

# **The Twisted Vessel Left us Twisting in the Wind**

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# Disclosure

- I, Piyoros Lertsanguansinchai, has no financial conflict of interest related to this discussion

# A 76-year-old Thai male

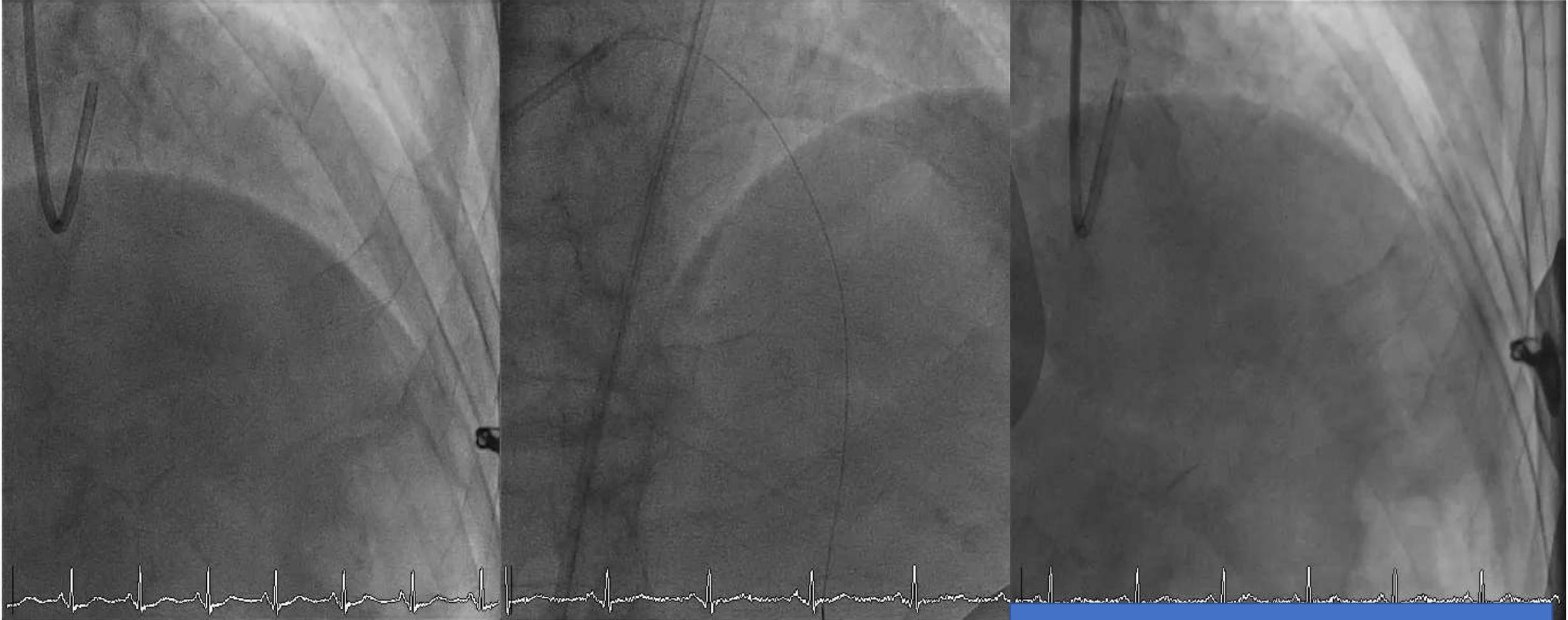
Underlying disease

- ❑ T2DM, HT, DLP
- ❑ TVD - presented with CCS (9/9/2019) at another Tertiary Hospital
  - ❑ CAG : TVD ( CTO at proximal LAD, CTO at proximal RCA, 90% stenosis at LCx)



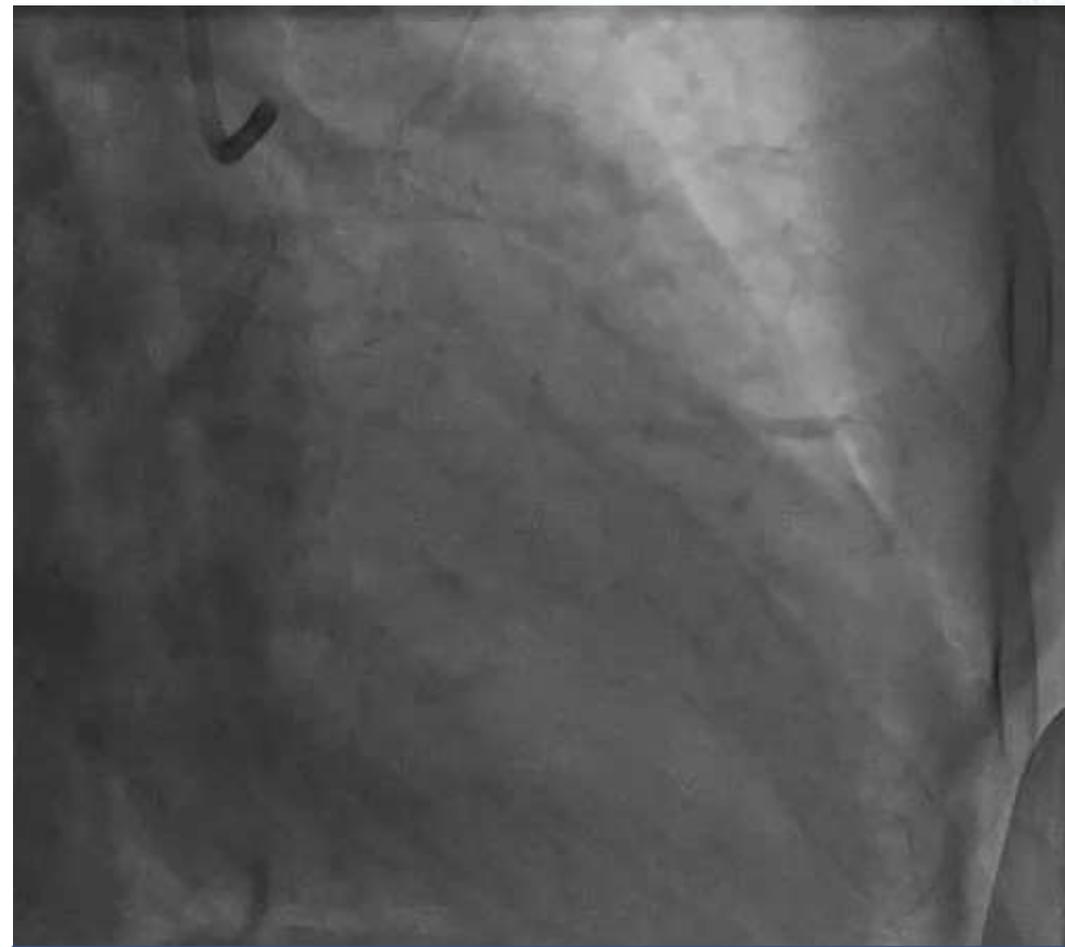
**Denied CABG then refer to our Hospital**

# PCI at CTO LAD (10/2019) (3 years prior to this current admission)



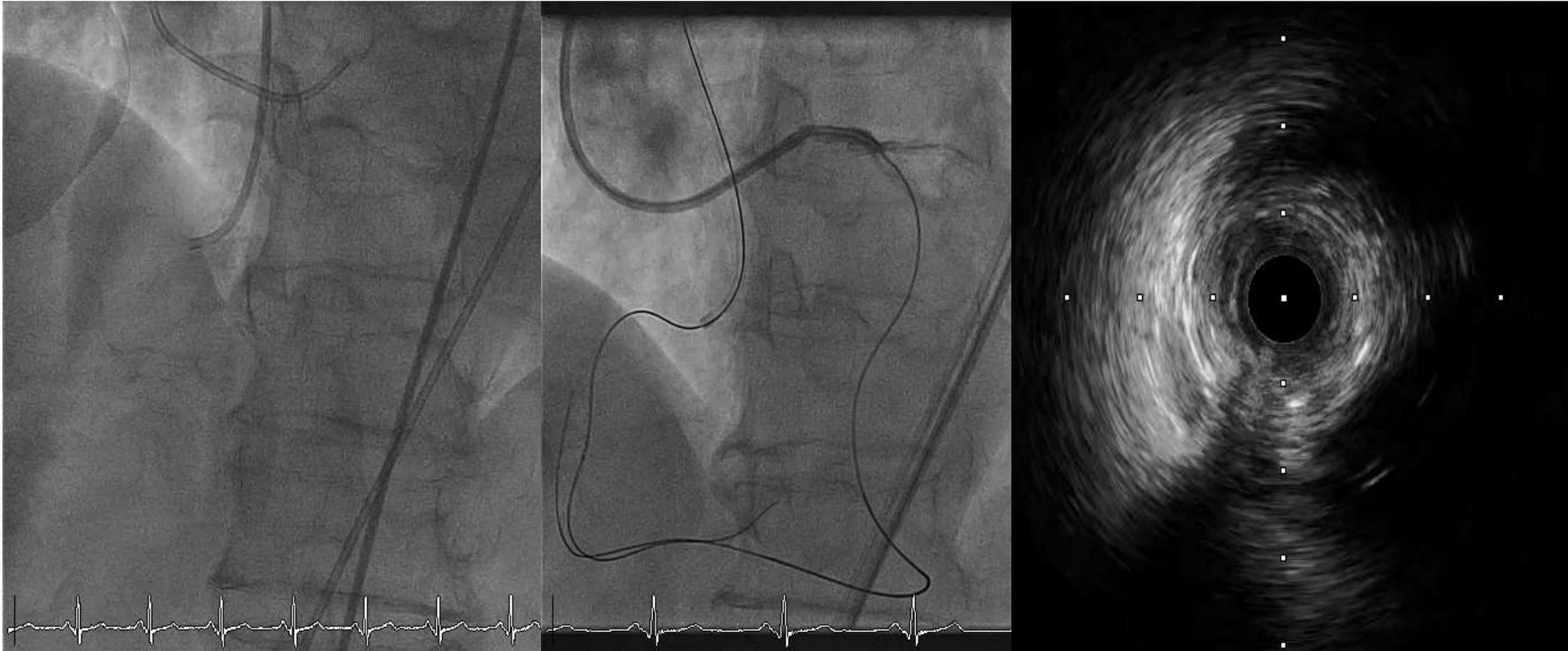
EES 3.0x18 mm at proximal LAD

# PCI at LCx (10/2019) (3 years prior to this current admission)

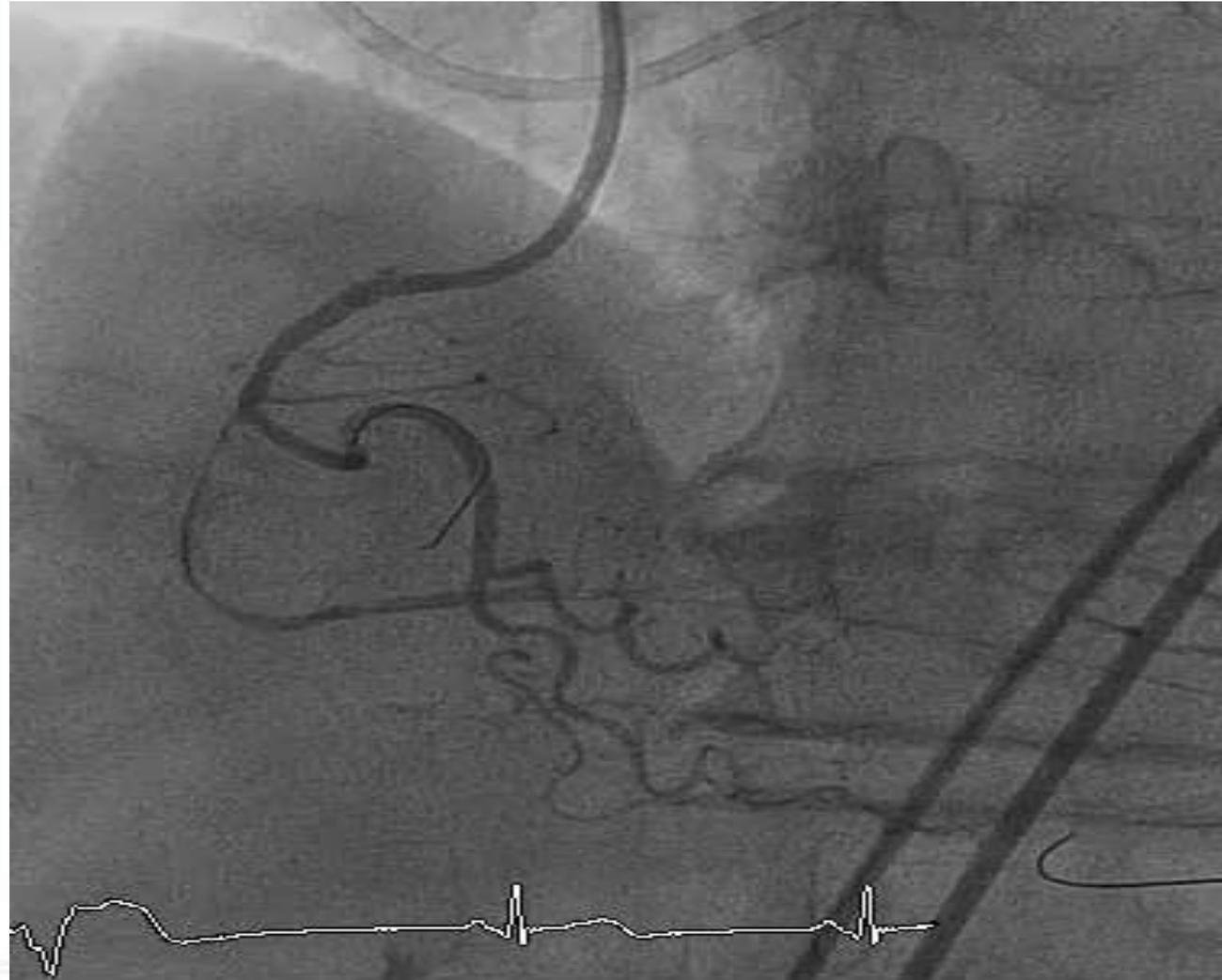


SES 2.75x28 mm at LCx

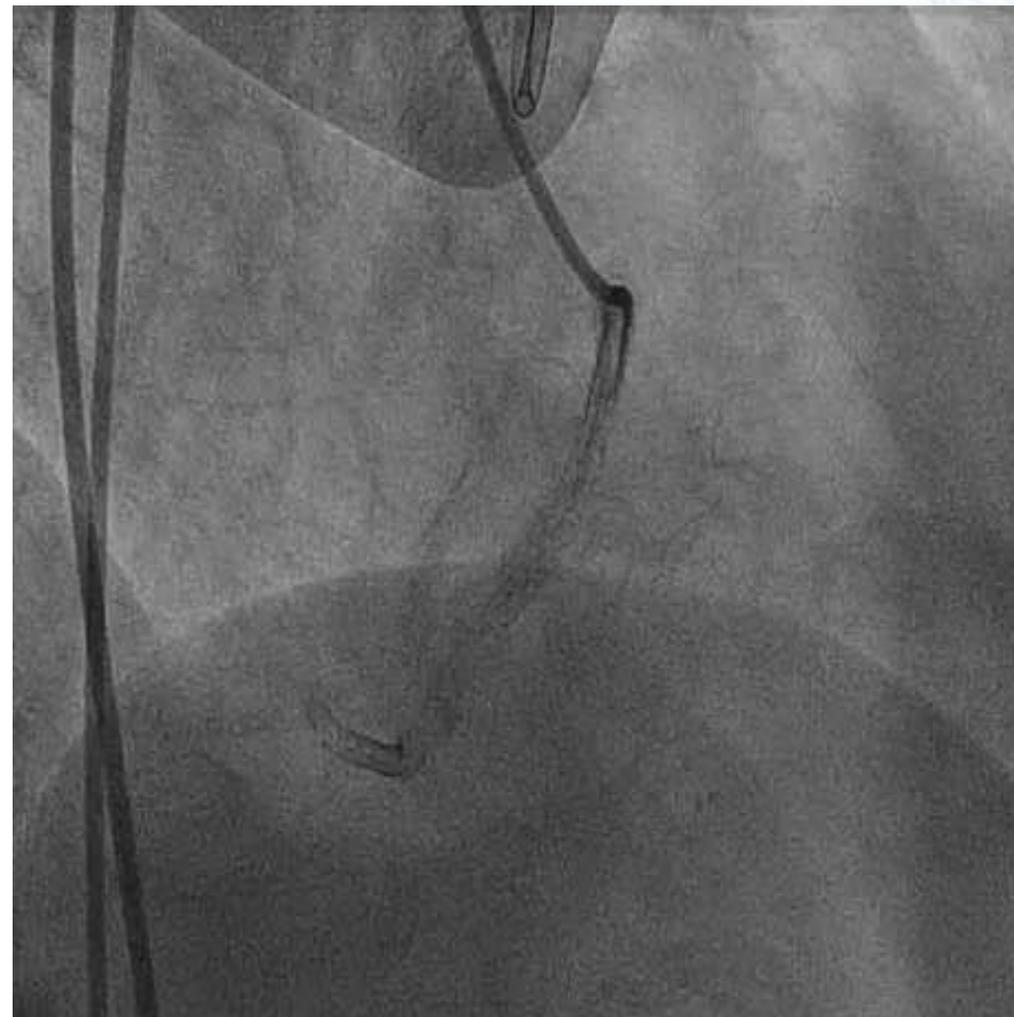
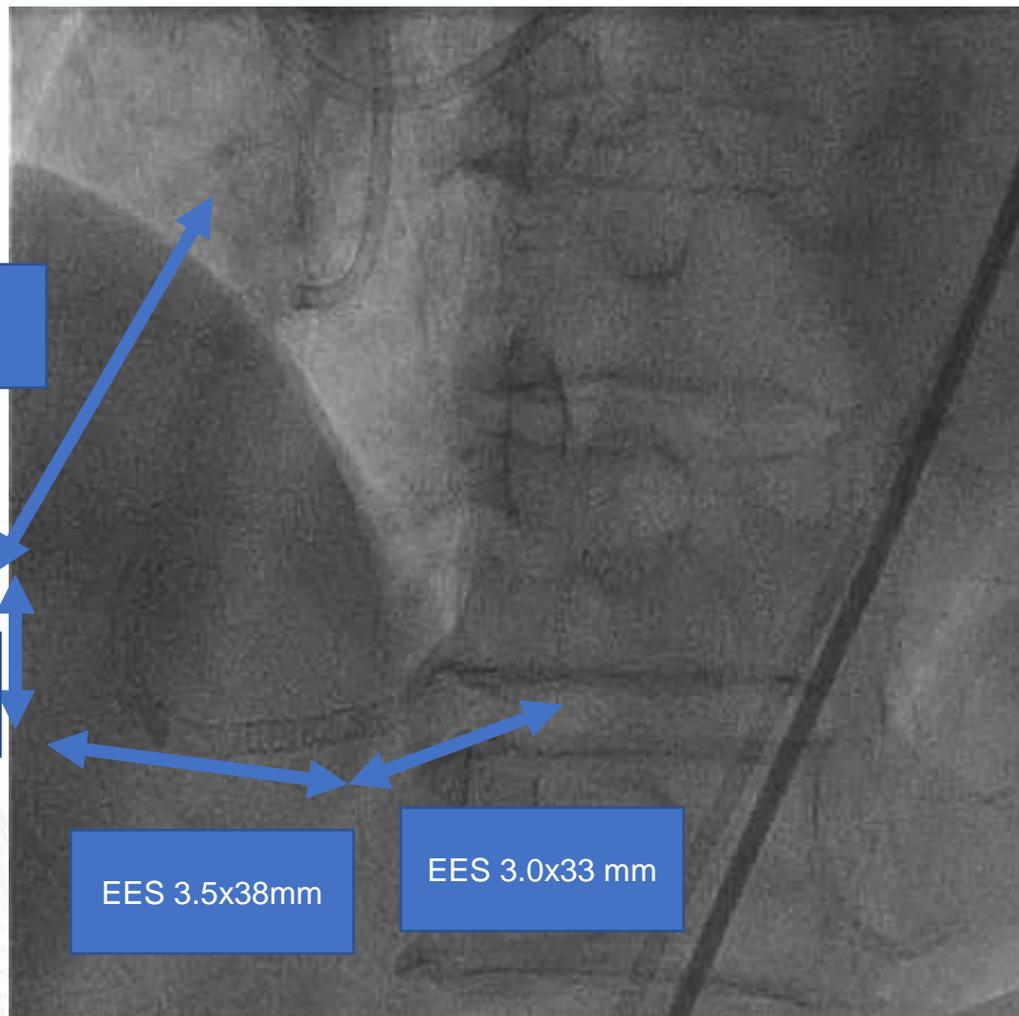
# PCI at CTO RCA (12/2019) (3 years prior to this current admission)



# PCI at CTO RCA (12/2019) (3 years prior to this current admission)



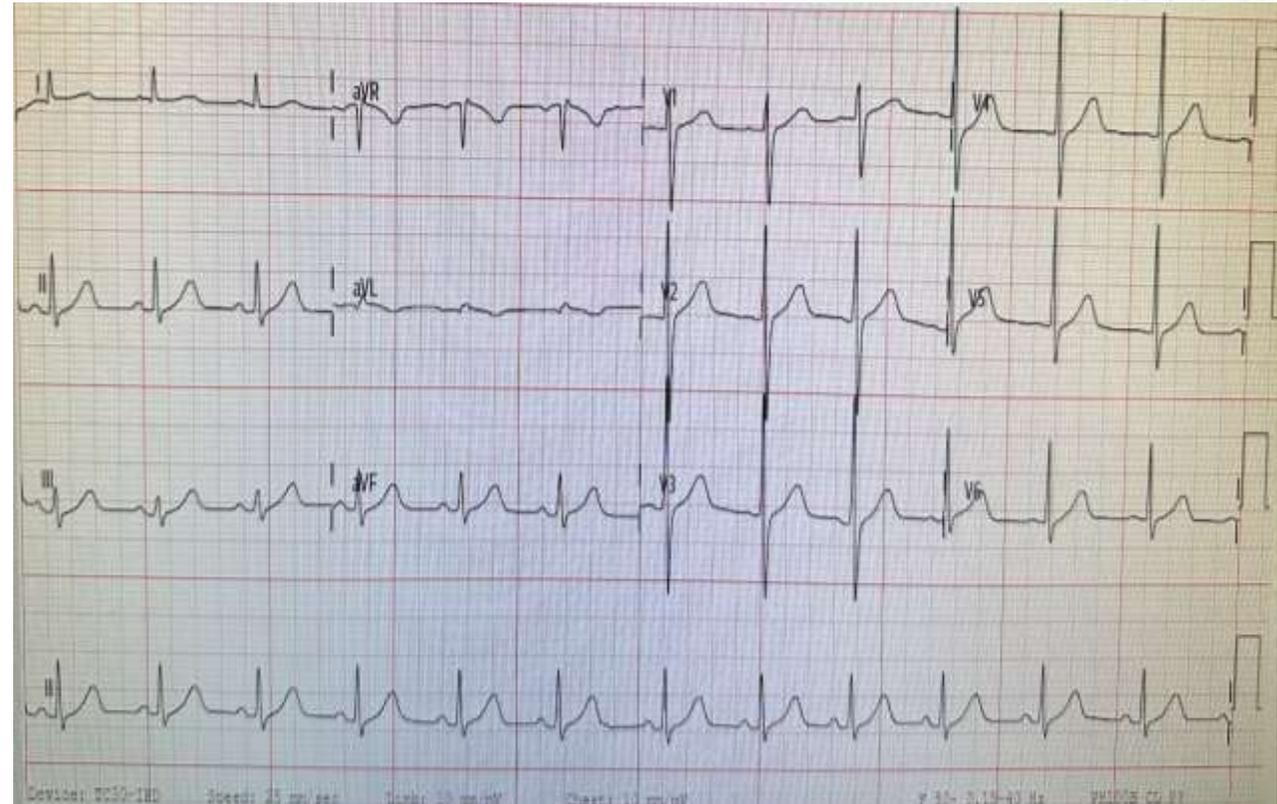
# PCI at CTO RCA (12/2019) (3 years prior to this current admission)



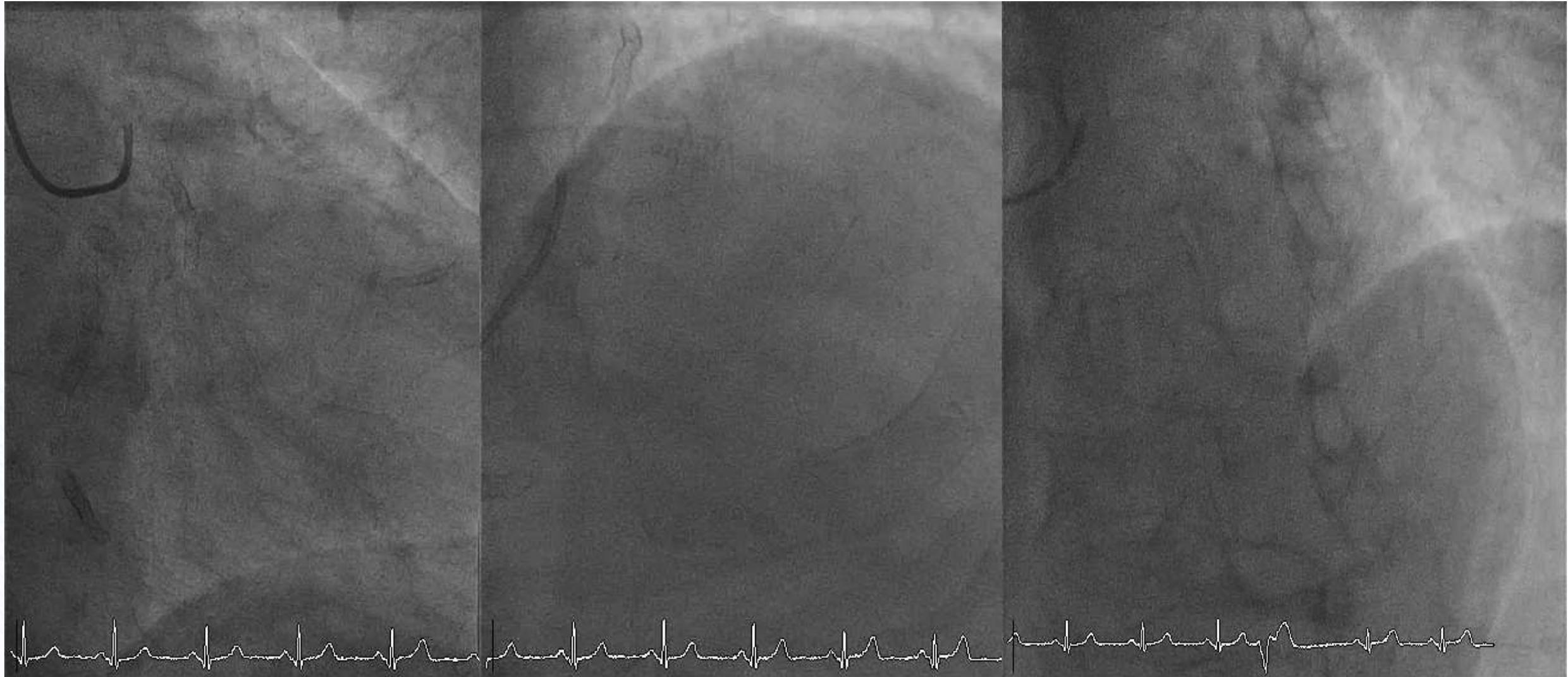
# Current clinical presentation

*(3 years after PCI at CTO LAD, CTO RCA, and LCx)*

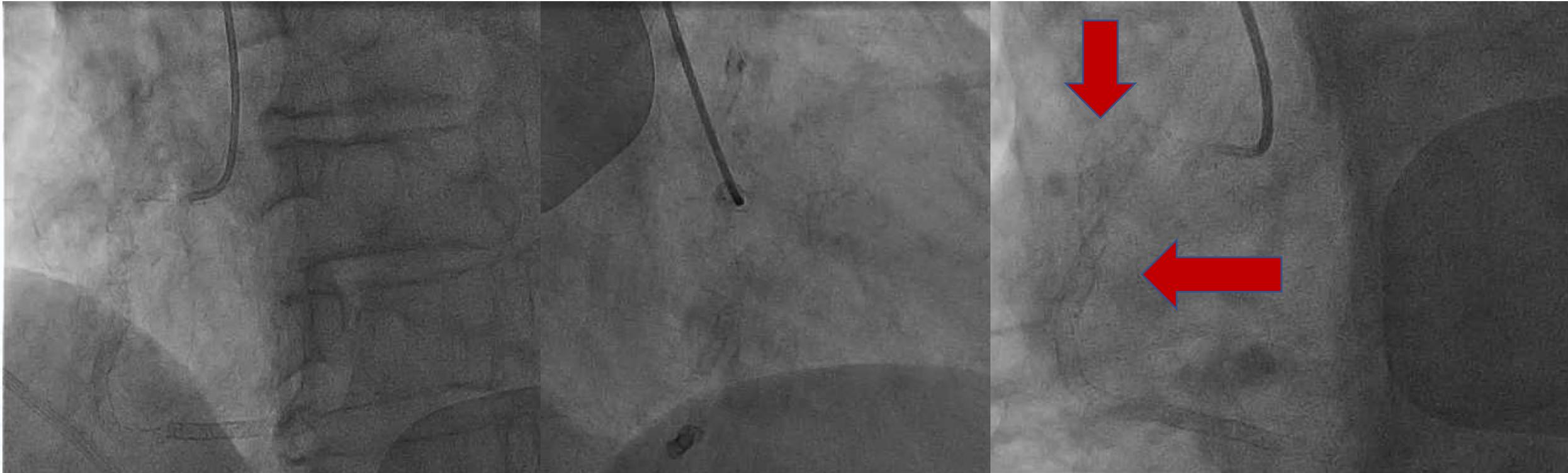
- ❑ Presented with chest pain and DOE for 4 months
- ❑ Exercise stress echo
  - Positive at RCA territory
  - LVEF 60%



# This current admission



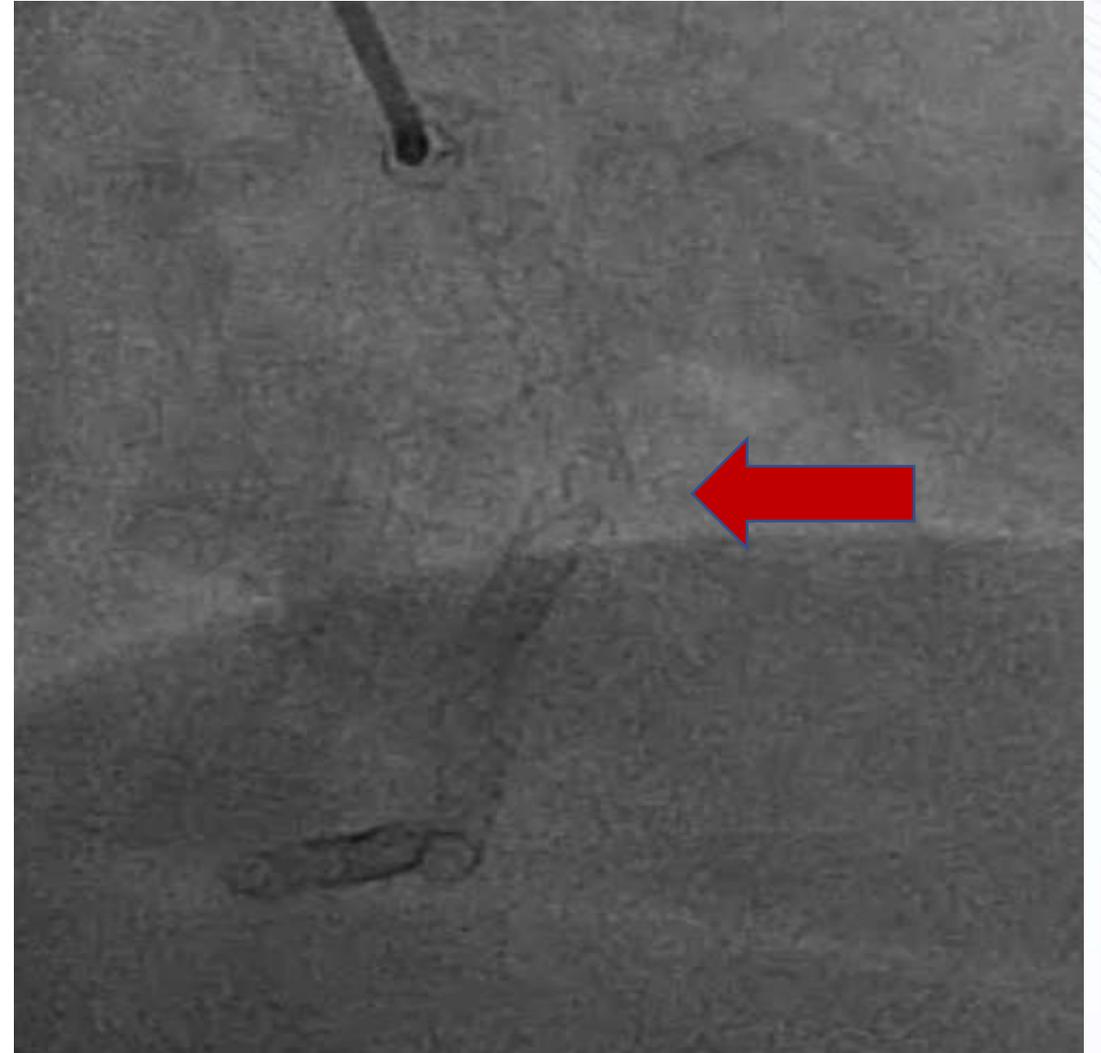
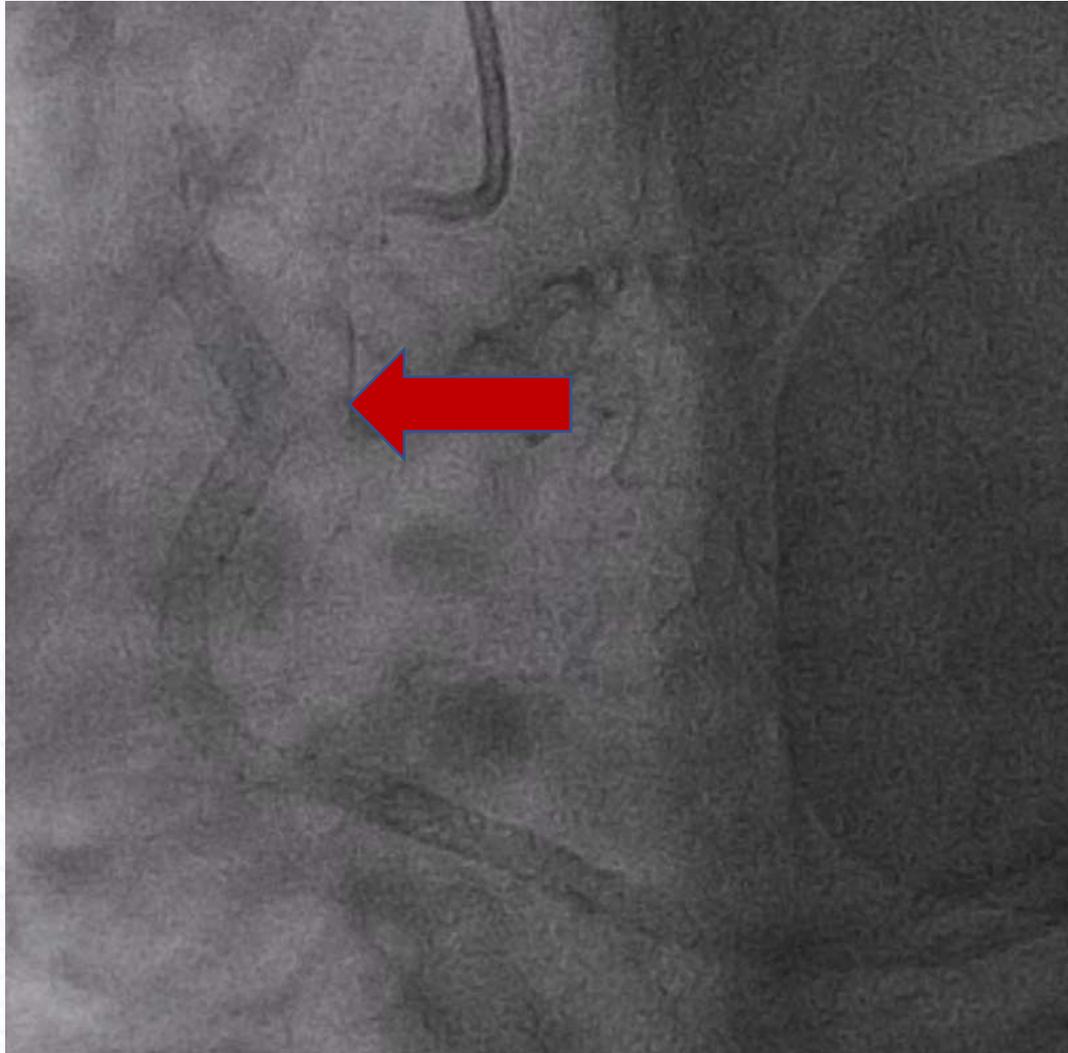
# This current admission



**What is the etiology of the ISR?**



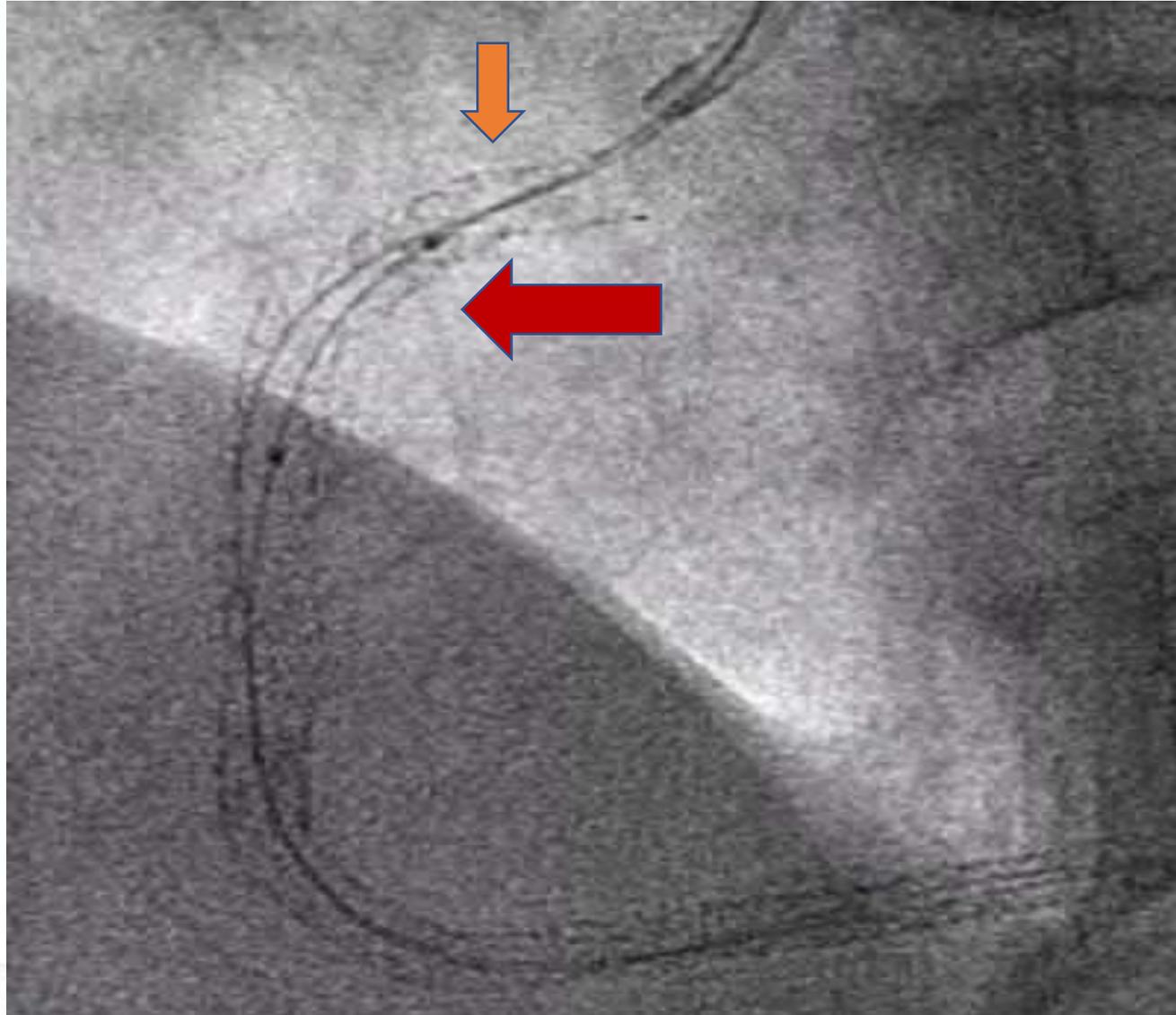
# Stent fracture



# Procedure planning

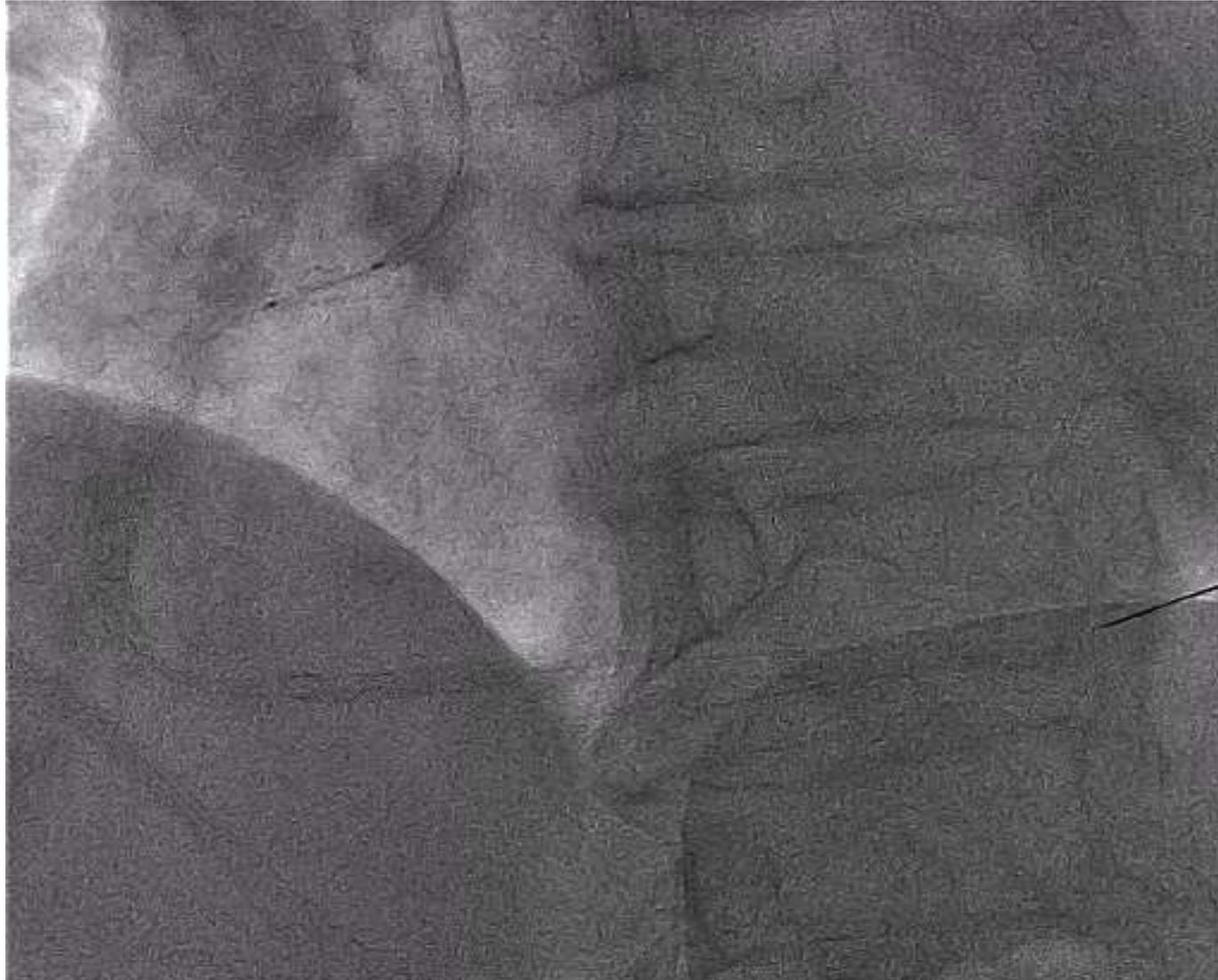
- RRA
- JR 4.0 (6-Fr)
- Stent boost at proximal RCA
- Predilatation with NC 3.5x15 mm at proximal RCA
- OCT

# Stent boost





NC 3.5x15 mm @ 22 ATM



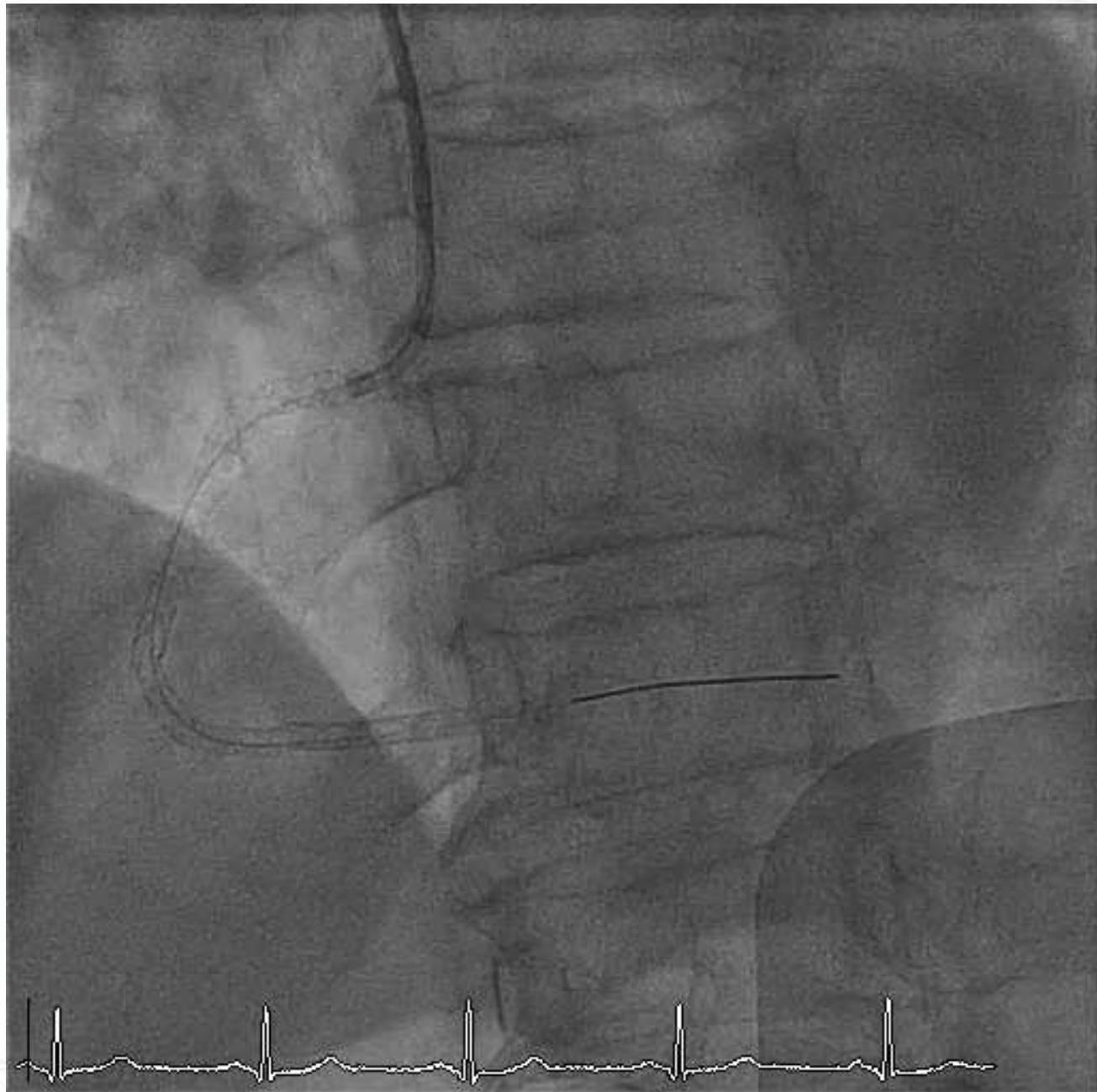
Cutting balloon 3.5x10 mm  
@ 14 ATM

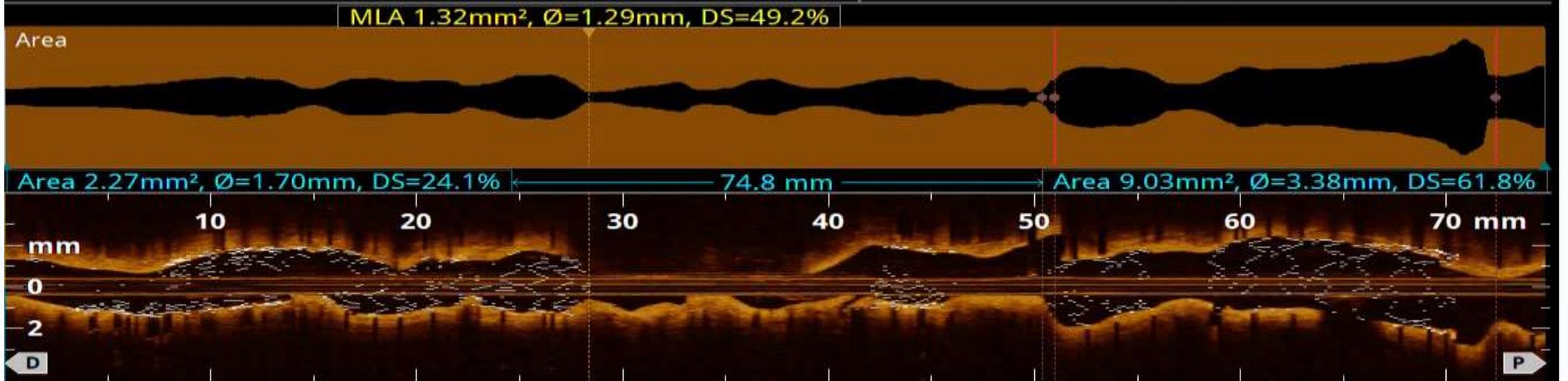
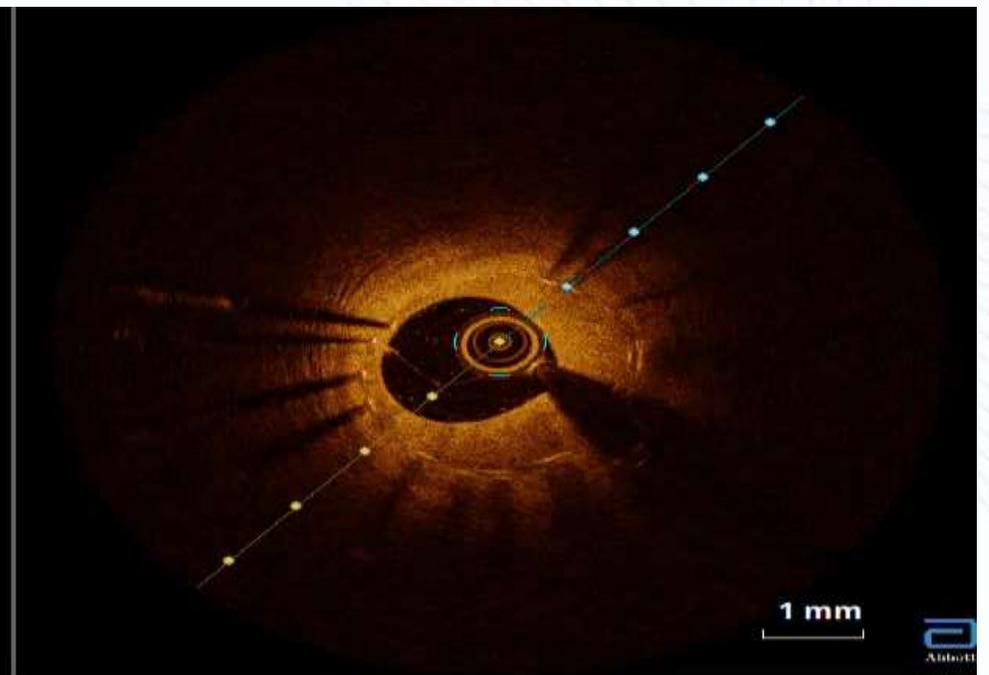


NC 3.5x15 mm @ 24 ATM  
and prolong inflation

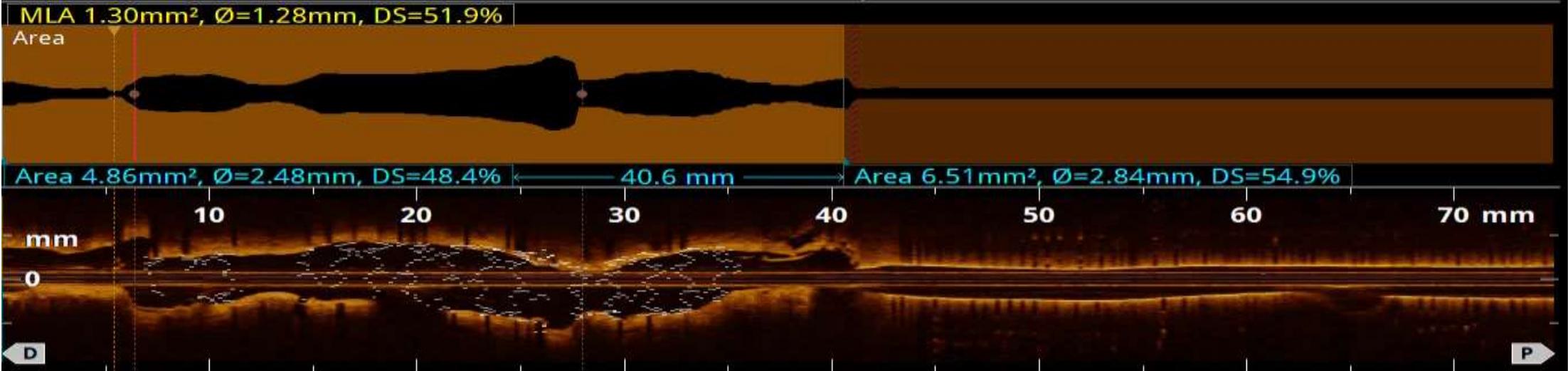
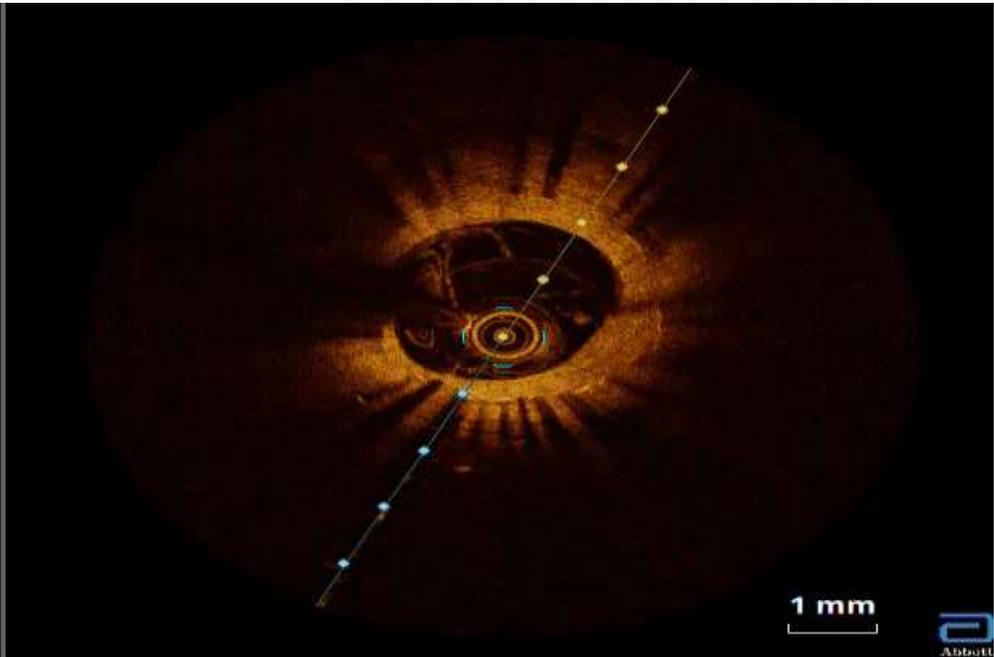
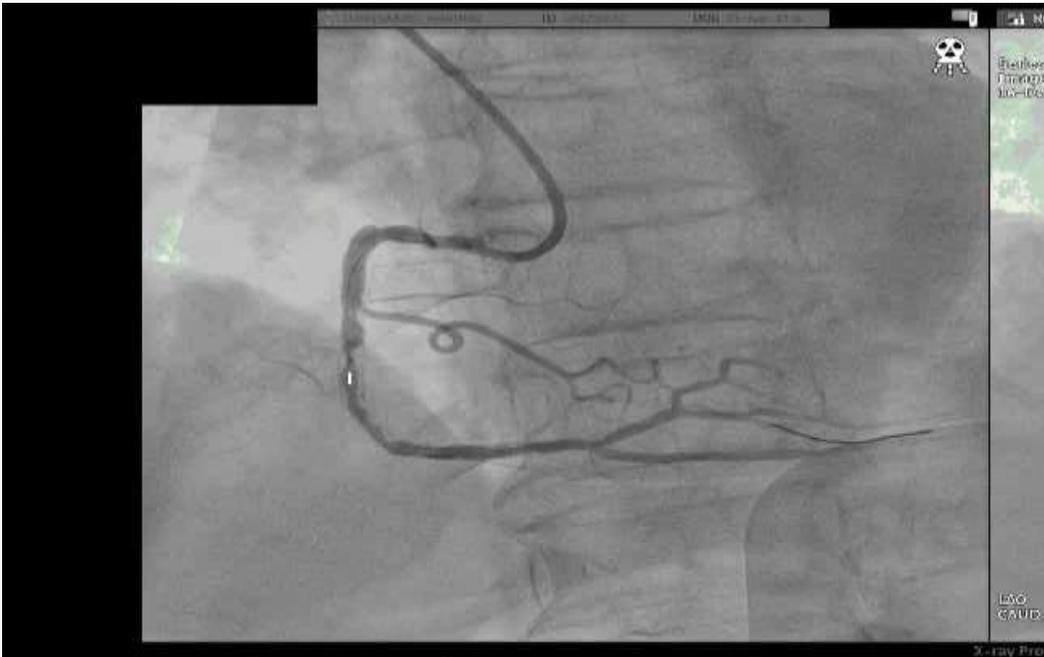


Cutting balloon 3.5x10 mm  
@ 18 ATM and prolong inflation

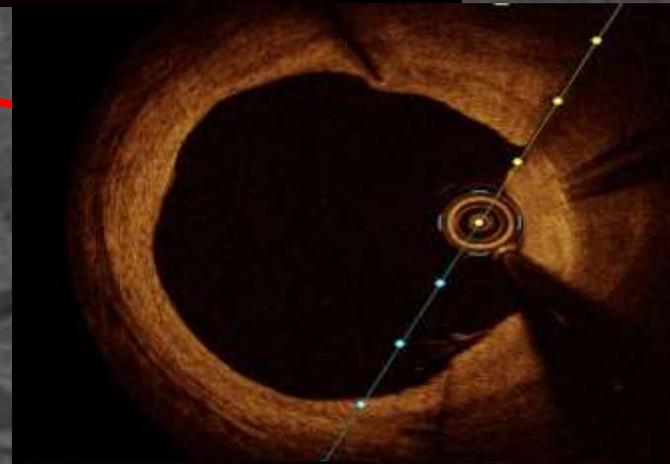
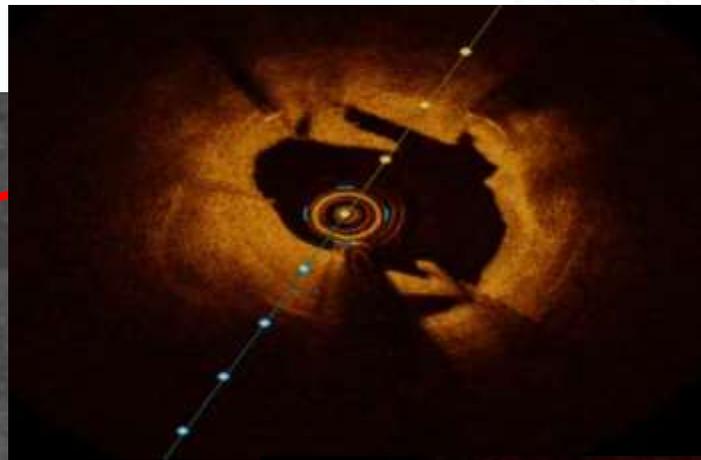
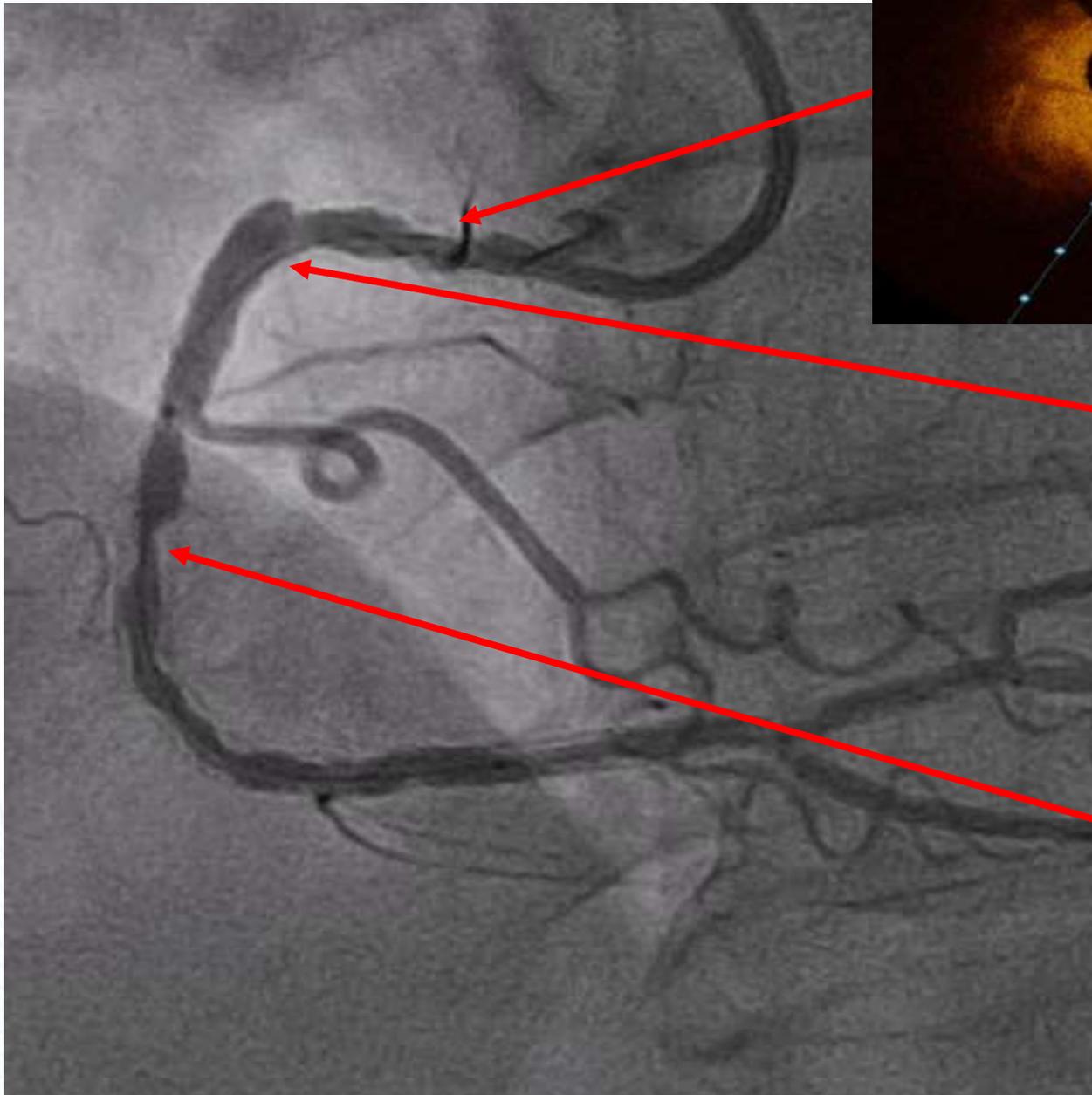




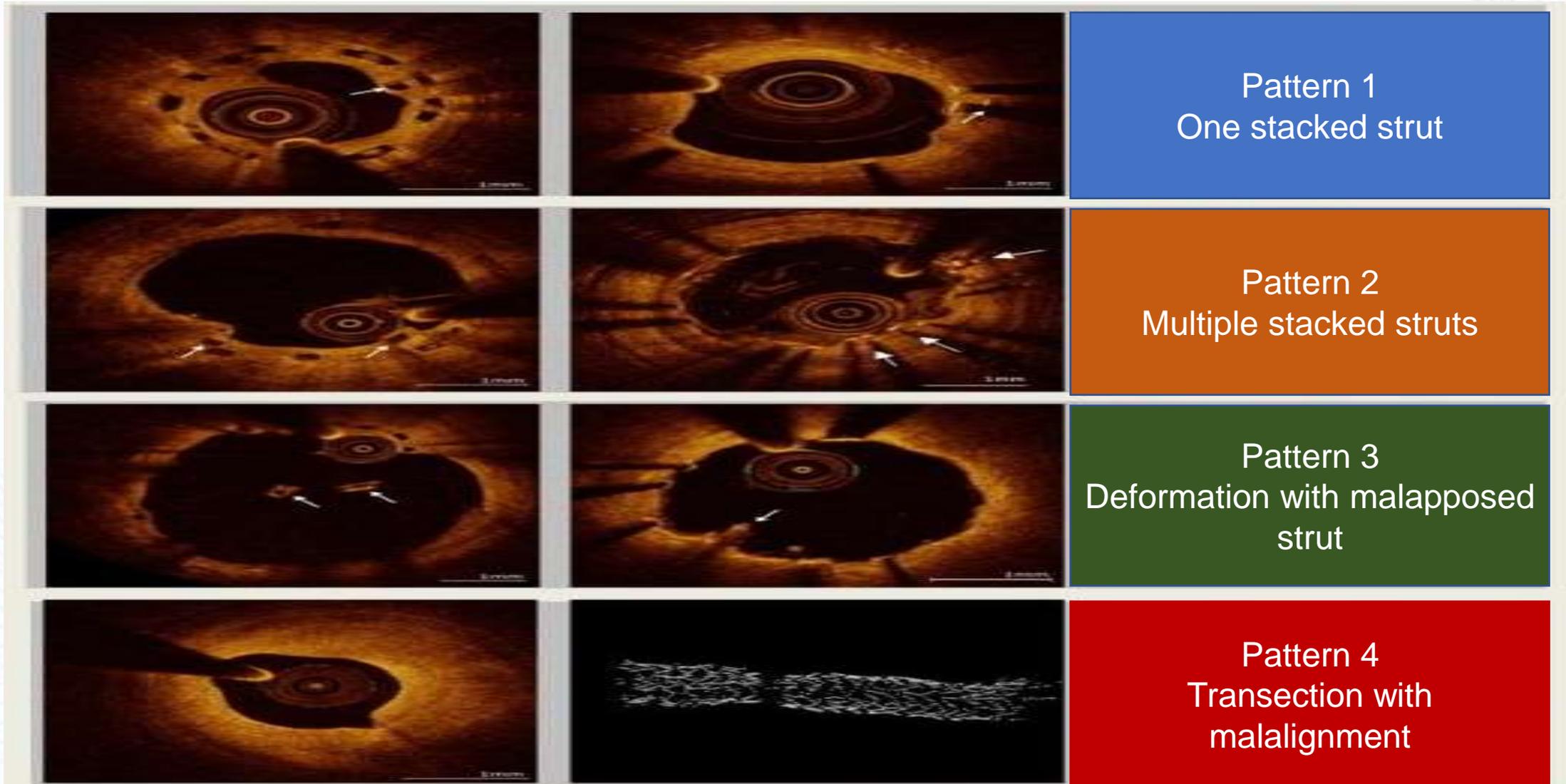
OCT : mid RCA to PL



# OCT : Proximal to mid RCA

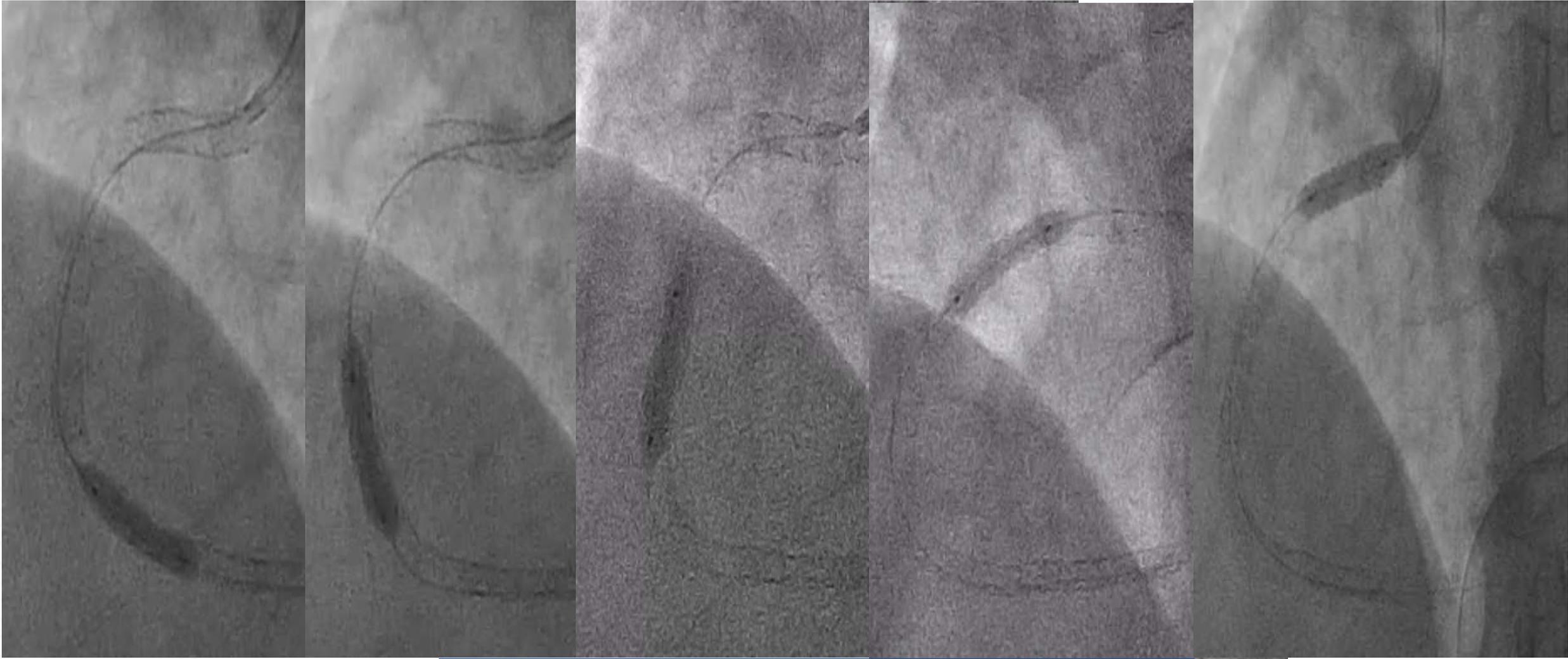


# OCT patterns of stent fracture





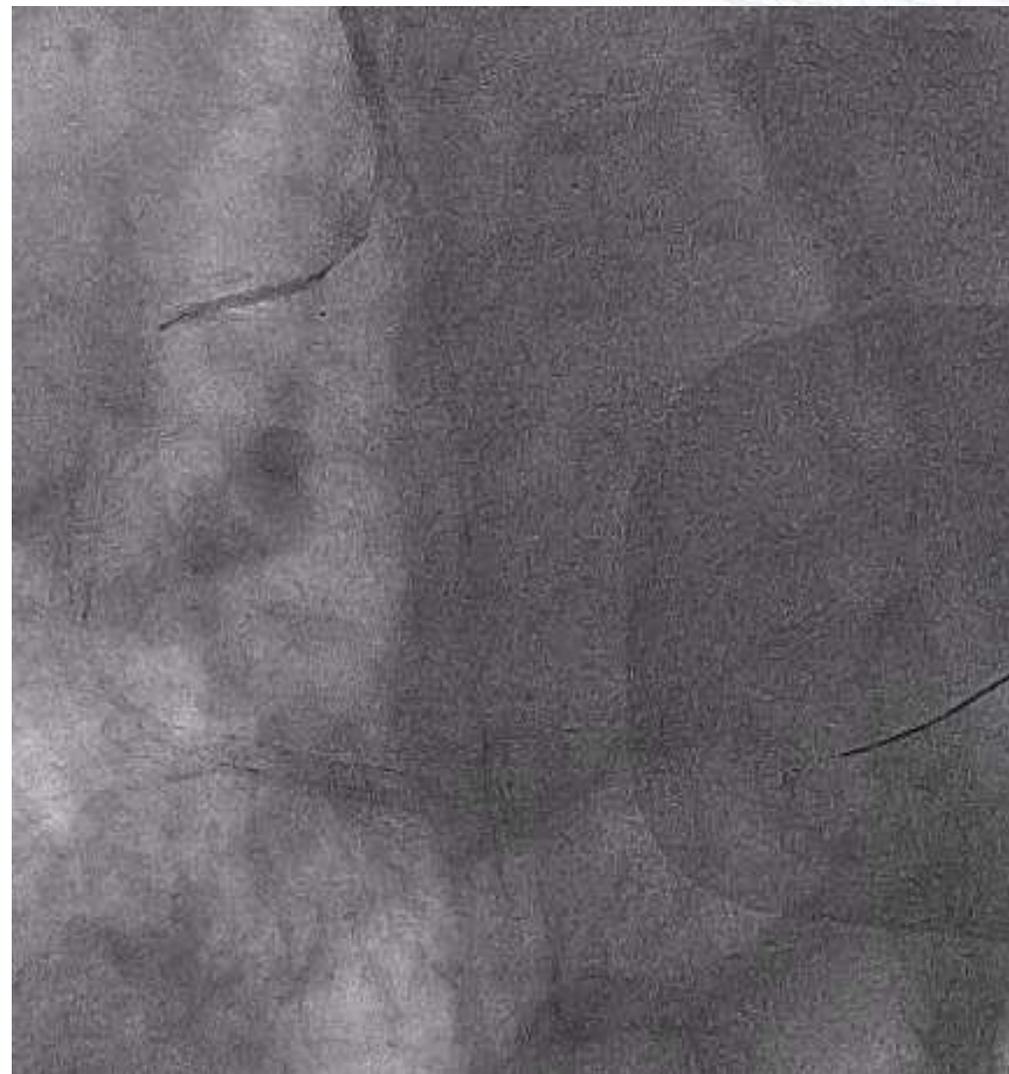
Cutting balloon 3.5x10 mm  
@ 12-14 ATM



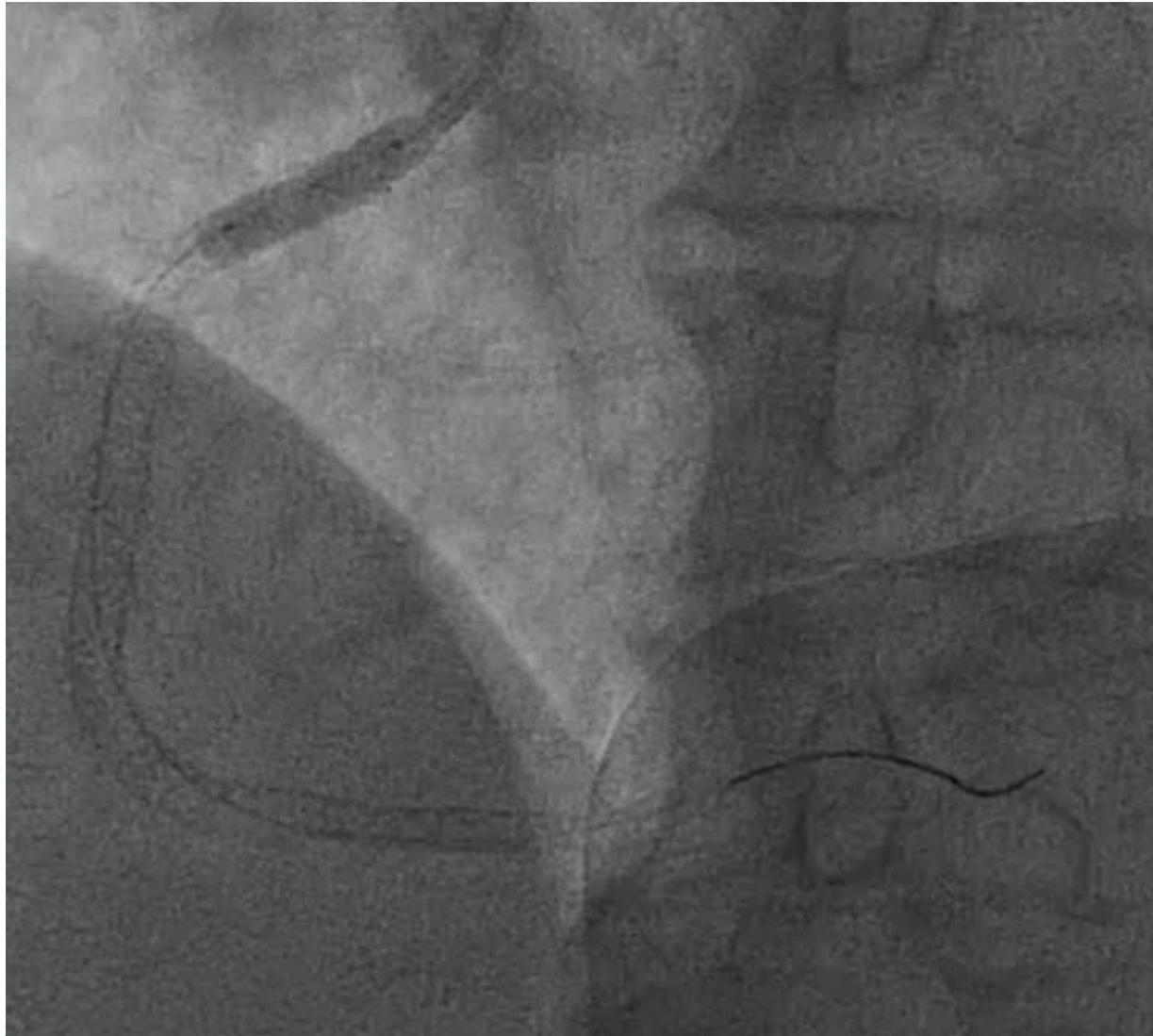
NC 3.5x15 mm @ 18-24 ATM



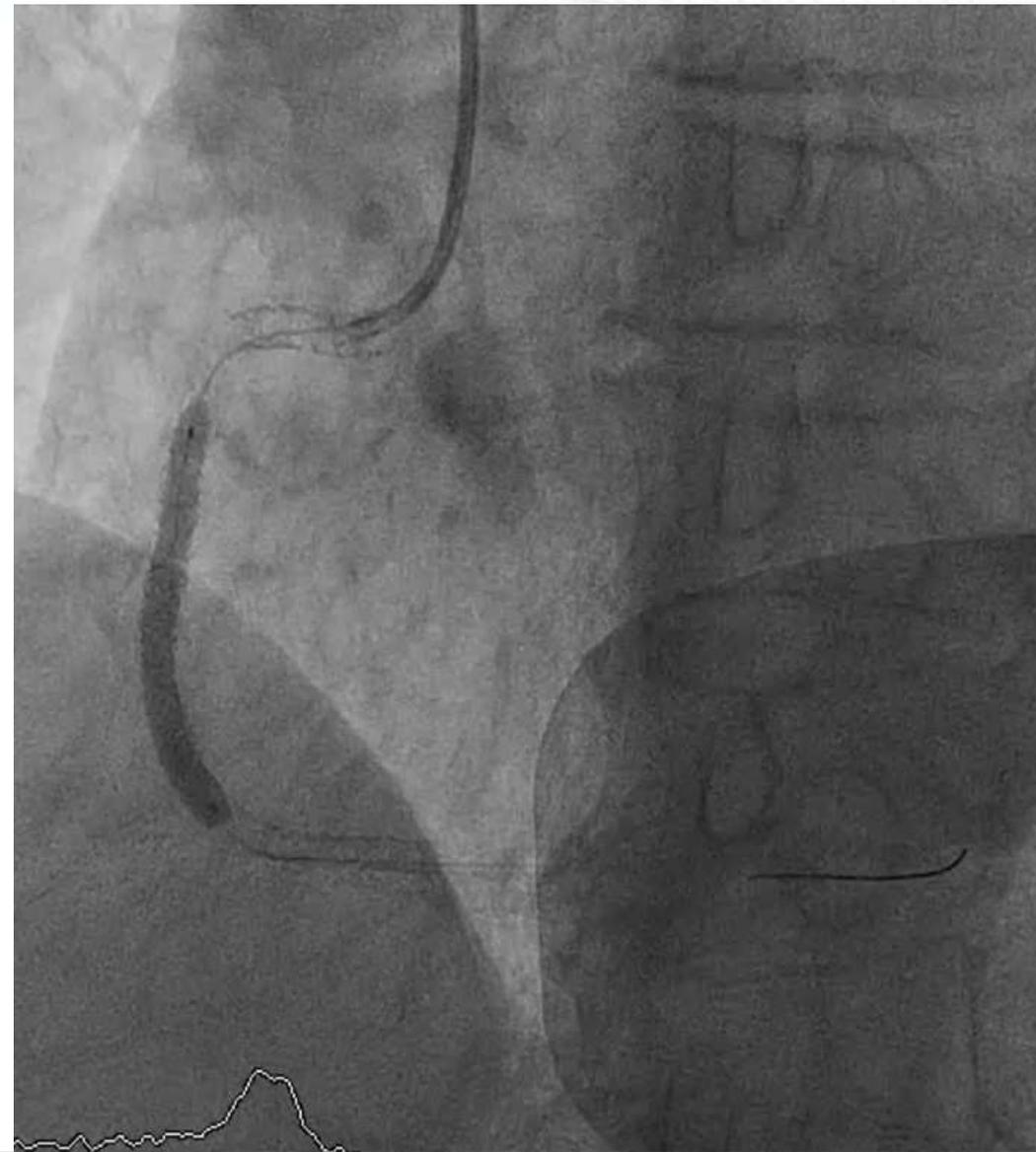
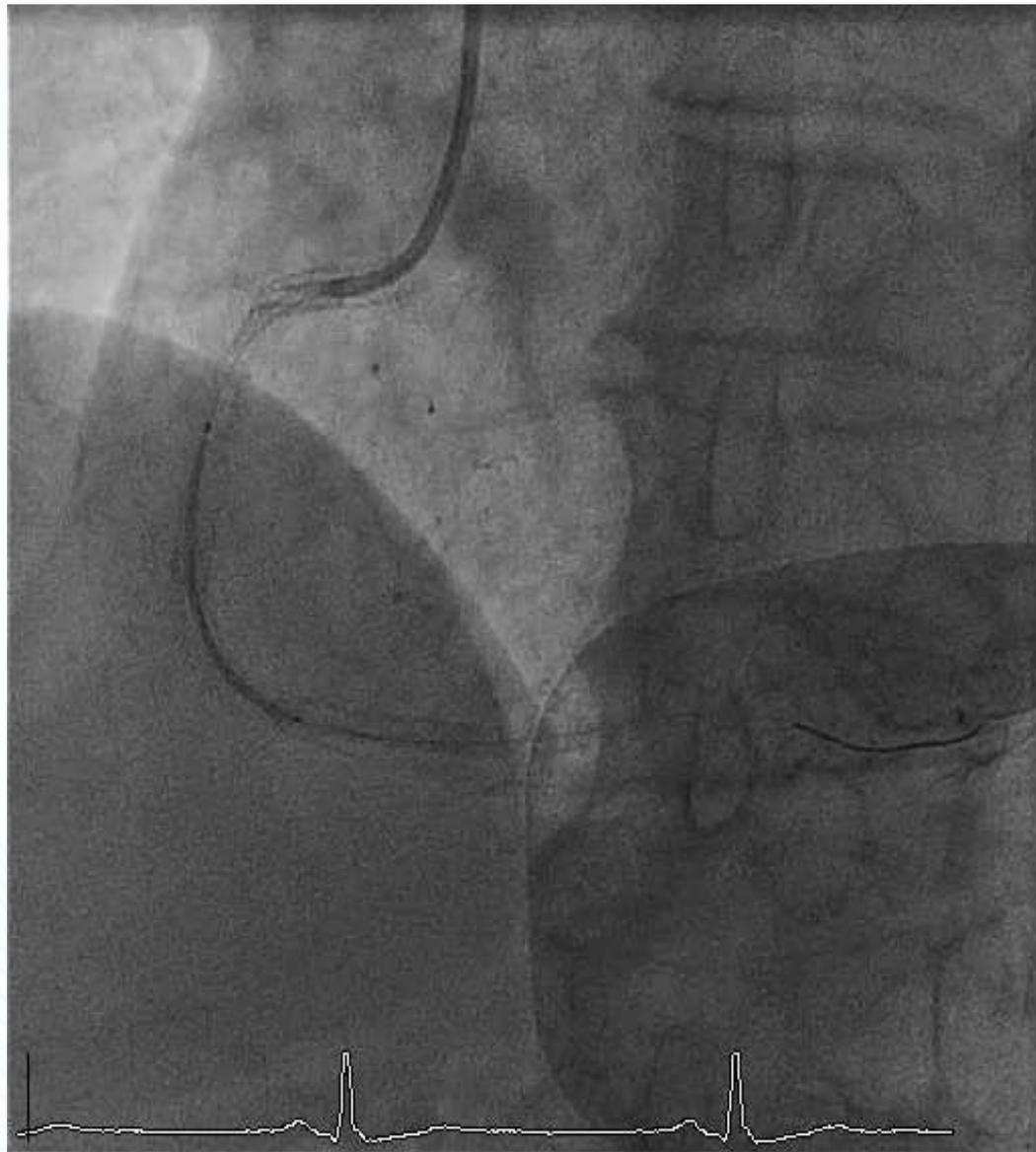
CINE after predilate



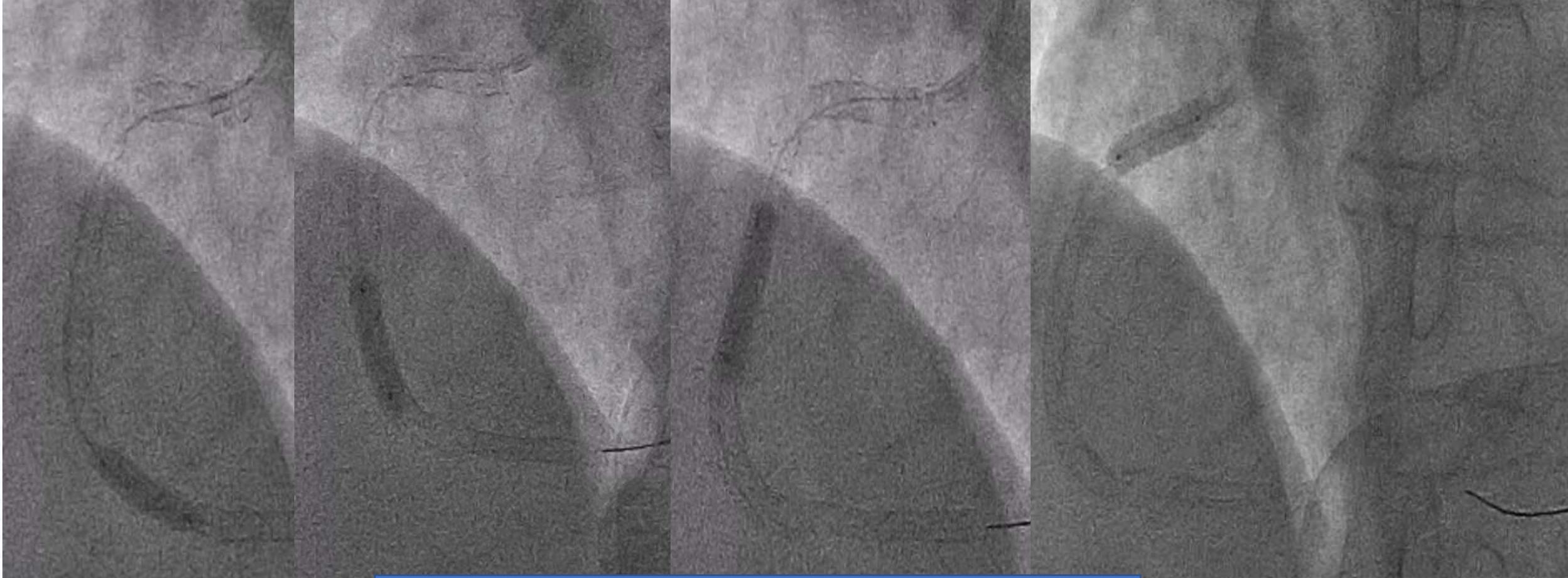
ZES 3.5x18 mm



NC 4.0x15 mm @ 24 ATM



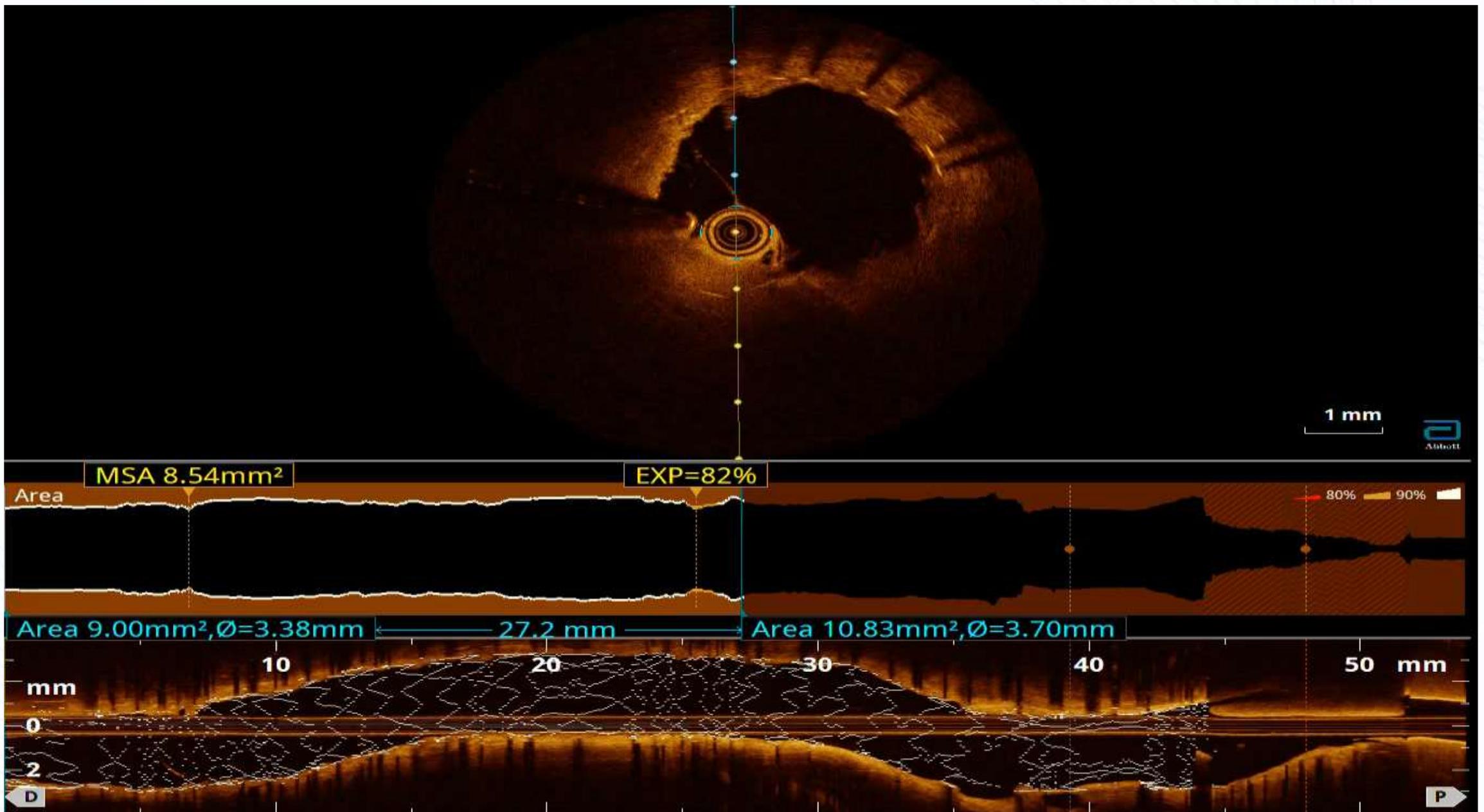
ZES 3.5x38 mm



NC 4.0x15 mm @ 16-24 ATM



Final angiogram

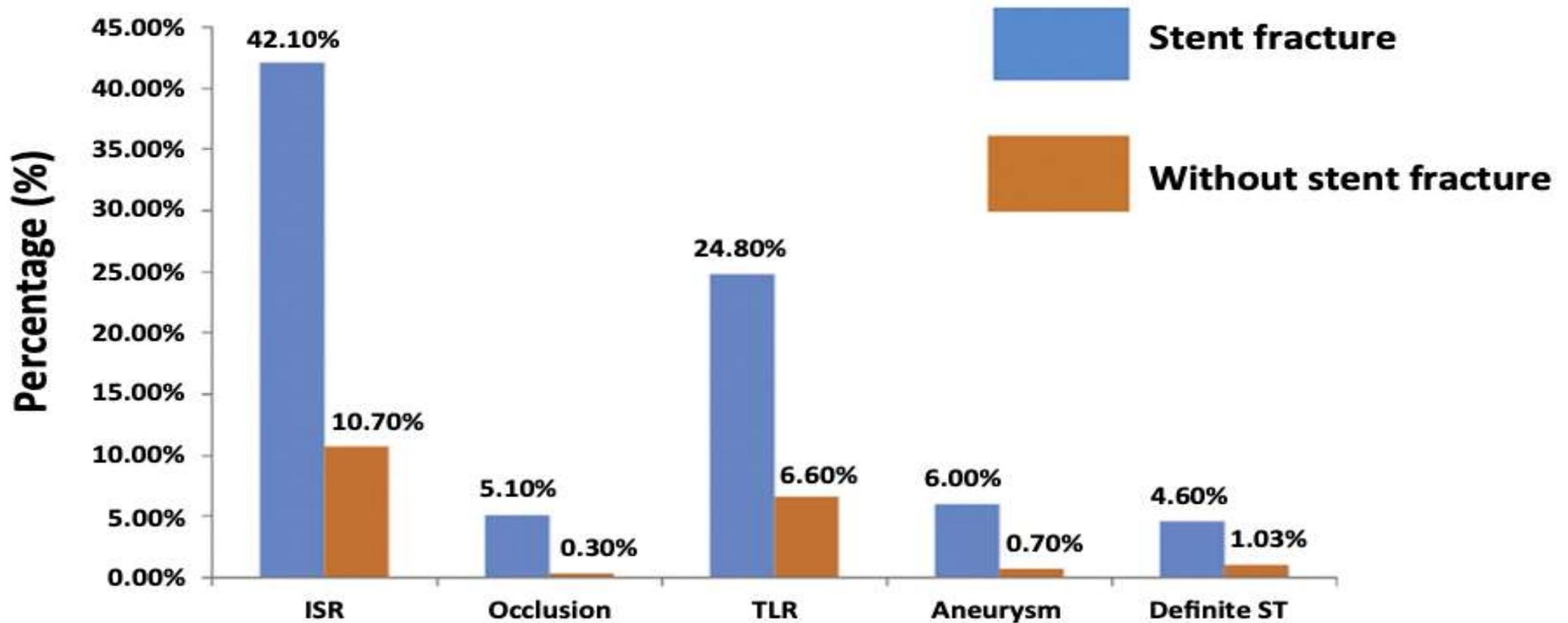


**OCT : Proximal to mid RCA**

# Take Home Message

- ❑ Stent fracture is associated with a high rate of clinical events
- ❑ Hinge motion, tortuosity, calcification, stent length > 25 mm, and RCA stent are independent predictors of stent failure
- ❑ Multiple views of StentBoost, and ClearStent aid in determining stent fracture
- ❑ Consider OCT or IVUS in ISR when suspicious of stent fracture

# Complication associated with stent fracture



# Take Home Message

- ❑ Stent fracture is associated with a high rate of clinical events
- ❑ Hinge motion, tortuosity, calcification, long stent, and RCA stent are independent predictors of stent fracture
- ❑ Multiple views of StentBoost, and ClearStent aid in determining stent fracture
- ❑ Consider OCT or IVUS in ISR when suspicious of stent fracture

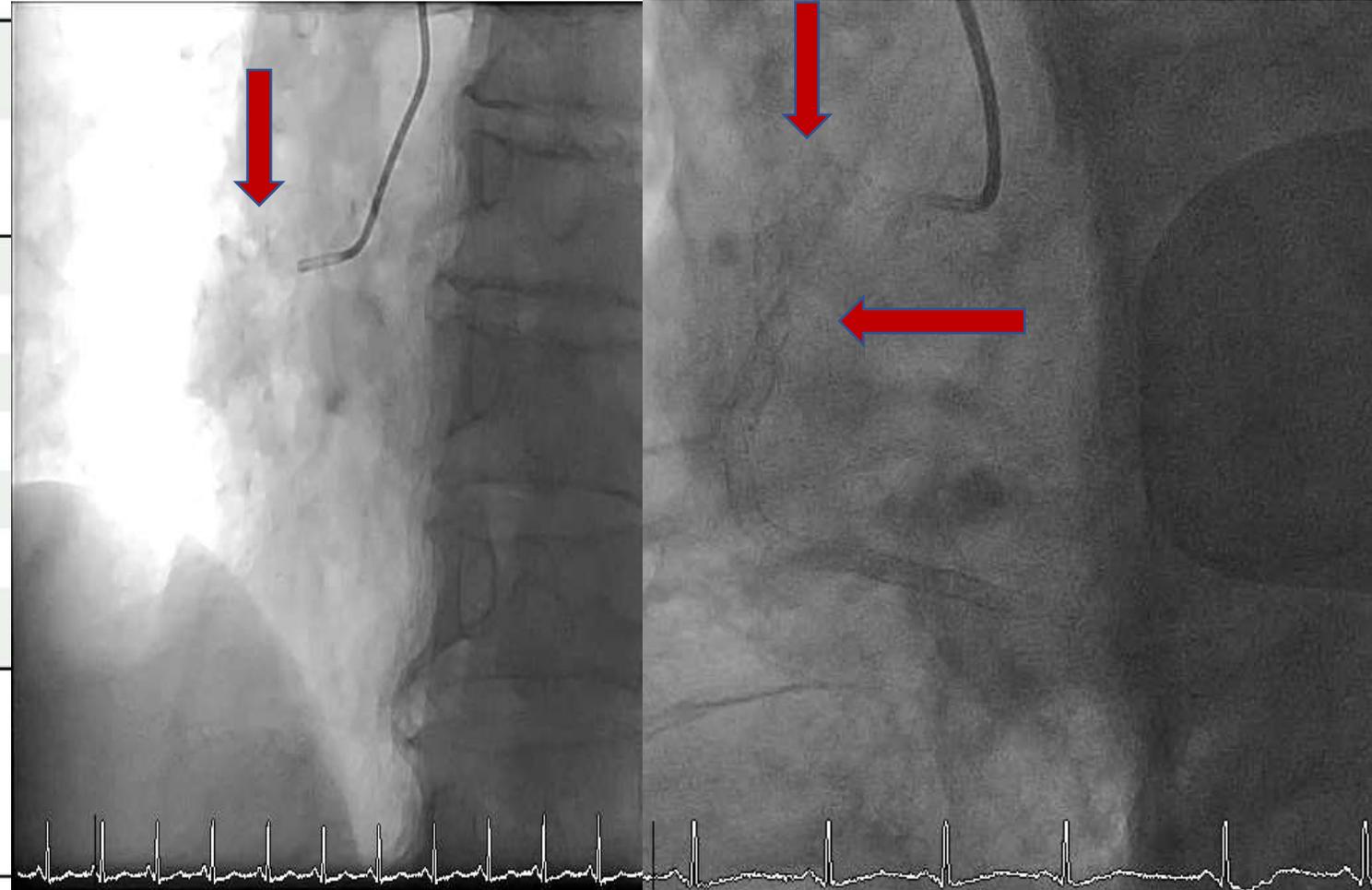
# Independent predictors of stent fracture

**TABLE 4** Independent Predictors of Stent Fracture

|                          | Odds Ratio | 95% Confidence Interval | p Value |
|--------------------------|------------|-------------------------|---------|
| RCA stent                | 10.816     | 3.026-18.553            | <0.001  |
| Stainless stent          | 2.601      | 1.509-4.484             | 0.001   |
| Stent length >25 mm      | 2.444      | 1.130-5.010             | 0.006   |
| Hinge motion             | 7.447      | 4.569-21.387            | <0.001  |
| Overlapping              | 4.037      | 1.814-8.060             | 0.001   |
| Stent/vessel ratio <0.8* | 5.289      | 1.155-6.284             | <0.001  |
| Multiple stents          | 5.224      | 3.839-7.108             | <0.001  |

\*Indicated the requirement of post-dilation using a larger balloon at higher pressure.

LCX = left circumflex artery; RCA = right coronary artery.



# Take Home Message

- ❑ Stent fracture is associated with a high rate of clinical events
- ❑ Hinge motion, tortuosity, calcification, stent length > 25 mm, and RCA stent are independent predictors of stent failure
- ❑ Multiple views of StentBoost, and ClearStent help in determining stent fracture
- ❑ Consider OCT or IVUS in ISR when suspicious of stent fracture

# Concerned question for panelists

What will you do if the patient comes back with a stent fracture again in the future?

1. CABG
2. DES
3. DCB
4. Medication
5. ....