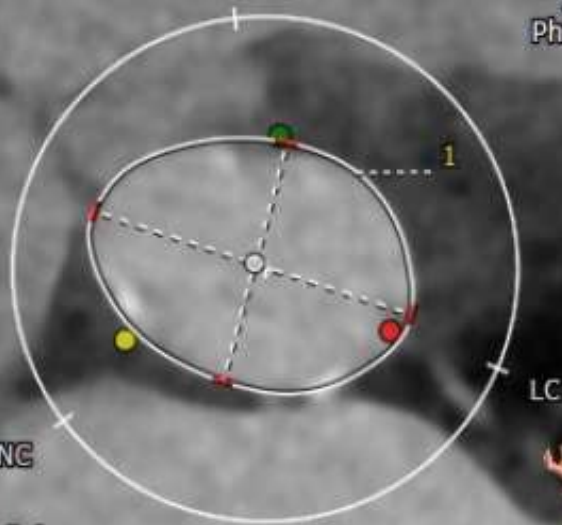
# CT analysis

## Annulus

PARK, NAN HWAN  
1938-07-08  
02973733

RC

DS\_CorCTA 0.75 Bv40 ...  
2019-04-20  
Phase: 30.0%



Series: 19  
Slices: 1-280  
Slice Spacing: 0.4 mm  
Distance: 0.0 mm

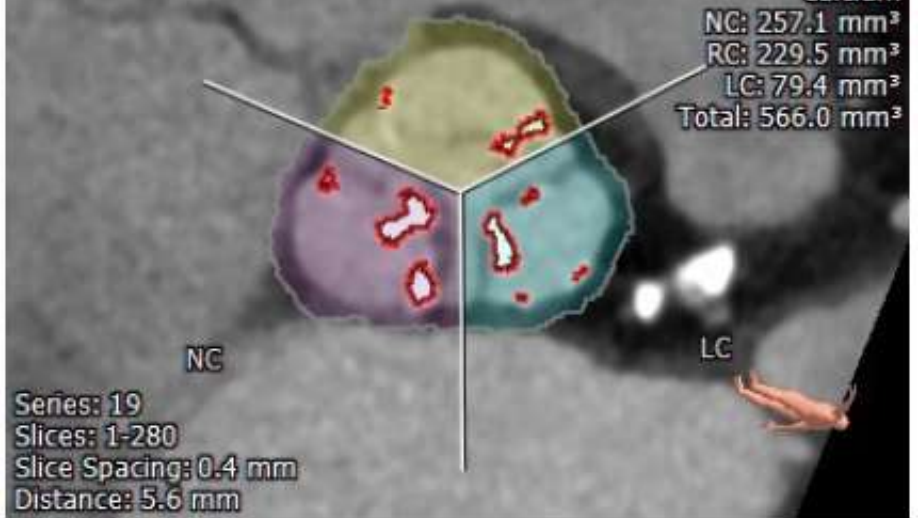
## Calcium score

PARK, NAN HWAN  
1938-07-08  
02973733

RC

DS\_CorCTA 0.75 Bv40 ...  
2019-04-20  
Phase: 30.0%

Calcium  
NC: 257.1 mm<sup>3</sup>  
RC: 229.5 mm<sup>3</sup>  
LC: 79.4 mm<sup>3</sup>  
Total: 566.0 mm<sup>3</sup>

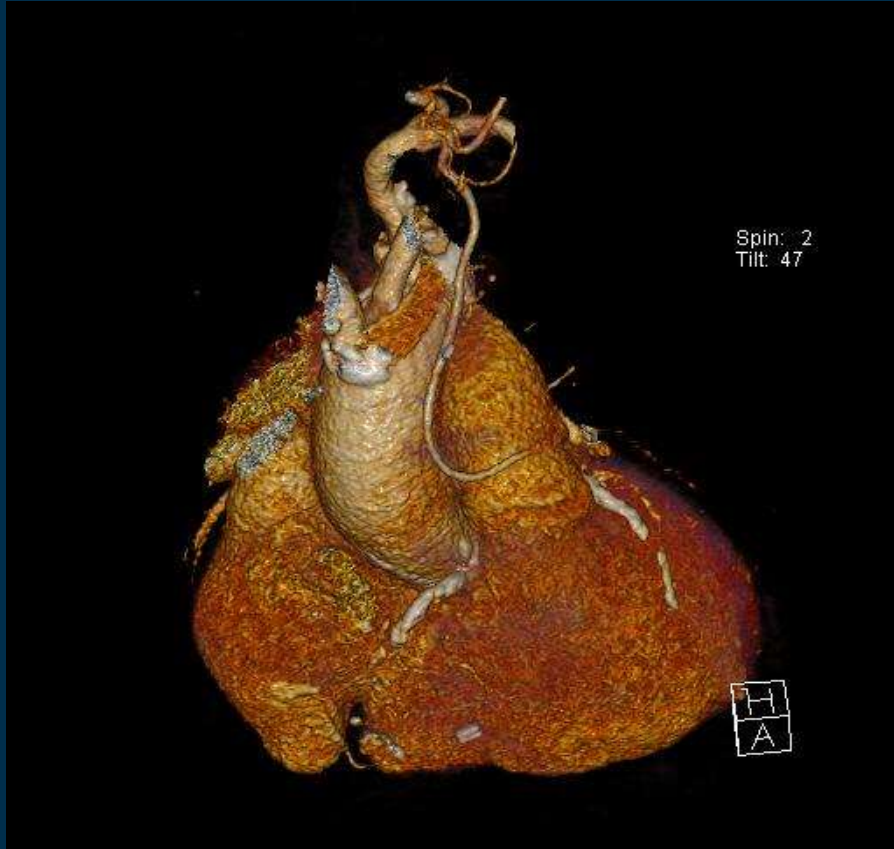


Series: 19  
Slices: 1-280  
Slice Spacing: 0.4 mm  
Distance: 5.6 mm

**Saphien 3 23mm**



# CT analysis



**LIMA to LAD occlusion**



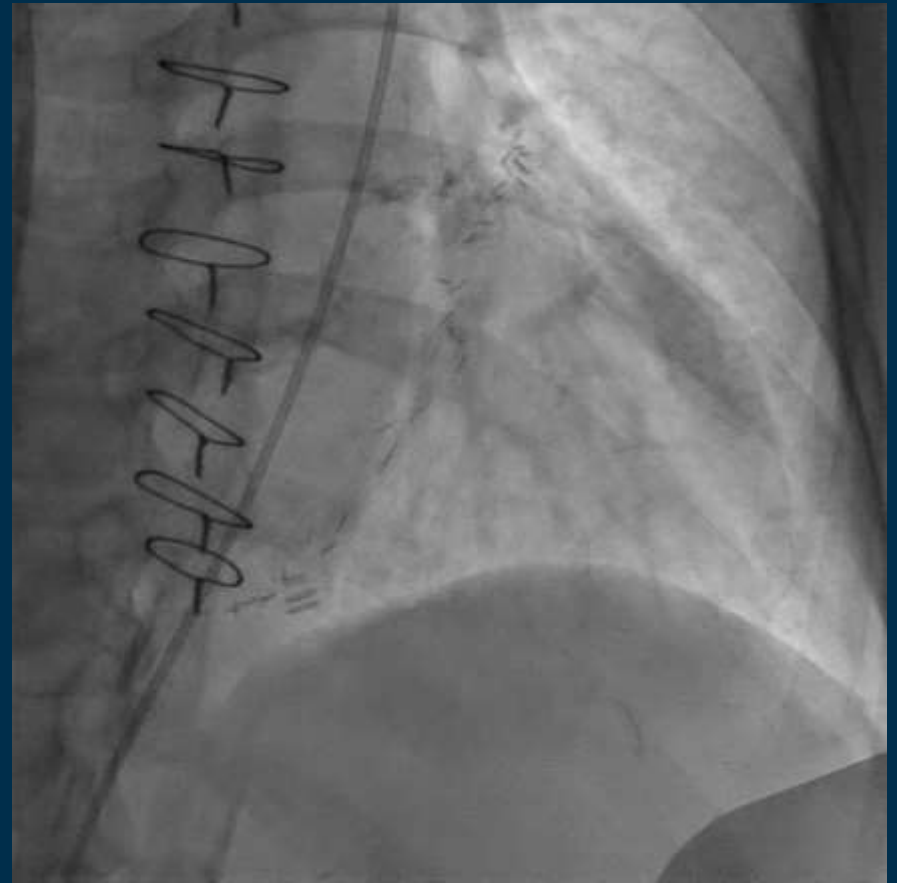
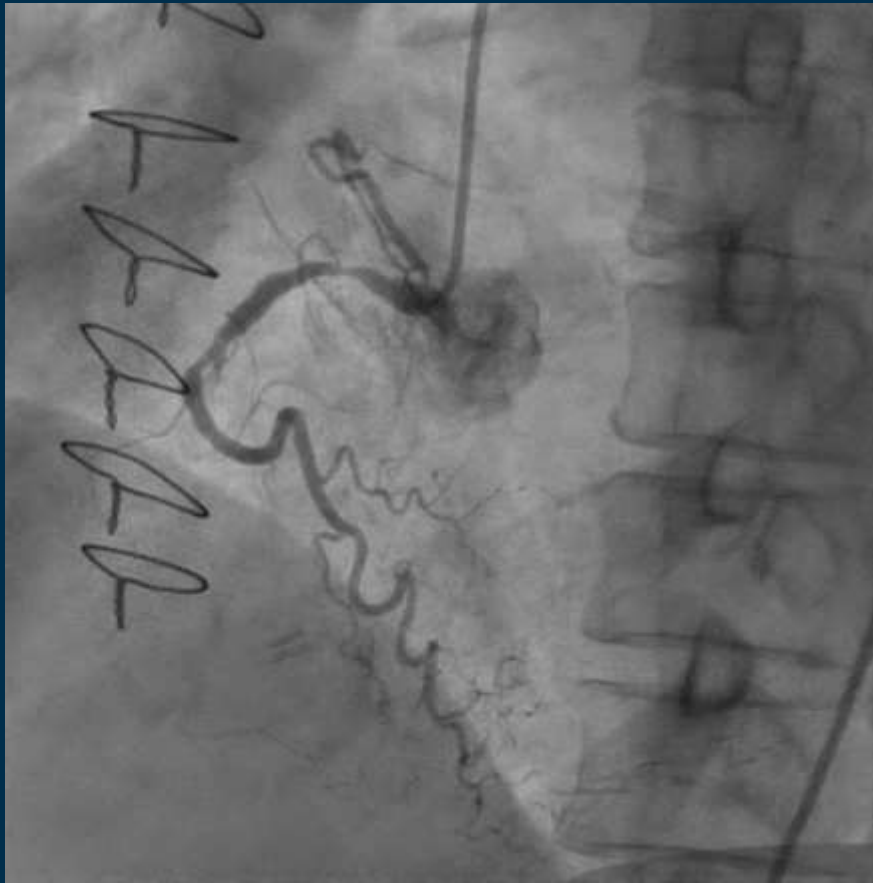
# Coronary Angiography



**Significant stenosis at LAD with heavy calcification, LIMA to LAD occlusion**



# Coronary Angiography



**LIMA to LAD occlusion, but t-RA-OM3-RCA  
graft patent**





**Severe AS with LV dysfunction?  
Low PG/Low EF?**

**Significant LAD disease with  
Ischemic cardiomyopathy?  
Asymptomatic Severe AS?**

**Low dose dobutamine make severe  
angina -> Failed Stress Echo test**



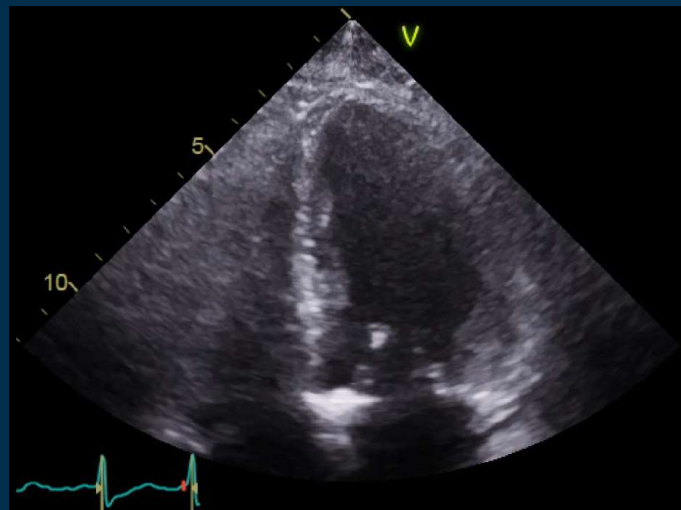
# Echocardiography



17.05



19.01

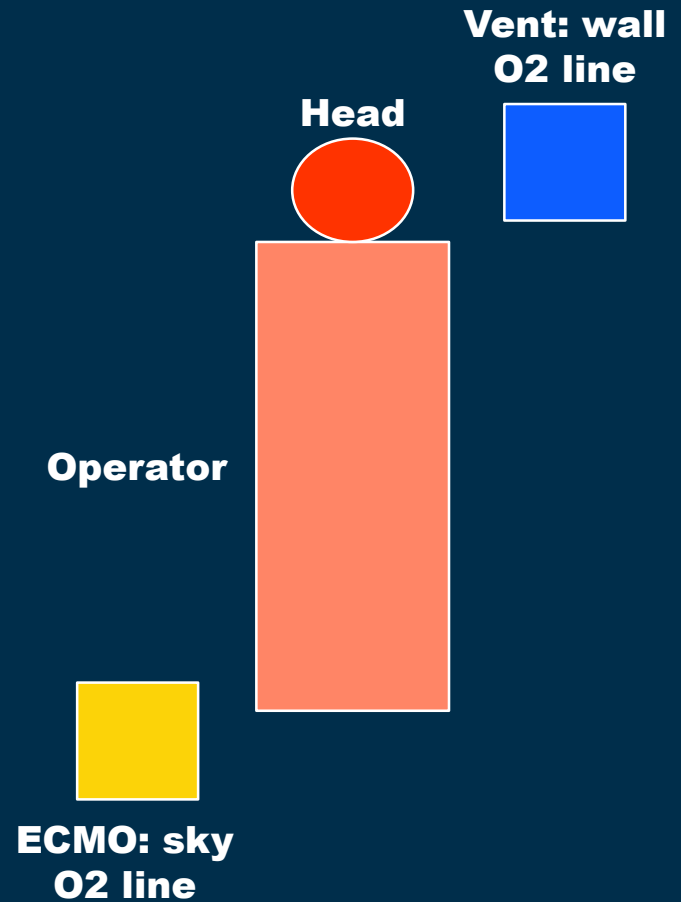


19.04

**Sequential decrease LAD wall motion**



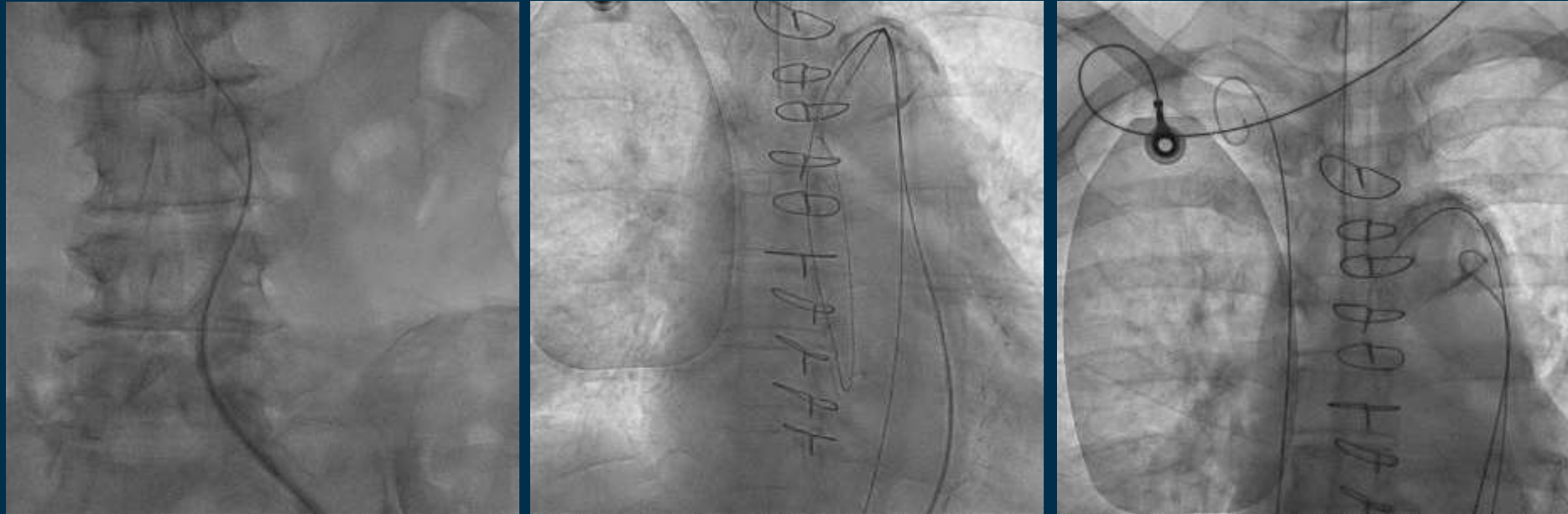
# Pre-PCI



**Pre-intervention setting with mechanical ventilator and ECMO using sky O2 line**



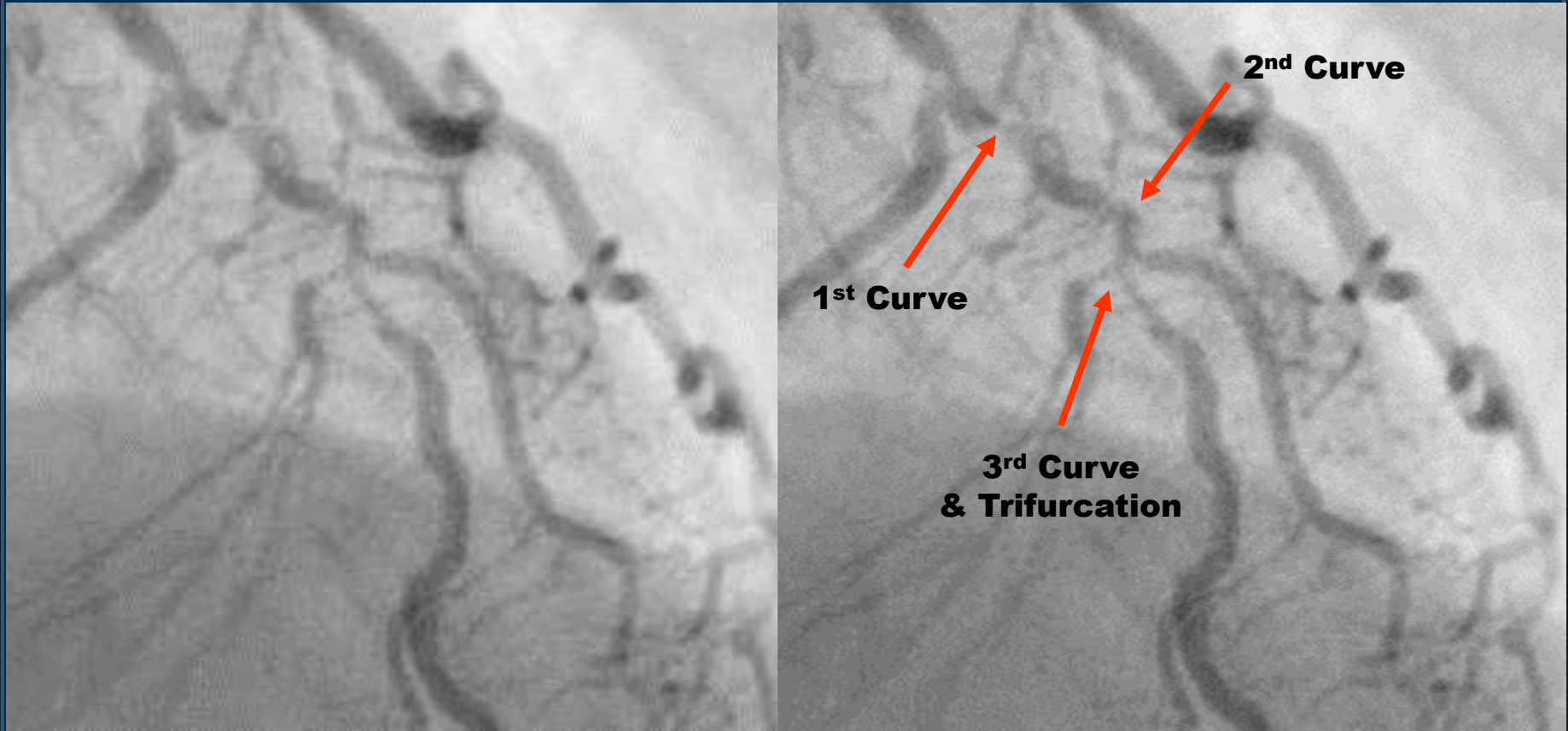
# ECMO wire insertion



**Left A: intervention, Rt A, Lt V: ECMO  
Using Cook Stiff 035 wire**



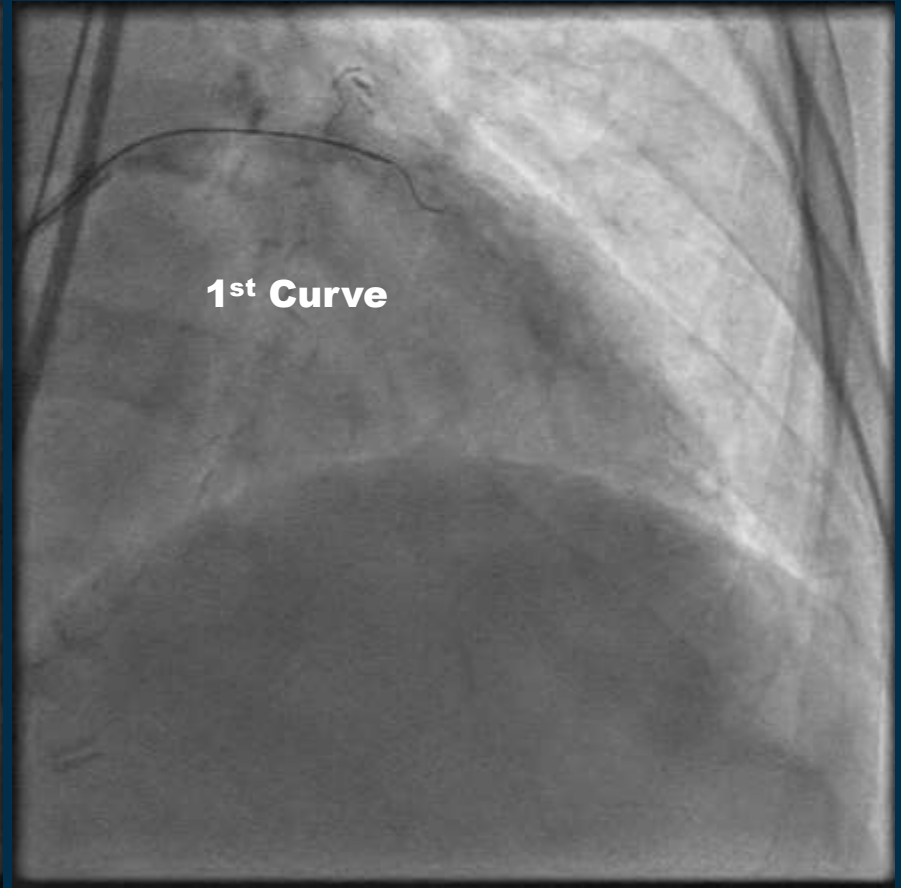
# Percutaneous coronary intervention



**The magnified angiography is divided into 1st curve, 2nd curve, 3rd curve and Trifurcation.**



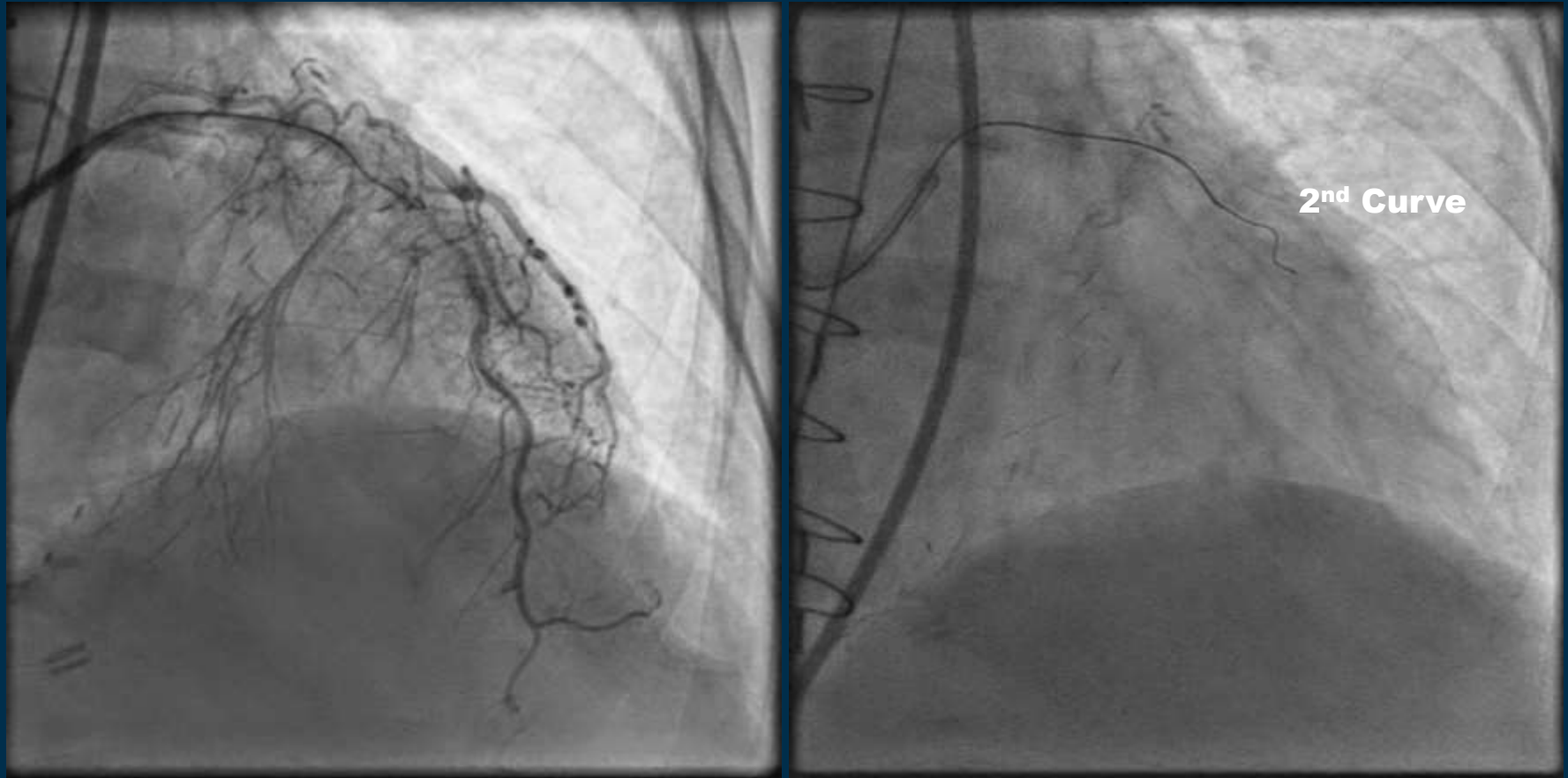
# Percutaneous coronary intervention



**The 1<sup>st</sup> and 2<sup>nd</sup> curves were overcome with Fielder XT-R wire and caravel microcatheter**



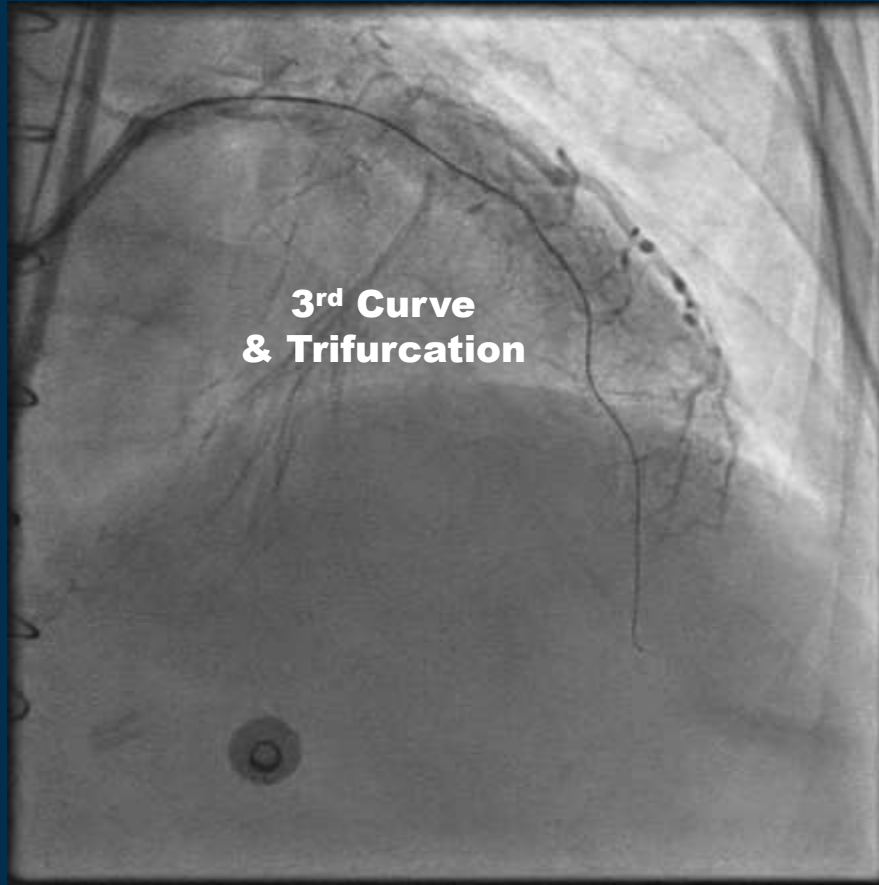
# Percutaneous coronary intervention



**The 1<sup>st</sup> and 2<sup>nd</sup> curves were overcome with Fielder XT-R wire and caravel microcatheter**



# Percutaneous coronary intervention

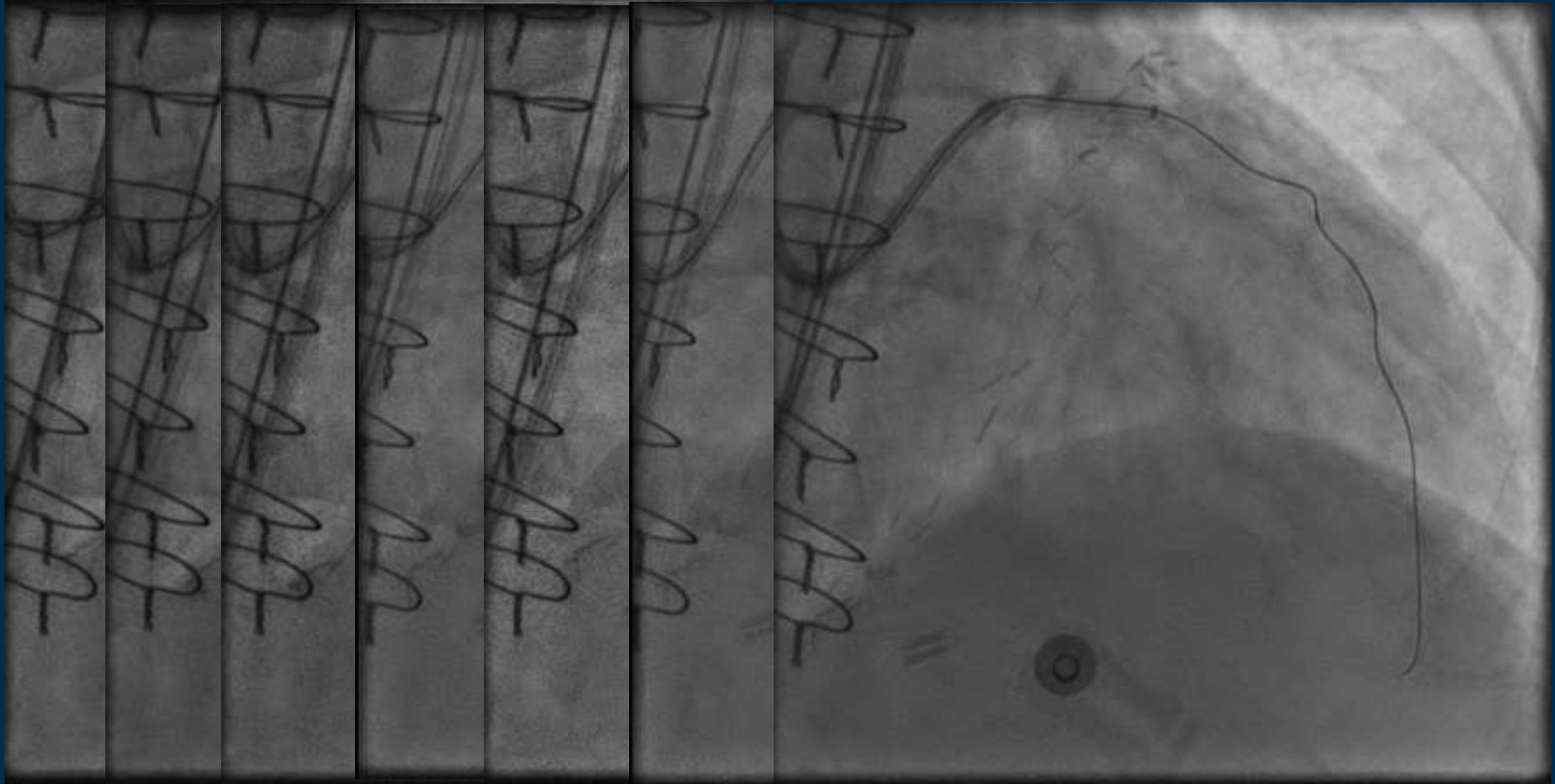


**3rd curve and trifurcation lesions were selected using Sion Black wire.**





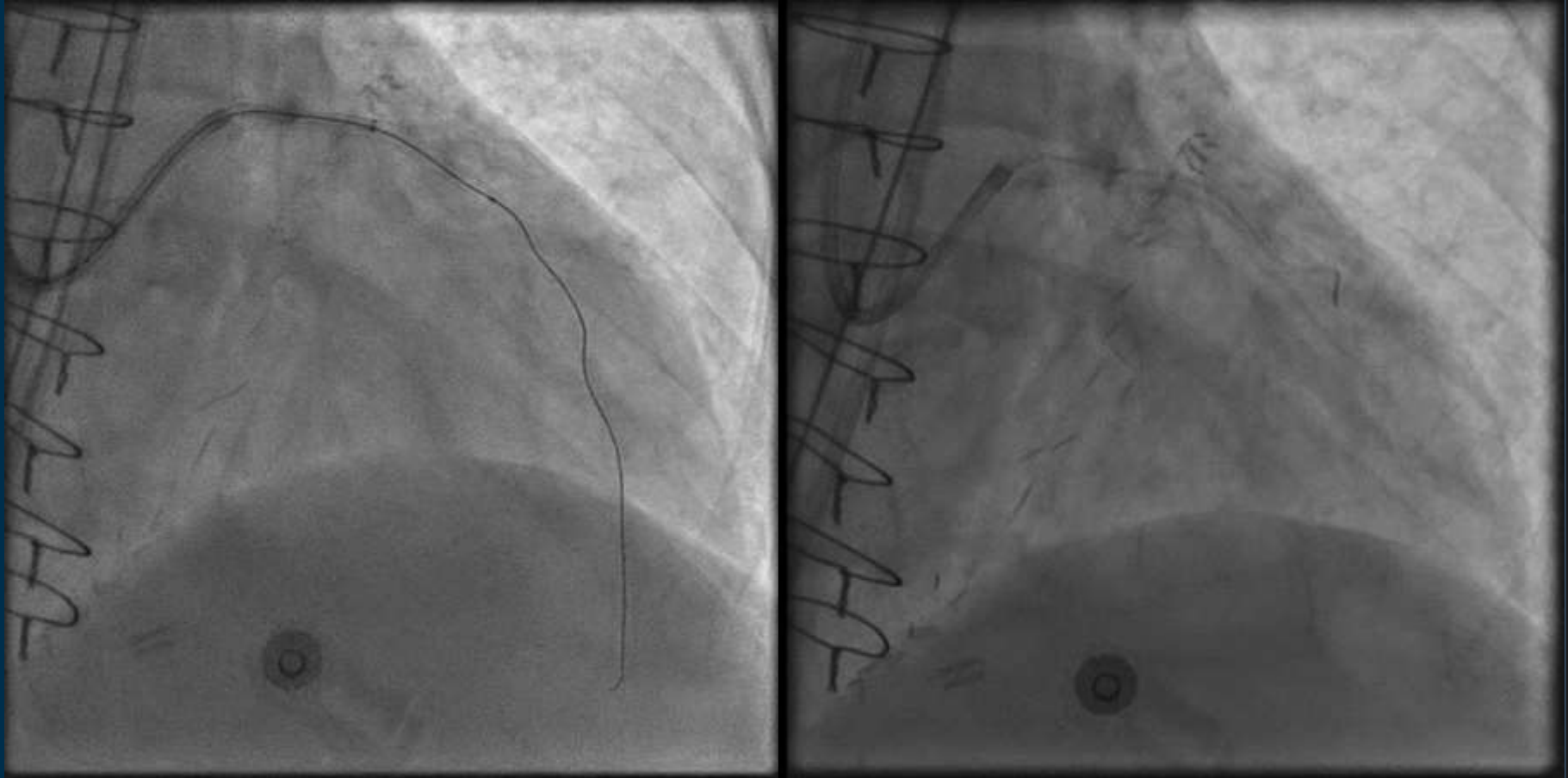
# Percutaneous coronary intervention



**Since the microcatheter could not cross the 2nd curve, 1.0 and 2.0mm balloon could be used repeatedly, penetration and curve stretching, and the device could be sent over the 2nd curve with guidezillar.**



# Percutaneous coronary intervention

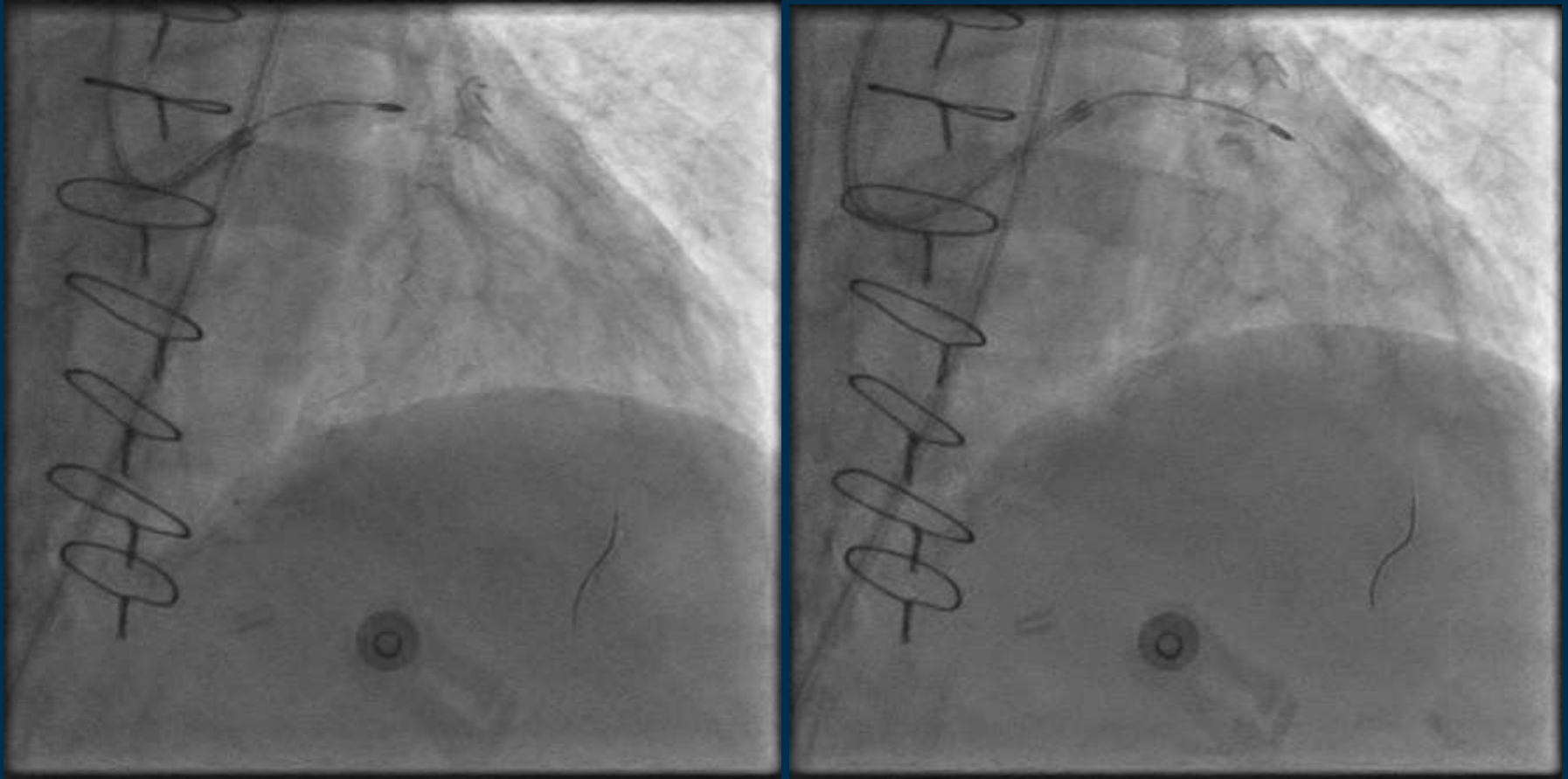


**Even after POBA, the device did not enter smoothly in the 2nd and 3rd curve calcium lesion, so we inserted microcatheter into the 3rd curve entrance to change the rota wire.**





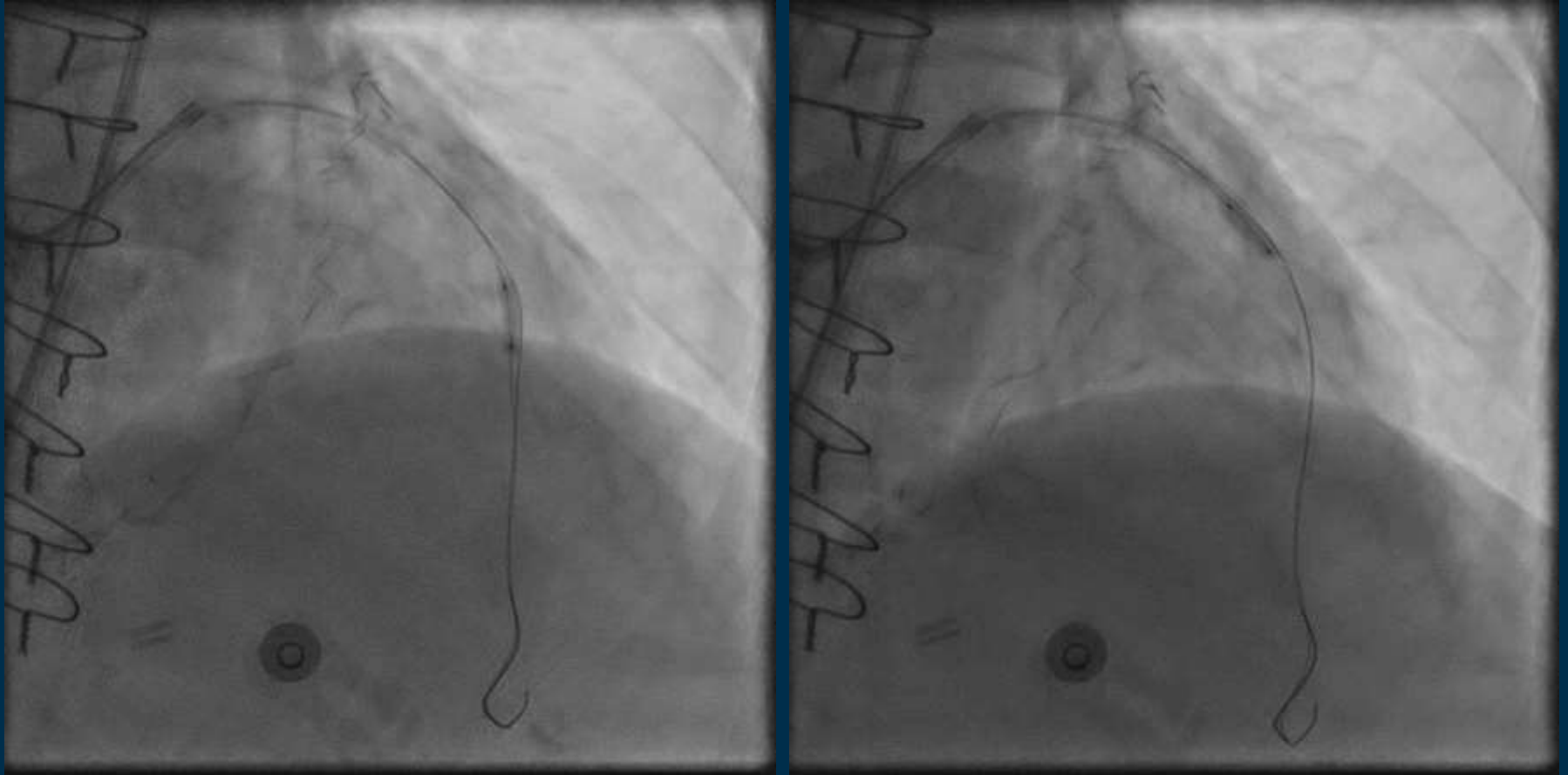
# Percutaneous coronary intervention



**We start rotational atherectomy using a 1.25 and 1.5 mm burr with hemodynamic support.**



# Percutaneous coronary intervention

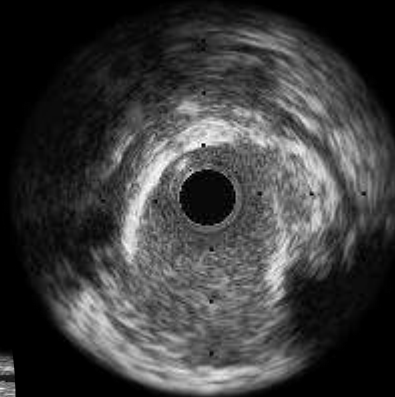


**After rotablation, high pressure balloon was performed with 2.75mm NC balloon.**



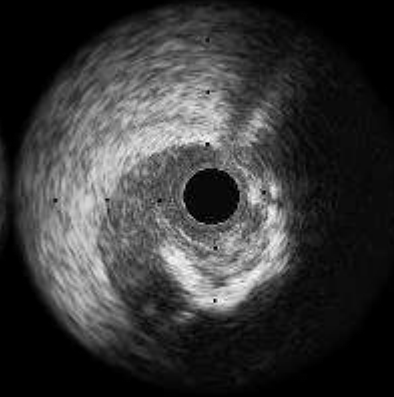
# IVUS Findings LAD

**A.** Prox. reference



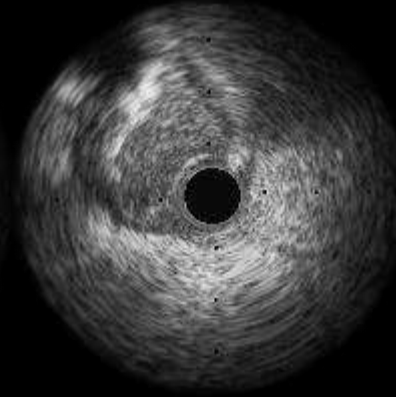
Lumen Mean D. 3.54mm  
Min D. 2.91mm / Max D. 4.08mm  
Vessel Mean D. 5.20mm  
Min D. 5.07mm / Max D. 5.36mm

**B.** MLA

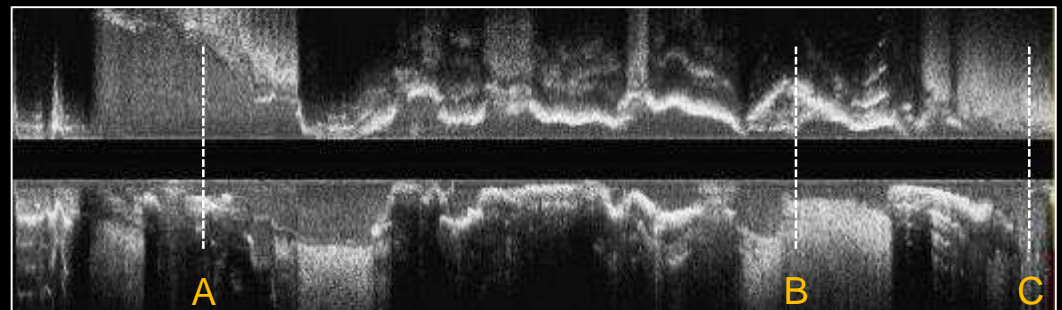
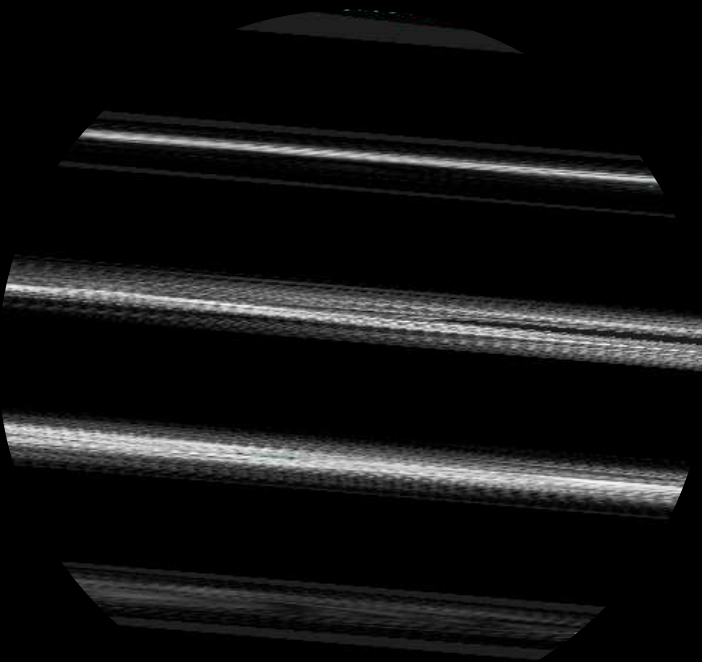


LA 2.05mm<sup>2</sup>  
Min D. 1.47mm / Max D. 1.80mm  
VA 11.54mm<sup>2</sup>  
Min D. 3.58mm / Max D. 4.05mm  
Plaque 82.2% of vessel

**C.** Dist. reference



Lumen Mean D. 2.20mm  
Min D. 1.85mm / Max D. 2.62mm  
Vessel Mean D. 3.22mm  
Min D. 2.80mm / Max D. 3.71mm

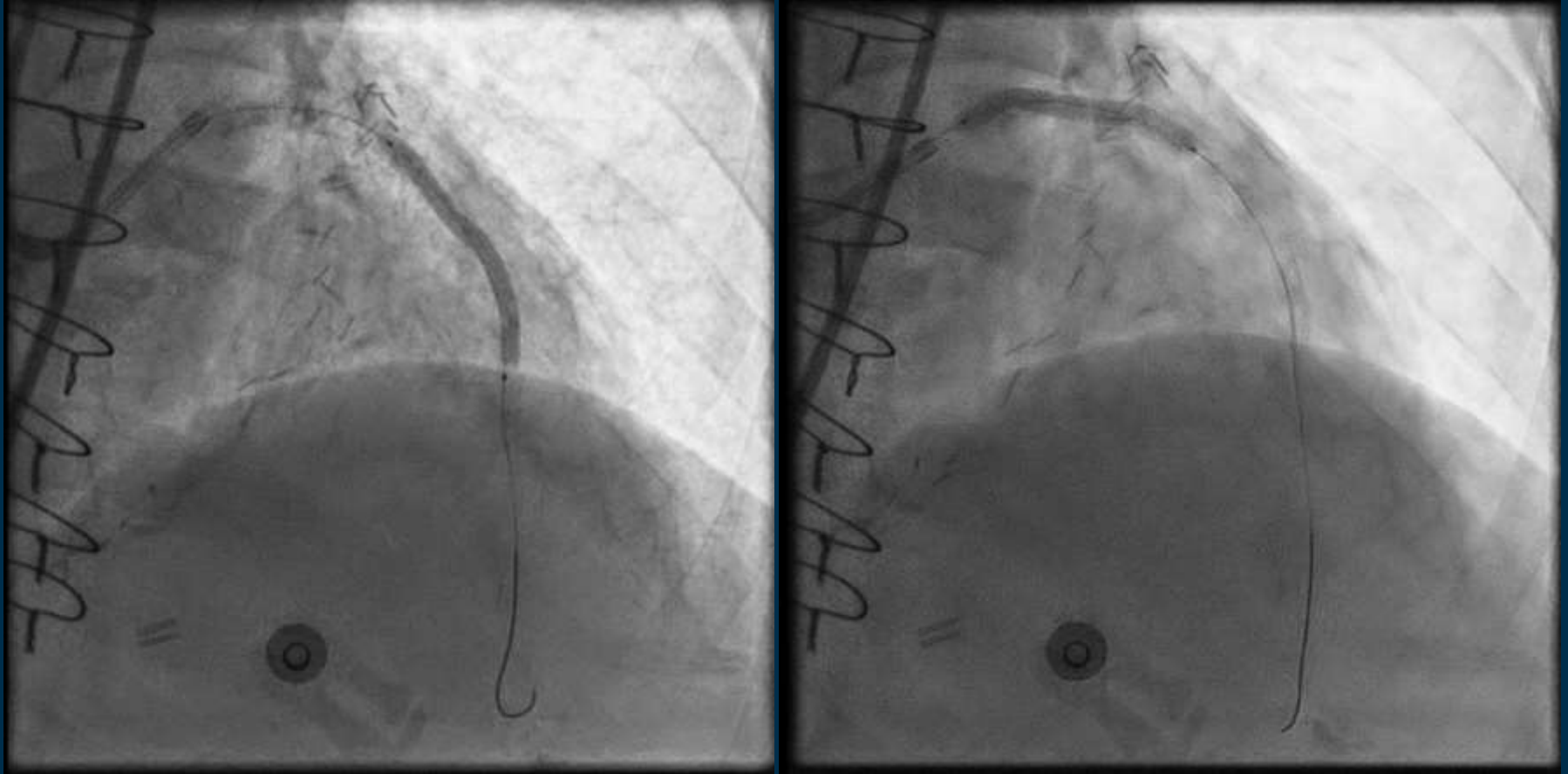


◀ proximal

Lesion length 50.92mm

distal ▶

# Percutaneous coronary intervention



**We performed stent implantation with Synergy 2.75x38 + 3.0x32mm and additionally high pressure balloon up to 28atm with 2.75mm NC balloon.**

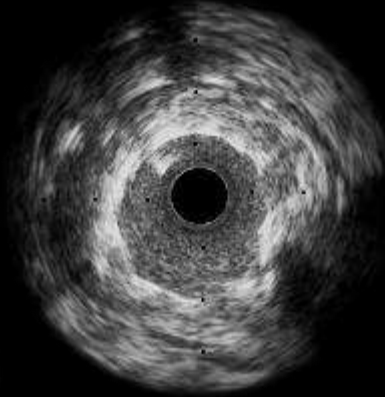
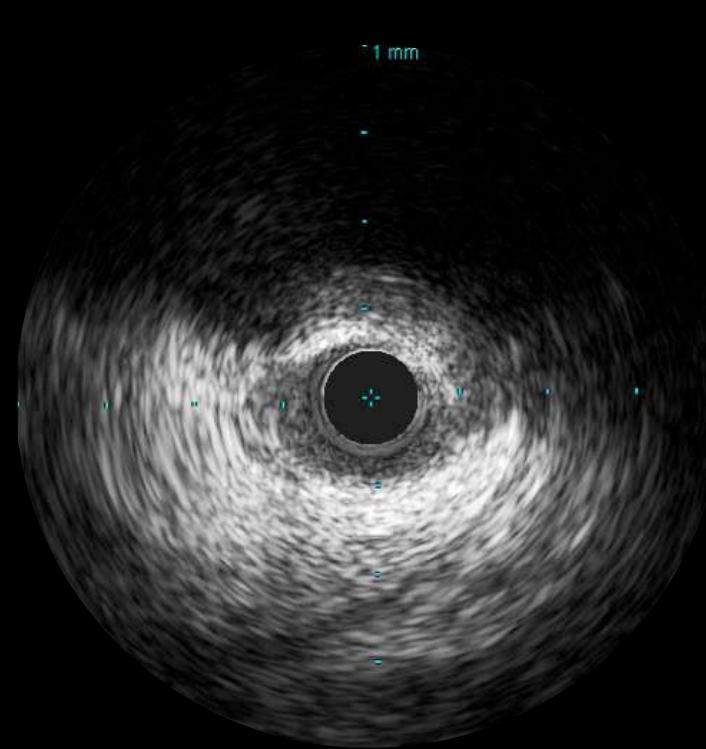


# Final OCT Findings LAD

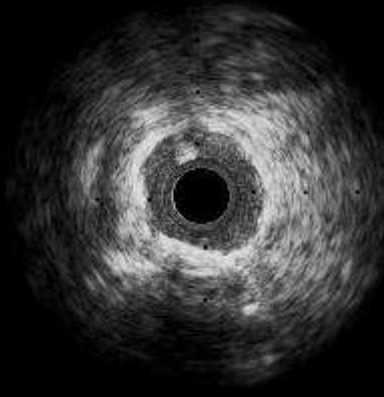
**A.** Prox. Stent edge

**B.** MSA

**C.** Dist. Stent edge



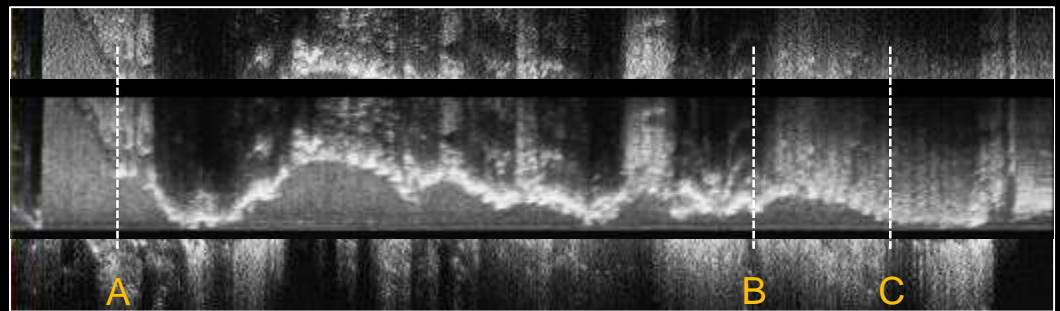
Stent Mean D. 2.93mm  
Min D. 2.75mm / Max D. 3.10mm  
Vessel Mean D. 5.19mm  
Min D. 4.93mm / Max D. 5.40mm



SA 4.07mm<sup>2</sup>  
Min D. 2.14mm / Max D. 2.51mm  
VA 10.85mm<sup>2</sup>  
Min D. 3.64mm / Max D. 3.84mm  
Plaque 62.5% of vessel



Stent Mean D. 2.39mm  
Min D. 1.90mm / Max D. 2.94mm  
Vessel Mean D. 3.68mm  
Min D. 3.54mm / Max D. 3.79mm



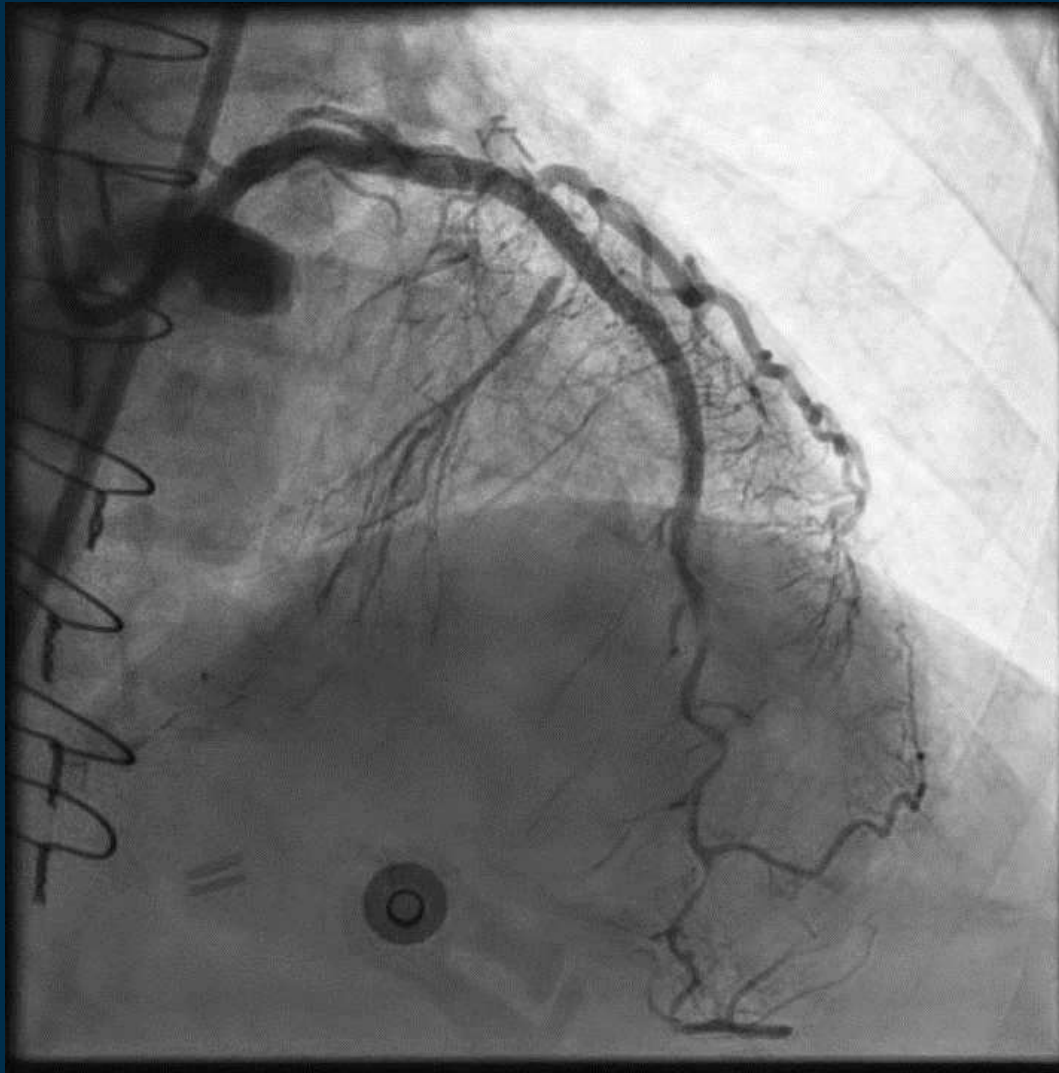
← proximal

Stent length 60.09mm (synergy 2.75×38, 3.0×32)

distal →



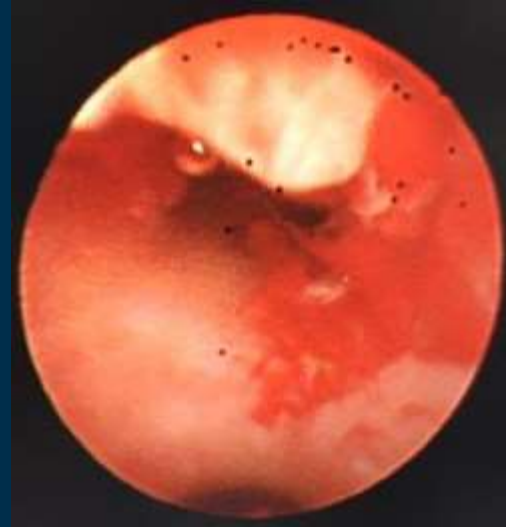
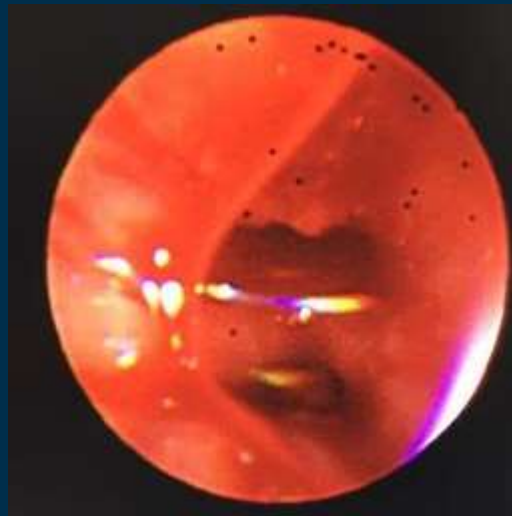
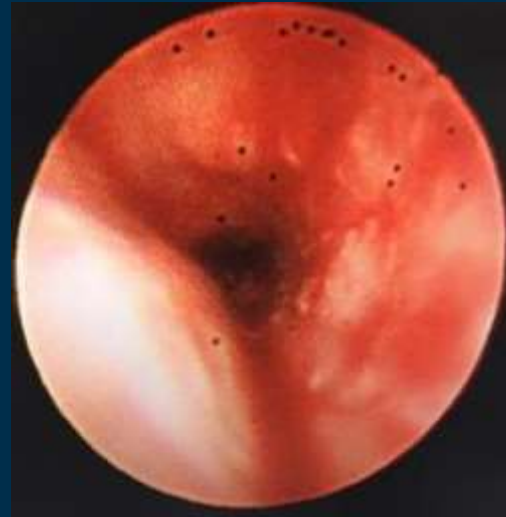
# Percutaneous coronary intervention



**There are some suboptimal lesion on IVUS, but the procedure was terminated with a successful result on angiography.**



# Bronchoscopy (post PCI day #4)



**LUL bronchus cancer bleeding**

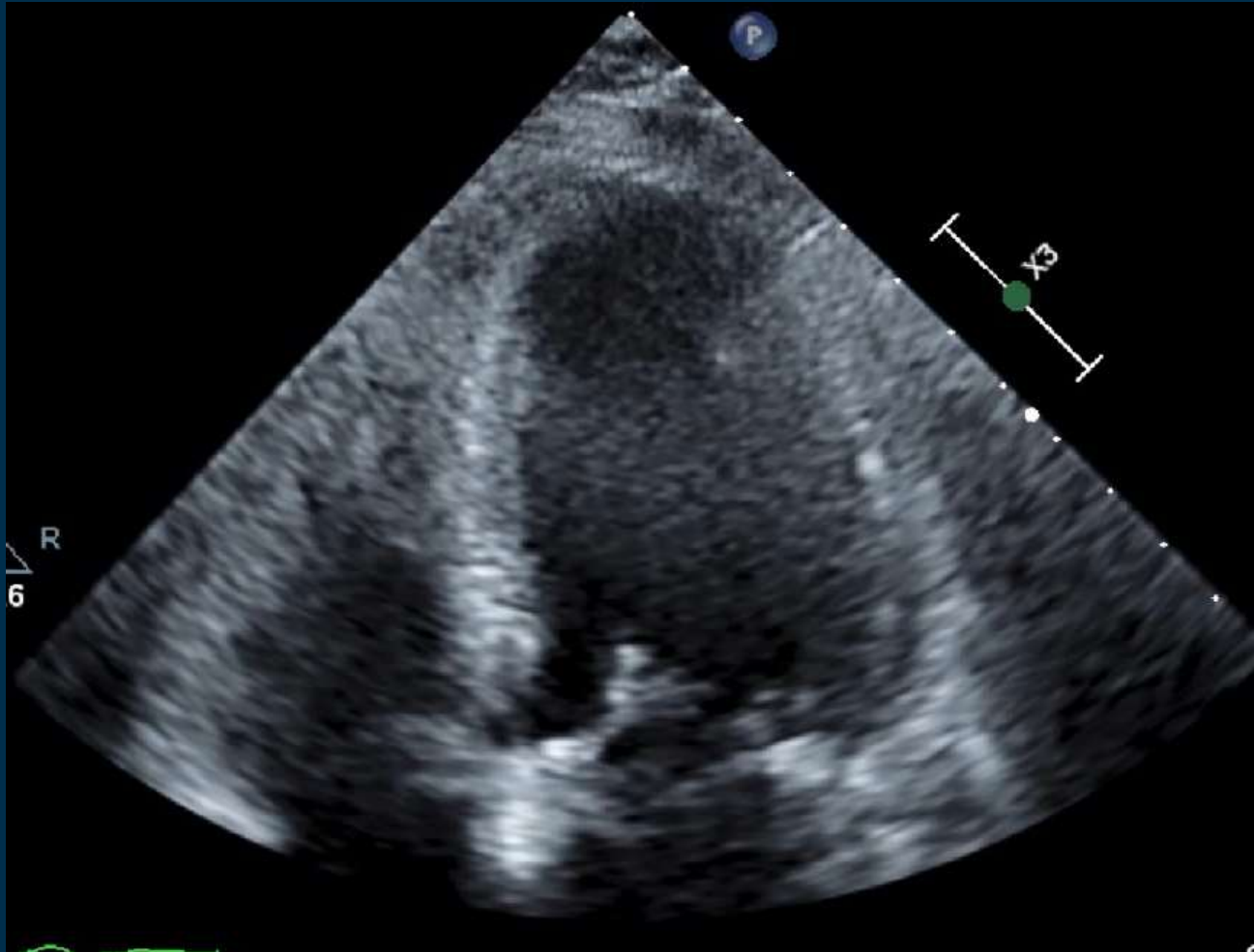


# After Procedure

- **ECMO : 5 days**
- **D/C cardioversion and amiodarone (post PCI day #2)**
- **Ventilator : 11 days (d/t bleeding in the intubation tube)**
  
- **Pre PCI medication : NOAC**
- **Post PCI medication : Aspirin, Plavix, IV heparin (ECMO)**
- **Medication : loading DAPT (3 day)**
  - hold DAPT d/t bleeding (3 day)**
  - SAPT (plavix 3 day)**
  - SAPT + low dose NOAC (until discharge)**



# Post-PCI Echocardiography



**LV EF 28 -> 60%, PASP 49 -> 28mmHg  
AV Vmax 4.07 -> 4.12m/s**

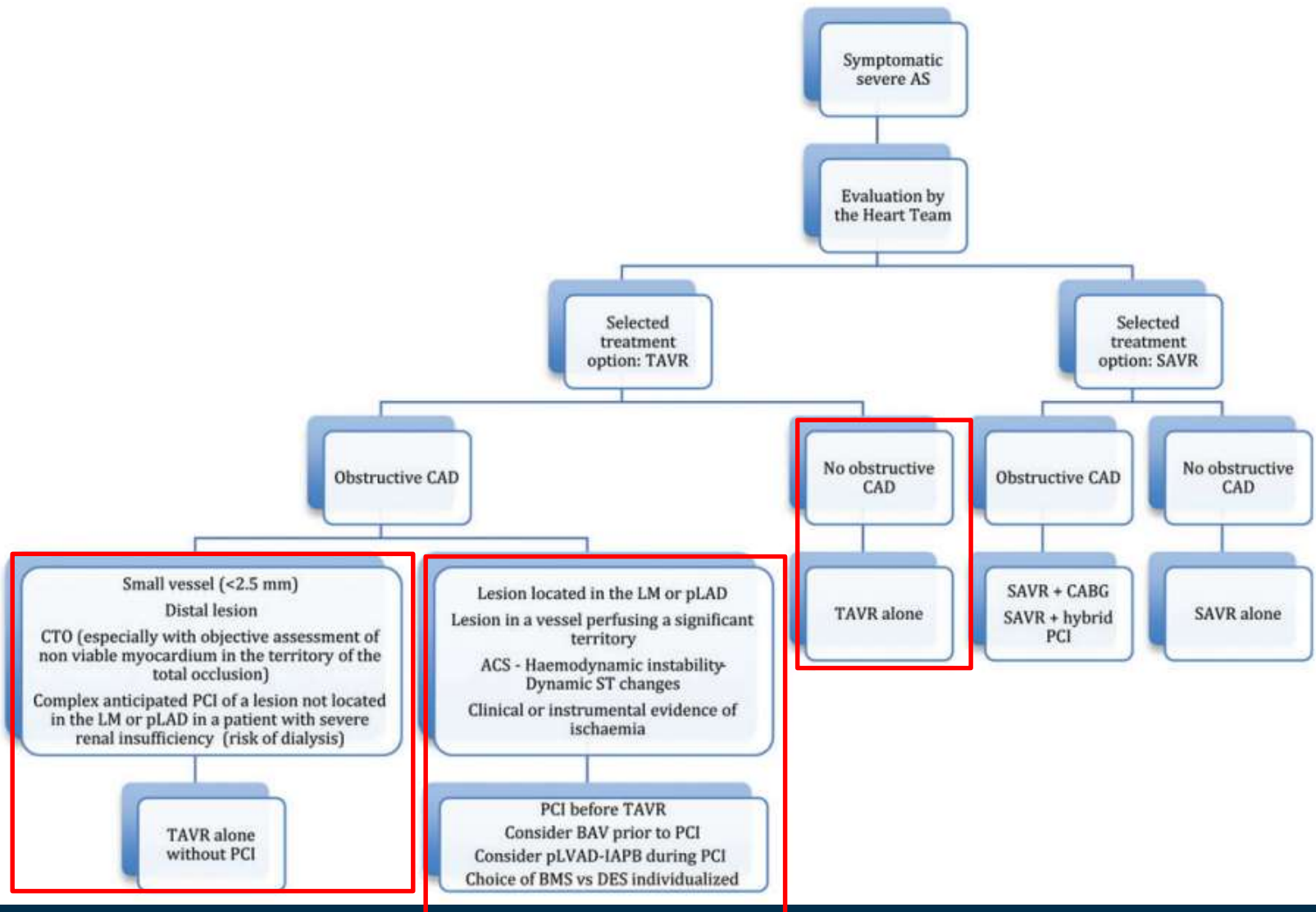


# After Procedure

- Last OPD f/u (post-PCI 9 months)
  - S) DOE: improved (10-15 min walk)
  - O) Echo: normal EF, AV Vmax 4.1m/s, PASP 28
  - A) Asymptomatic Severe AS
    - AFL (sinus conversion)
    - NSCLC (no progression during immune Tx.)
  - P) consider TAVR? Or regular Echo f/u with OMT?



# severe AS with CAD



# Conclusion

- **It may be necessary to assess where culprit lesions are present in high risk patients with severe AS.**
- **As TAVR procedure becomes more common, accurate assessment of Severe AS and severe CAC is necessary to prevent overtreatment in high risk patients.**
- **As the interventional technique develops, physician's decision making also becomes more difficult.**

