

Percutaneous coronary Interventions in 2023

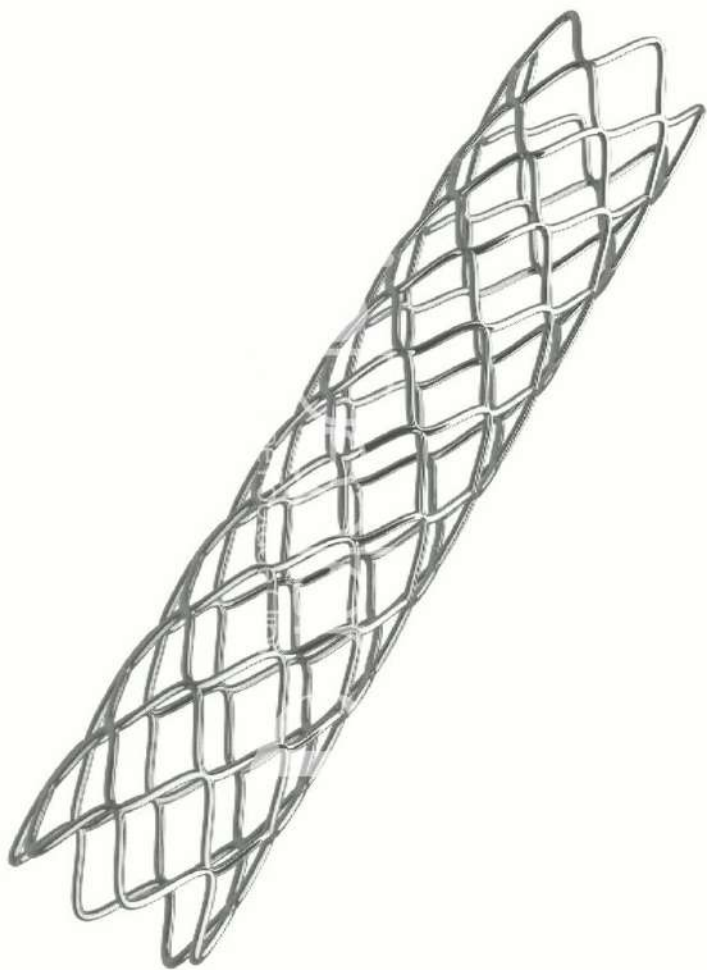
Challenges & Chances

Prof. Florim Cuculi
Head of Cardiology
Heart Centre Lucerne - Switzerland



Current challenges in percutaneous coronary interventions

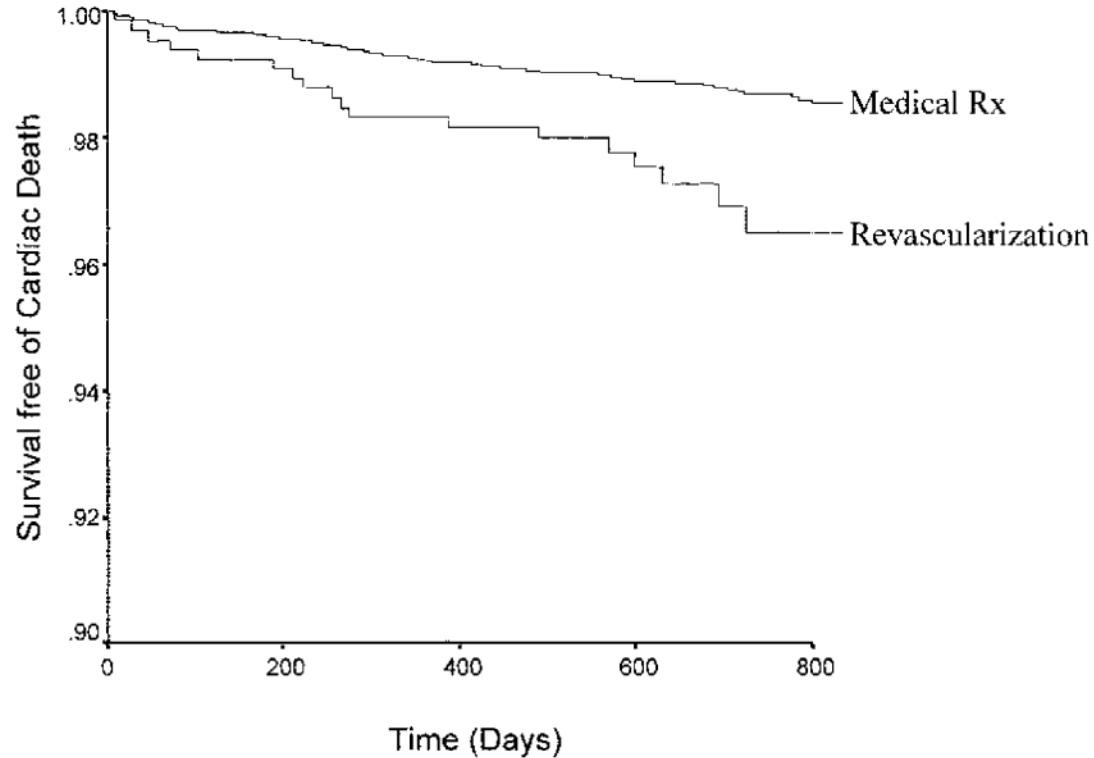
- **Chronic coronary syndrome**
 - PCI or pills
 - Deciding pro or contra PCI: Fractional Flow Reserve (FFR)
 - Stent or drug coated balloon
 - When to think hybrid
- **Acute coronary syndrome**
 - Cardiogenic shock: still a major challenge



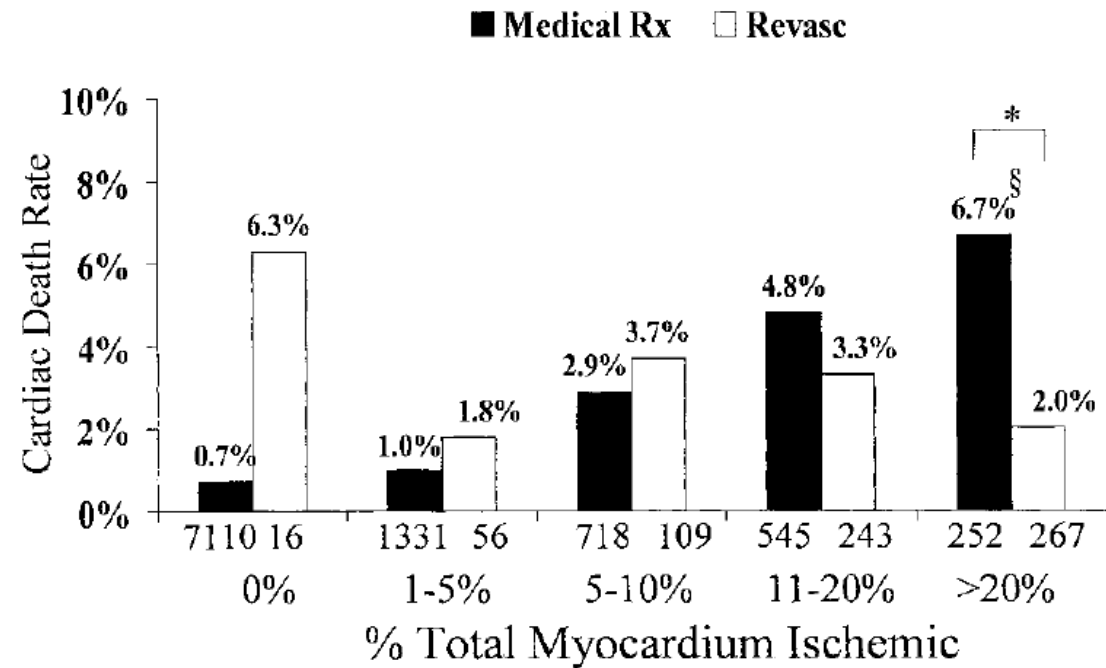
VS.



Ischemia & Prognosis



log-rank
p=0.0004



Hachamovitch et al. Circulation. 2003; 107:2900-2907

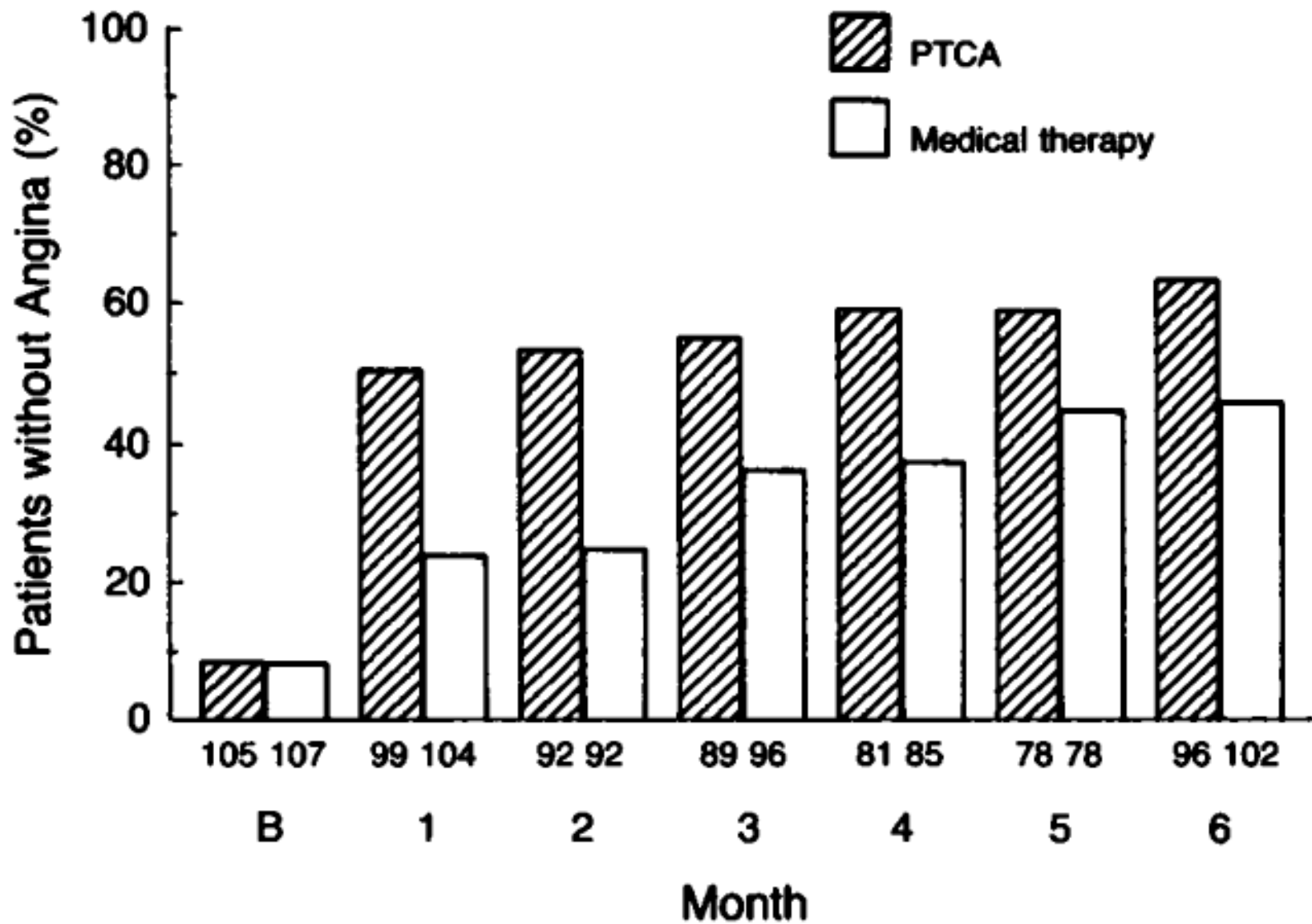
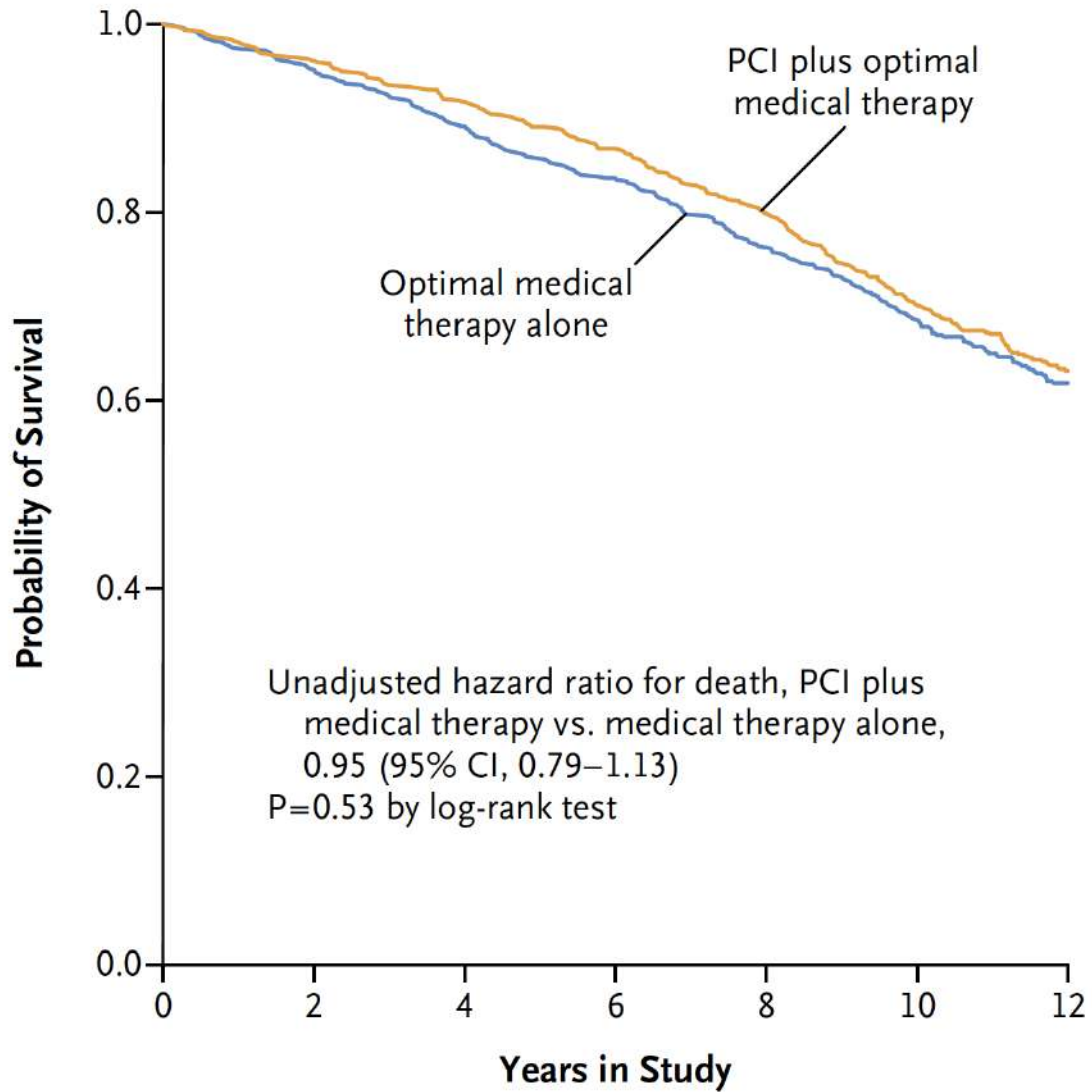


Figure 2. Percent of Patients Who Were Free of Angina Each Month after Randomization.

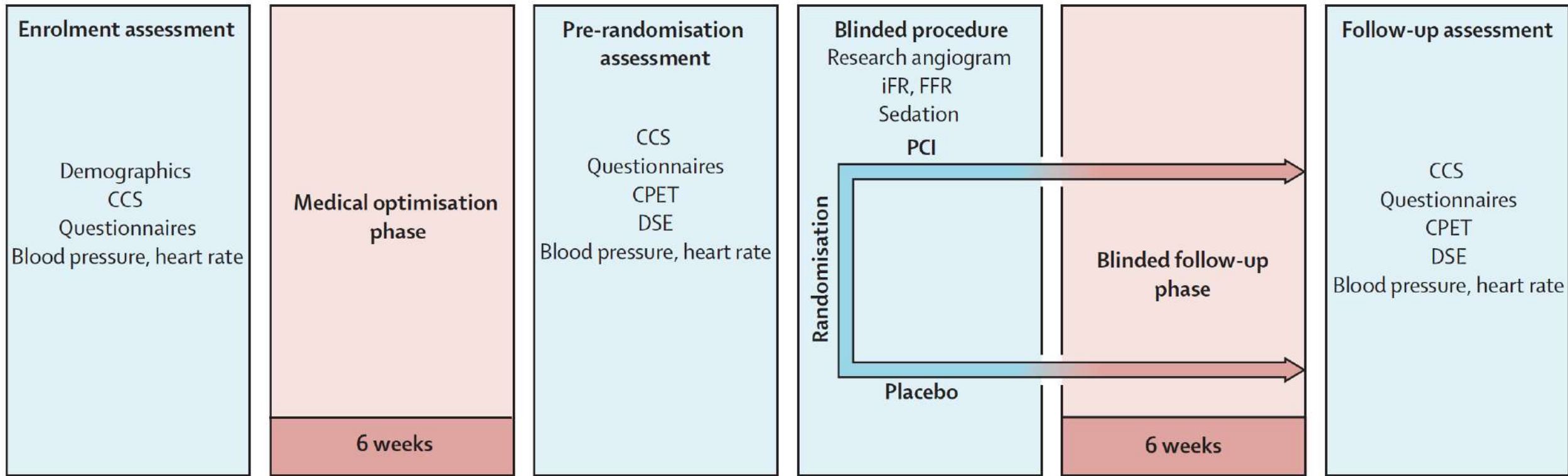
B Extended Follow-up Study Cohort



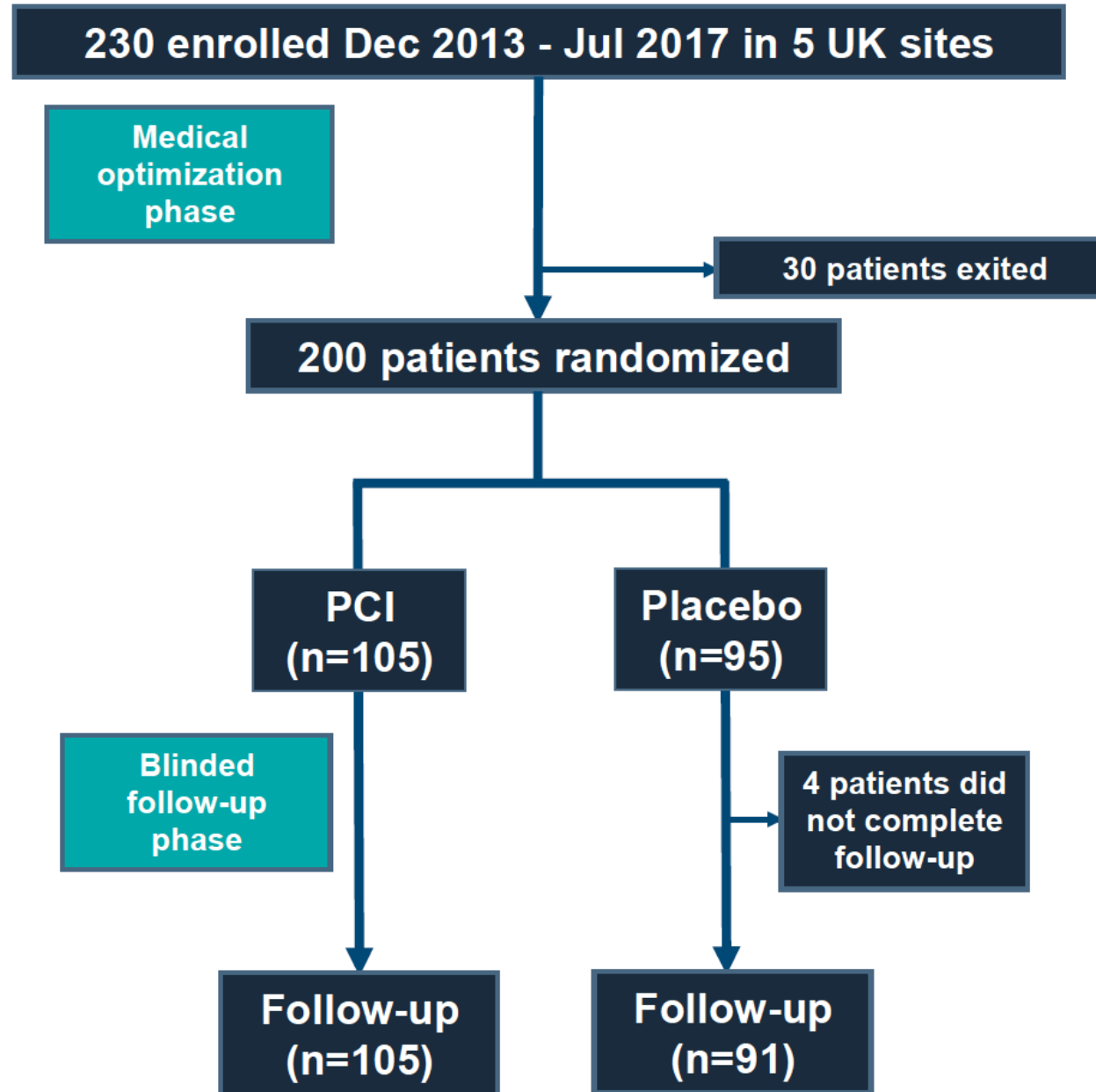
No. at Risk

	0	2	4	6	8	10	12
Optimal medical therapy	598	569	533	500	455	403	280
PCI plus optimal medical therapy	613	589	561	529	486	416	302

ORBITA-Study



ORBITA trial

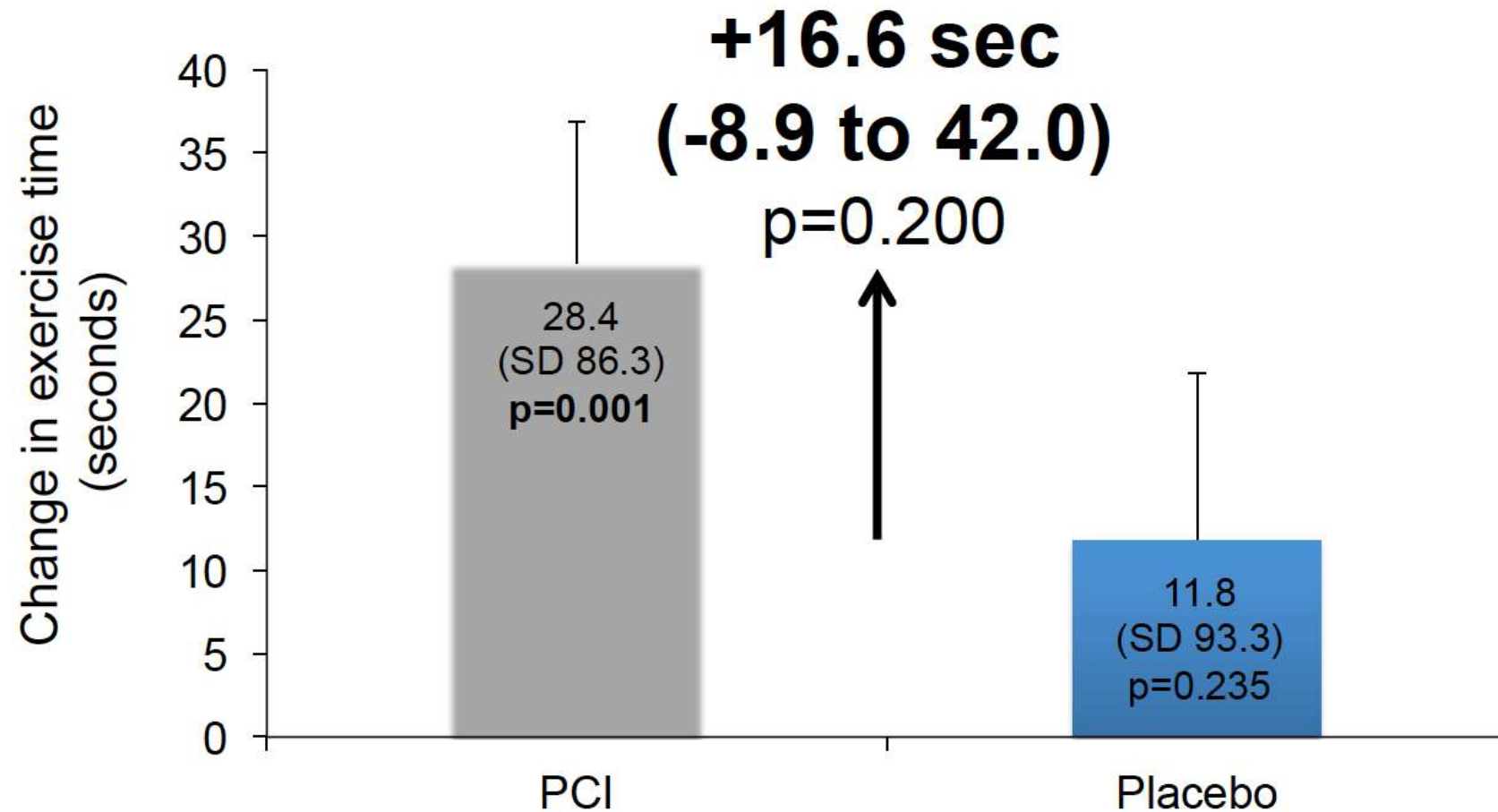


Stenosis severity

	PCI n = 105	Placebo n = 95	P
Area stenosis by QCA (%)	84.6 (SD 10.2)	84.2 (SD 10.3)	0.781
FFR	0.69 (SD 0.16)	0.69 (SD 0.16)	0.778
iFR	0.76 (SD 0.22)	0.76 (SD 0.21)	0.751

Primary endpoint result

Change in total exercise time



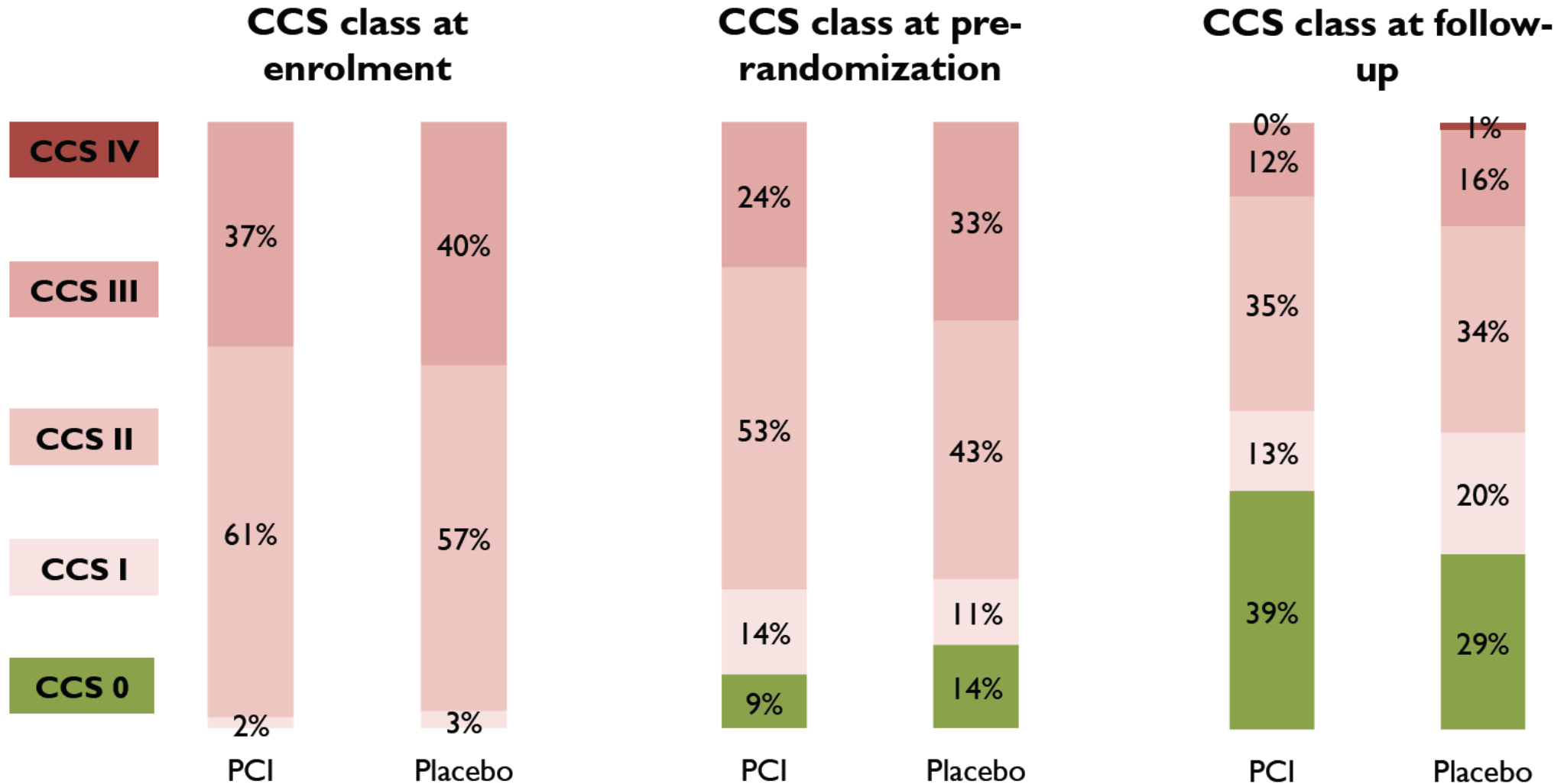
Secondary endpoint results

Blinded evaluation of ischaemia reduction

Peak stress wall motion index score	PCI n = 80	Placebo n = 57
Pre-randomization	1.11 (0.18)	1.11 (0.18)
Follow-up	1.03 (0.06)	1.13 (0.19)
Δ (Pre-randomization to follow-up)	-0.08 (0.17)	0.02 (0.16)
	p<0.0001	p=0.433
Difference in Δ between arms	-0.09 (-0.15 to -0.04) p=0.0011	

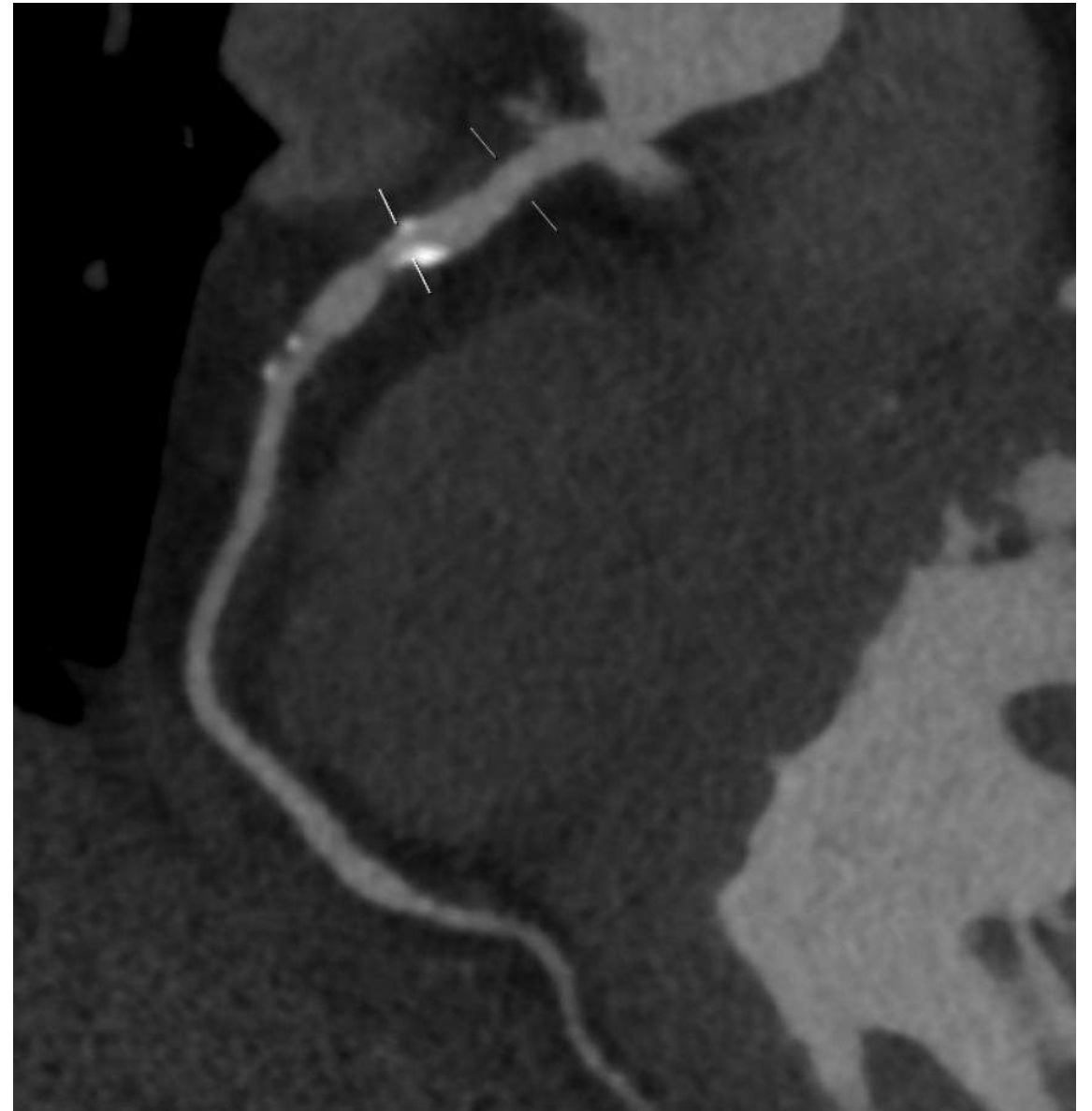
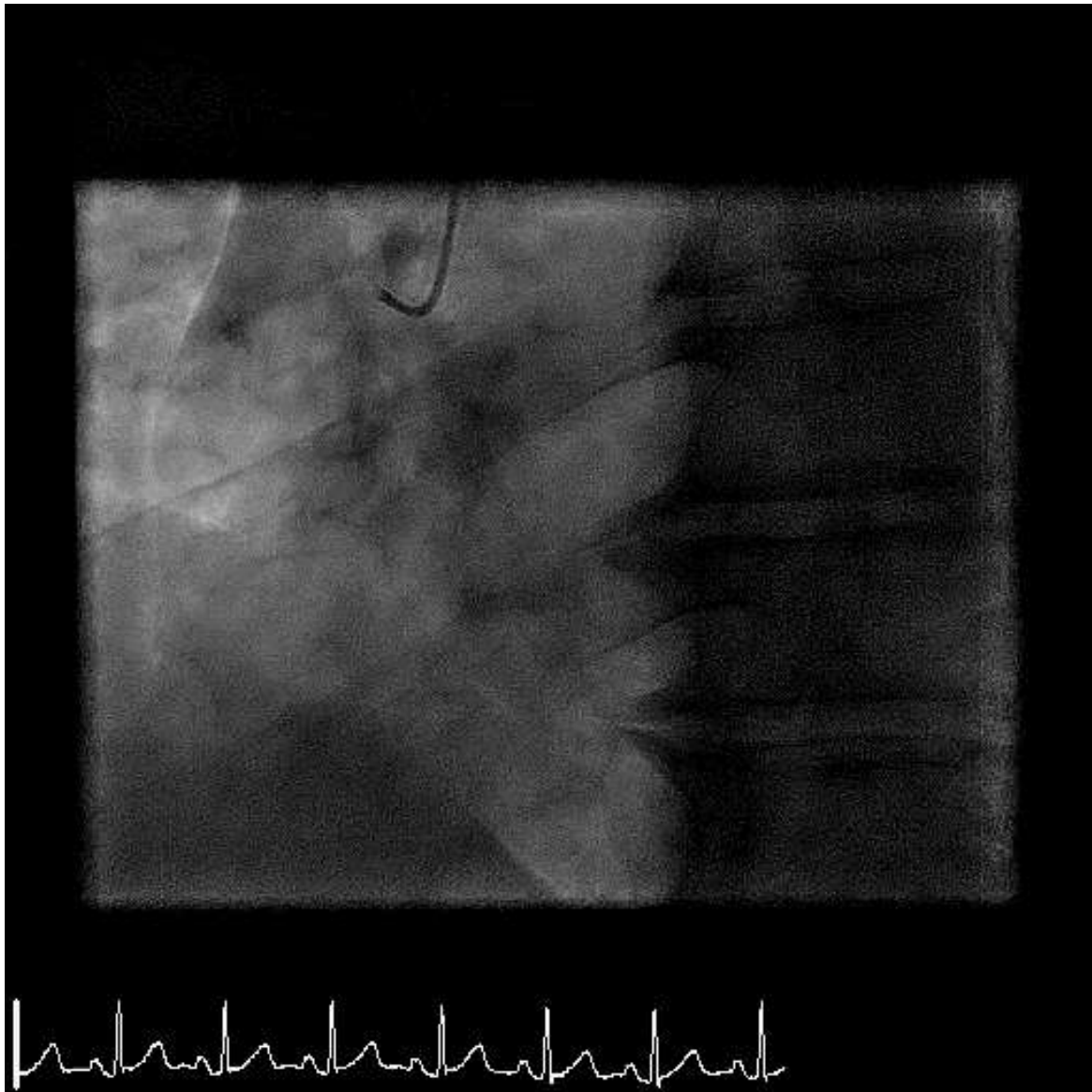
Secondary endpoint results

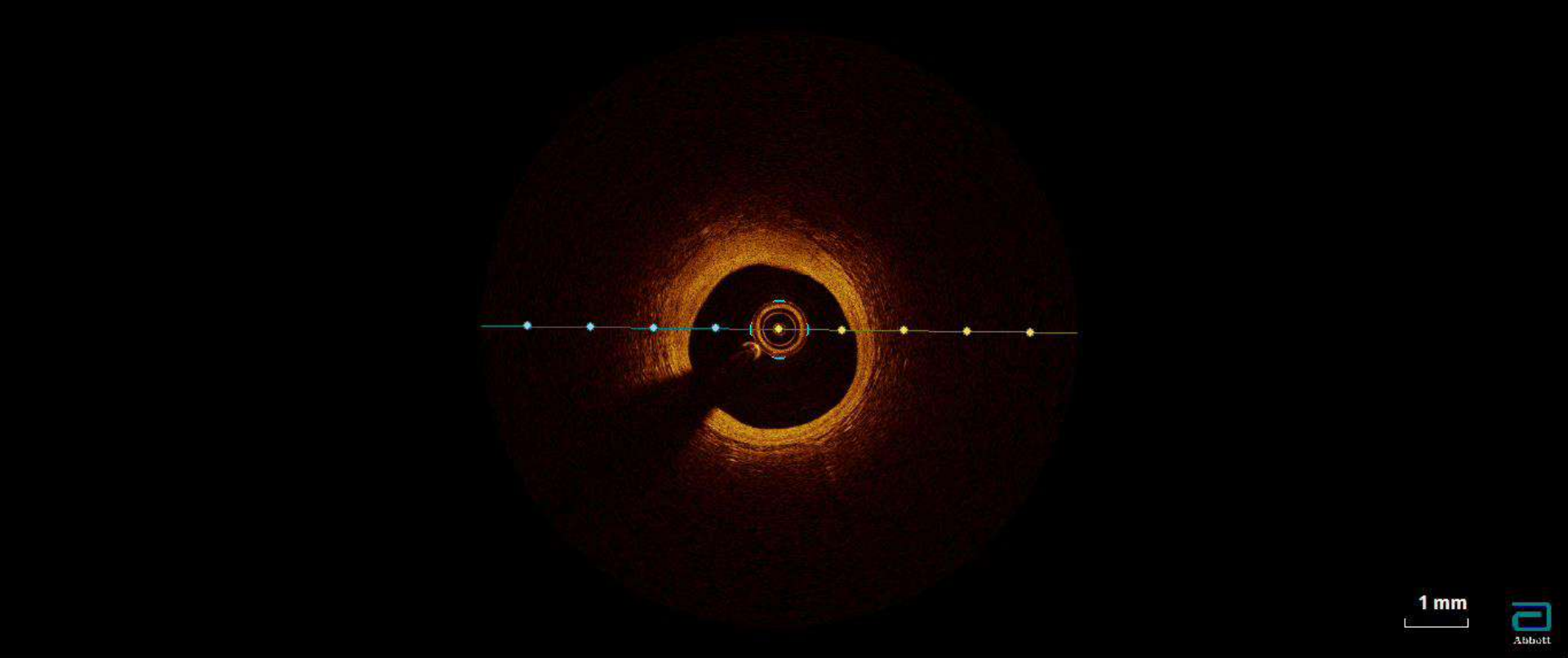
CCS class improved in both groups



Chronic coronary syndrome: PCI or pills?

- **PCI is not always the best choice**
 - Various studies failed to demonstrate a prognostic benefit
 - COURAGE, ORBITA, ISCHEMIA . . .
- **Good medical therapy is crucial**
- **PCI for „uncontrollable“ symptoms & for relevant ischemia**

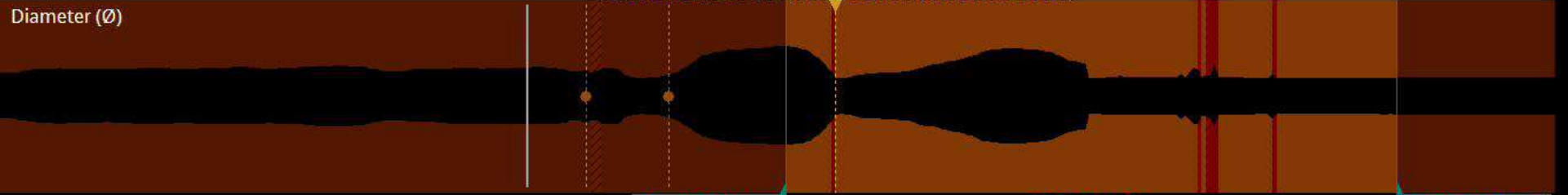




1 mm



Area 2.44mm², \varnothing =1.75mm, DS=44.8%

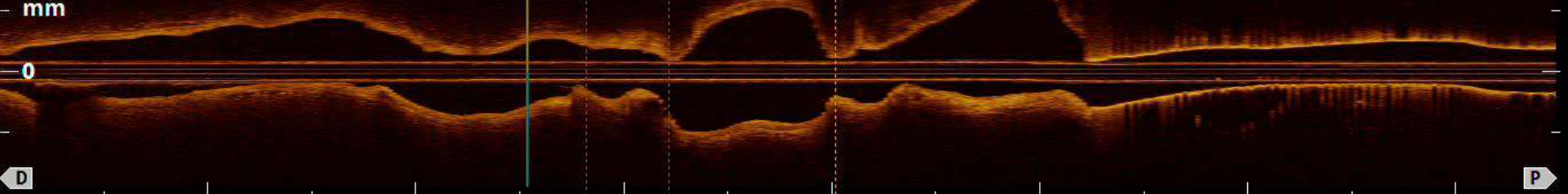


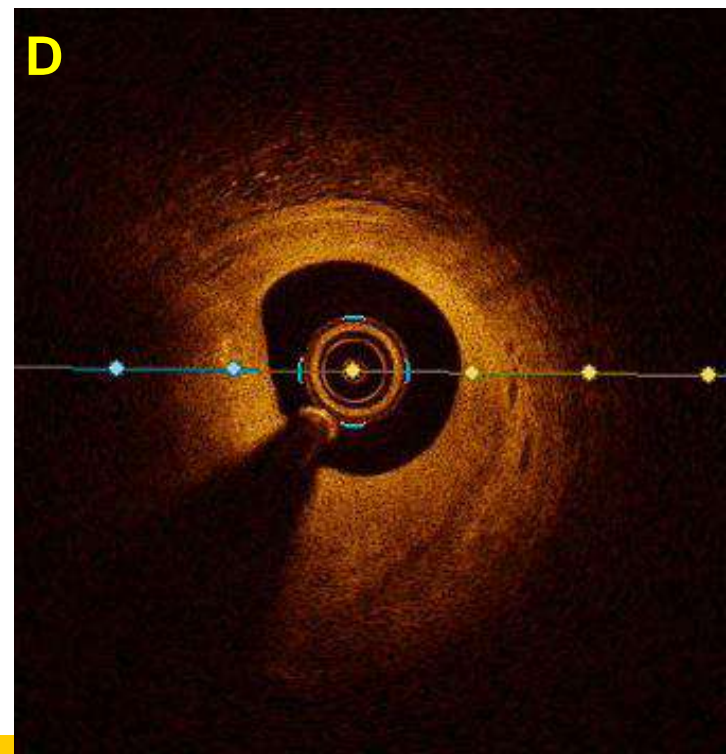
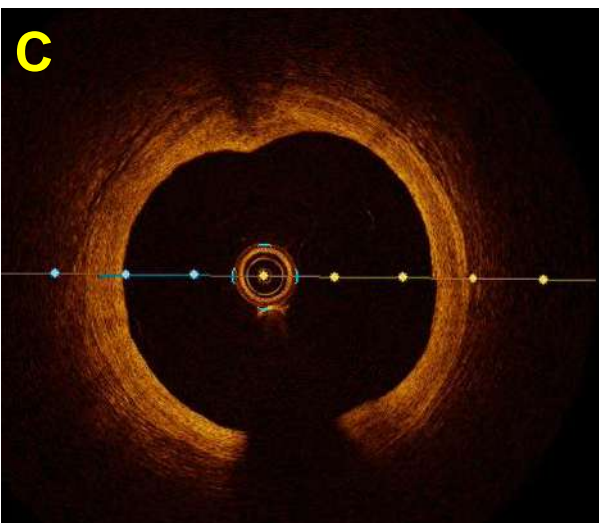
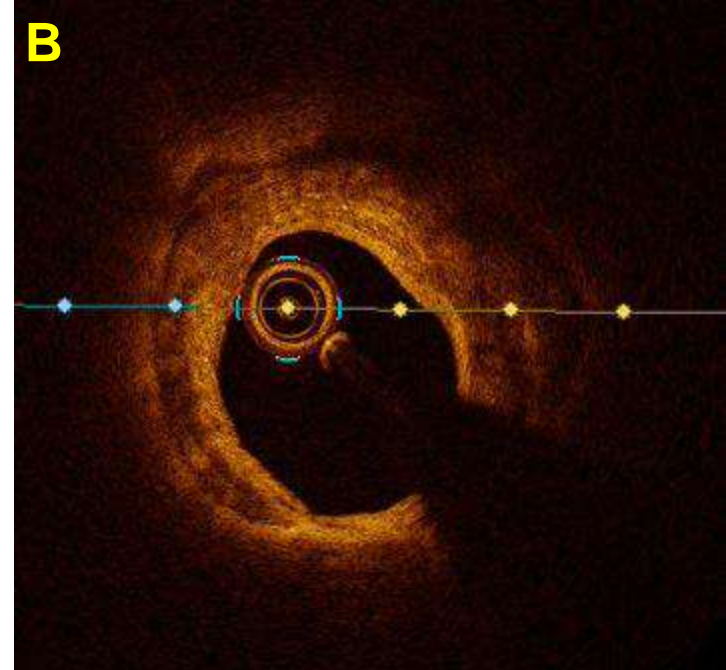
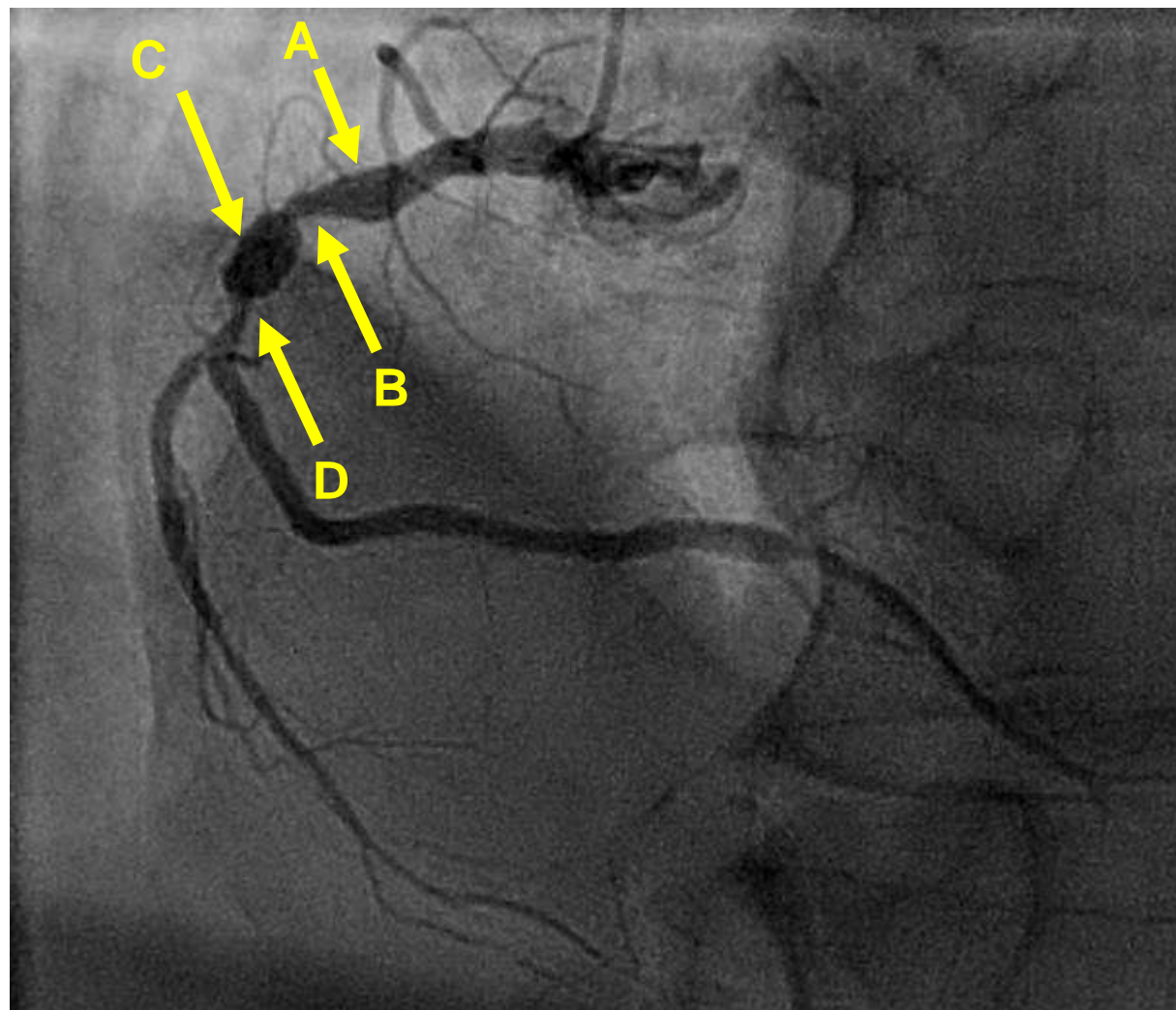
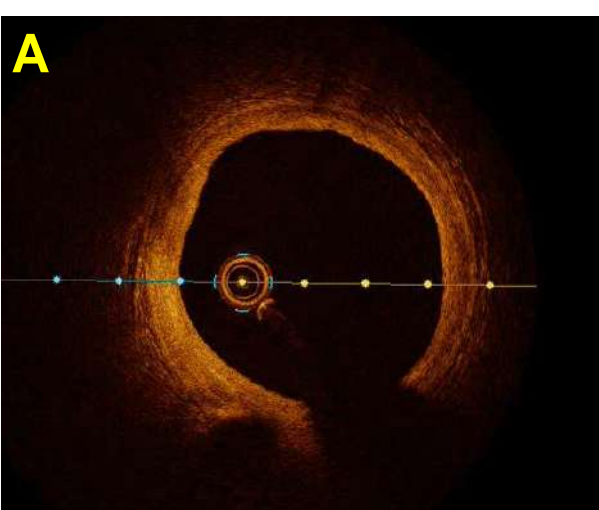
\varnothing =4.61mm

29.4 mm

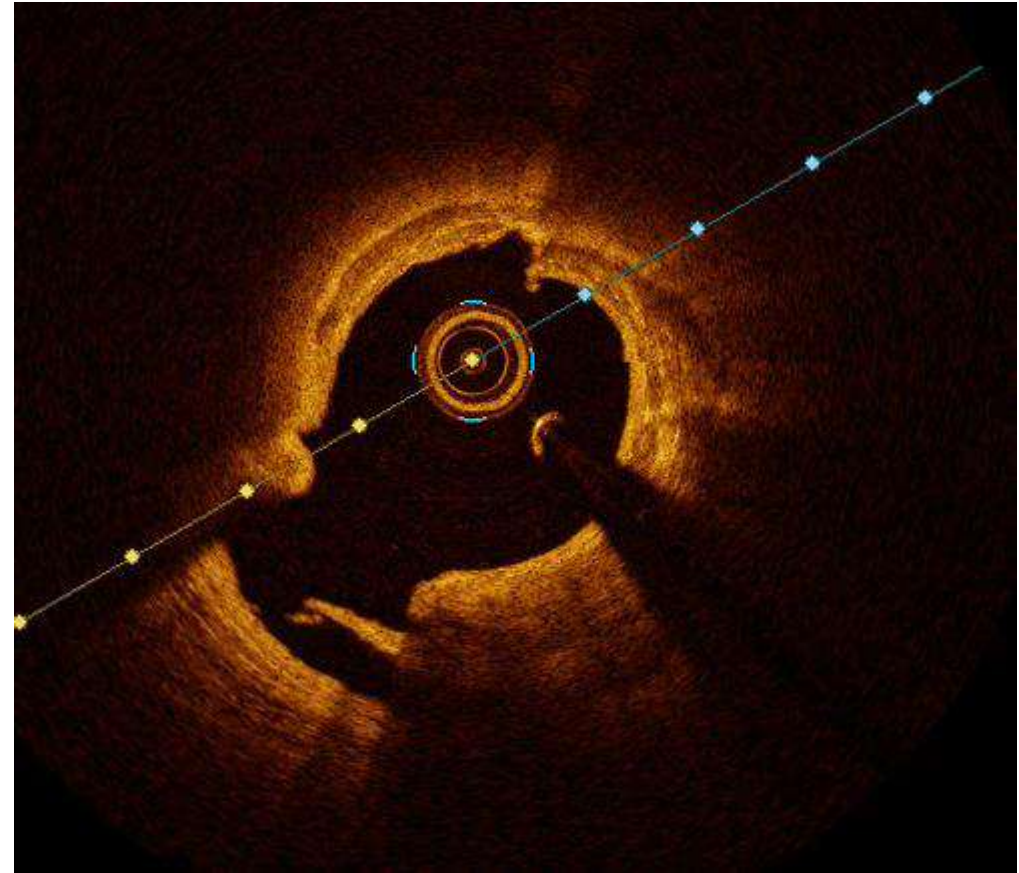
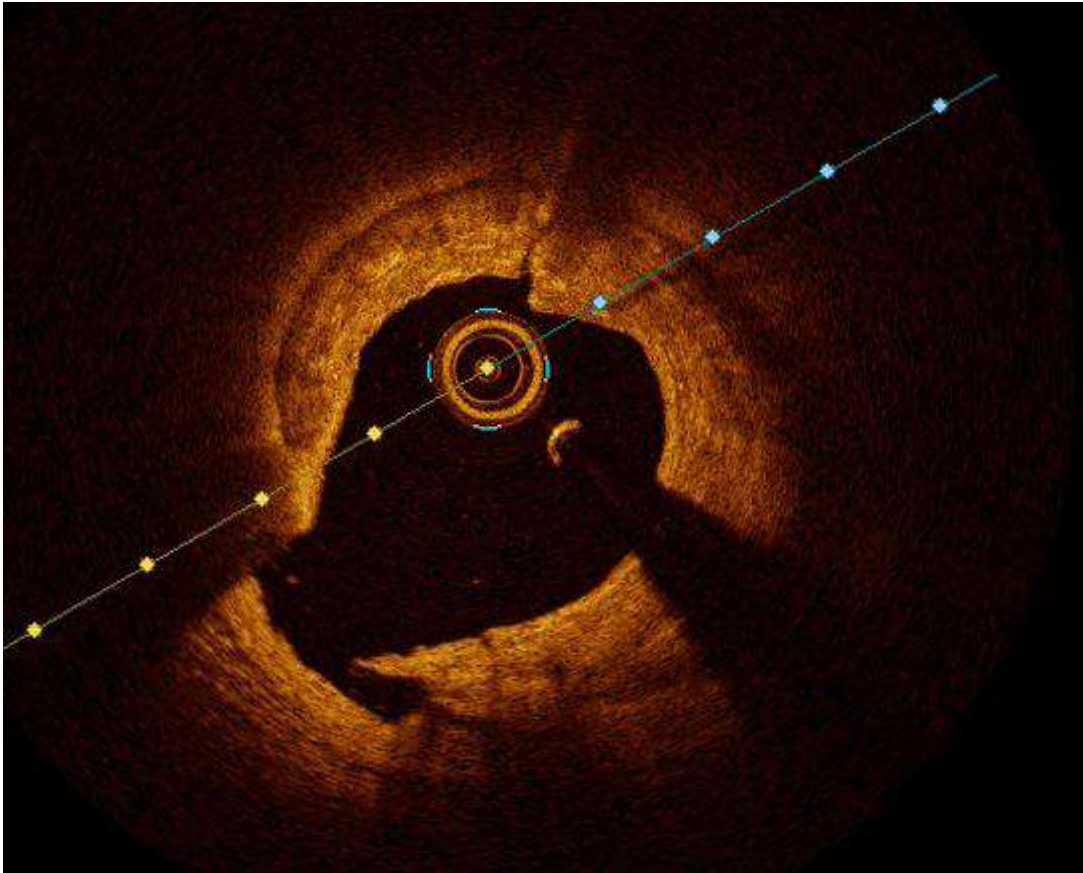
\varnothing =1.73mm

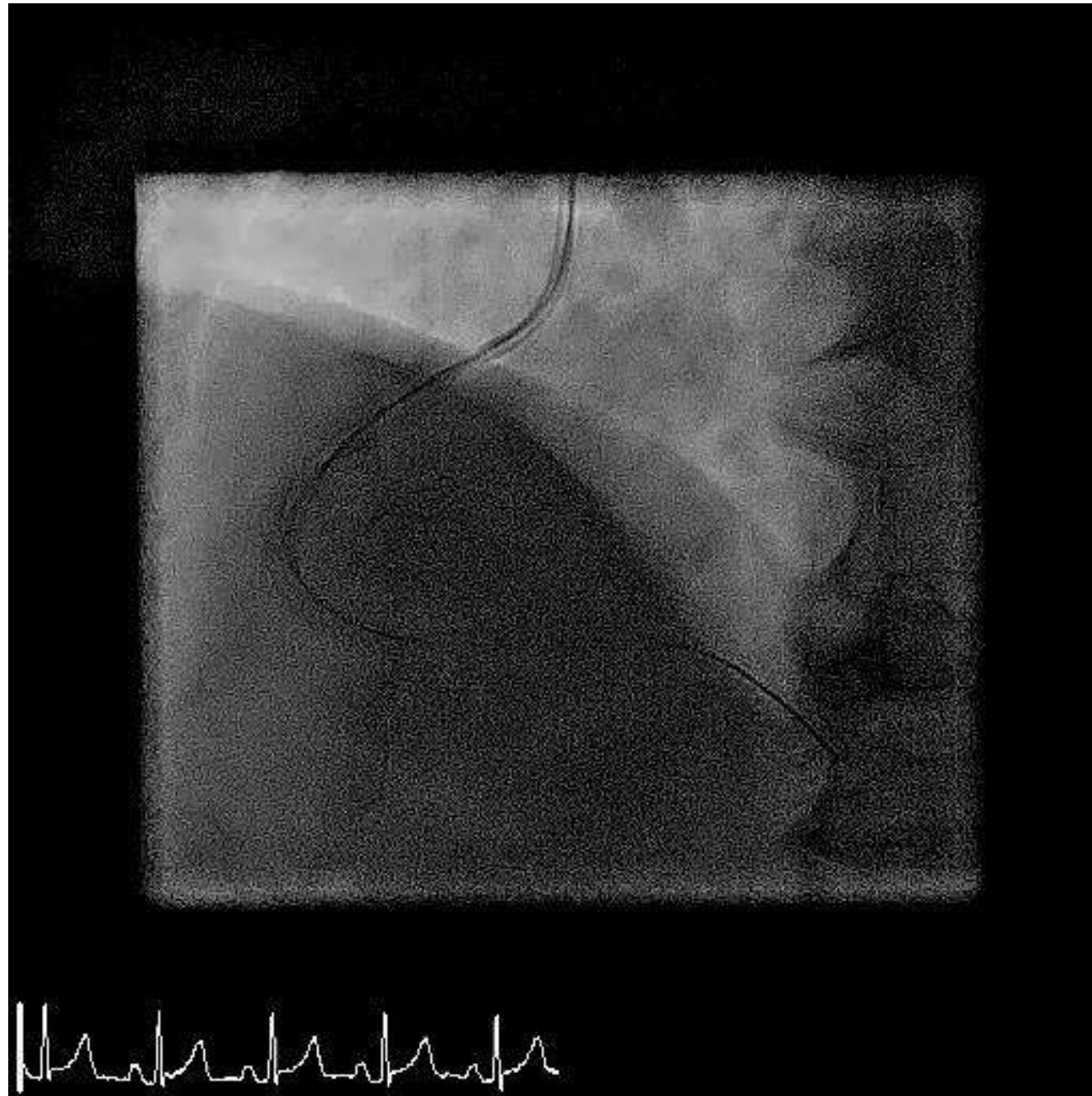
mm 10 20 30 40 50 60 70 mm

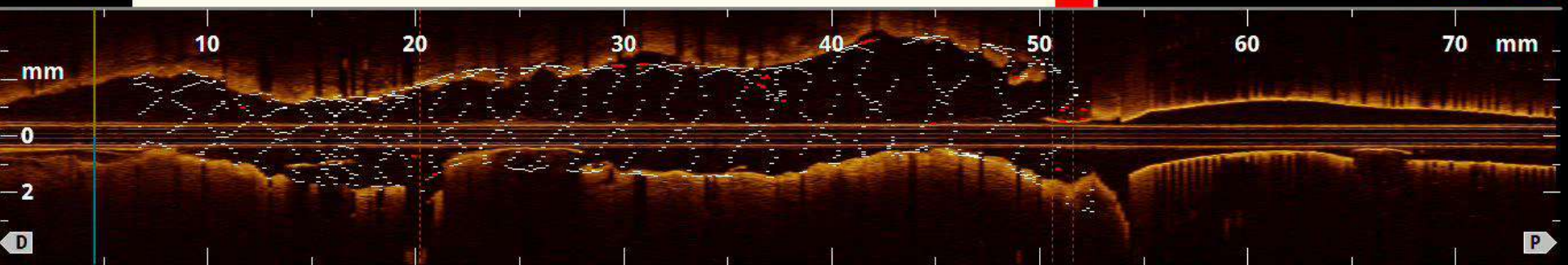
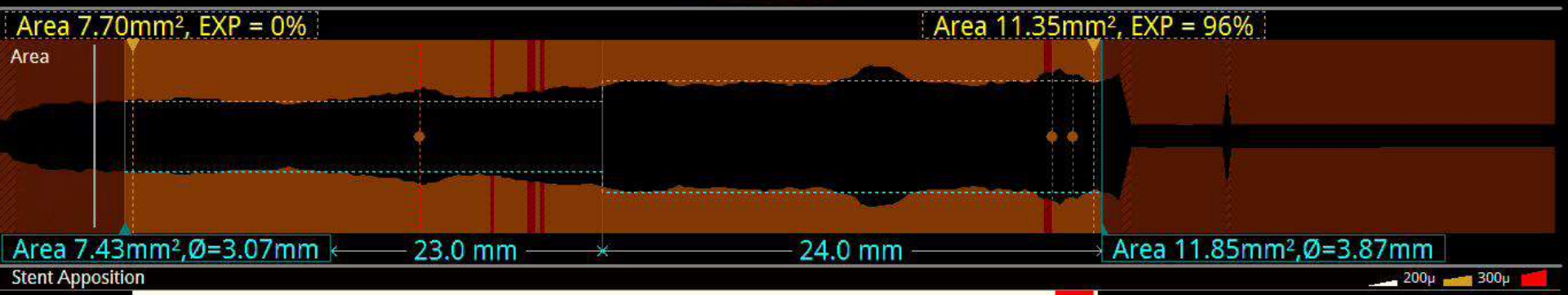
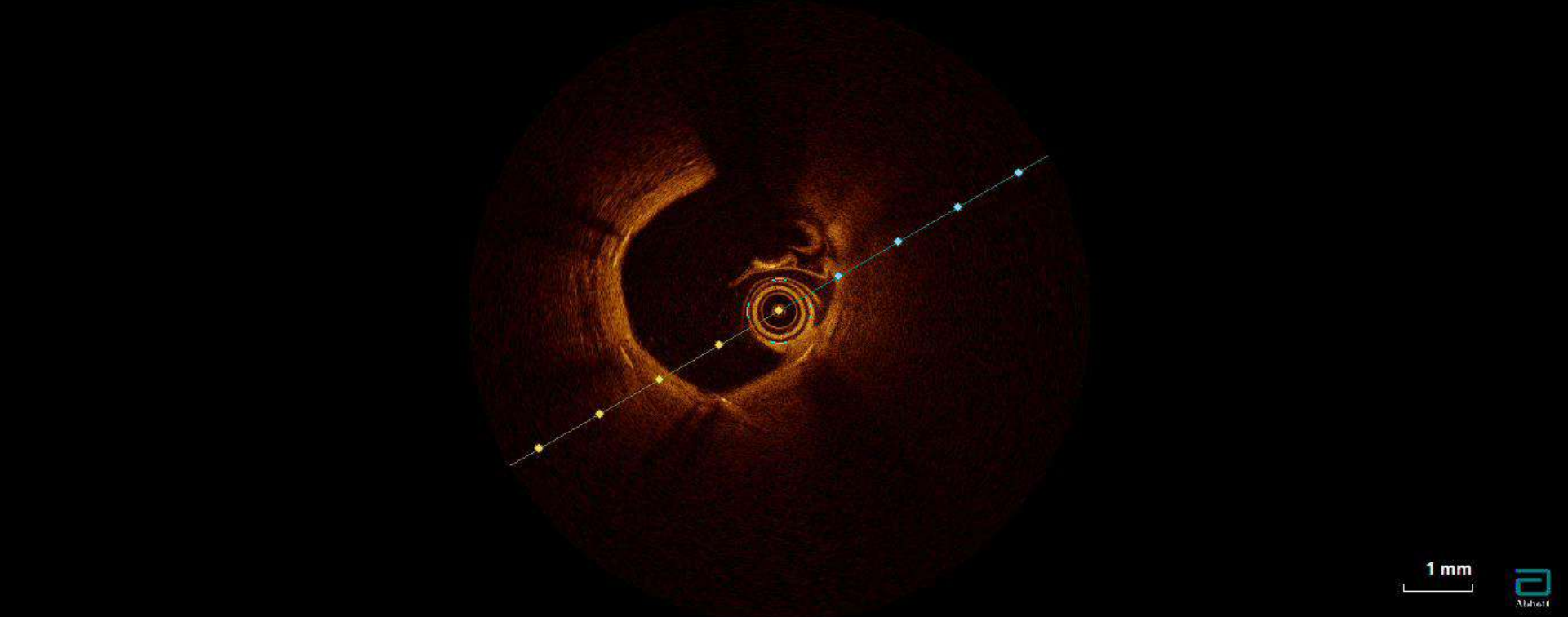




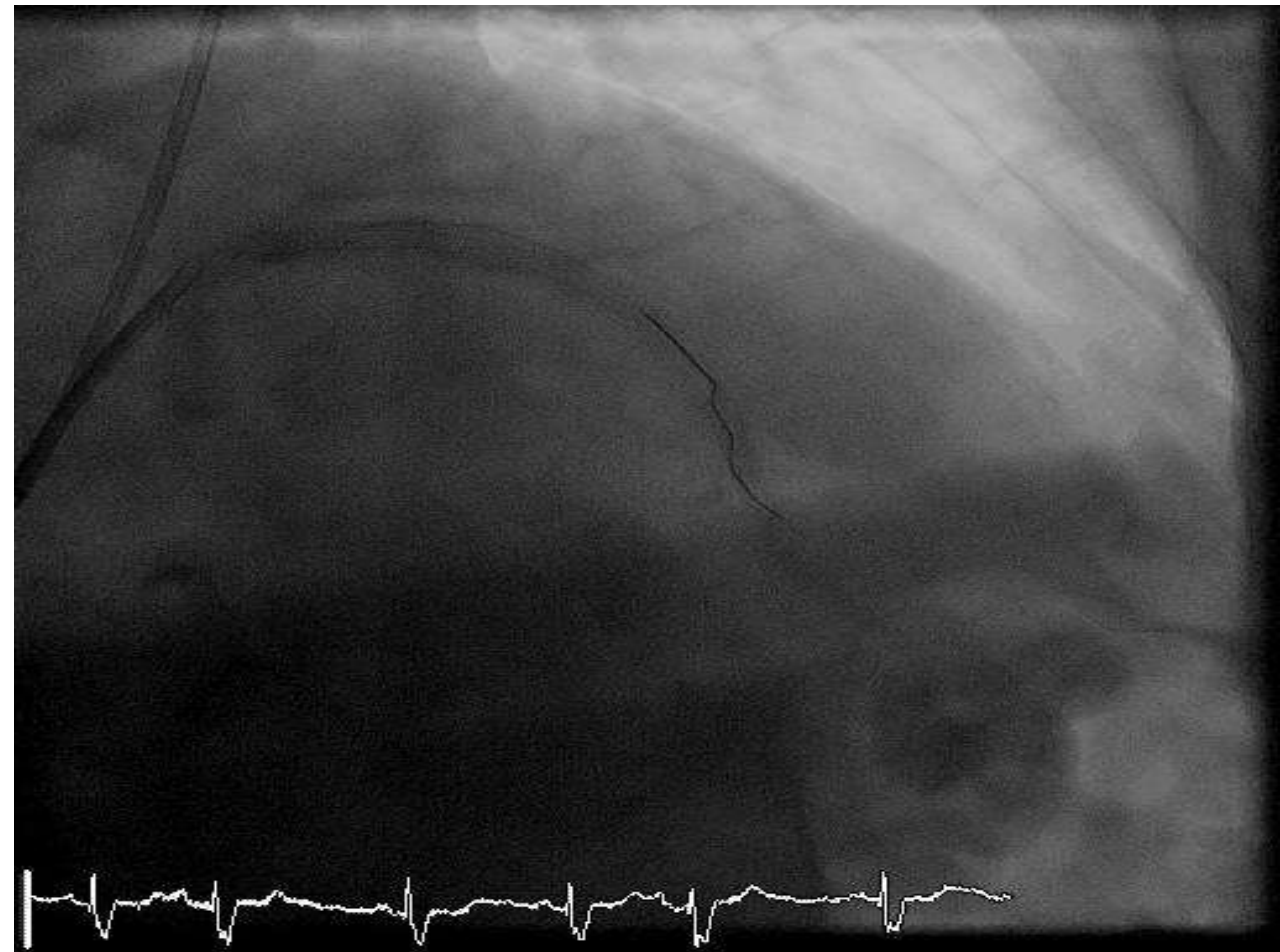
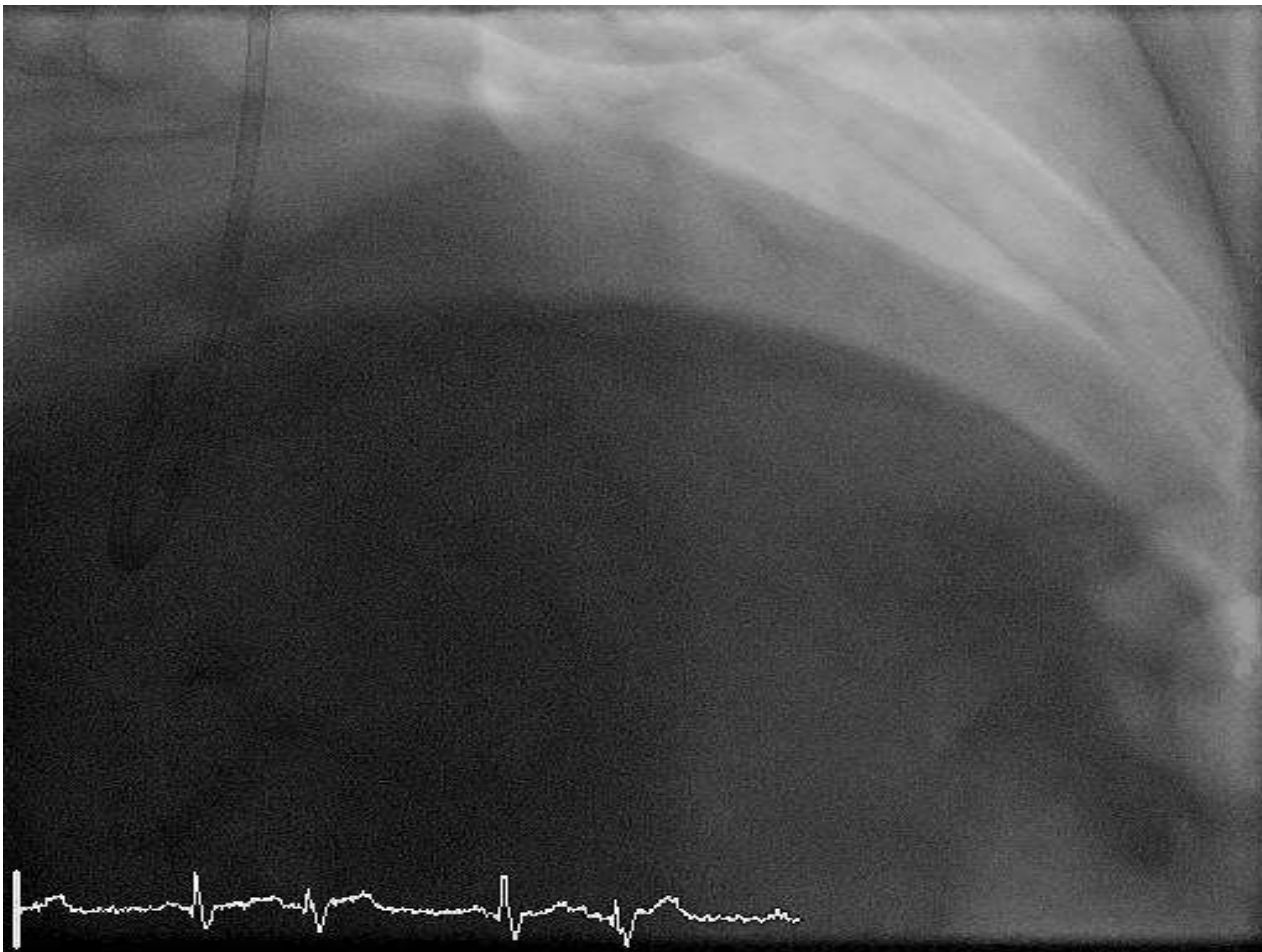
The effect of OPN NC balloon





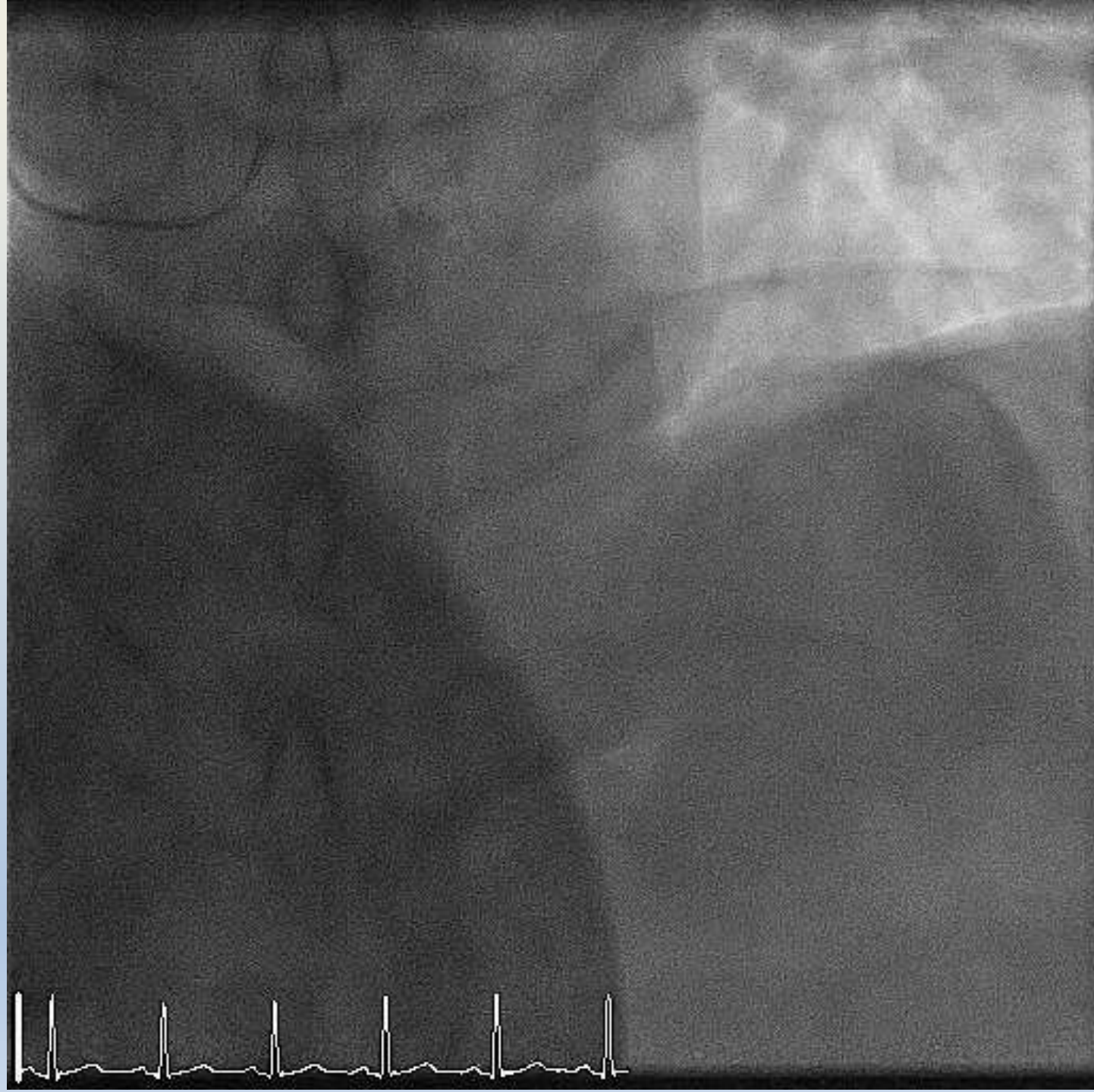


Coronary artery disease has many faces

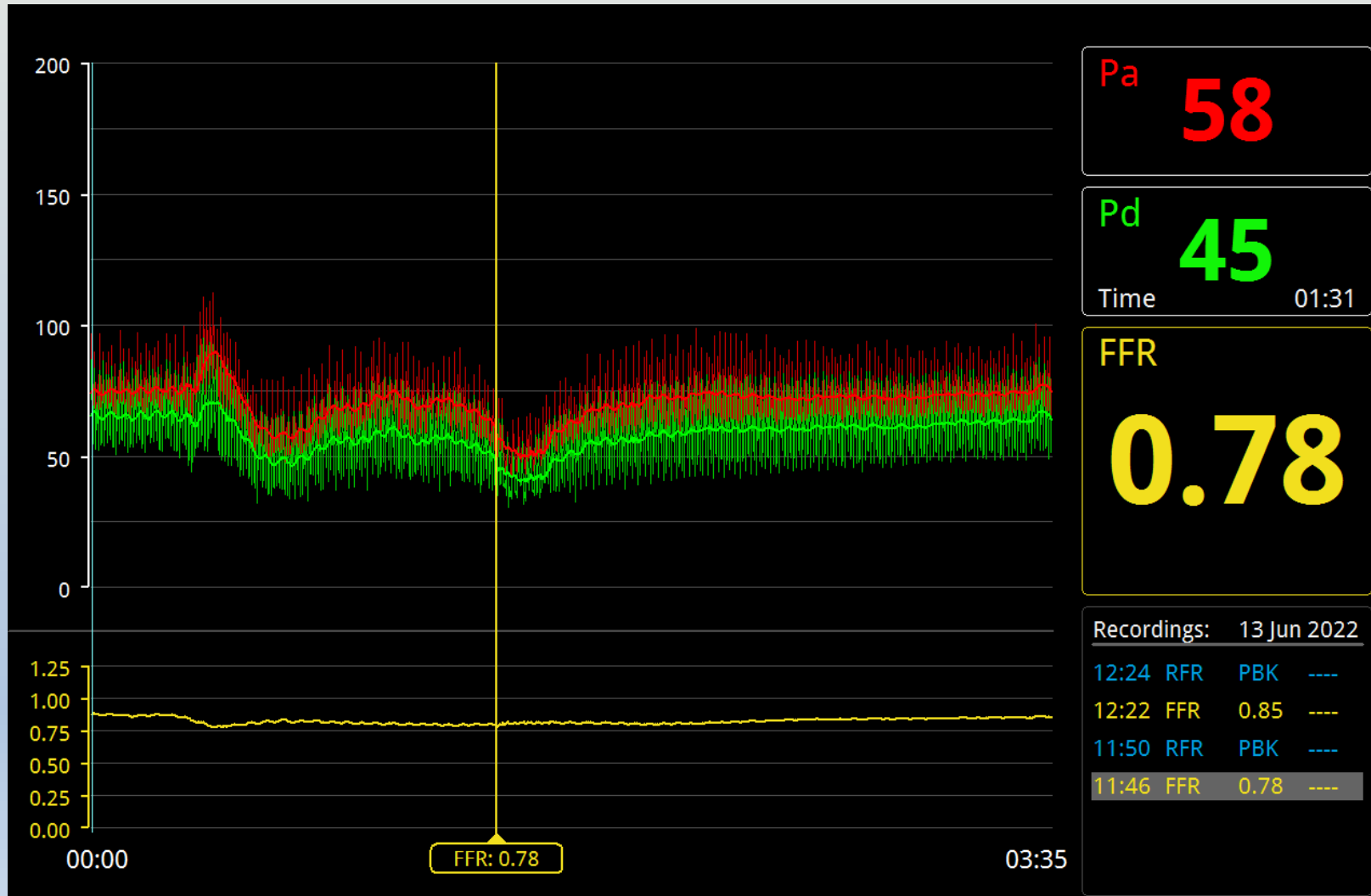


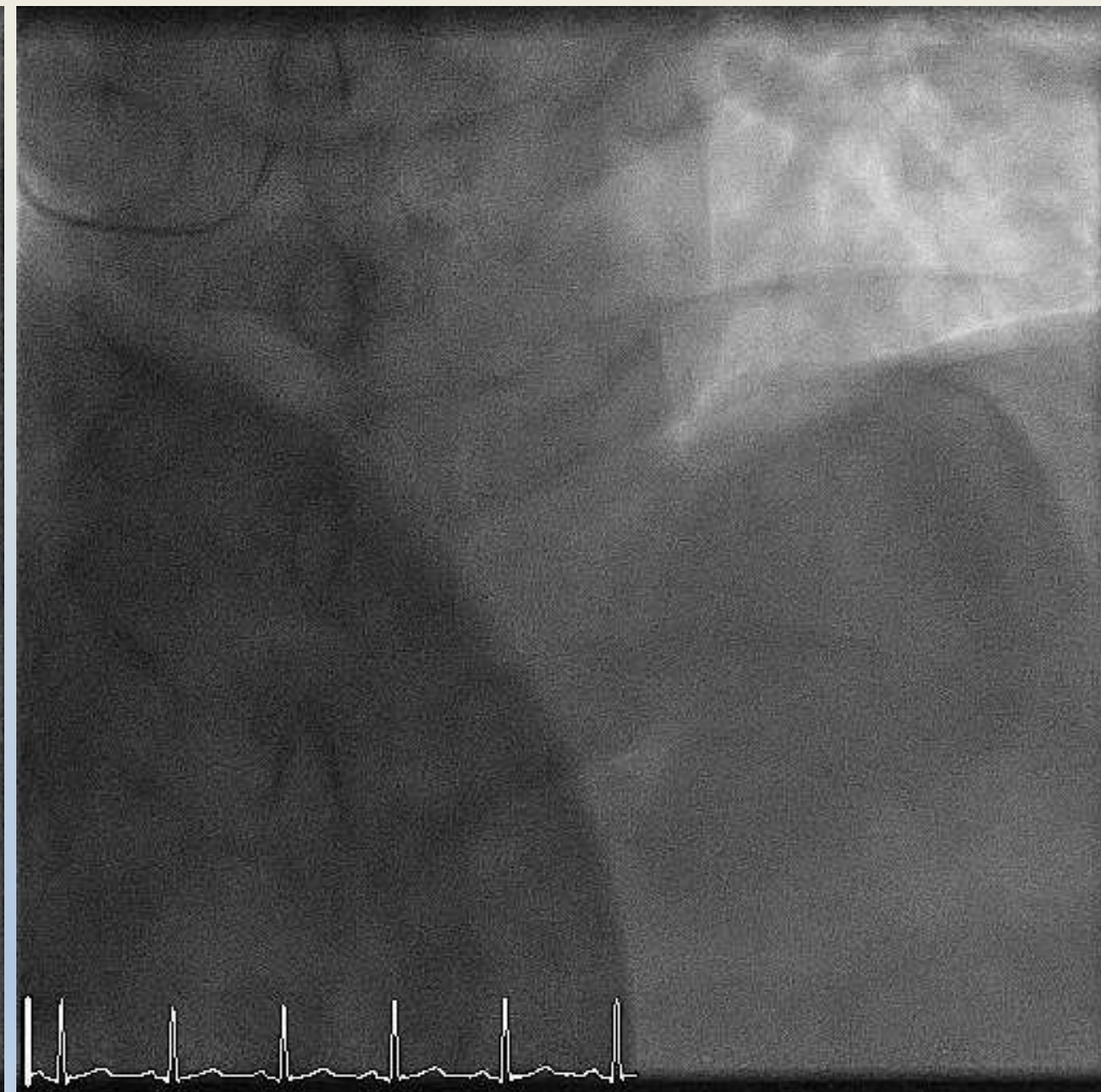
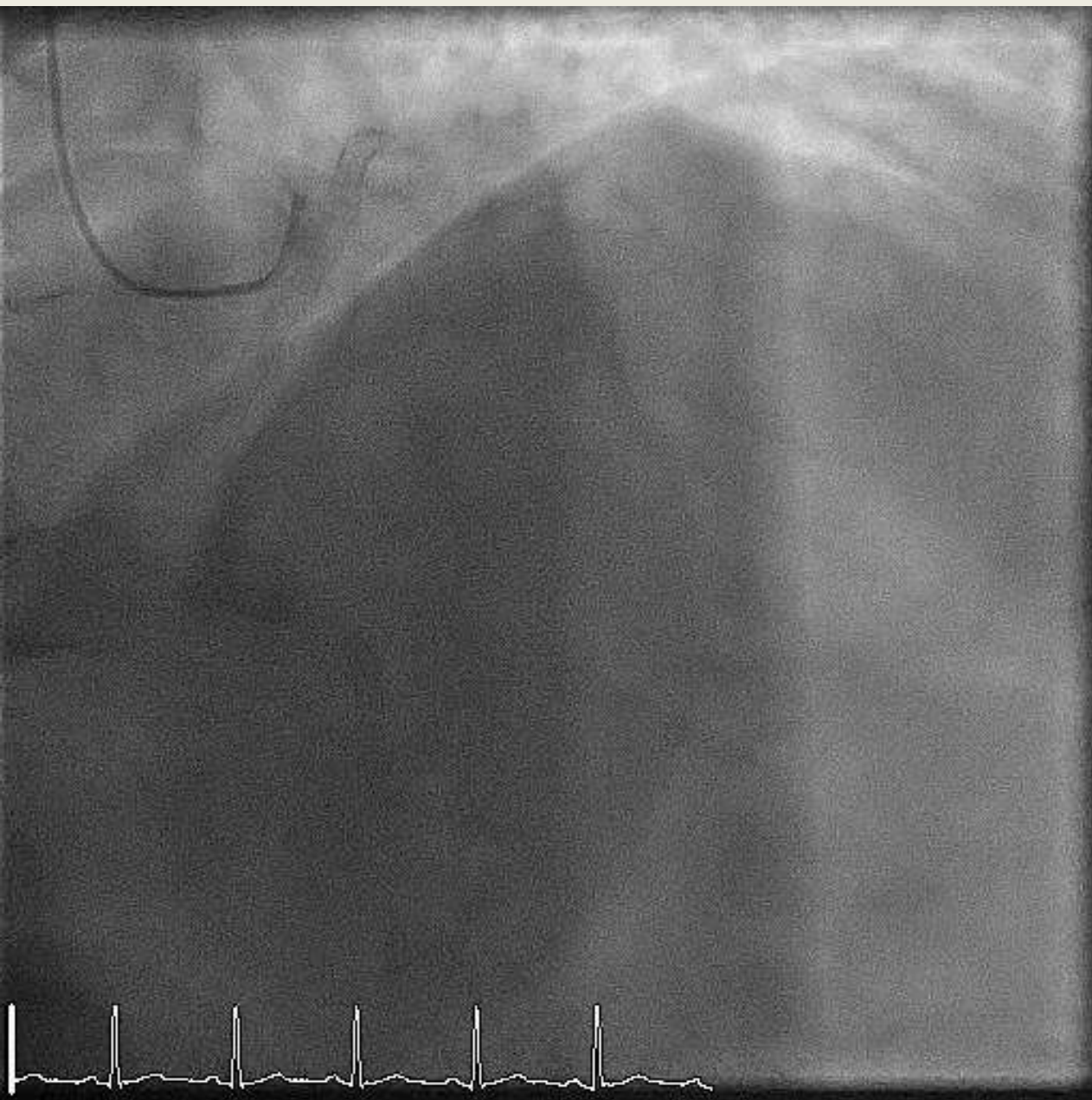
Use of FFR and RFR for guidance

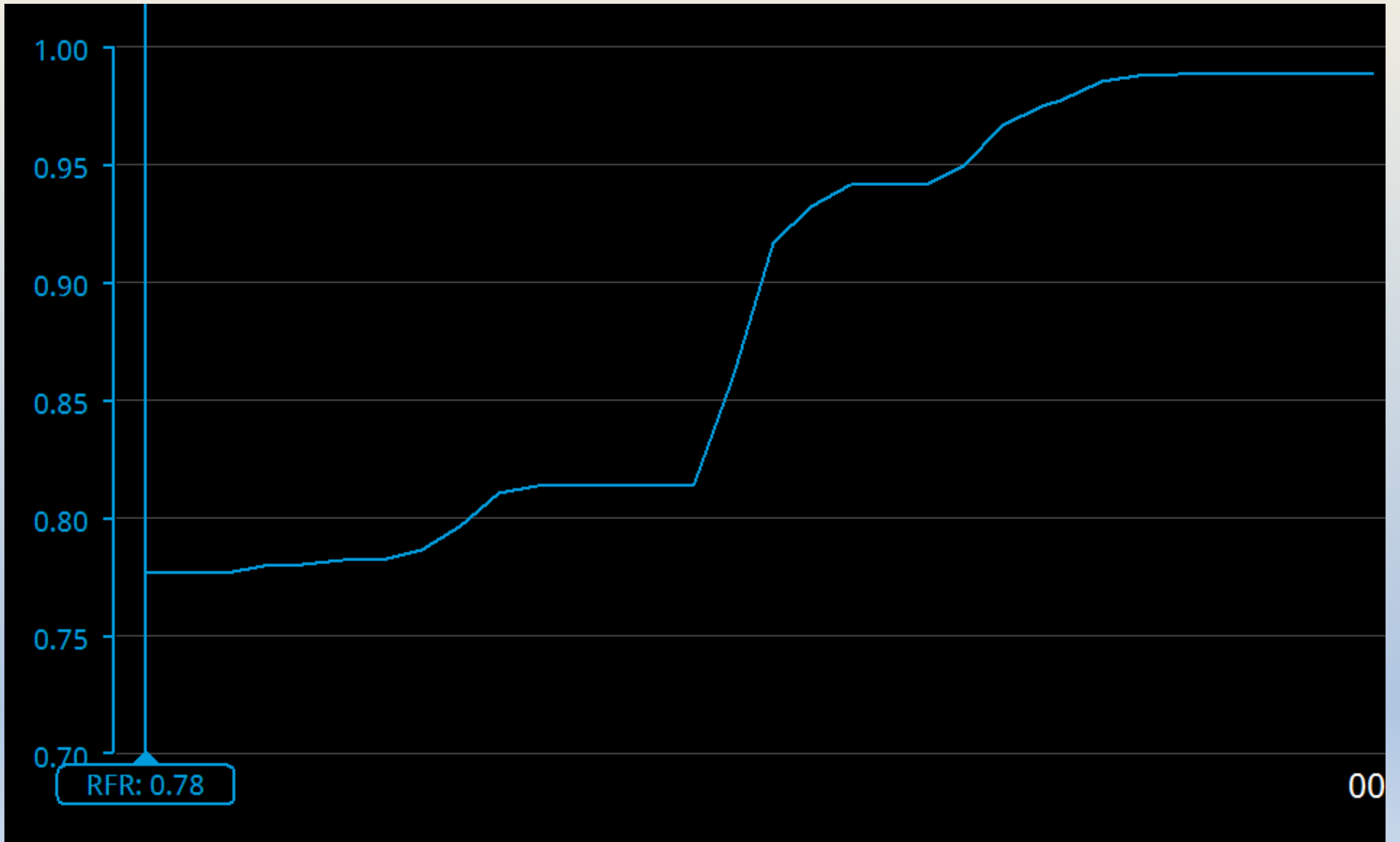
- 59 years old gentleman with diabetes
- Atypical angina → pathologic exercise testing
- Coronary angiography → moderate LAD disease

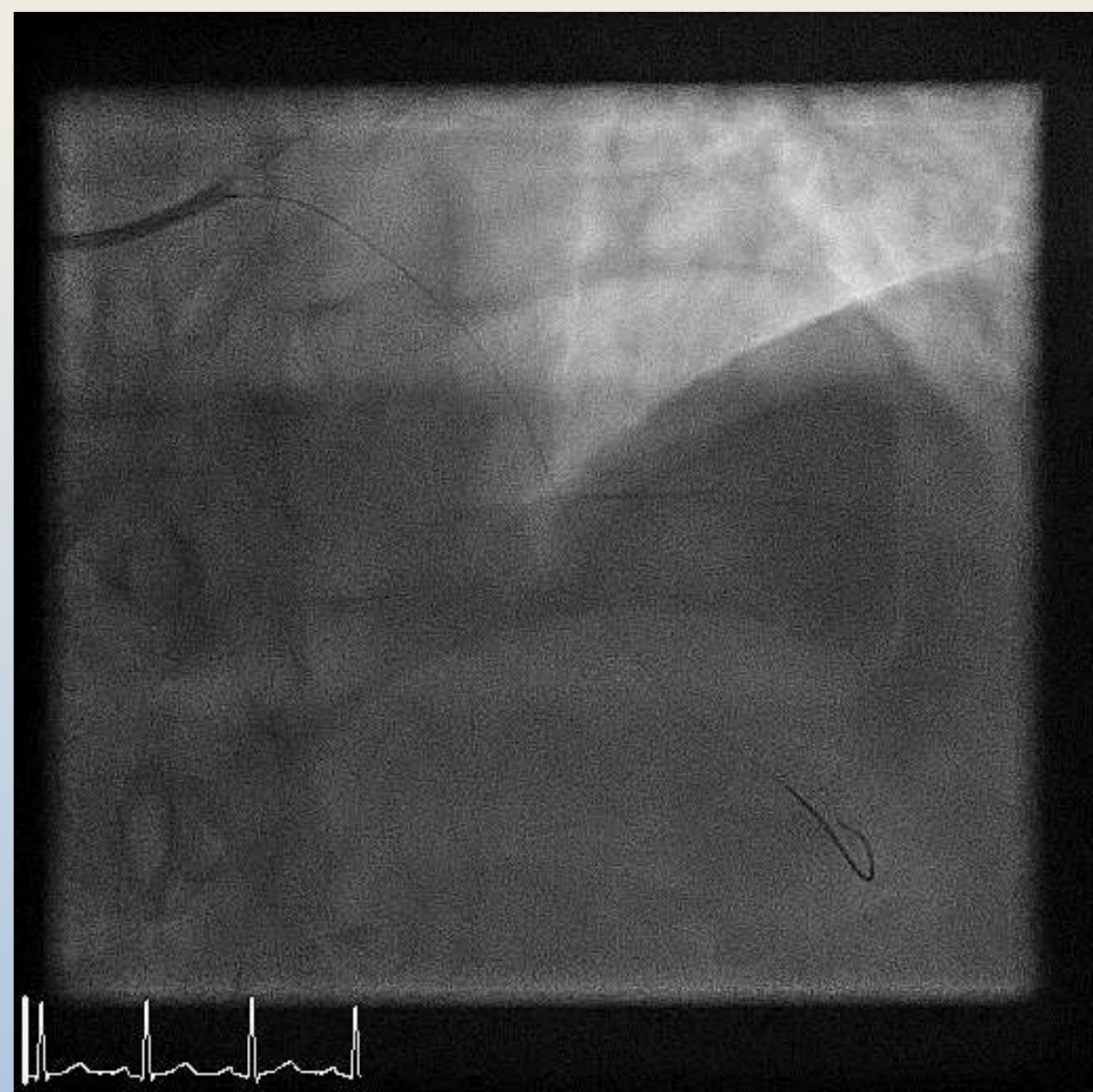
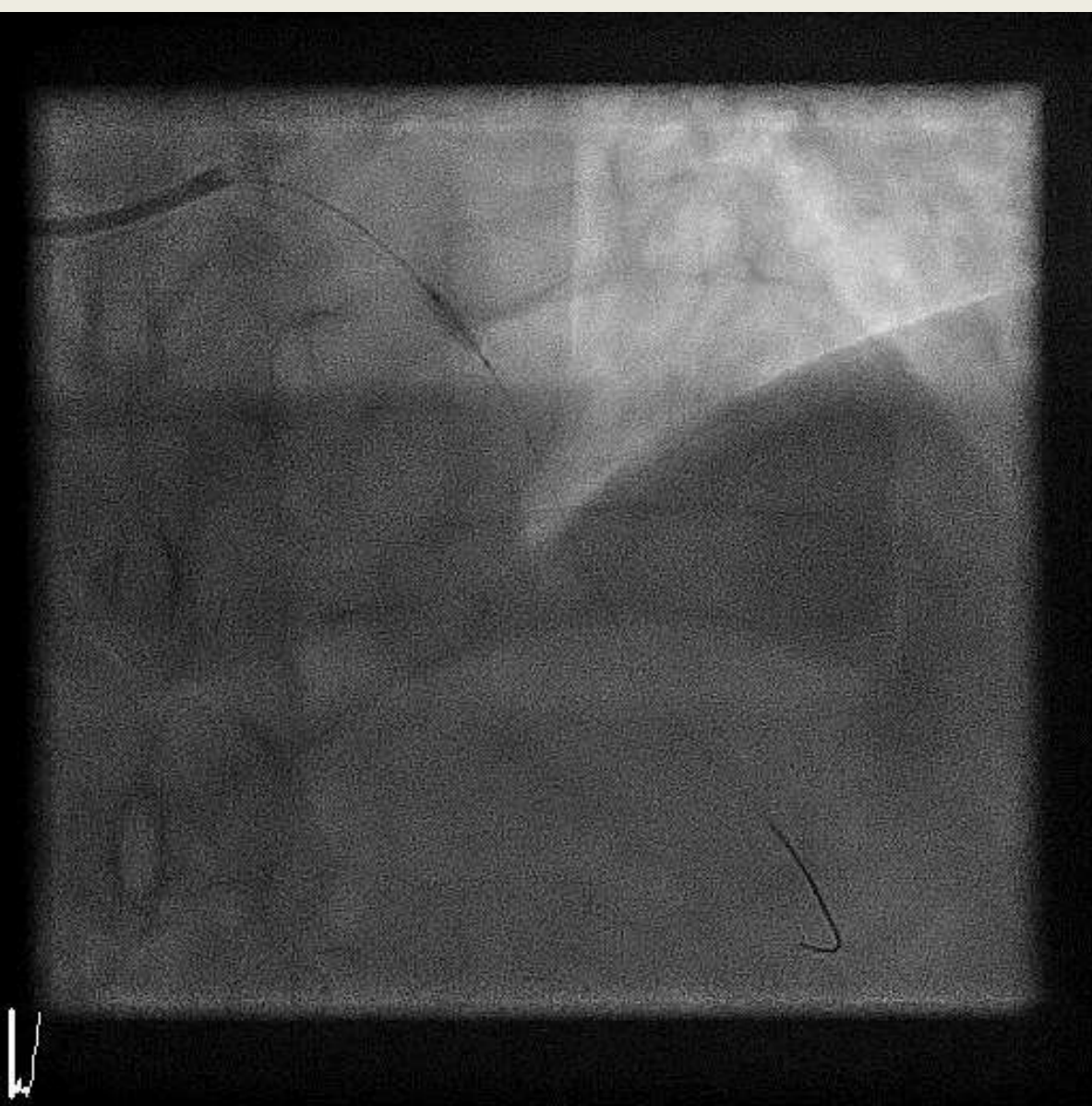


LAD diffusely diseased ...

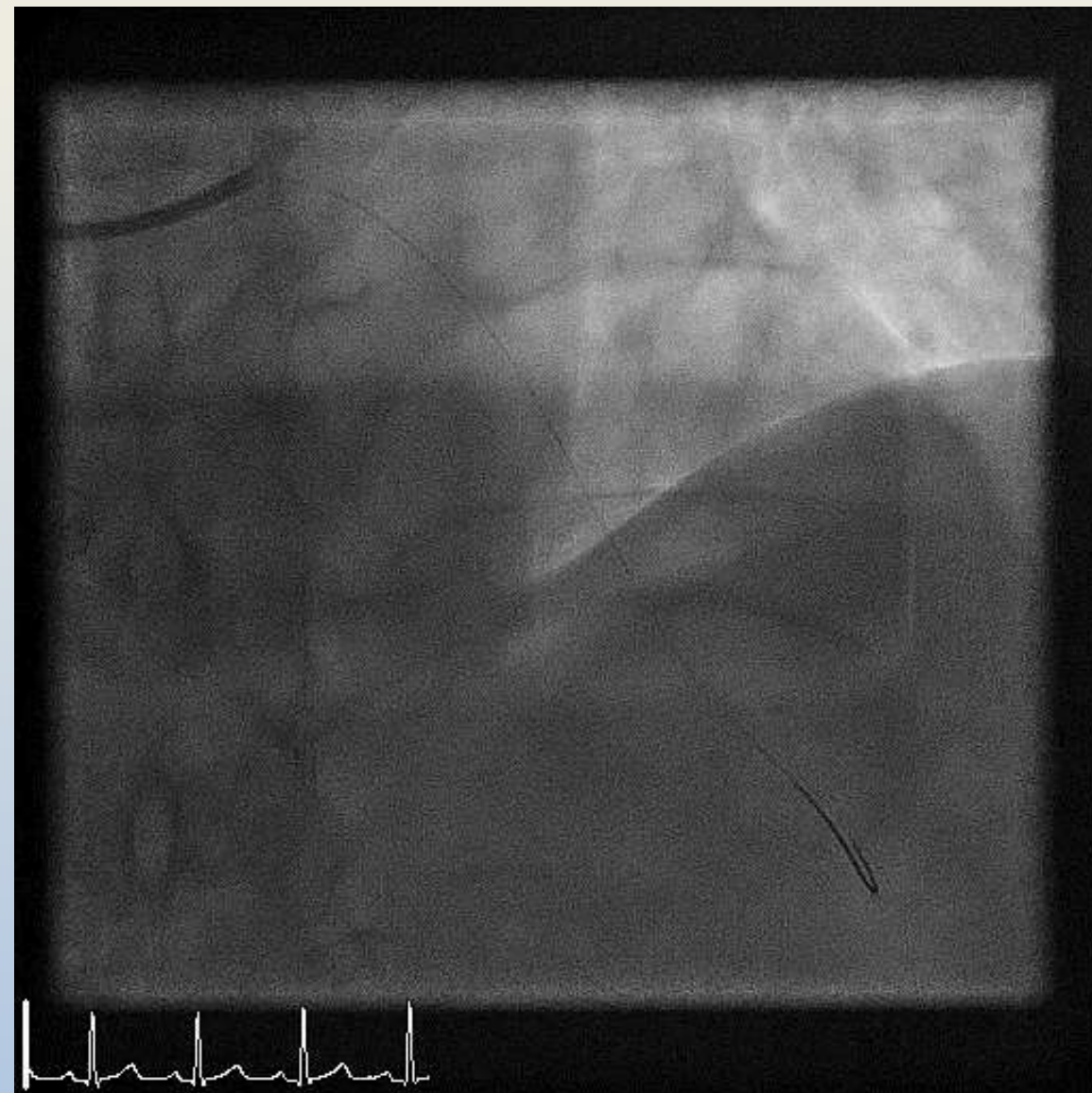
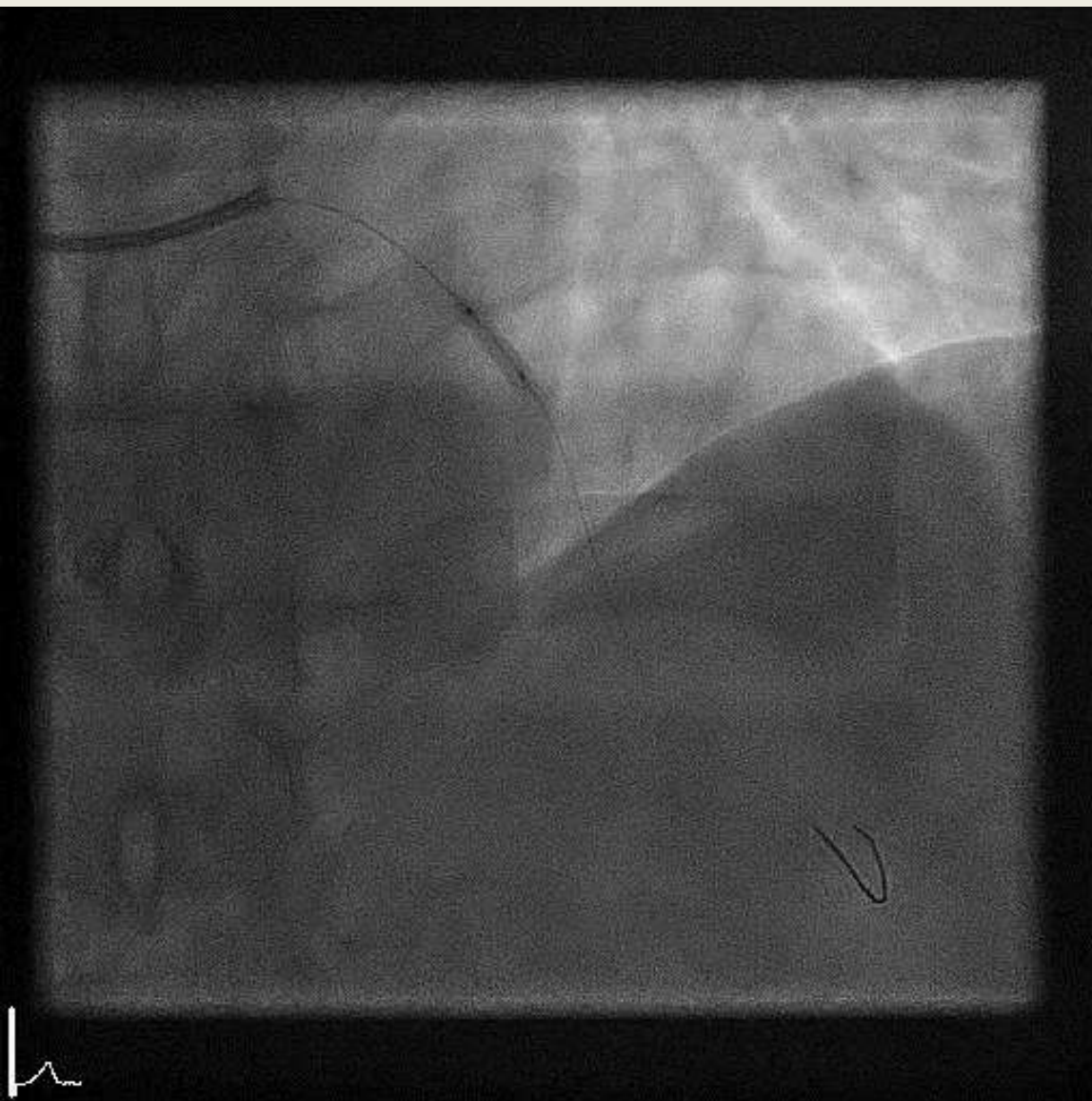




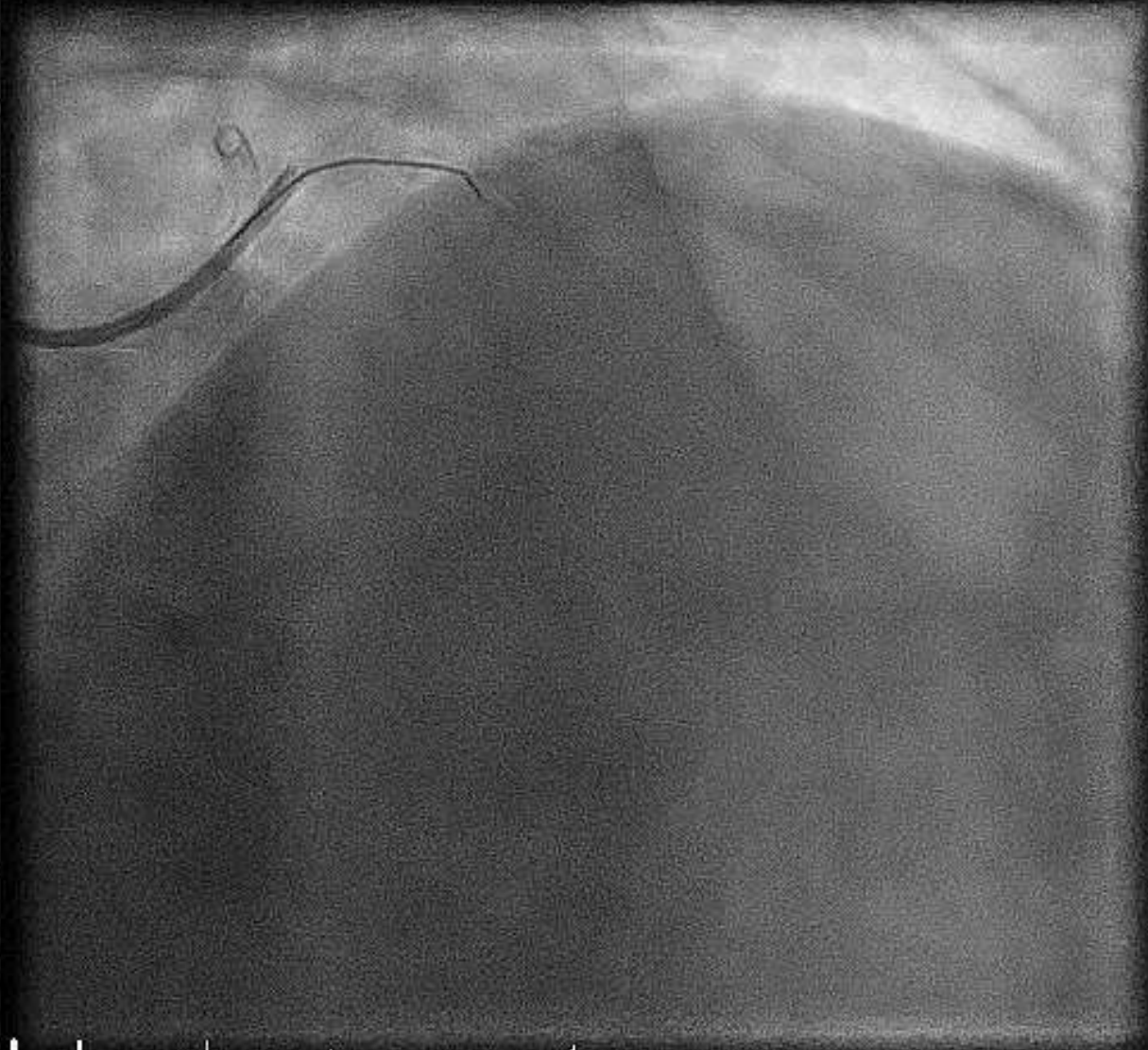
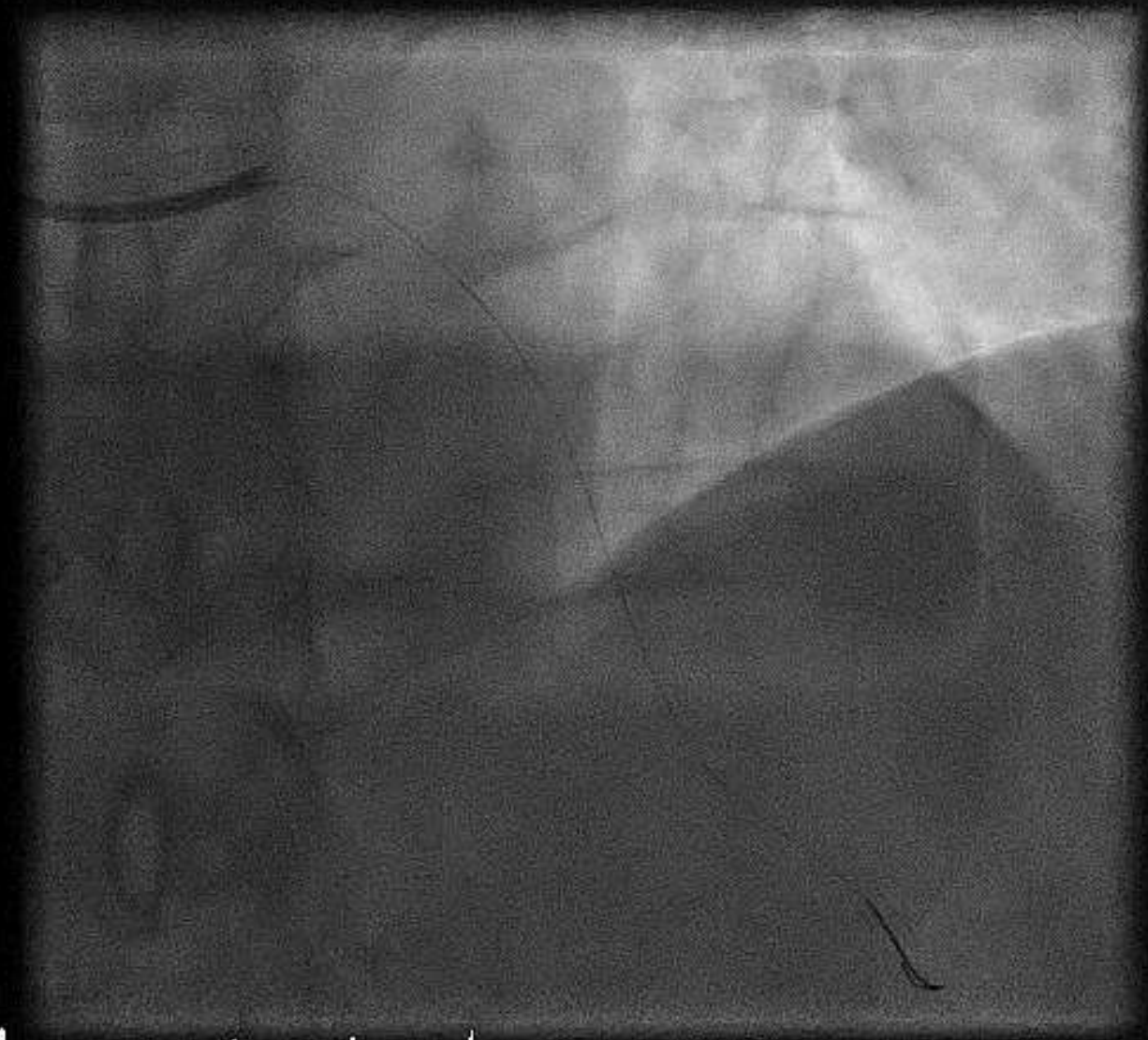


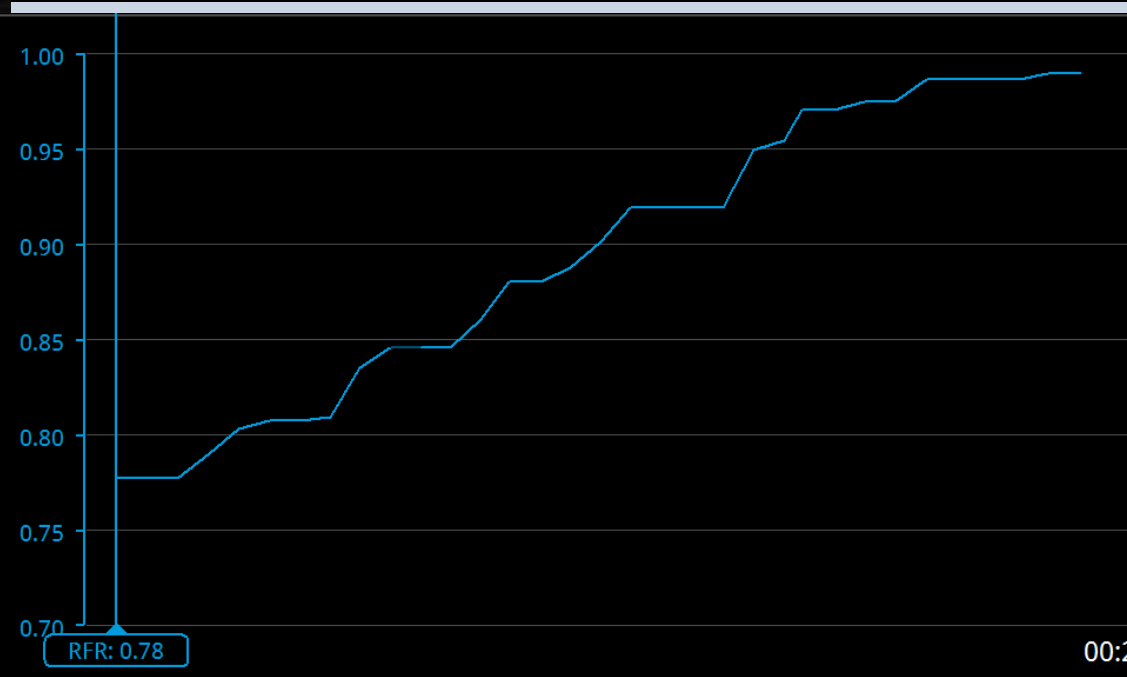
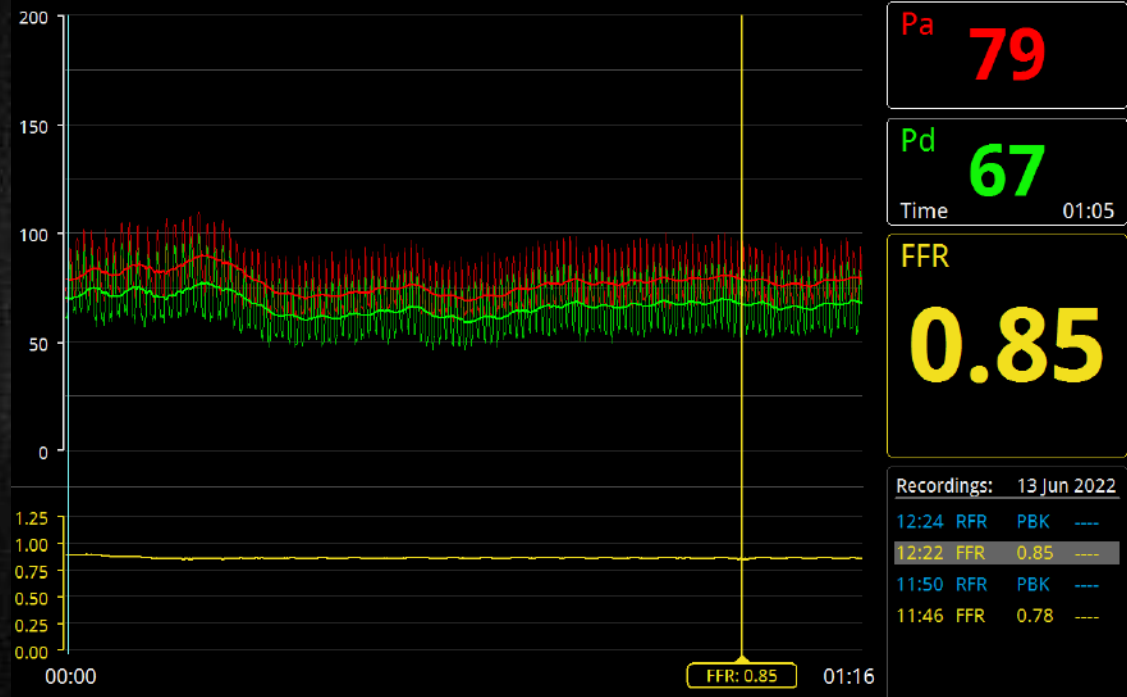
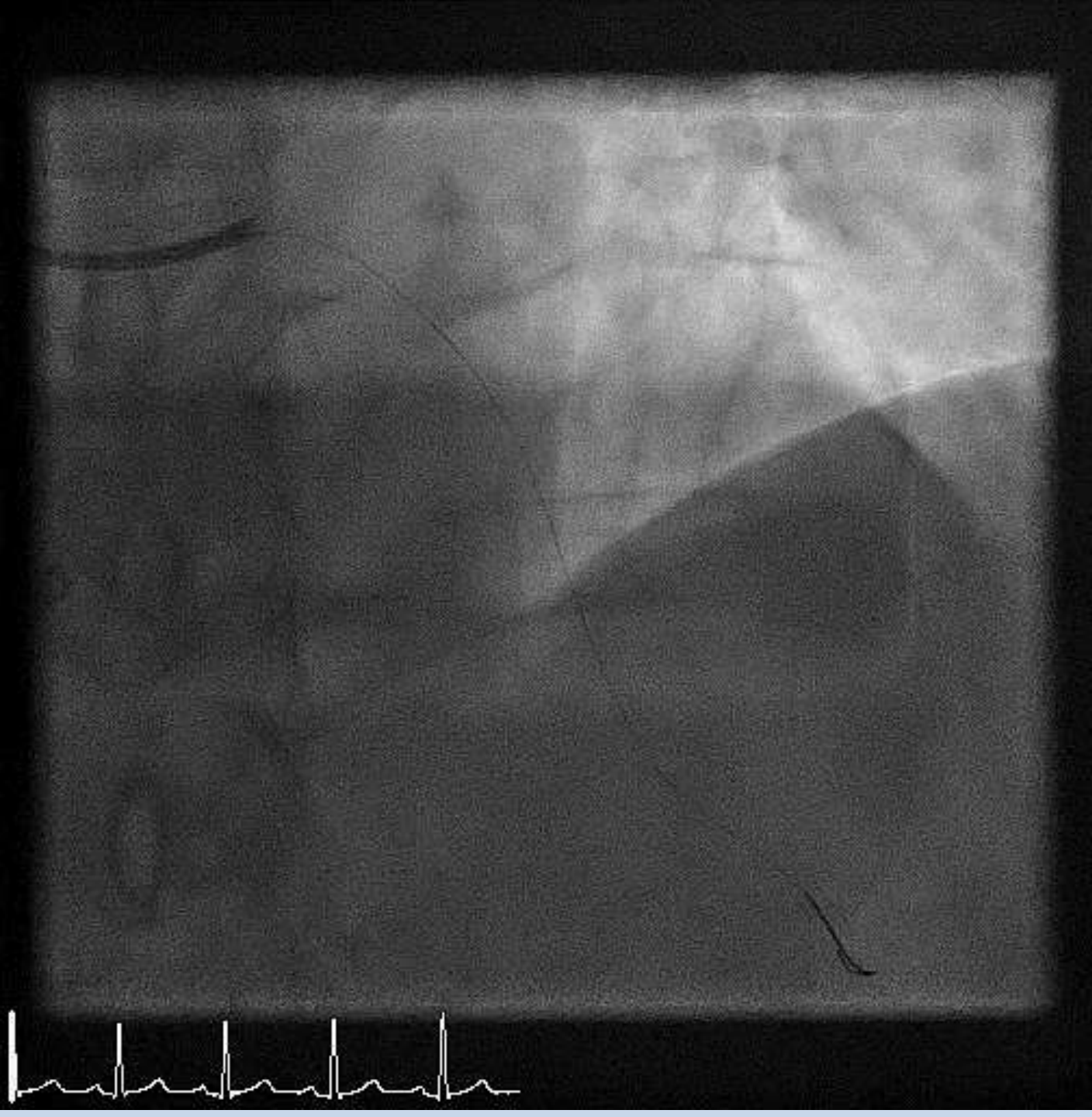


Wolverine 2.5 mm @ 24 atm



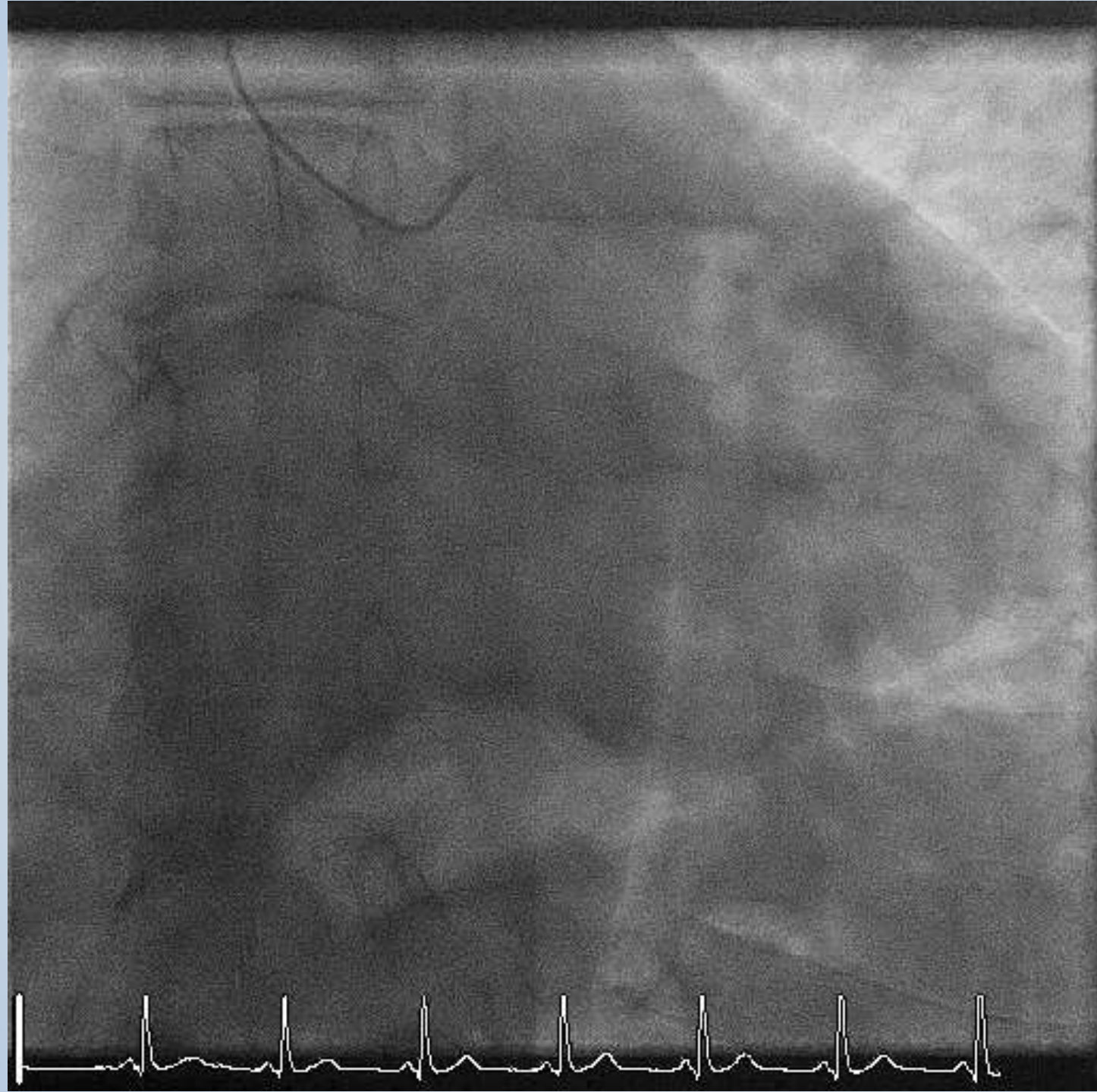
Wolverine 3.0 mm @ 24 atm
OPN 3.0 @ 24 atm
Selution 3.0 x 30 mm @ 4 atm

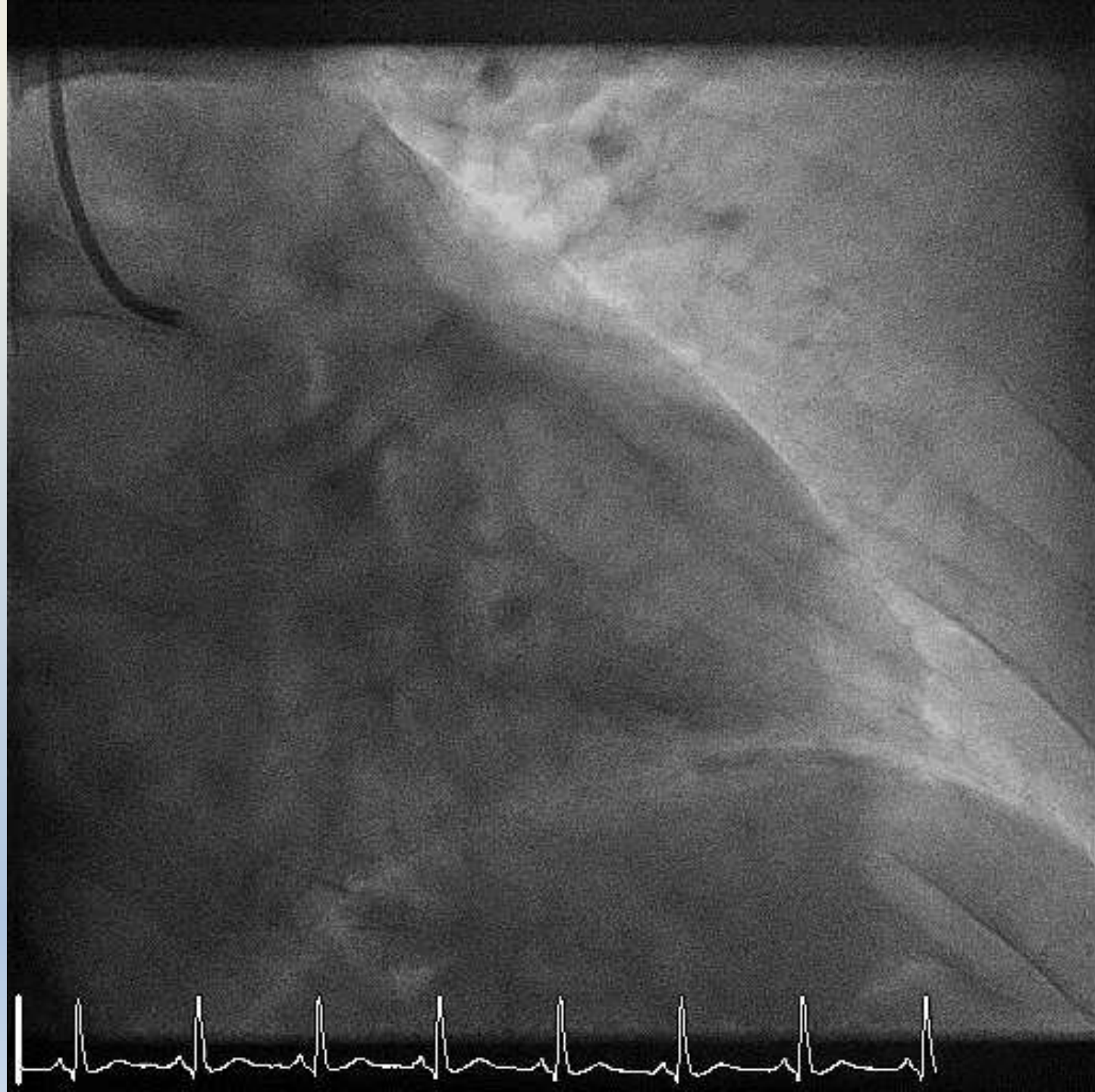




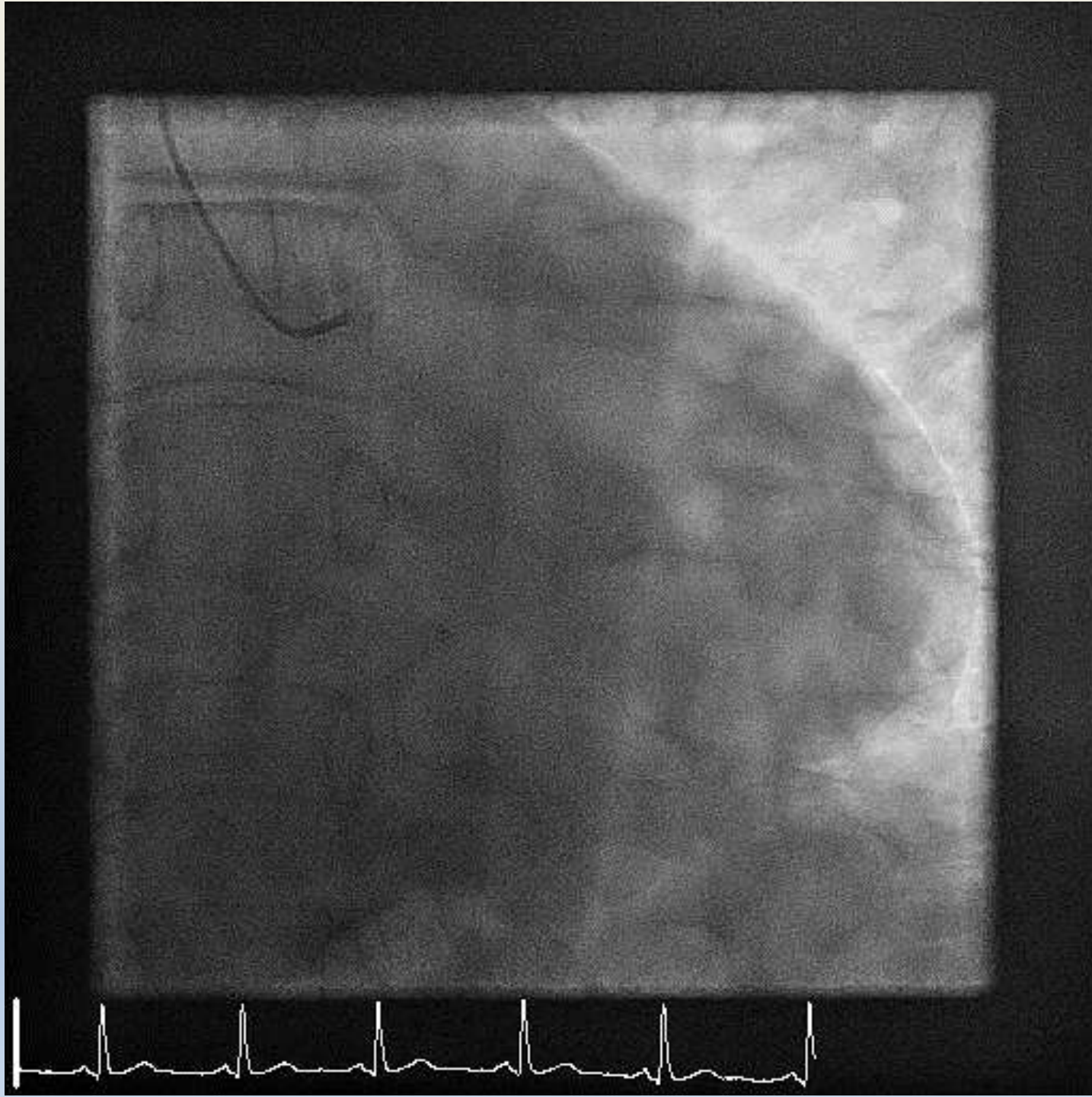
DCB in a CTO

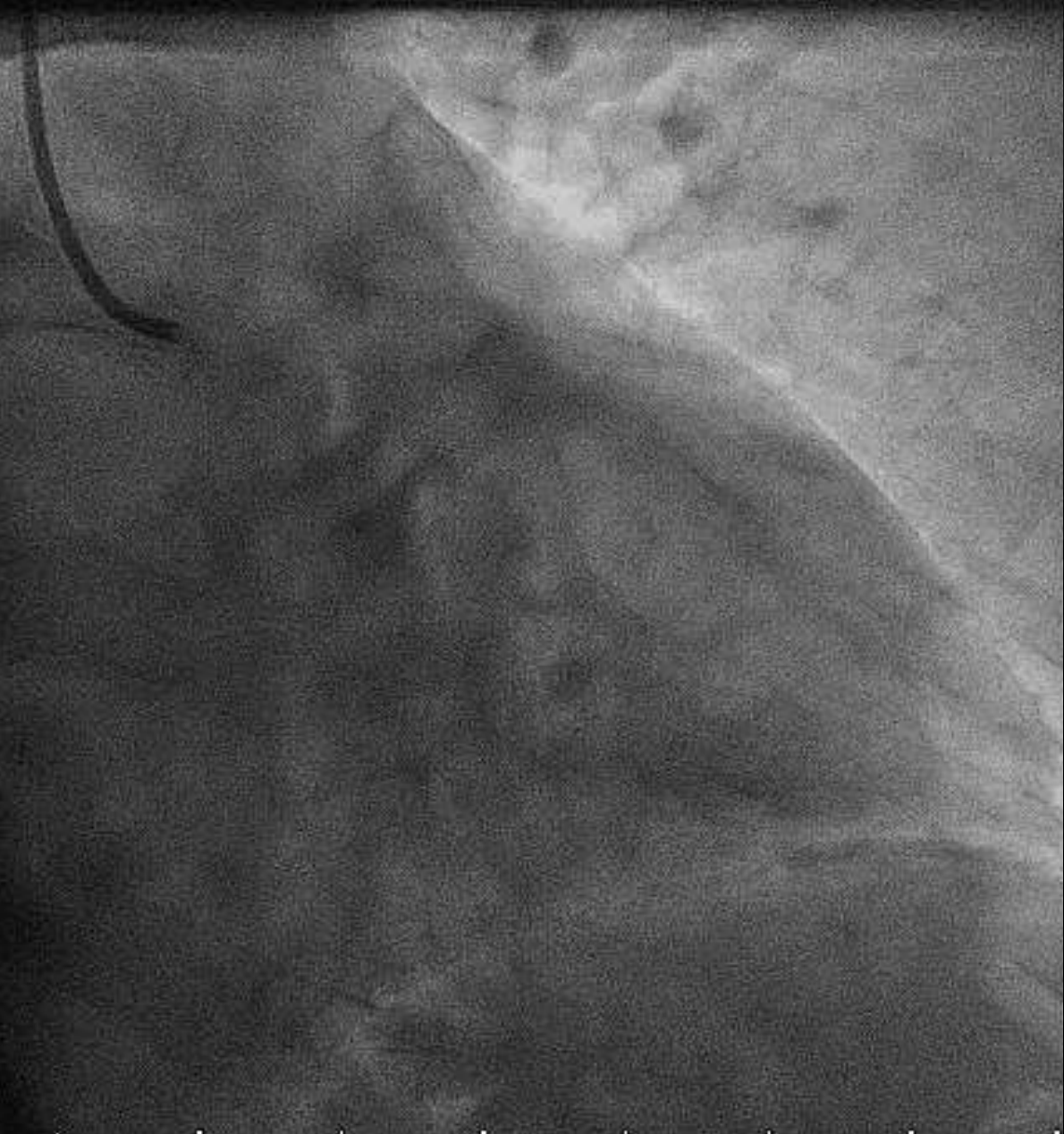
- 60 years old man with Diabetes
- Stable angina CCS 2
- Coronary angiography → CTO of LCX



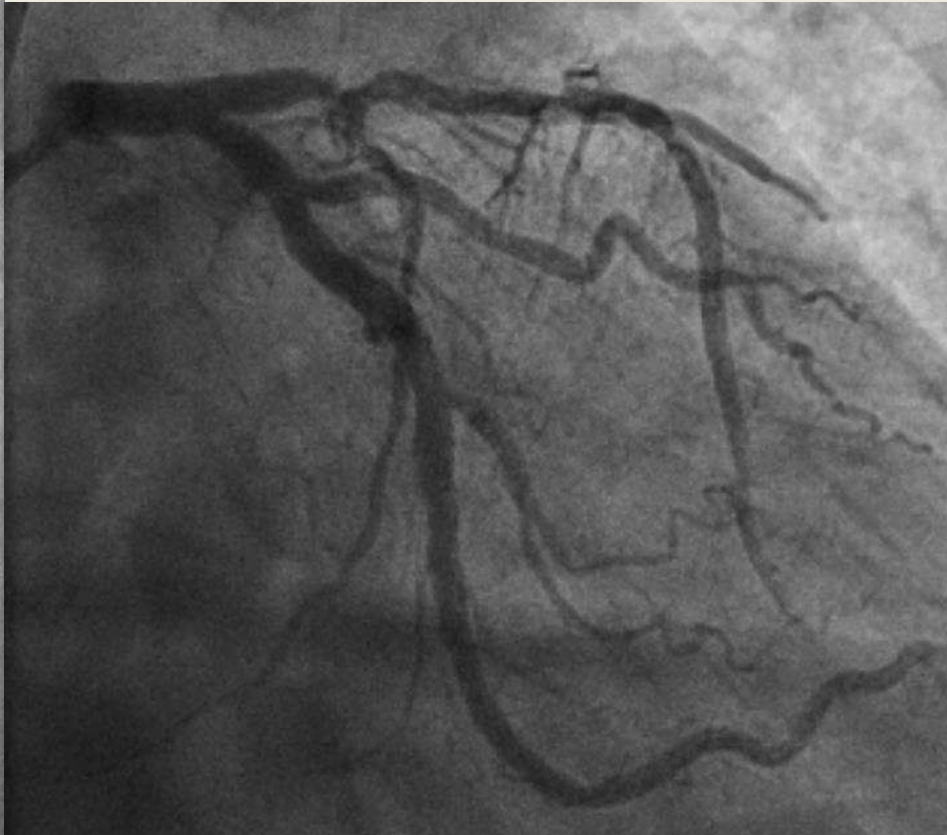
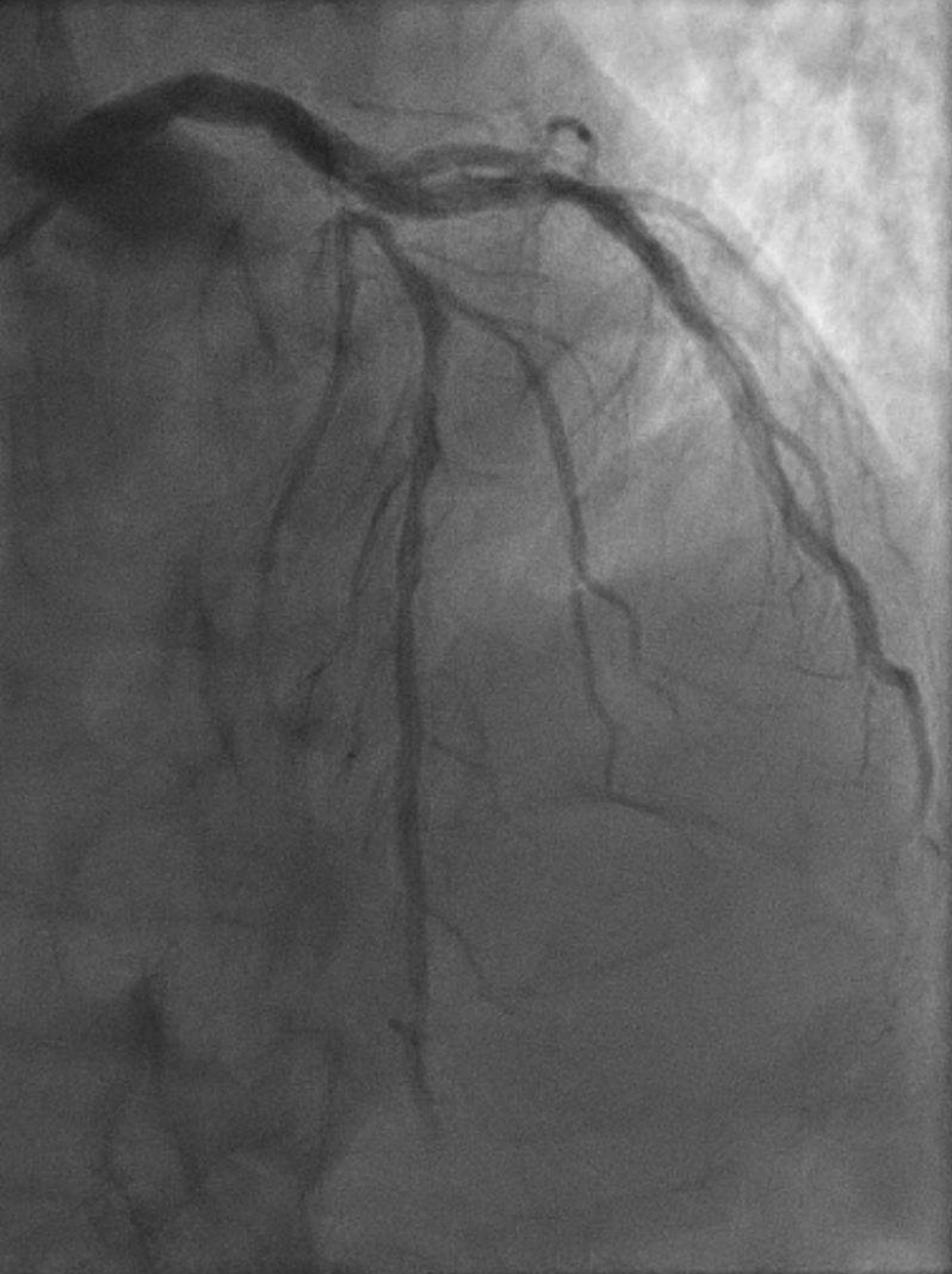


Coronary angiography 18 months later



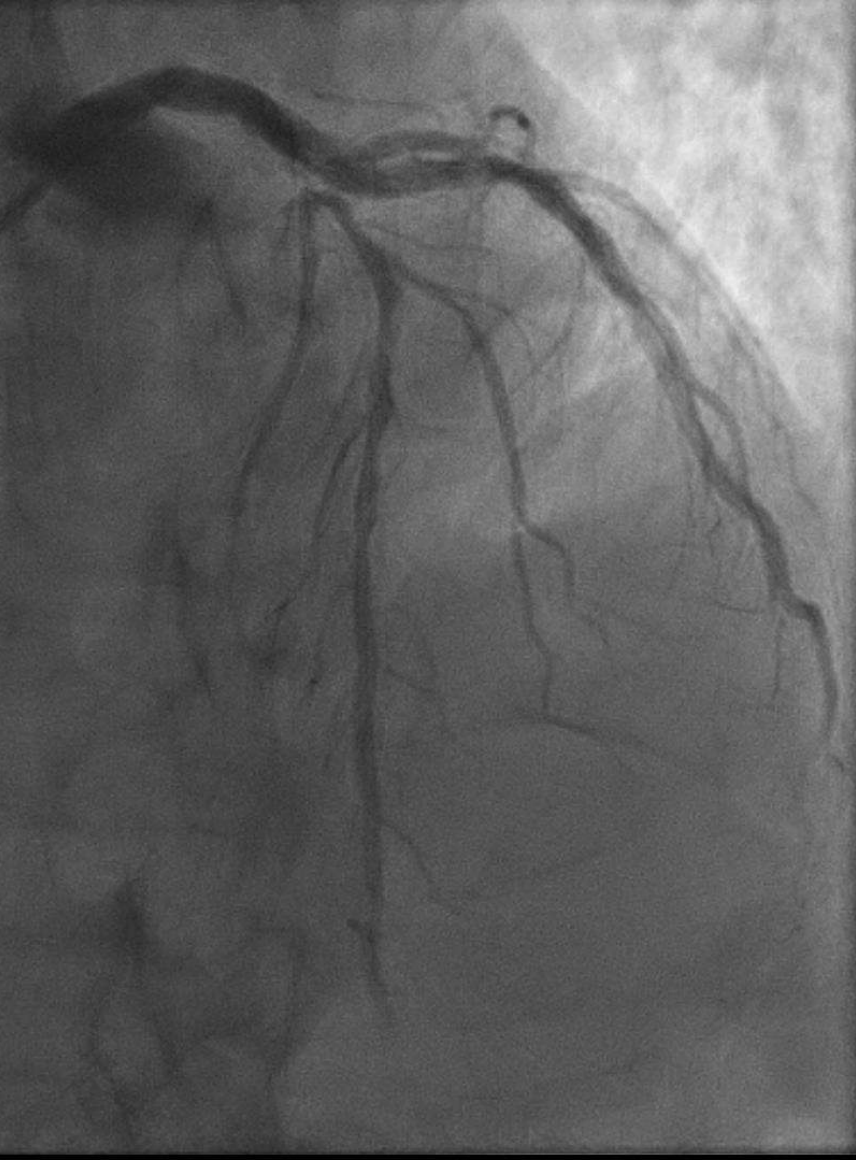


Vascular Healing after IVL+DCB

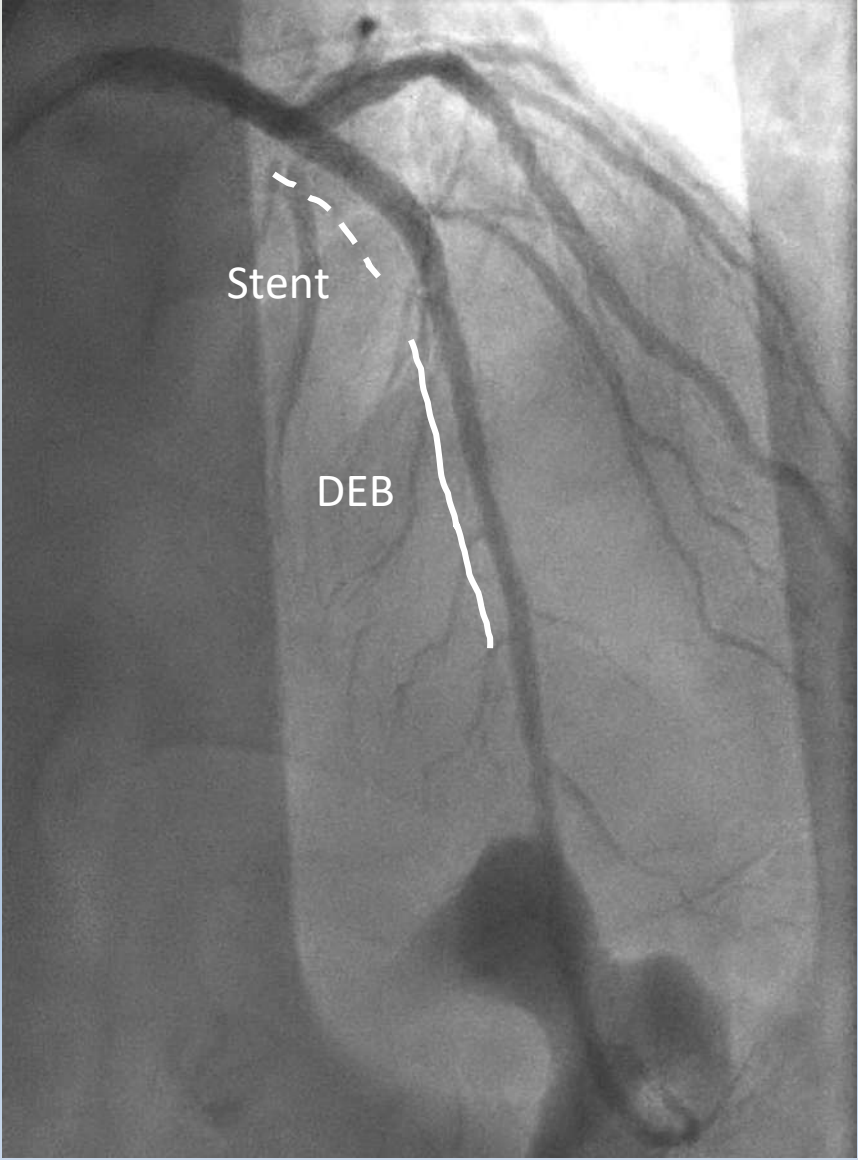


NSTEMI,
Wellens-
ECG

Pre (NSTEMI)



Post-Intervention

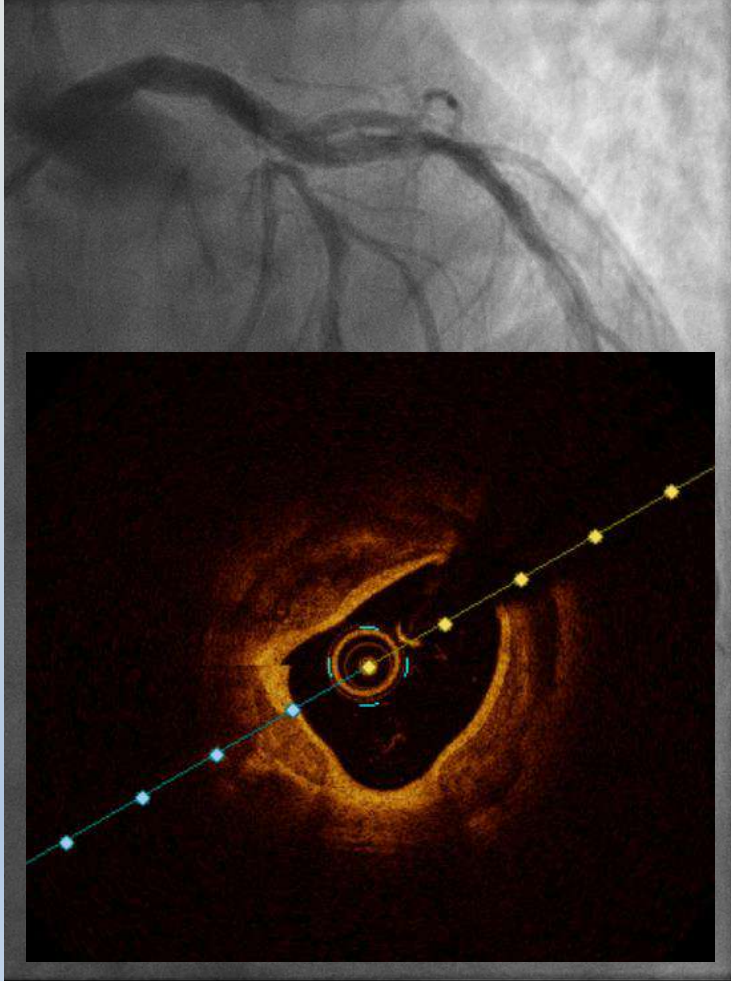


6 Months Follow up

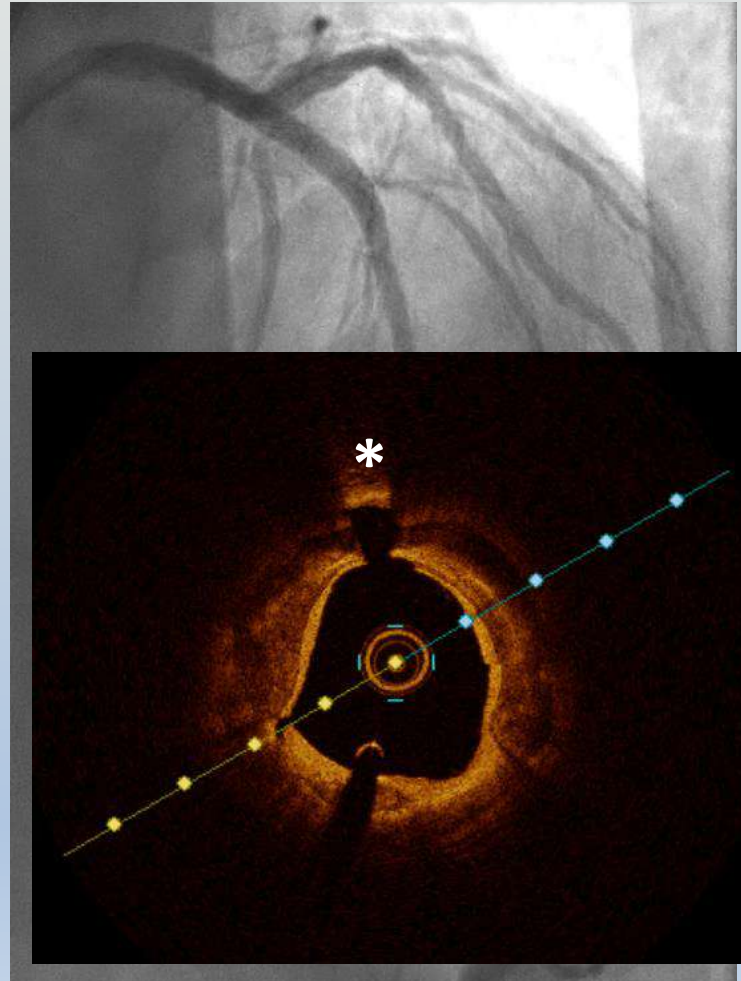


Calcification: Shockwave + DEB

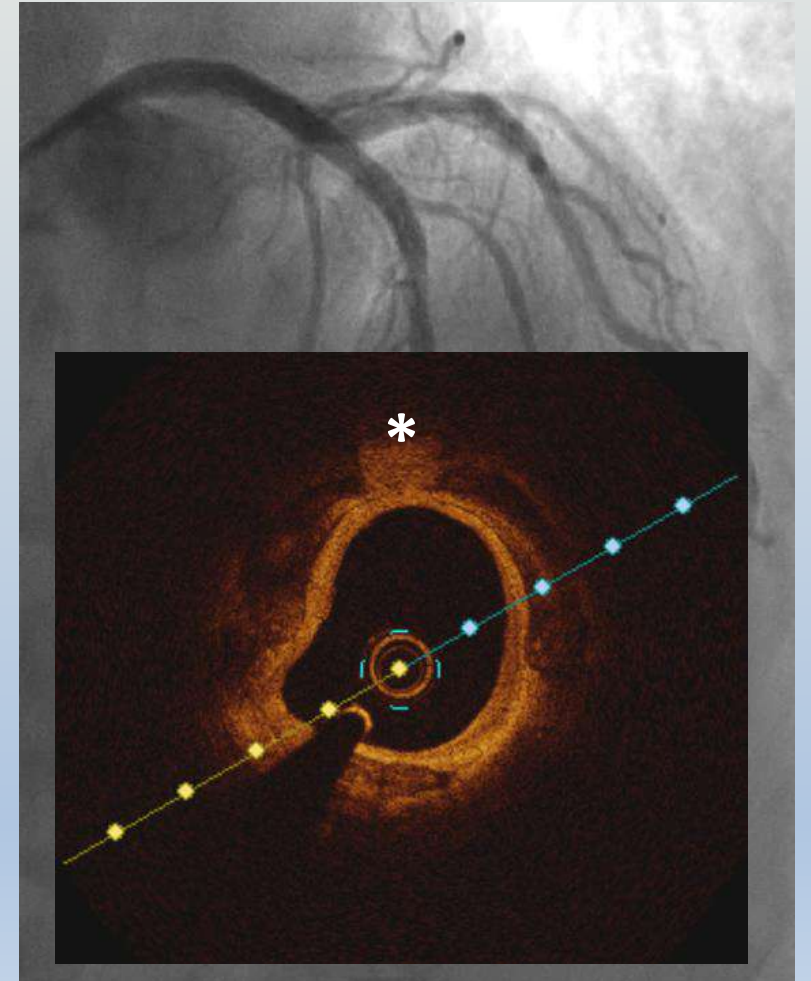
Pre (NSTEMI)



Post-Intervention

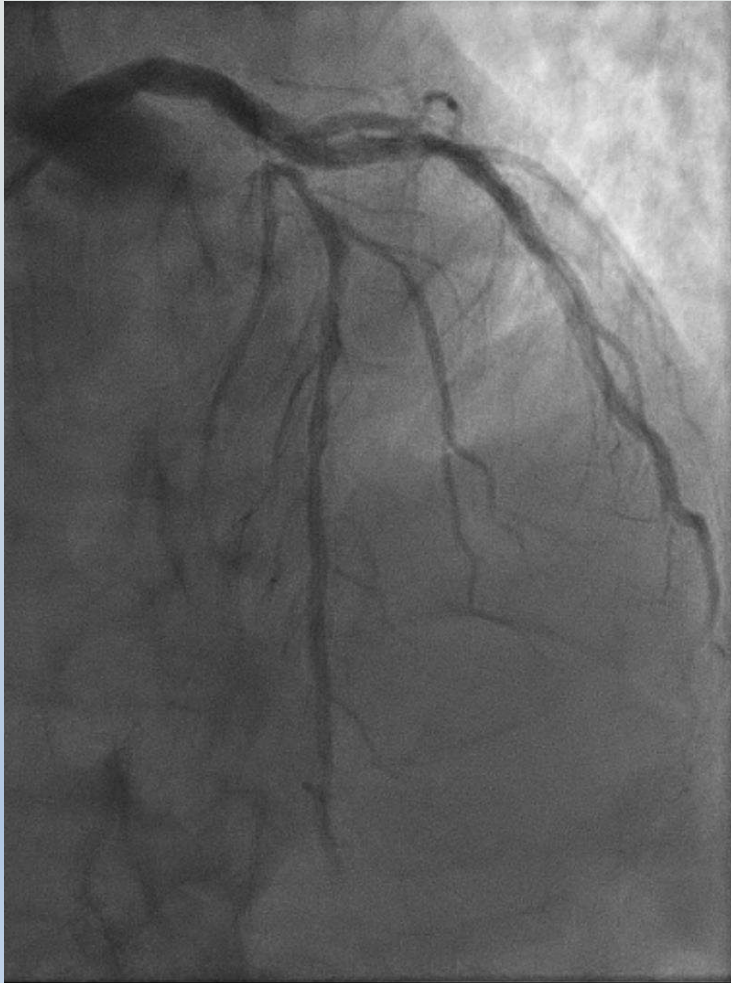


6 Months Follow up

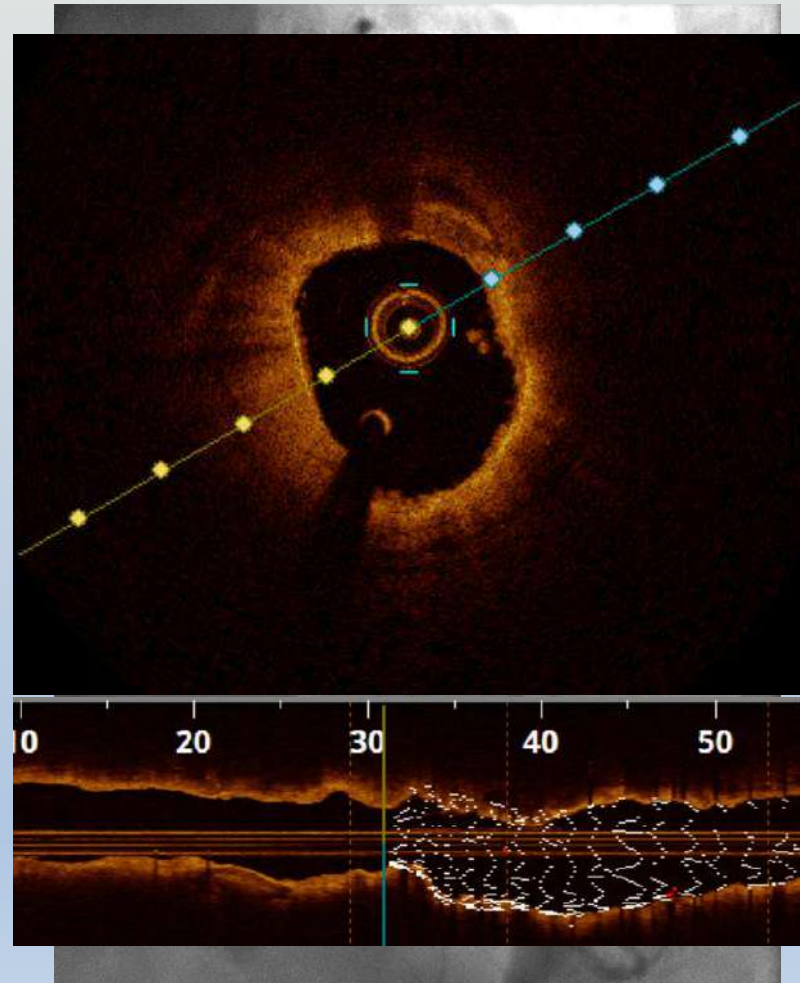


Stent Edge (DEB), MLA 4.7mm² -> 7.4mm²

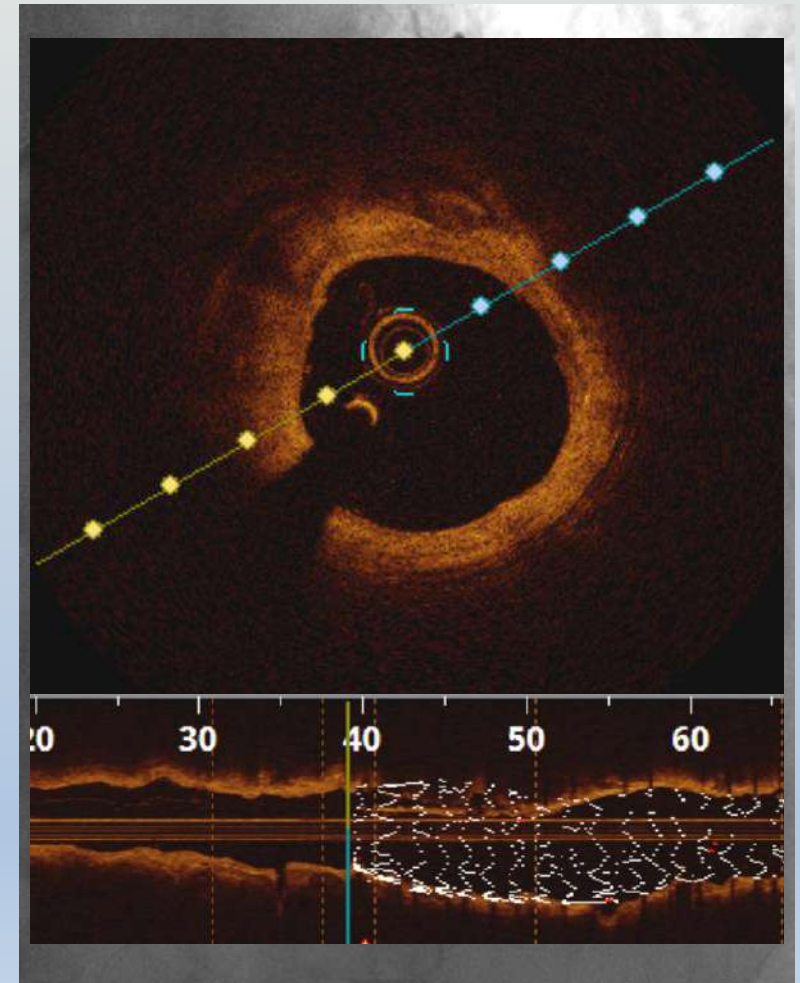
Pre (NSTEMI)



Post-Intervention



6 Months Follow up



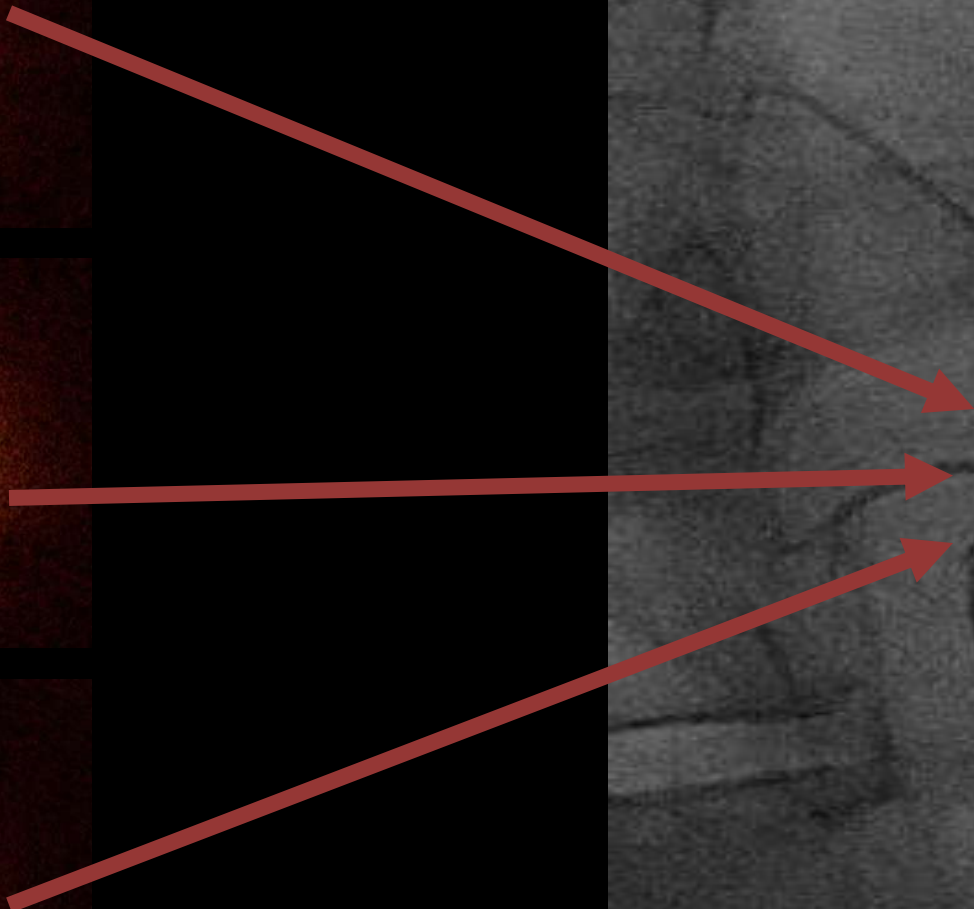
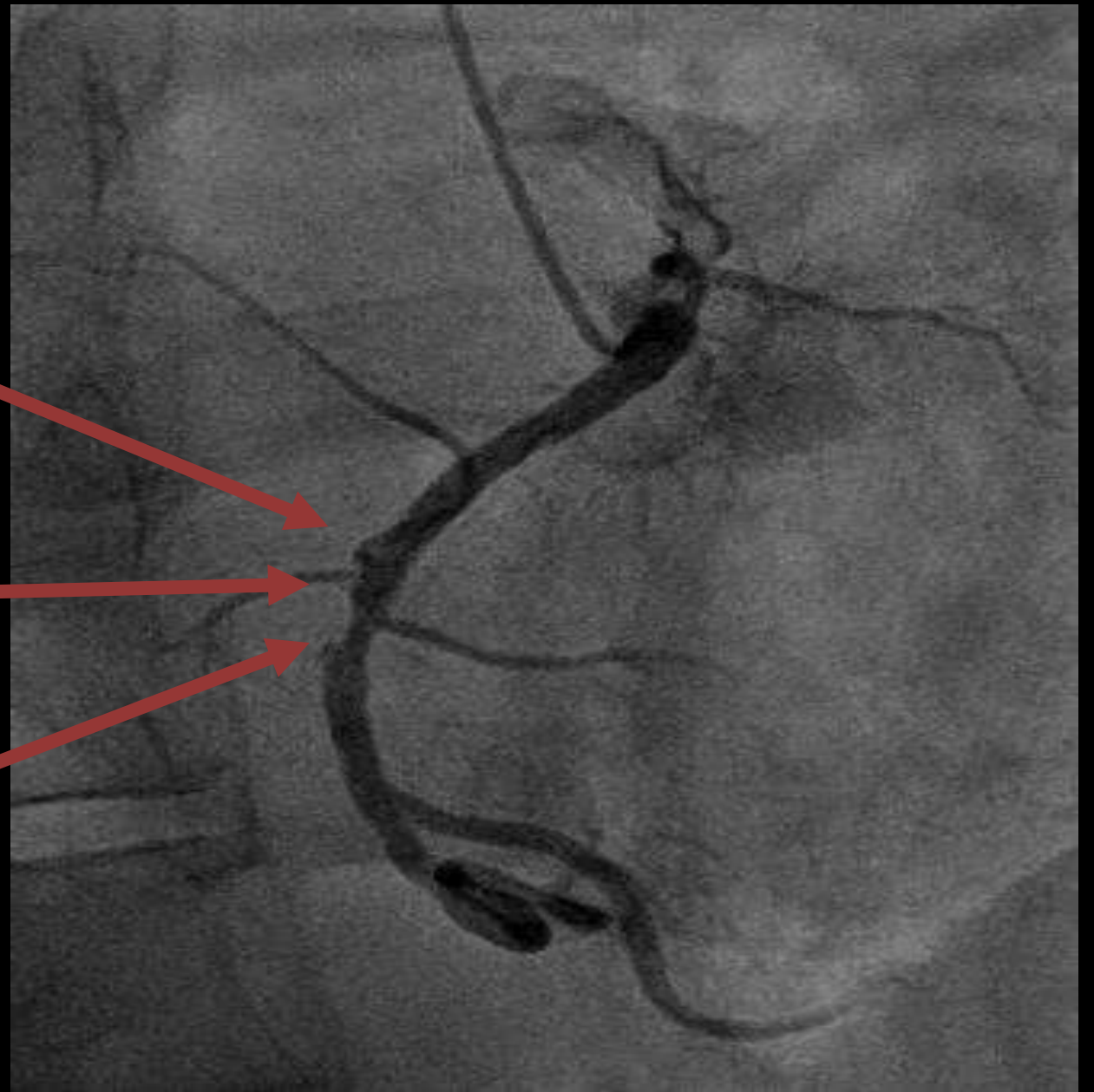
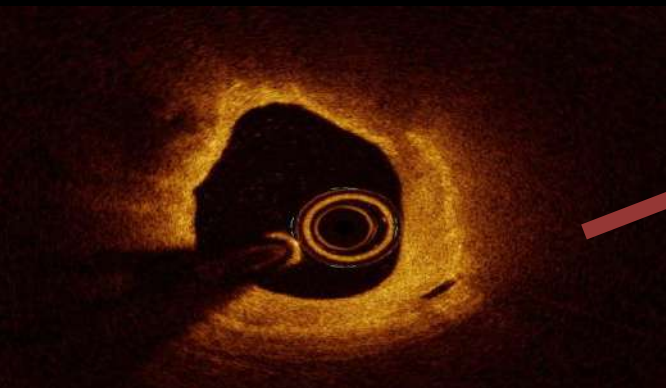
Taking the best of two worlds: CABG & PCI

	CABG (conventional)	PCI
Invasiveness	+++	+
Prognosis	+++ (LIMA-LAD)	++
Patient Preference	+	+++
Recovery	+	+++



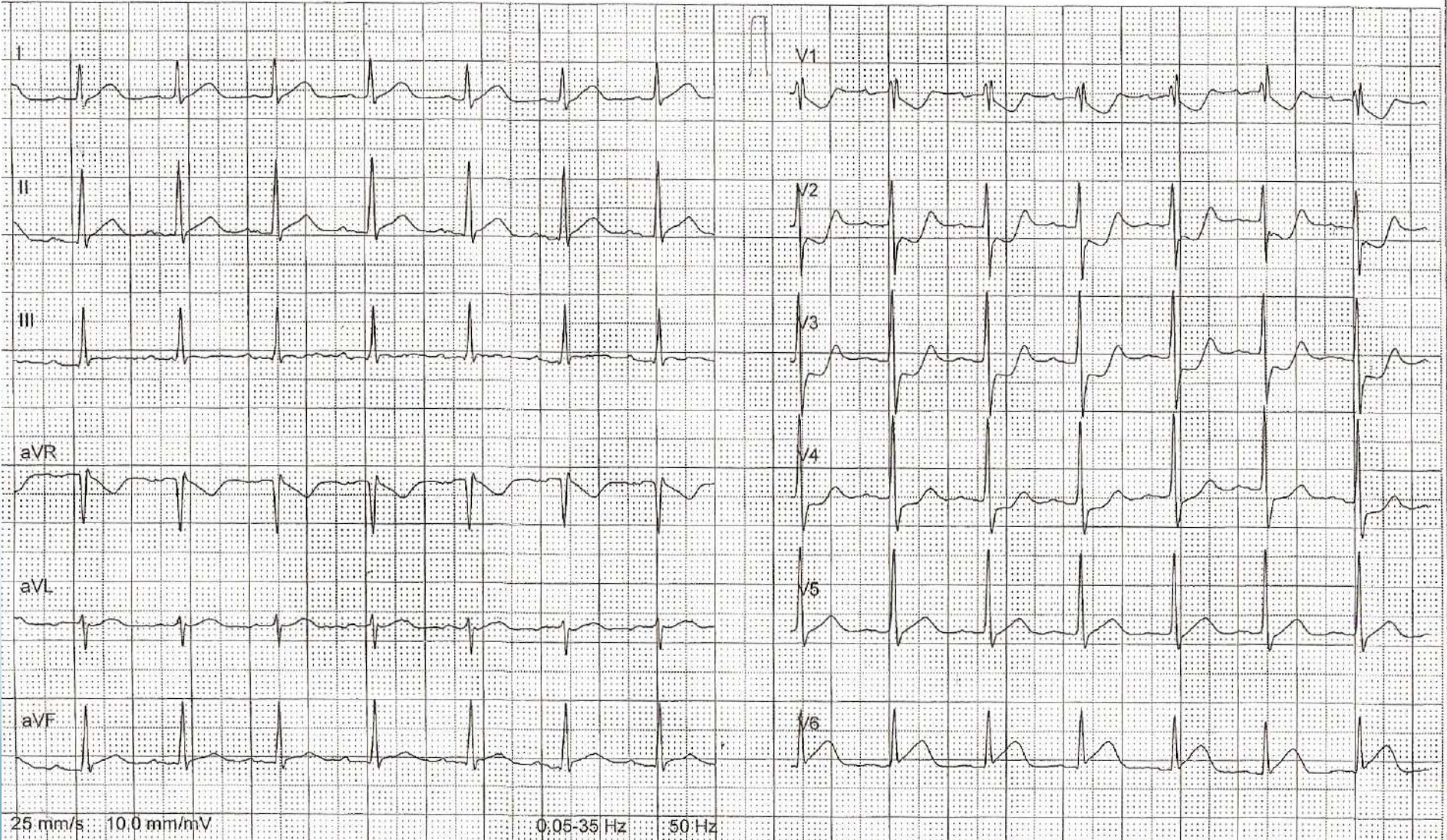
2 years post MIDCAB
(Prof. Matt, LUKS)

OCT visualization of acute plaque rupture explaining recurrent ACS

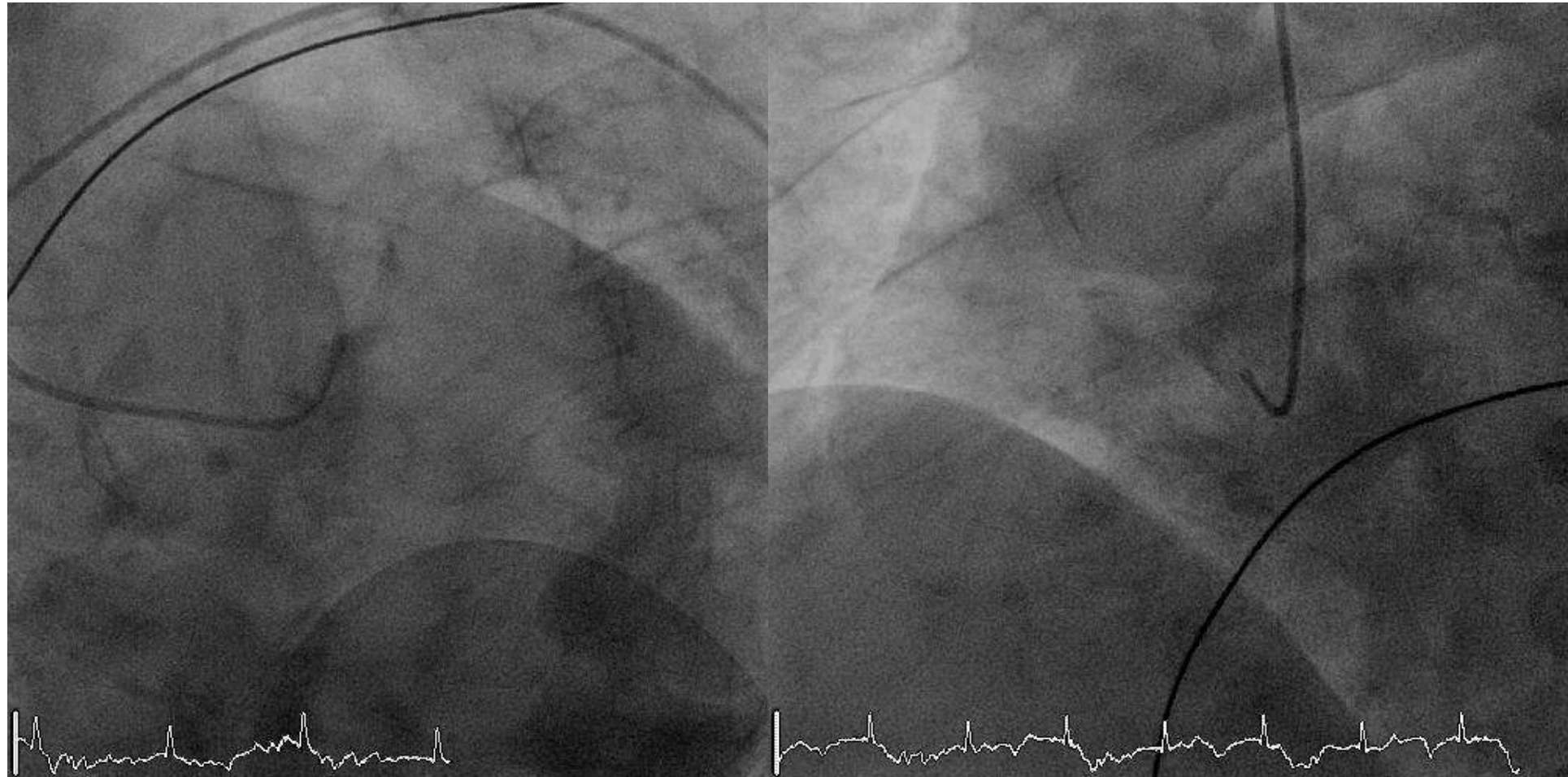


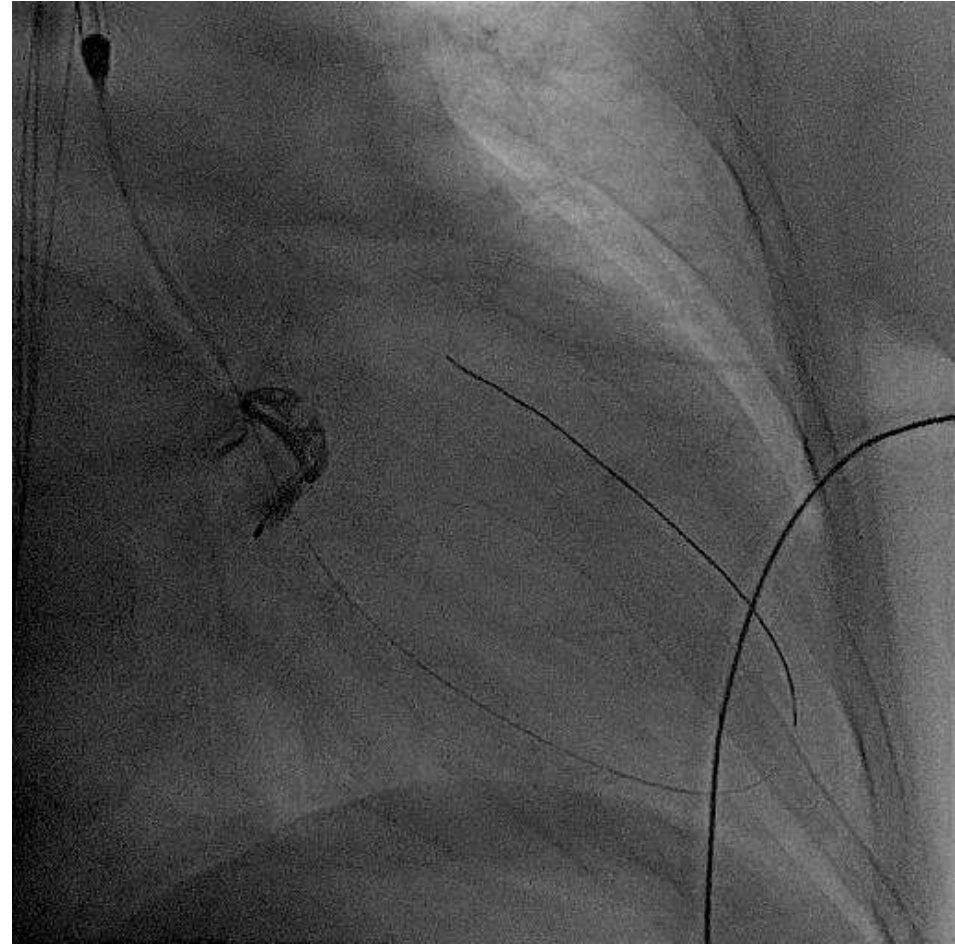
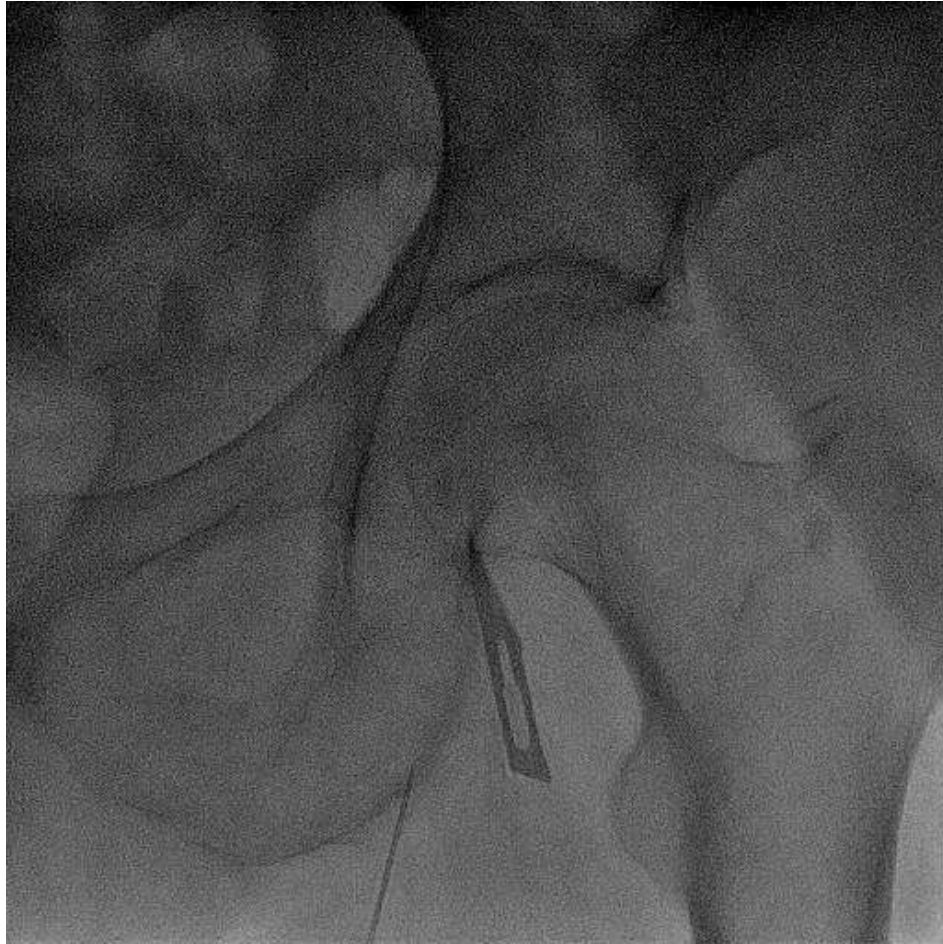
83 years old lady with arterial hypertension and severe chest pain

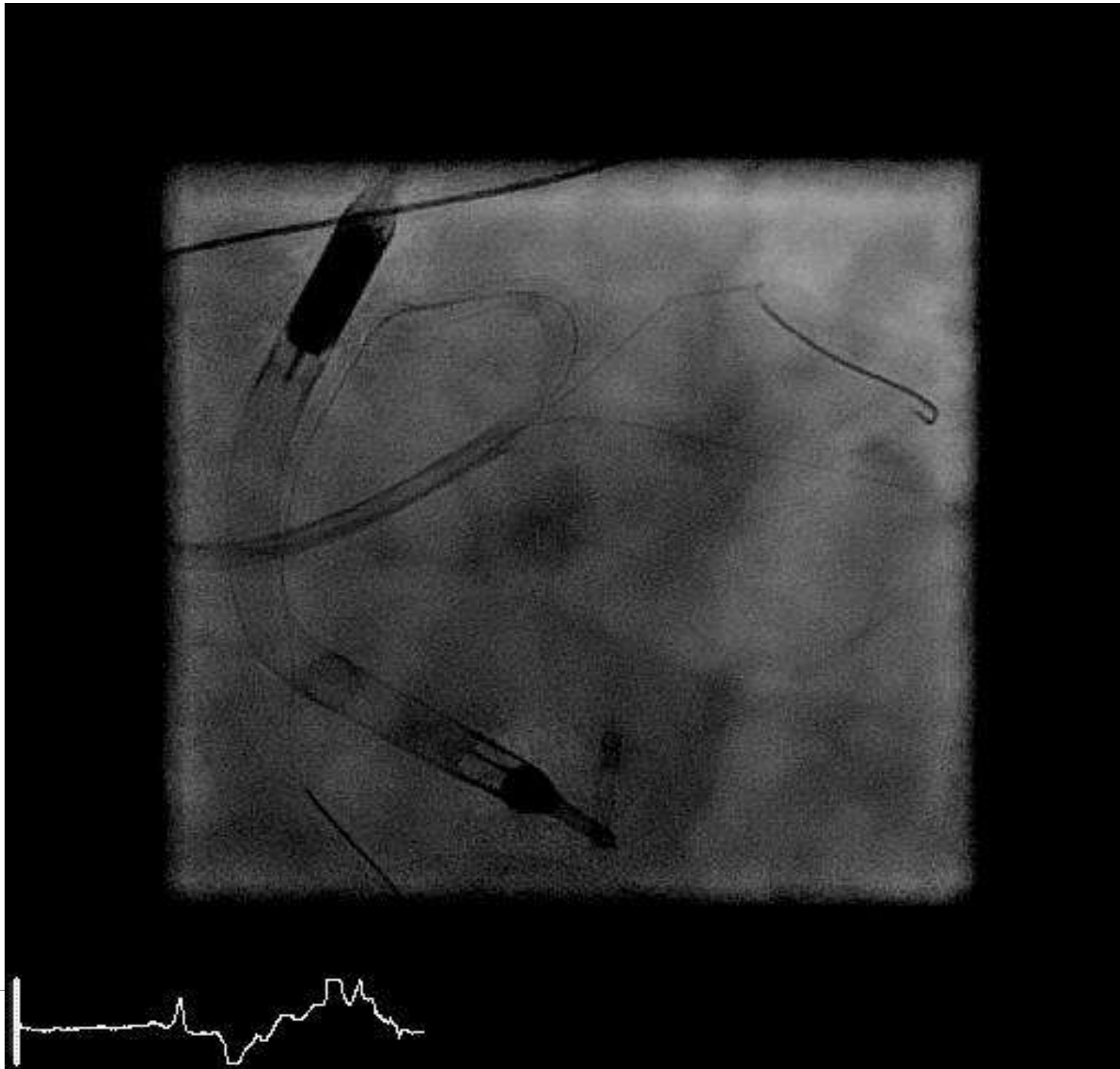
BP 70/30

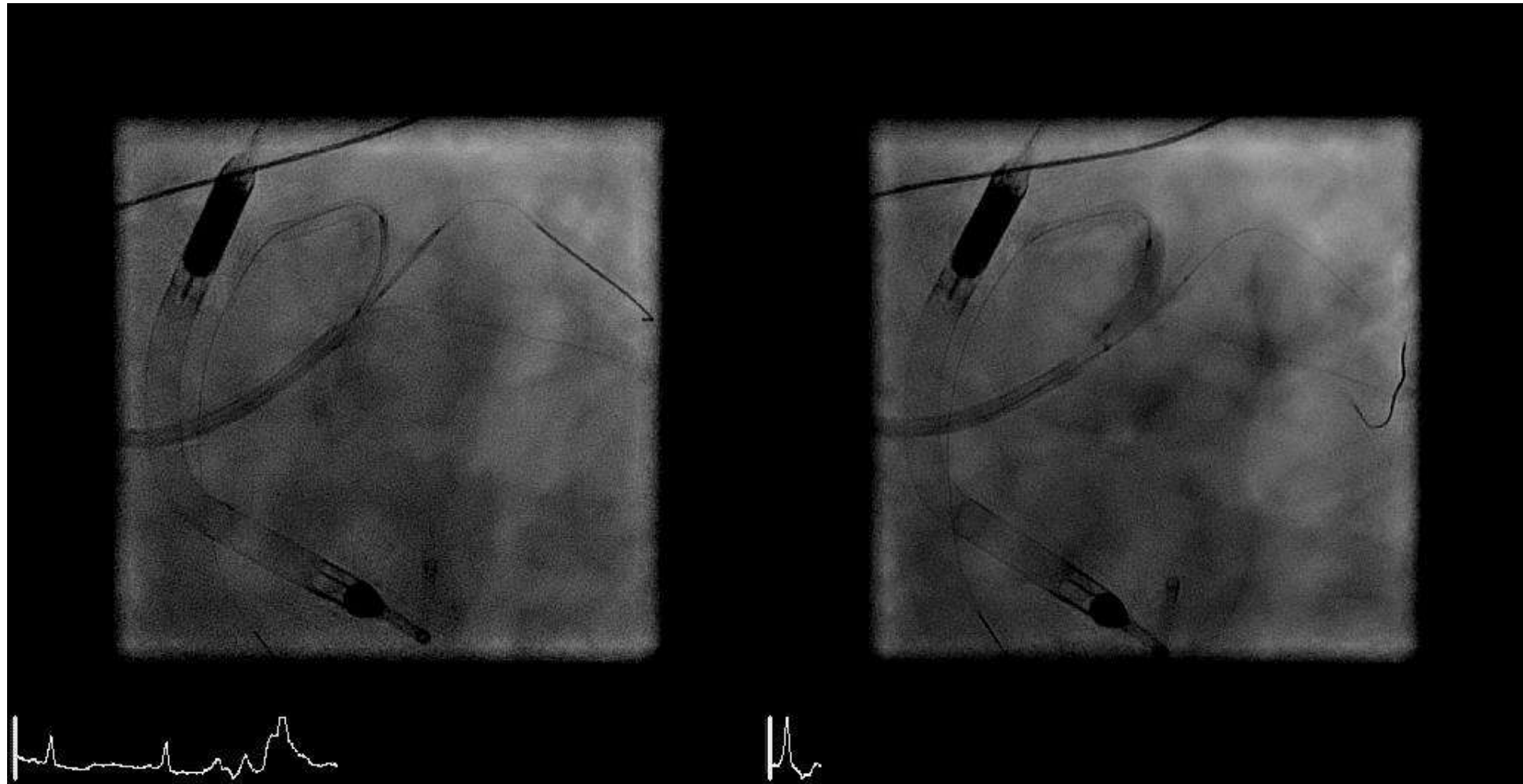


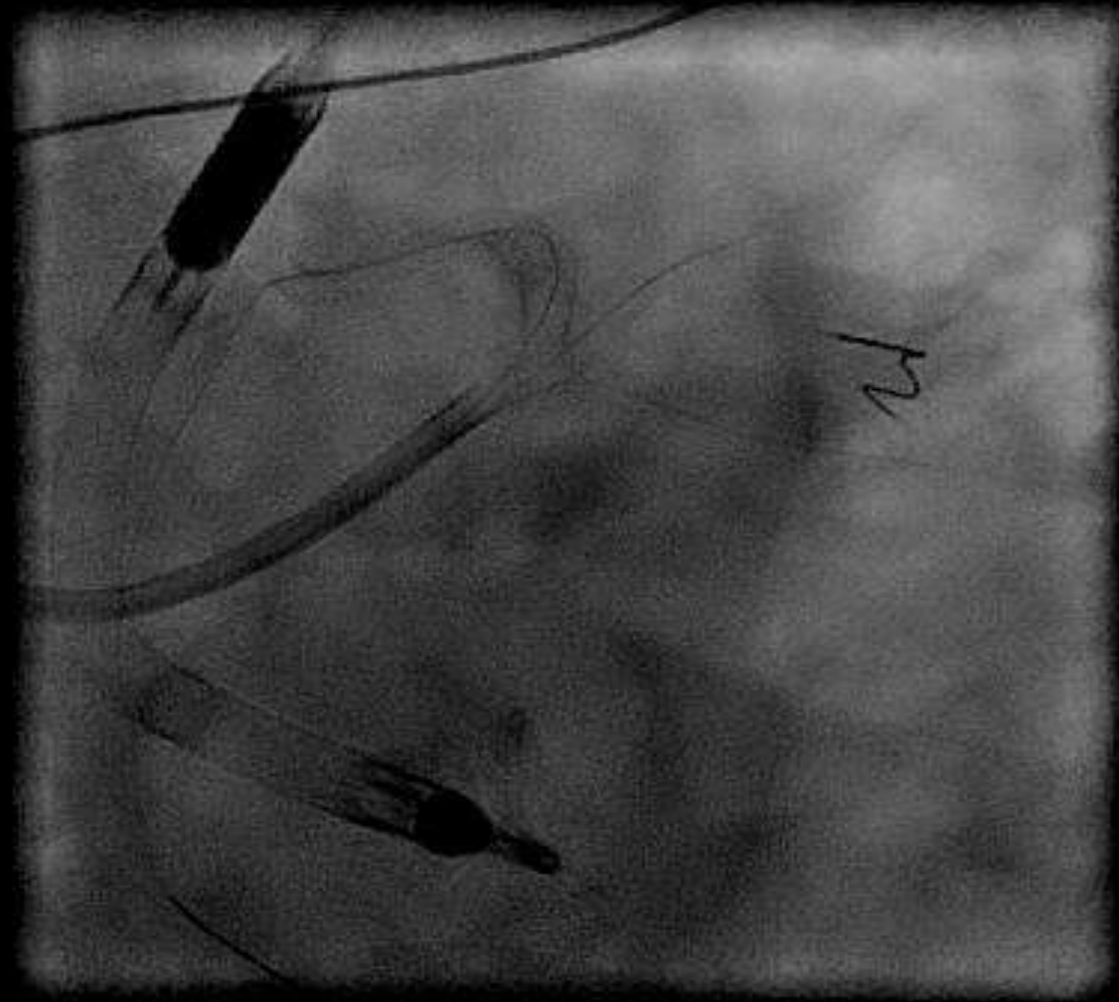
STEMI patients are often complex ...











Conclusions

- PCI has undergone a massive (r)evolution in the last 4 decades
- In CCS: treat less, treat in a more targeted fashion
- Combination of CABG & PCI is very promising
- Use less stents & more drug coated balloons

Conclusions II

- In ACS: Use more intravascular imaging
- Cardiogenic shock: still a major challenge
- Impella could offer a good solution but randomized data badly needed