Provocative PREVENT cases

Vulnerable Plaque: To Treat or Not to Treat

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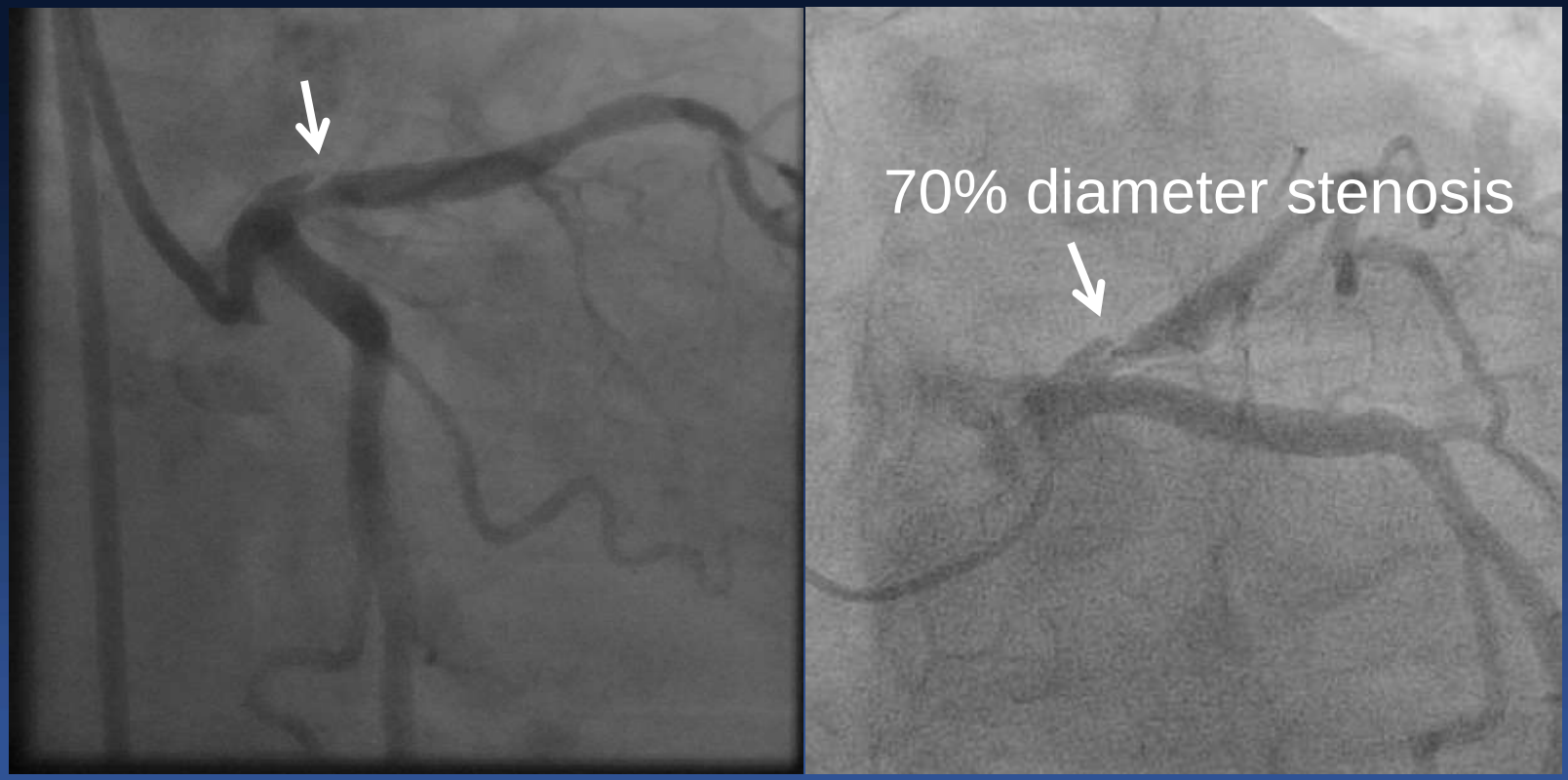
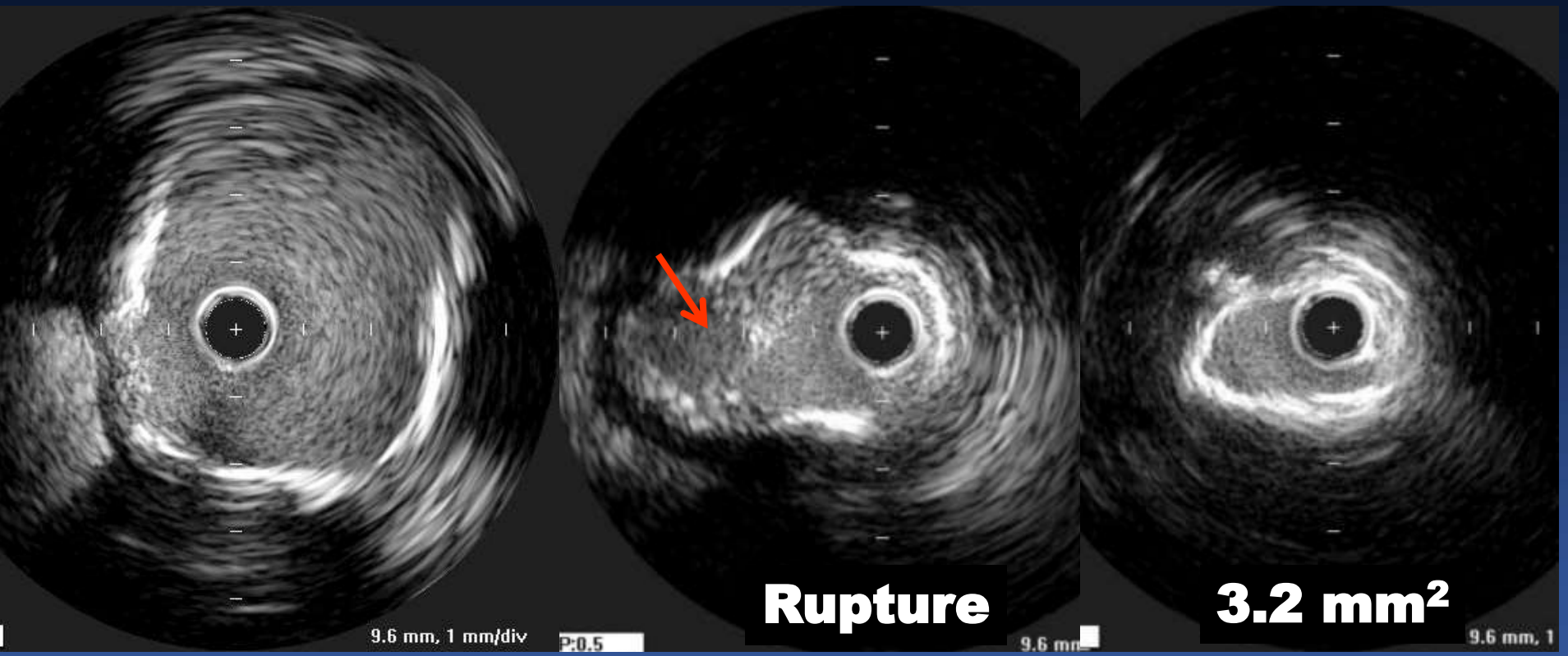
M/74,
Asymptomatic Plaque Rupture



IVUS

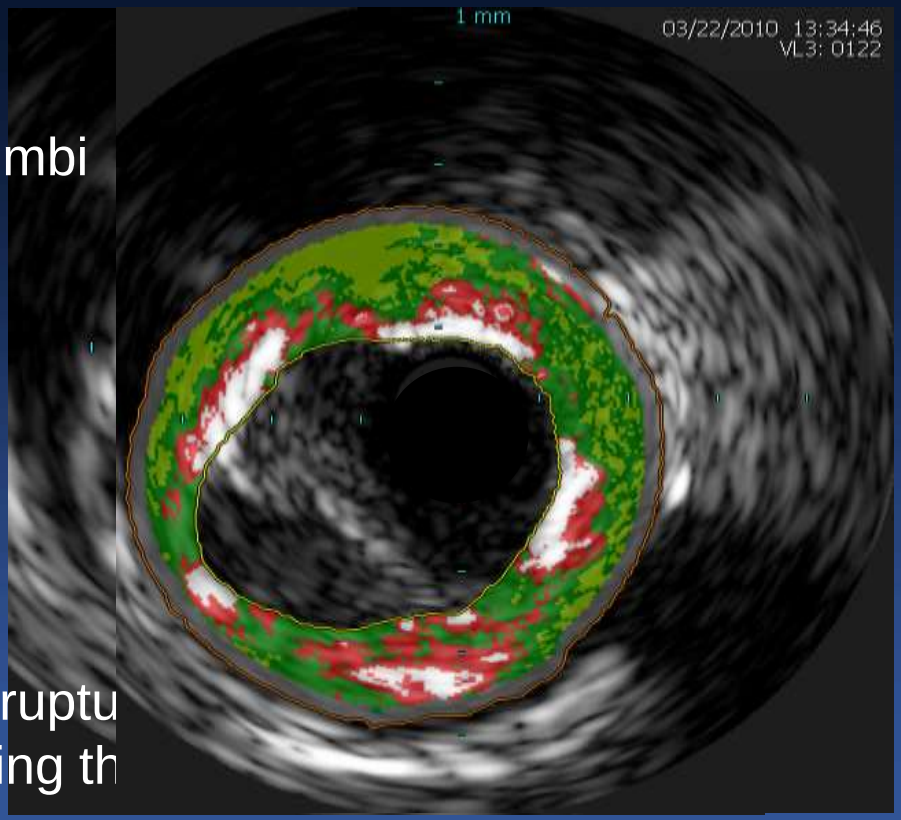
LM *LAD, Culprit*



VH-IVUS

LAD, Culprit

Thrombi



Plaque ruptu
organizing th

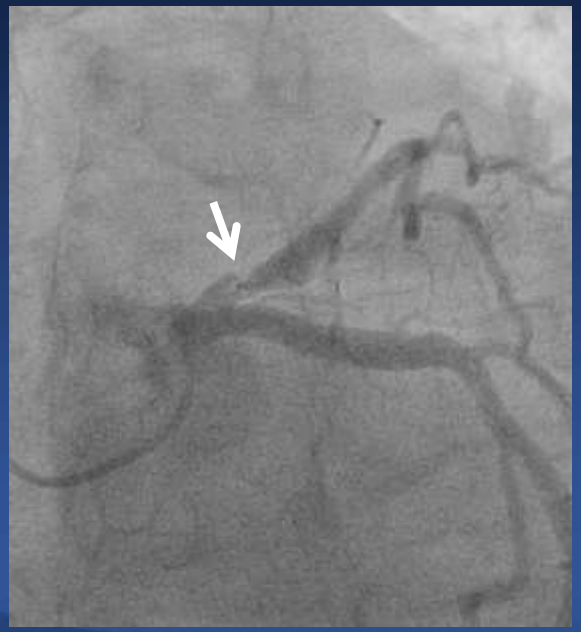
PB: 71.3%
FI : 41.4%
FF: 20.0%
NC: 23.0%
DC: 15.6%

Vulnerable Plaque !

To Treat or Not To Treat ?

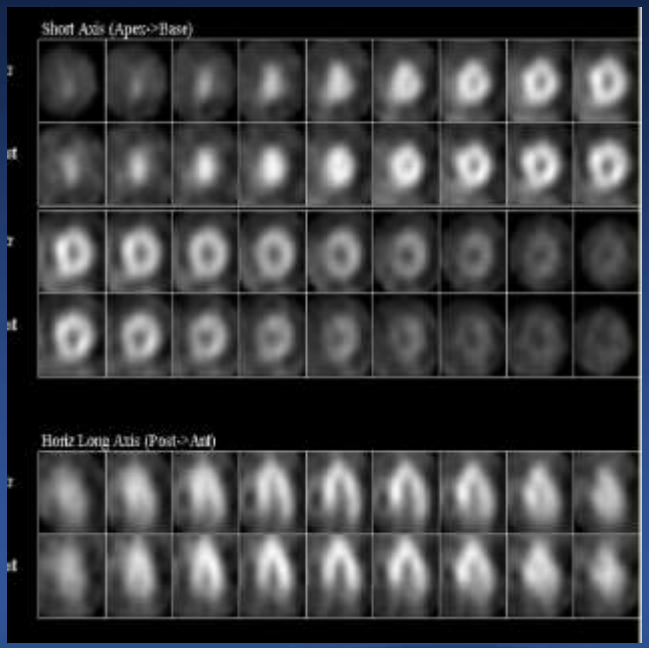
Functionally Insignificant Vulnerable Plaque

Vulnerable Plaque



Negative FFR 0.89

Normal Thallium SPECT



Not to Treat ?

Negative FFR (non-invasive stress tests) means *excellent prognosis (0.6%/year, Cardiac death and MI),* even in the presence of angiographically proven coronary artery disease.

Shaw LJ, J Nucl Cardiol 2004;11:171-85 ,Prognostic value of gated myocardial perfusion SPECT. Very large meta-analysis (n=39,173 patients)

To Treat ?

Vulnerable Plaque (defined by PROSPECT study) *has more tendency to increase MACE.*

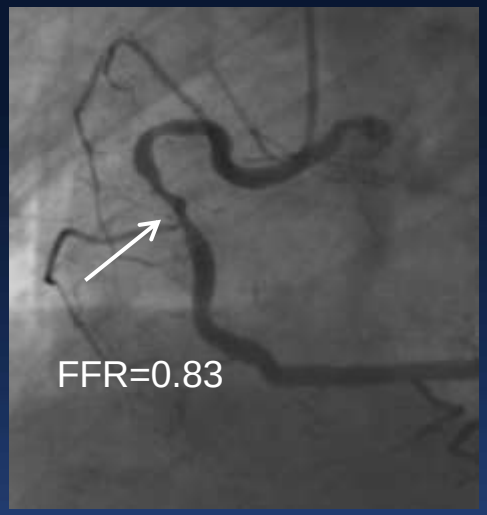
Hypothesis,

BVS Implantation Can Stabilize Plaque Vulnerability Which May Prevent Future Events of Vulnerable Plaque.

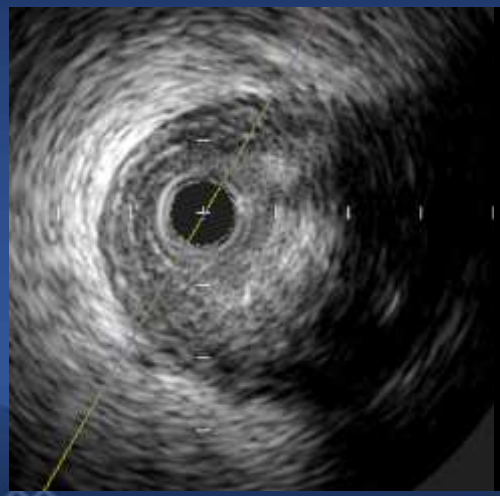
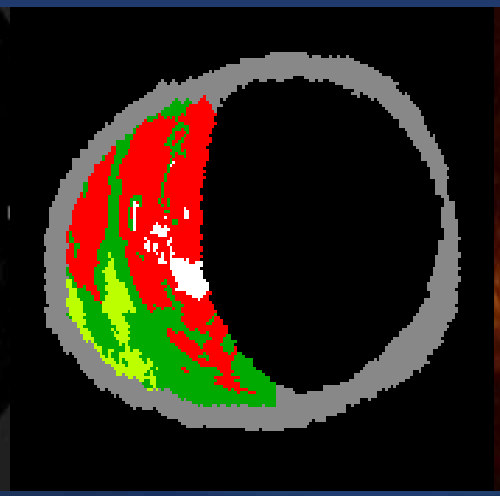
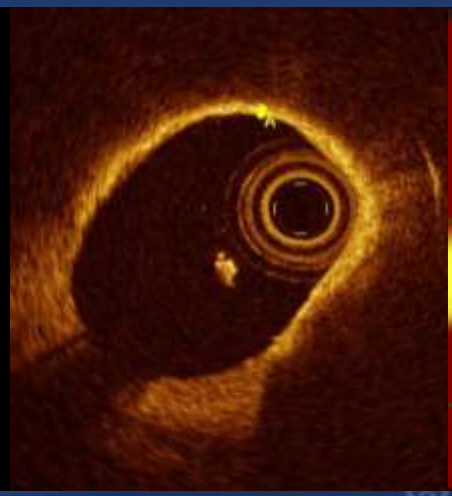
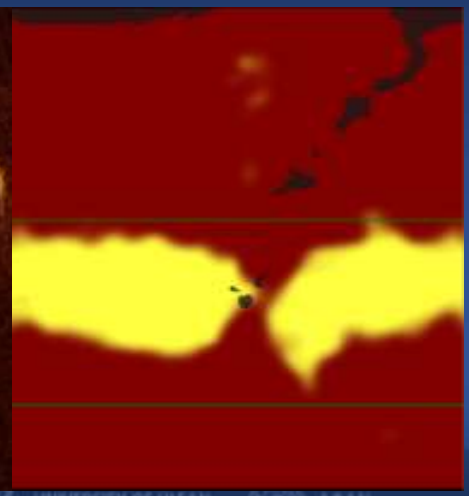
PREVENT Study,

The ***PREVENT***ive Implantation of BVS on Stenosis With Functionally Insignificant Vulnerable Plaque Compared to Optimal Medical treatment.

Defining,
Functionally Insignificant Vulnerable Plaque



1. TCFA by OCT or VH-IVUS
2. PB_{MLA} ≥70%
3. MLA ≤4.0 mm^2
4. LRP on NIRS ($_{max}LCBI_{4mm}$>315)

PREVENT Trial

Any Epicardial Coronary Stenosis **with**
FFR ≥0.80 **and with** ***Two*** **of the following**

1. TCFA by OCT or VH-IVUS
2. IVUS MLA ≤4.0mm^2
3. IVUS Plaque Burden >70%
4. Lipid-Rich Plaque on NIRS ($_{max}LCBI_{4mm}$>315)

R

BVS+OMT
N=800

OMT
N=800

Primary endpoint at 2 years:
CV death, MI, Hospitalization d/t unstable angina

TCFA : OCT definition: fibrous cap thickness<65 μm and arc>90°
VH-IVUS definition: ≥10% confluent NC with >30° abutting to the lumen in 3 consecutive slices

CASE #1

- 50 y/o male
- Effort chest pain, new-onset (1 months ago)
- Coronary risk factor
  : Ex-smoker(15PYR)

Clinical Presentation

- Unstable angina
- Cardiac enzyme : within normal level
- Echocardiography
  - LV EF = 40%
  - Akinesia of inferior wall, mid ateroseptum

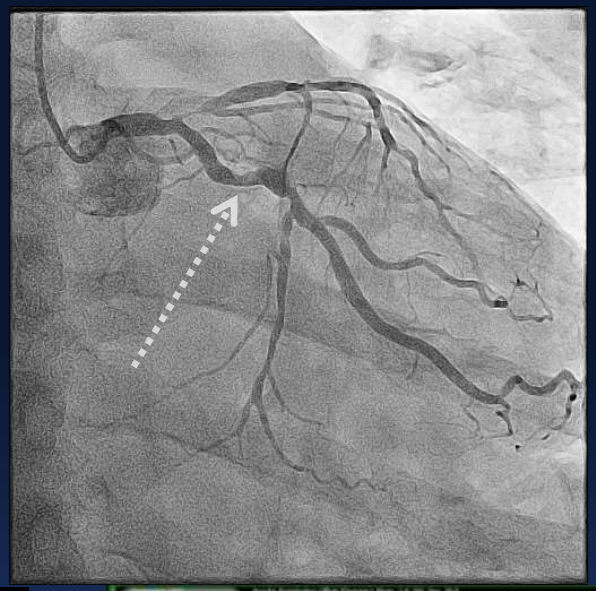
Coronary Angiogram

LCX

FFR

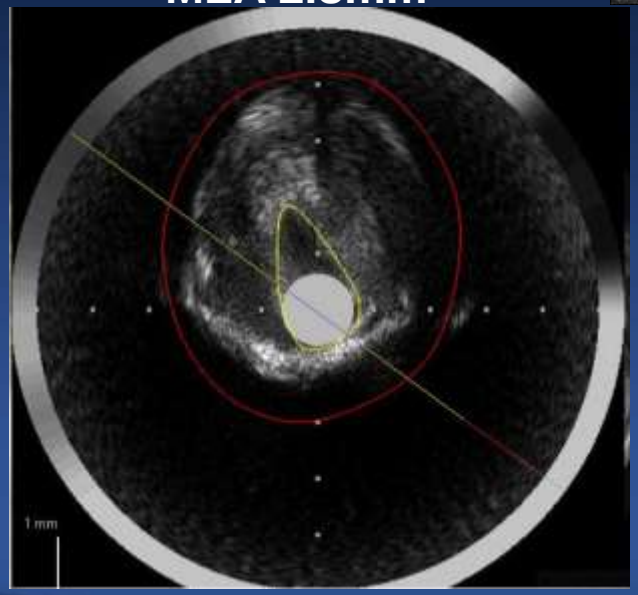
Intravenous adenosine, 140 µg/kg/min

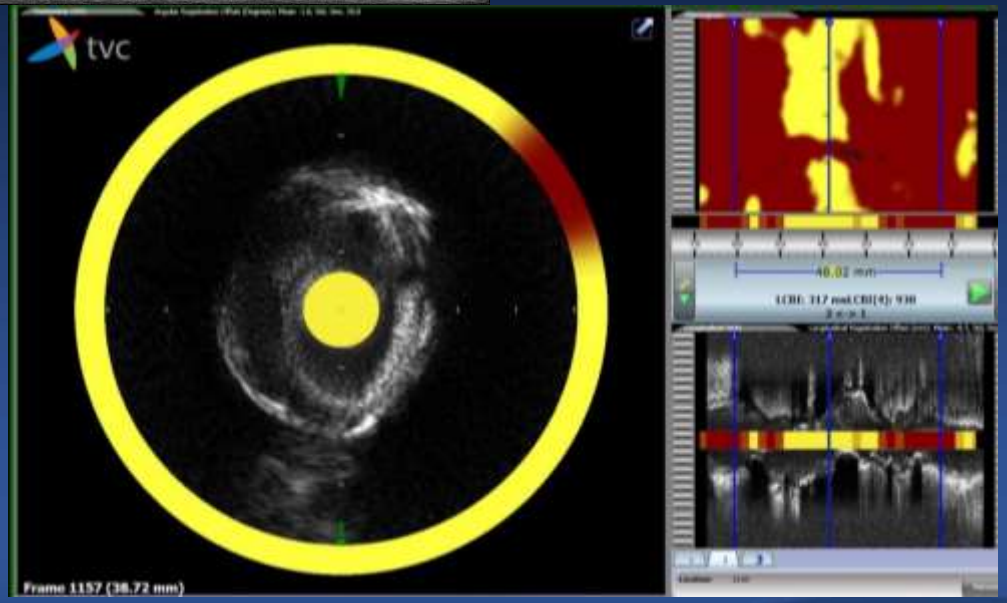
NIRS



Plaque burden 81%
MLA 2.8mm^2

max**LCBI**$_{4mm}$: 930





The *PREVENT*ive Implantation of Bioresorbable Vascular Scaffold on Stenosis With Functionally Insignificant Vulnerable Plaque

PREVENT Trial

Any Significant Epicardial Coronary Stenosis (DS>50%)
with *FFR >0.80* and with *Two* of the following

1. MLA <4.0mm^2
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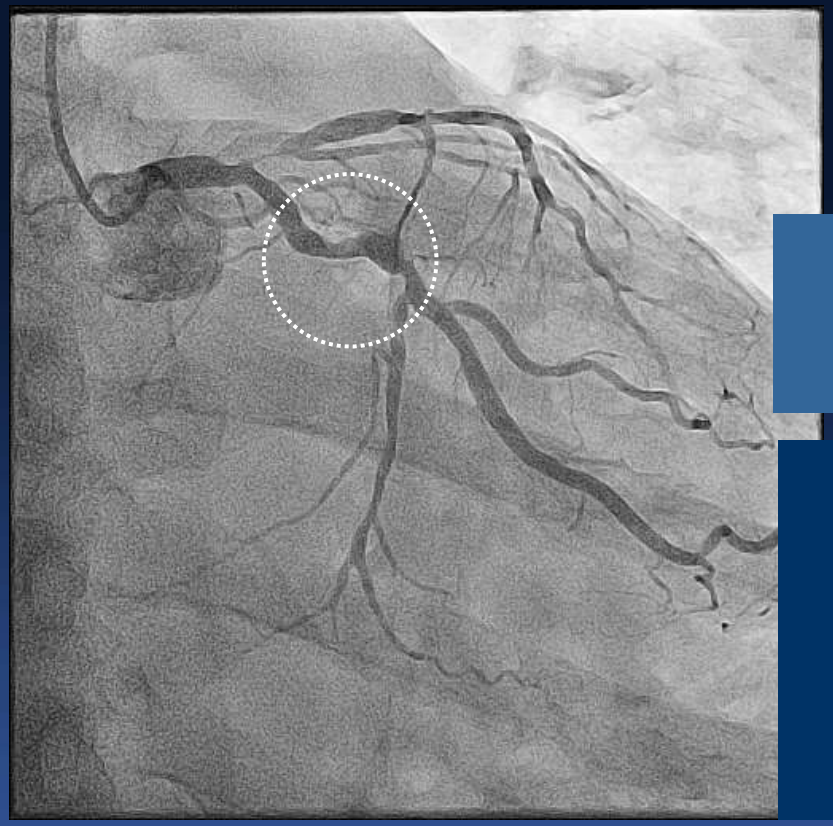
OMT for this patient!



Angiographic DS : 50%
FFR : 0.83

IVUS MLA : 2.8 mm^2
Plaque burden : 81%
$_{max}LCBI_{4mm}$: 930

PCI for RCA and LM-pLAD

Xience Alpine 3.0 x 18 mm

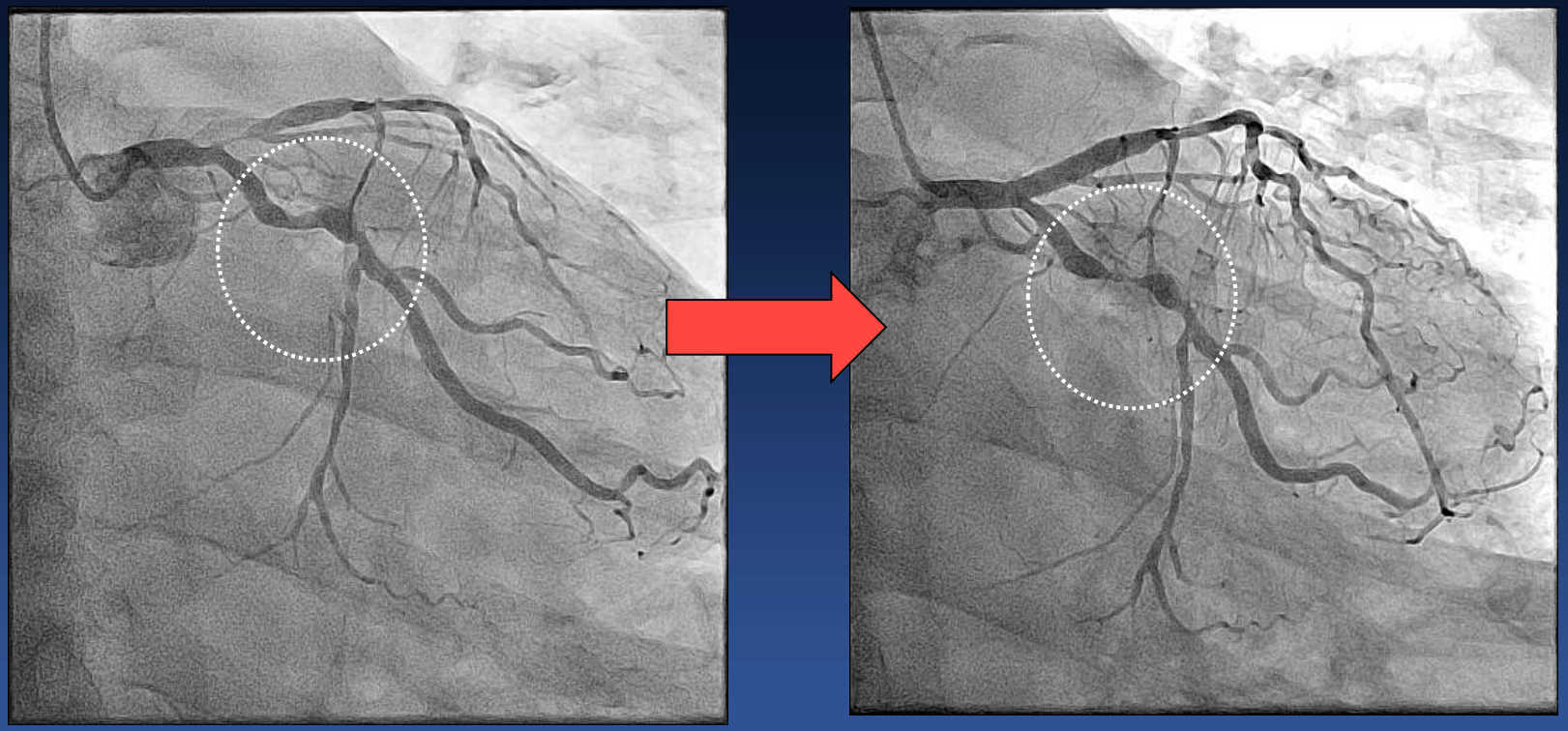
Xience Alpine 4.0 x 23 mm

11 months later

- Unstable angina
- Effort chest pain for 3 weeks
- Cardiac enzyme : within normal level

Coronary Angiogram

Screening → **11 months later**



PCI

Preballoon
: Tazuna 2.0 x 15mm

Stent
: Xience Alpine 3.5 x 23mm

Final angiogram

CASE #2

- 57 y/o female
- Atypical chest pain
- Coronary risk factor
  : Hyperlipidemia

Clinical Presentation

- Atypical chest pain
- Cardiac enzyme : within normal level
- Echocardiography
  - LVEF = 66%
  - No reginal wall motion abnormality

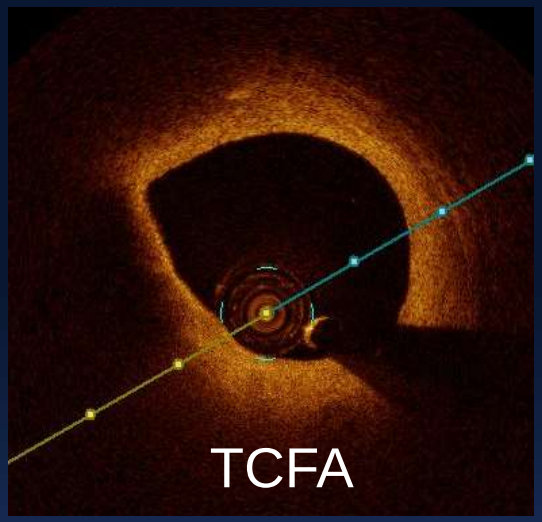
Coronary Angiogram

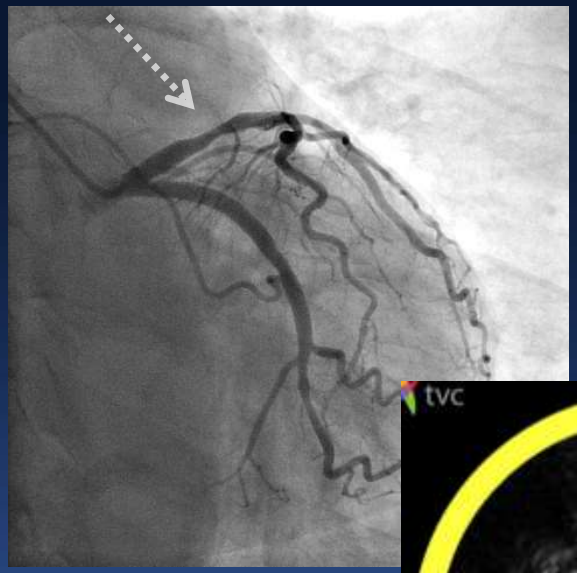
LAD

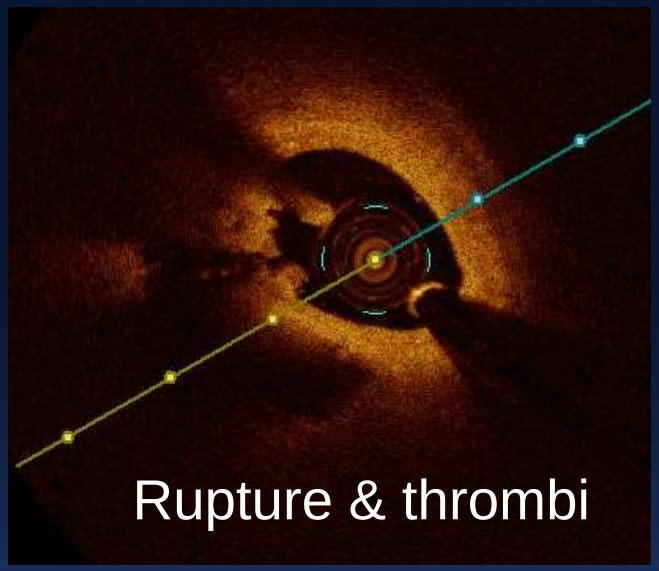
FFR

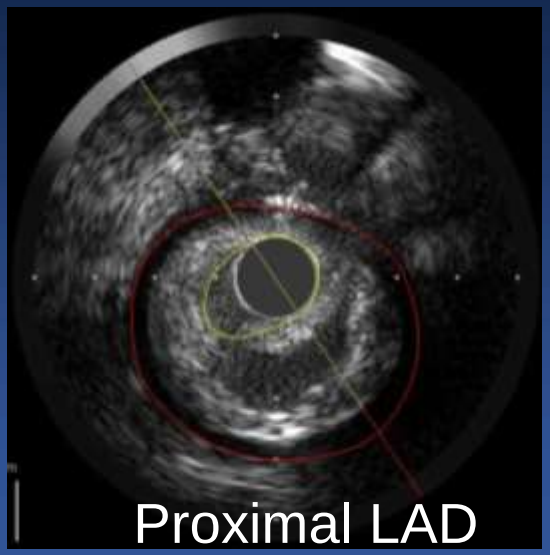
Intravenous adenosine, 140 µg/kg/min

OCT & NIRS



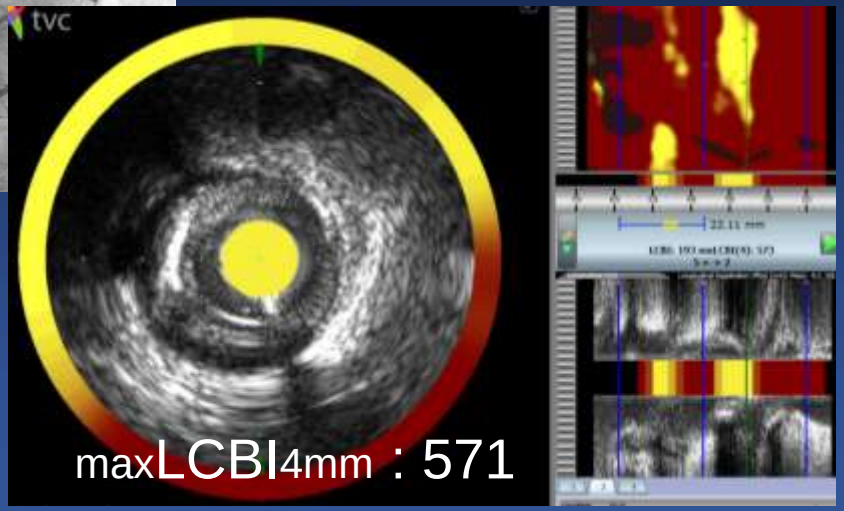






MLA : 2.7 mm^2

Plaque burden 73%



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N=800

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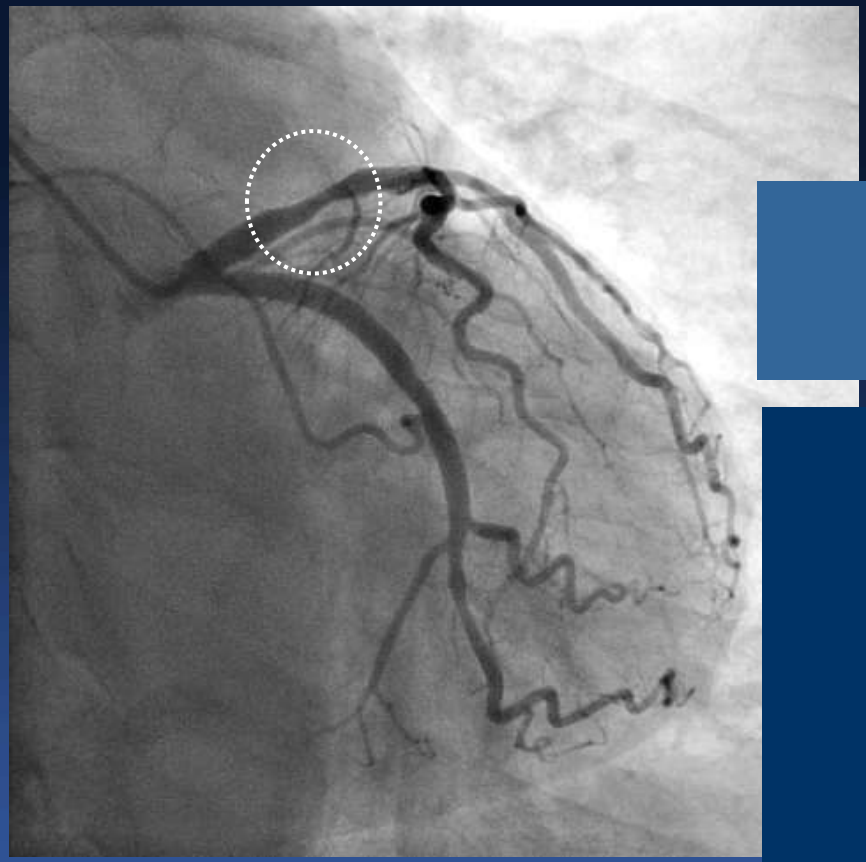
OMT for this patient!



Angiographic DS : 50%
FFR : 0.85

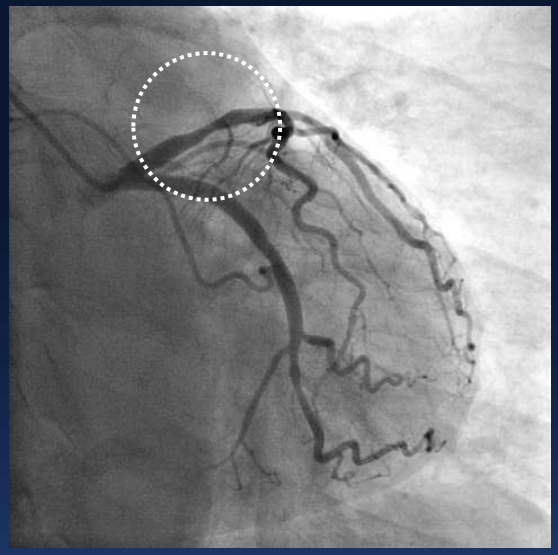
IVUS MLA : 2.7 mm^2
Plaque burden : 73%
$_{max}LCBI_{4mm}$: 571
TCFA (+)

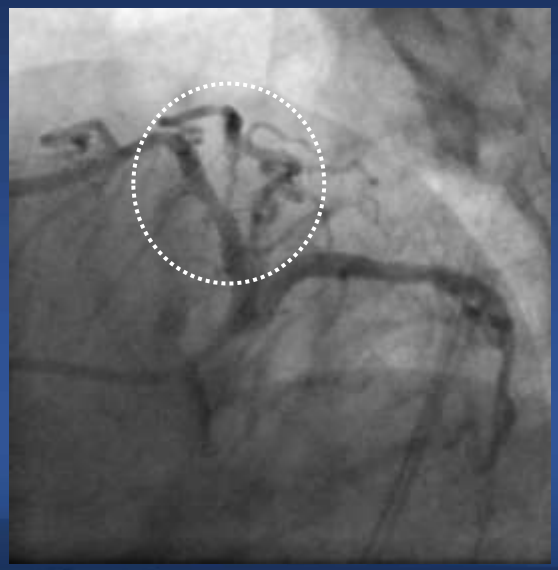
7 months later

- Unstable angina
- Resting chest pain for 1months
- Cardiac enzyme : within normal level
- Echocardiography
  - LVEF = 66%
  - RWMA(-)

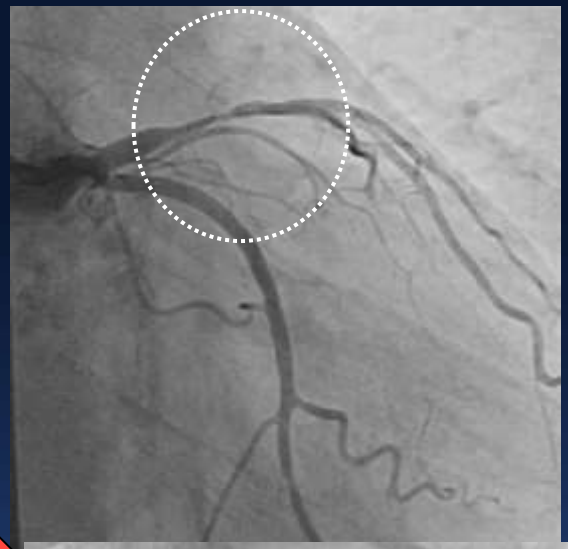
Coronary Angiogram

Screening



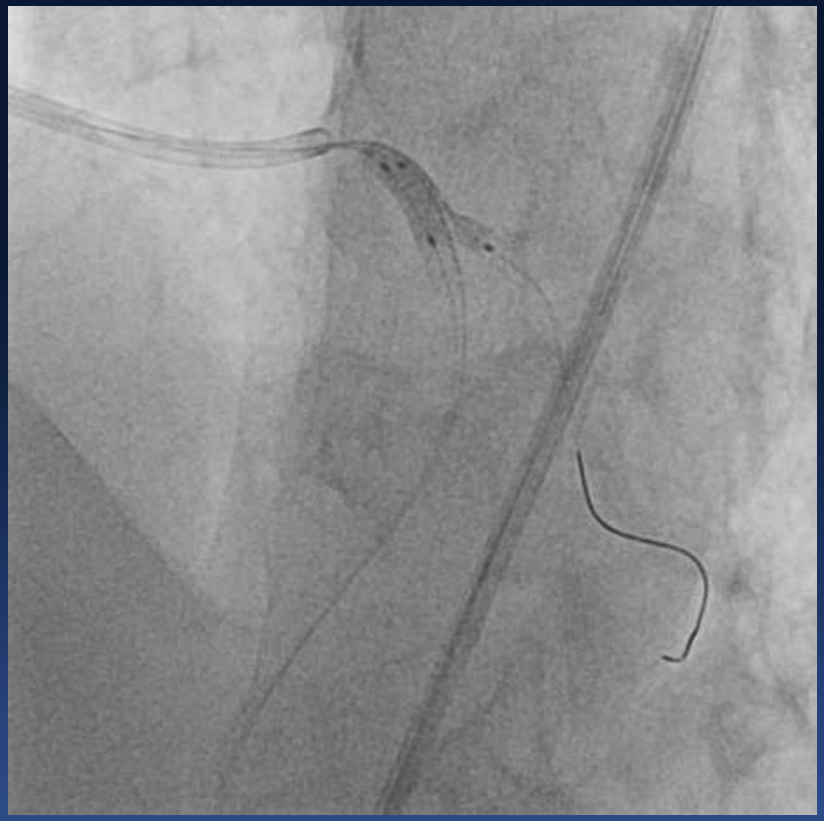


7 months later



PCI

pLAD
: Resolute Onyx 3.5 x 18 mm
Di br.
: Resolute Onyx 2.5 x 15 mm



Kissing balloon
pLAD : Maverick 3.0 x 15mm
Di br. : Tazuna 2.5 x 15 mm

Final angiogram

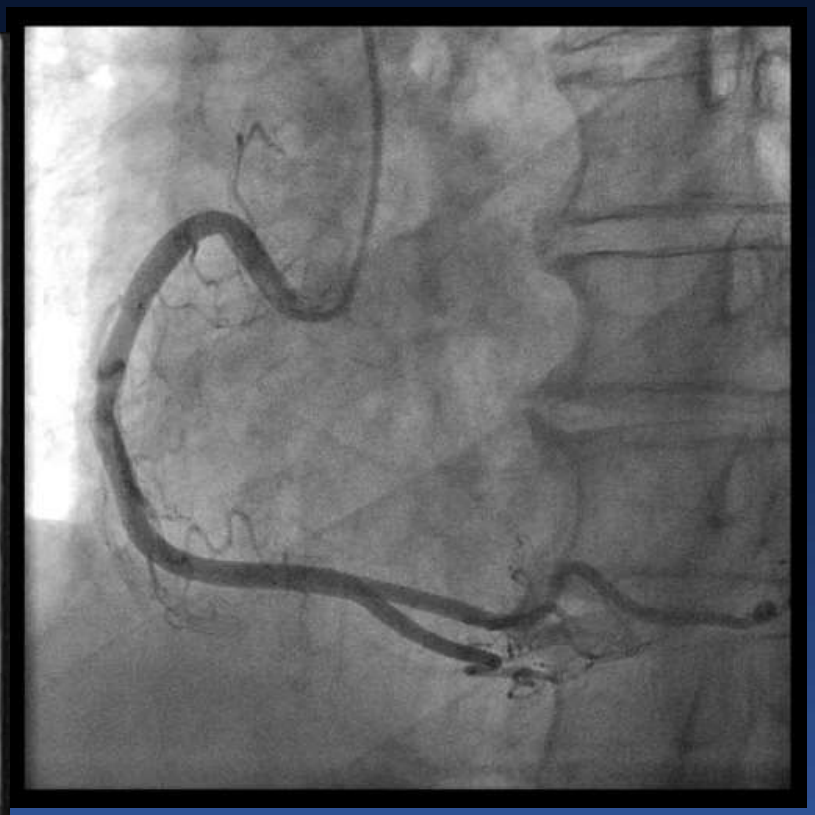
CASE #3

- 74 y/o male

- Effort related chest pain for 1 month
- Intermittent resting chest pain for 2 days

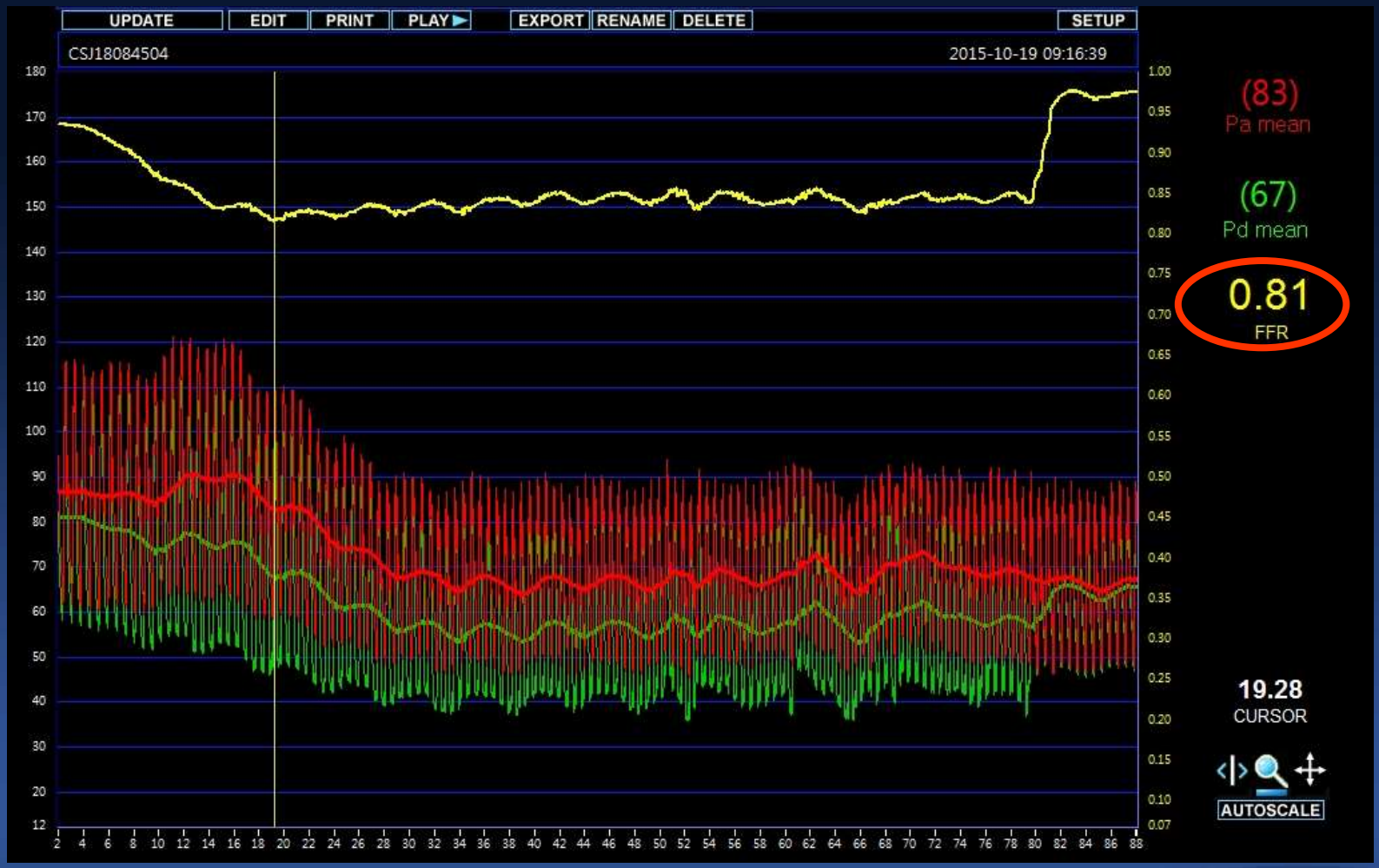
- Coronary risk factor
  : Ex-smoker(25PYR)

Coronary Angiogram

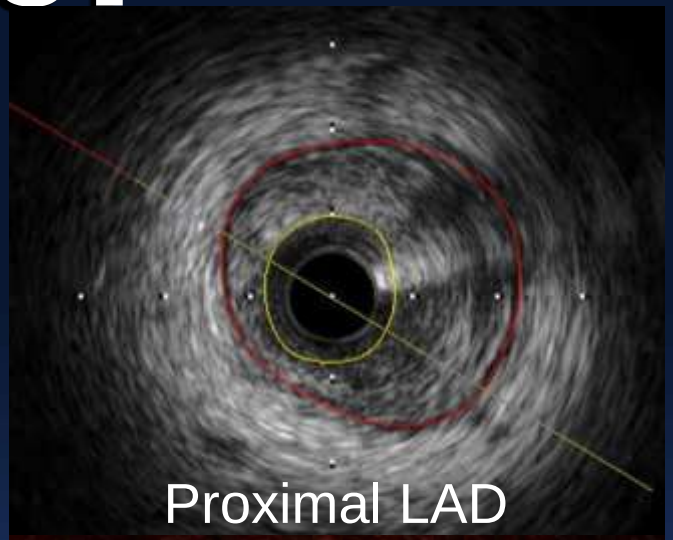


FFR

Intravenous adenosine, 200 μg/kg/min



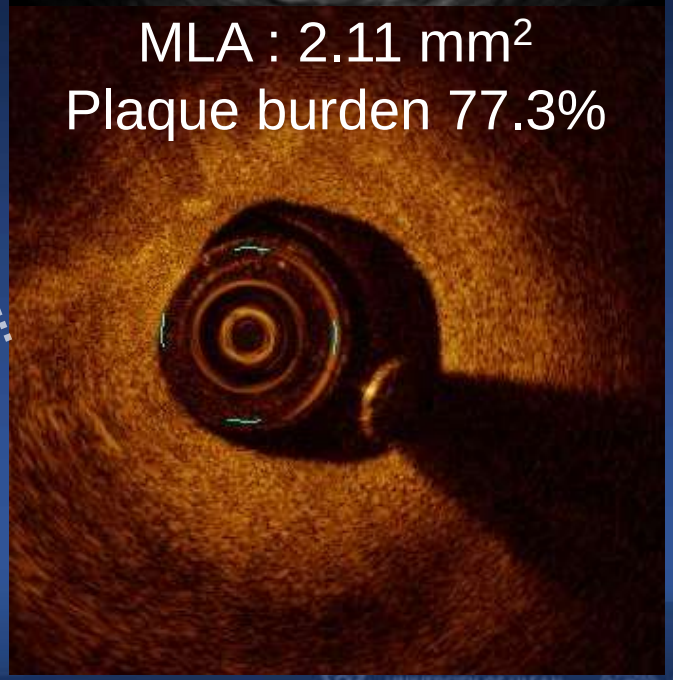
IVUS & OCT



Proximal LAD

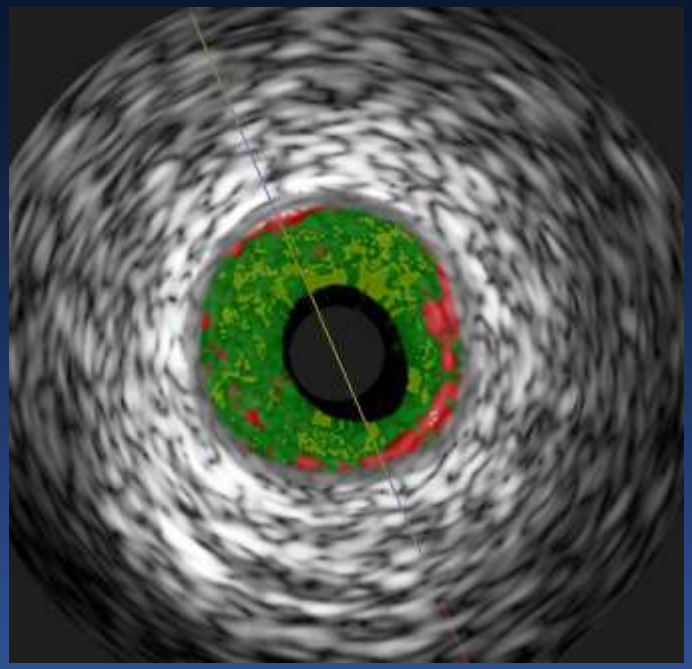
MLA : 2.11 mm^2

Plaque burden 77.3%

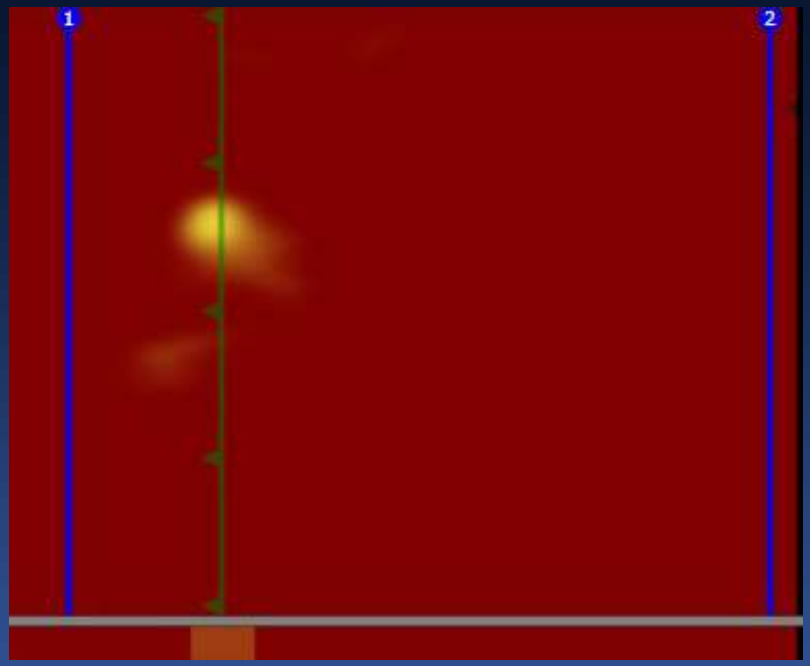


RCA

VH-IVUS & NIRS



Necrotic Core 15%



$_{max}LCBI_{4mm}$= 93

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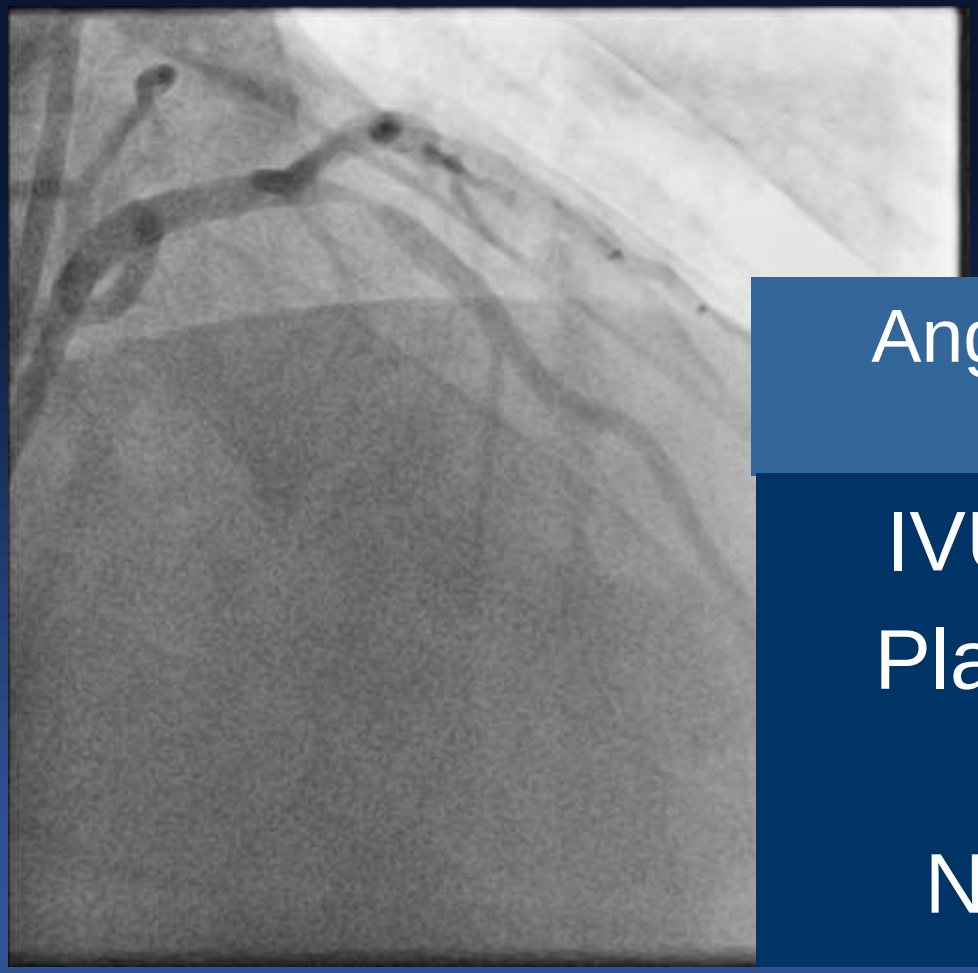
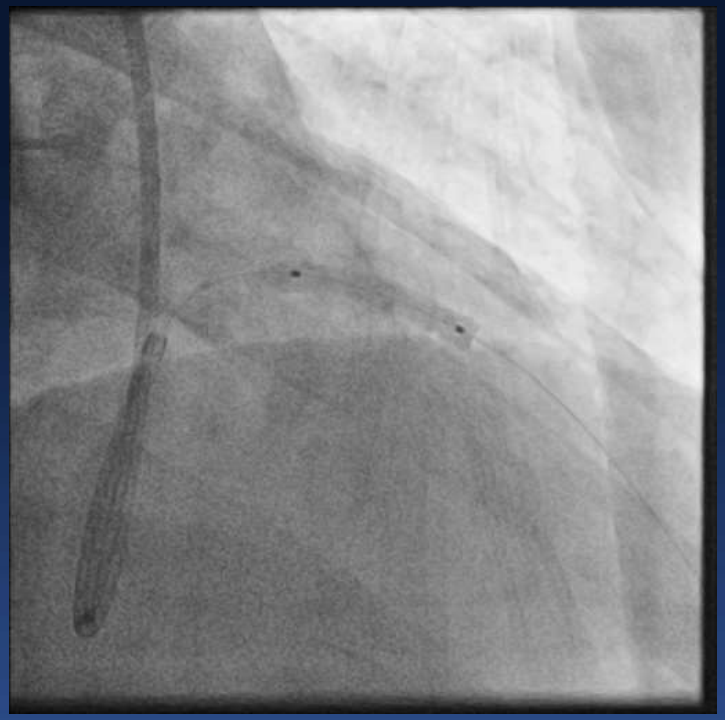
BVS for this patient!



Angiographic DS : 80%
FFR : 0.83

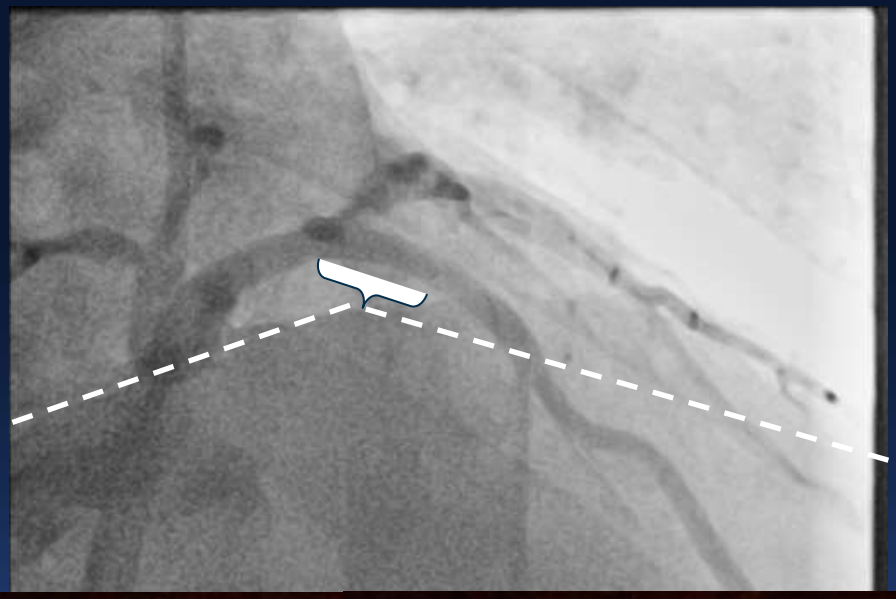
IVUS MLA : 2.11 mm^2
Plaque burden : 77%
$_{max}LCBI_{4mm}$: 93
Necrotic core : 15%

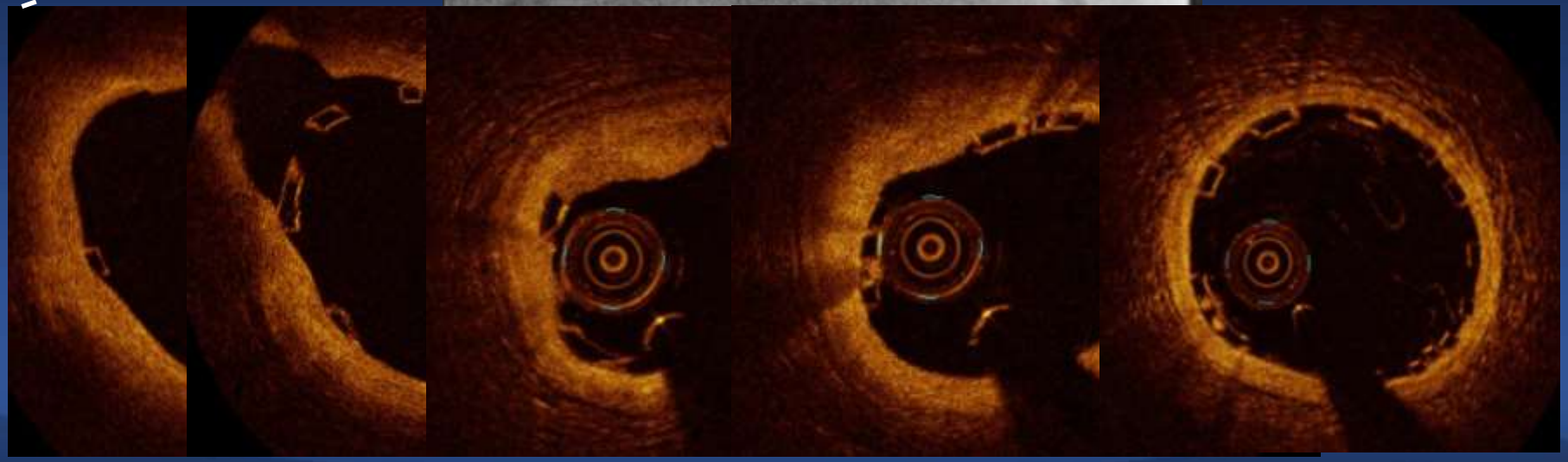
PCI



Absorb (BVS)
3.5 mm x 18 mm

Post PCI - OCT





PREVENT Trial,

8 Countries, 33 Centers

Principal Investigators

Seung-Jung Park, MD, PhD.
Korea

Co-Principal Investigator

Gregg Stone, MD, PhD.
USA

Active Participants

Korea, Japan, Taiwan, Hong-Kong, New Zealand, Australia, Italy and USA

Thank You !!

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