

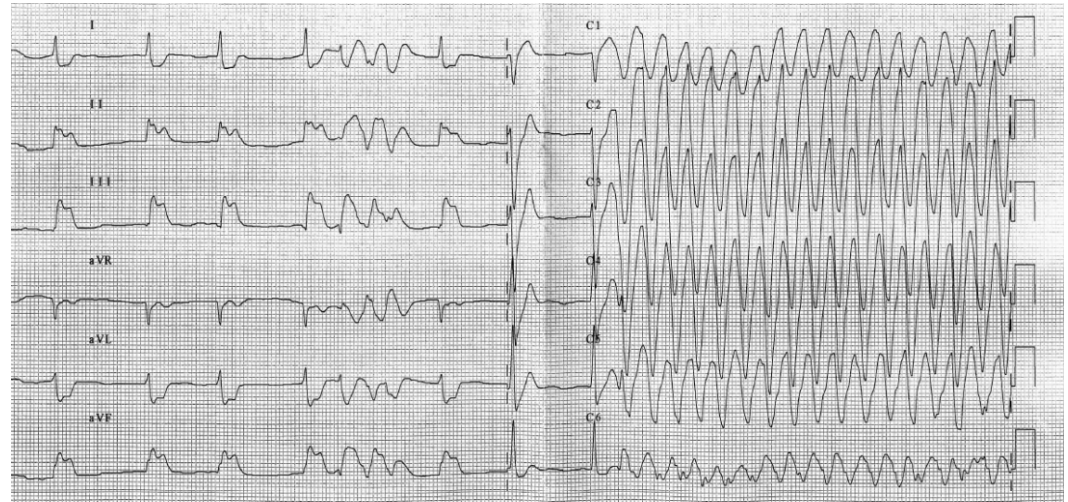
Strategy for an Acute Myocardial Infarction with Multivessel Disease: Contribution of IVUS and FFR.

Marc Bedossa
Dpt of cardiology
University Hospital of Rennes;
France.



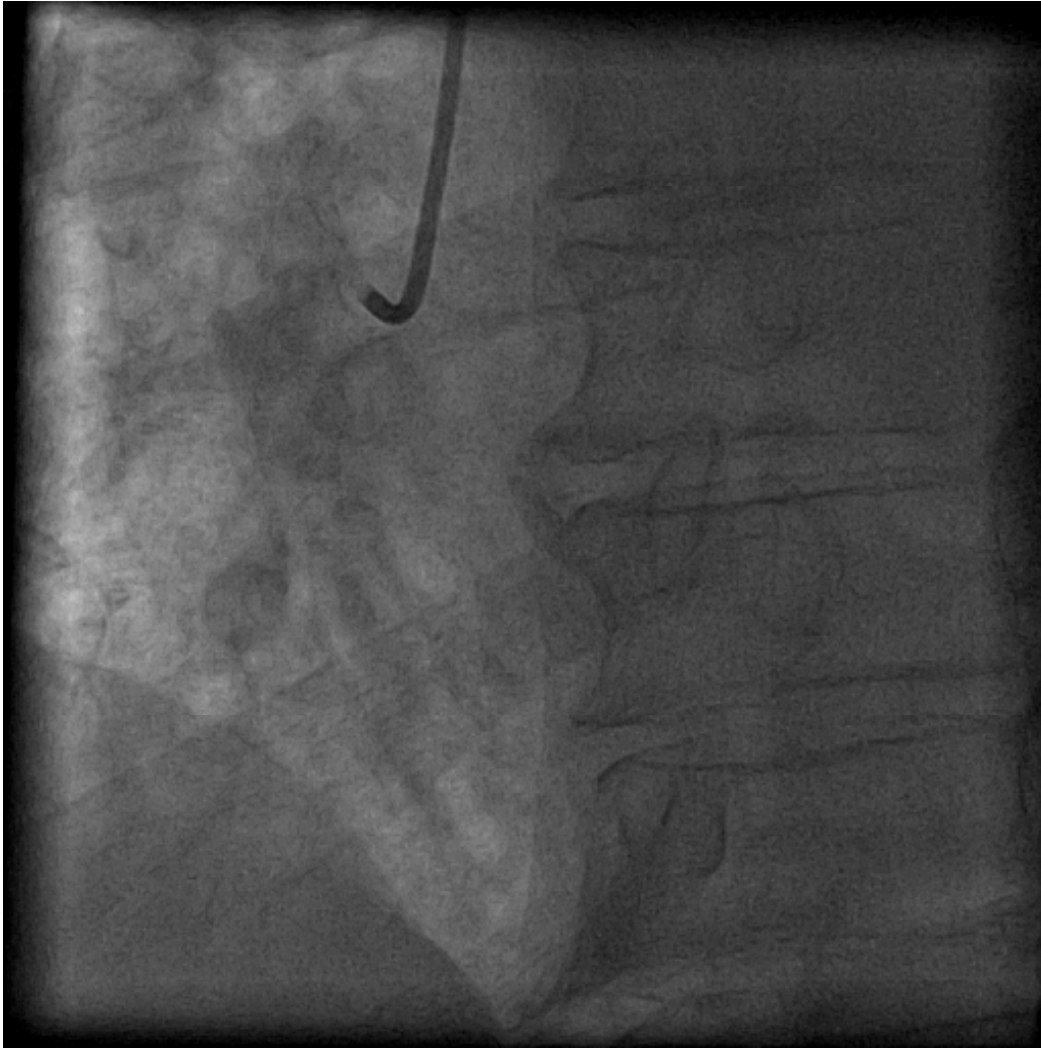
Clinical presentation

- Men: 73 years old
- Risk factor:
 - Hypertension,
 - Diabetes

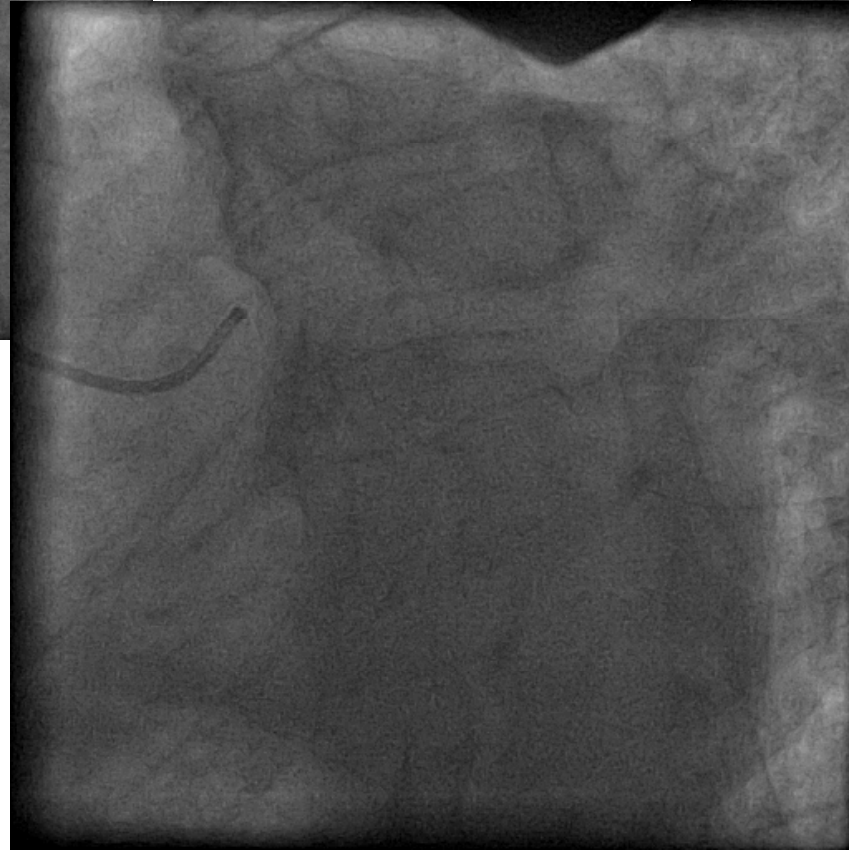
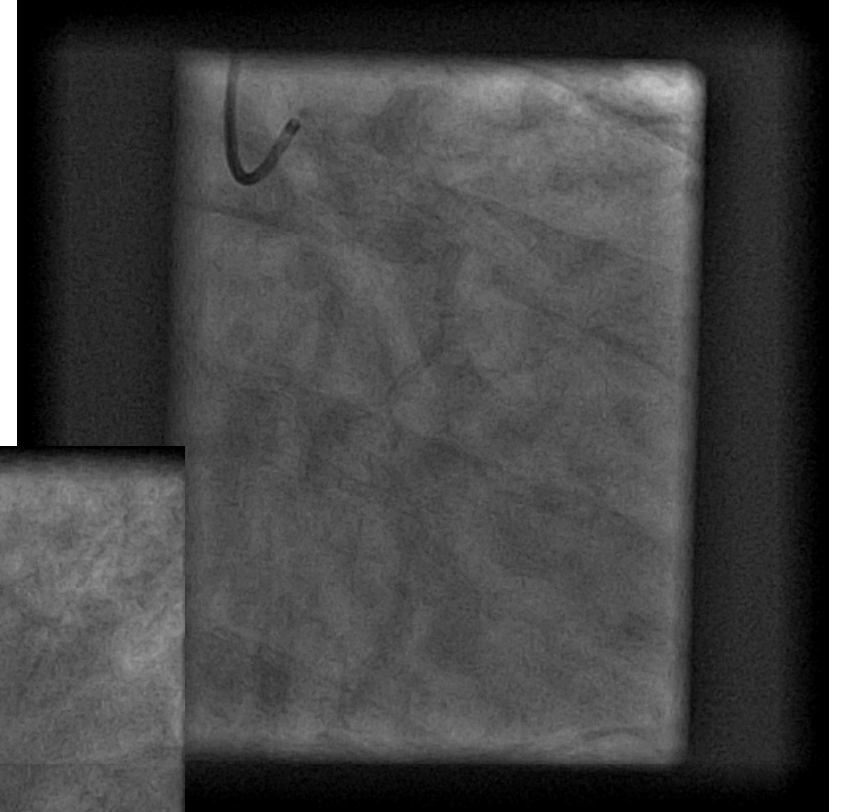


- Chest pain without sign of cardiogenic shock
- Treatment: Prazugrel* Aspirin* Heparin*
- STEMI: (inferior H+115 mn: First call- Balloon)

The lesion..TIMI 2

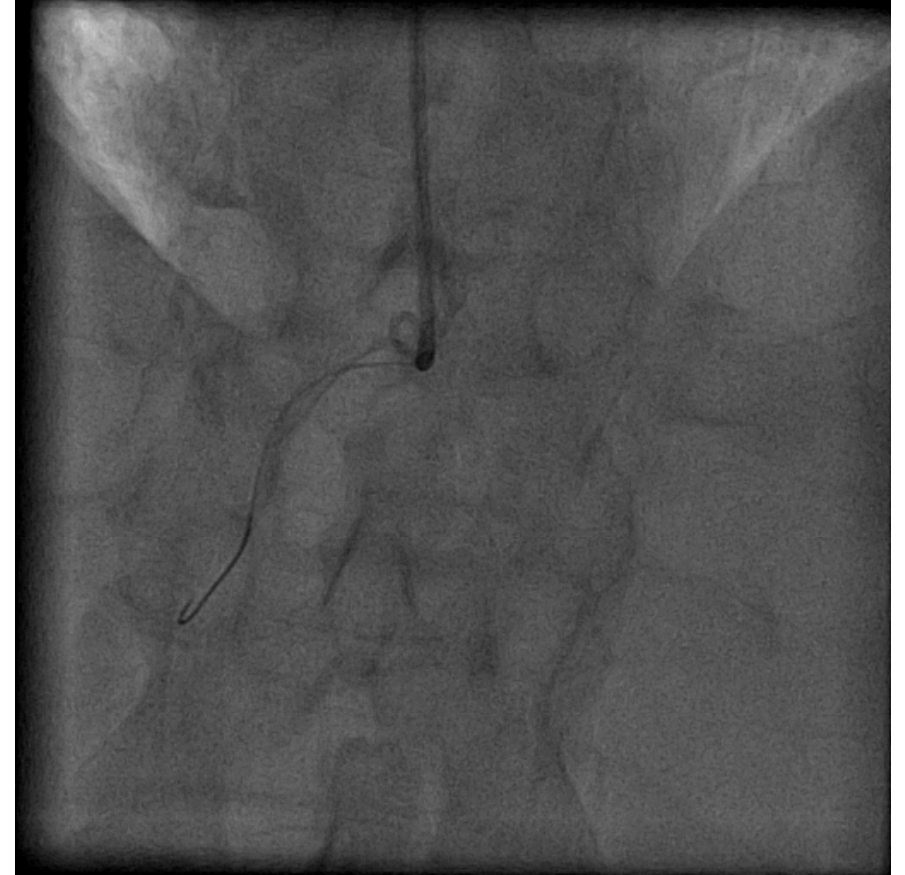
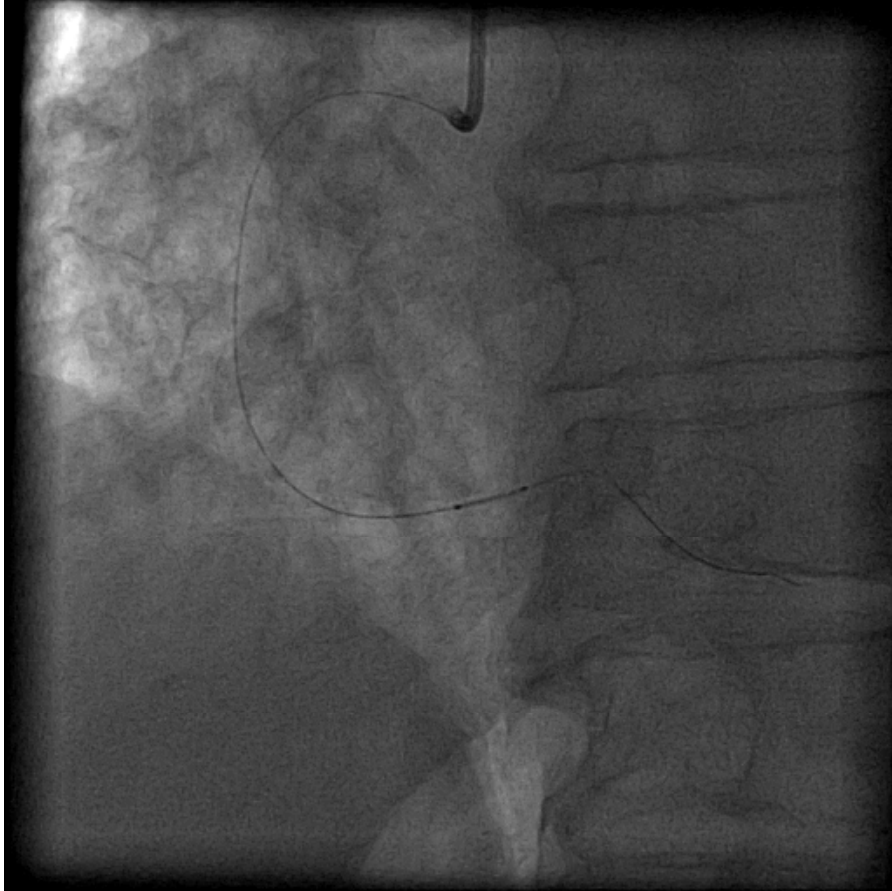


And the Left coronary artery..





PCI on the RCA



DES: Xience 3.0/15mm

What do We do on the LCA?

- Nothing?
- Stress test?
- FFR on LAD/CX?
- IVUS on LAD/CX?



And when?



Our choice is an interventional approach on the LCA and if necessary PCI after control of the RCA

Journal of the American College of Cardiology
 © 2013 by the American College of Cardiology Foundation and the American Heart Association, Inc.
 Published by Elsevier Inc. Vol. 61, No. 4, 2013
 ISSN 0735-1097/936.00
<http://dx.doi.org/10.1016/j.jacc.2012.11.018>

PRACTICE GUIDELINE

2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction: Executive Summary

5.3. PCI of a Noninfarct Artery Before Hospital Discharge

CLASS I

1. PCI is indicated in a noninfarct artery at a time separate from primary PCI in patients who have spontaneous symptoms of myocardial ischemia. (Level of Evidence: C)

CLASS IIa

1. PCI is reasonable in a noninfarct artery at a time separate from primary PCI in patients with intermediate- or high-risk findings on noninvasive testing (58,141,142). (Level of Evidence: B)



European Heart Journal (2012) 33, 2569–2619
 doi:10.1093/eurheartj/ehs215

ESC GUIDELINES

3.5.3 Primary percutaneous coronary intervention

3.5.3.1 Procedural aspects of primary percutaneous coronary intervention (Table 11)

Approximately 50% of STEMI patients have significant multivessel disease. Only the infarct-related artery should be treated during the initial intervention. There is no current evidence to support emergency intervention in non-infarct-related lesions.^{75,76} The only exceptions, when multivessel PCI during acute STEMI is justified, are in patients with cardiogenic shock in the presence of multiple, truly critical ($\geq 90\%$ diameter) stenoses or highly unstable lesions (angiographic signs of possible thrombus or lesion disruption), and if there is persistent ischaemia after PCI of the supposed culprit lesion. However, in patients with multivessel disease and cardiogenic shock, non-culprit lesions without critical stenoses should not routinely be stented.⁷⁷ See also section 3.5.4.9.



Our Practice in the Real Life

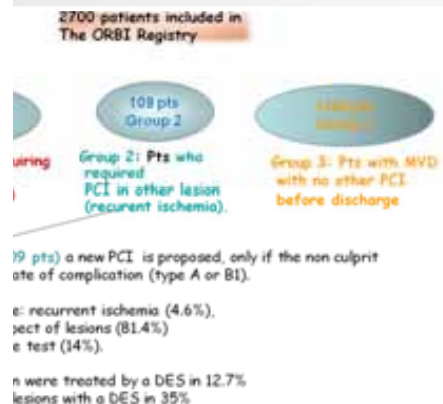


- A staged complementary PCI



Results of PCI on Non Culprit Lesion in Acute Myocardial Infarction: Result of a French Brittany Prospective Registry about 2 700 Patients (ORBI).

Marc Bedossa¹, Guillaume Leurent¹, Isabelle Couderc², Philippe Druelles³, Pierre Pennec⁴, Jean philippe Hacot⁵, Benoit Moquet⁶, Antoine Riellan⁷, Gilles Rouault⁸, Dominique Boulmier¹, Hervé Le Breton¹



	Group 1 (n=109)	Group 2 (n=172)	Group 3 (n=1613)
Age	62,7±12,6	64,0±12,9	59,9±13,6
Sexe :			
Male	79,8%	77,9%	77,4%
Female	20,2%	22,1%	22,6%
HTA	47,7%	41,2%	33,1%
Hypercholestérolémie :			
yes (treated)	48,1%	50,9%	42,6%
No	42,5%	39,5%	48,1%
unknown	9,4%	9,6%	9,3%
Diabète	14,1%	12,0%	8,5%
Tabaco :			
Activ smoker	39,4%	27,8%	44,2%
Past smoker	27,5%	23,7%	20,3%
Anterior STEMI	44 (40,4%)	92 (53,5%)	768 (47,6%)

Result

	Group 1 n=1613	Group 2 n=109	p	Group 2 n=109	Group 3 n = 1146	p
Ant STEMI	768 (47,6%)	44 (40,4%)	0,1	44 (40,4%)	434 (37,9%)	0,6
Mean delay (mn)	205 mn	250 mn	0,02	250 mn	220 mn	0,02
DES on culprit Lesion	166 (10,4%)	13 (12,7%)	0,3	13 (12,7%)	120 (10,6%)	0,7
Mean between 2 PCI	-	6,1±3,6		6,1±3,6	-	
Recurrent ischemia	15 (0,9%)	5 (4,6%)	0,004	5 (4,6%)	18 (1,6%)	0,04
Before discharge						
Death	53 (3,3%)	0	0,046	0	61 (5,3%)	0,01
Stroke	5 (0,3%)	0	1	0	6 (0,5%)	1
Cardiac Assist (IABP/ECMO)	53 (3,4%)	5 (4,6%)	0,4	5 (4,6%)	57 (5,0%)*	0,9
LVEF at discharge	50,3 ± 10,2	49,0 ± 9,7	0,1	49,0 ± 9,7	49,5 ± 10,7	0,3
Hospitalisation stay	6,6 ± 3,9	9,8 ± 4,4	<0,0001	9,8 ± 4,4	6,9 ± 4,2	<0,0001

Main clinical data and intra hospital outcome were compared between:

Group 1: Pts requiring PCI in 1 vessel (no other lesion)

Group 2: Pts who required PCI in other lesion (recurrent ischemia).

Group 3: Pts with MVD with no other PCI before discharge

Conclusion

Confirmation of this practice

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Randomized Trial of Preventive Angioplasty in Myocardial Infarction

David S. Wald, M.D., Joan K. Morris, Ph.D., Nicholas J. Wald, F.R.S., Alexander J. Chase, M.B., B.S., Ph.D., Richard J. Edwards, M.D., Liam O. Hughes, M.D., Colin Berry, M.B., Ch.B., Ph.D., and Keith G. Oldroyd, M.D., for the PRAMI Investigators*

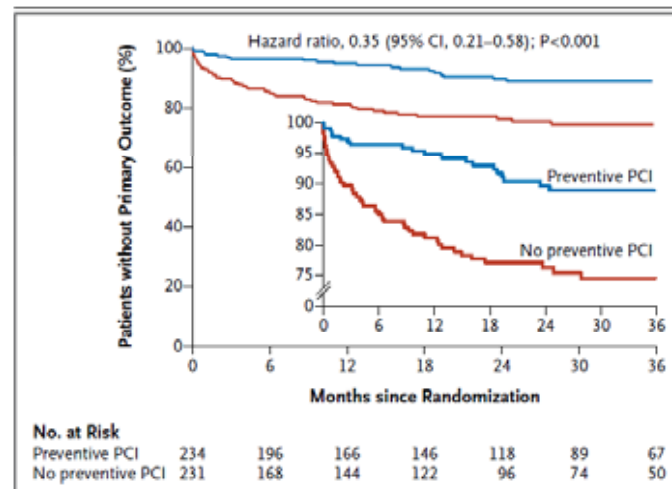
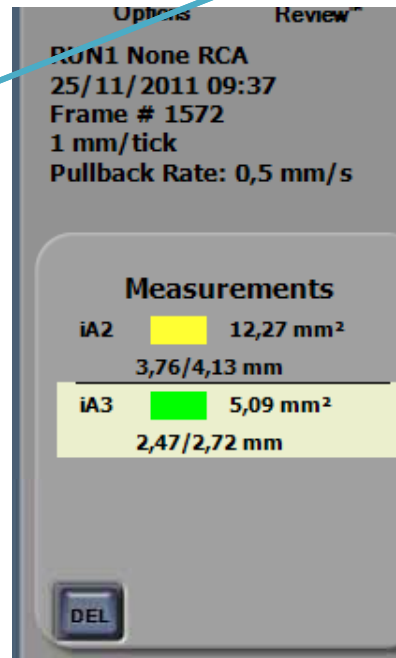
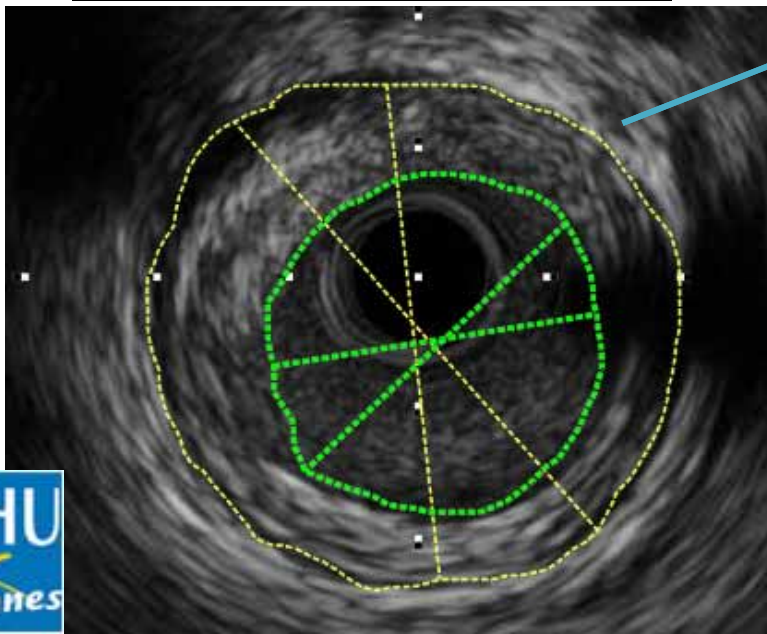
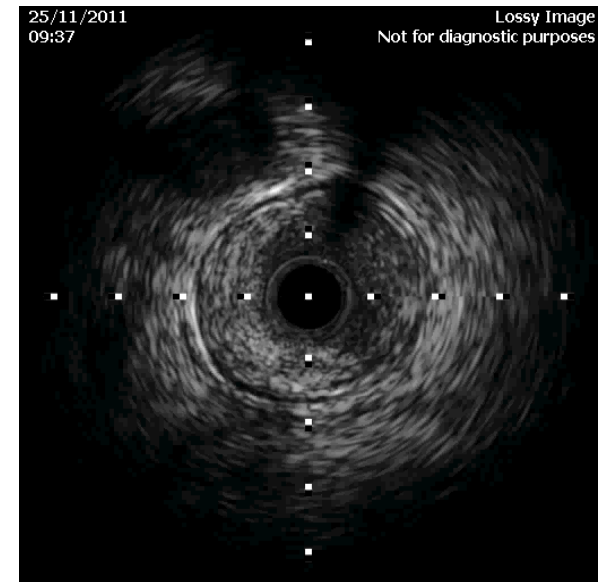
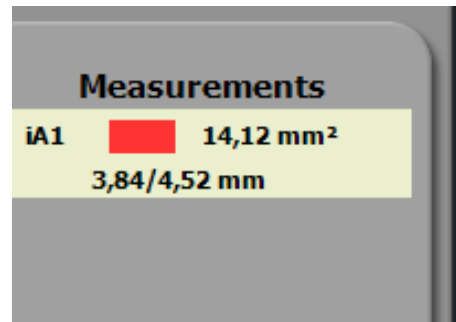
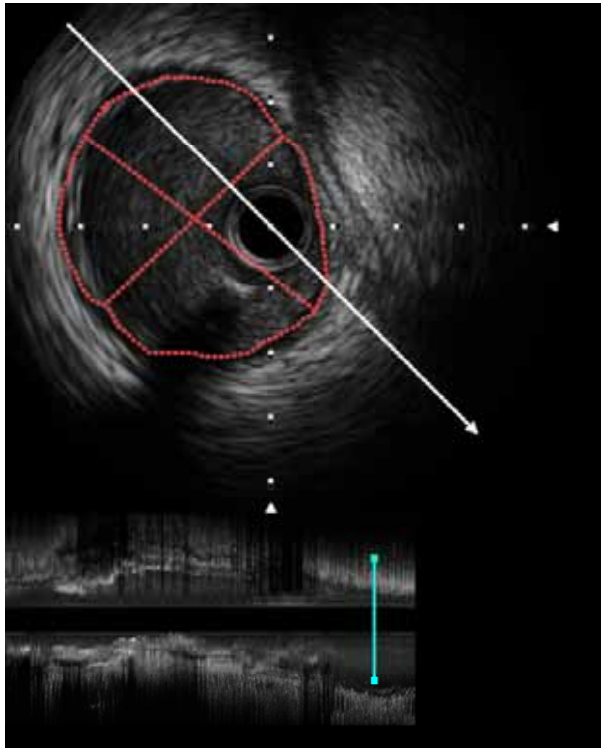


Figure 2. Kaplan–Meier Curves for the Primary Outcome.

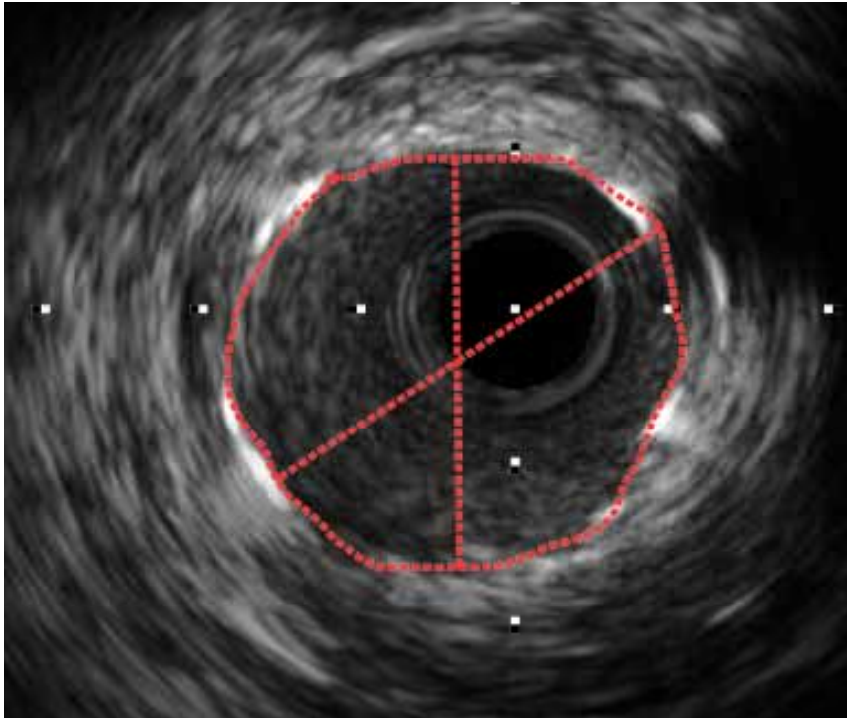
The primary outcome was a composite of death from cardiac causes, non-fatal myocardial infarction, or refractory angina. The inset graph shows the same data on a larger scale. All patients in the trial underwent infarct-artery PCI immediately before randomization.



5 days later: RCA (proximal part)



IVUS on the stent



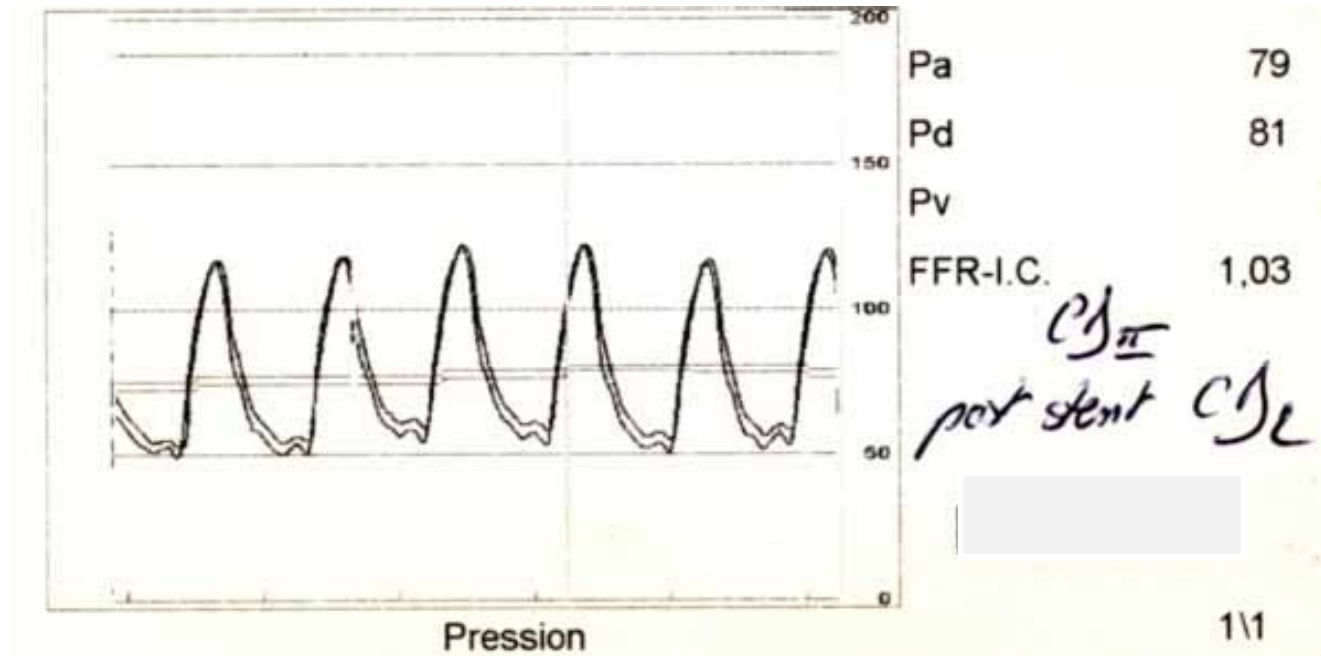
RUN1 None RCA
25/11/2011 09:37
Frame # 863
1 mm/tick
Pullback Rate: 0,5 mm/s

Measurements

iA1 ■ 5,93 mm²
2,59/2,91 mm



And FFR on the RCA



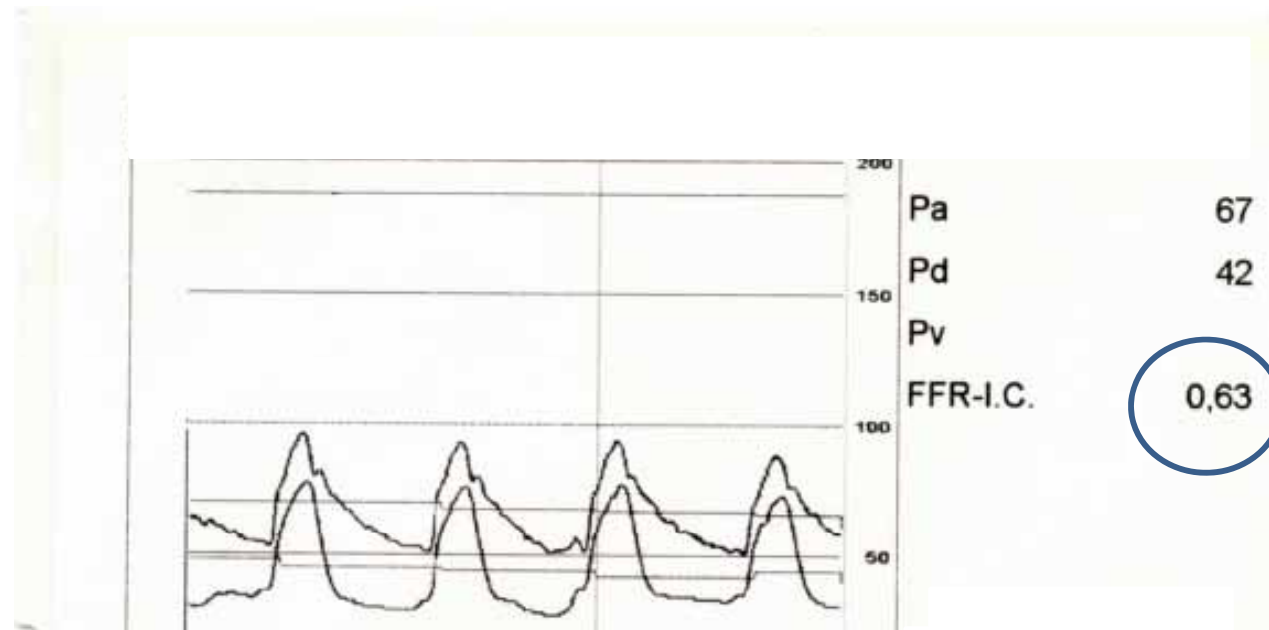
Ejection Fraction by ETT

49% with a mild hypokinesia on the inferior wall

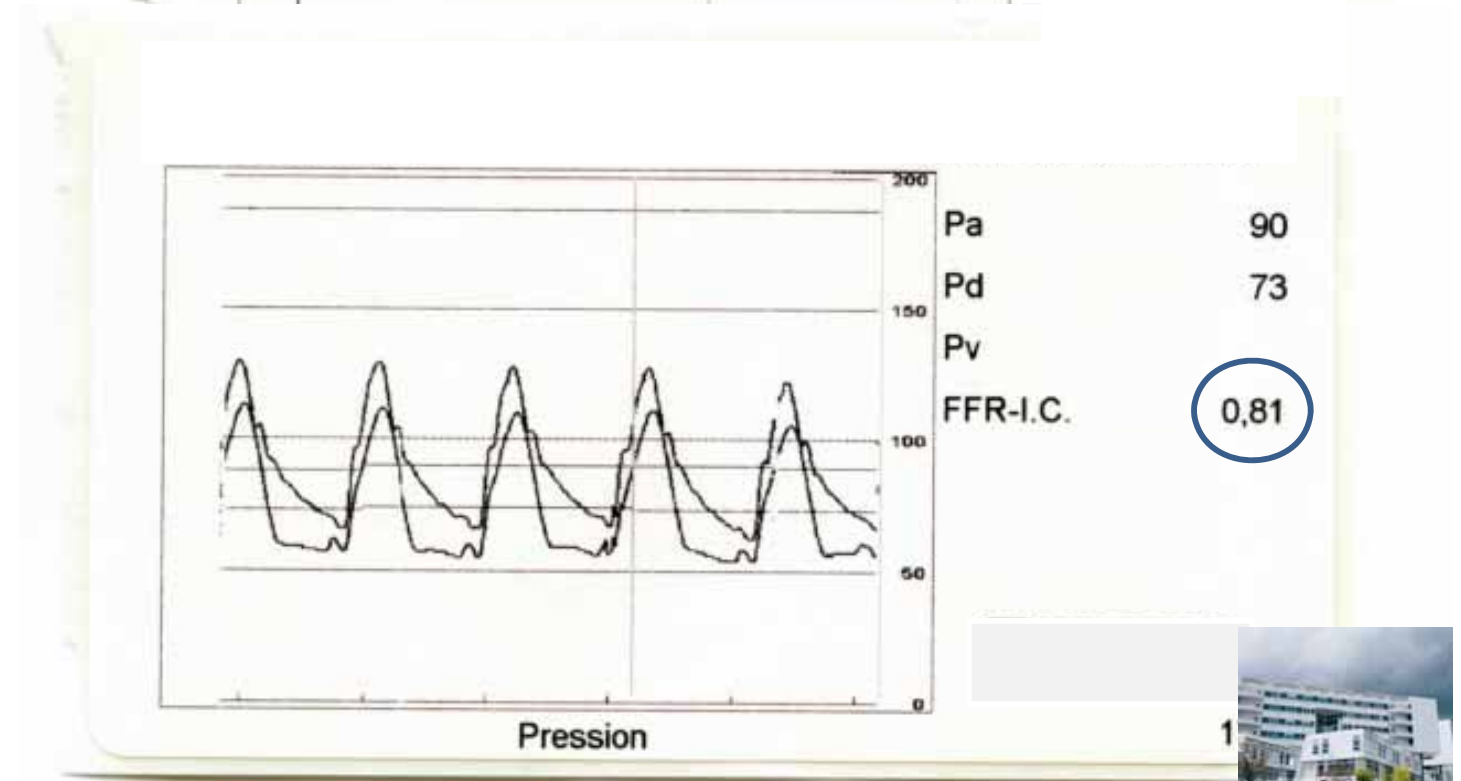


Result of the FFR

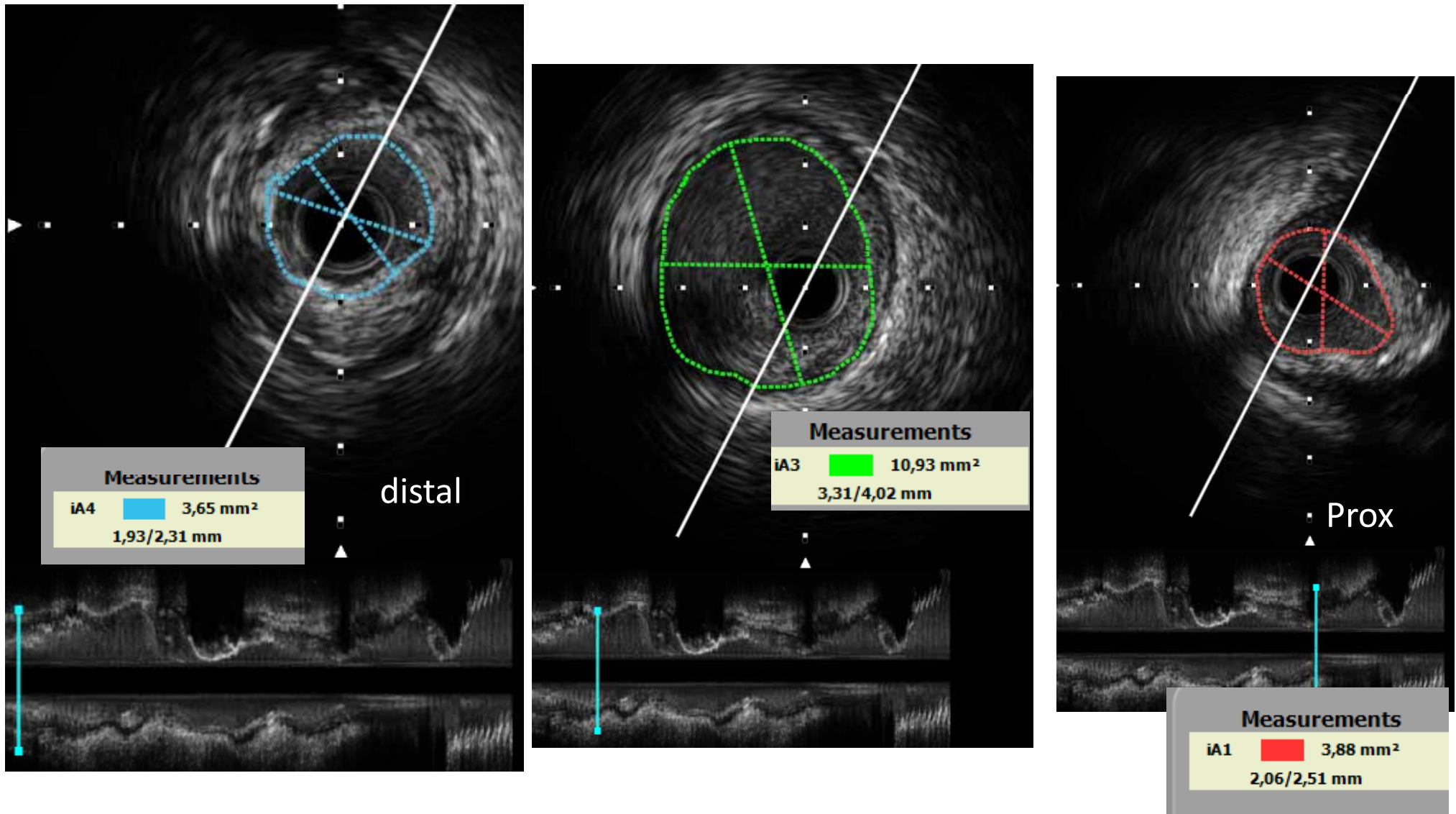
Distal LAD



Prox LAD



Result of the IVUS on the LAD

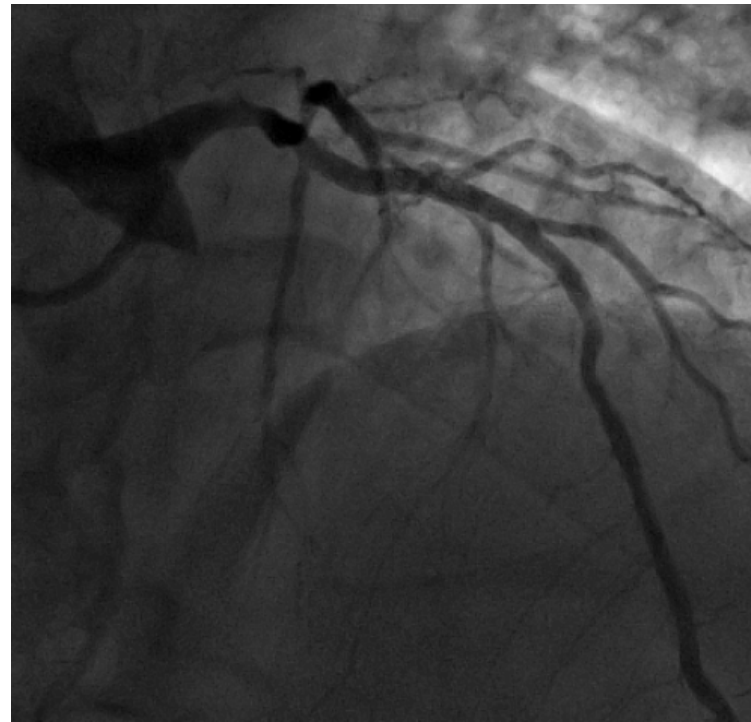


IVUS confirm that the 2 lesions are significant (MLA < 4mm²) with complementary information for the Prox LAD because FFR is borderline on the gray zone for this one.



The Treatment

- **No PCI on the Cx (FFR= 0.87)**
- **Stenting of the proximal and distal LAD**
- After PCI (2 DES) FFR= 0.9 on the LAD
- (and beta blocker, statin, ACE inhibitor ...)



Conclusion (1)

- In case of AMI with multivessel disease FFR and IVUS can be helpful to select the lesion to treat.
- However this strategy can be proposed before discharge with a staged PCI without other exercise test.
- To remember for this case an stress test was negative (150 watts and 70% of the of the theoretic maximal rate!! Before PCI ...)





IVUS - FFR

Thank You

Angio