

30/April/2015

CCT@TCTAP 2015

Improving Success in CTO PCI

# Current PCI Technique to improve success The Art of IVUS Guided Reentry

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Showa University School of Medicine



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Current PCI Technique to improve success

# The Art of IVUS Guided ~~Reentry~~ Rewiring

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# Current strategy for CTO PCI

**Antegrade approach**

**Retrograde approach**

Single antegrade wiring

Retrograde wiring



Parallel wire technique





IVUS guided rewiring



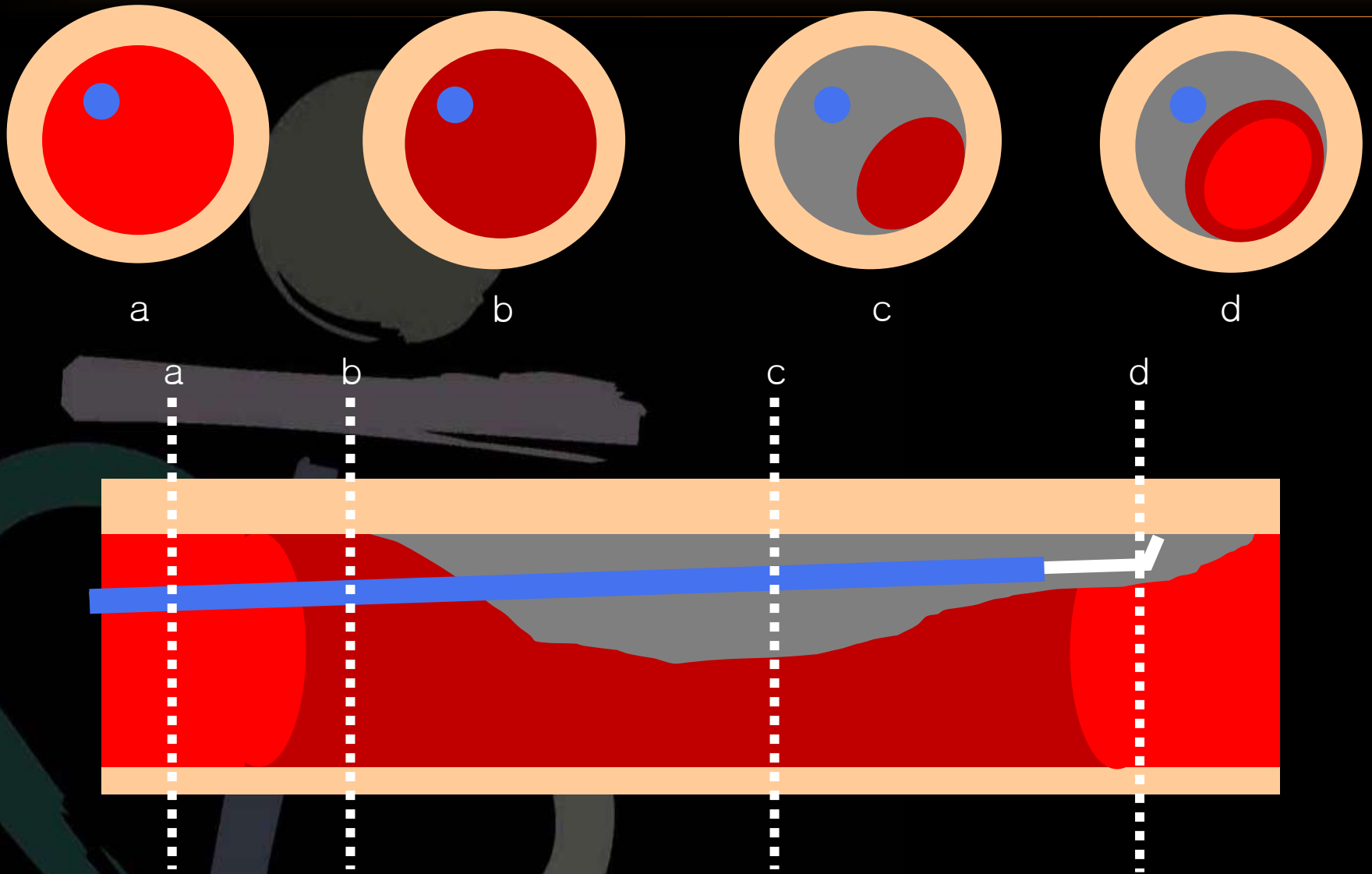
# What is IVUS guided rewiring

- IVUS guided rewiring is a method to insert another GW into an intimal plaque using IVUS guidance.
- IVUS was inserted into a subintimal space using 1<sup>st</sup> GW.
- A entry point of 1<sup>st</sup> GW to subintimal space is detected using IVUS and rewiring using 2<sup>nd</sup> GW at proximal site of this entry point is performed (**rewiring point is not subintimal space but intimal plaque**).
- This method does not depend on vessel size of distal lumen.
- This method is usually used as the final strategy because IVUS has to be inserted into a subintimal space.
- 8Fr GC is required because IVUS and a micro catheter are inserted through GC at the same time.

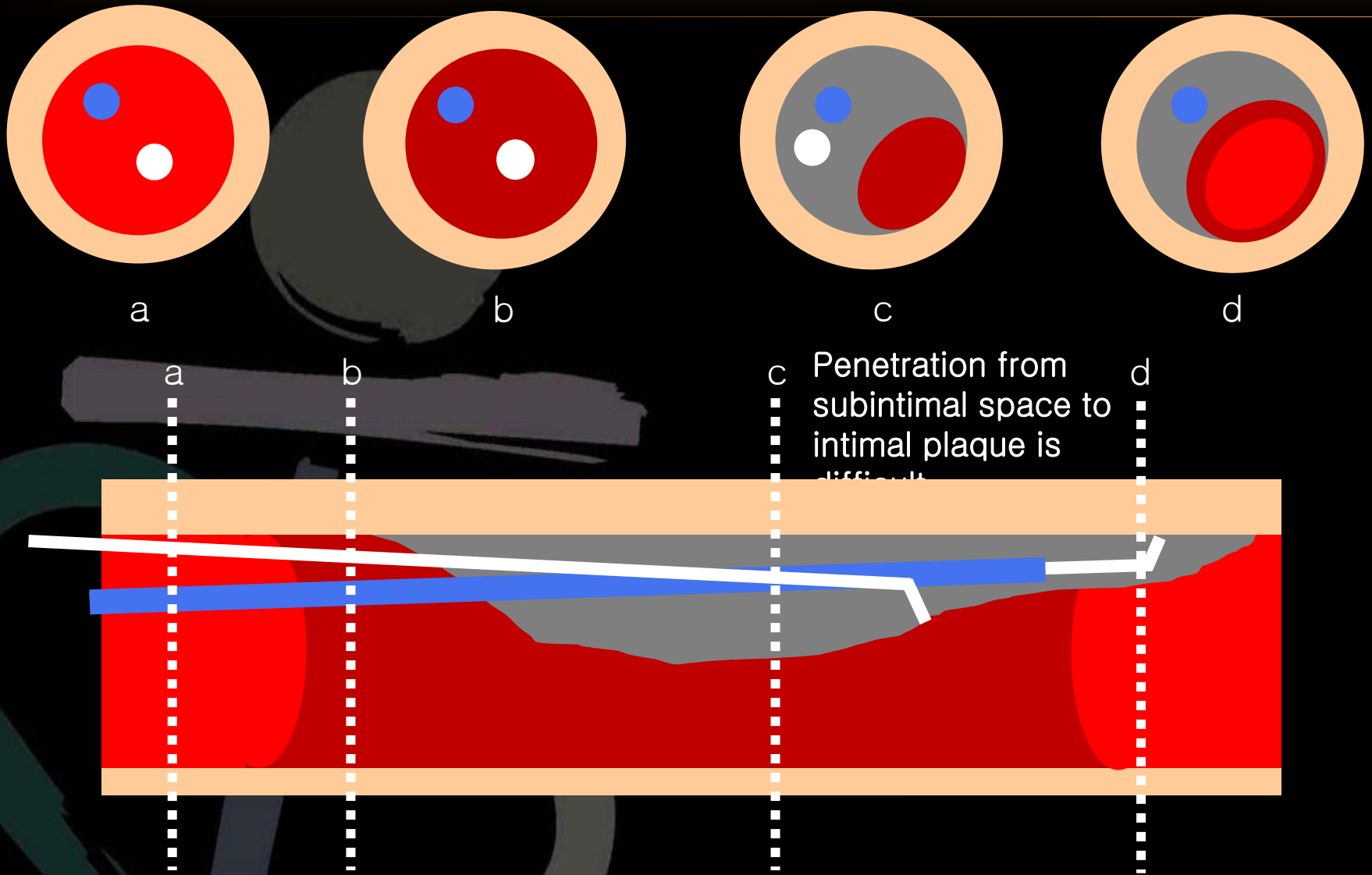
# IVUS Catheter

Company	Catheter	Tip to Transducer	Scan Type	Image
Volcano	Eagle Eye Platinum ST	2.5mm	Electronic scan type	 <p>↔ 2.5mm</p>
Volcano	Eagle Eye Platinum	10mm	Electronic scan type	 <p>↔ 10mm</p>
TERUMO	Navi Focus WR	9mm	Mechanical Scan type	 <p>↔ 9.0mm</p>
Boston	OptiCross	20mm	Mechanical Scan type	 <p>↔ 20mm</p>

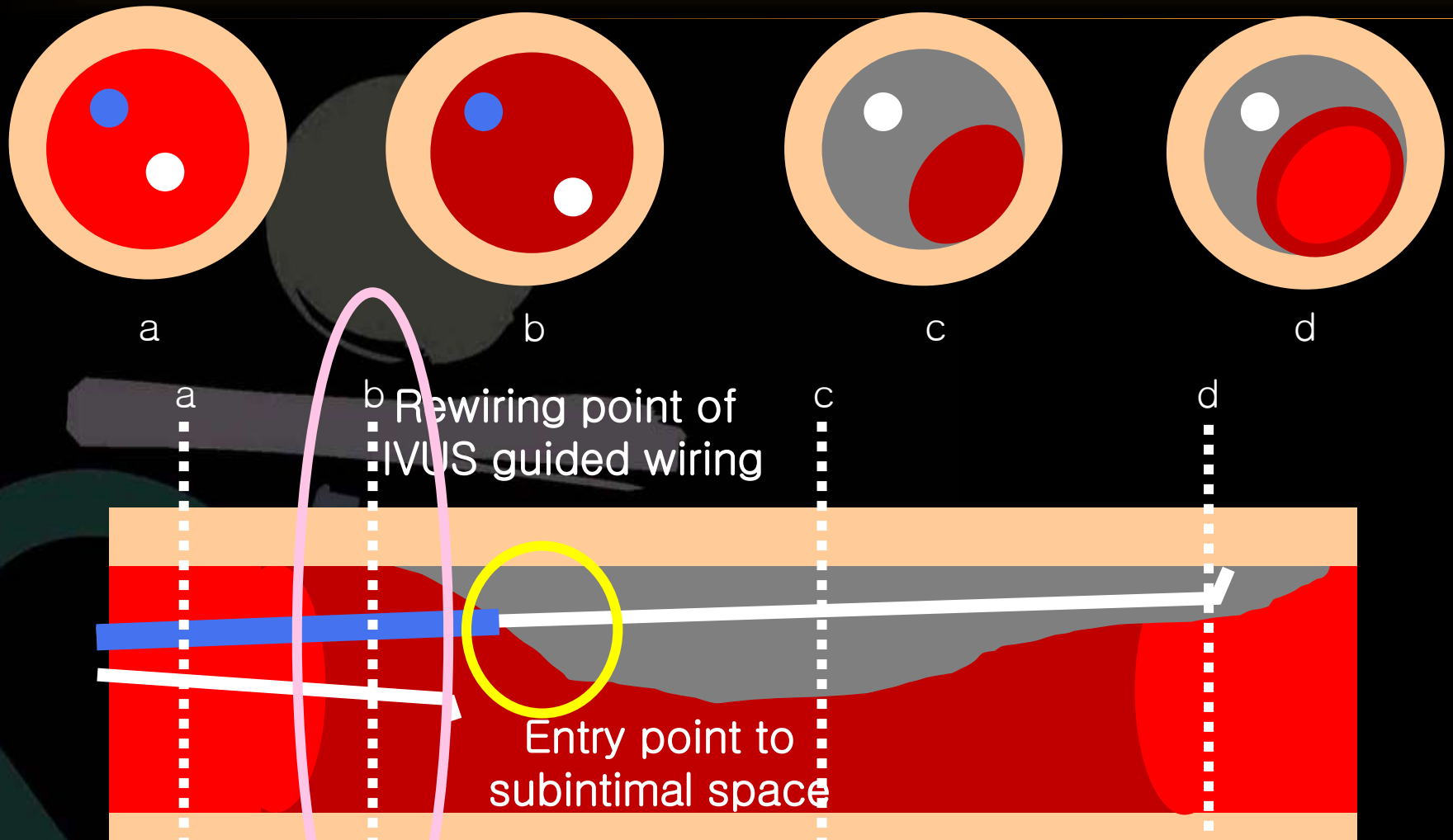
# IVUS findings of failed antegrade wiring



# IVUS guided rewiring is not reentry method



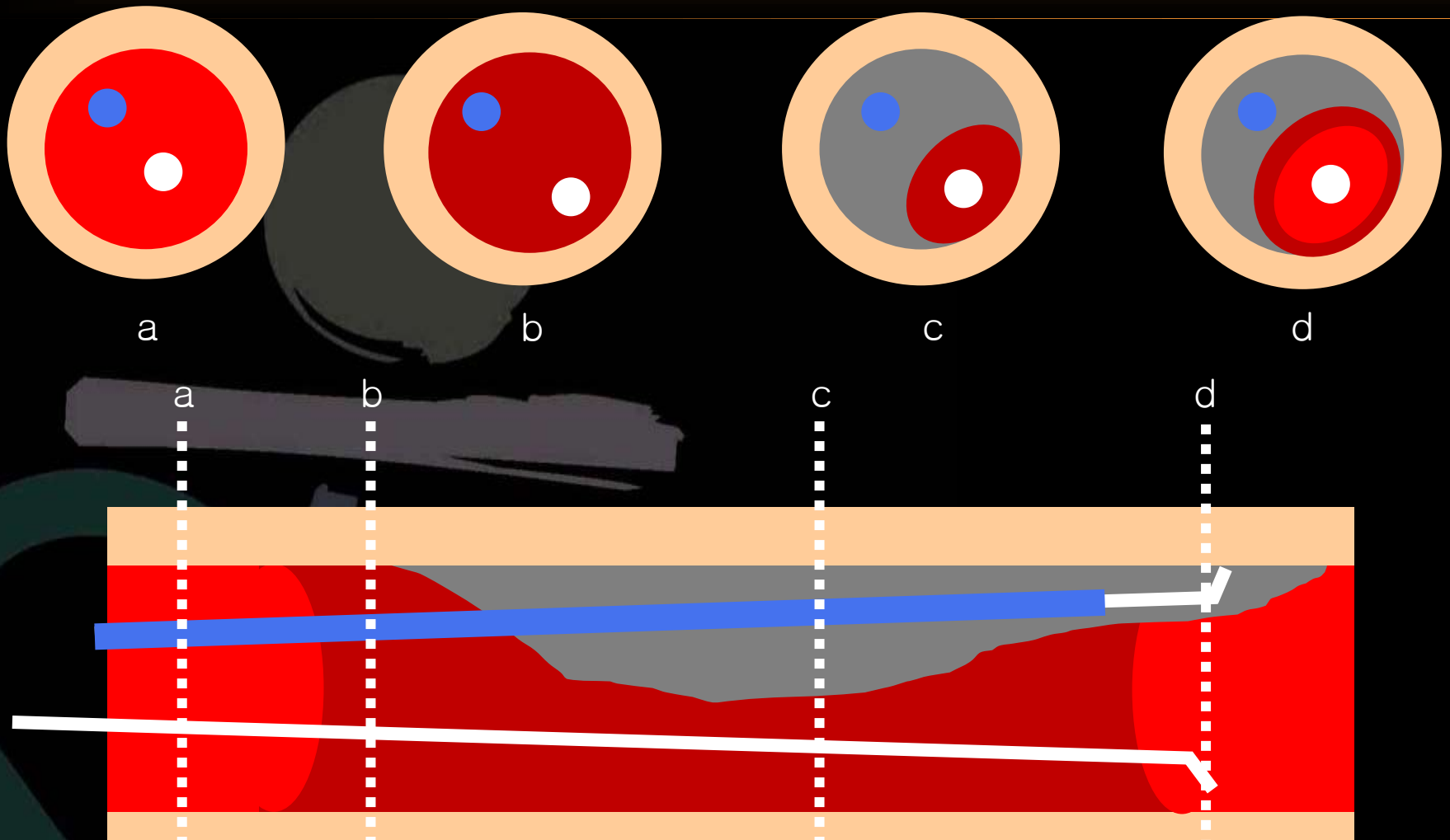
# Concept of IVUS guided rewiring



To advance GW into intimal plaque, rewiring must be done in intimal plane.  
Role of IVUS is to identify entry point of 1<sup>st</sup> GW to subintimal space.  
Rewiring starts at proximal site of this entry point based on IVUS findings.

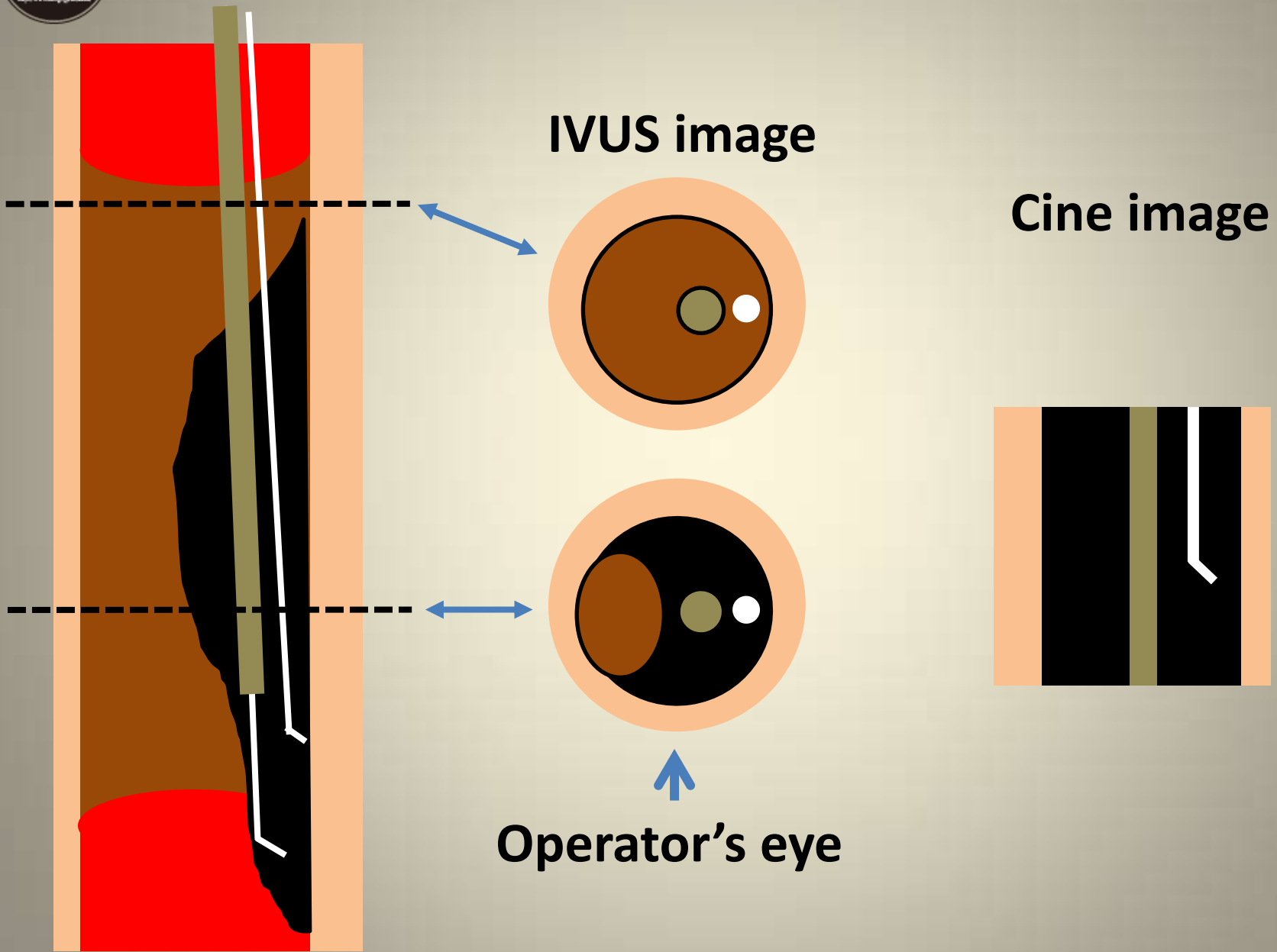


# Concept of IVUS guided rewiring

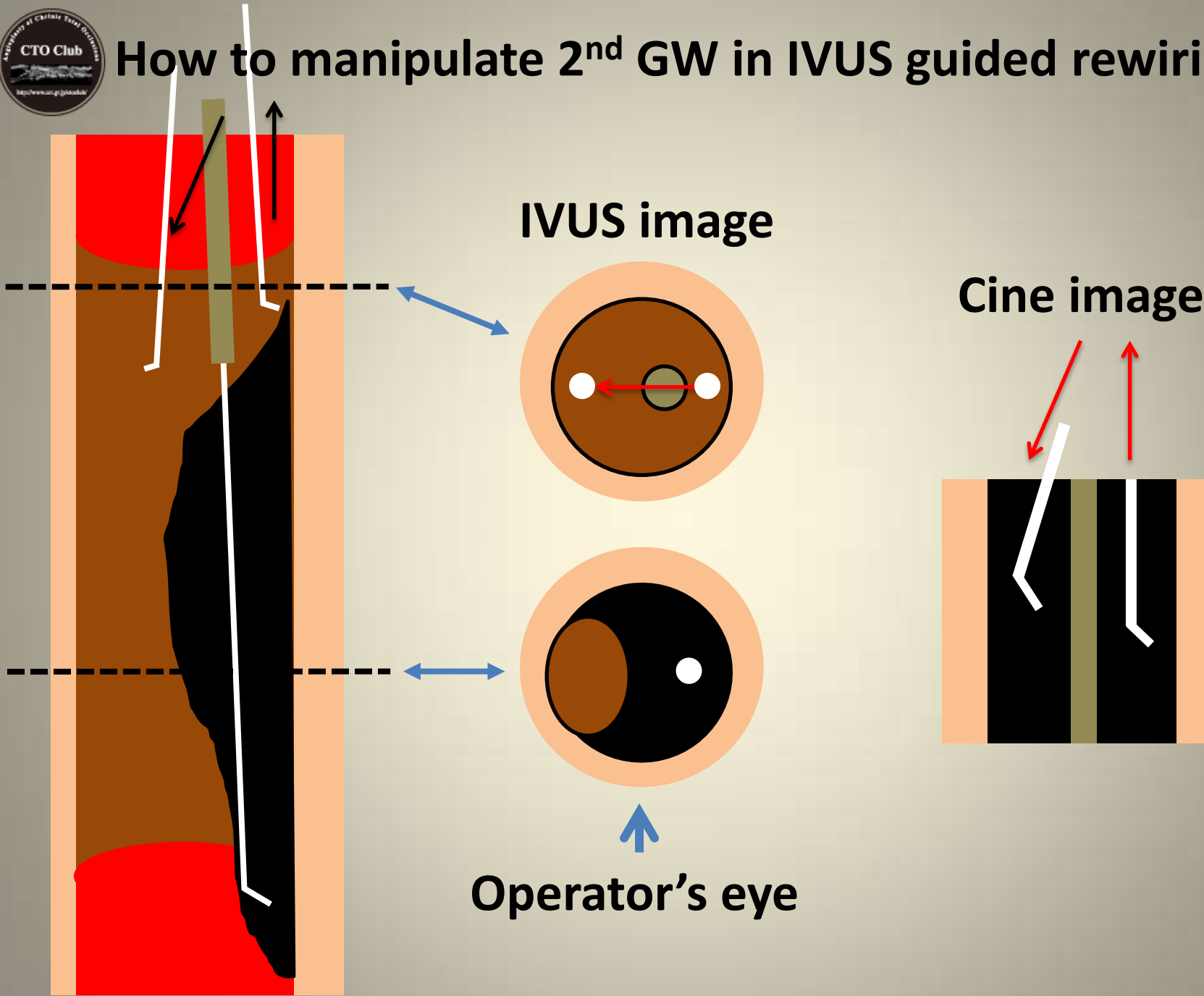


Advance GW with not only fluoro image but also IVUS image, and GW can get distal true lumen through intimal plaque.

# How to manipulate 2<sup>nd</sup> GW in IVUS guided rewiring



# How to manipulate 2<sup>nd</sup> GW in IVUS guided rewiring





CCT2013

***Saitama Case 2 30's male***

**Target Lesion: mid.LAD (CTO)**

**Diagnosis: AP**

**Prior intervention: Mar.07.2013**

D1(CoCr-EES, PtCr-EES), Jul.23.2013  
mid.CX(CoCr-EES)

**Coronary risk factor:**

HT, DM, Insulin, Dyslipidemia,  
Smoking

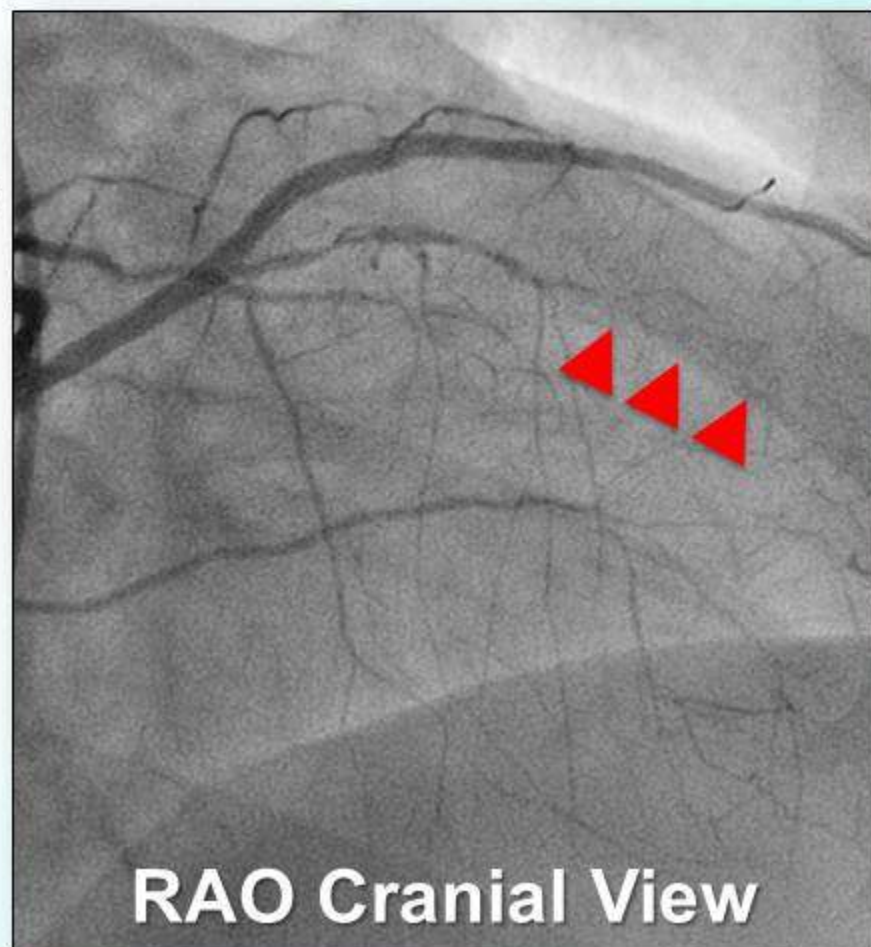
**Euro SCORE II : 1.31%**

**Syntax score: 18.5**

**Final CAG findings: Jul.23.2013**

LVEF: 35%

CAG: dist.RCA 90%, mid.CX 90%,  
mid.LAD 100%

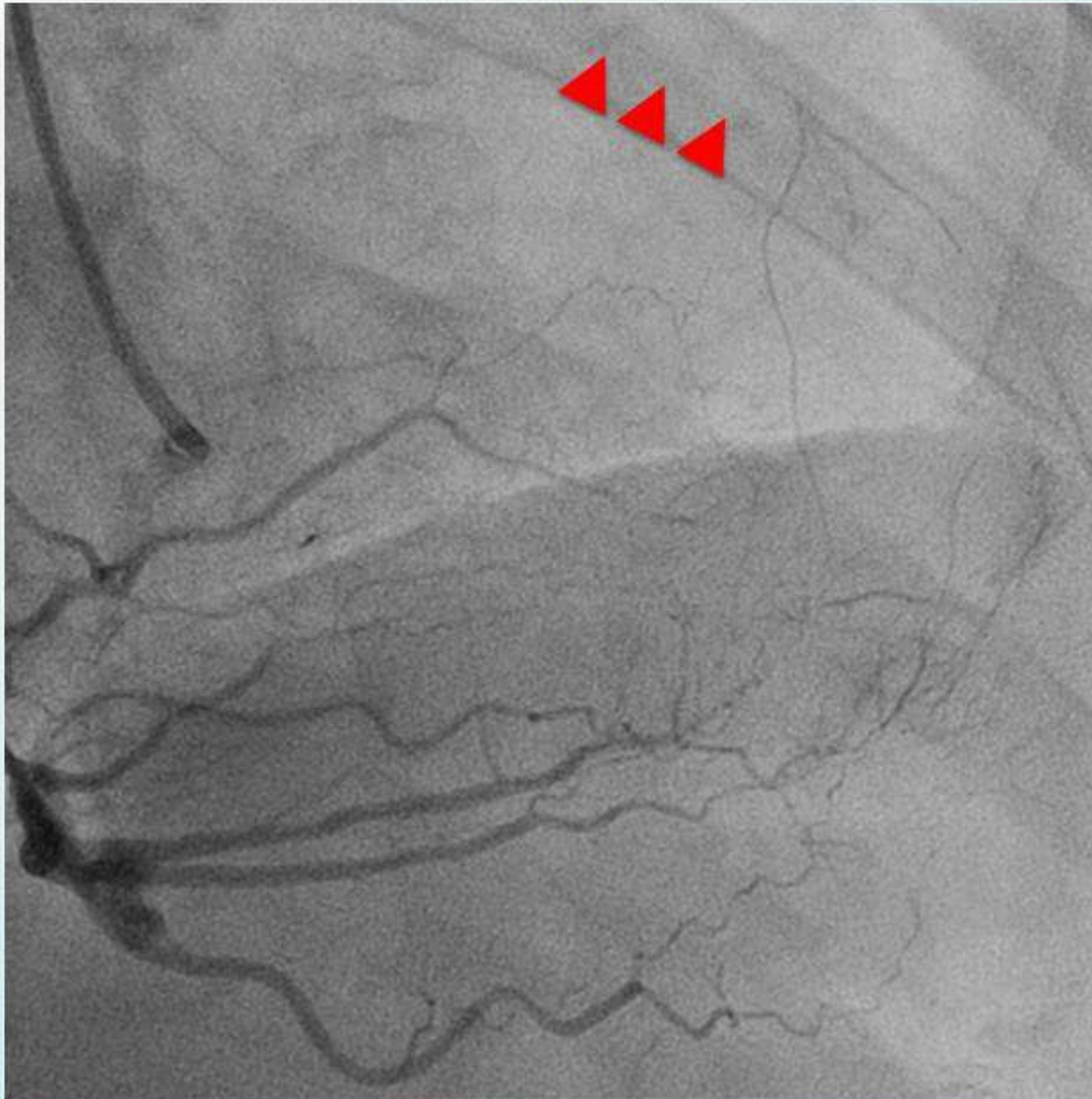


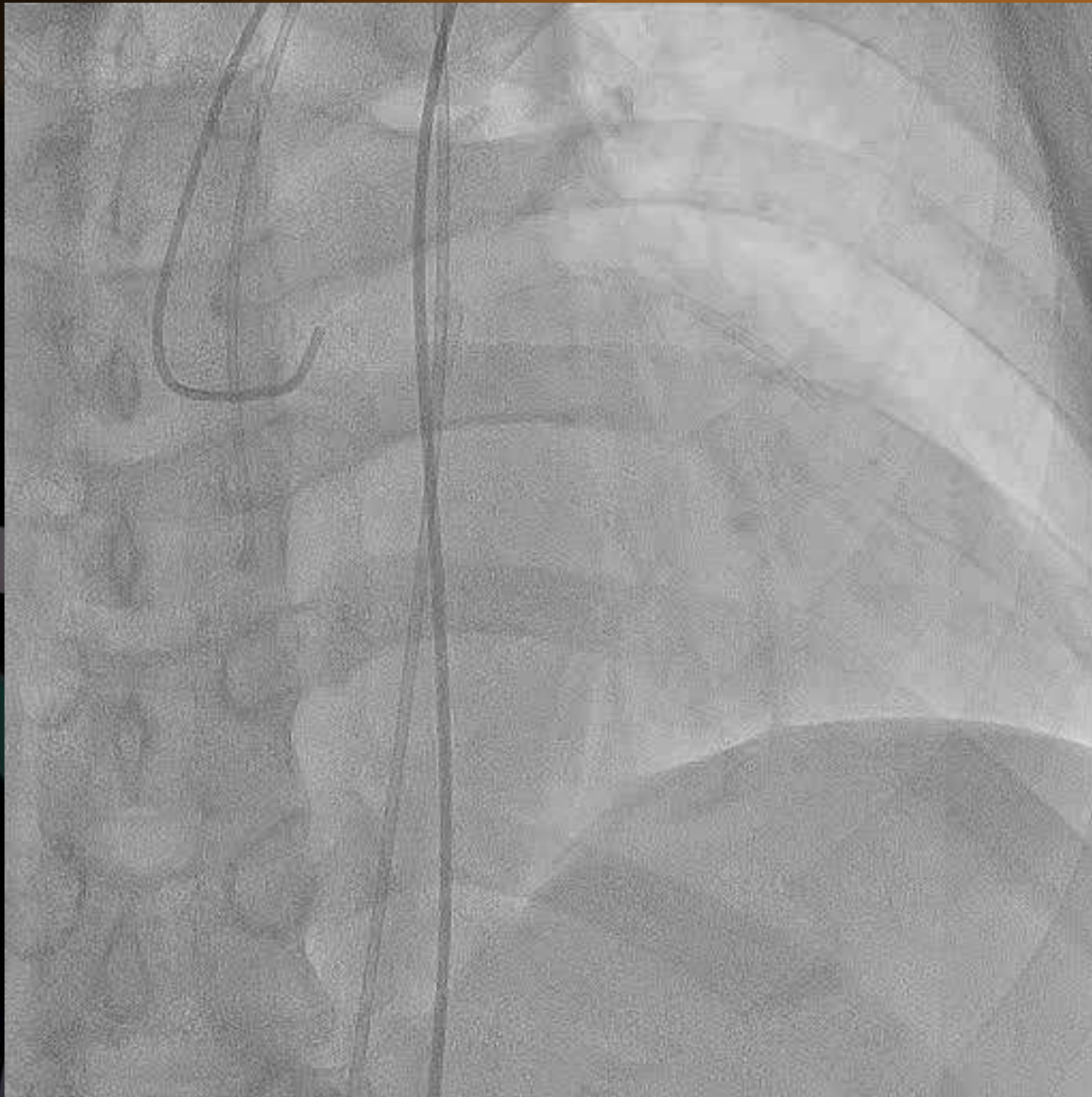


# CCT2013 Live Case Transmission

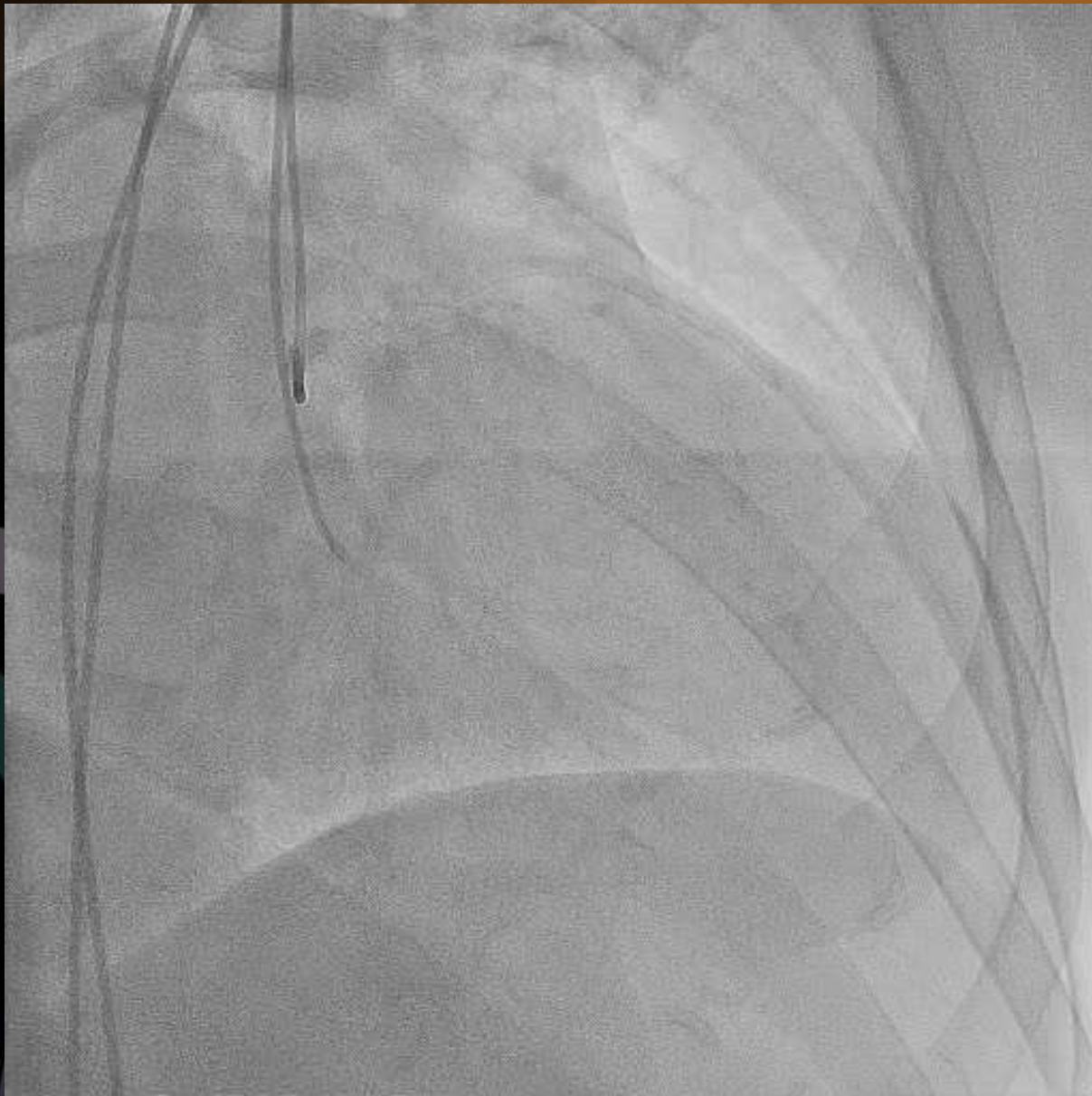
*Saitama Sekishinkai Hospital*

CCT2013

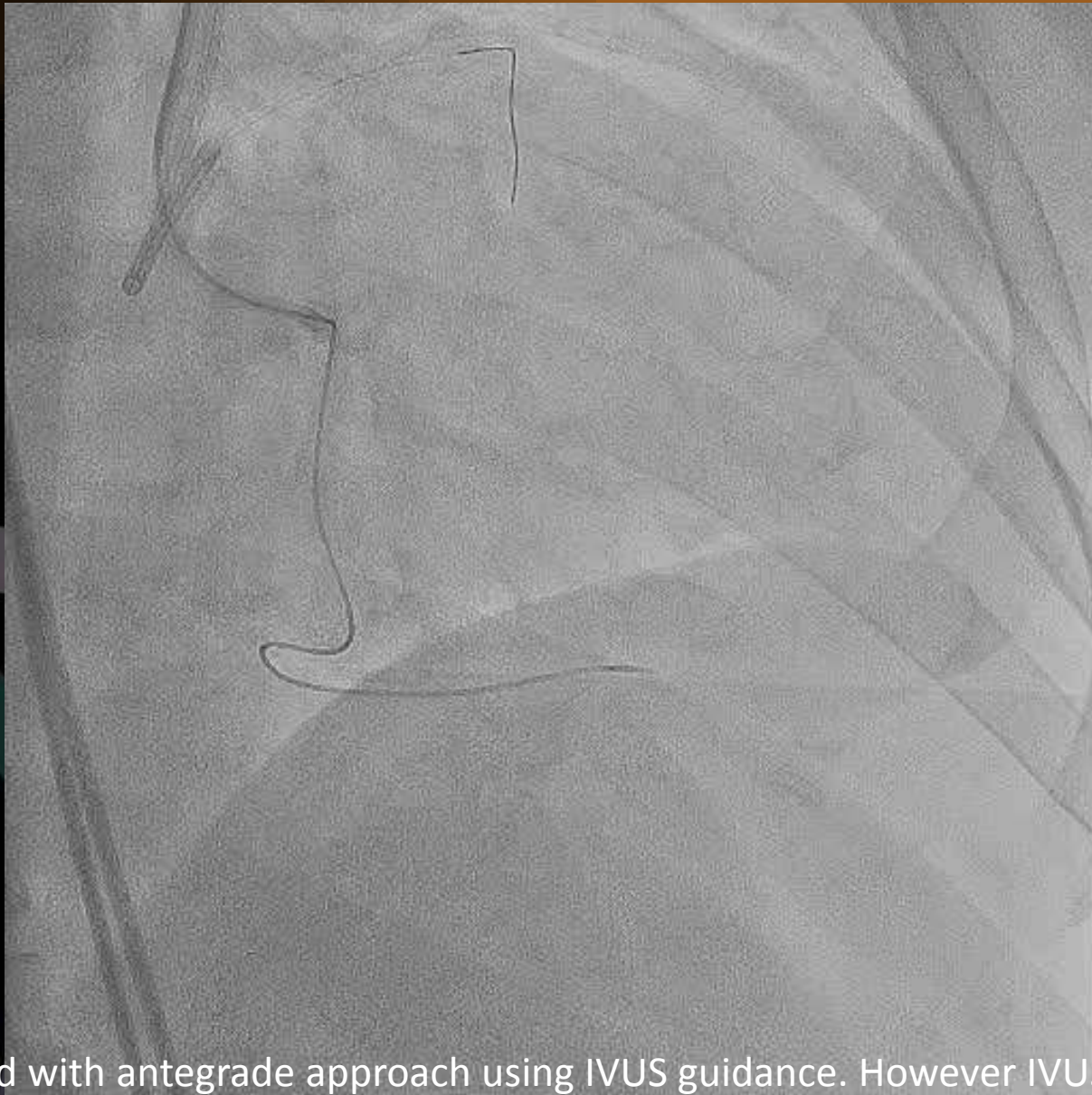




Baseline CAG showed CTO lesion at mid LAD.



Large septal channel from proximal PD existed but it connected into CTO lesion.  
Some channels from distal PD existed but these looked tiny

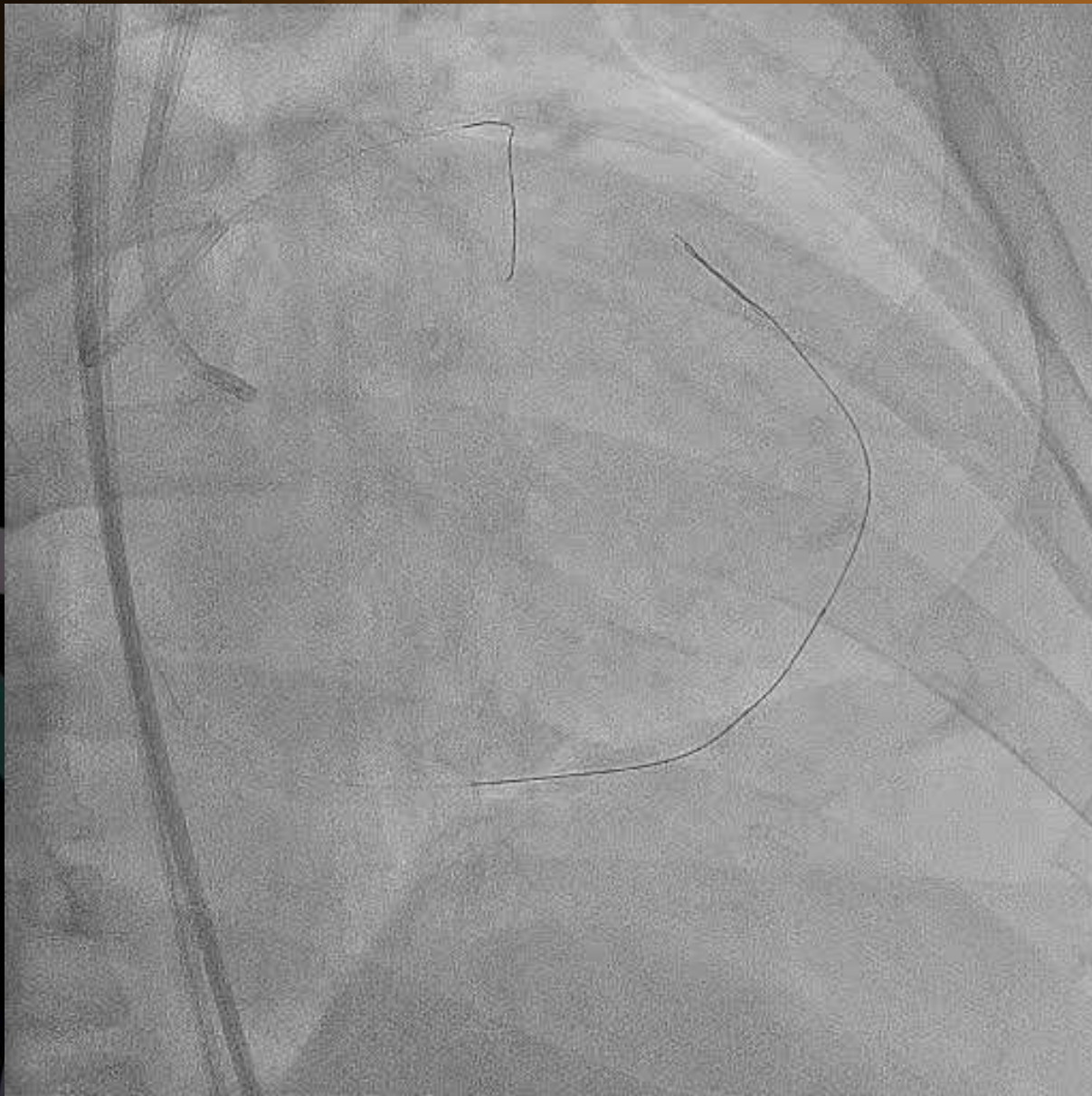


PCI was started with antegrade approach using IVUS guidance. However IVUS could not be advanced at proximal part. Therefore strategy was changed to retrograde approach .  
Tip injection with Corsair showed tiny channels





XT-R could get this channel



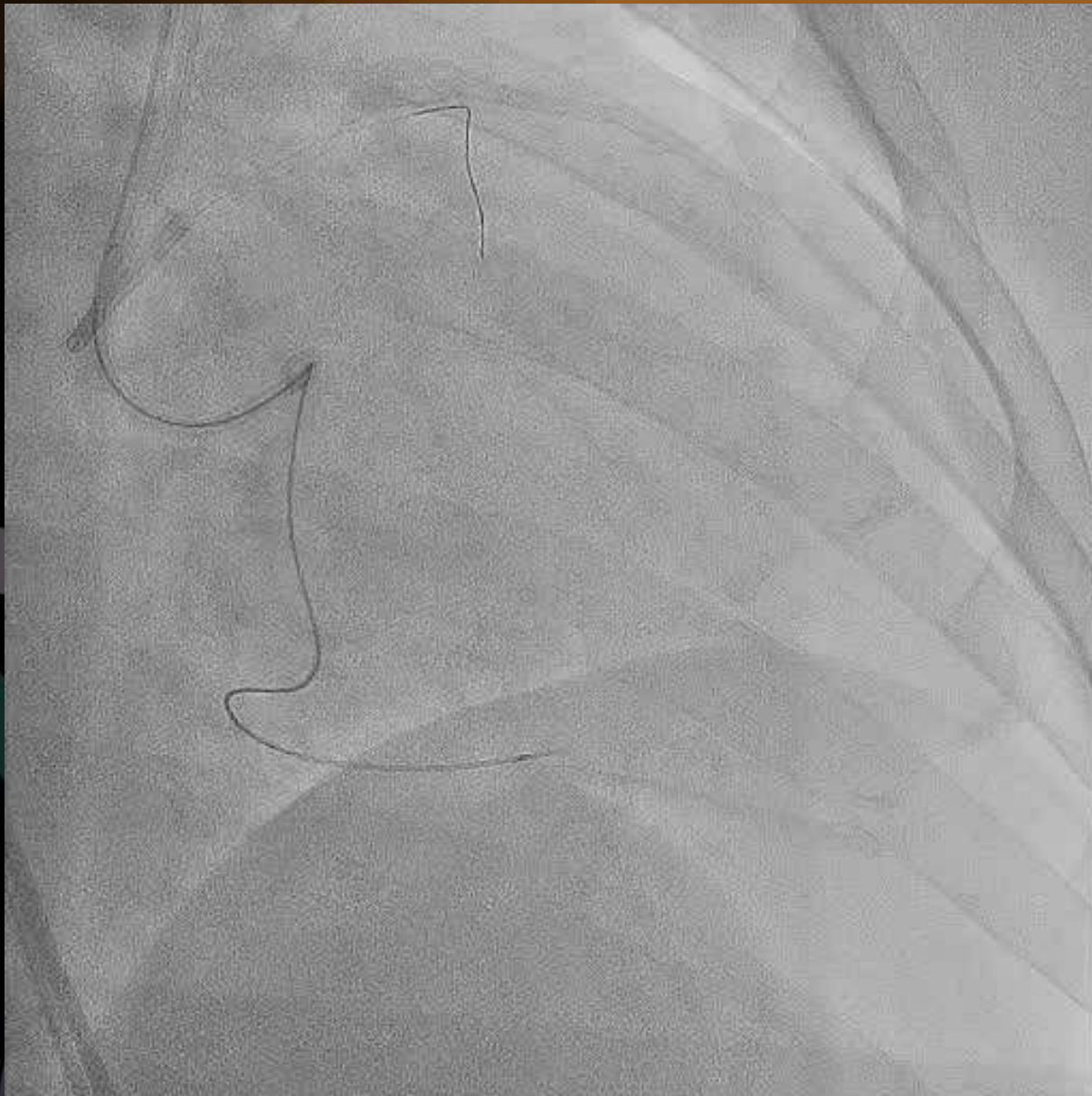
XT-R could be advanced into distal LAD



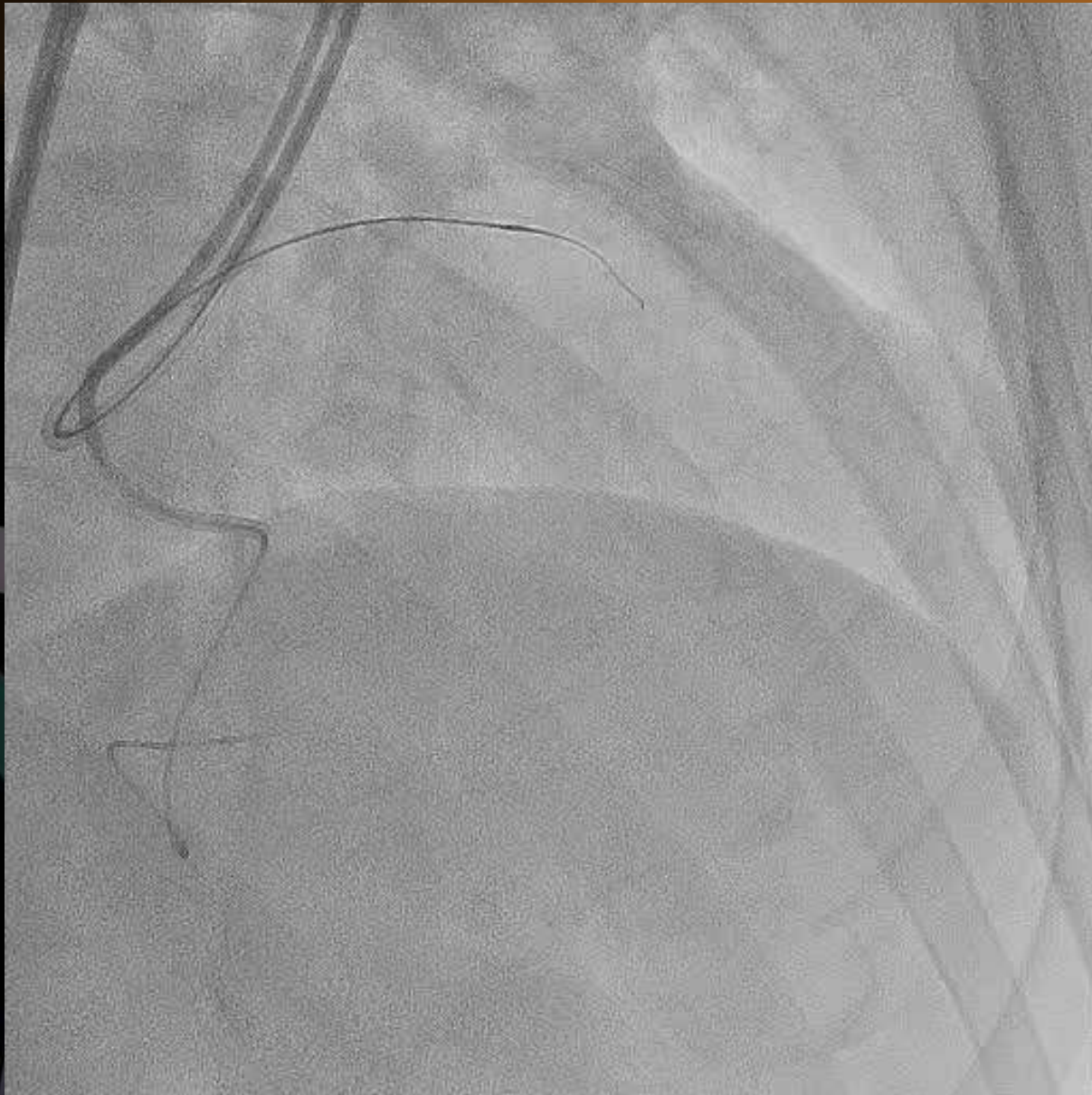
Any device could not pass this channel



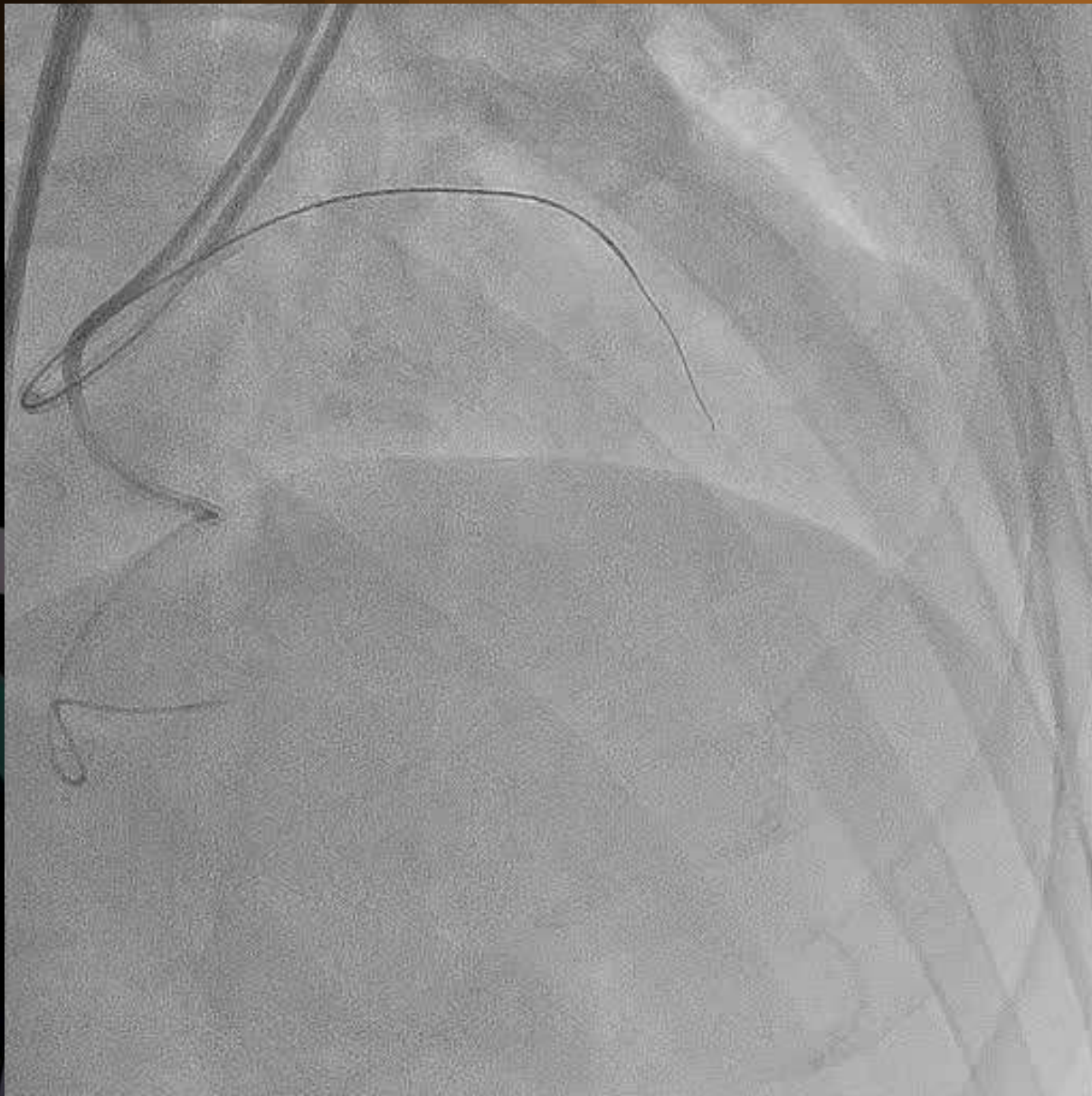
Finally retrograde system collapsed



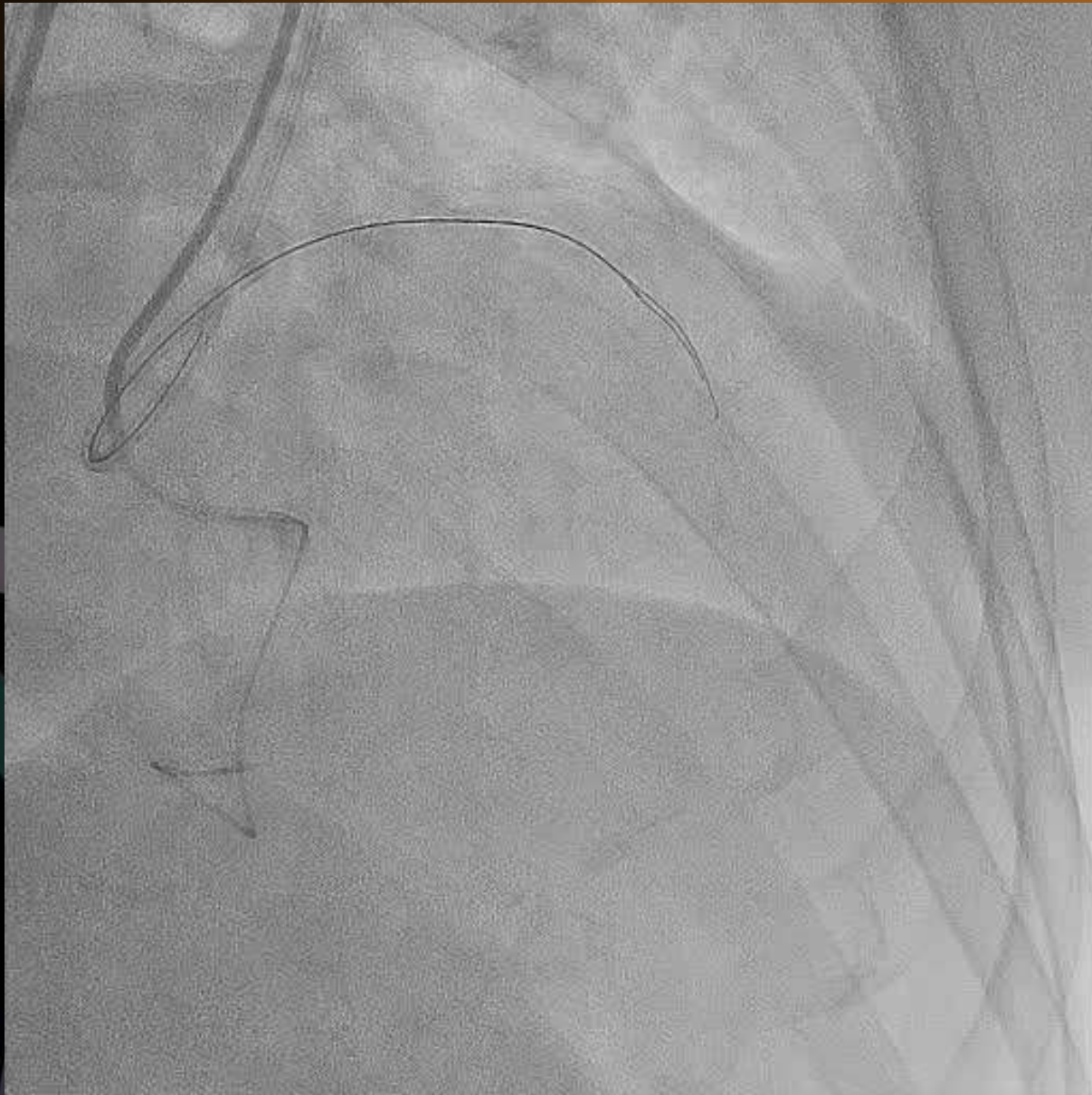
Channel damage occurred. Therefore retrograde approach was given up.



After that, antegrade approach started

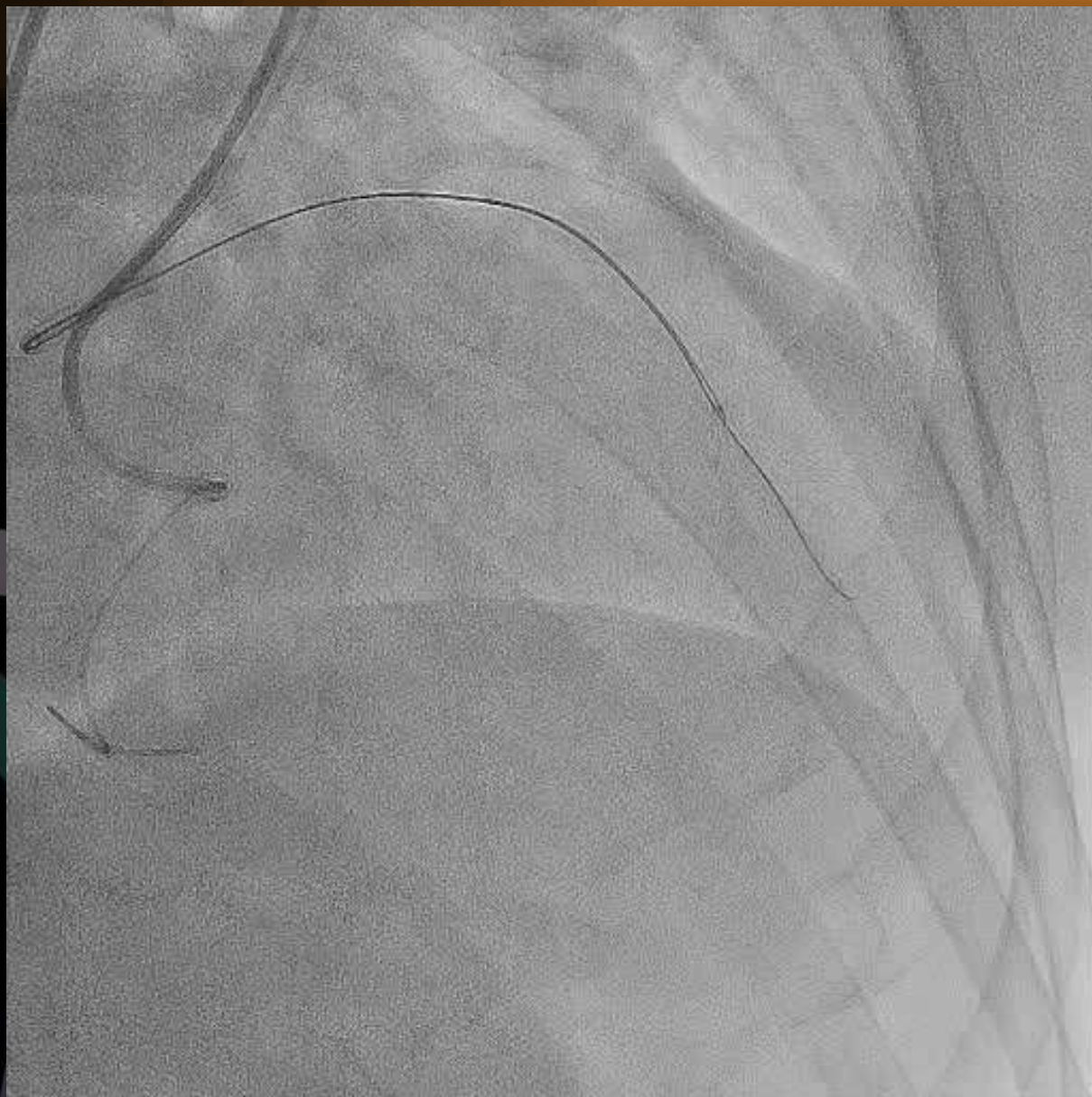


Single antegrade wiring could not get distal lumen

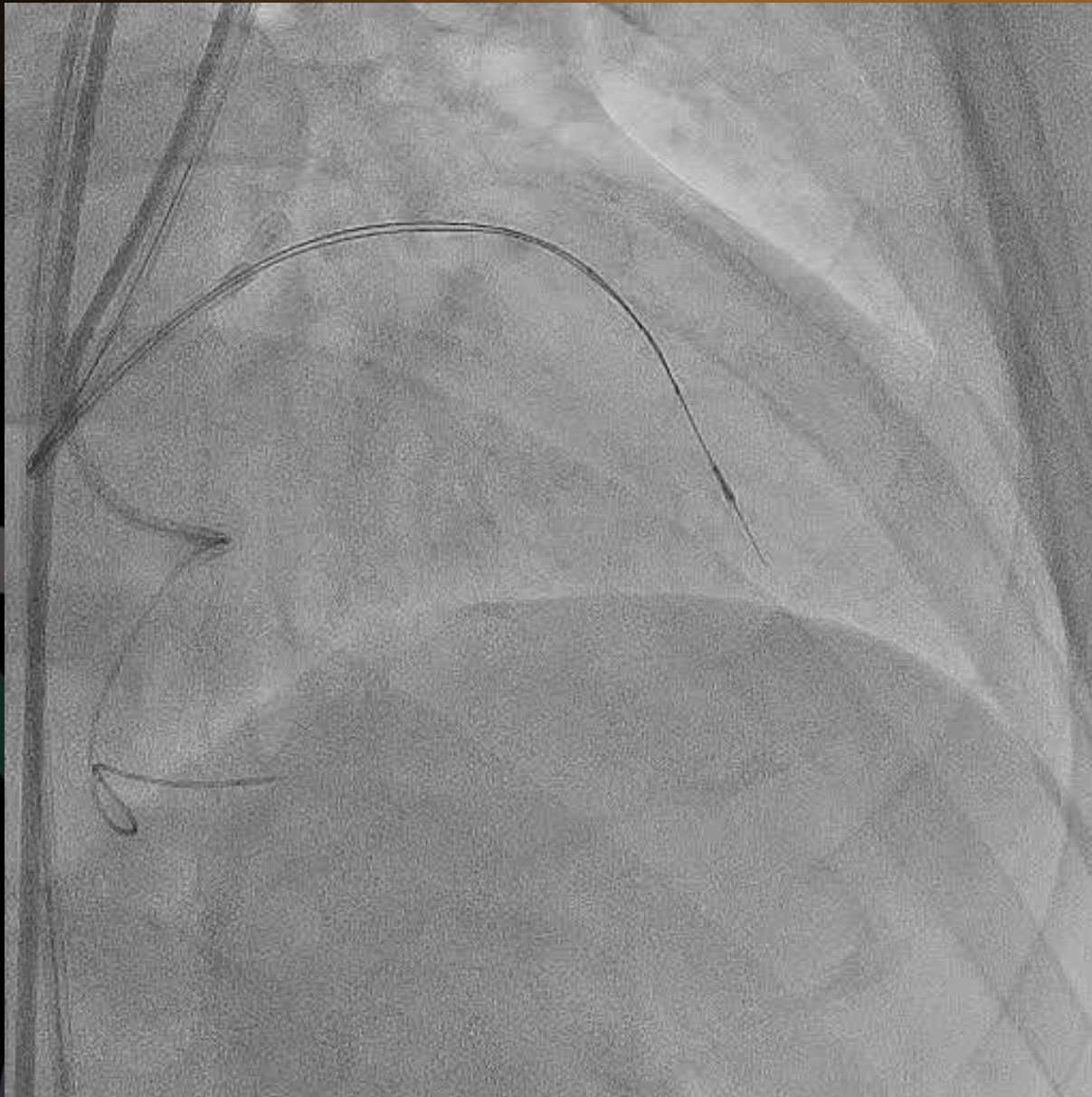


Parallel wire technique was used, but GW also could not get distal true lumen





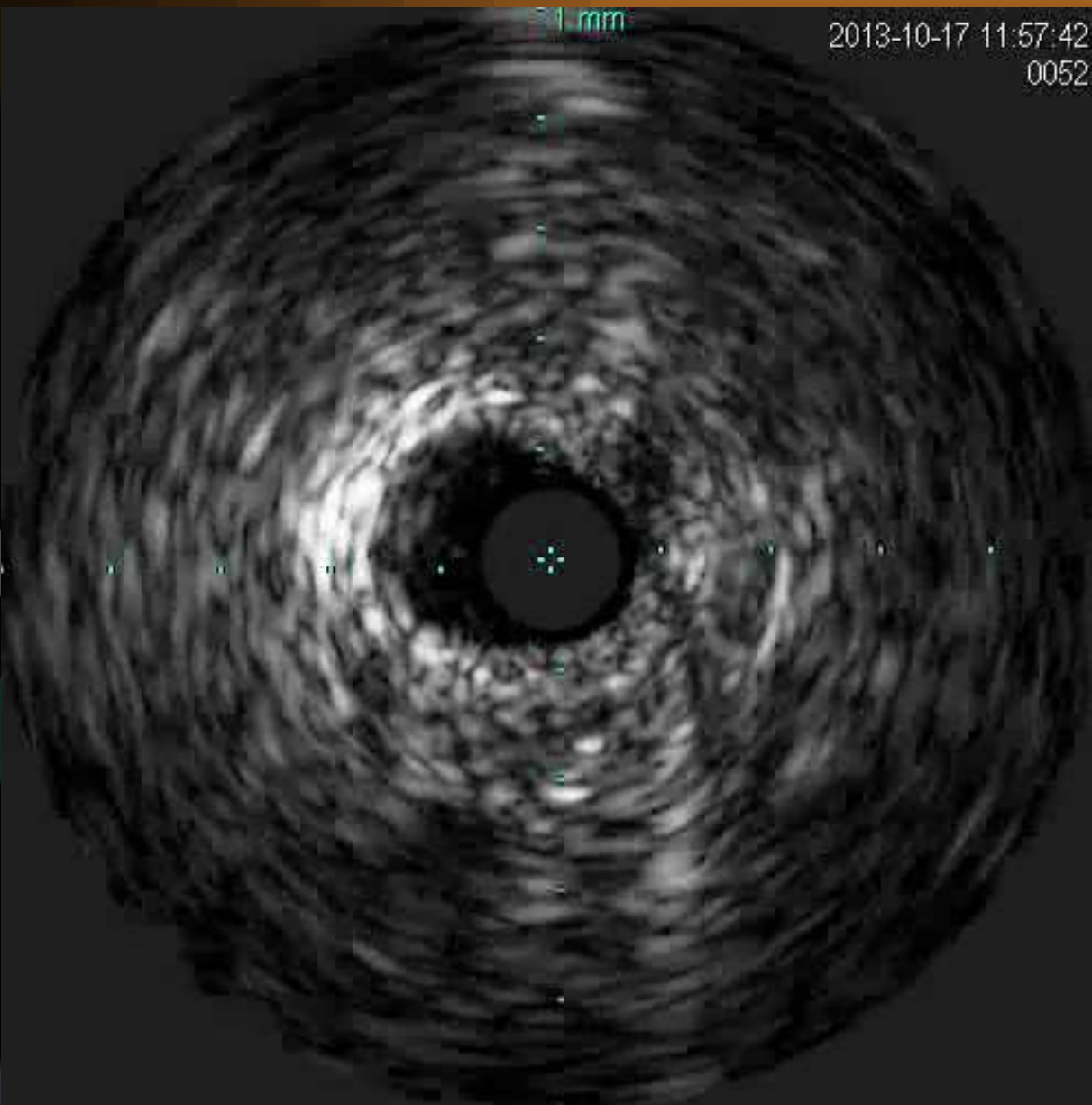
A GW was advanced into distal LAD to perform IVUS guided rewiring

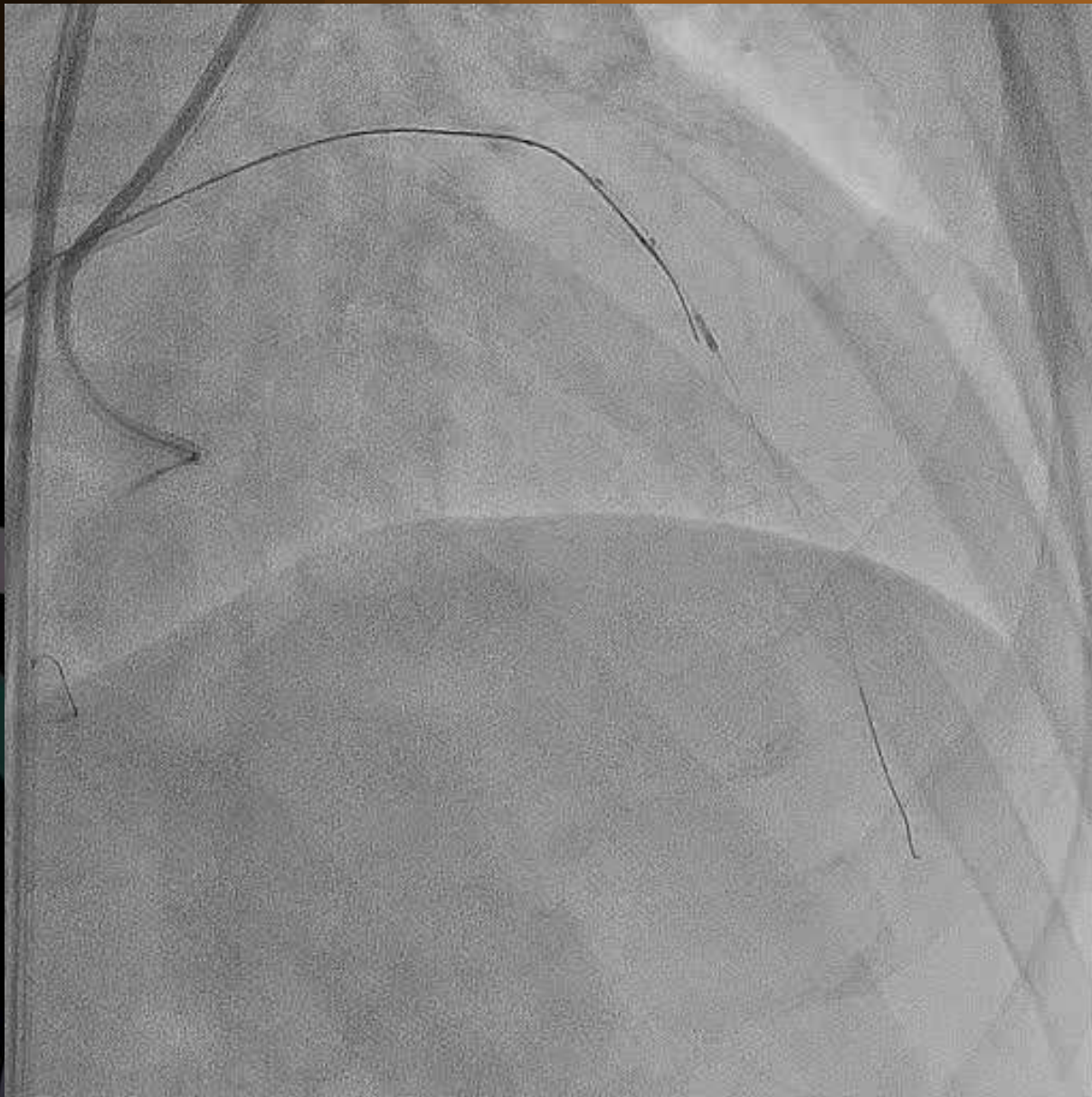


IVUS was performed to identify entry point to subintimal space

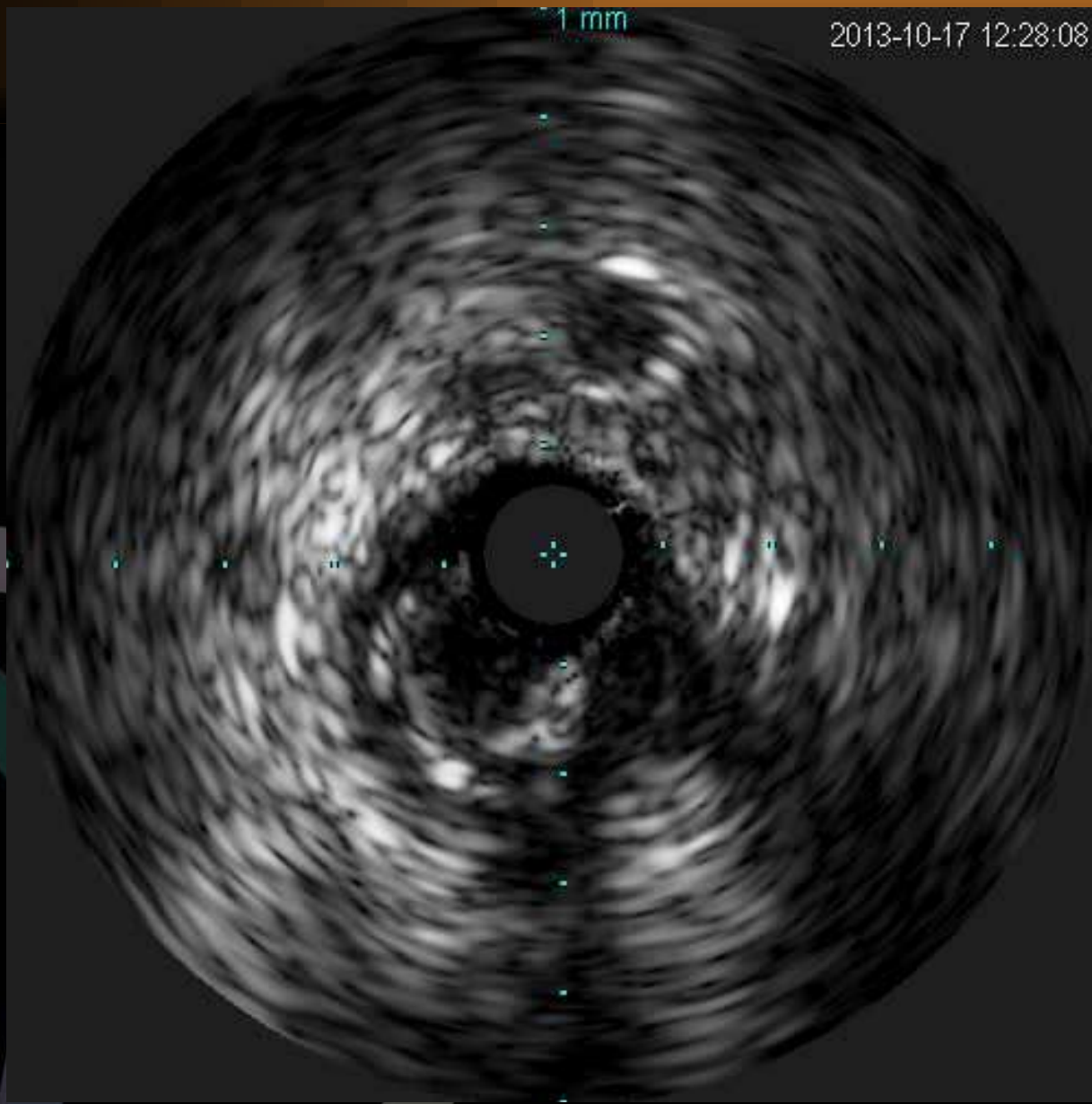
1 mm

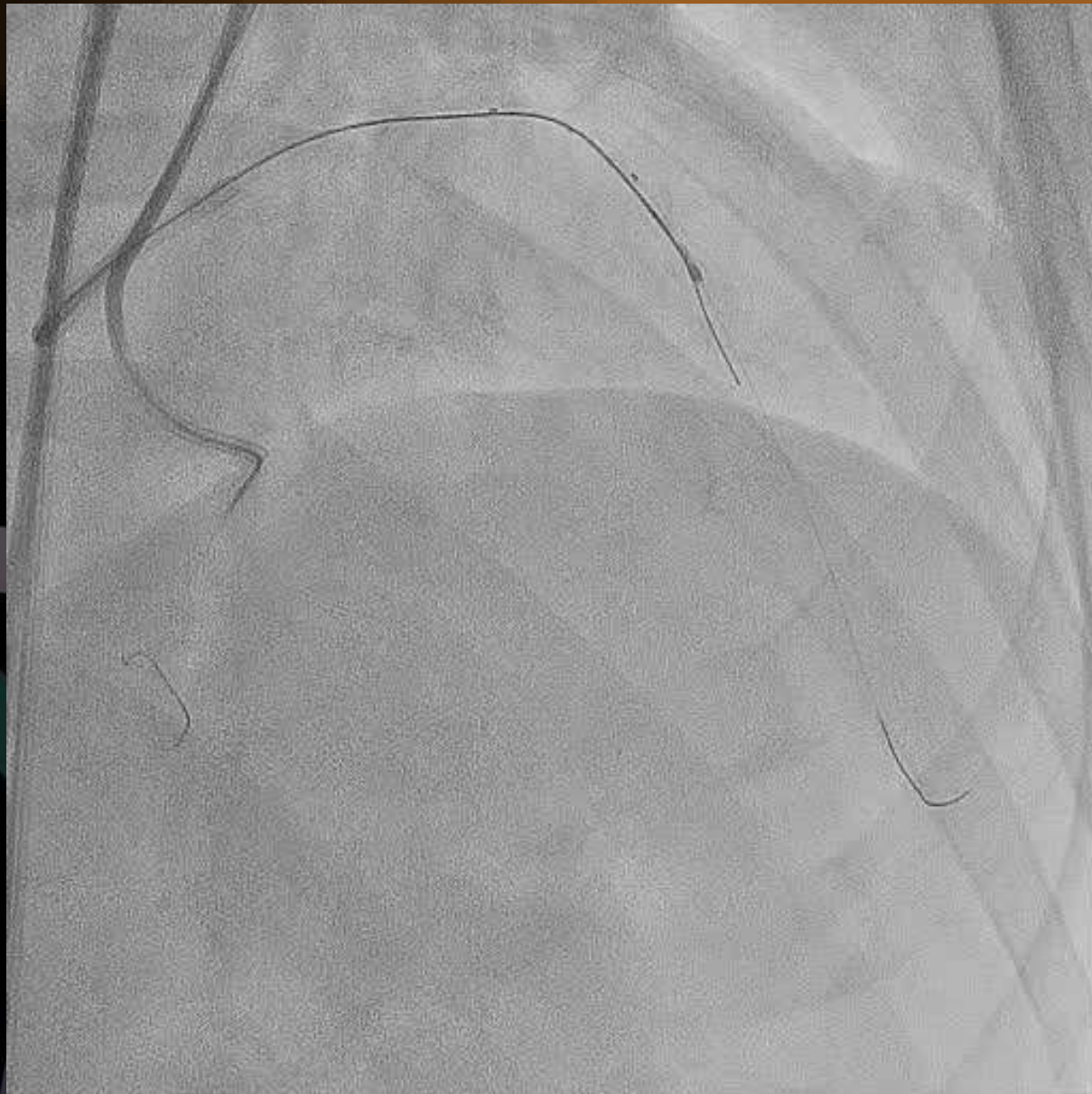
2013-10-17 11:57:42  
0052





Rewiring with IVUS guidance was started



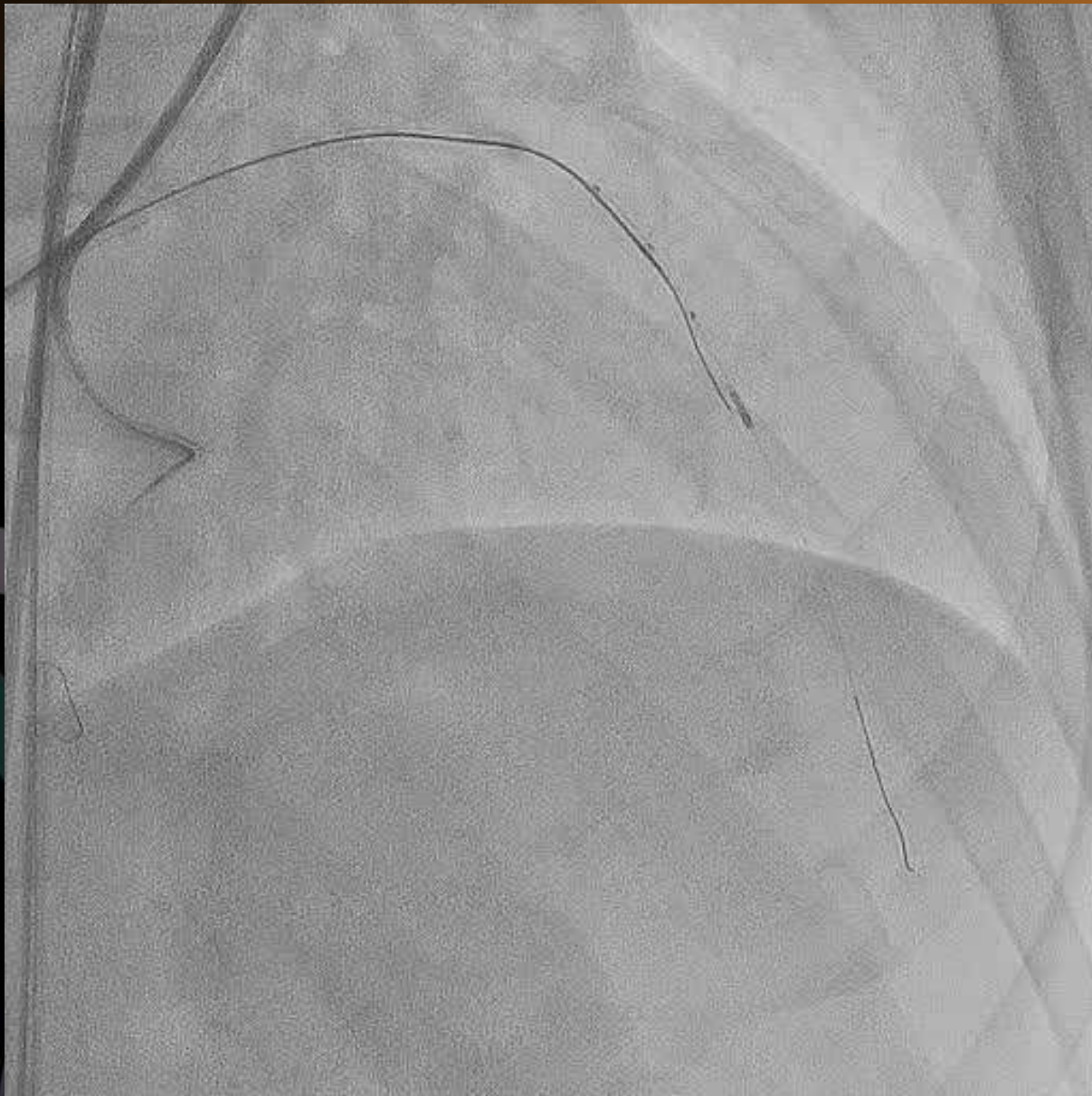


GW was advanced to distal part gradually.

1 mm

2013-10-17 12:56:46  
0146





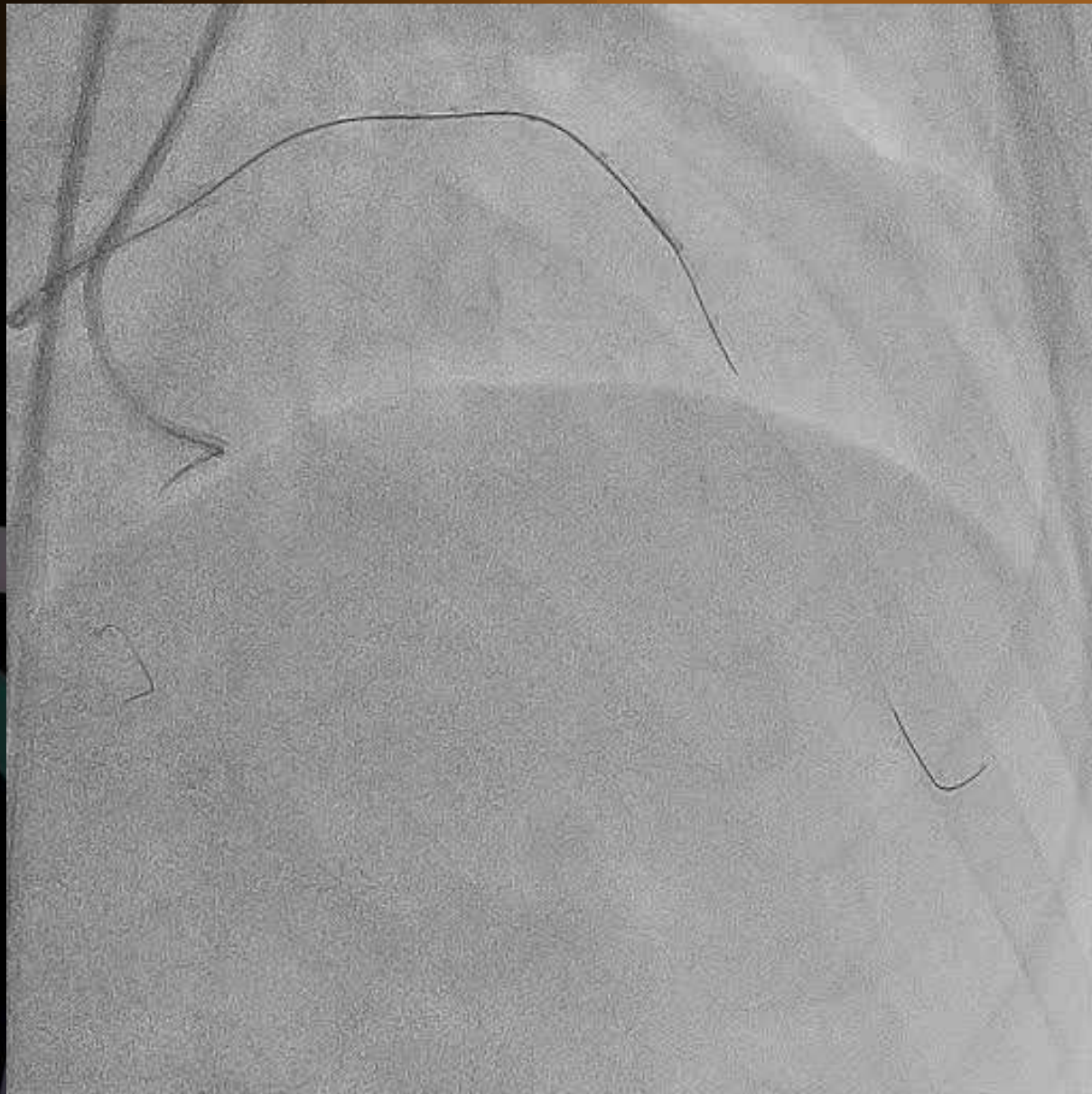
GW was advanced to more distal part with IVUS.



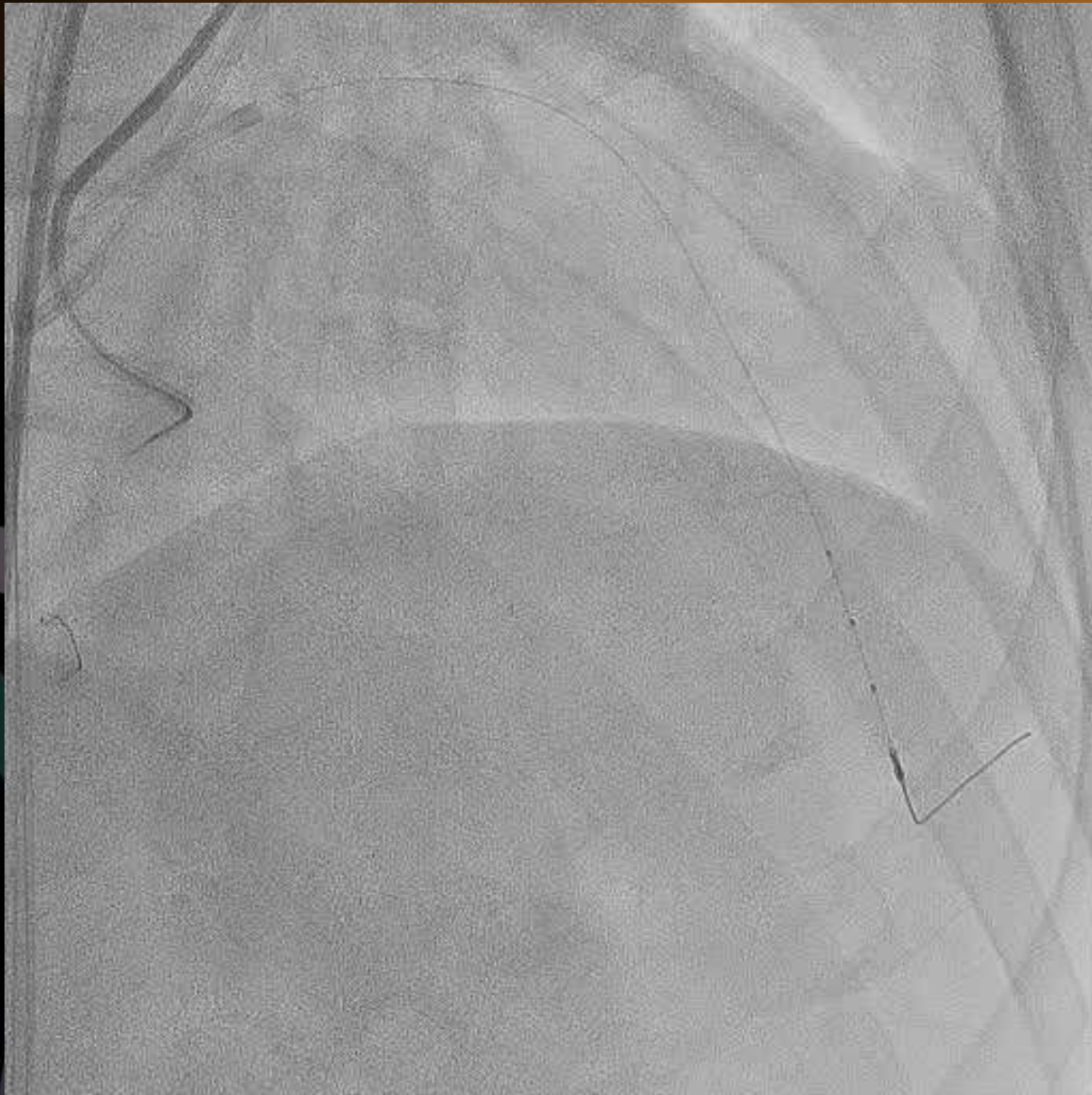
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0001

1 mm

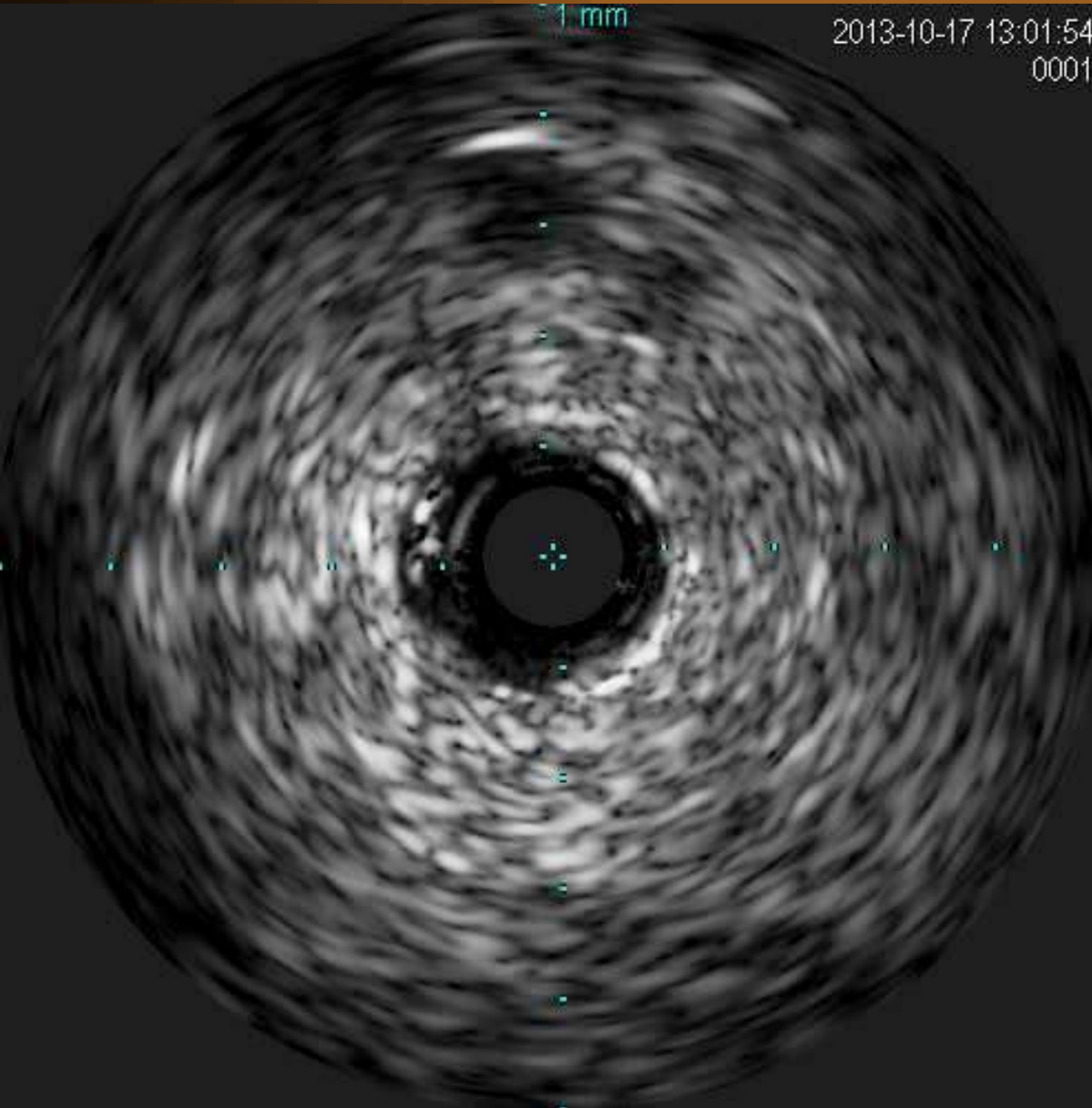




Finally 2<sup>nd</sup> GW could be advanced to distal LAD.

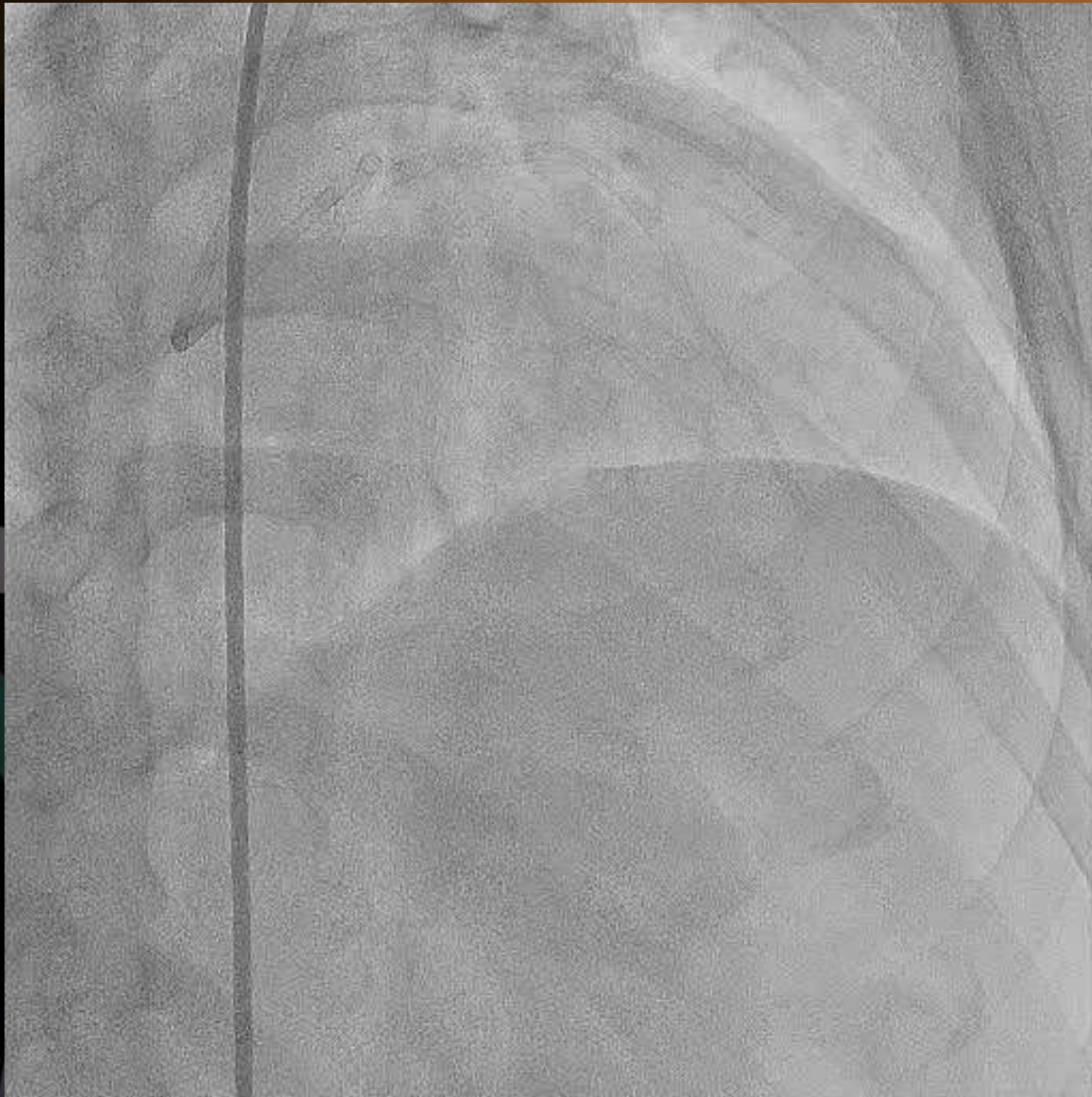


IVUS was performed to confirm GW position

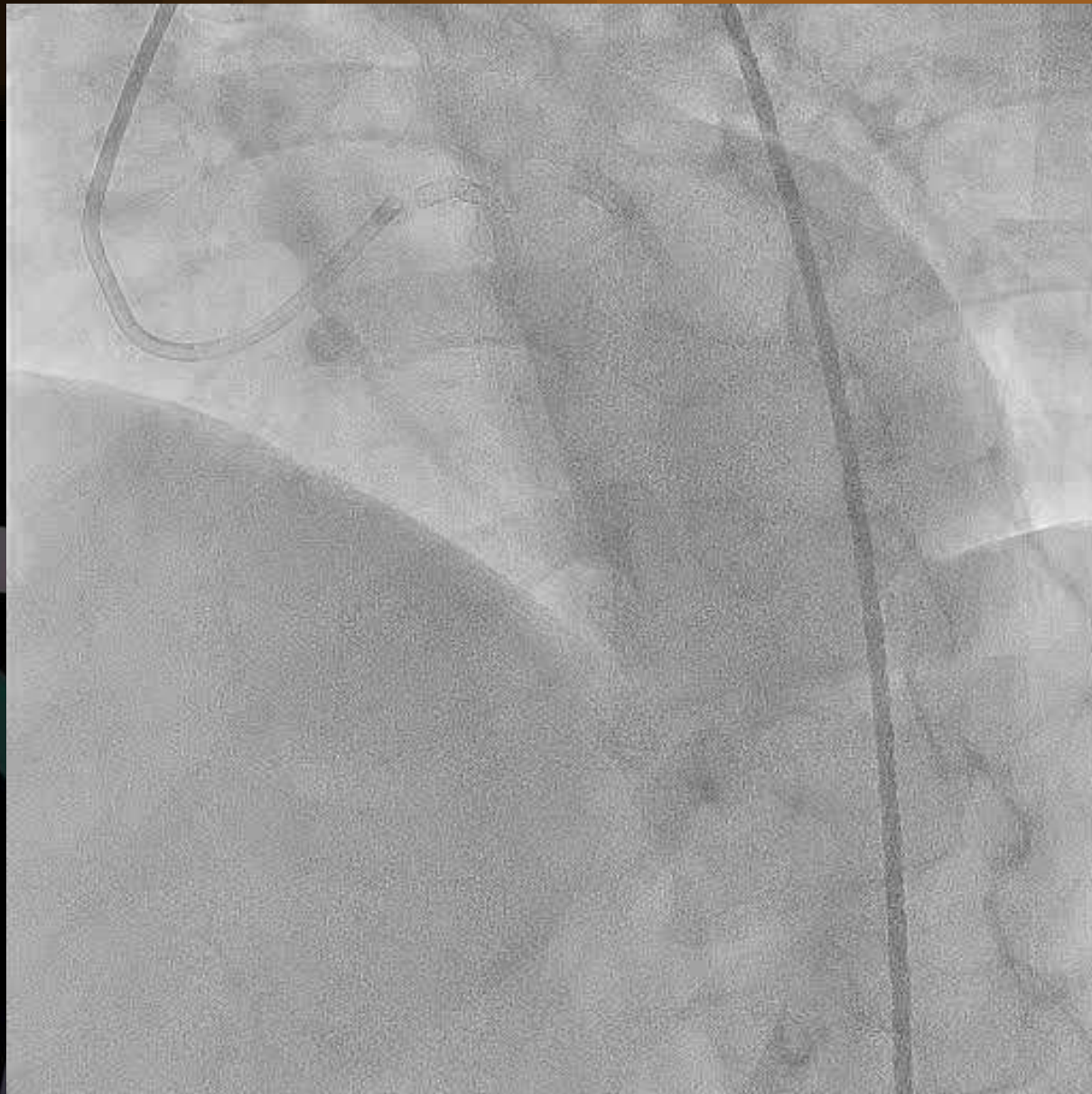


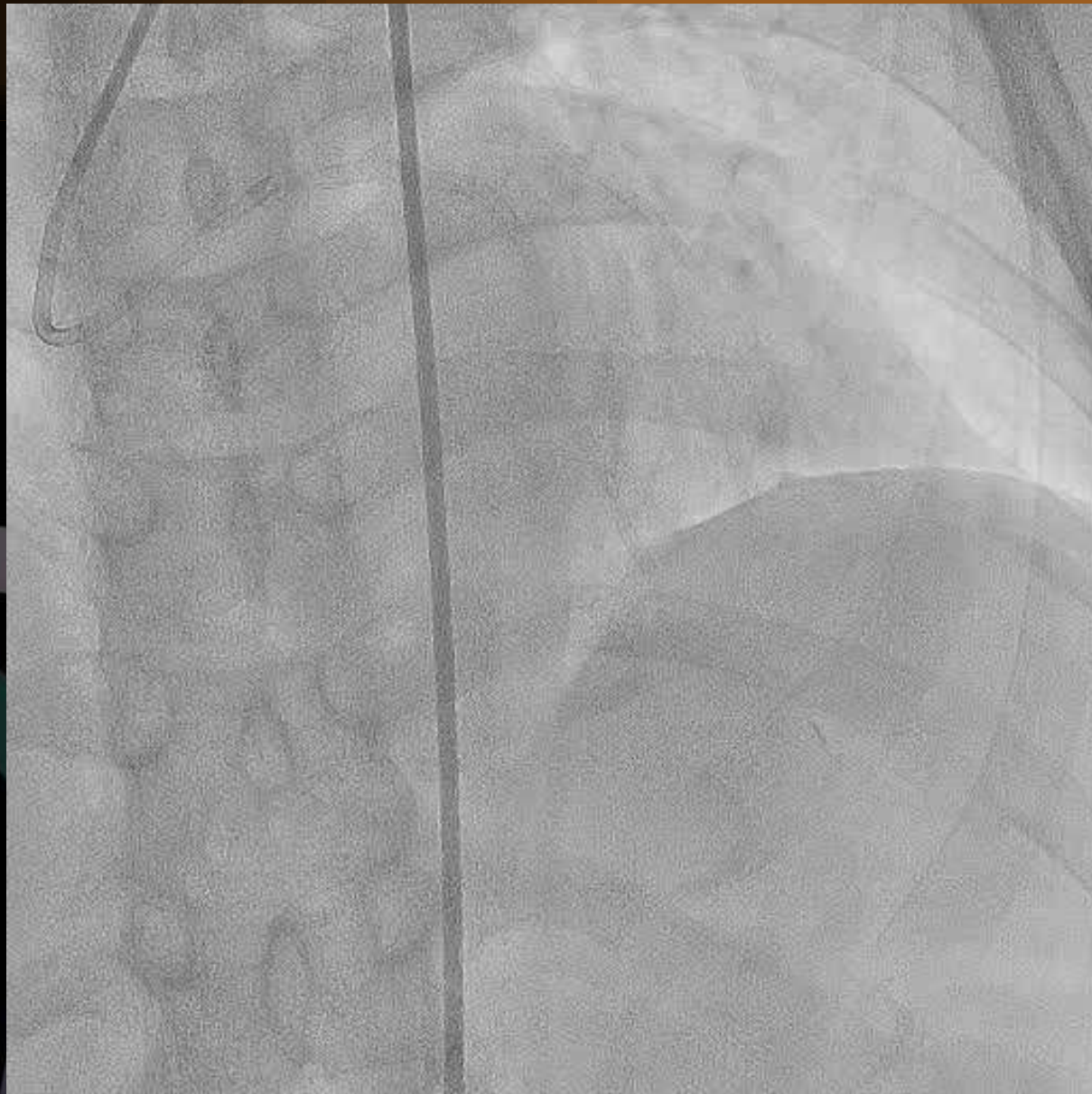
1 mm

2013-10-17 13:01:54  
0001



After successful rewiring, 3 DESs were implanted. Final CAG showed good results





# Summary

- **IVUS guided rewiring is the last resort in CTO PCI after other strategies fail.**
- **Concept of this methods is not reentry but rewiring.**
- **The most important role of IVUS is to identify the entry point of 1<sup>st</sup> GW to subintimal space.**
- **Rewiring starts from intimal plaque at the proximal site of entry point of 1<sup>st</sup> GW to subintimal space.**



# Take Home Message

- **Never give up even if not only parallel wire technique but also retrograde approach fail.**
- **Finally IVUS guided rewiring can provide us procedural success!**

*Thank you for  
your attention*

