

Non-Culprit Lesion in a Patient with
Acute Coronary Syndrome.
Same Picture, Different Physiology One
Week Later

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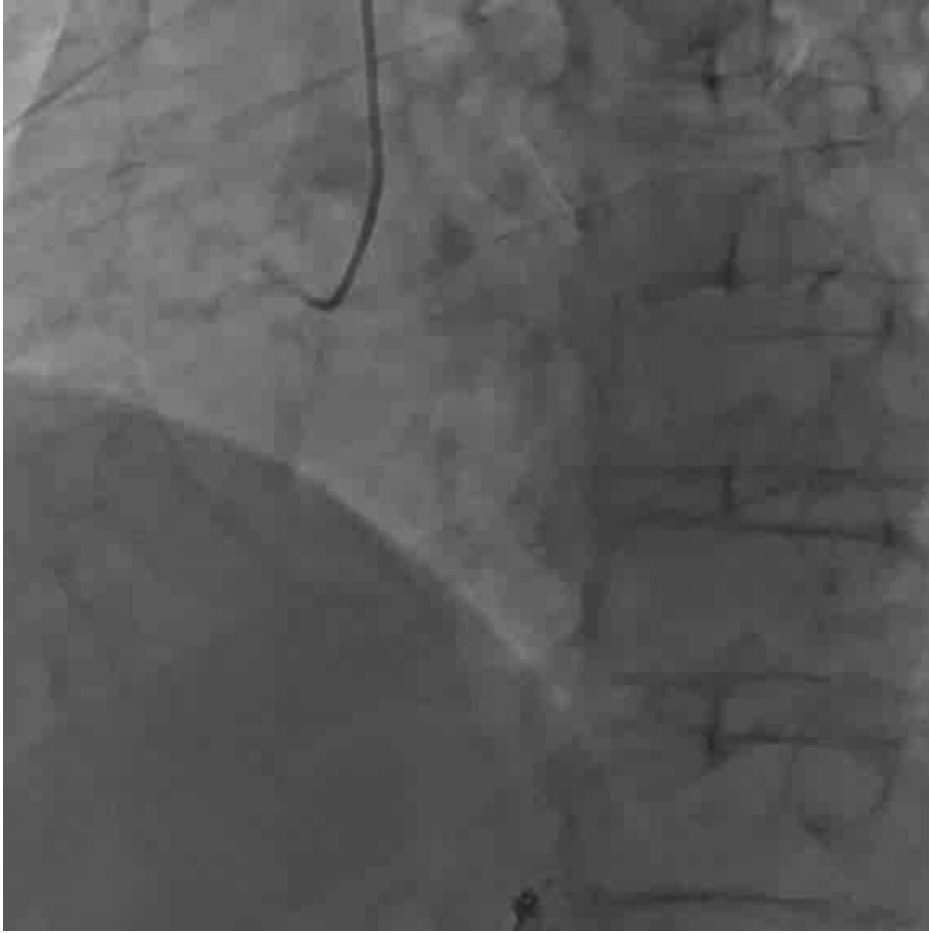
History and Physical Exam.

- A 73 year-old gentleman presented to the emergency department for sudden onset anterior chest pain with diaphoresis.
- Prior Hx: HTN, DLP
- BP 97/60 mmHg, HR 74 bpm.

Relevant Test Results Prior to Cath.

- ECG:
 - ST-segment elevation in the inferior leads.
- Echocardiogram:
 - Akinesis of the inferior wall. Preserved overall LV systolic function.
- Blood tests:
 - Negative for cardiac enzyme.

Coronary Angiogram



Primary PCI to RCA



Rt. Radial approach

6Fr. IL-4.0 GC

Runthrough Extrafloppy

Thrombuster II

Blood pressure dropped to 70/42mmHg after thrombo-aspiration.
Dopamine infusion was started at 3mcg/kg/min.

PCI to RCA



Rt. Radial approach

6Fr. IL-4.0 GC

Runthrough Extrafloppy

Thrombuster II

Filtrap 5.0mm distal protection

3.0 x 34mm Resolute Integrity

PCI to RCA



Rt. Radial approach

6Fr. IL-4.0 GC

Runthrough Extrafloppy

Thrombuster II

Filtrap 5.0mm

3.0 x 34mm Resolute Integrity

3.0 x 38mm Resolute Integrity

Post-dilatation 4.0mm NC balloon

Filter no-flow



Rt. Radial approach

6Fr. IL-4.0 GC

Runthrough Extrafloppy

Thrombuster II

Filtrap 5.0mm

3.0 x 34mm Resolute Integrity

3.0 x 38mm Resolute Integrity

**Post-dilatation 4.0mm NC
balloon**

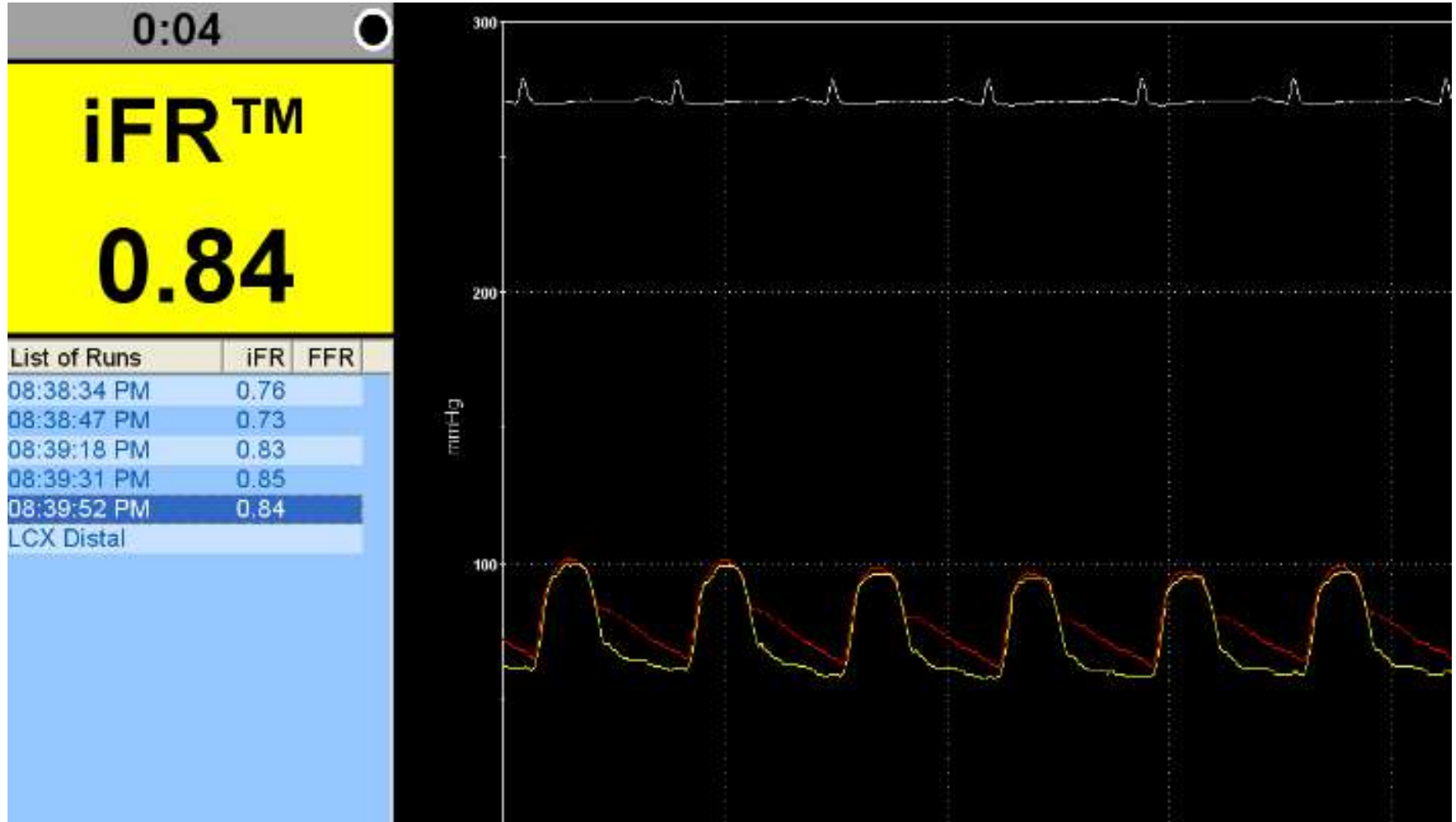
RCA, final angiogram



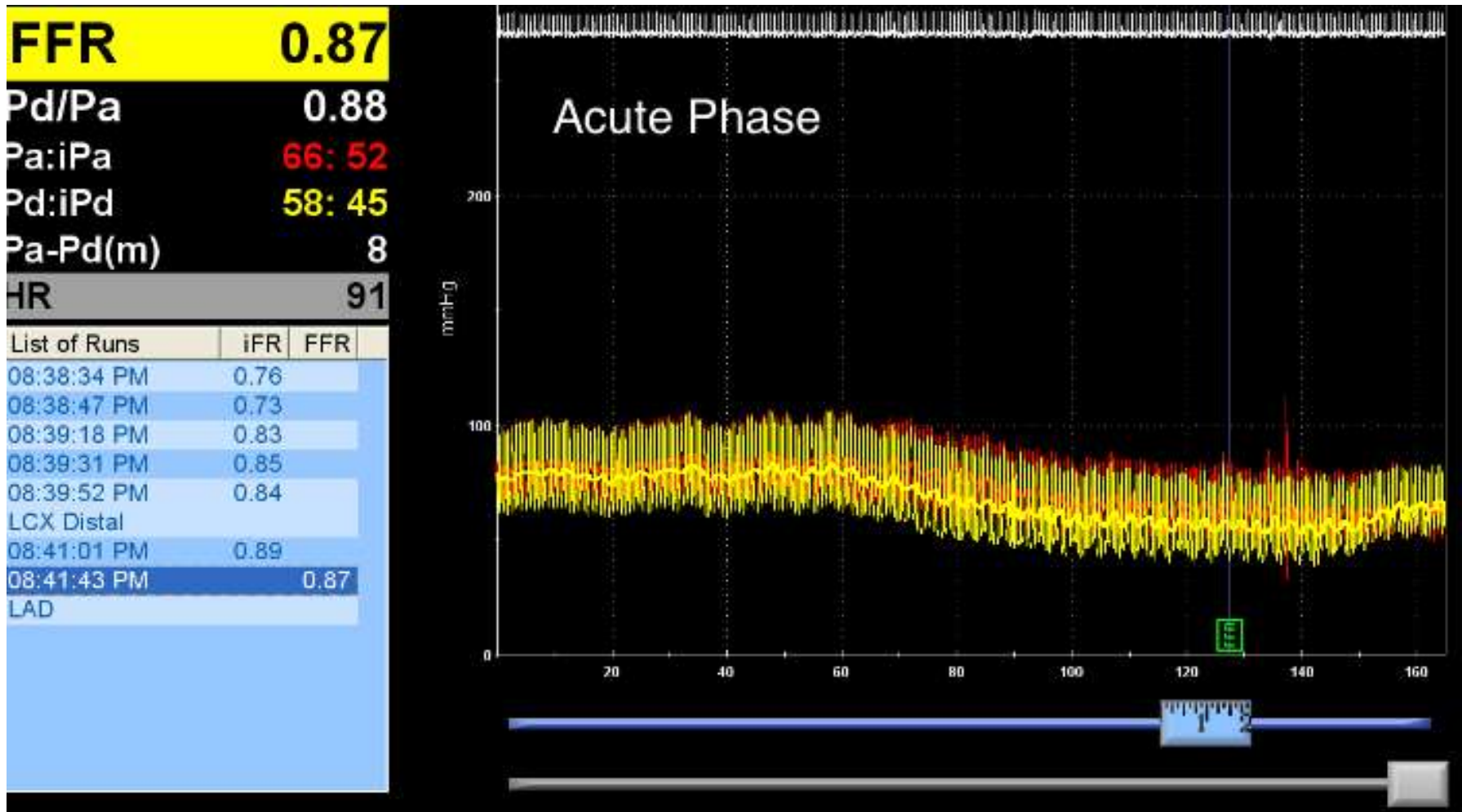
Is LAD significant ?



iFR said "Yes"



FFR said "No" → Deferred

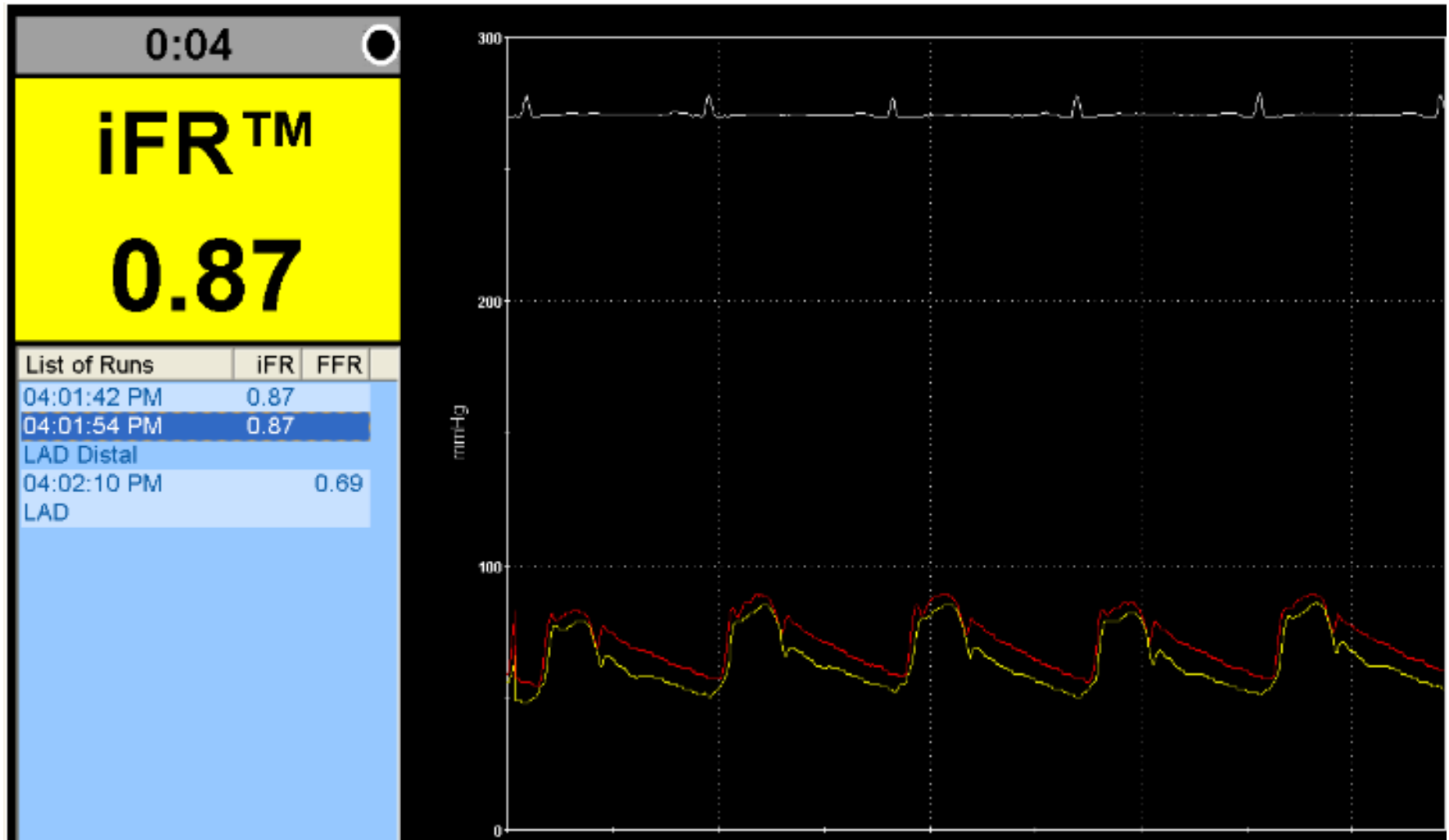


Peripheral ATP infusion at 150 mcg/kg/min.

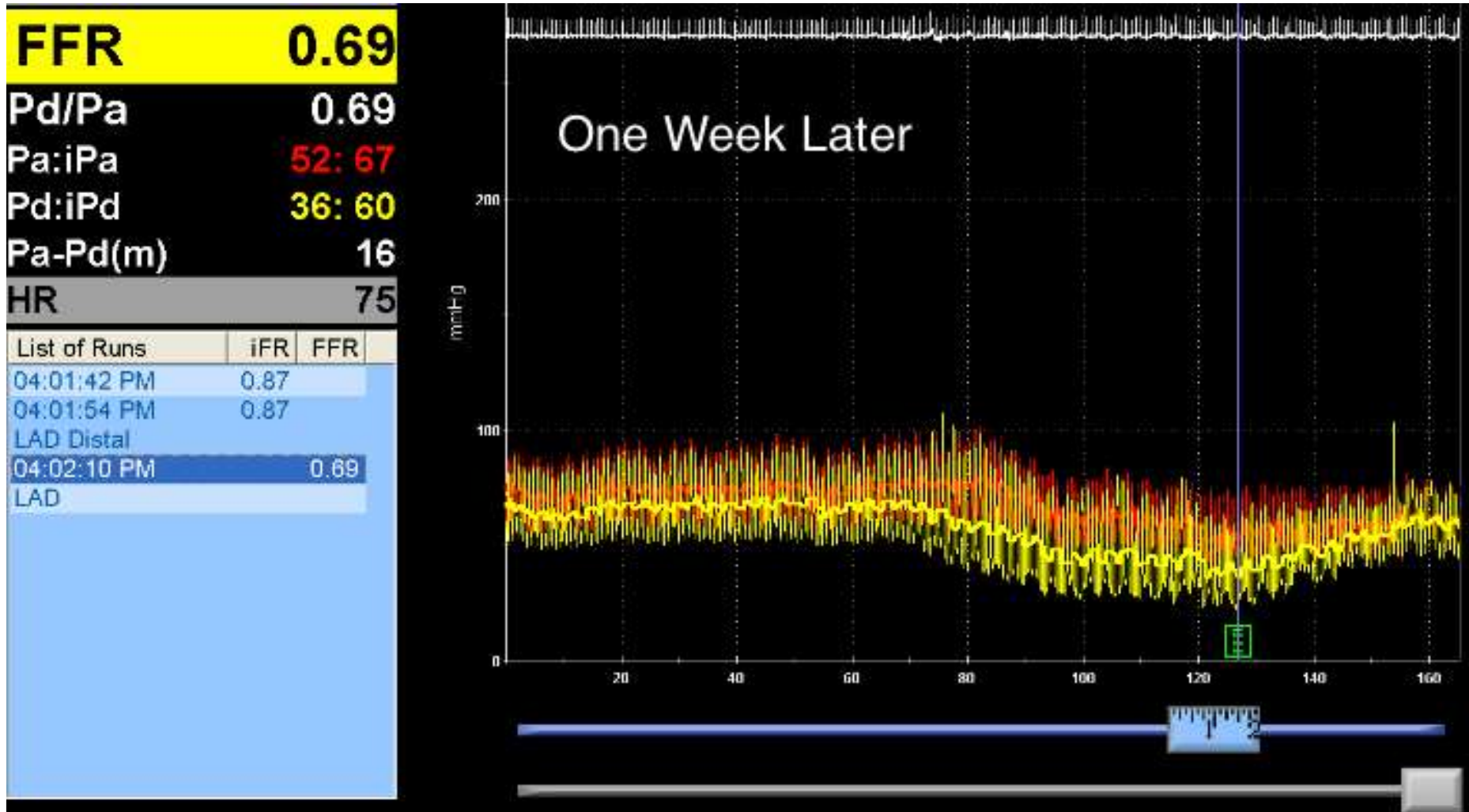
Re-FFR measurement 1 week later

- Not fully convinced by the negative FFR value.
- The patient was brought back to the cathlab for repeat FFR measurement and possible PCI to LAD **one week after** the initial PCI.
- And then,,,

iFR said “...Yes, but not convincing”

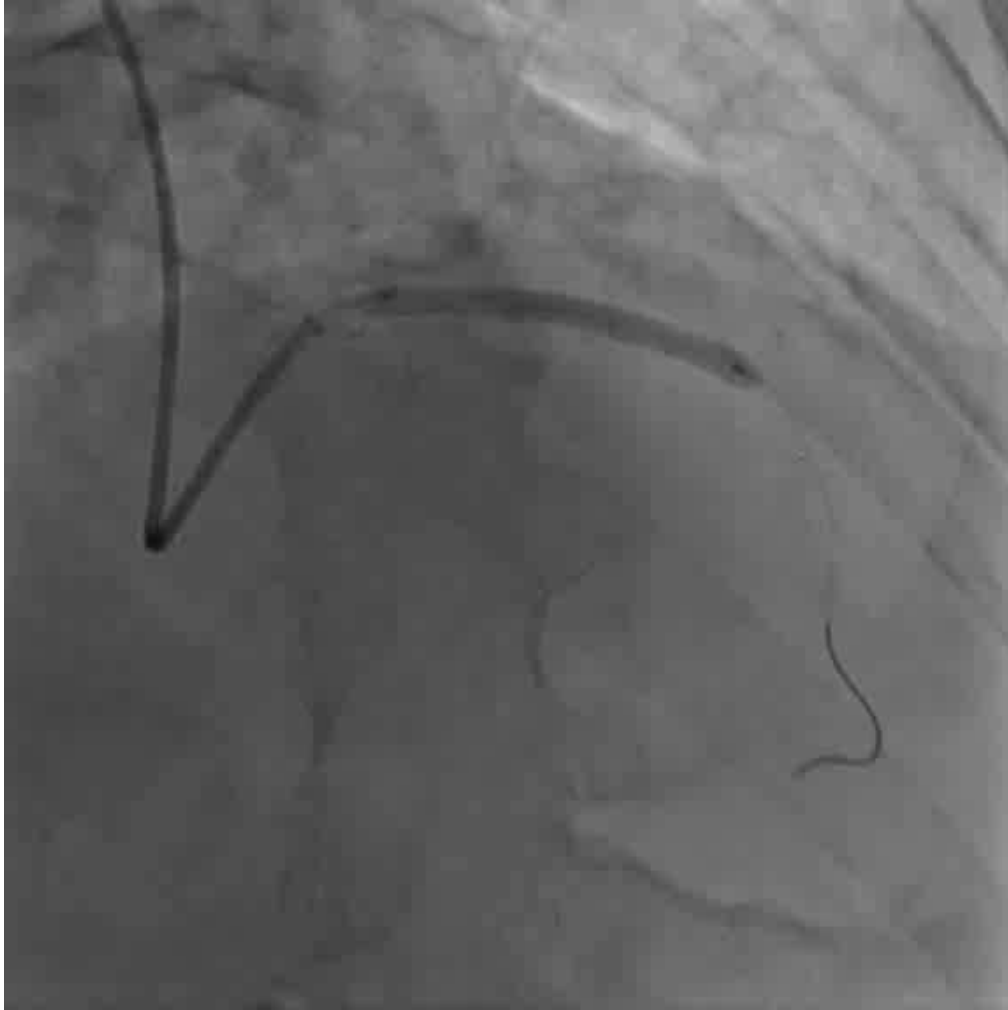


FFR said “Yes, significant”



Peripheral ATP infusion at 150 mcg/kg/min.

PCI to LAD



Rt. Radial approach

6Fr. IL-4.0 GC

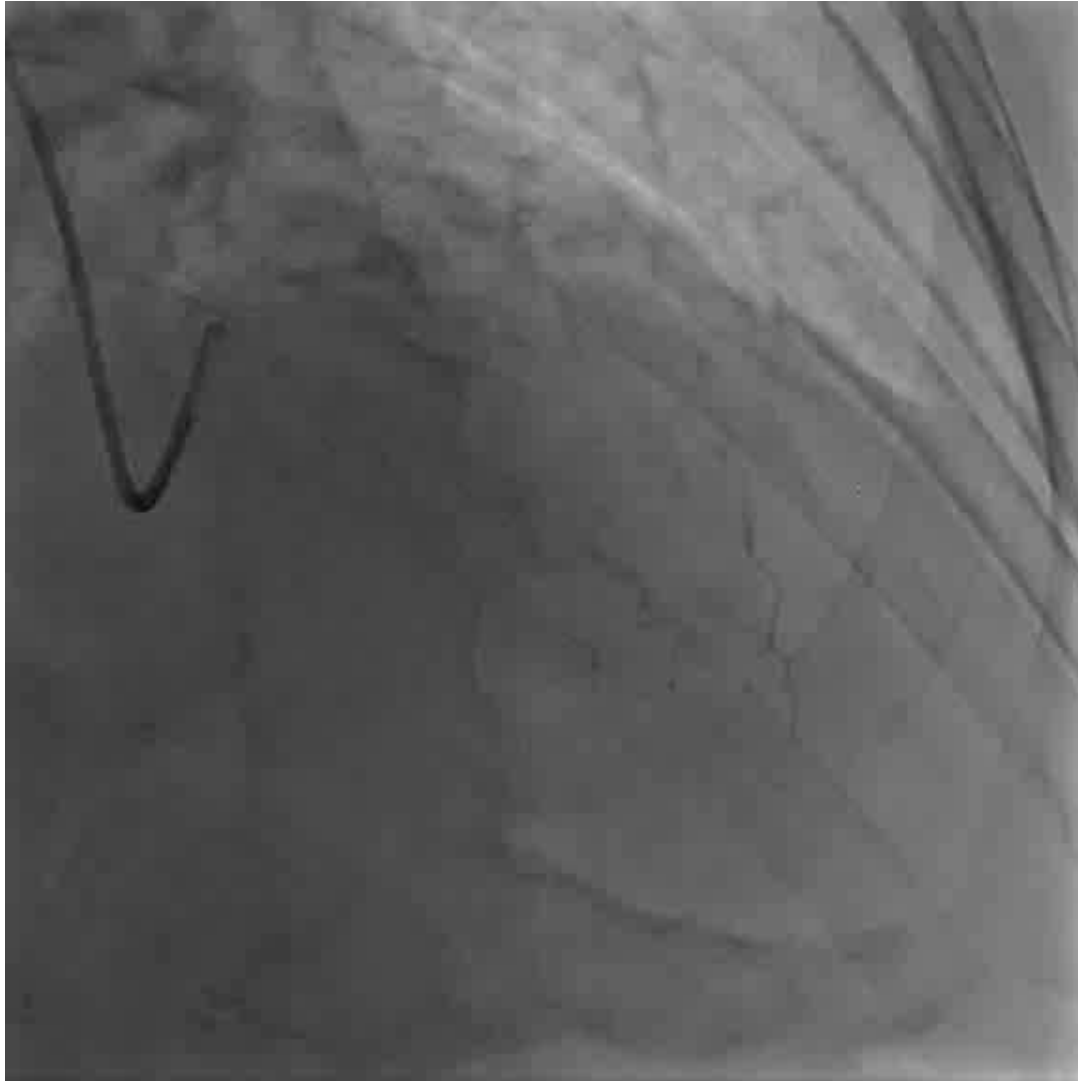
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3.5 x 38mm Xience Xpedition
(12atm)

Post dilatation

3.5x15mm NC @ 18-22atm

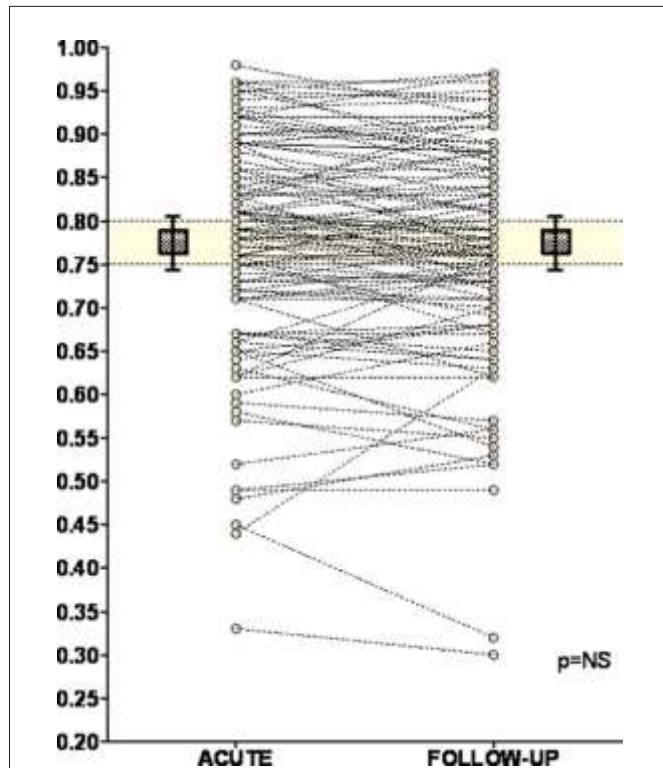
Final Angiogram



Discussion

CLINICAL RESEARCH

Fractional Flow Reserve for the Assessment of Nonculprit Coronary Artery Stenoses in Patients With Acute Myocardial Infarction



- 101 pts with STEMI or NSTEMI who had at least 1 nonculprit stenoses.
- Hemodynamically unstable pts. excluded (definition not described).
- Repeat FFR measurement in 35 +/- 4 days.
- **FFR unchanged in acute phase and at follow-up (0.77 vs. 0.77)**
- **Only in 2 pts (2%), FFR decreased across 0.75-0.80 gray zone.**

Conclusions During the acute phase of acute coronary syndromes, the severity of nonculprit coronary artery stenoses can reliably be assessed by FFR. This allows a decision about the need for additional revascularization and might contribute to a better risk stratification. (J Am Coll Cardiol Intv 2010;3:1274–81) © 2010 by the American College of Cardiology Foundation

Why FFR differed in this case?

	Acute	Subacute
iFR	0.84	0.87
FFR	0.87	0.69

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GC	6Fr. IL-4.0 (Termo)	6Fr. IL-4.0 (Termo)

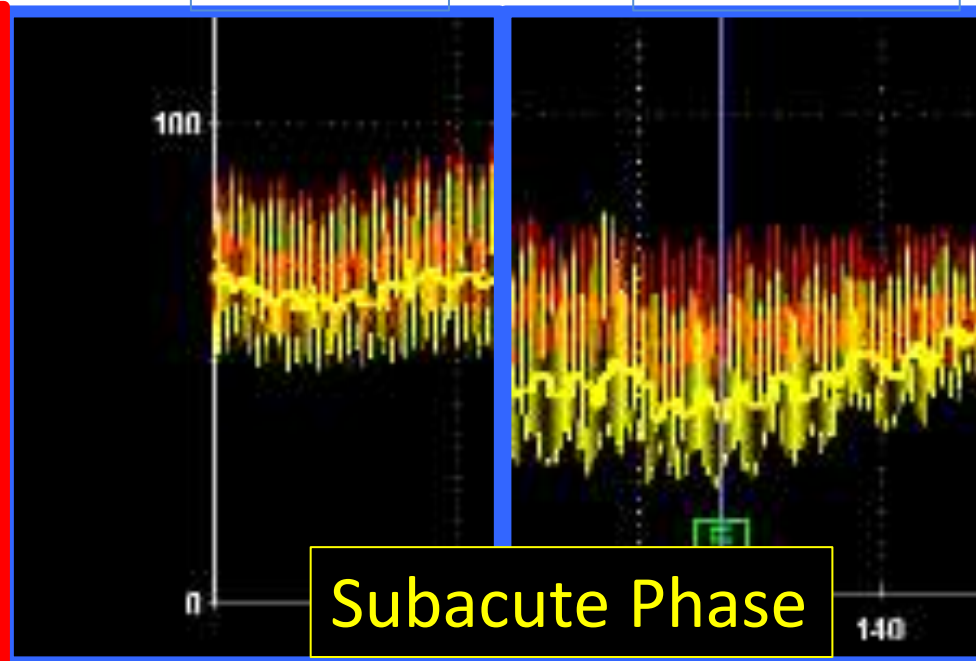
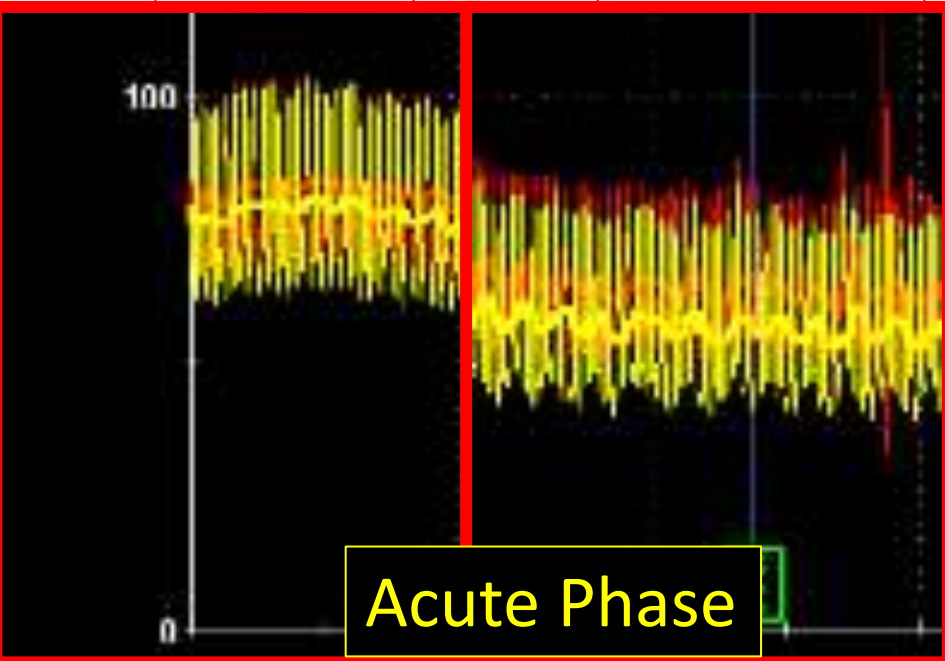
Response to vasodilator (ATP)

Baseline

Hyperemia

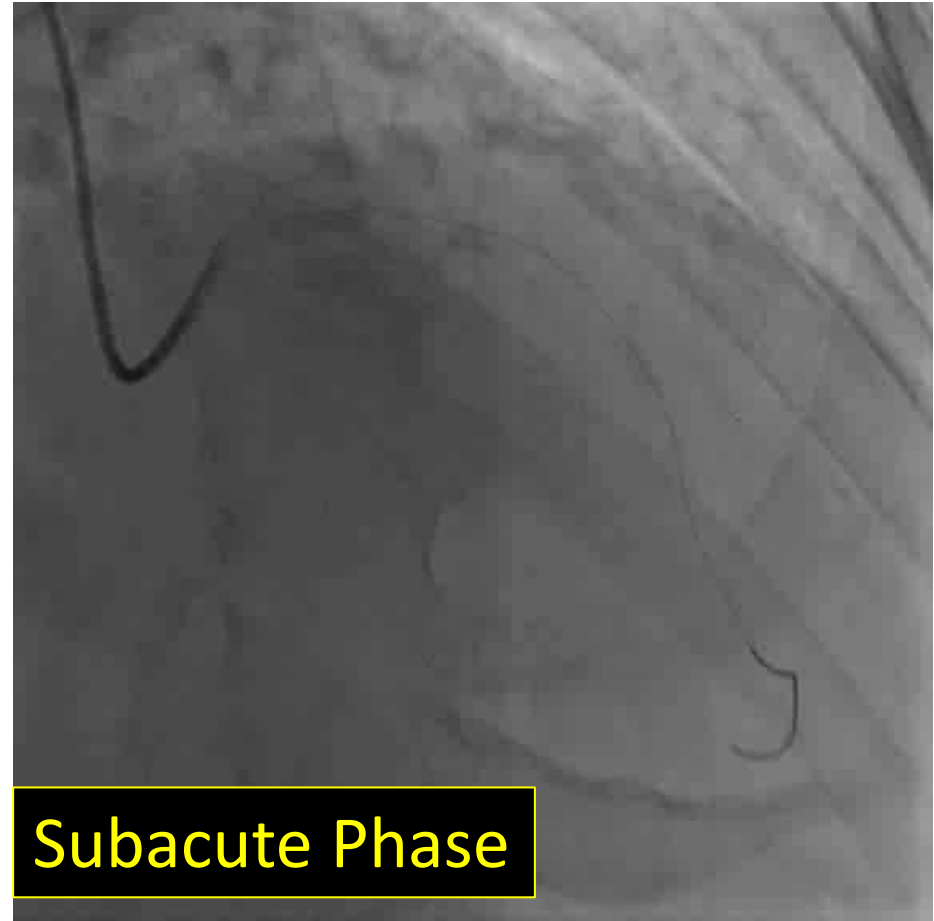
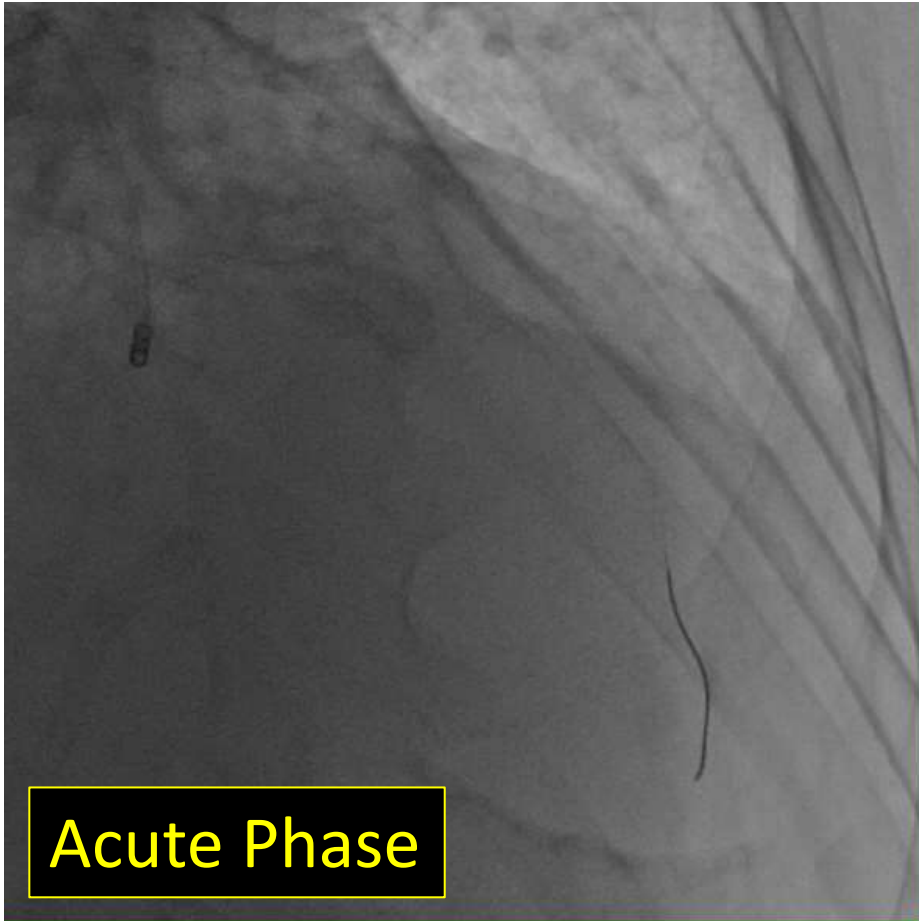
Baseline

Hyperemia



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iFR	0.84	0.87
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GC	6Fr. IL-4.0 (Termo)	6Fr. IL-4.0 (Termo)
Stress	ATP 150mcg/kg/min	ATP 150mcg/kg/min
Systolic BP	100→80mmHg	90→70mmHg

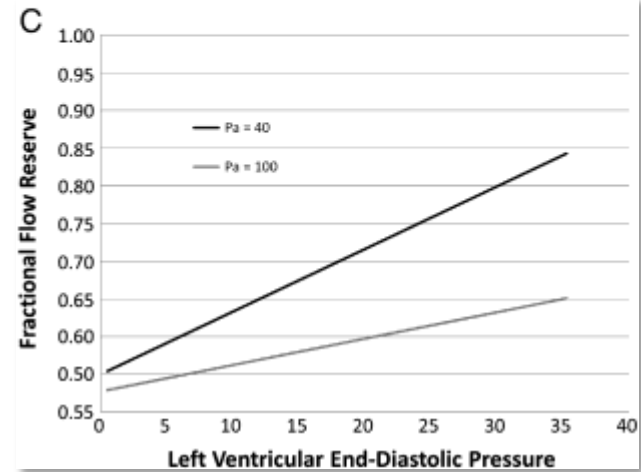
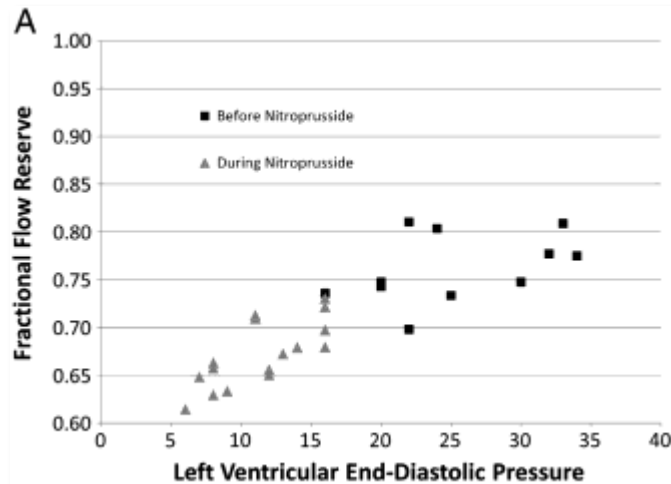
Position of pressure wire



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GW position	Distal LAD	Slightly more distal

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GW position	Distal LAD	Slightly more distal
Nitro before FFR	No	Yes
Vasopressor	Low dose DOA	None

LVEDP affects FFR



* Pts with significant stenosis (FFR<0.80)

In multivariate model ,

FFR increases by 0.012 for every 1mmHg increase in LVEDP

Present case: $\Delta\text{FFR} = 0.87 - 0.69 = 0.18$ (estimated $\Delta\text{LVEDP} = 0.18 / 0.012 = 15\text{mmHg}$)

Conclusions: LVEDP was positively associated with FFR. The association was greater in obstructive disease (FFR < 0.80) and at lower P_a . These findings have implications for the use of FFR to guide revascularization in patients with heart failure.

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GW position	Distal LAD	Slightly more distal
Nitro before FFR	No	Yes
Vasopressor	Low dose DOA	None
LVEDP	Not measured, could've been higher	Not measured

Conclusions: we have learnt...

Multiple factors (technical, hemodynamic, physiological and more) affect FFR.

In acute setting, it is not always possible to check and correct all of those factors.

One should not hesitate to perform repeat FFR measurement if not convinced by the results obtained during the ACS setting.