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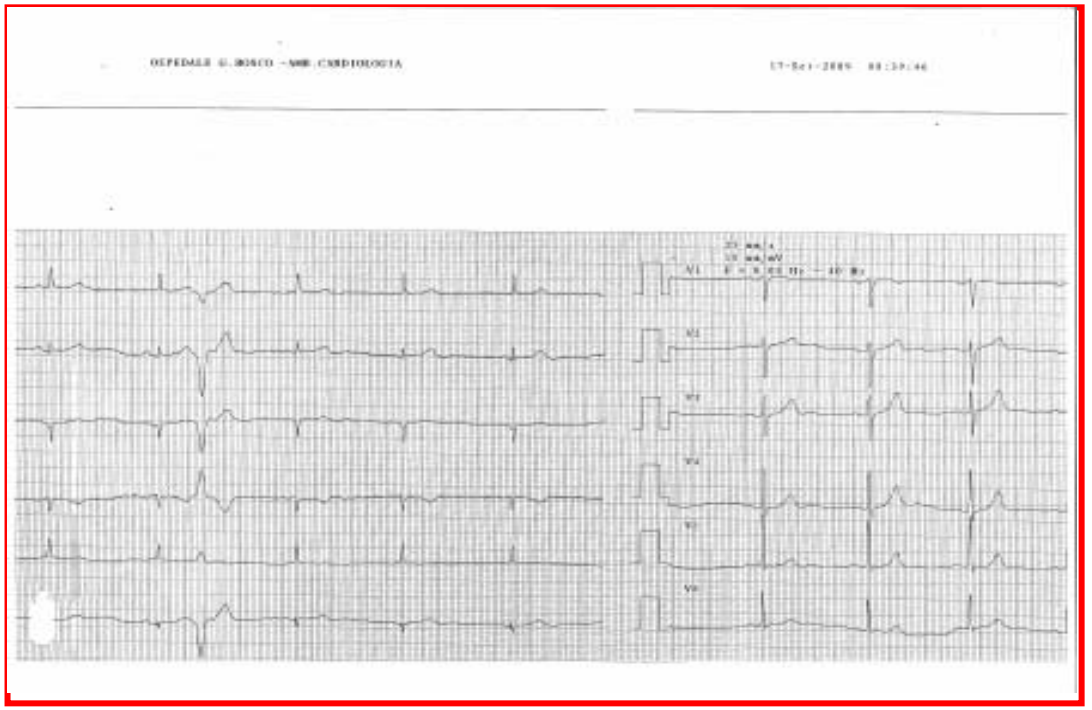
75-year-old man

22 september 2009. The patient was admitted for esclating effort angina (from CCS class I to CCS class III). No TpT and CPK elevation.

TTE showed: Normal left ventricular systolic function.

Inferior wall ipokinesia.

ECG: inferior q wave



History

Risk factors: arterial hypertension, hyperlipidemia, diabetes mellitus, moderate renal insufficiency (creatinine 2.0 mg/dl).

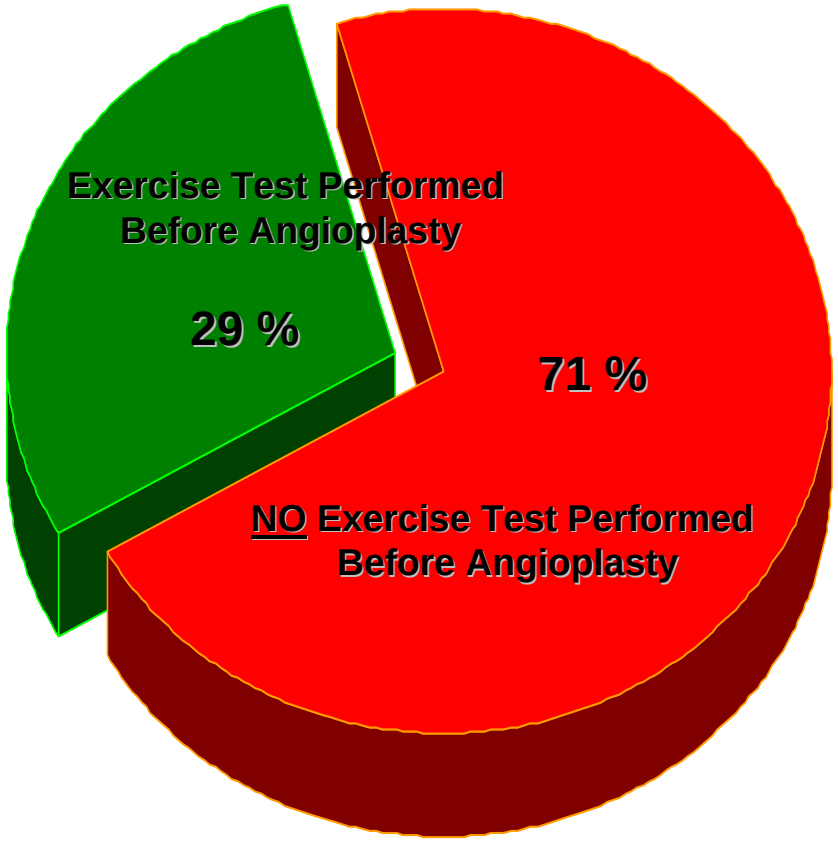
Previous duodenal ulcer Hp +

Intermittens claudicatio (a recent PTA of right iliac artery)

1993: acute inferior myocardial infarction treated with medical therapy. Coronary angiography showed a 2 vessel disease. Critical stenosis of ostial LAD and occlusion of RCA. The patient underwent bypass surgery. **LIMA on the LAD and venous graft on RCA**

In the **ideal world** patients would be screened pre- (angiography/PCI) using a technique that assessed stress-induced myocardial ischemia (Myocardial perfusion imaging/ Echo dobutamine)

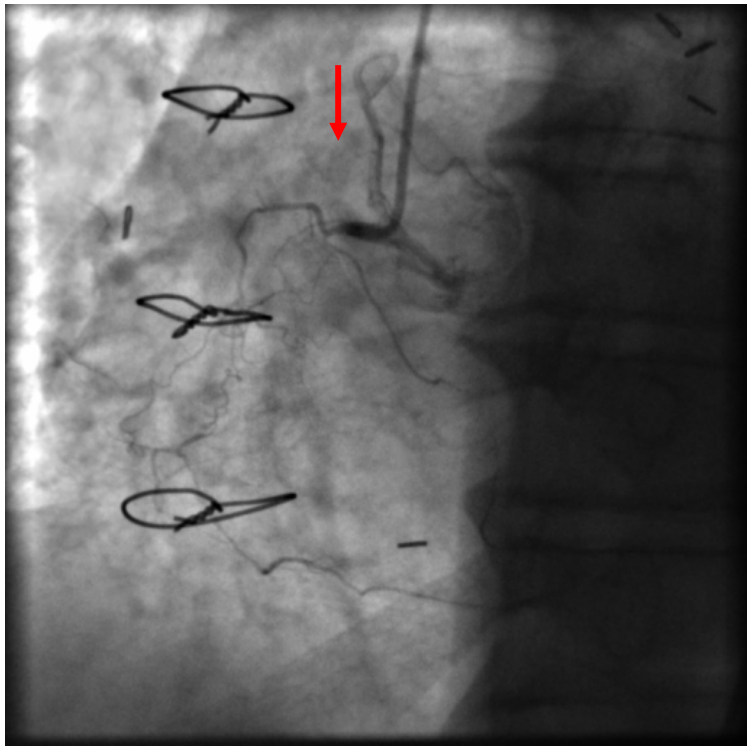
but……..



In **real practice** non invasive testing is performed in a **minority of cases** of patients

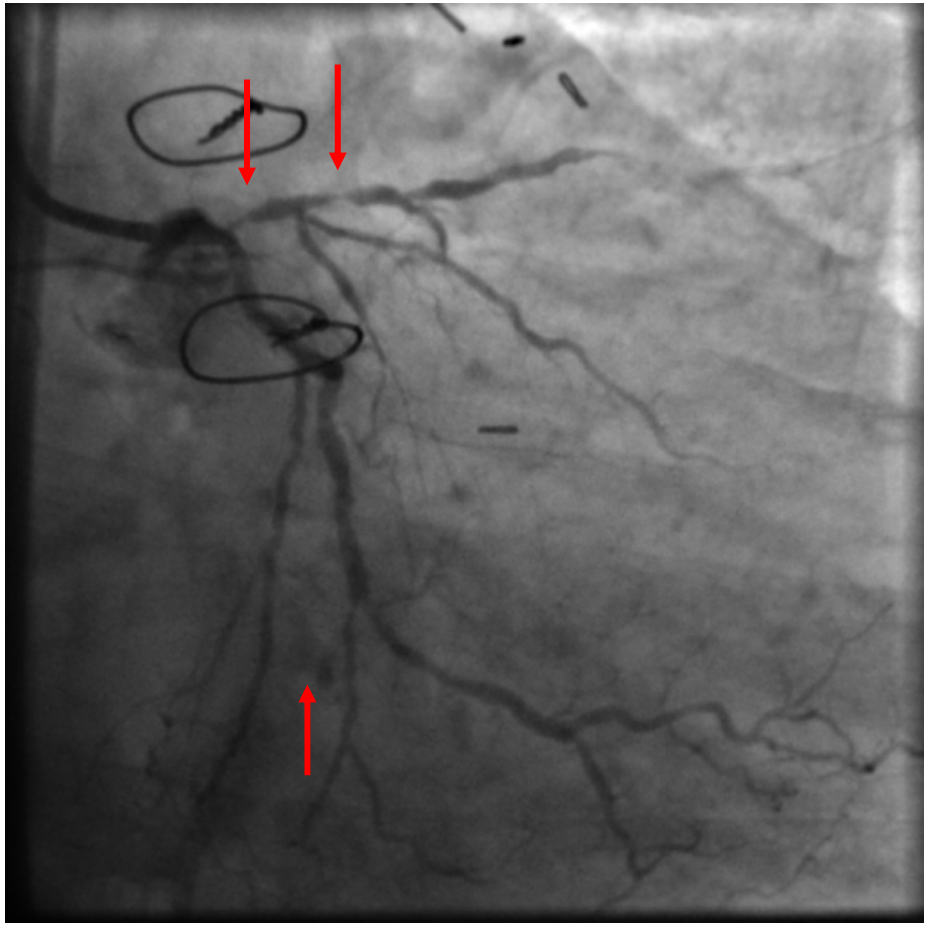
Topol et al. Circulation 1993

RCA proximal occlusion receive collateral from LAD and LCx



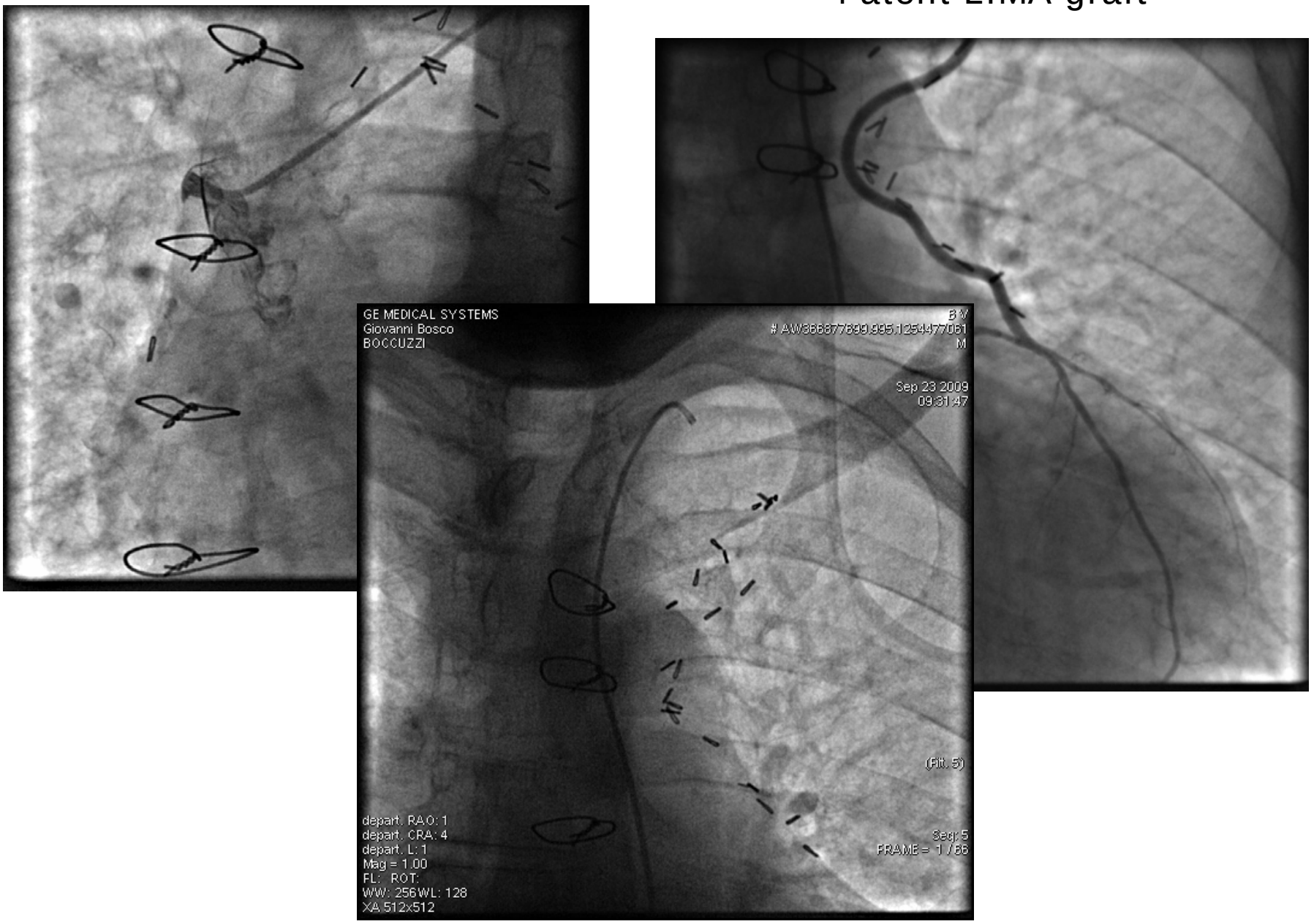
LAD ostial and proximal lesions.

Diffuse disease of LCX

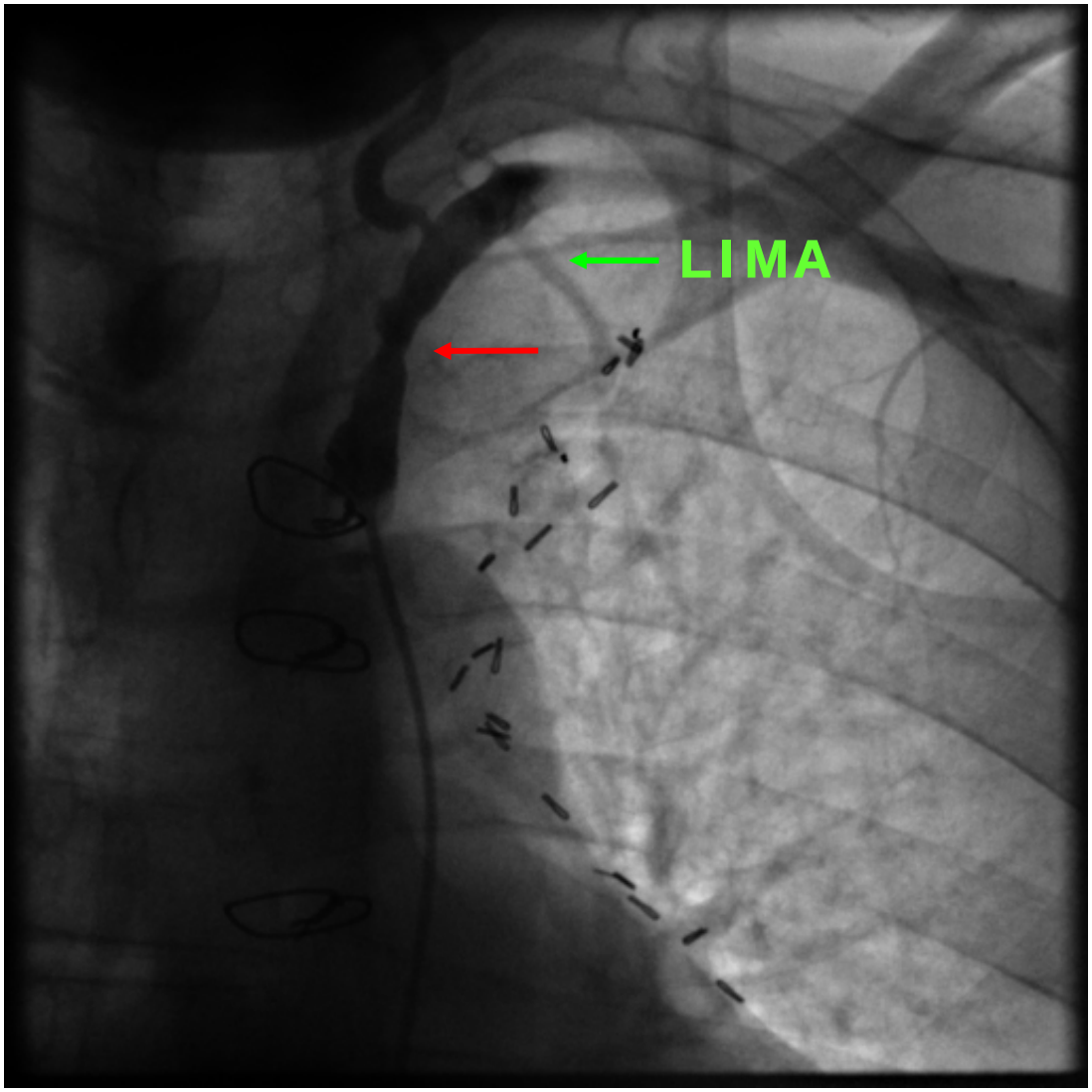


Venous graft occlusion

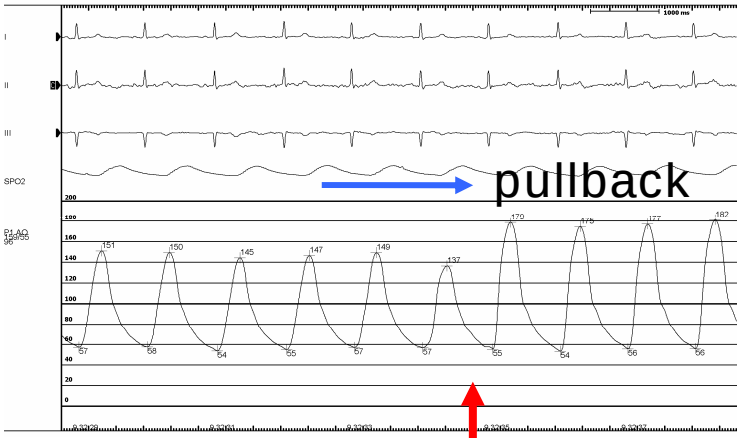
Patent LIMA graft



Left subclavian artery



Transtenotic gradient: 30 mmHg



Stenosis

Problem

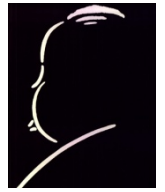
Which is the stenosis responsible for the complaints of the patient?

1. Venous graft occlusion
2. Subclavian artery stenosis

Problem

What we can do?

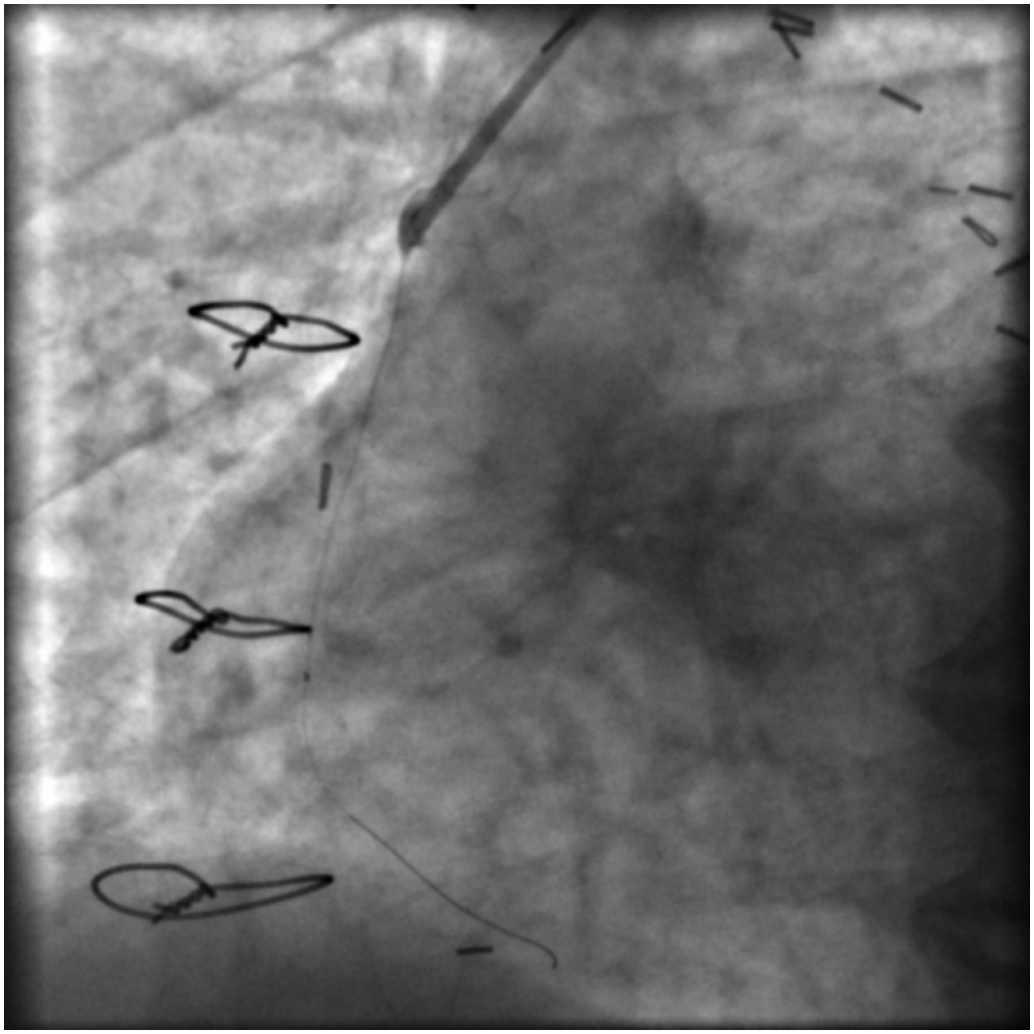
1. **Exercise test** → Intermittens claudicatio
2. **ECO dobutamine**
3. **MIBI-SPECT**



We try to reopen the venous graft

but

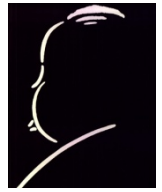
was a CTO!



Problem

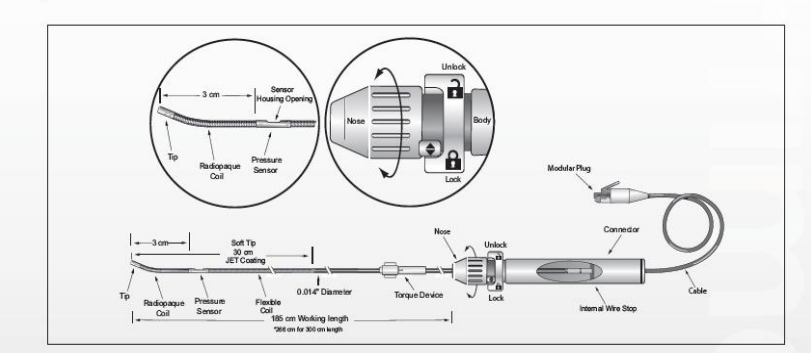
How can we confirm that the lesion of subclavian artery is the culprit lesion?

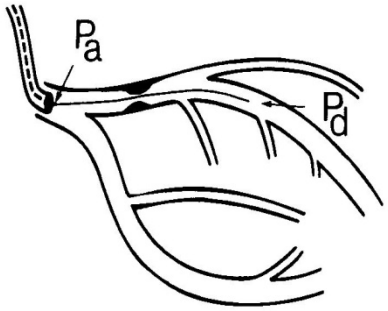
1. ~~**Exercise test**~~ → Intermittens claudicatio
2. **ECO dobutamine**
3. **MIBI-SPECT**
4. **Fractional Flow Reserve**

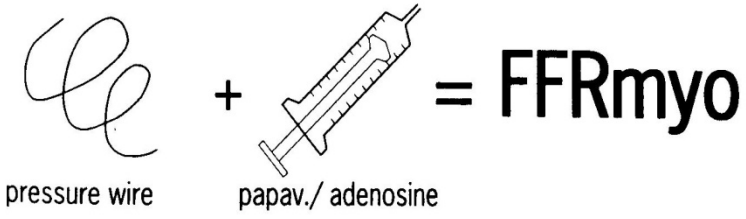


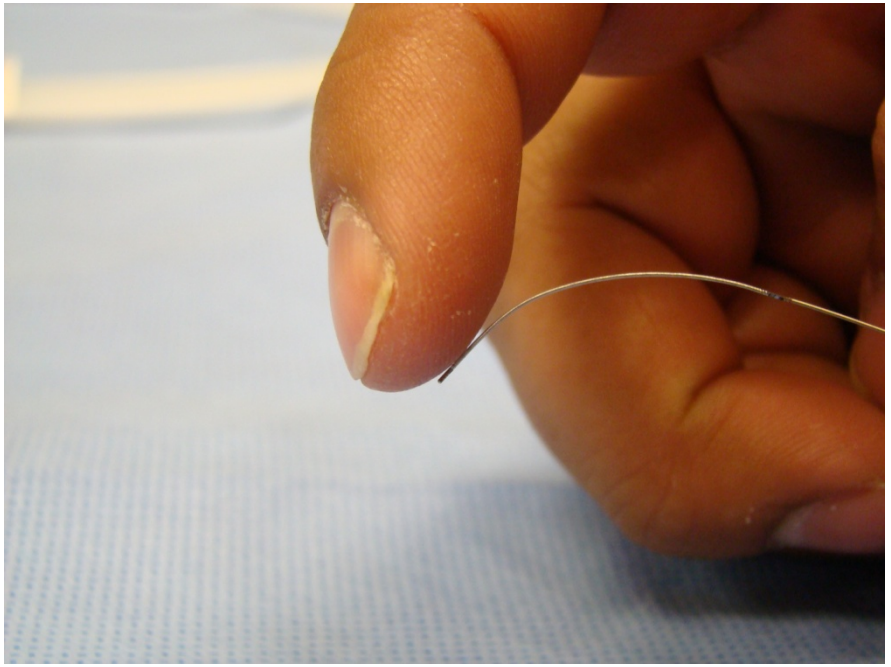
What is FFR?

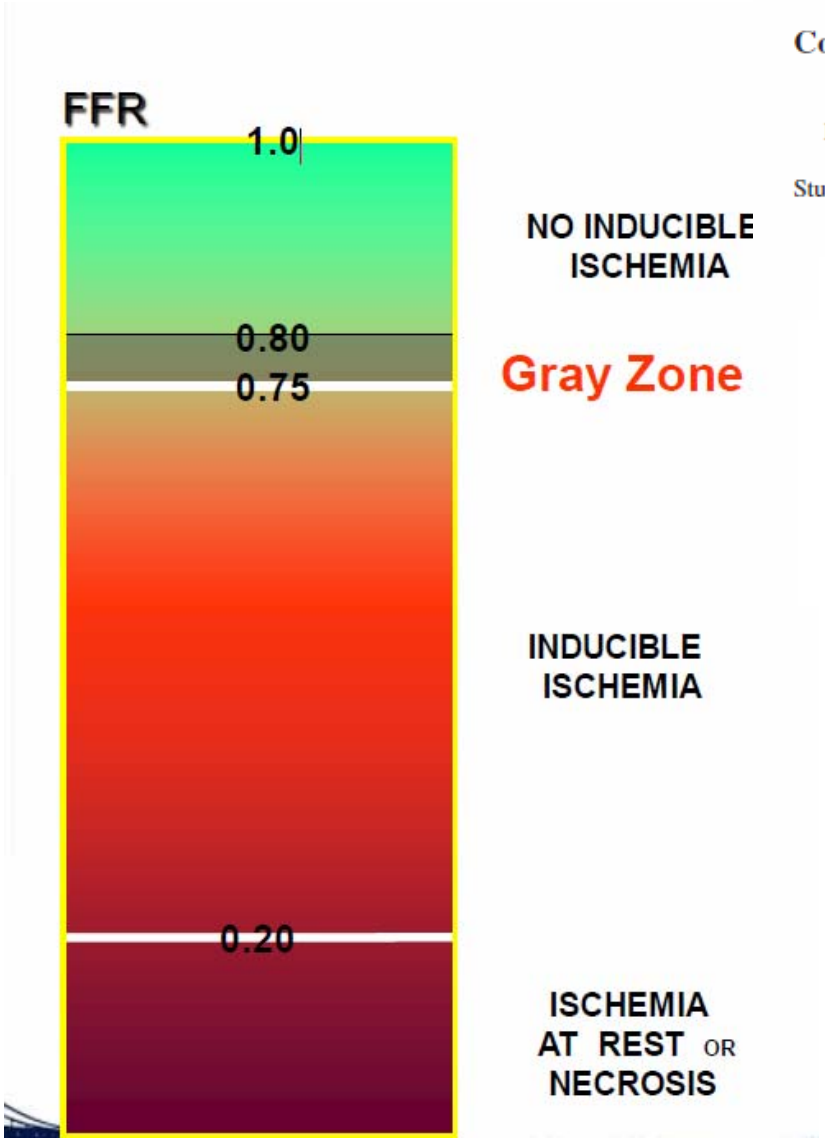
FFR: is defined as the ratio of maximal blood flow in a stenotic artery to normal maximal flow.











AHA Scientific Statement

Physiological Assessment of Coronary Artery Disease in the Cardiac Catheterization Laboratory

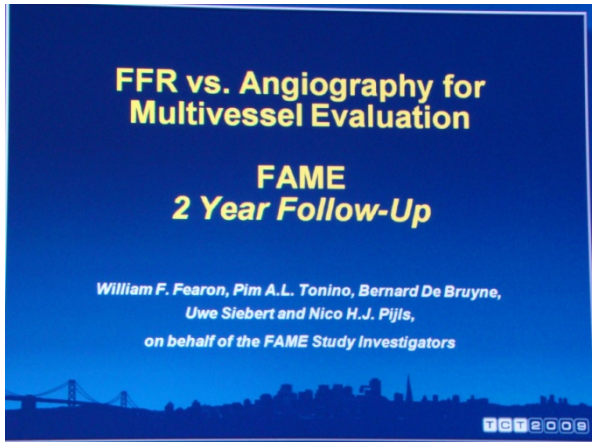
A Scientific Statement From the American Heart Association Committee on Diagnostic and Interventional Cardiac Catheterization, Council on Clinical Cardiology

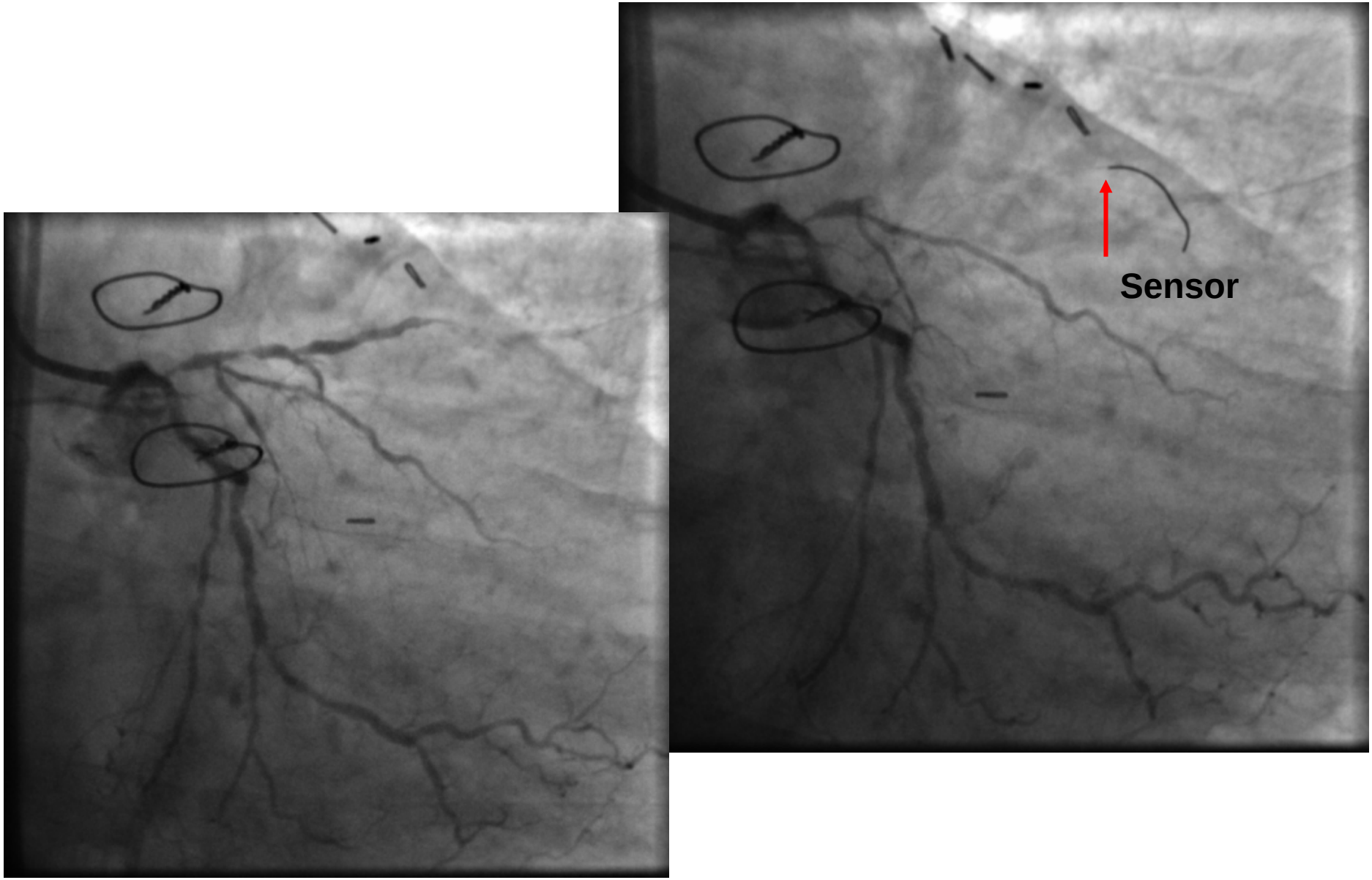
Morton J. Kern, MD, FAHA, Chair; Amir Lerman, MD, Co-Chair; Jan-Willen Bech, MD; Bernard De Bruyne, MD, PhD; Eric Eeckhout, MD, PhD; William F. Fearon, MD; Stuart T. Higano, MD, FAHA; Michael J. Lim, MD; Martijn Meuwissen, MD; Jan J. Piek, MD; Nico H.J. Pijls, MD, PhD, FAHA; Maria Siebes, PhD; Jos A.E. Spaan, PhD, FAHA

Circulation September 19, 2006

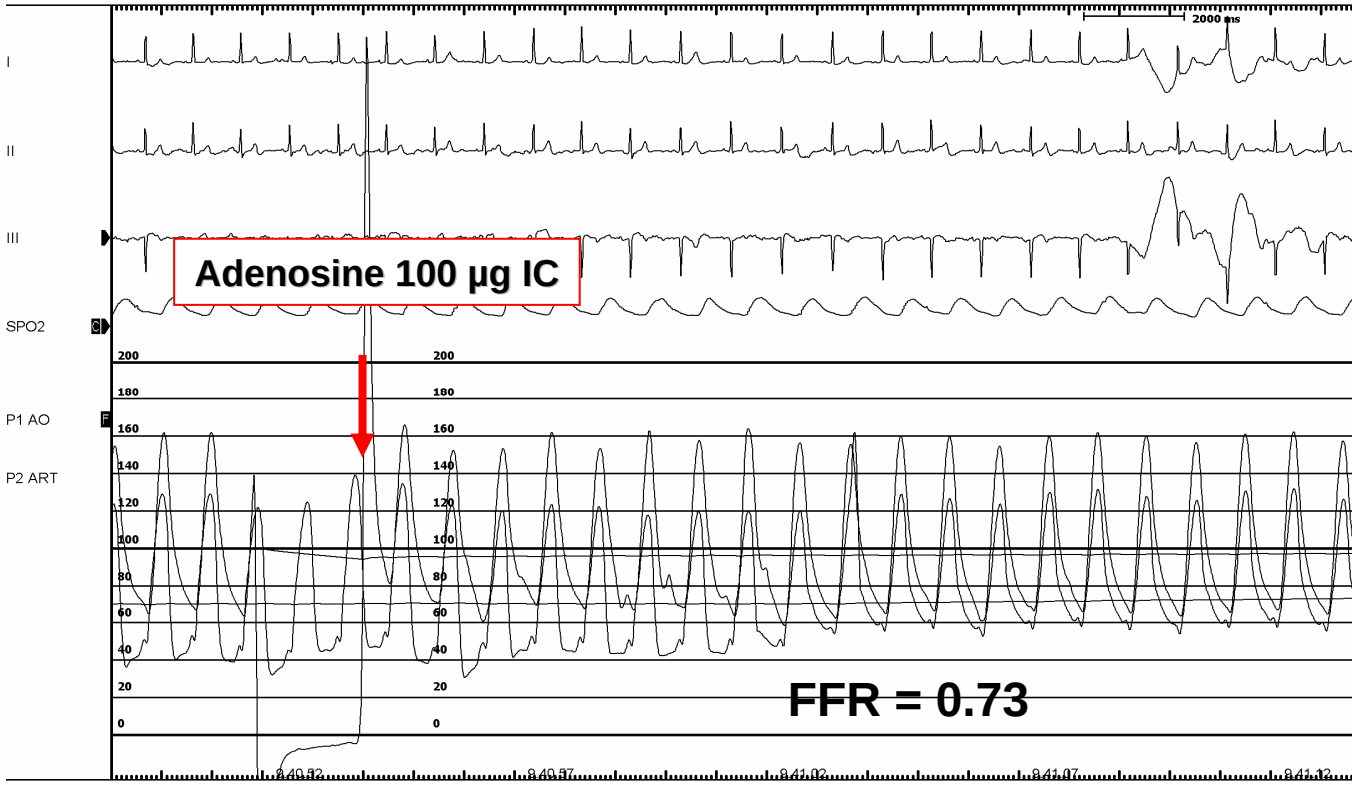
Fractional Flow Reserve versus Angiography for Guiding Percutaneous Coronary Intervention

Pim A.L. Tonino, M.D., Bernard De Bruyne, M.D., Ph.D., Nico H.J. Pijls, M.D., Ph.D., Uwe Siebert, M.D., M.P.H., Sc.D., Fumiaki Ikeno, M.D., Marcel van 't Veer, M.Sc., Volker Klauss, M.D., Ph.D., Ganesh Manoharan, M.D., Thomas Engstrøm, M.D., Ph.D., Keith G. Oldroyd, M.D., Peter N. Ver Lee, M.D., Philip A. MacCarthy, M.D., Ph.D., and William F. Fearon, M.D., for the FAME Study Investigators*

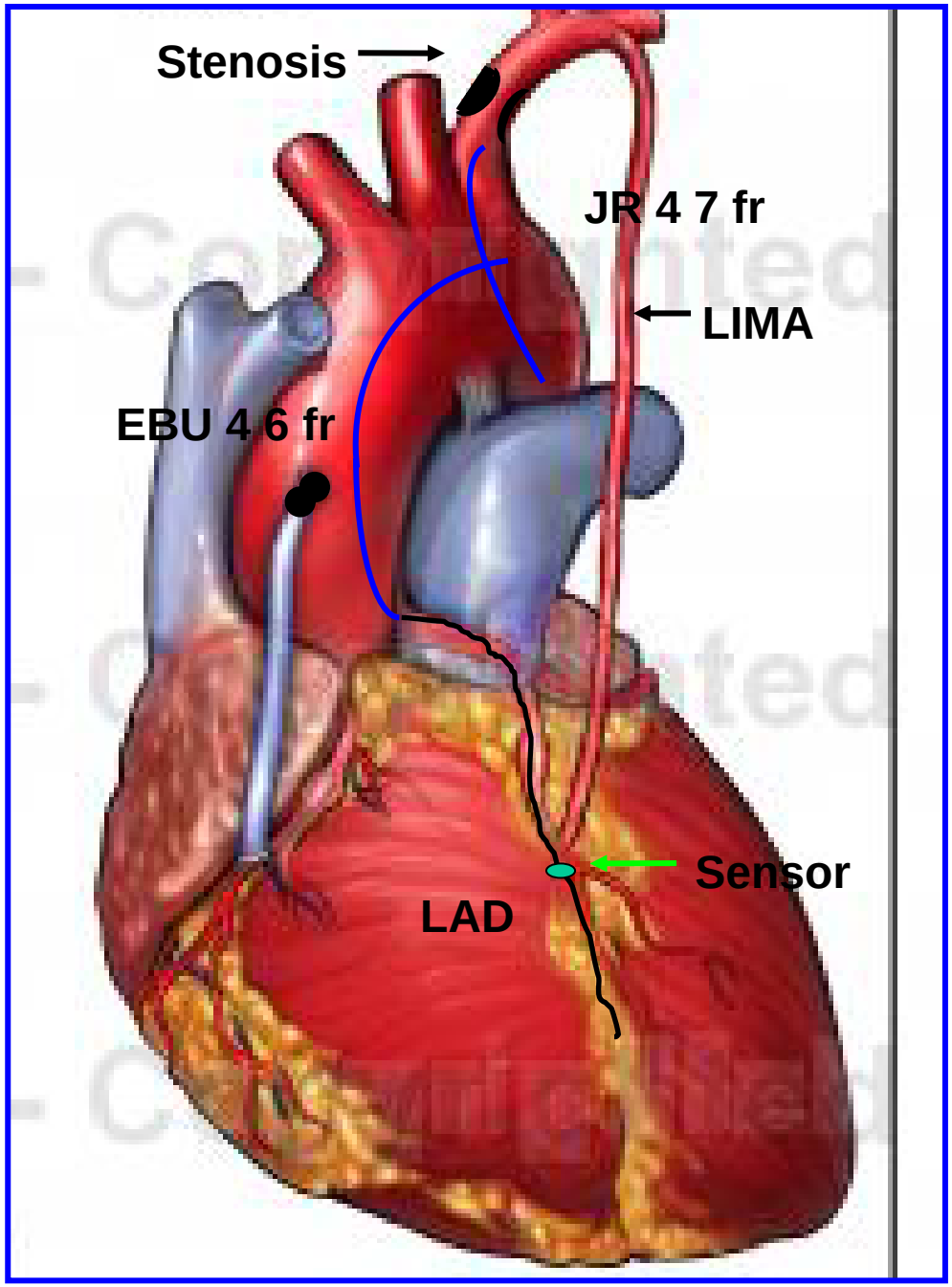


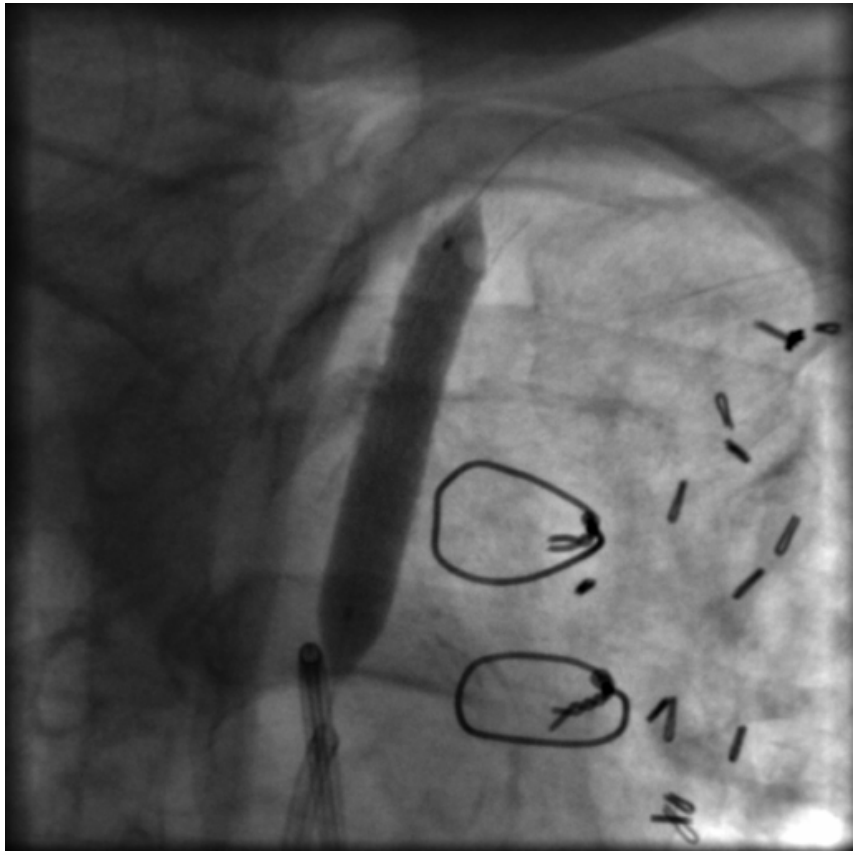

Sensor

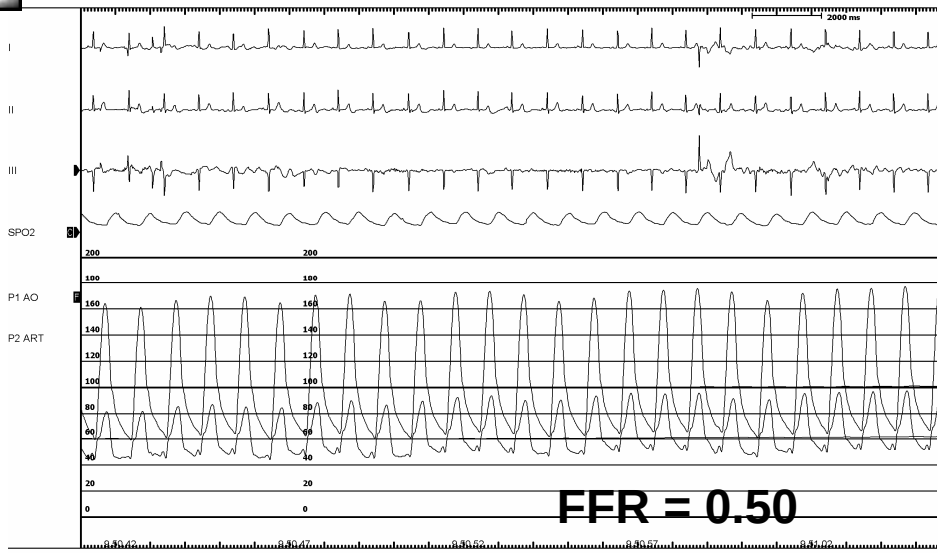
PressureWire Sensor distal to the LIMA-LAD anastomosis



An FFR value of 0.80 or less identifies ischemia-causing coronary stenoses with an accuracy of more than 90%.


Stenosis
JR 4 7 fr
LIMA
EBU 4 6 fr
Sensor
LAD

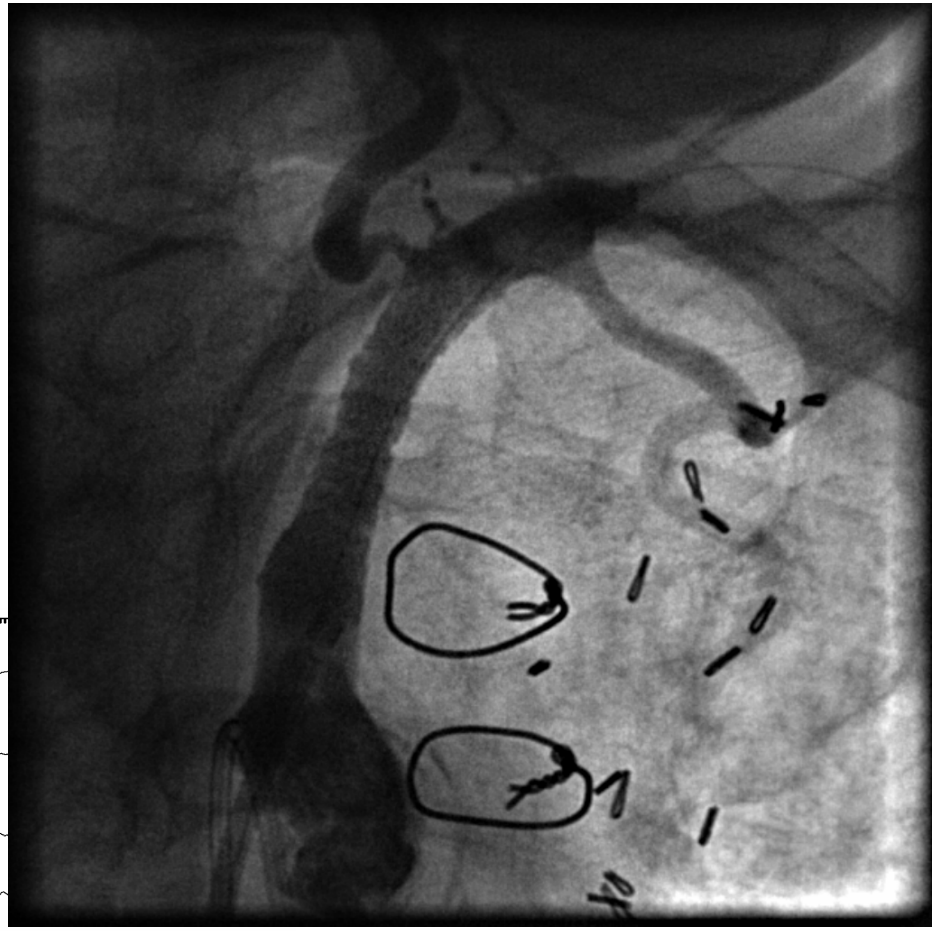




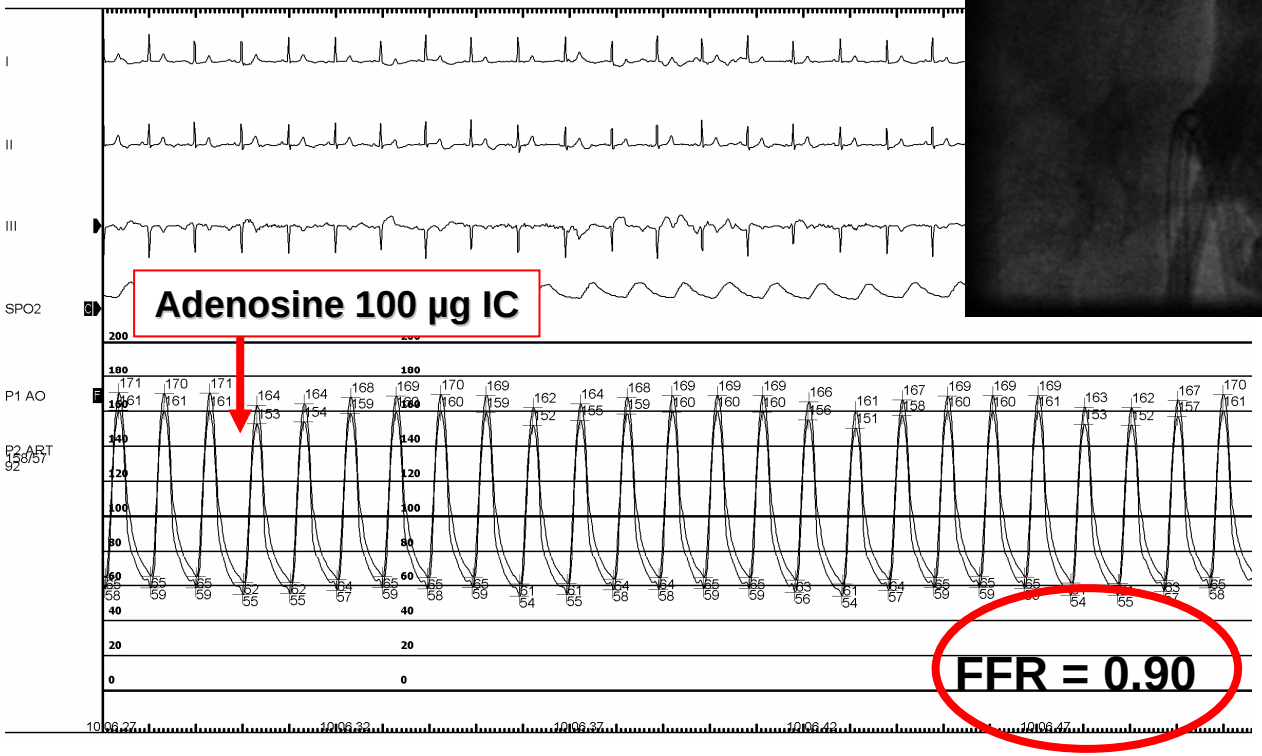
Precise 9.0 x 30 mm
(self expandable stent)

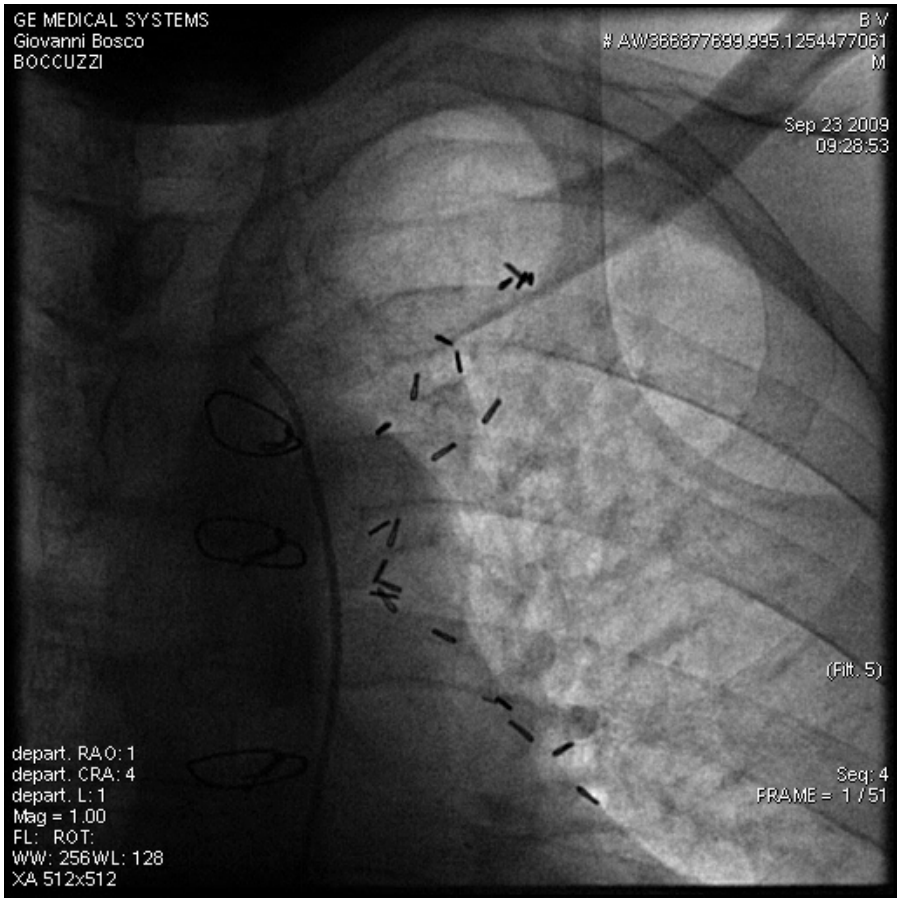
Post Dilatation:
Sterling 8.0 x 40 mm

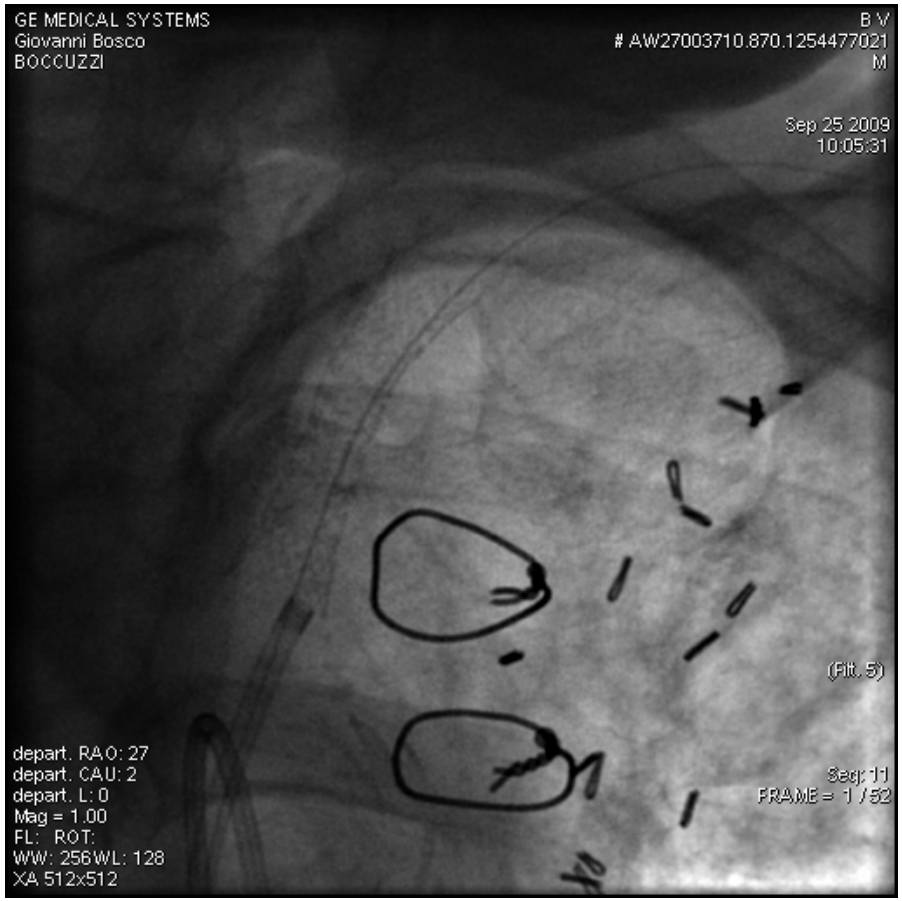
Final result



PressureWire Sensor in distal LAD



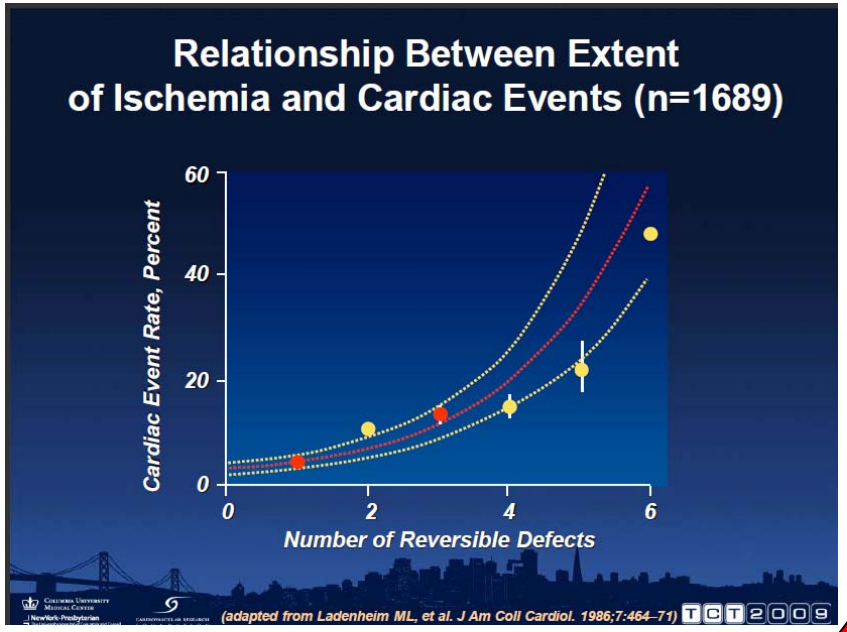




Follow up

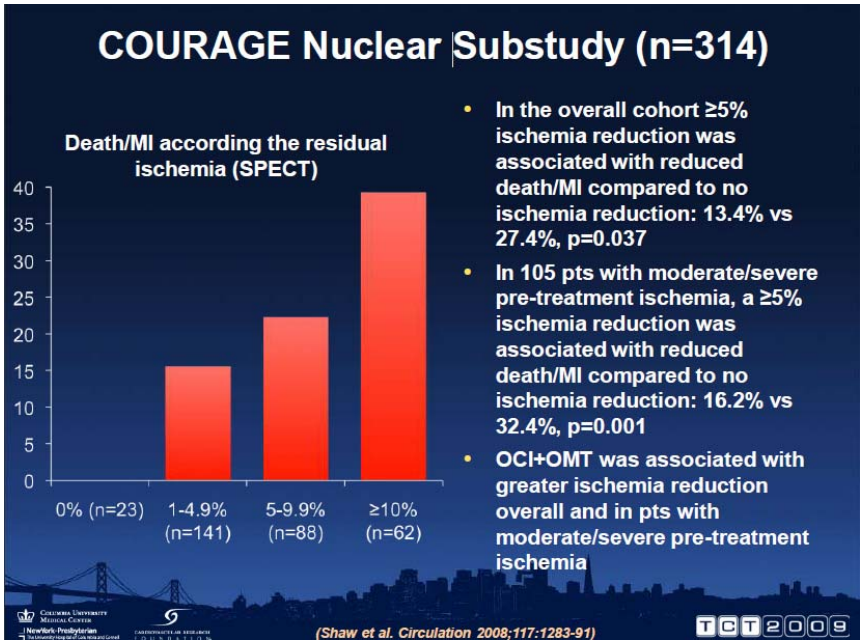
The patient remains symptom-free at 1-month follow-up

Conclusion



Ischemic-producing lesions cause symptoms and cardiac events

A primary goal of PCI is to relieve myocardial ischemia, resulting in fewer symptoms and cardiac events

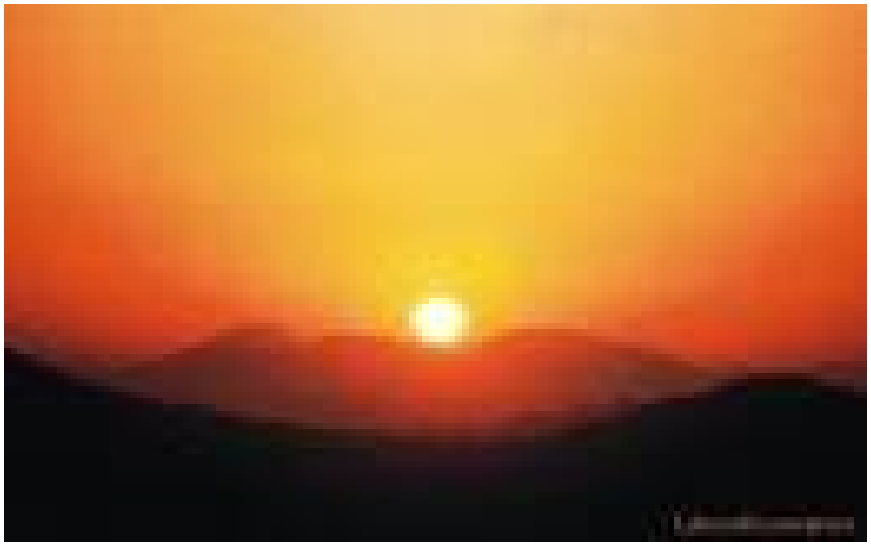


Conclusion

1. Measuring FFR (or IVUS) can maximize the benefit of PCI by accurately **discriminating** the lesions for which revascularization will provide the most benefit from those for which PCI may only increase the risk

2. FFR /IVUS can help us to achieve **a “functionally” complete revascularization**

Grazie per l’attenzione



THANK YOU