2018 Joint meeting of Coronary Revascularization

10:50 ~ 11:55

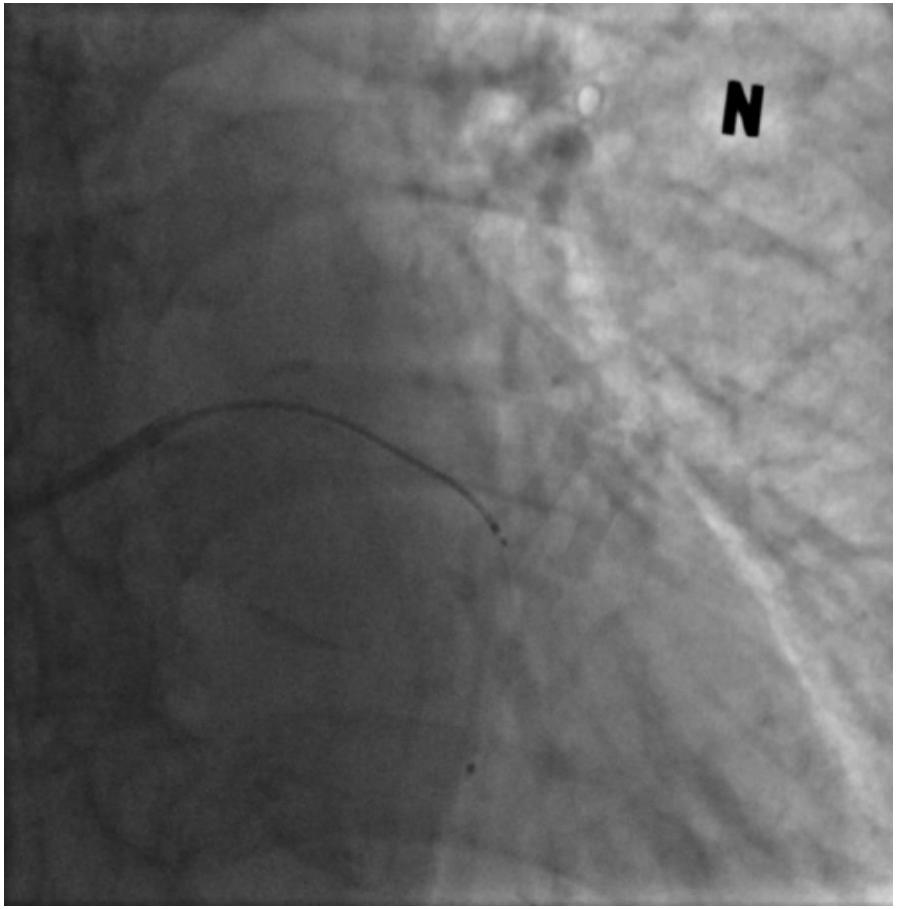
Case (TVC)

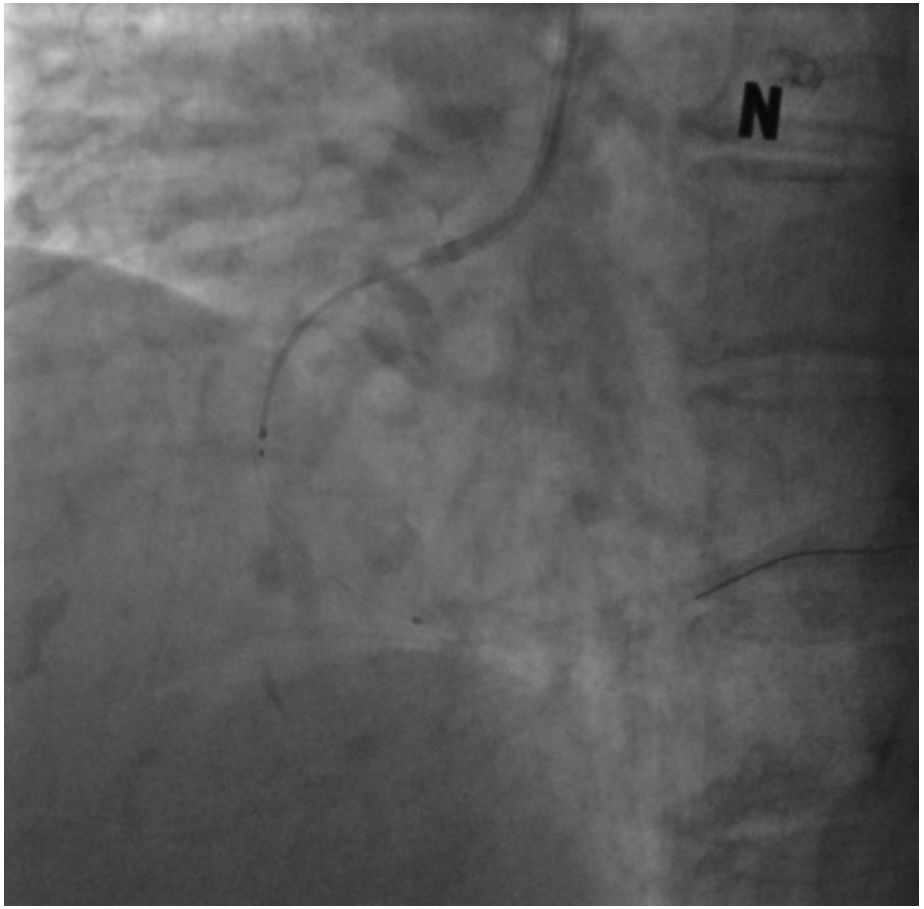
Sanghoon Shin

Division of Cardiology

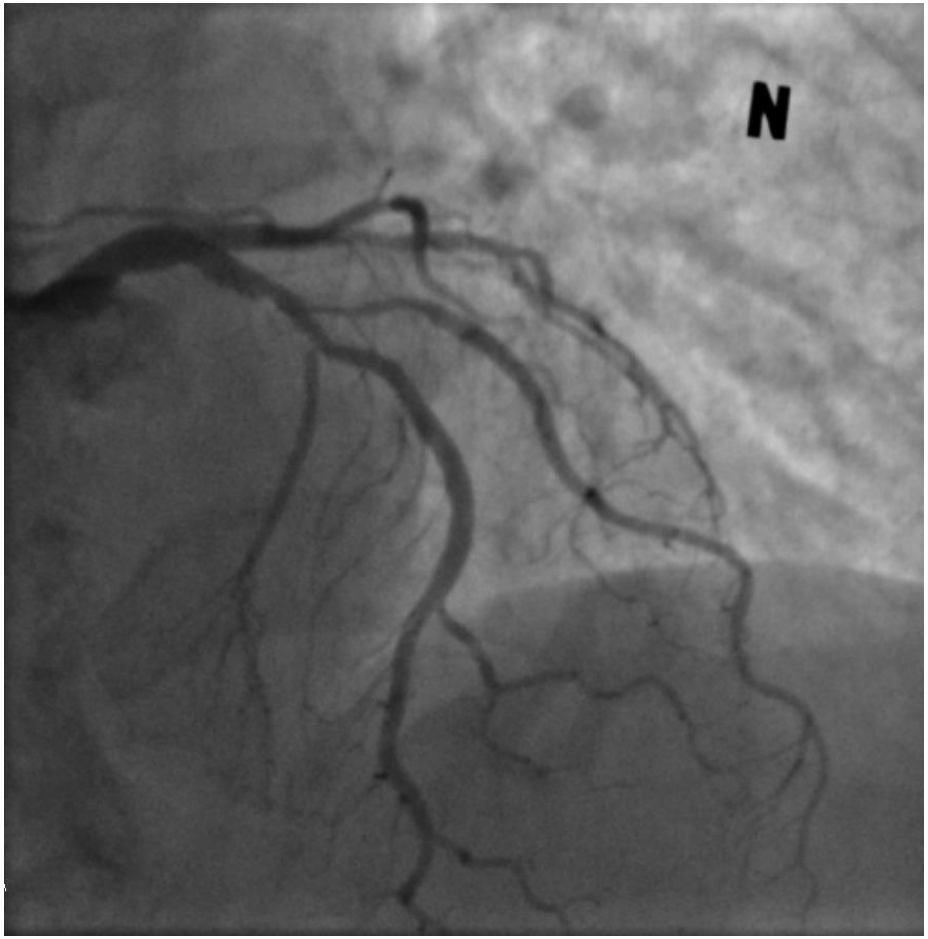
NHIS Ilsan Hospital

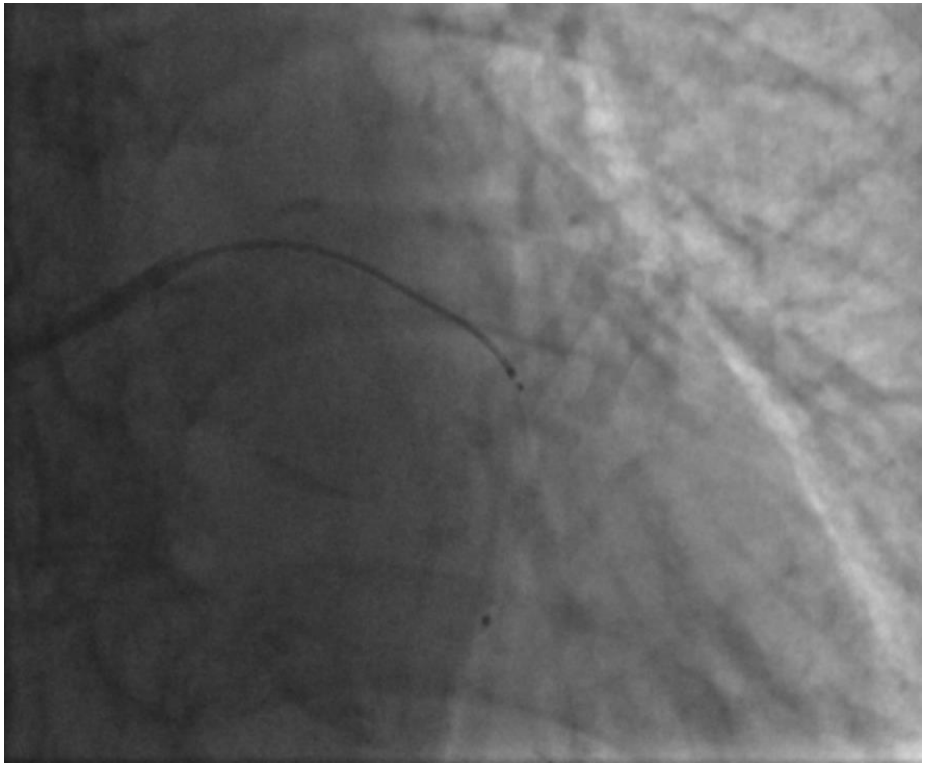
TVC NIRS IVUS



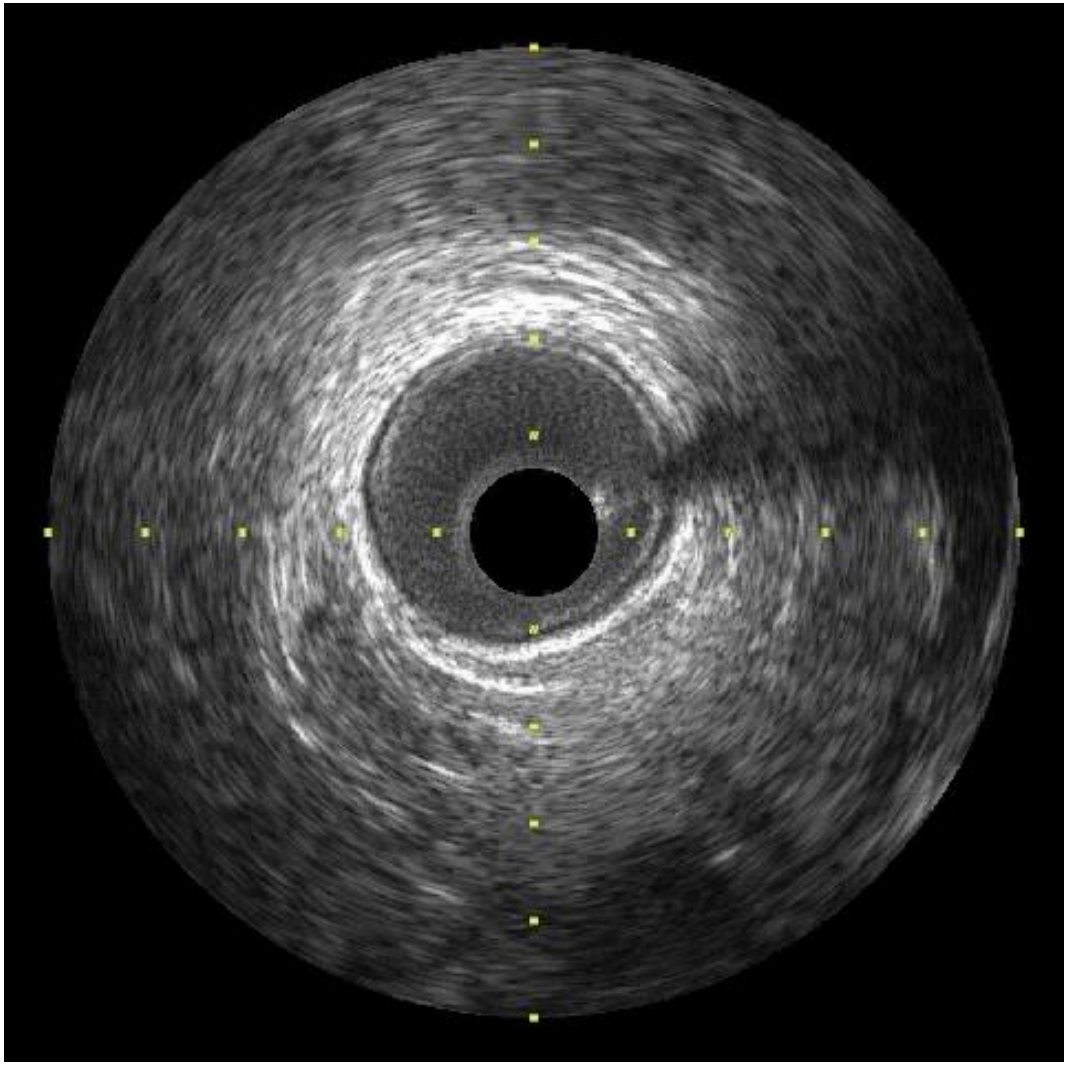


pLAD- TVC

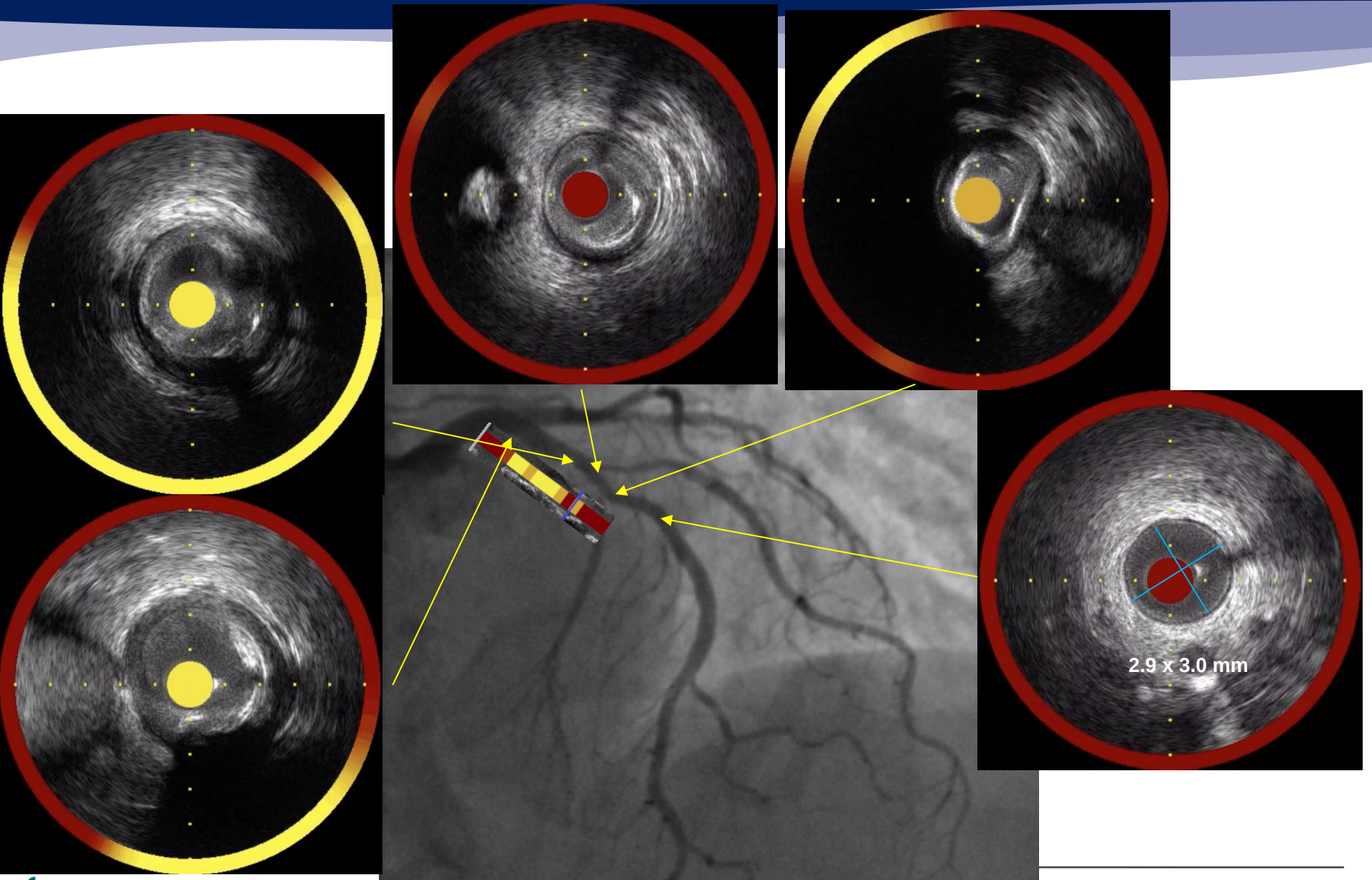




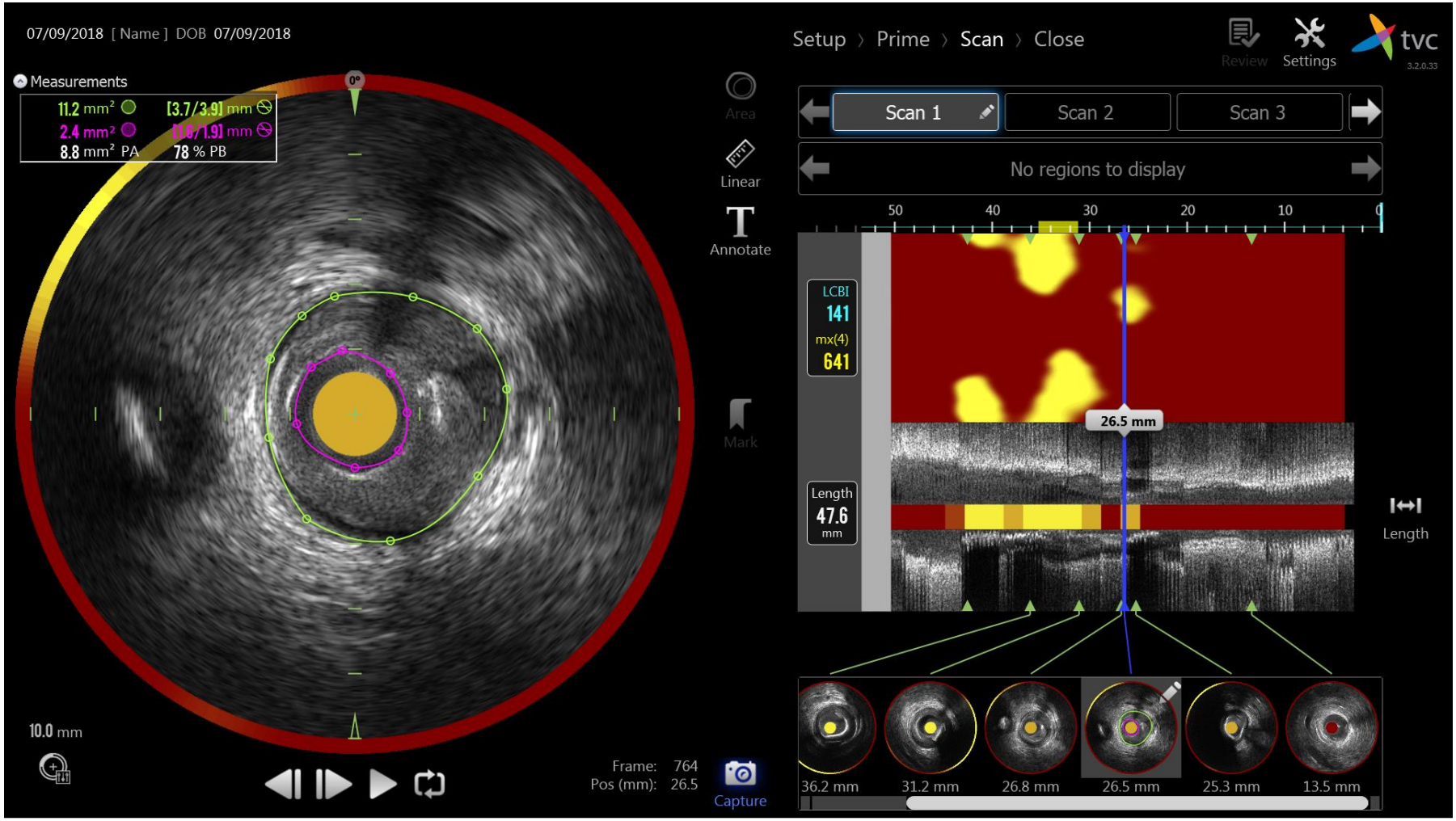
TVC at pLAD



TVC at pLAD



TVC at pLAD


07/09/2018 [Name] DOB 07/09/2018
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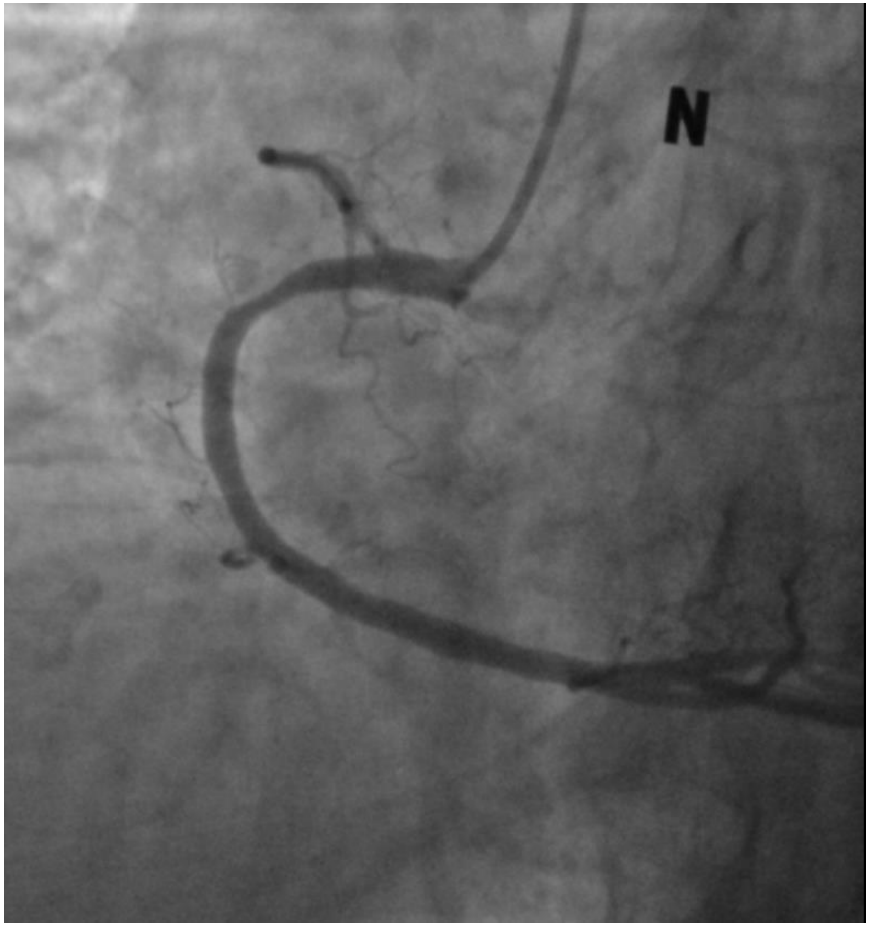
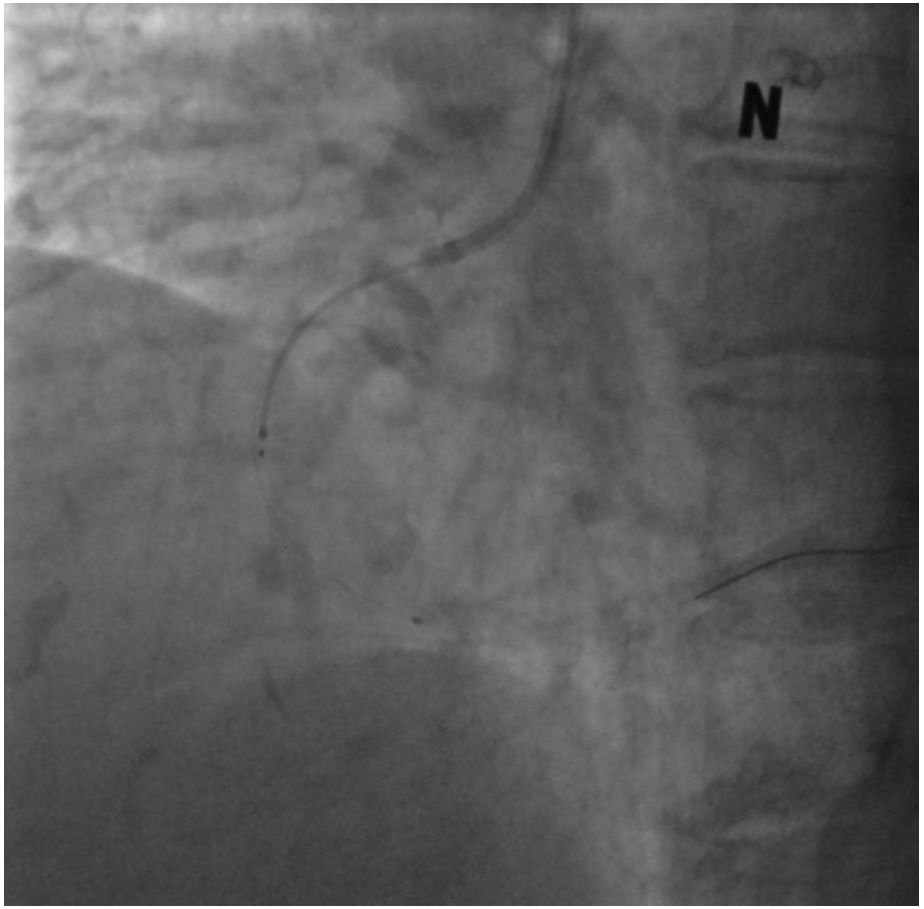
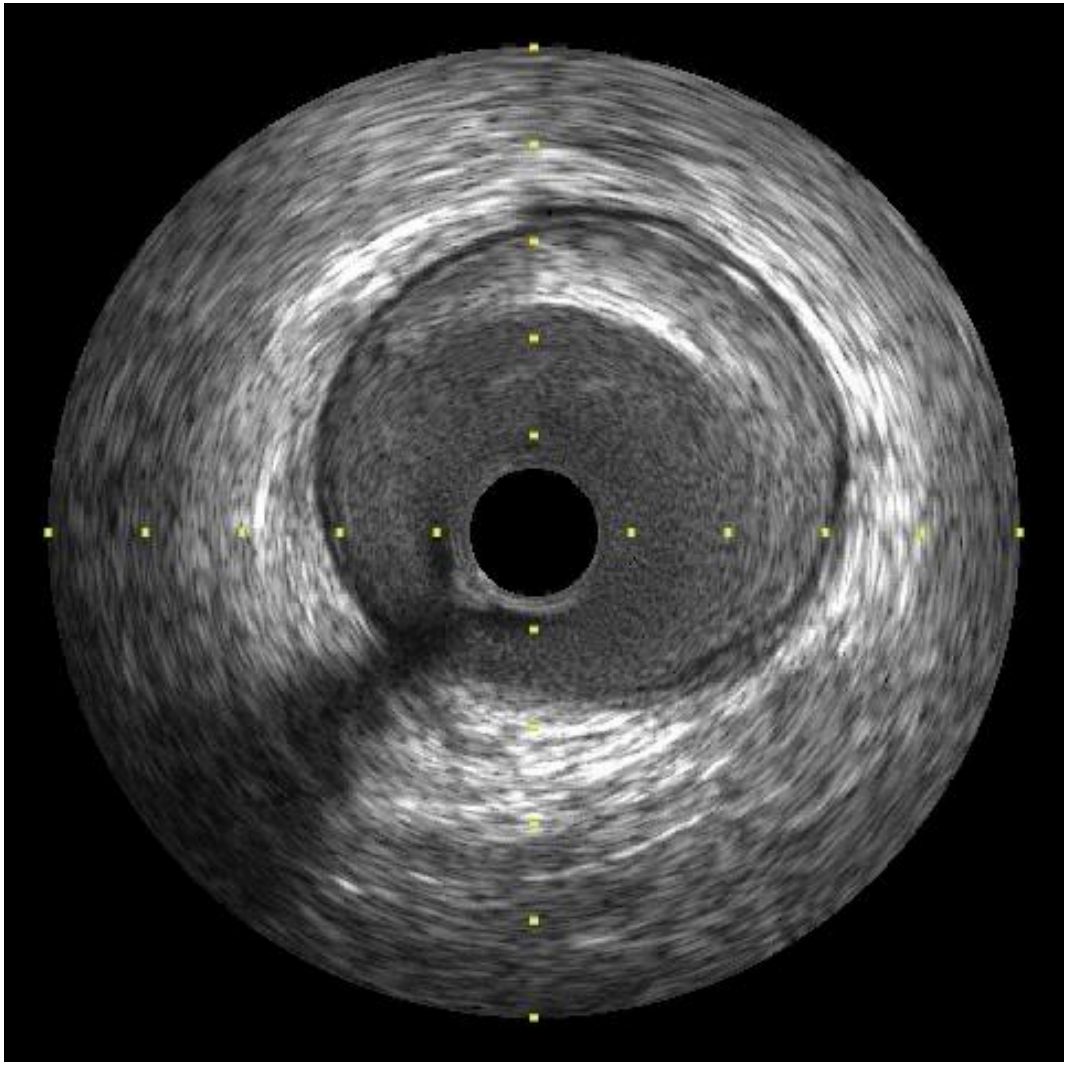
11.2 mm²
[3.7/3.9] mm
2.4 mm²
[1.0/1.9] mm
8.8 mm² PA
78 % PB
0°
10.0 mm
Area
Linear
Annotate
Mark
Frame: 764
Pos (mm): 26.5
Capture
Setup › Prime › Scan › Close
Review
Settings
tvc
3.2.0.33
Scan 1
Scan 2
Scan 3
No regions to display
50
40
30
20
10
0
LCBI
141
mx(4)
641
26.5 mm
Length
47.6
mm
Length
36.2 mm
31.2 mm
26.8 mm
26.5 mm
25.3 mm
13.5 mm

pRCA





TVC-pRCA



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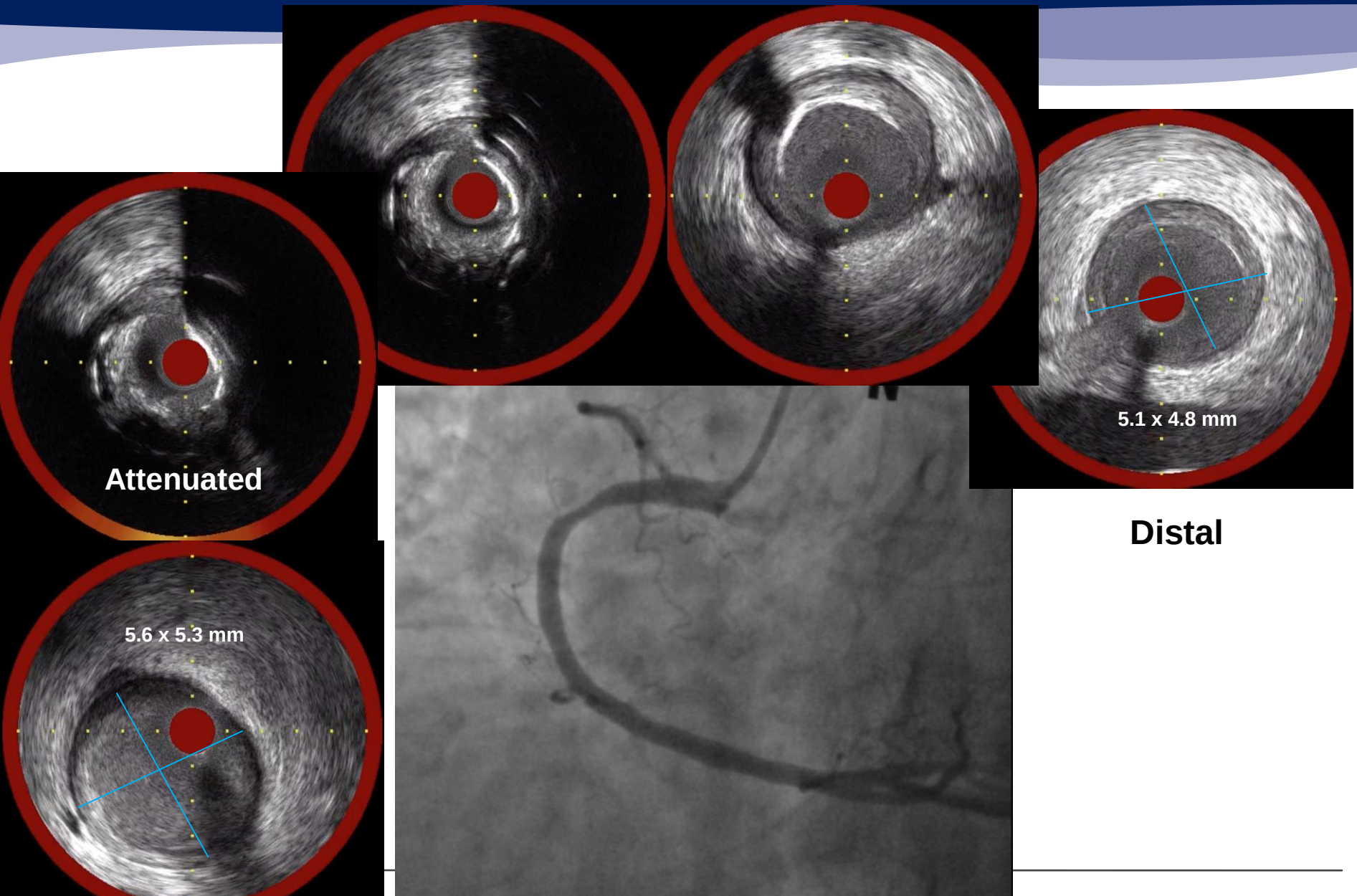
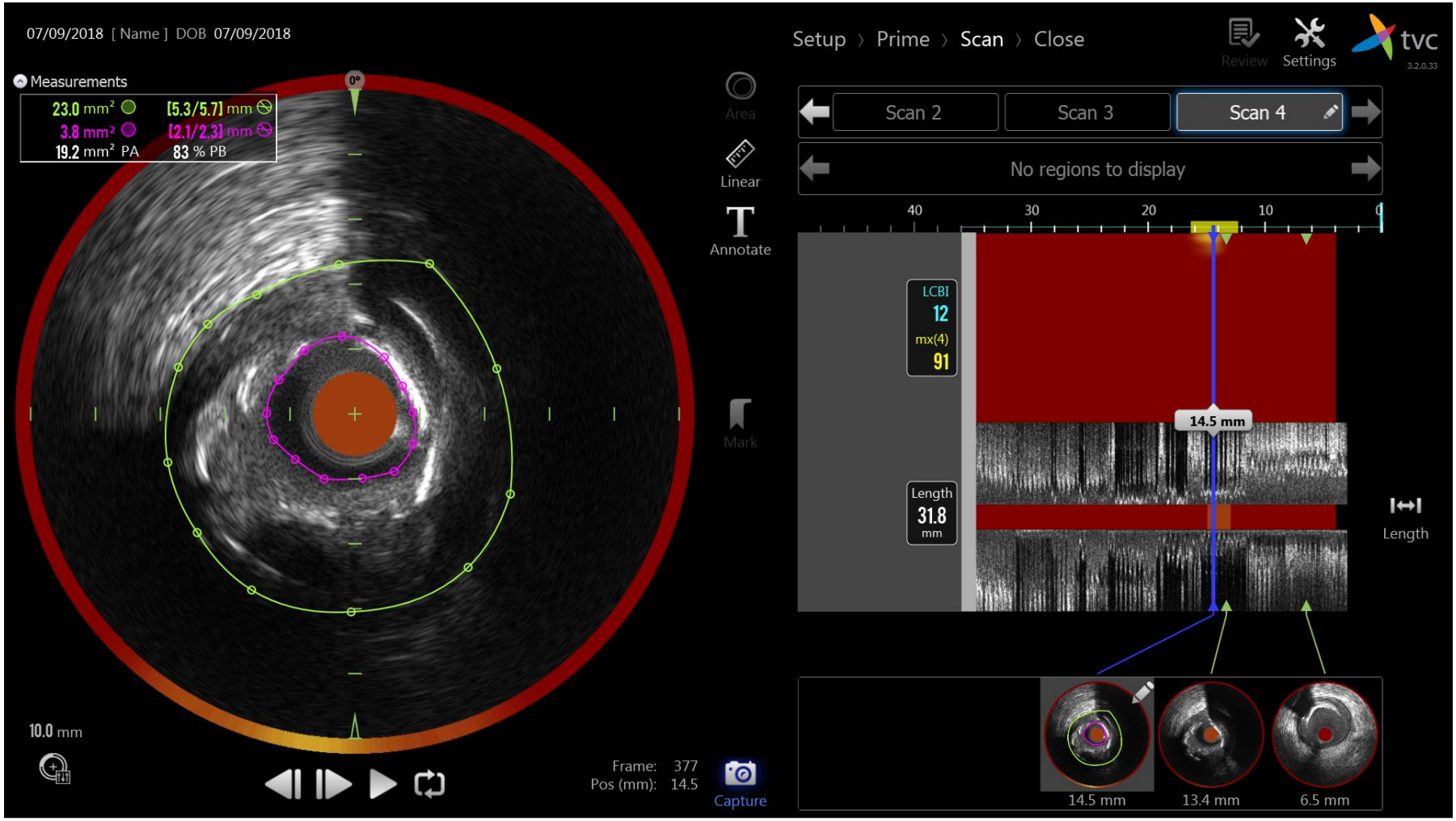
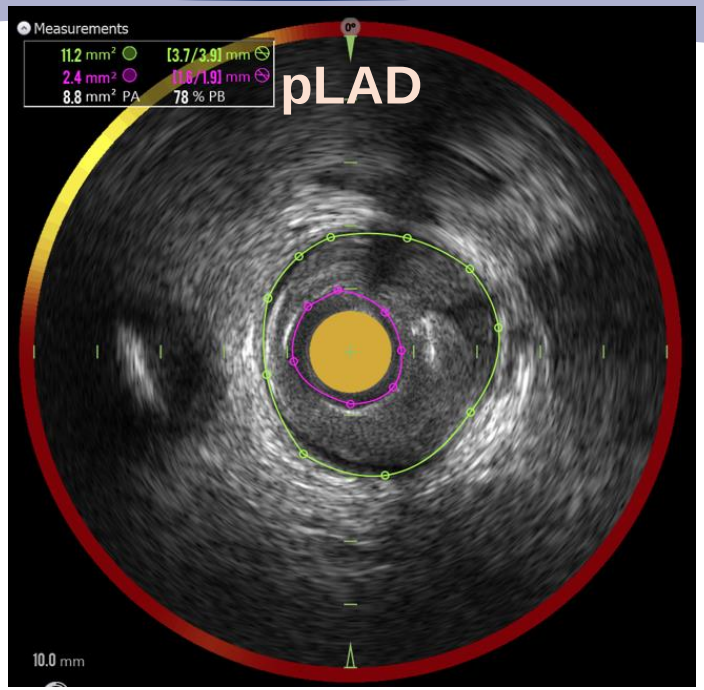
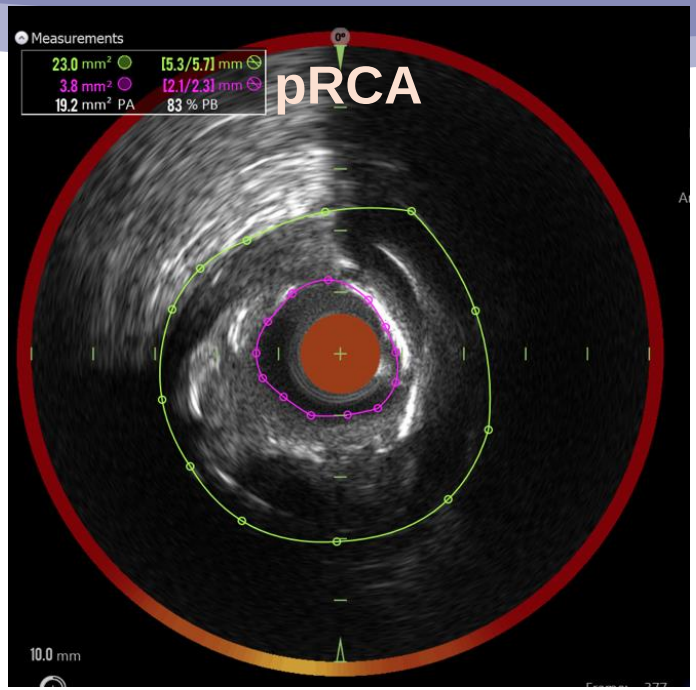


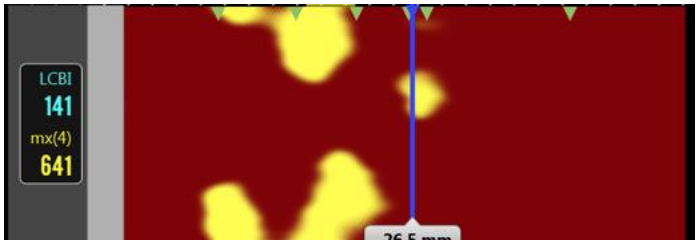
pRCA


07/09/2018 [Name] DOB 07/09/2018
Measurements
23.0 mm²
[5.3/5.7] mm
3.8 mm²
[2.1/2.3] mm
19.2 mm² PA
83 % PB
0°
10.0 mm
Area
Linear
Annotate
Mark
Frame: 377
Pos (mm): 14.5
Capture
Setup › Prime › Scan › Close
Review
Settings
tvc
3.2.0.33
Scan 2
Scan 3
Scan 4
No regions to display
40
30
20
10
0
LCBI
12
mx(4)
91
14.5 mm
Length
31.8
mm
Length
14.5 mm
13.4 mm
6.5 mm

TVC





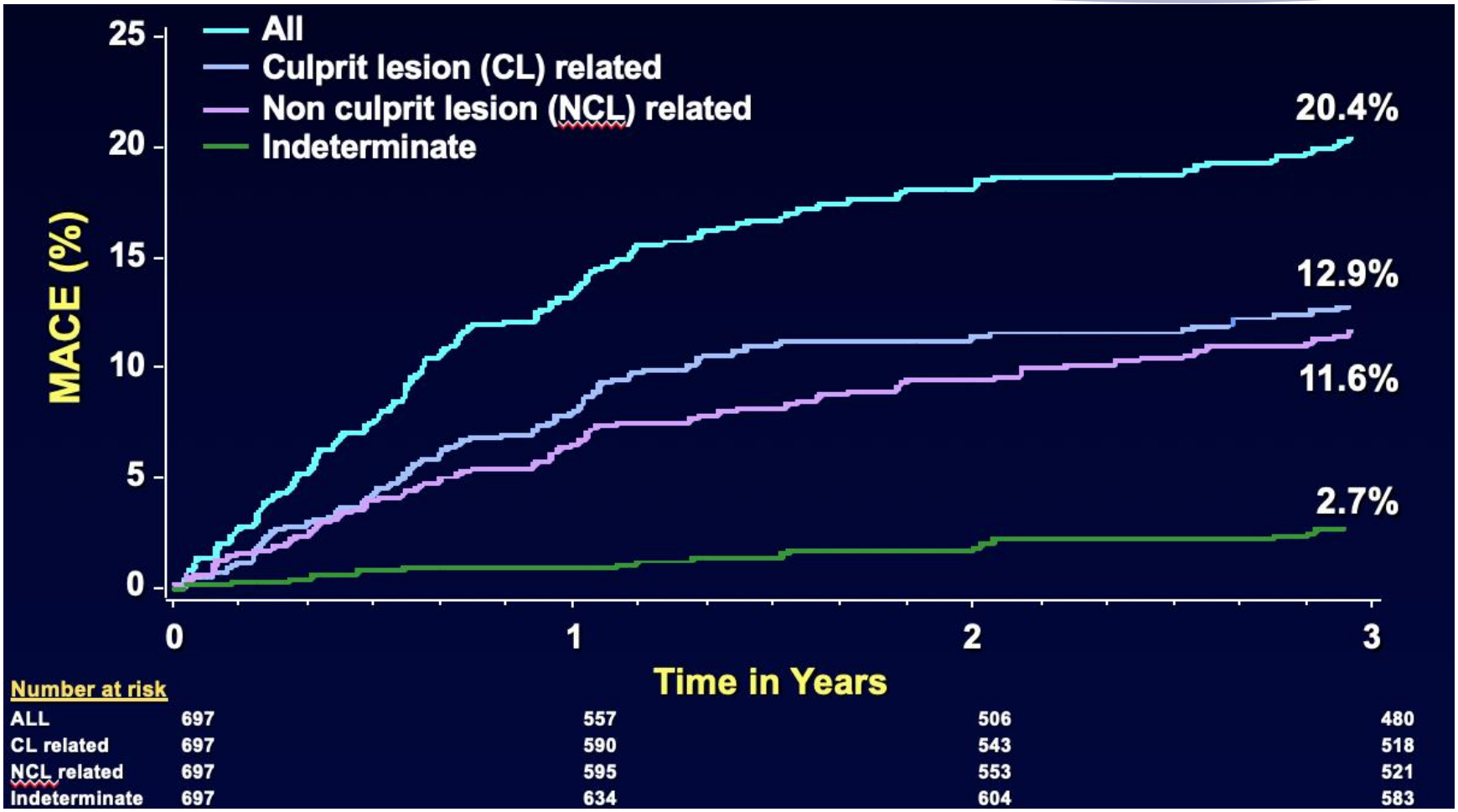


- MLA 2.4mm²
- PB 78%
- LCBI max 641

- MLA 3.8mm²
- PB 83%
- LCBI max 91

Which lesion should be treated?
Which lesion could be deferred?

PROSPECT



Stone GW et al. *NEJM* 2011;364:226-35

PROSPECT: Multivariable Correlates of Non-Culprit Lesion Related Events

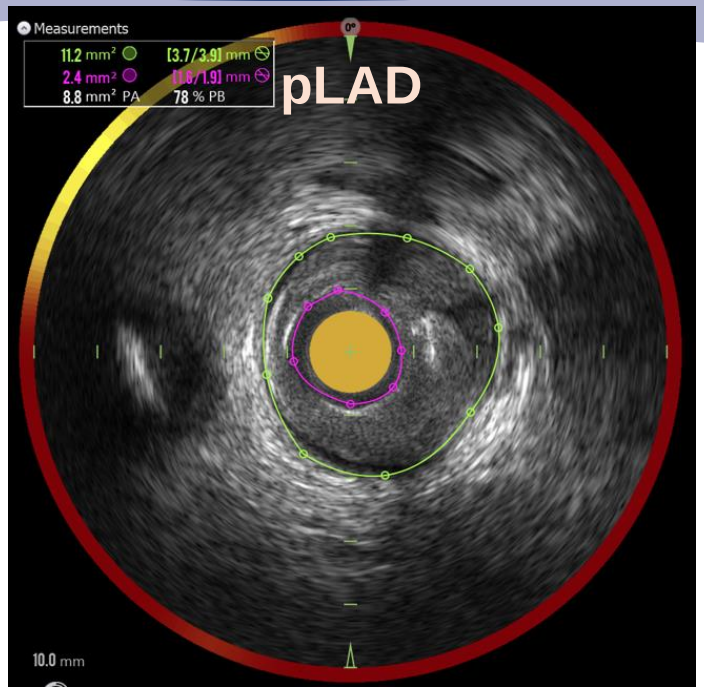
Independent predictors of lesion level events by Cox Proportional Hazards regression

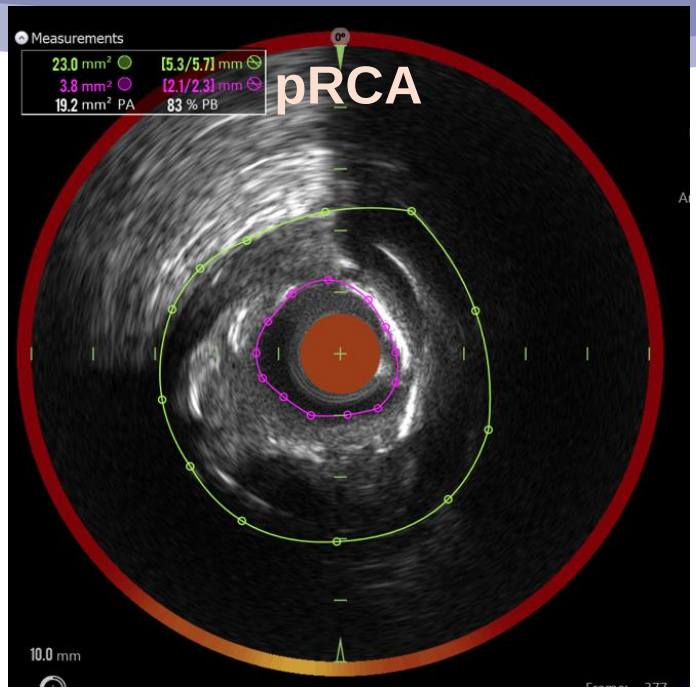
Variable	HR (95% CI)	p-value
PB_{MLA} ≥70%	5.03 [2.51, 10.11]	<0.0001
VH-TCFA	3.35 [1.77, 6.36]	0.0002
MLA ≤4.0 mm^2	3.21 [1.61, 6.42]	0.001
Lesion length ≥11.6 mm	1.97 [0.94, 4.16]	0.07
EEM_{MLA}<14.3 mm^2	1.30 [0.62, 2.75]	0.49

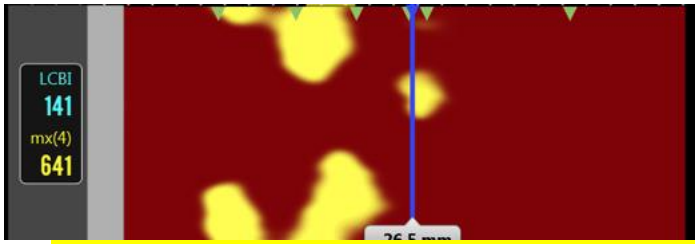
Variables entered: minimal lumen area (MLA), plaque burden at the MLA, external elastic membrane at the MLA, lesion length, distance from the coronary ostium to the MLA, remodeling index, thin-cap fibroatheroma, insulin-requiring diabetes and prior percutaneous coronary intervention

Stone GW et al. *NEJM* 2011;364:226-35

TVC



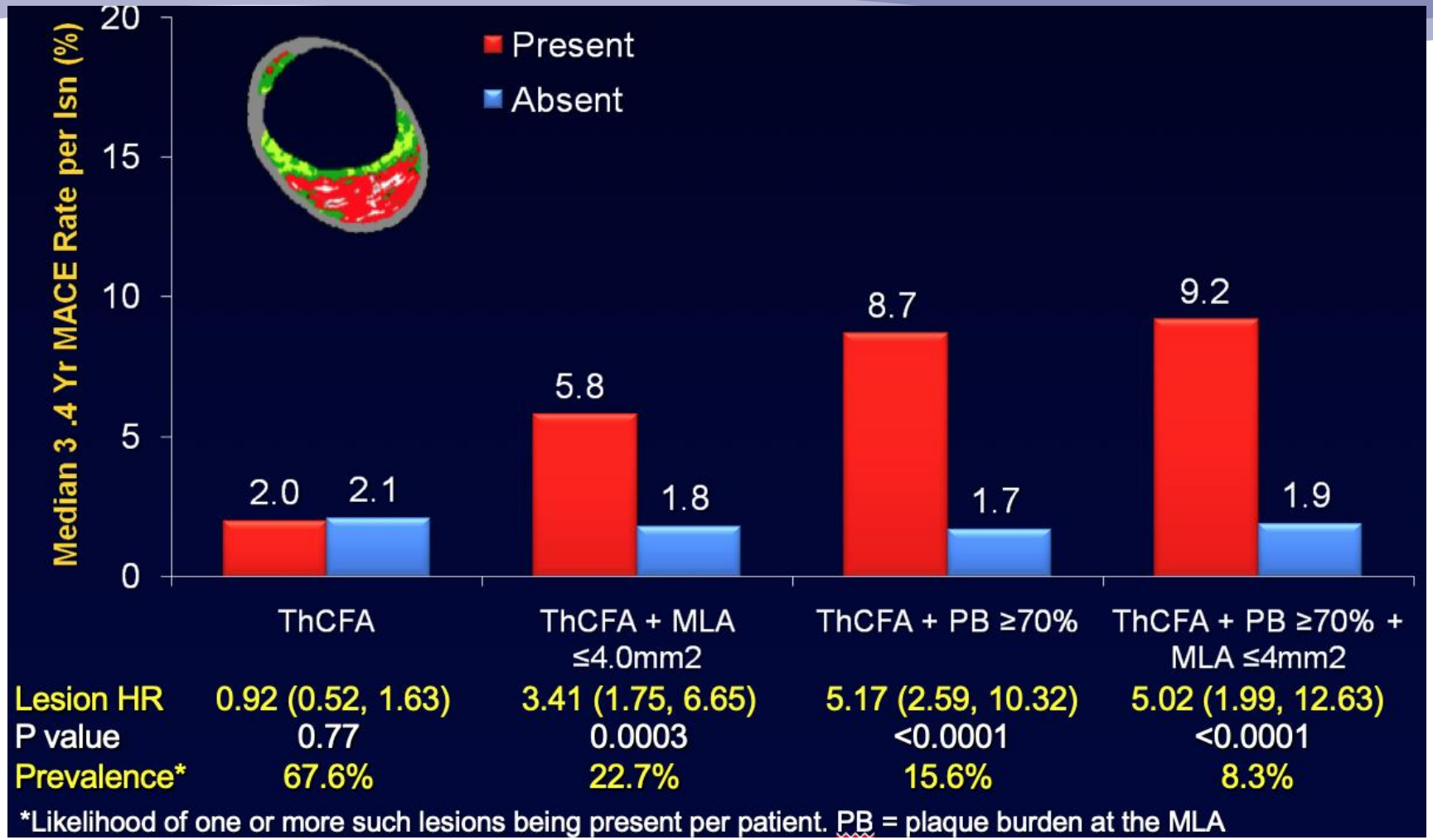




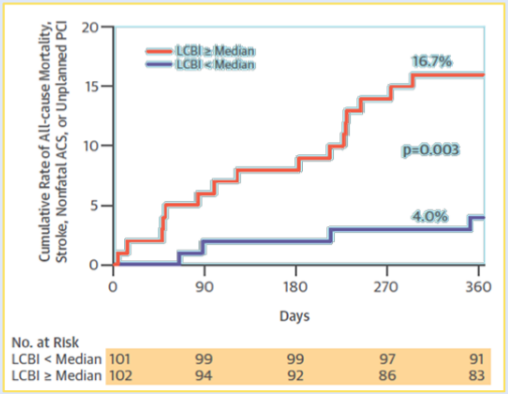
- MLA 2.4mm² ≤4.0 mm²
- PB 78% >70%
- LCBI max 641

- MLA 3.8mm² ≤4.0 mm²
- PB 83% >70%
- LCBI max 91

Thick CFA and Non- Culprit Lesion Related Events

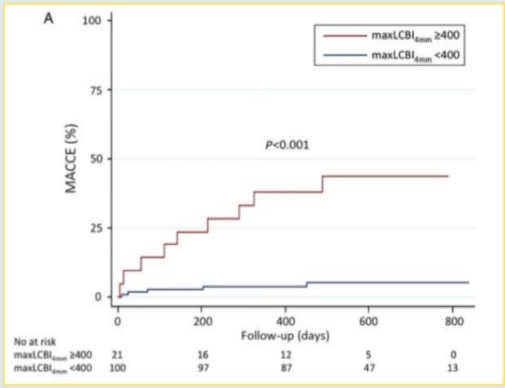


LCBI and Clinical outcomes



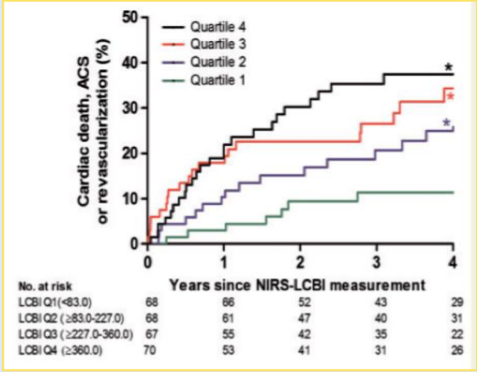
- *203 patients*
- *1 yr FU*
- *HR=4.04*

Oemrawsingh RM, et al. *J Am Coll Cardiol*. 2014



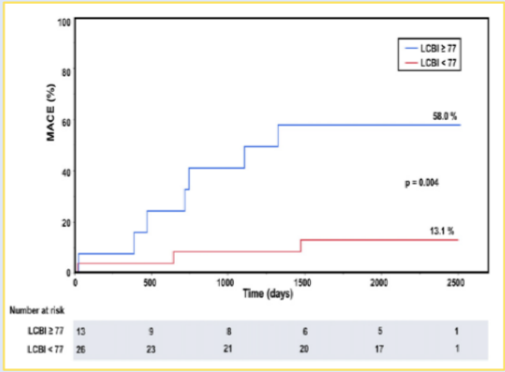
- *121 patients*
- *2 yr FU*
- *HR=10.2*

Madder RD, et al. *Eur Heart J Cardiovasc Imaging*. 2016



- *275 patients*
- *4yr FU*
- *HR=3.22*

Schuurman AS, et al. *Eur Heart J*. 2017



- *239 patients*
- *5 yr FU*
- *HR=14.05*

Danek BA, et al. *Cardiovasc Revascularization Med*. 2017

High LCBI = poor clinical outcomes

LRP Study

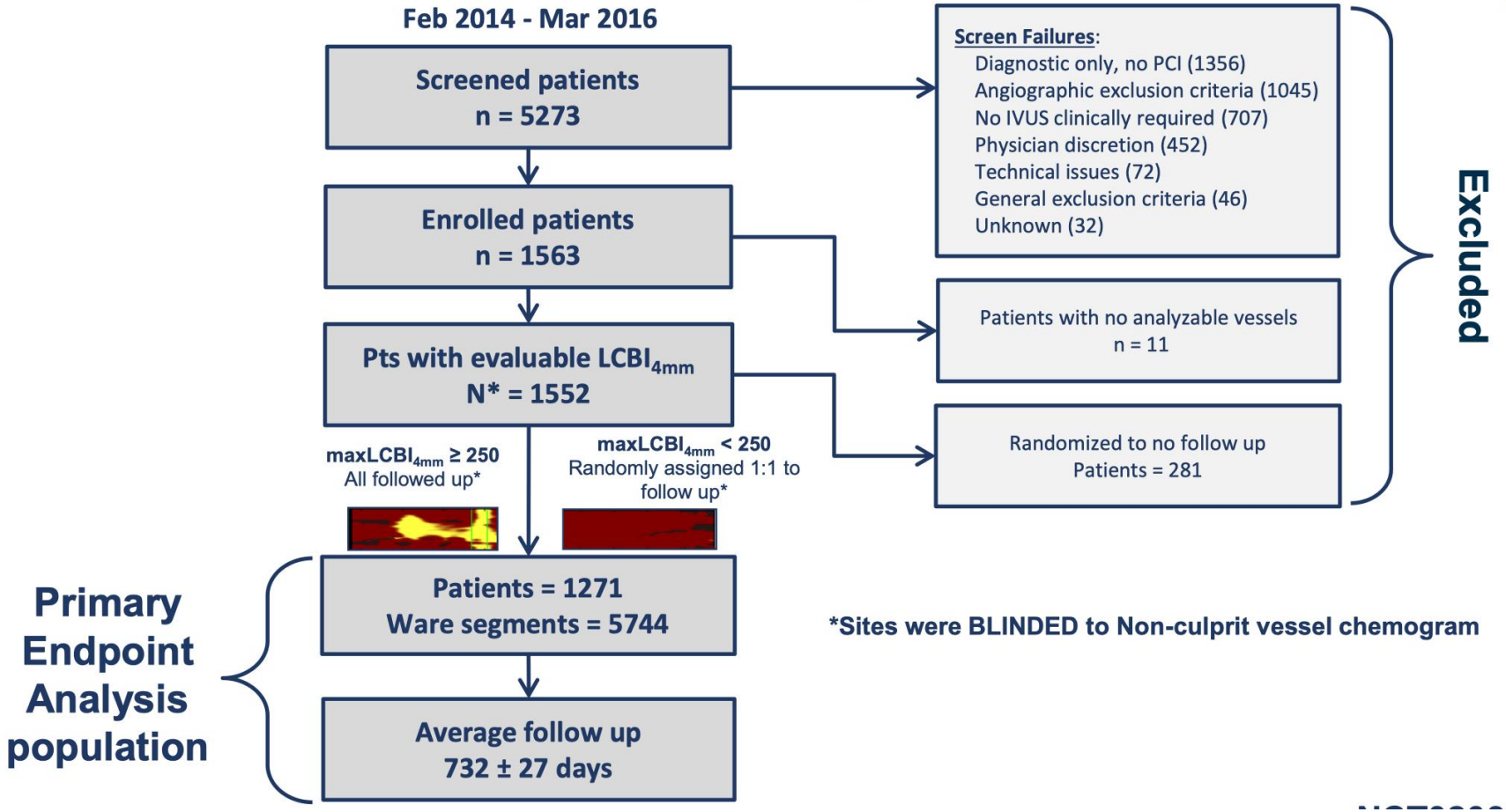
- Can intravascular NIRS imaging identify Vulnerable Patients and Vulnerable Plaques during a 24-month period?

- **Vulnerable Patient** : Association between maxLCBI4mm in all imaged arteries and future patient-level non-culprit MACE

- **Vulnerable Plaque**: Association between maxLCBI4mm in a segment and incidence of future non-culprit MACE* in same segment

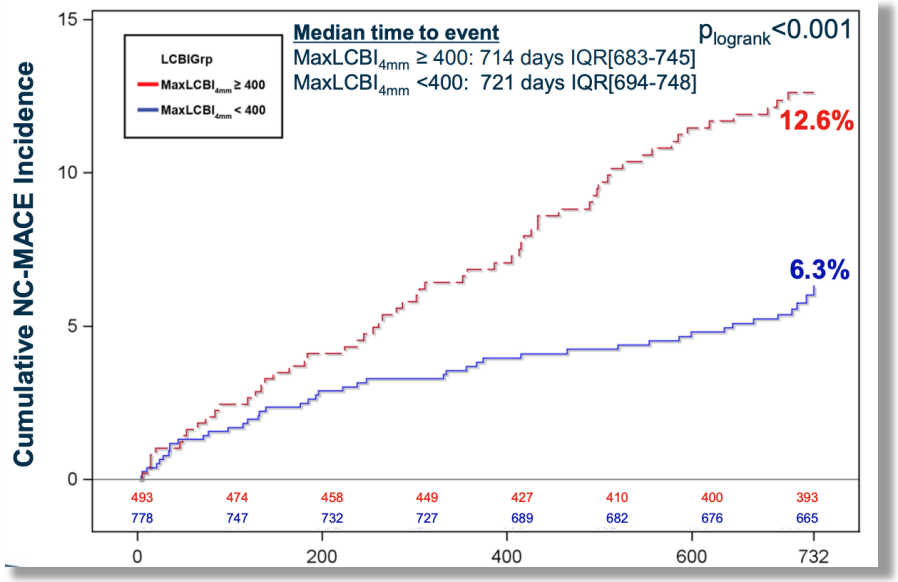
LRP study

Study Flow Diagram

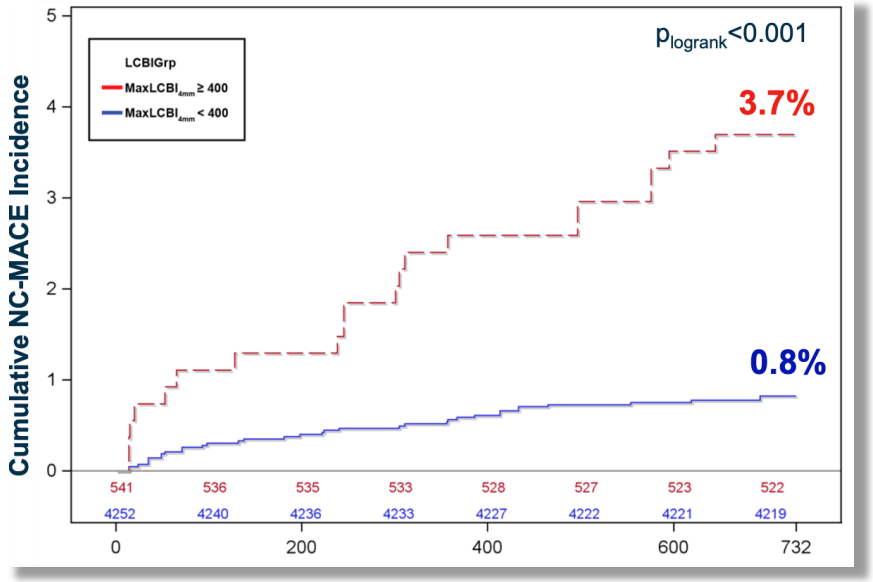


NC-MACE

Per Patient



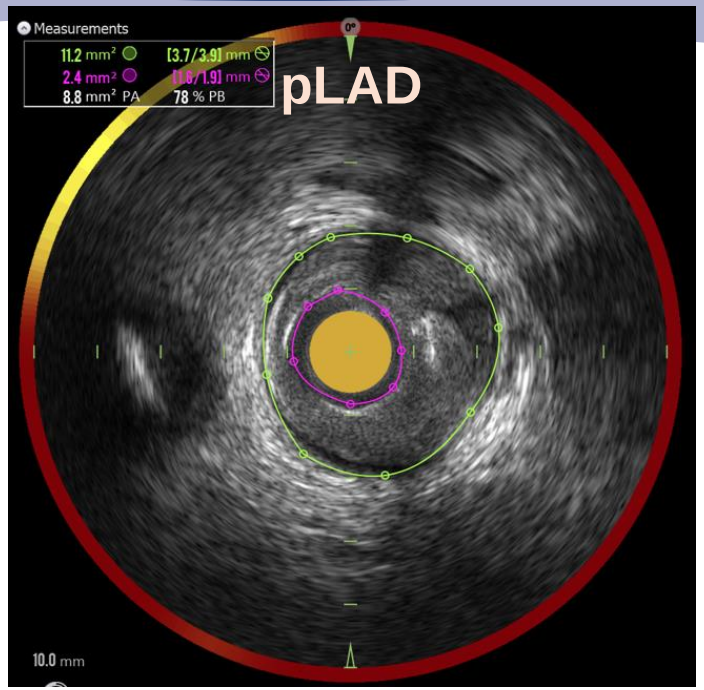
Per Plaque

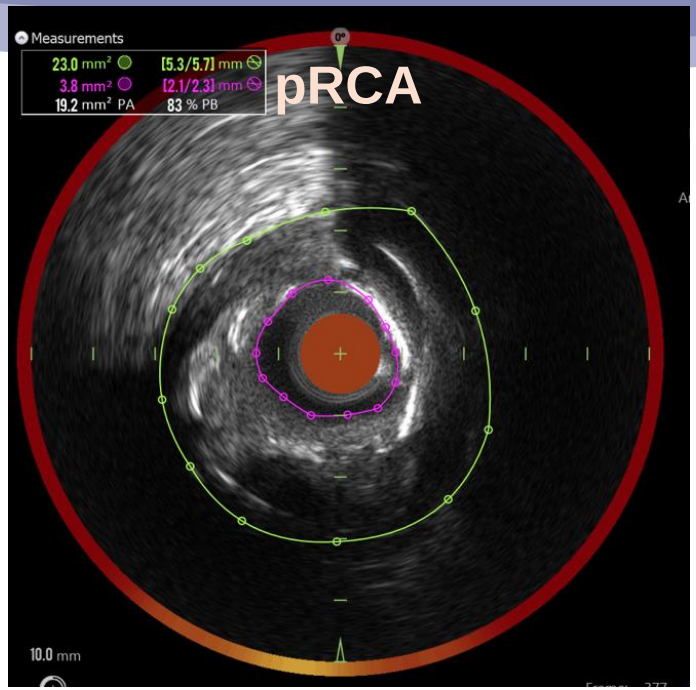


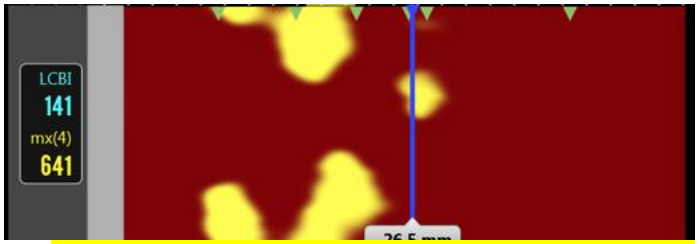
18% increase per 100 unit
87% higher MACE in maxLCBI$_{4mm}$ >400

45% increase per 100 unit
4-fold higher MACE in maxLCBI$_{4mm}$ >400

TVC







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- PB 78% >70%
- LCBI max 641 >400

- MLA 3.8mm² ≤4.0 mm²
- PB 83% >70%
- LCBI max 91

Now, You saw the vulnerable plaque…

So, Will you treat it using PCI?...