

# Linking Plaque Composition to Events: Insights from PROSPECT

*Gregg W. Stone, MD*

*Columbia University Medical Center  
Cardiovascular Research Foundation*



CARDIOVASCULAR RESEARCH  
FOUNDATION



COLUMBIA UNIVERSITY  
MEDICAL CENTER

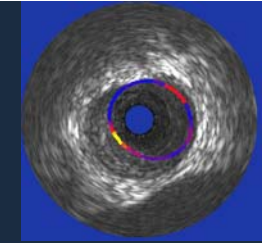
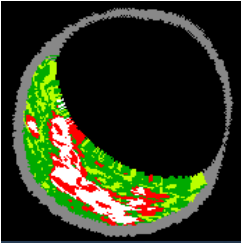


NewYork-Presbyterian  
The University Hospital of Columbia and Cornell

# Disclosures

- **Gregg W. Stone**
  - **Research support from Abbott Vascular Devices**
  - **Consultant to Volcano**





# The **PROSPECT** Trial

**700 pts with ACS**

UA (with ECGΔ) **or** NSTEMI **or** STEMI >24°

1-2 vessel CAD undergoing PCI  
at up to 40 sites in U.S., Europe

## **Metabolic S.**

- Waist circum
- Fast lipids
- Fast glu
- HgbA1C
- Fast insulin
- Creatinine

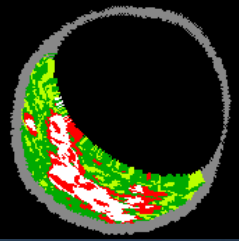
## **Biomarkers**

- Hs CRP
- IL-6
- sCD40L
- MPO
- TNFα
- MMP9
- Lp-PLA2
- others

**PCI of culprit lesion(s)**

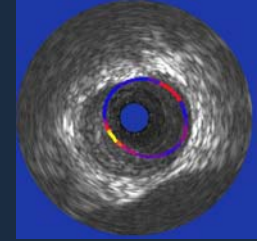
**Successful and uncomplicated**

**Formally enrolled**



# 3-vessel imaging post PCI

**Culprit artery, followed by  
non-culprit arteries**



**Angiography (QCA of entire coronary tree)**

**IVUS**

**Virtual histology**

**Palpography (n=~350)**

*Proximal 6-8  
cm of each  
coronary  
artery*

**Meds rec**

Aspirin

Plavix 1yr

Statin

**Repeat biomarkers**

**@ 30 days, 6 months**

**F/U: 1 mo, 6 mo,  
1 yr, 2 yr,  
±3-5 yrs**

**MSCT**

**Substudy**

**N=50-100**

**Repeat imaging  
in pts with events**



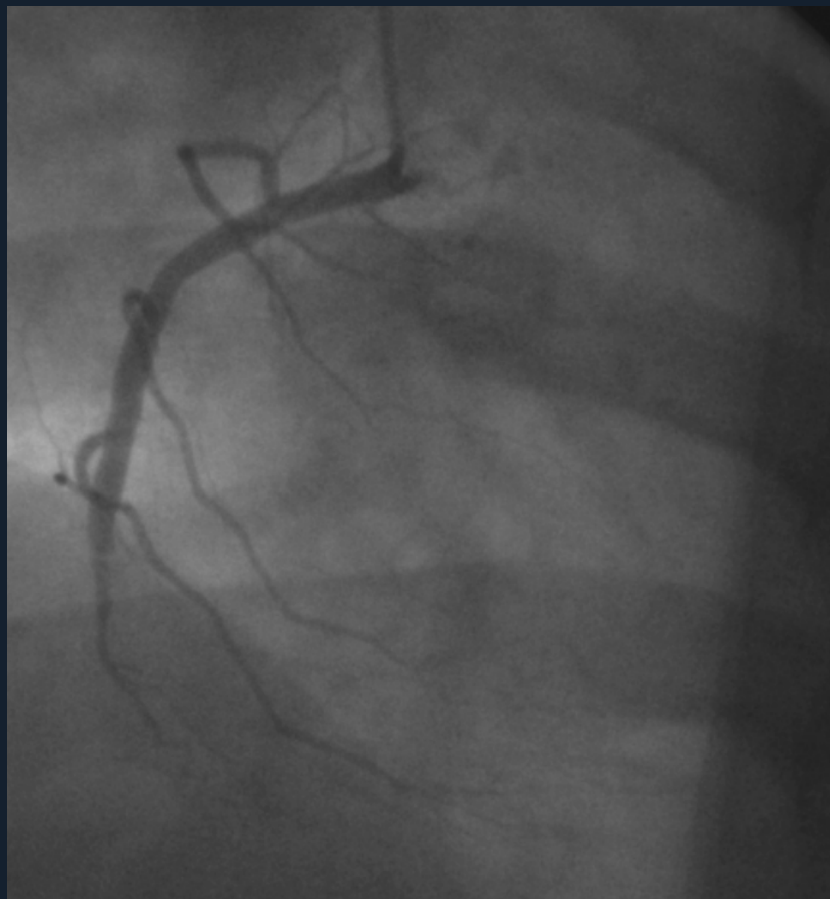
CARDIOVASCULAR RESEARCH  
FOUNDATION



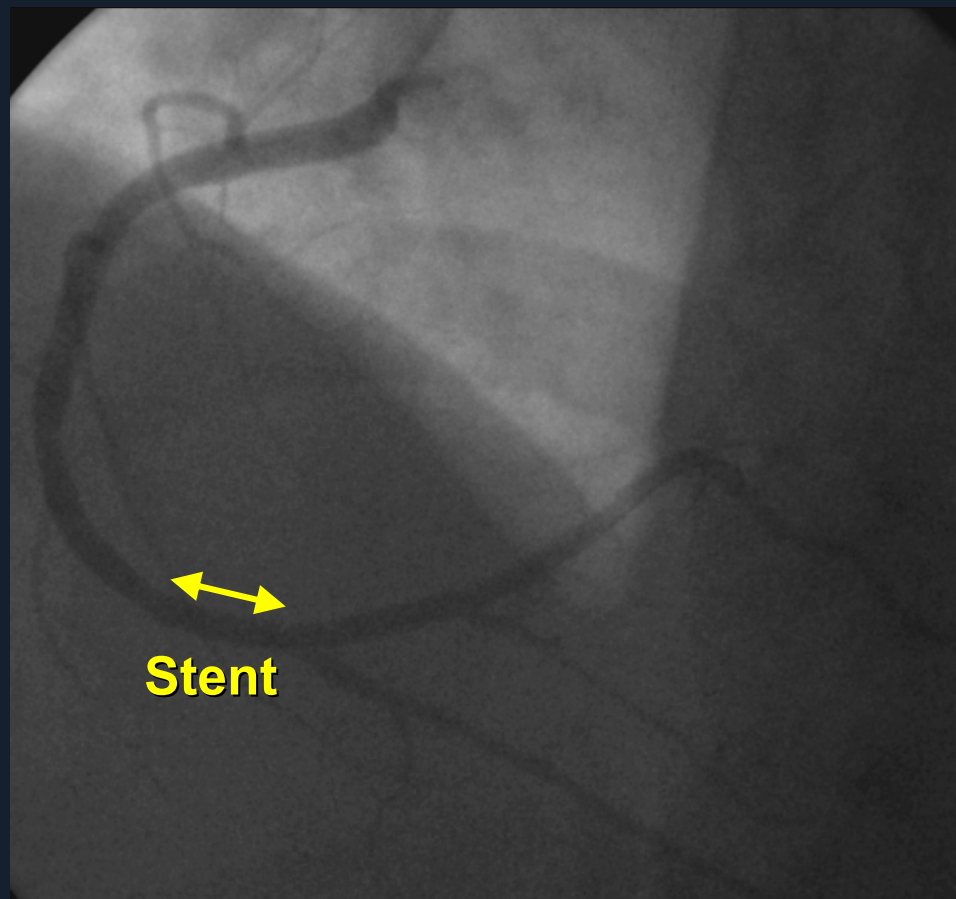
COLUMBIA UNIVERSITY  
MEDICAL CENTER

NewYork-Presbyterian  
The University Hospital of Columbia and Cornell

# PROSPECT: Acute MI



**Pre PCI**

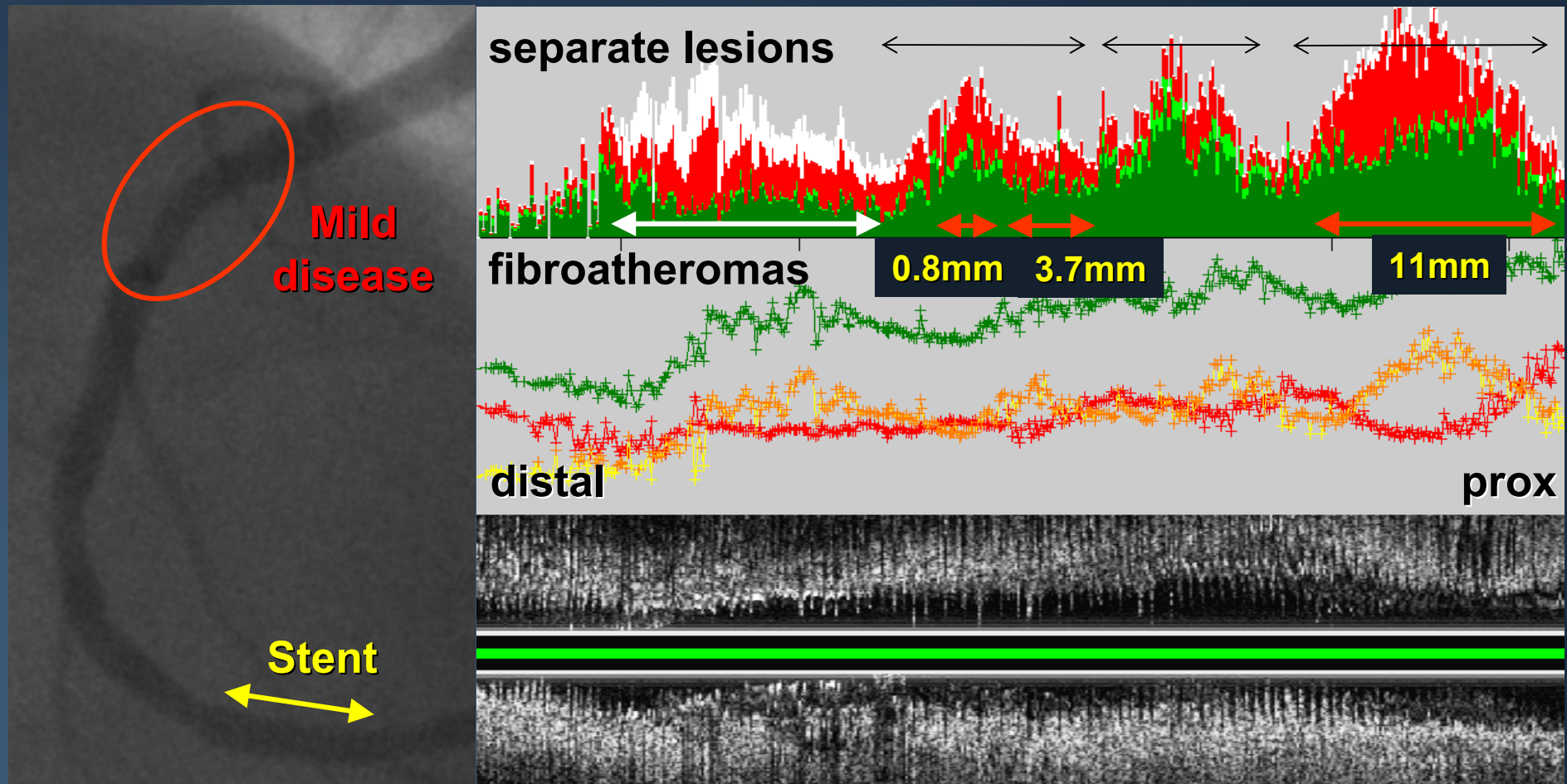


**Post PCI**

# PROSPECT: Acute MI

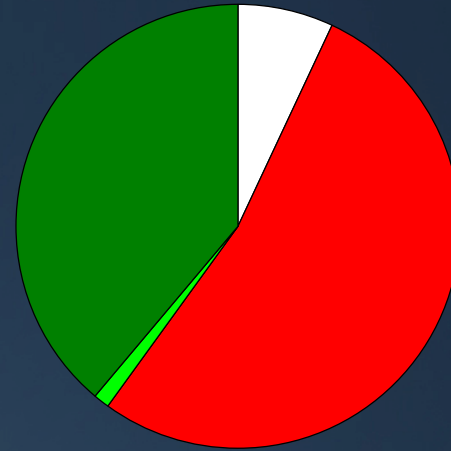
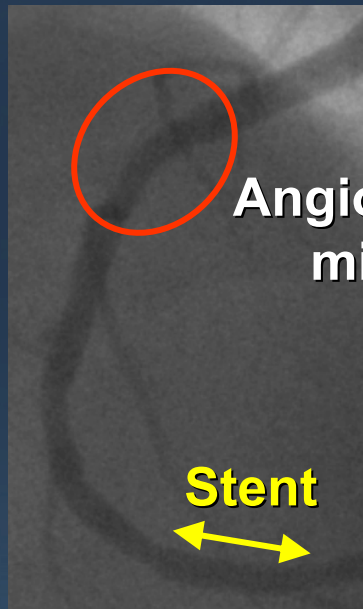
Stent

3 Fibroatheromas





## PRCA fibroatheroma



### 2<sup>nd</sup> VH-TCFA

Single NC

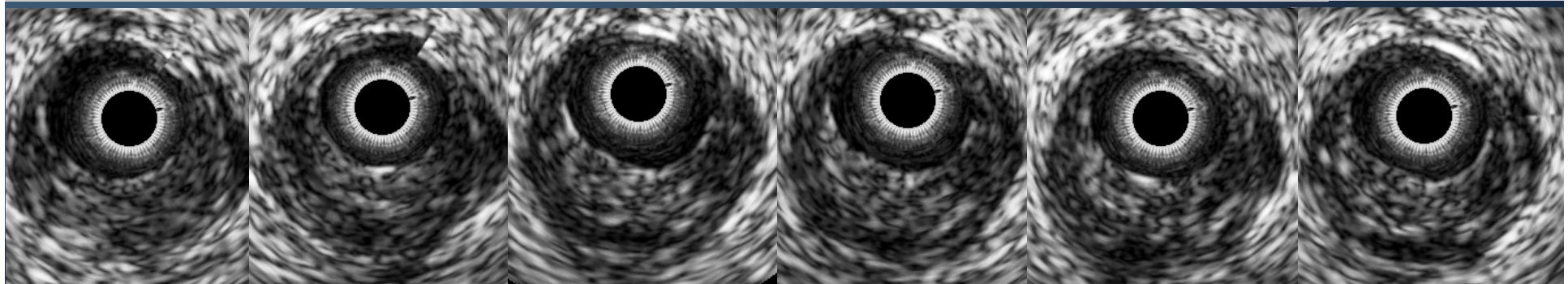
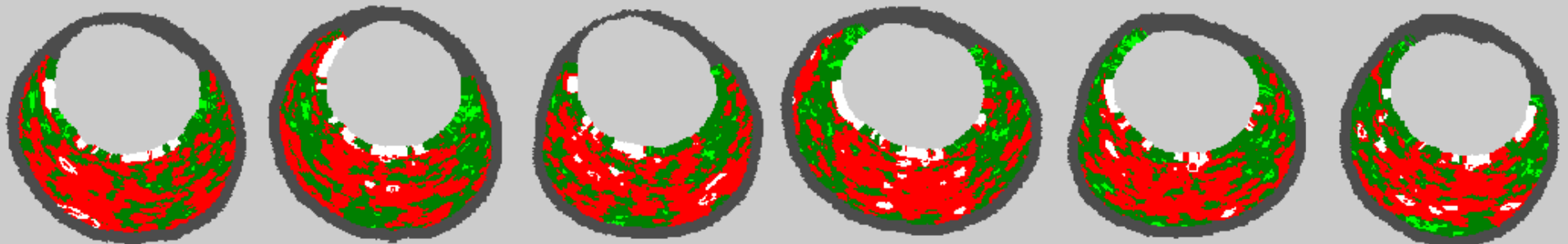
Length 11 mm

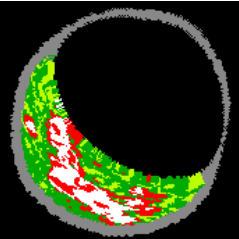
F 39%

FF 1%

NC 53%

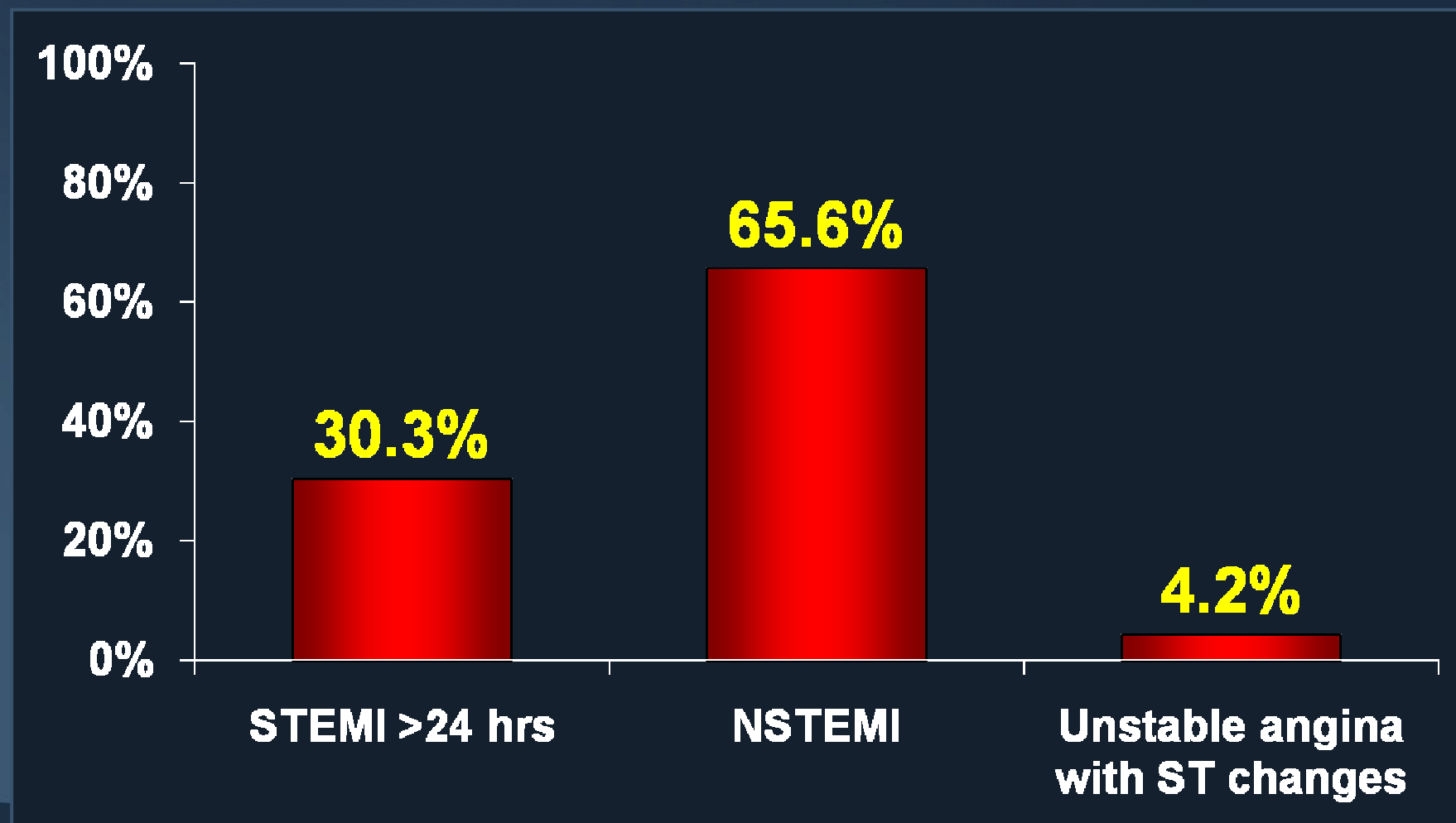
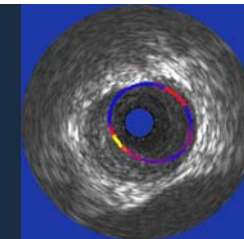
DC 7%



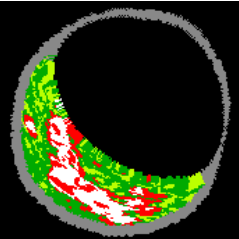


# PROSPECT: Baseline Features

N = 697

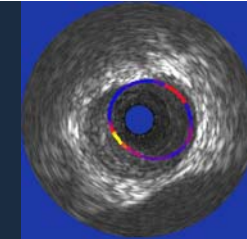




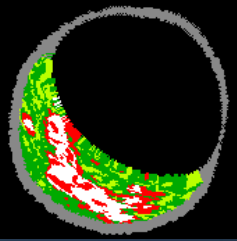


# PROSPECT: Imaging Summary

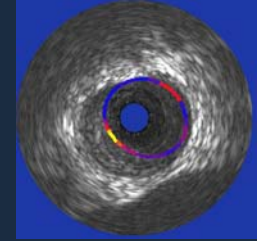
## Length of coronary arteries analyzed



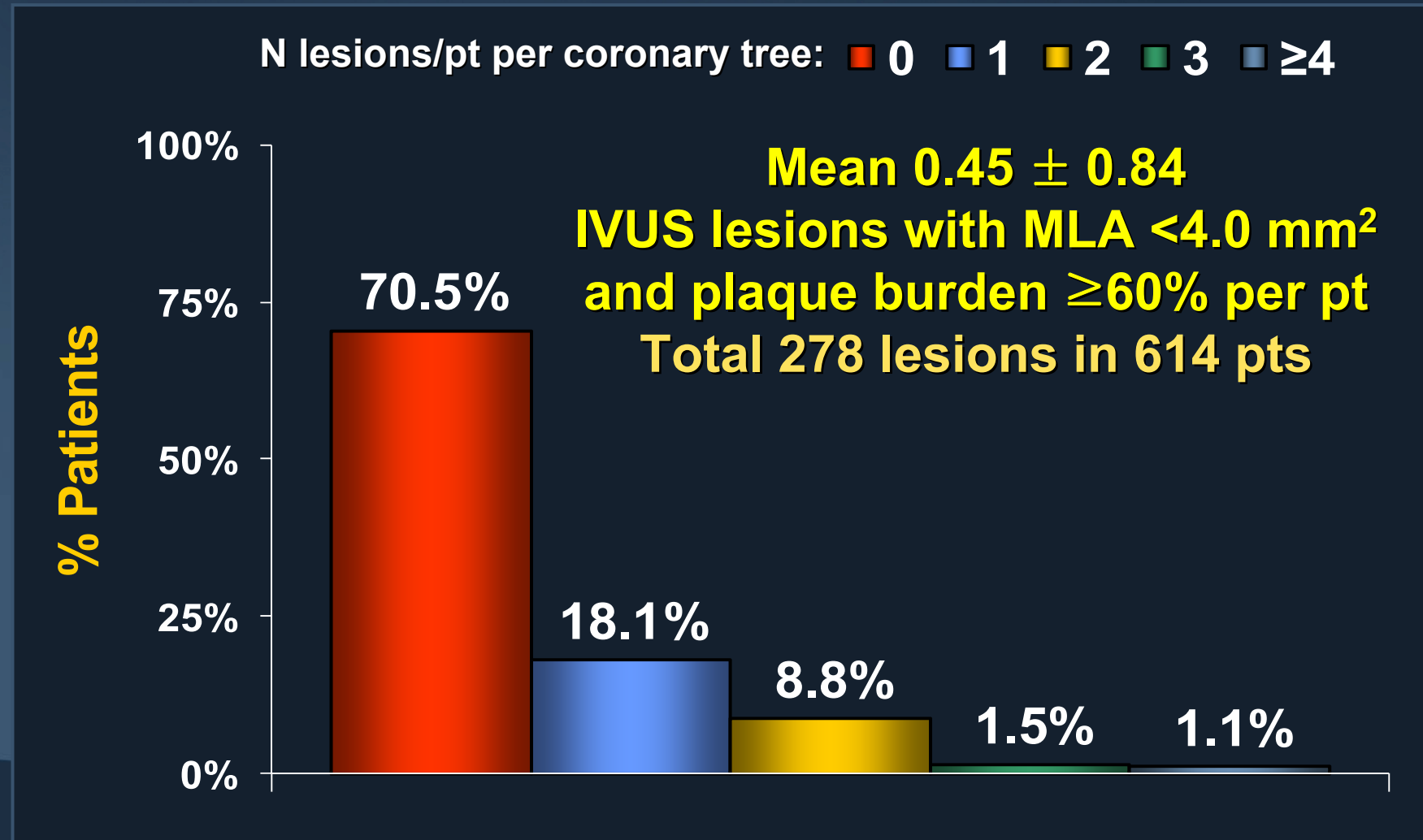
Mean (mm)	Angiography	IVUS	VH data*
<b>LM</b>	9.27 ± 4.3	9.6 ± 10.2	9.0 ± 10.2
<b>LAD</b>	155.7 ± 41.0	72.6 ± 33.2	52.4 ± 29.3
<b>LCX</b>	135.4 ± 49.9	61.7 ± 35.9	41.5 ± 28.2
<b>RCA</b>	149.9 ± 44.7	81.6 ± 38.0	68.6 ± 37.4
<b>Total per pt</b>	446.2 ± 84.0	193.8 ± 82.4	146.8 ± 70.2
<b>Total all pts</b>	<b>311,016</b>	<b>118,983</b>	<b>90,136</b>

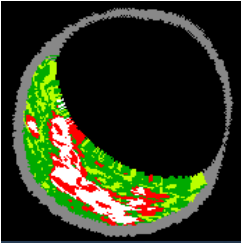


# PROSPECT: Imaging Summary



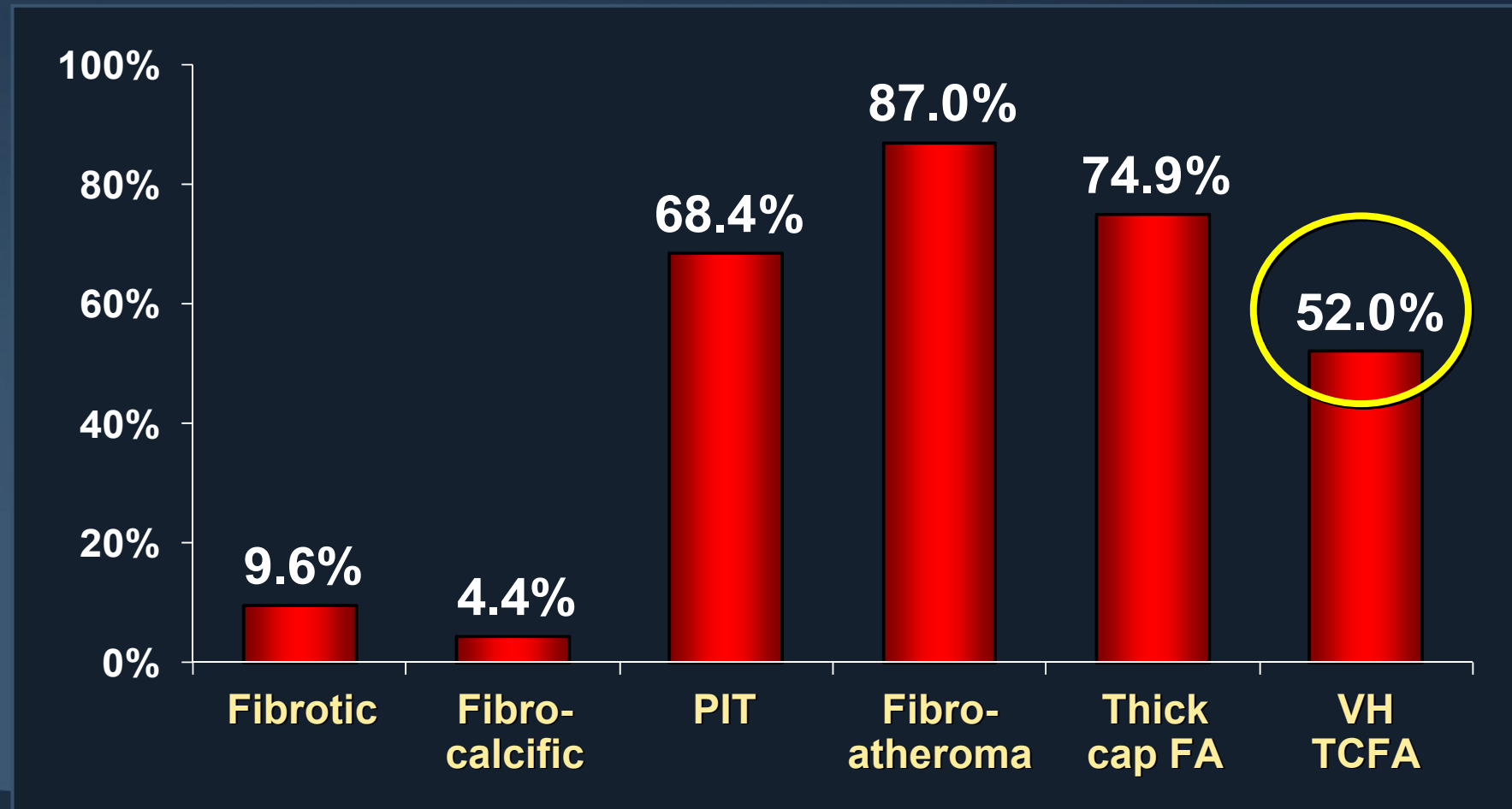
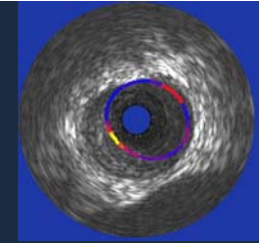
Per pt incidence of IVUS lesions with  
MLA  $<4.0 \text{ mm}^2$  and plaque burden  $\geq 60\%$

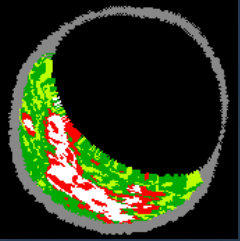




# PROSPECT: Baseline features

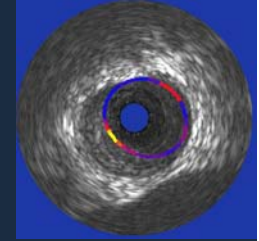
Presence of  $\geq 1$  VH lesion  
subtypes (2765 lesions in 614 pts)



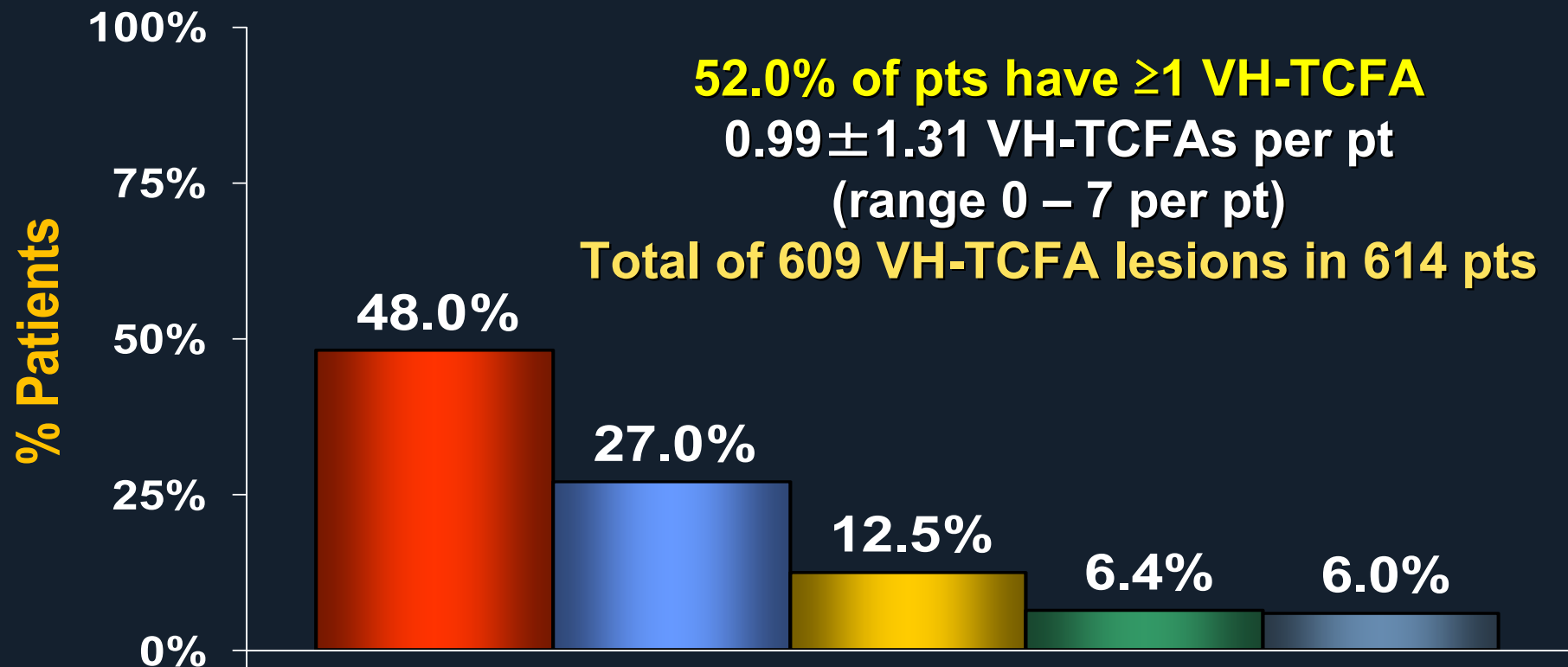


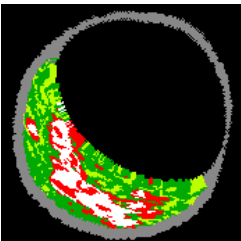
# PROSPECT: Imaging Summary

## Per patient incidence of VH-TCFAs



N lesions/pt per coronary tree: ■ 0 ■ 1 ■ 2 ■ 3 ■ ≥4

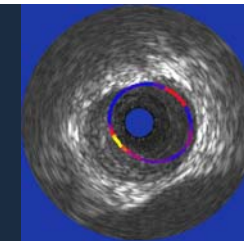




**PROSPECT 27731-003: 58 yo man**

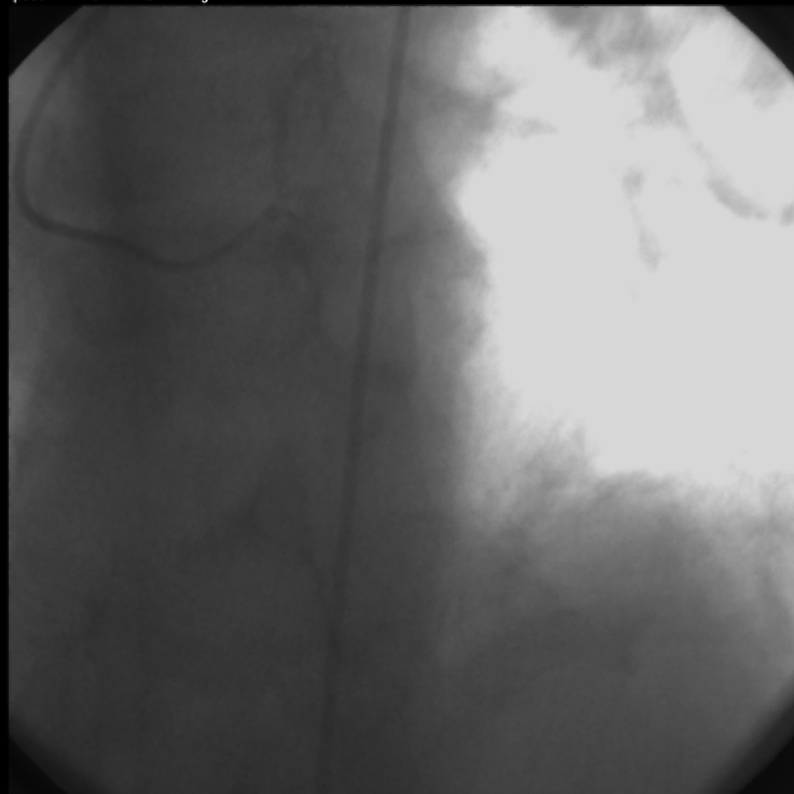
**3/15/05: NSTEMI, PCI of MRCA**

**3/23/06 (1 year): Unstable angina  
attributed to LAD**



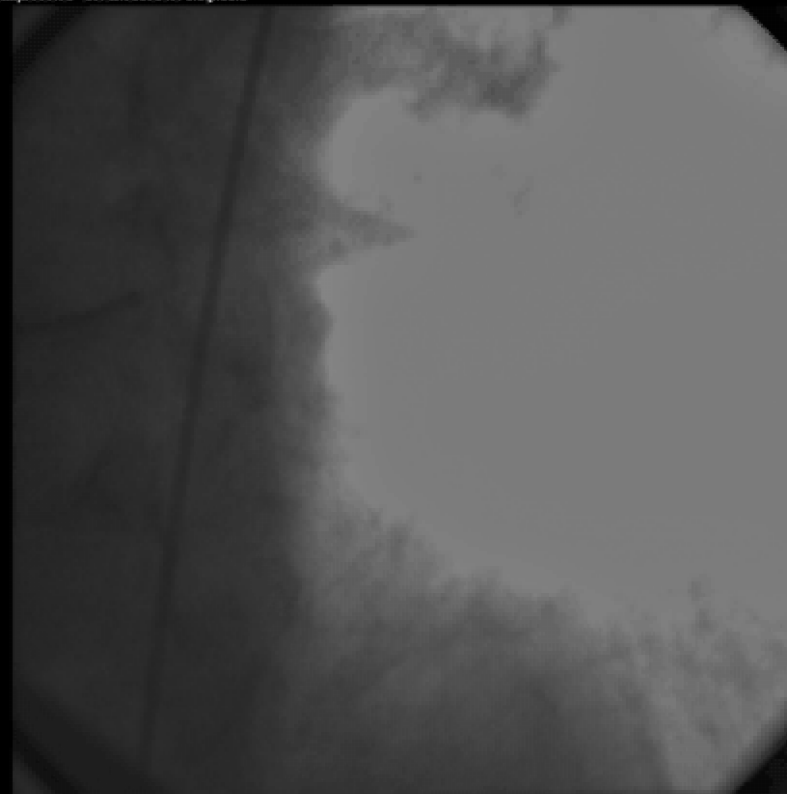
**Index 3/15/05**

Lossy Compression - not intended for diagnosis

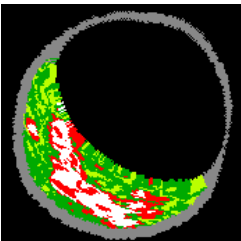


**Event 3/23/06**

Lossy Compression - not intended for diagnosis



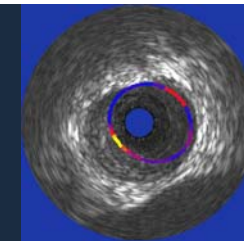




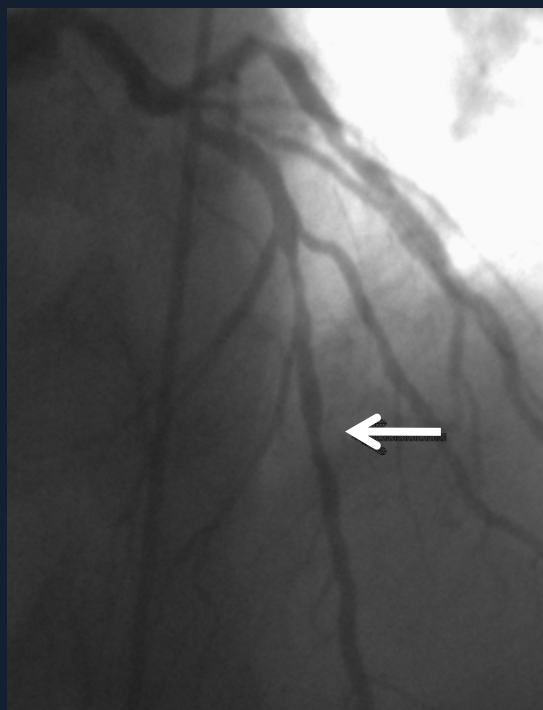
**PROSPECT 27731-003: 58 yo man**

**3/15/05: NSTEMI, PCI of MRCA**

**3/23/06 (1 year): Unstable angina  
attributed to LAD**

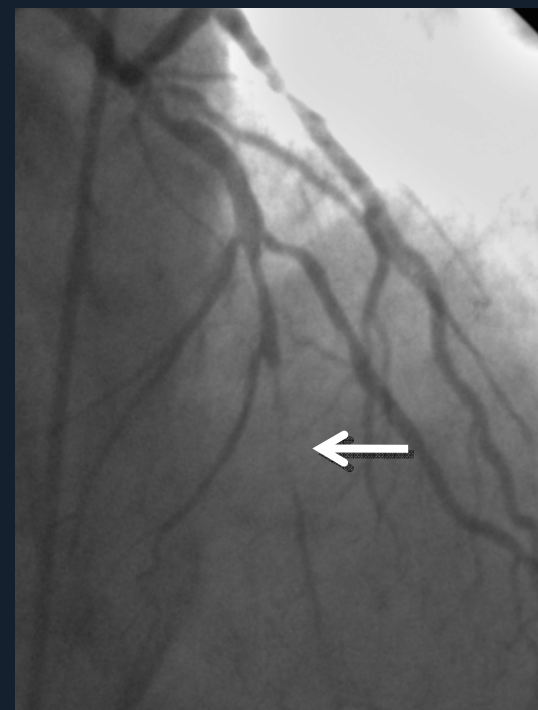


**Index 3/15/05**



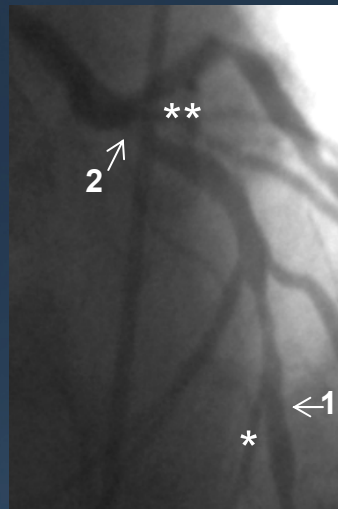
**QCA MLAD DS 31.1%**

**Event 3/23/06**



**QCA MLAD DS 100%**

# PROSPECT 27731-003: Index 3/15/05

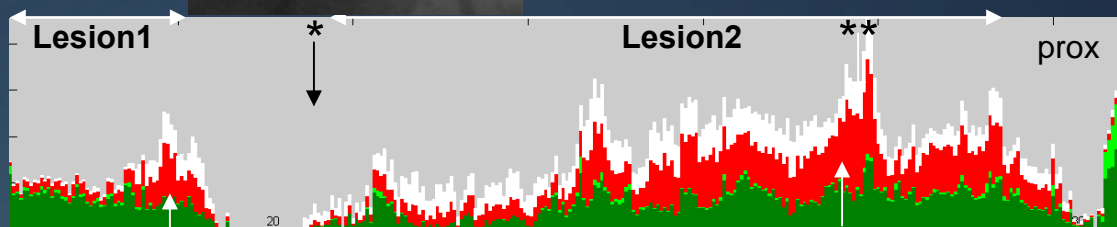


## Baseline MLAD

**QCA: DS 31.1%**

**IVUS: MLA 3.6 mm<sup>2</sup>**

**VH: TCFA**

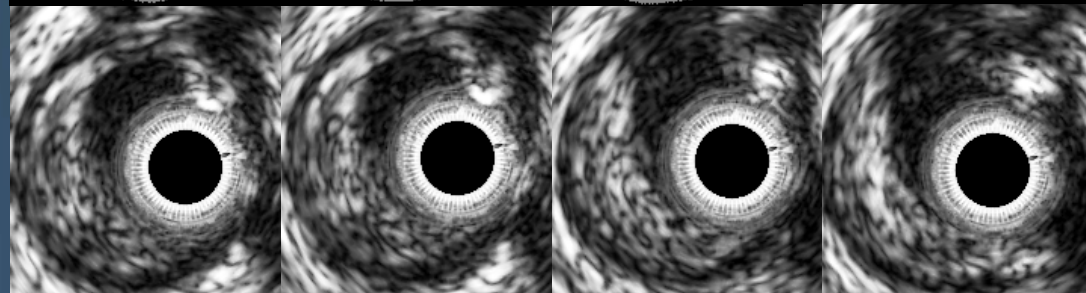
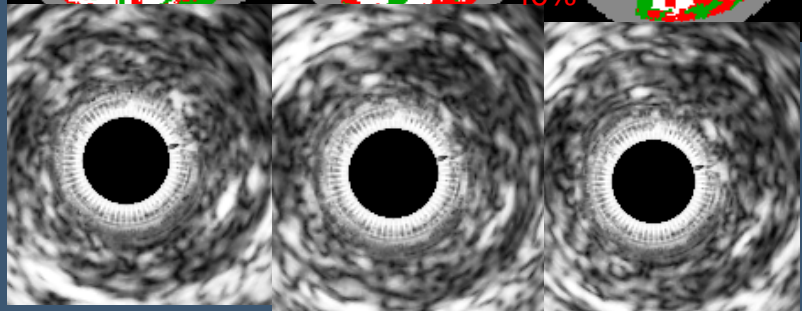
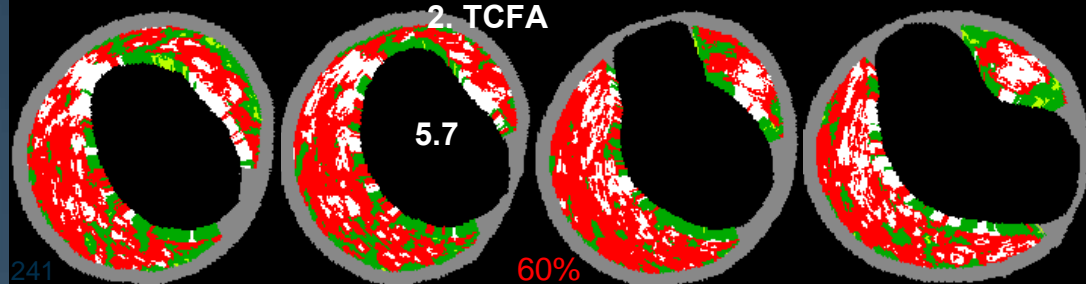
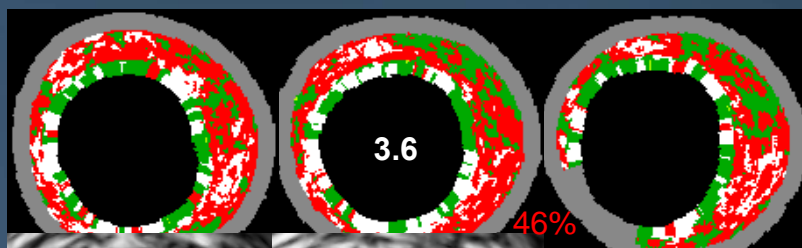


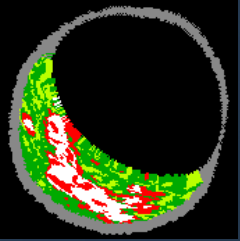
**MLAD**

**PLAD**

1. TCFA

2. TCFA

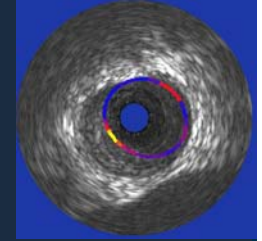




**PROSPECT 82910-012: 52 yo man**

**2/13/06: NSTEMI, PCI of MLAD**

**2/6/07 (1 year): NSTEMI attributed to  
LCX**



**Index 2/13/06**

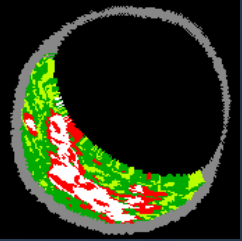
Lossy Compression - not intended for diagnosis



**Event 2/6/07**

Lossy Compression - not intended for diagnosis

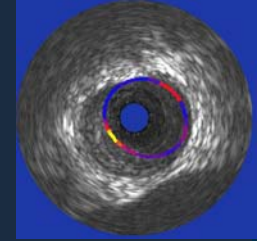




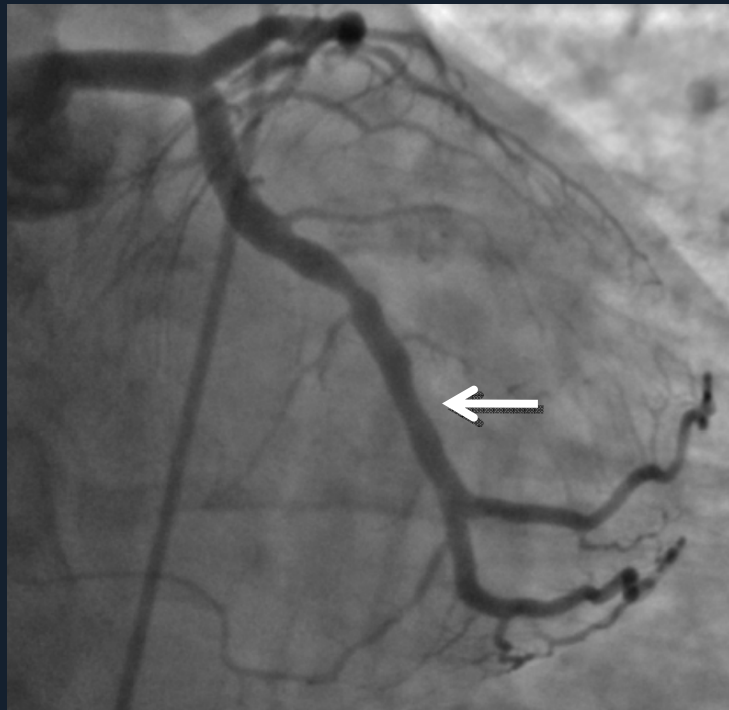
**PROSPECT 82910-012: 52 yo man**

**2/13/06: NSTEMI, PCI of MLAD**

**2/6/07 (1 year): NSTEMI attributed to  
LCX**

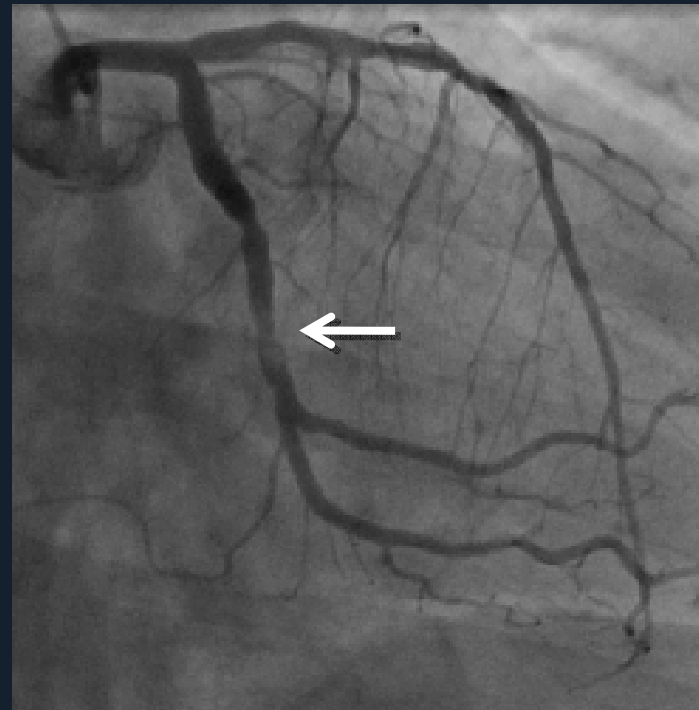


**Index 2/13/06**



**QCA PLCX DS 38.6%**

**Event 2/6/07**



**QCA PLCX DS 71.3%**



# PROSPECT 82910-012: Index 2/13/06

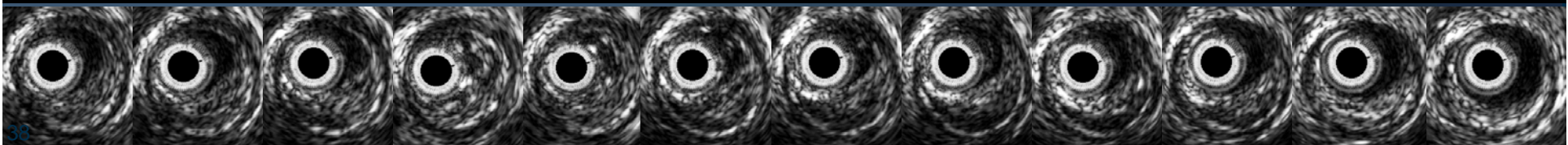
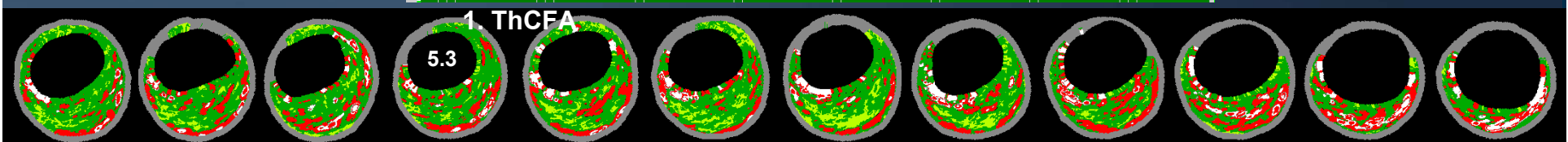
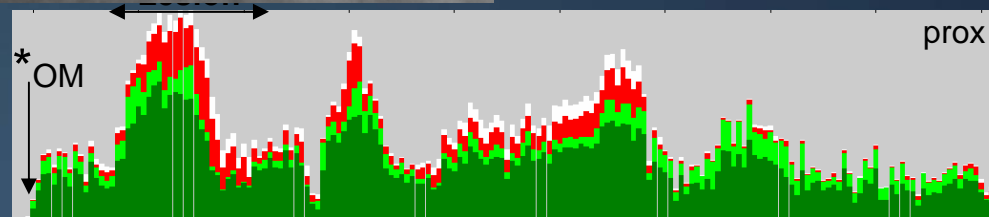


Baseline PLCX

**QCA: DS 38.6%**

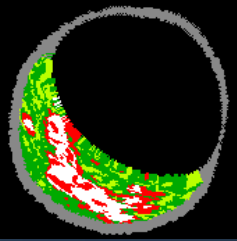
**IVUS: MLA 5.3 mm<sup>2</sup>**

**VH: ThCFA**



Echolucent Plaque

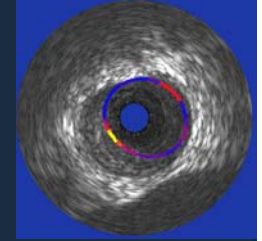




**PROSPECT 27589-033: 54 yo man**

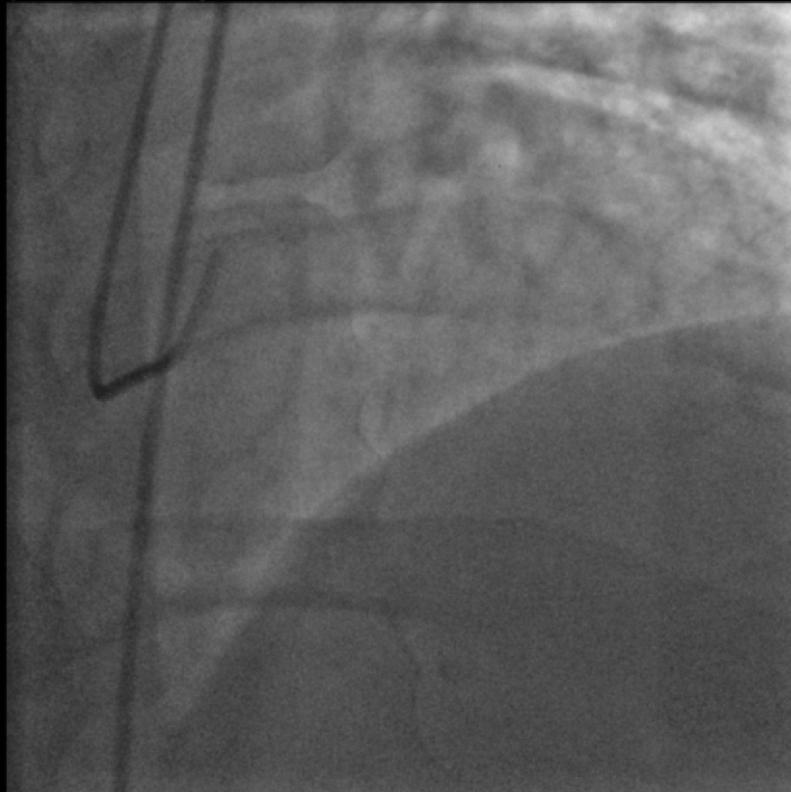
**10/12/05: NSTEMI, PCI of RPDA**

**11/7/05 (4 weeks): Unstable angina  
attributed to LAD**



**Index 10/12/05**

Lossy Compression - not intended for diagnosis



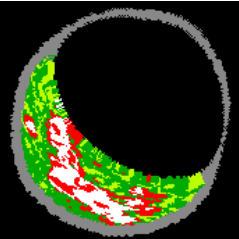
**Event 11/7/05**

Lossy Compression - not intended for diagnosis

N, RICHARD  
1950 M  
33  
2005

St. THOMAS HO  
Constantine,

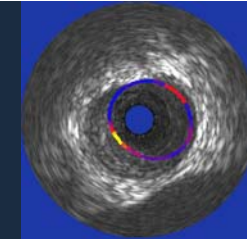




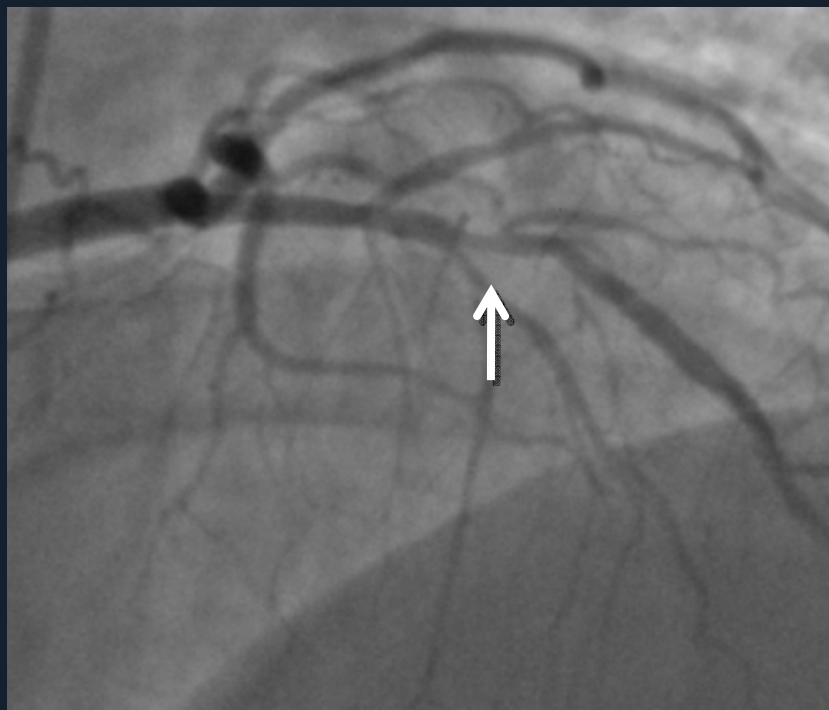
**PROSPECT 27589-033: 54 yo man**

**10/12/05: NSTEMI, PCI of RPDA**

**11/7/05 (4 weeks): Unstable angina  
attributed to LAD**

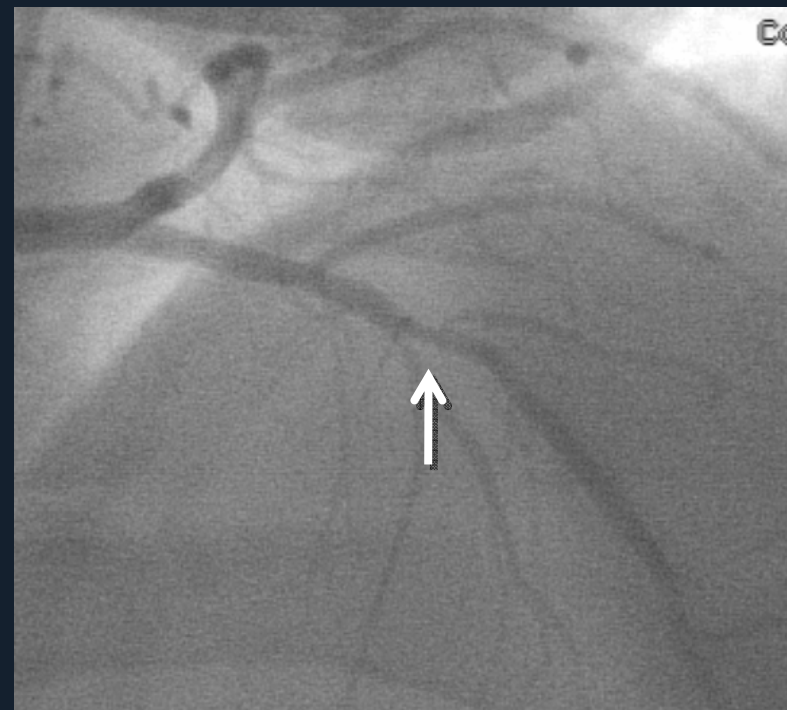


**Index 10/12/05**



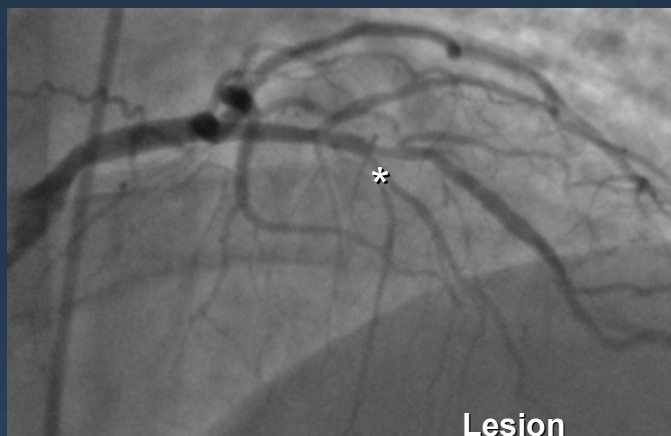
**QCA MLAD DS 50.6%**

**Event 11/7/05**



**QCA MLAD DS 55.0%**

# PROSPECT 27589-033: Index 10/12/05

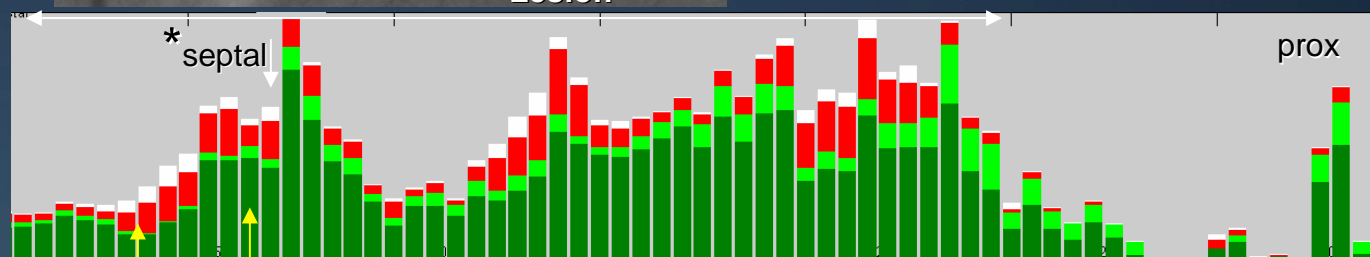


Baseline MLAD

**QCA: DS 50.6%**

**IVUS: MLA 3.2 mm<sup>2</sup>**

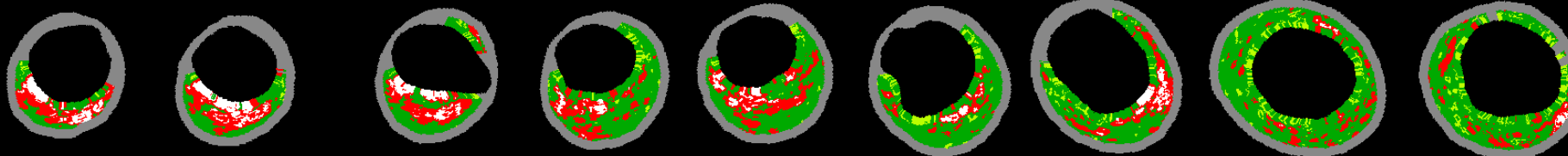
**VH: ThCFA**



1. CaThFA, M

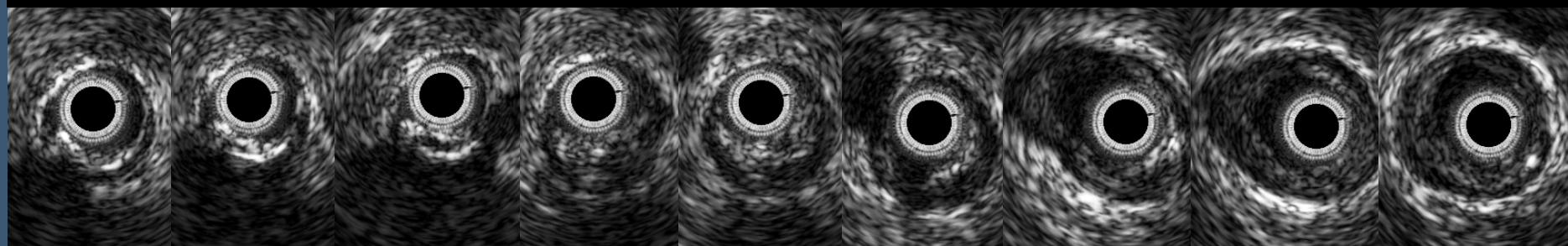
2

2. ThCFA, M

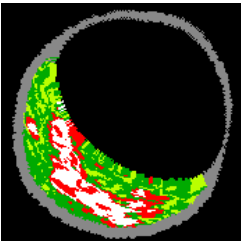


3.2/10.3

29%

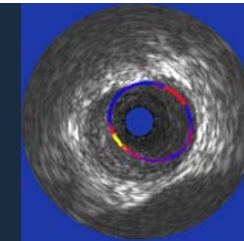






# PROSPECT Status

## as of April 2009



- All pts have passed their 2 year follow-up
- Events are accruing, but not enough to yet analyze (protocol specifies 105 minimum events adjudicated to non culprit lesions)
- See you at TCT 2009!

TCT September 2009

San Francisco, CA

Sept. 22 - 26



TCT 2009