Successful Management of Chronic Total Occlusion of Left Anterior Descending Artery and Diagonal Bifurcation Using Intravascular Ultrasound and Parallel wire technique

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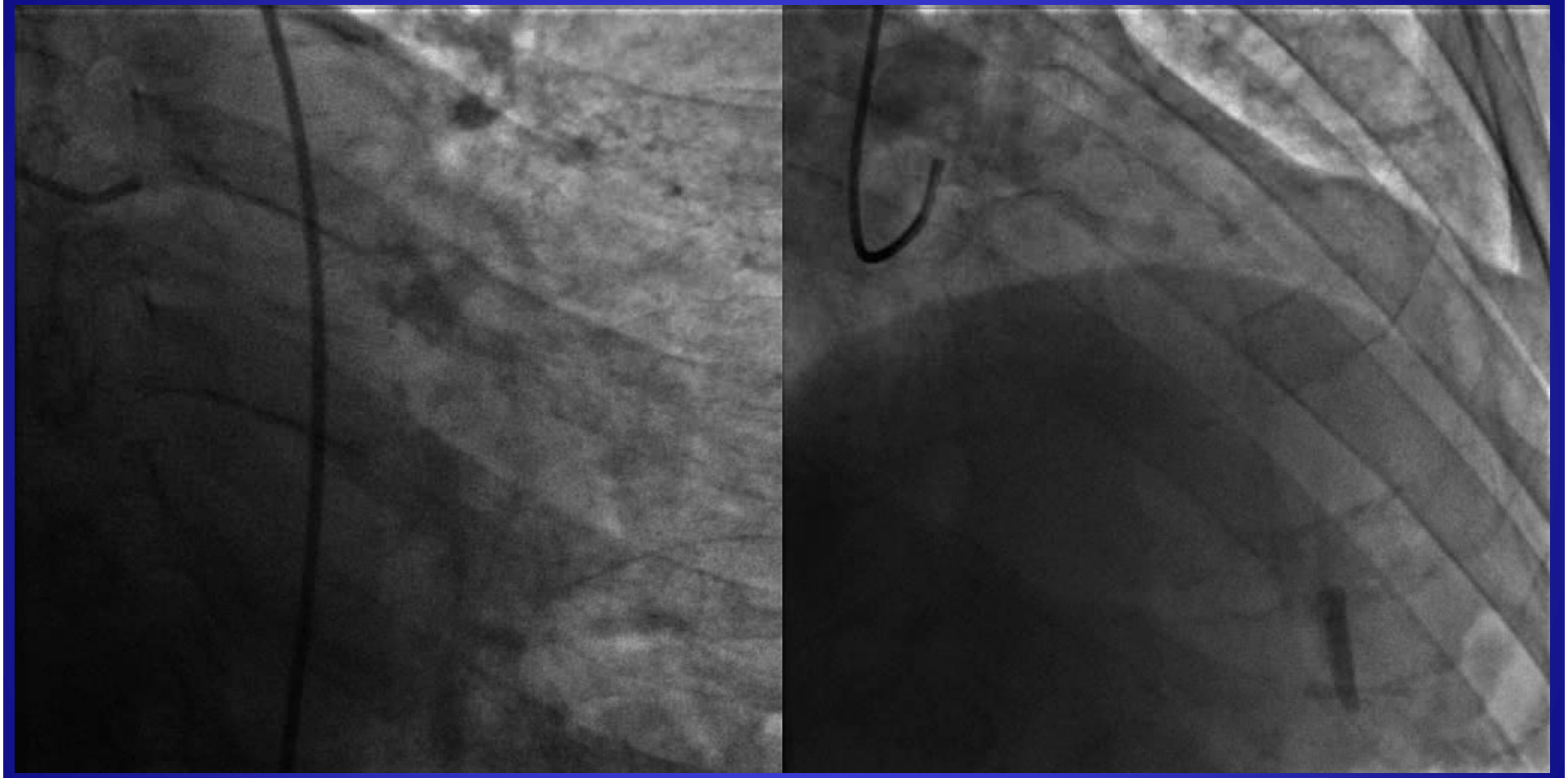
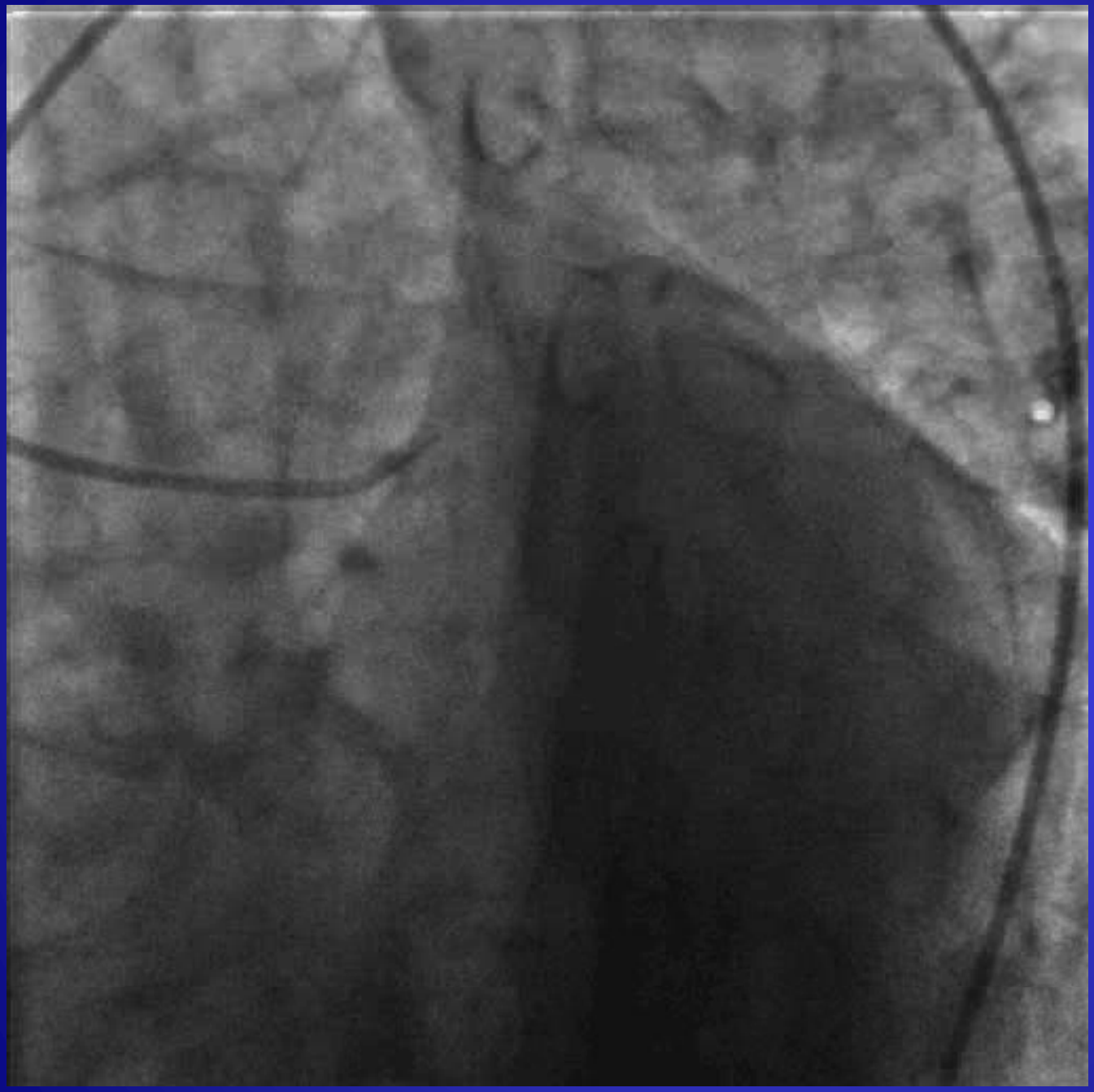
Clinical History and Physical Examination

- 65-year-old male with effort chest pain for 12 months.
- Risk factor: ex- smoker, 15 pack year smoking history
- ECG : T wave inversion in V1,2,3,4
- Echo : EF 65%, no RWMA

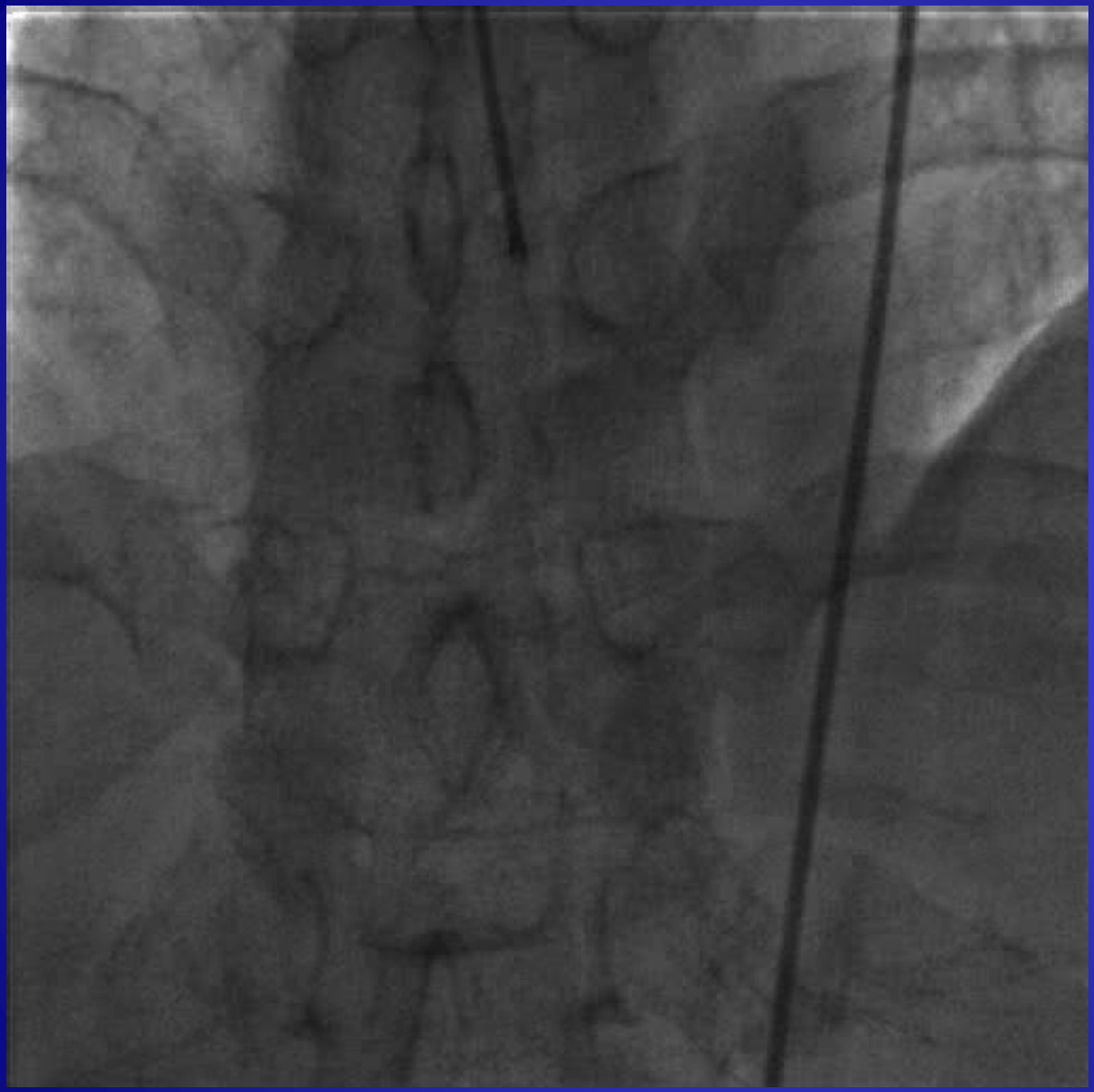
Baseline CAG



A long calcified severe stenotic lesion in the proximal LAD (Type C), TIMI 1 flow

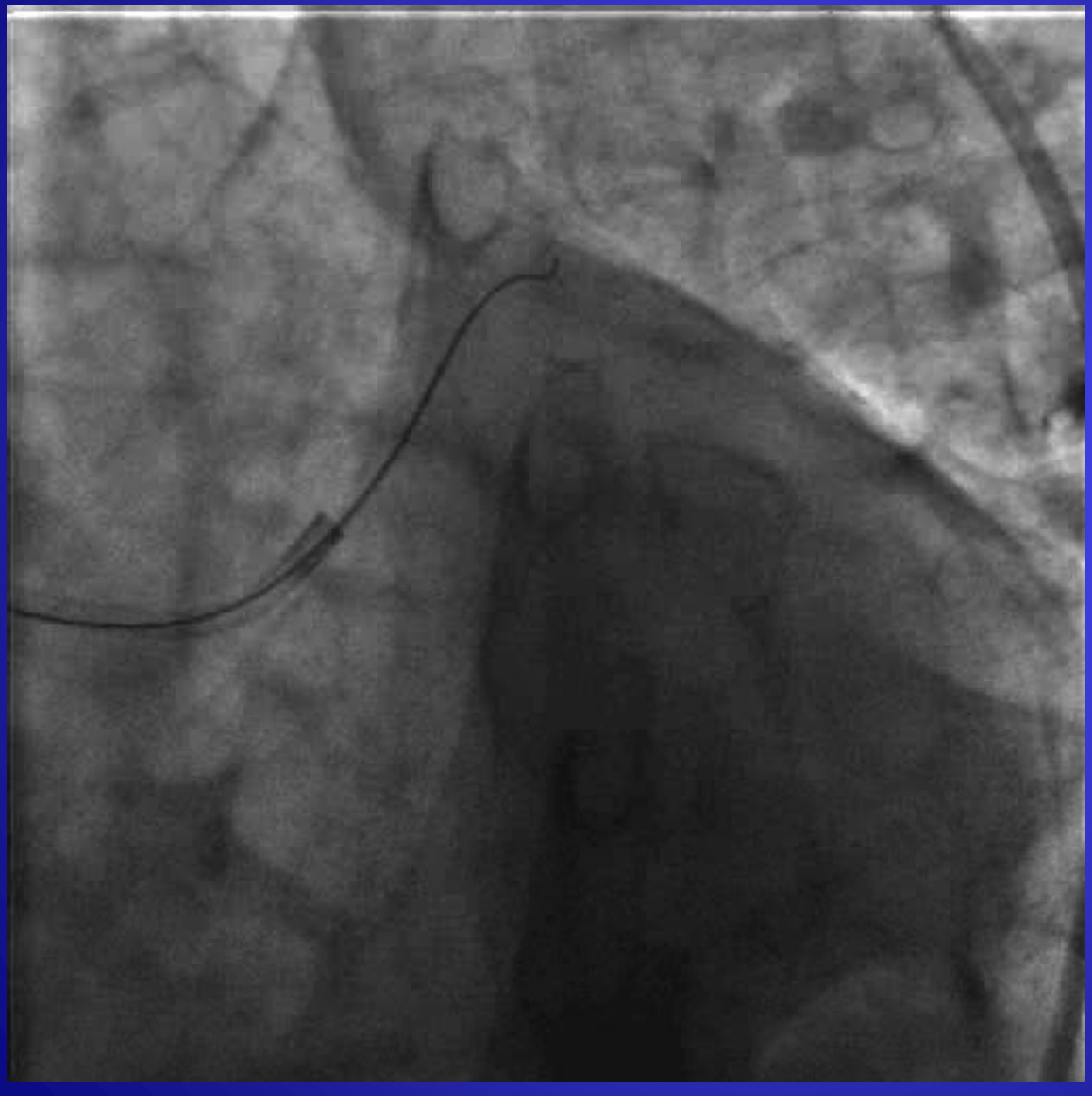


Severe stenotic lesion of 1st diagonal branch (Type B2 lesion). Medina classification (1,1,1)



The well developed collateral branches were shown from distal RCA to distal LAD (grade 2) . Therefore, we assumed that proximal LAD leision seems to be progressing chronic total occlusion due to well developed collateral branches.

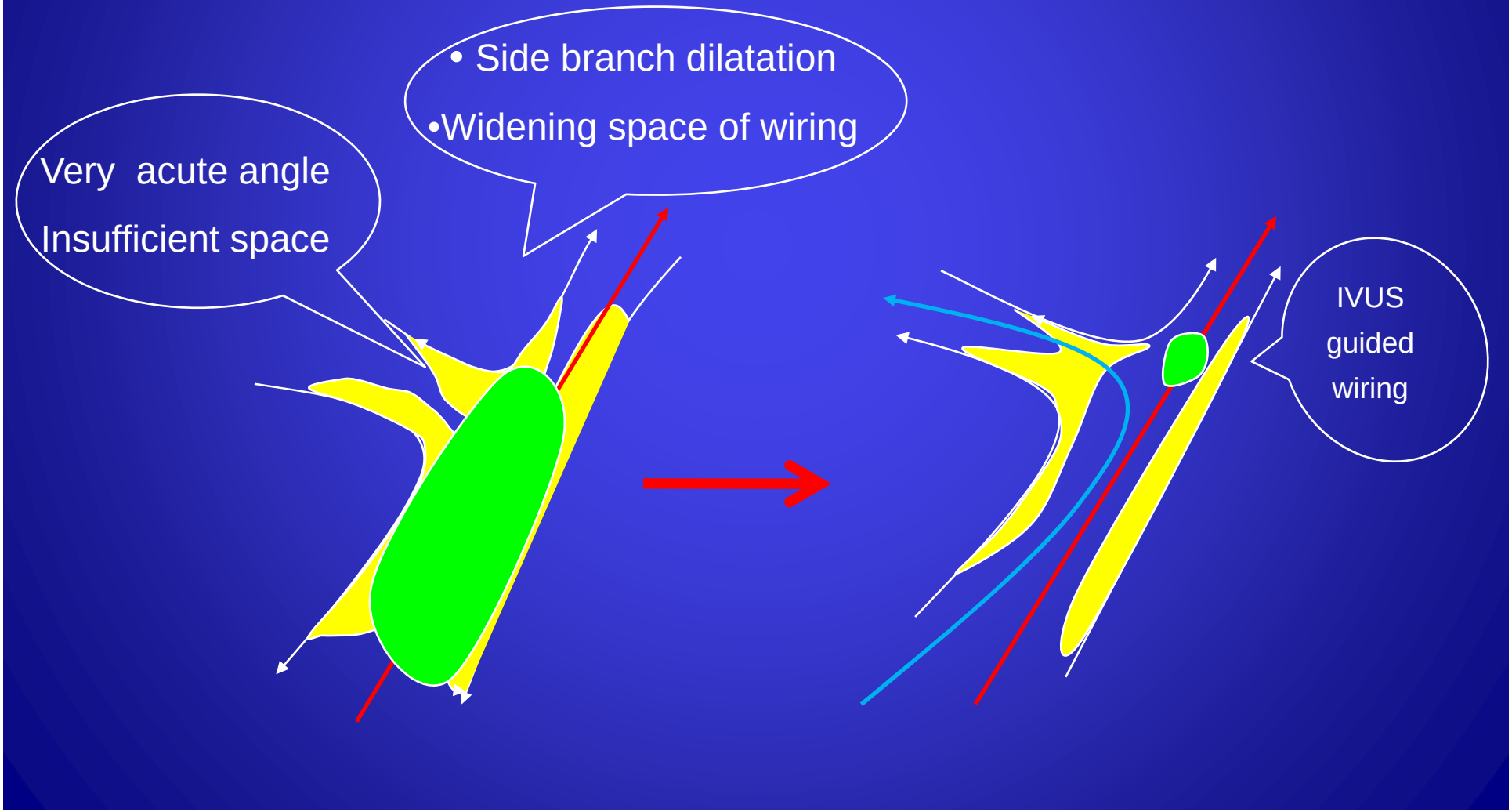
PCI at Bifurcation p-LAD & 1st Dx

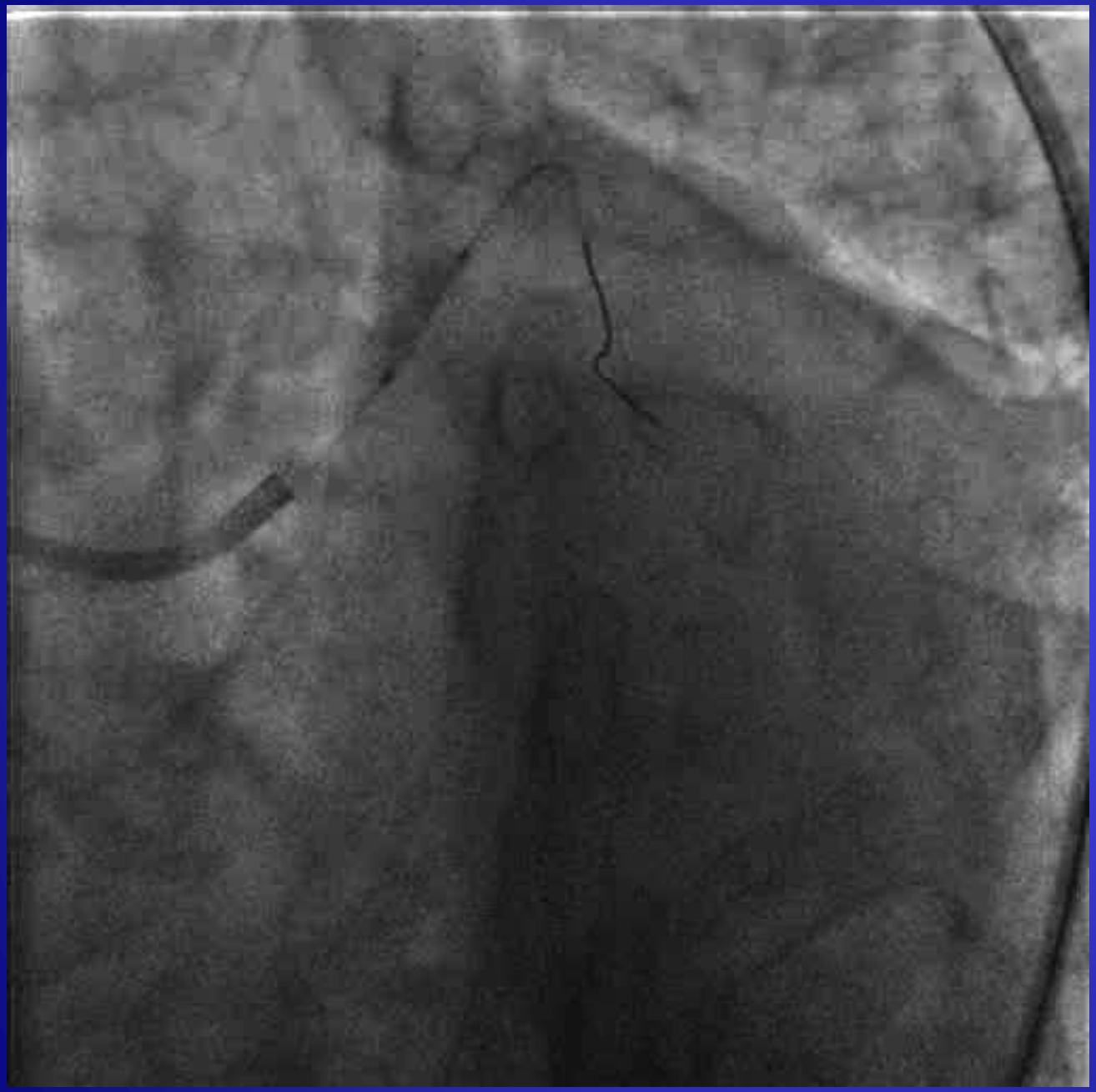


6Fr. JL4 Guiding catheter was engaged through Rt. femoral approach.

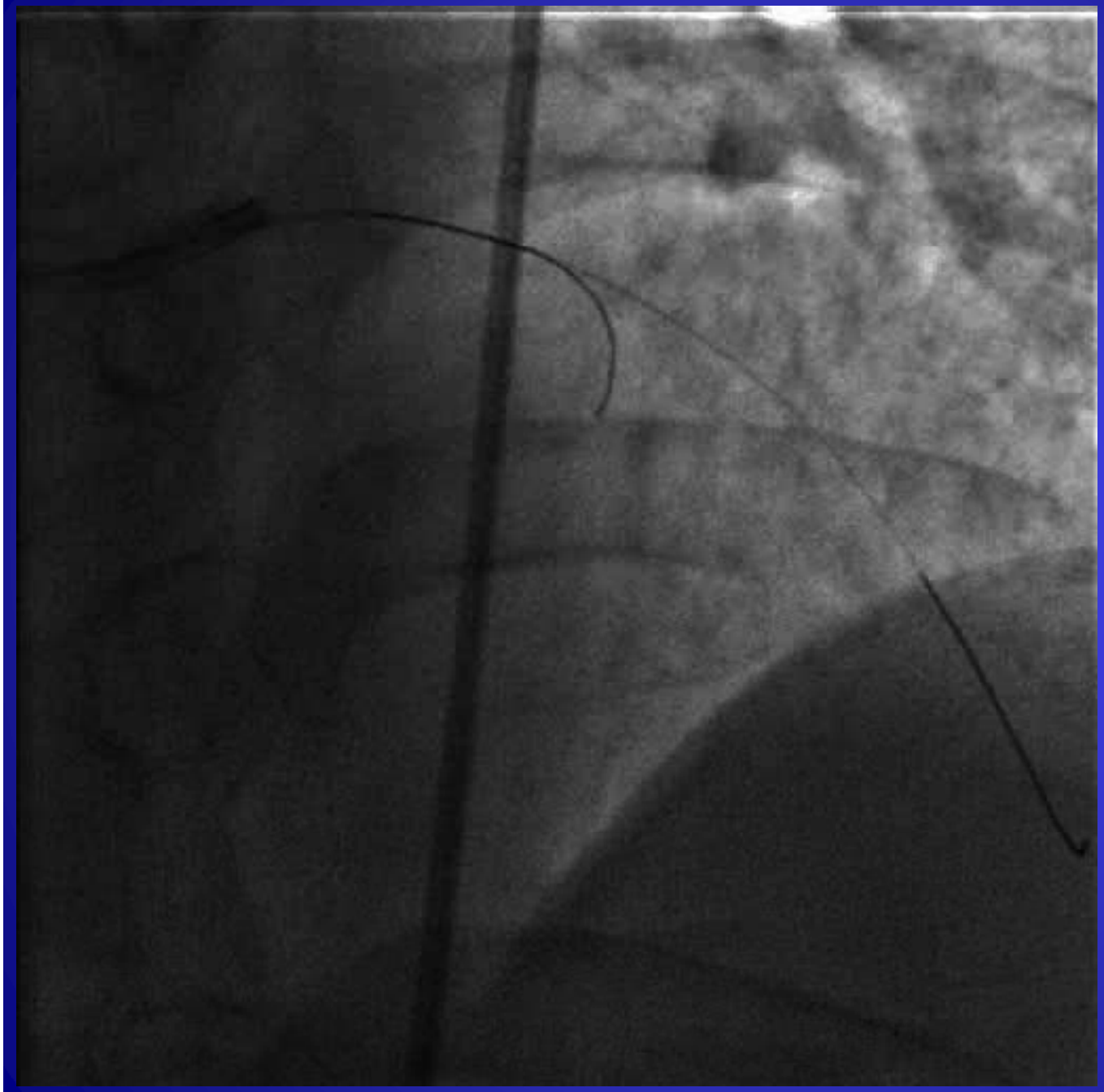
Prox. LAD with Fielder XT, 1st diagonal branch with BMW

- However, wiring of LAD was failed due to
  1) Insufficient wiring control space
  2) Very severe acute angle





Wire was changed to Fielder FC, and sequential predilatation was done in ostium of LAD using voyger 1.5x15mm and 2.0x15mm.



PCI at proximal LAD with Conquest .

↓

After wiring, patient complained

1) severe chest pain
2) SBP < 80mmHg
3) HR>100 / minute

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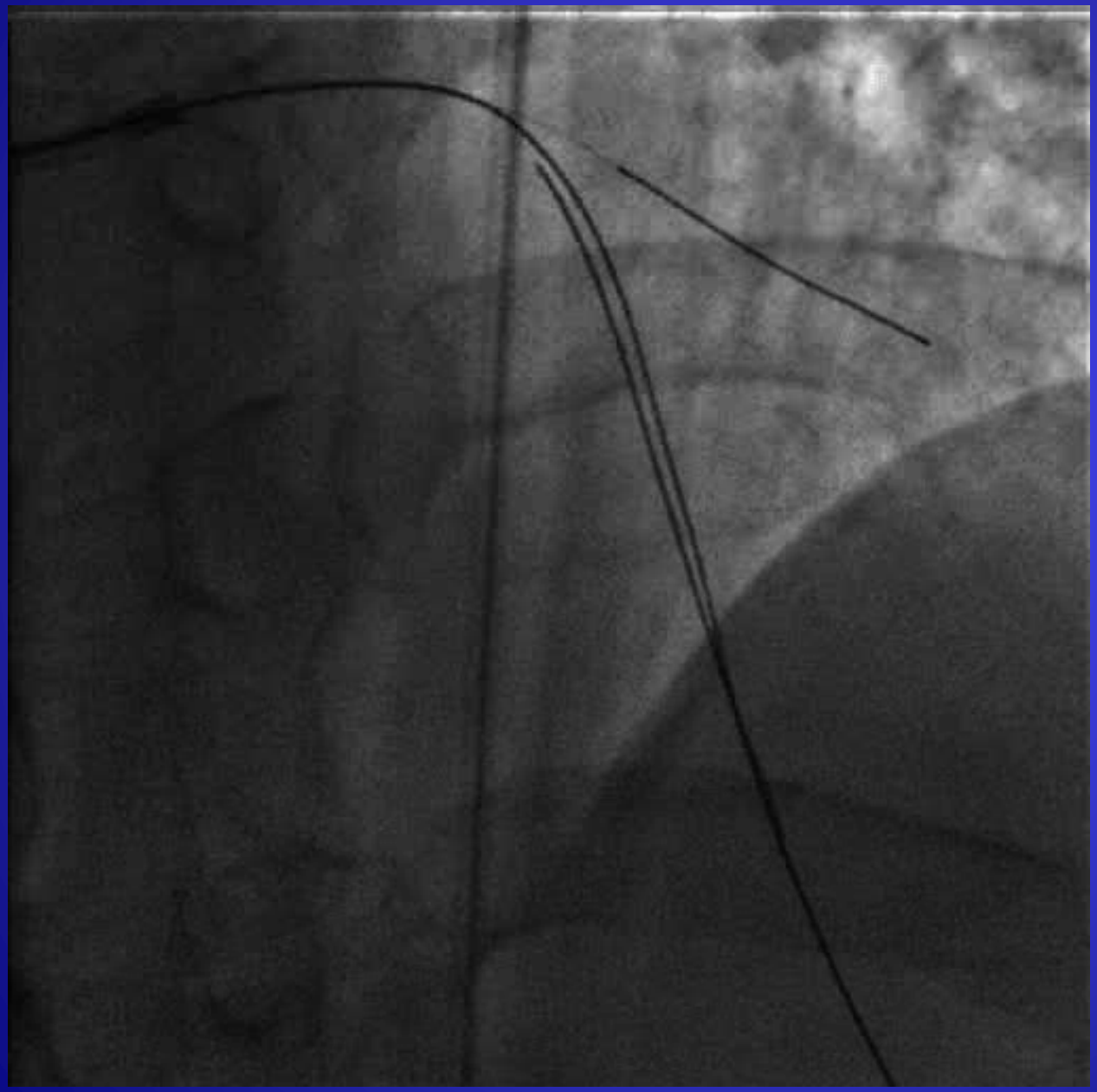
Intraarterial balloon pump (IABP)

Strategy of Escape from ‘ False lumen’

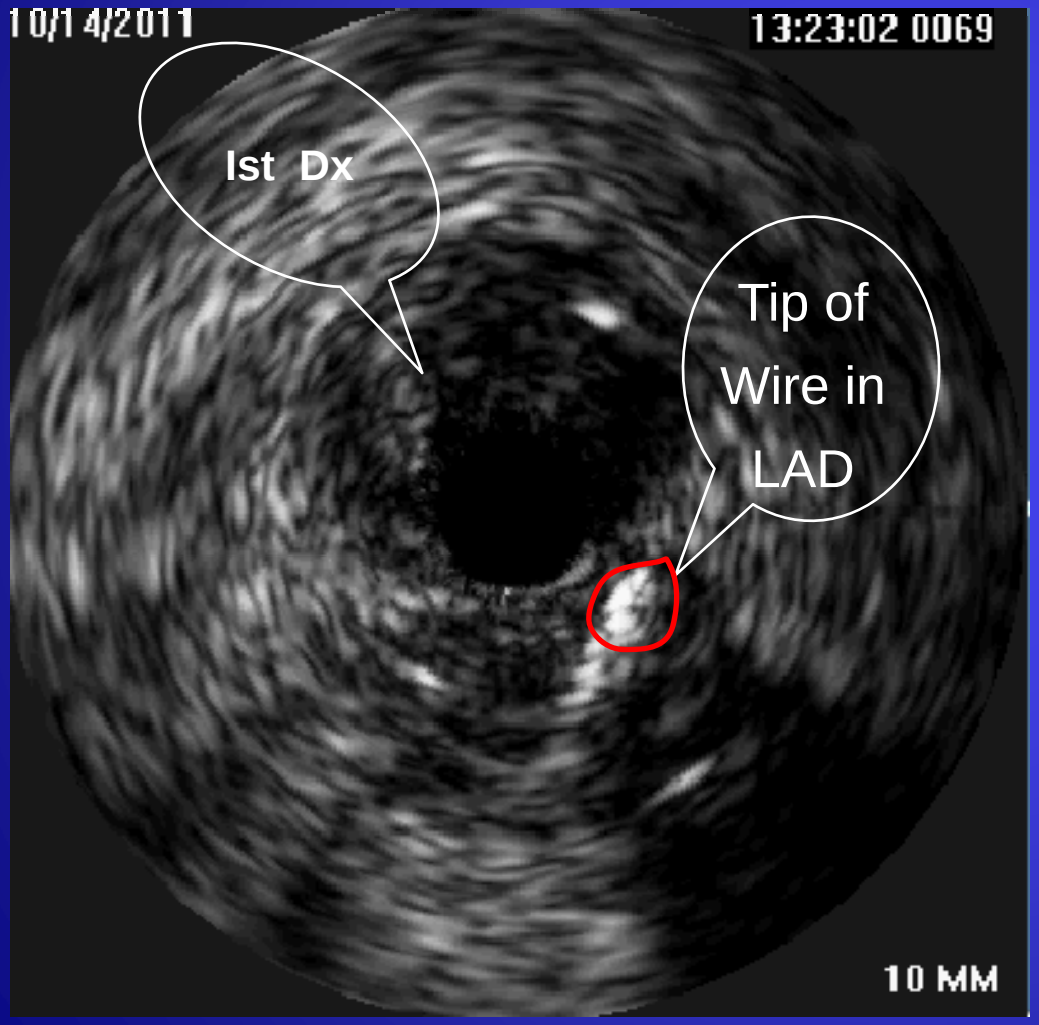
- Parallel or seesaw wire technique
- IVUS-guided wiring

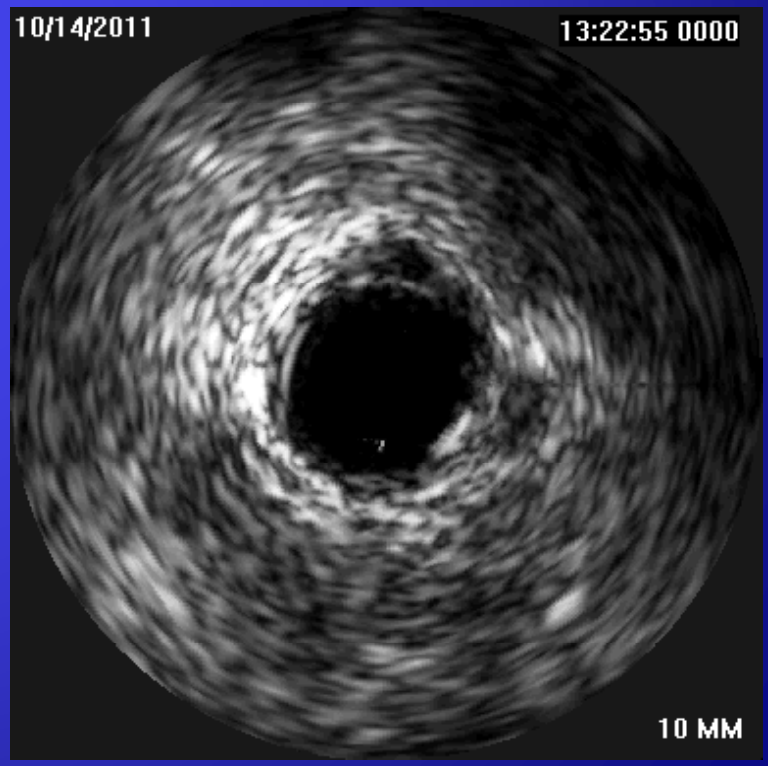
IVUS guide parallel wire technique



Parallel wire technique was performed using Conquest and Miracle wires in LAD

IVUS

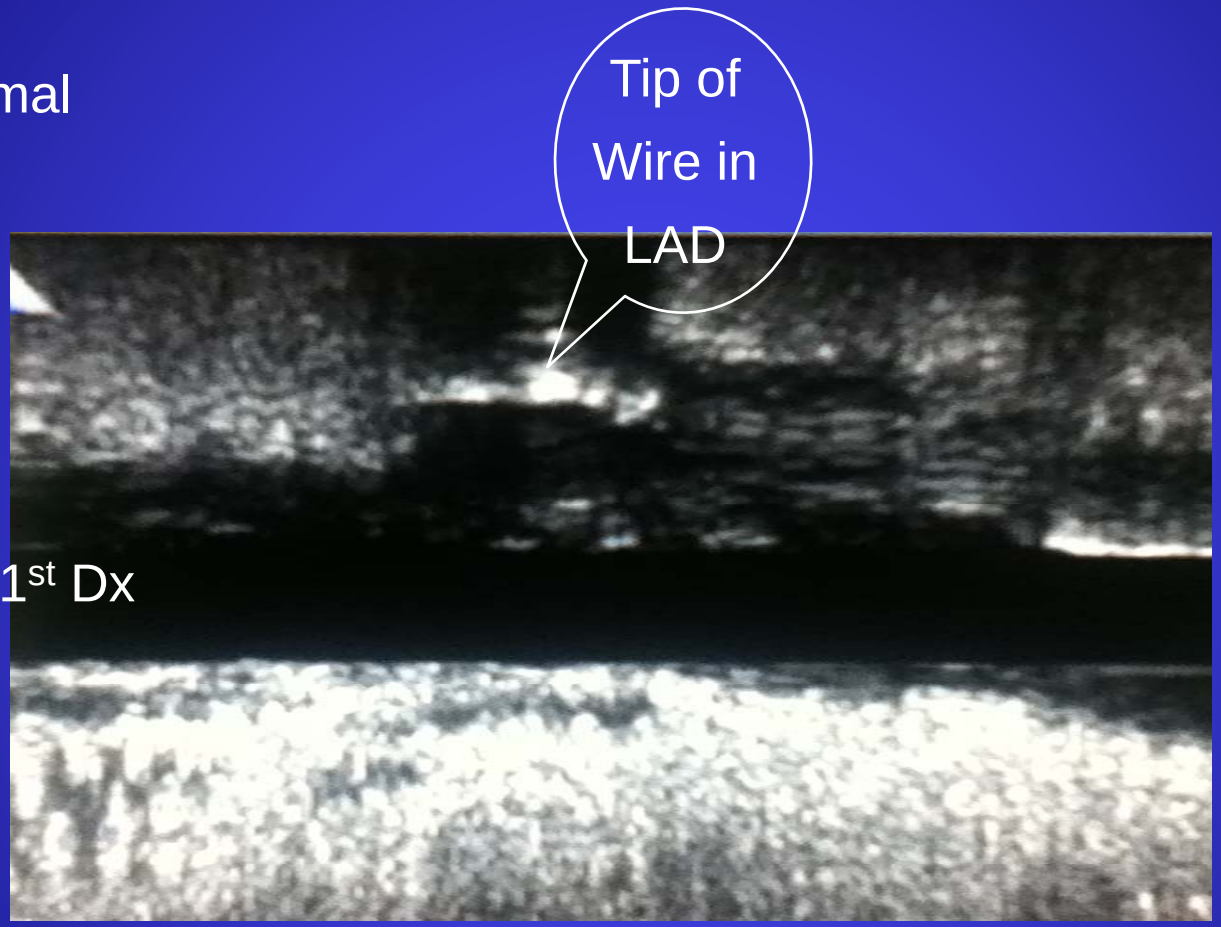

10/14/2011
13:23:02 0069
Ist Dx
Tip of Wire in LAD
10 MM


10/14/2011
13:22:55 0000
10 MM

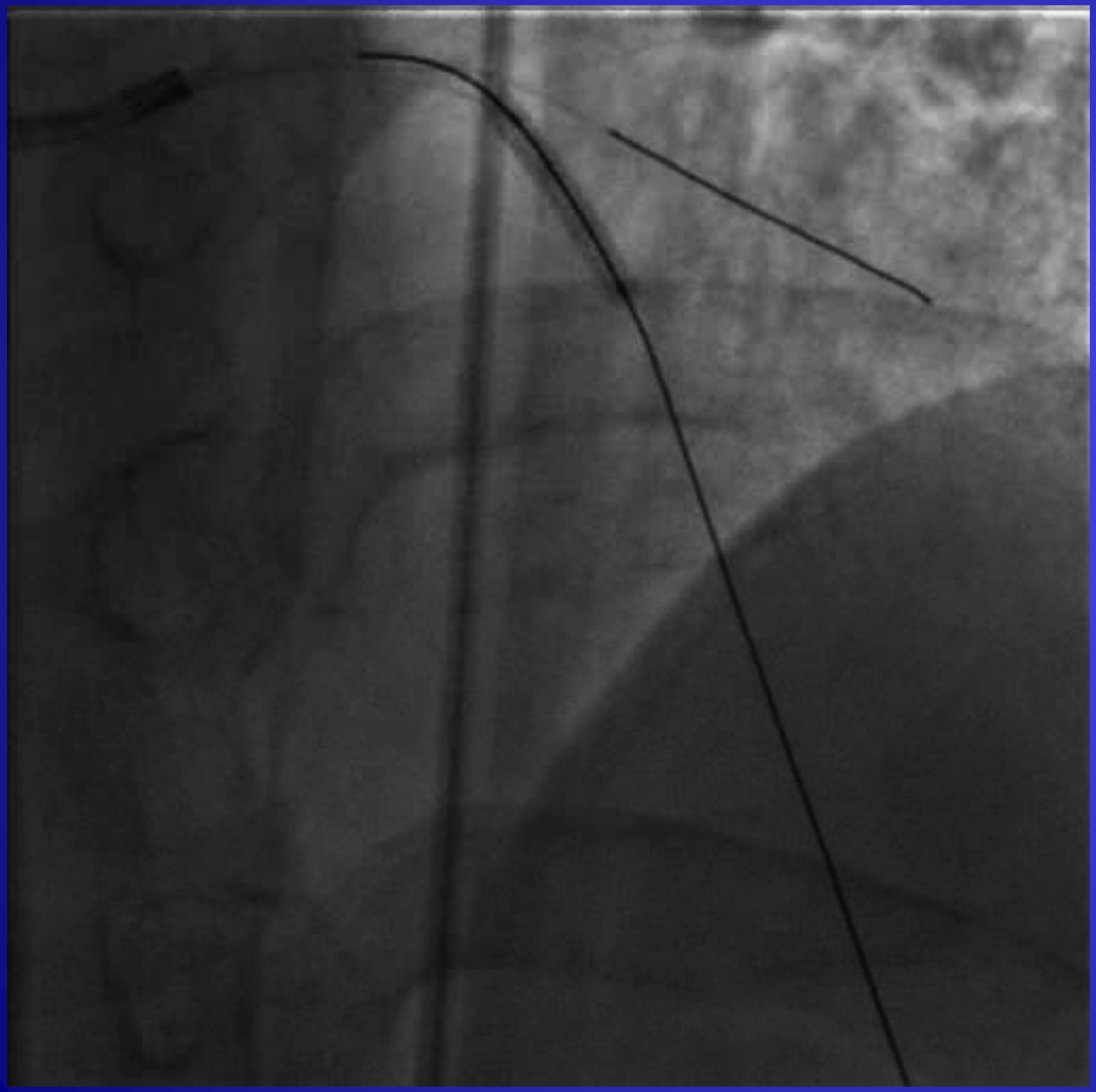
IVUS : True lumen

proximal

distal



LAD PCI

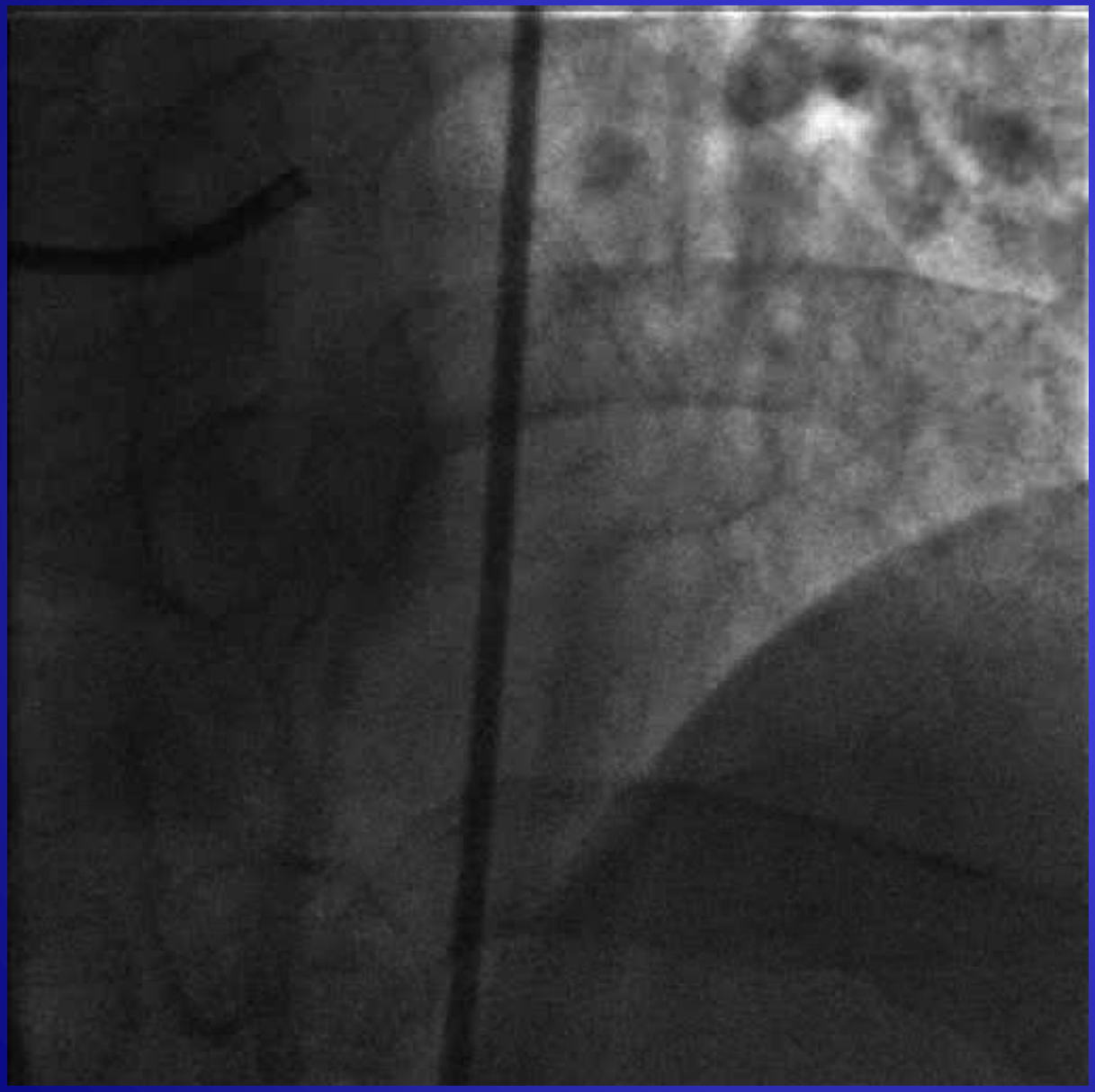


Voyger 2x15 mm,

Two Xience 2.75 x18 mm

at proximal and mid LAD

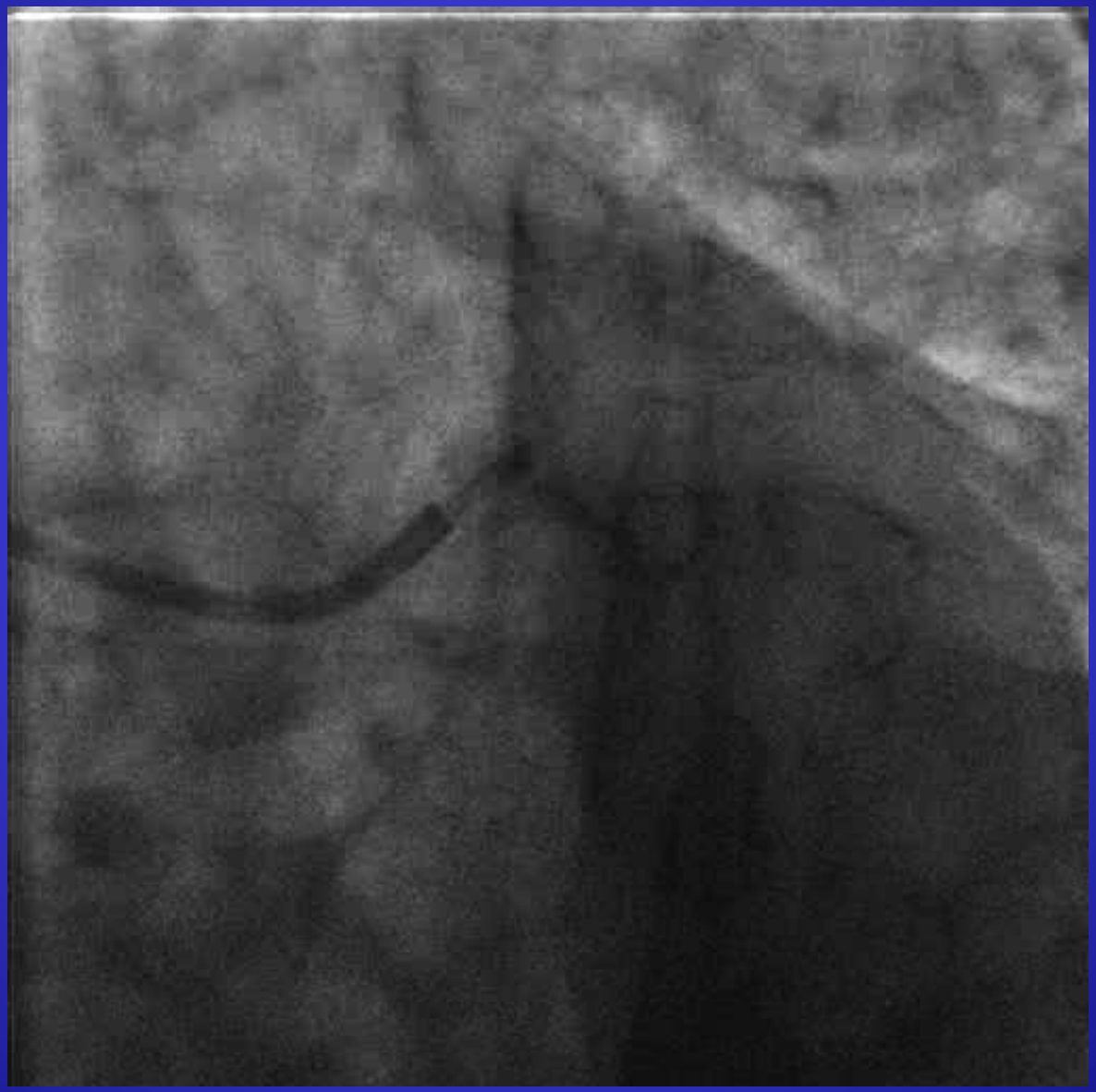
Final angiography



Final angiography showed successfully revascularization of LAD with TIMI 3 grade flow.

The patients did not complained of chest pain, and systolic blood pressure was increased 120mmHg.

Final angiography



Conclusion

We learned through this case

- In bifurcation lesion with main branch CTO, predilatation at side branch can make the wiring space widening.
- However, in this process, unexpected compromising LAD made hemodynamic status unstable and leaded to chest pain.

Conclusion

- Incomplete CTO seems to be far more dangerous lesion than we guess and very careful managements are needed.
- IVUS guided wiring technique is helpful technique to advance in a true lumen during CTO intervention.