2013 TCTAP

Wrap-Up Interview

OCT in Clinical Practice

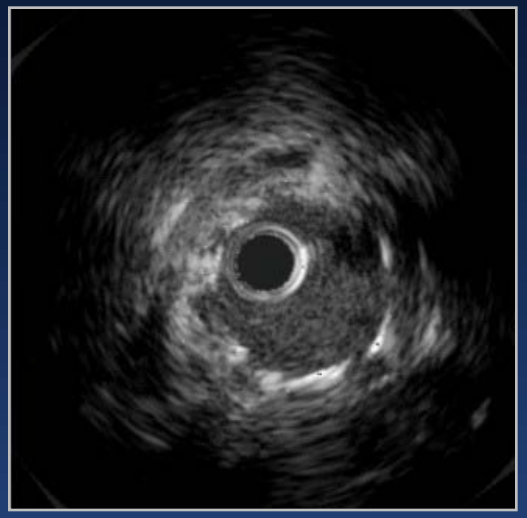
Moderator

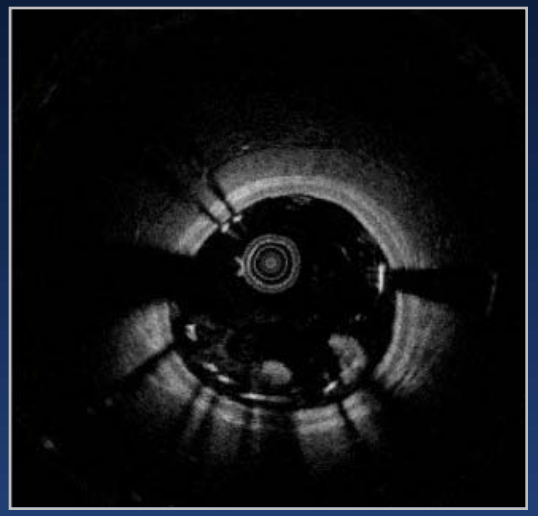
Takashi Akasaka

Interviewees

Giulio Guagliumi, Soo-Jin Kang, Evelyn Regar

IVUS vs. OCT





	IVUS (40MHz)	OCT
Resolution axial lateral	100 - 150 μm 150 - 300 μm	10 - 15 μm 25 - 40 μm
Scan diameter	8-10 mm	8-10 mm
Max. Penetration depth	4 - 8 mm	1.0 – 2.5 mm
Frame rate	30 f/s	100-160 f/s
Pullback rate	0.5 mm/s	20mm/s

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MINI-FOCUS ISSUE: OPTICAL COHERENCE TOMOGRAPHY

Clinical Research

Consensus Standards for Acquisition, Measurement, and Reporting of Intravascular Optical Coherence Tomography Studies

A Report From the International Working Group for Intravascular Optical Coherence Tomography Standardization and Validation

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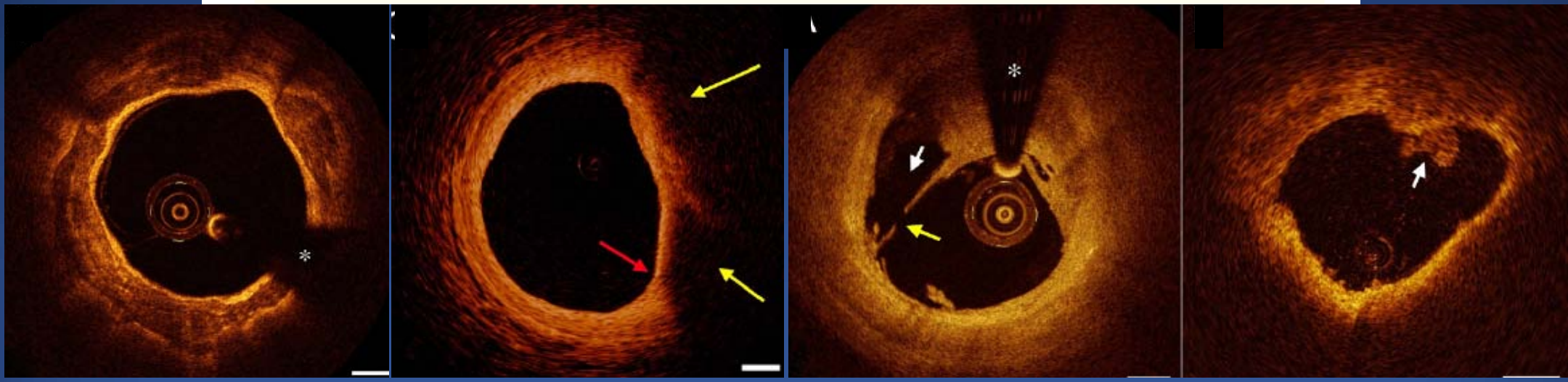
Evelyn Regar, MD, PHD, *Writing Committee Co-Chair*,† Takashi Akasaka, MD, *Writing Committee Co-Chair*,‡



Fibrocalcific **TCFA** **Plaque Rupture and Erosion**

JACC 2012;59:1058-72

Prediction of No-reflow Post-PCI

	No-reflow n=14	Reflow n=69	*p*-Value
Plaque rupture, %	71	48	0.053
Thrombus, %	79	80	0.567
TCFA, %	50	16	0.034
Lipid-arc, degree*	166	44	0.012

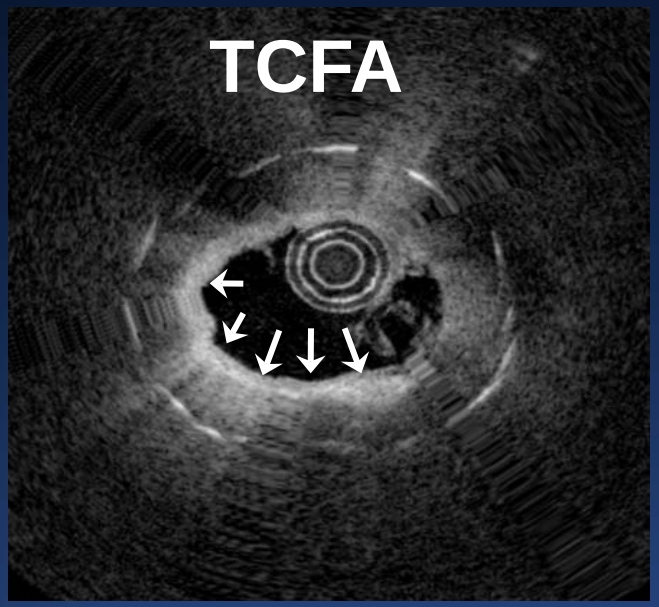
Tanaka A, Kubo T, Akasaka T et al. Eur Heart J 2009;30:1348-55

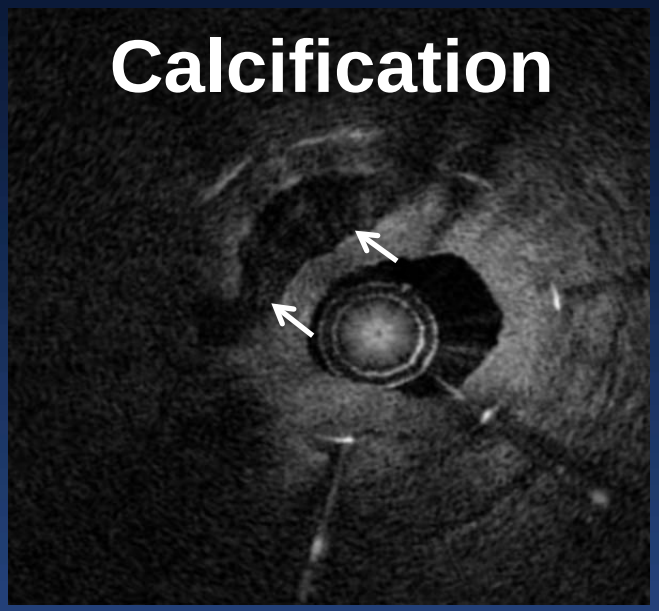
Prediction of Microvascular Obstruction

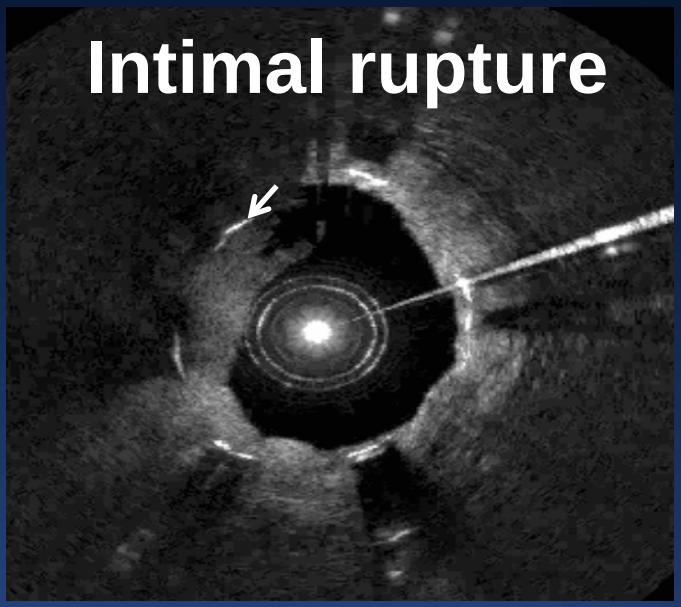
	OR	95% CI	*P*
ST-elevation myocardial infarction	48.05	2.85–809.11	0.007
TCFA at culprit	5.43	1.27–23.32	0.023
Thrombectomy	0.014	0.001–0.35	0.009
Diameter stenosis, %	1.1	1.02–1.19	0.011

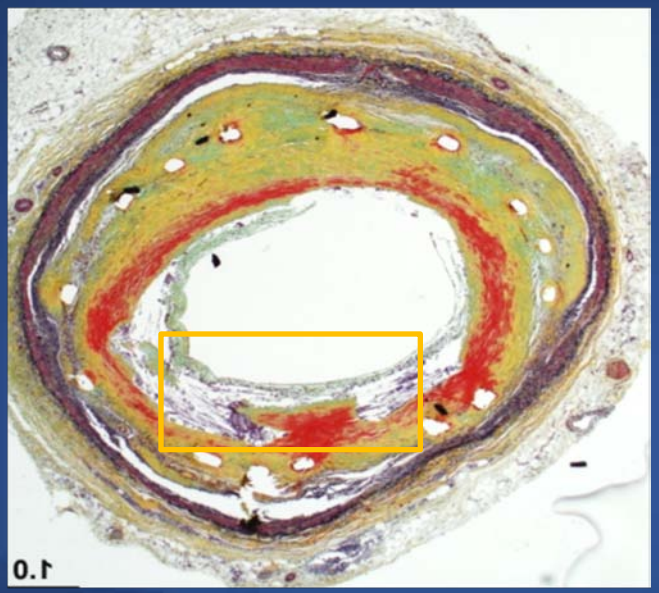
Ozaki, Kubo, Akasaka et al. Circulation Img 2011;4:620-7

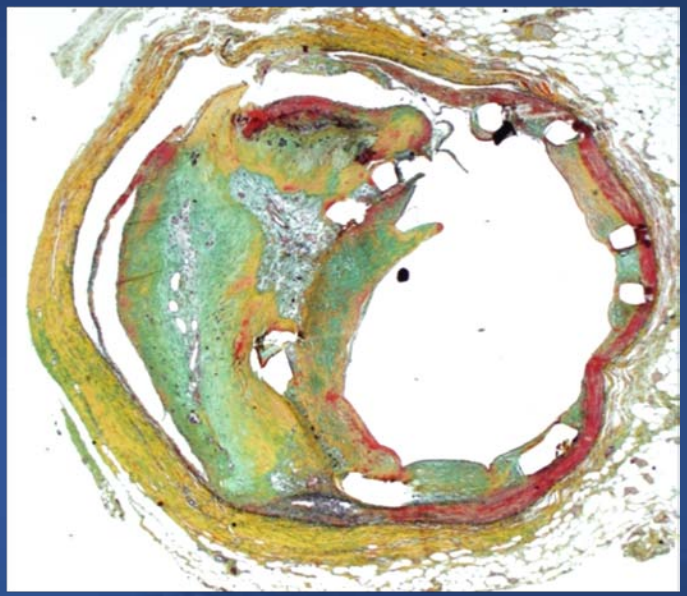
Neointima Characterization









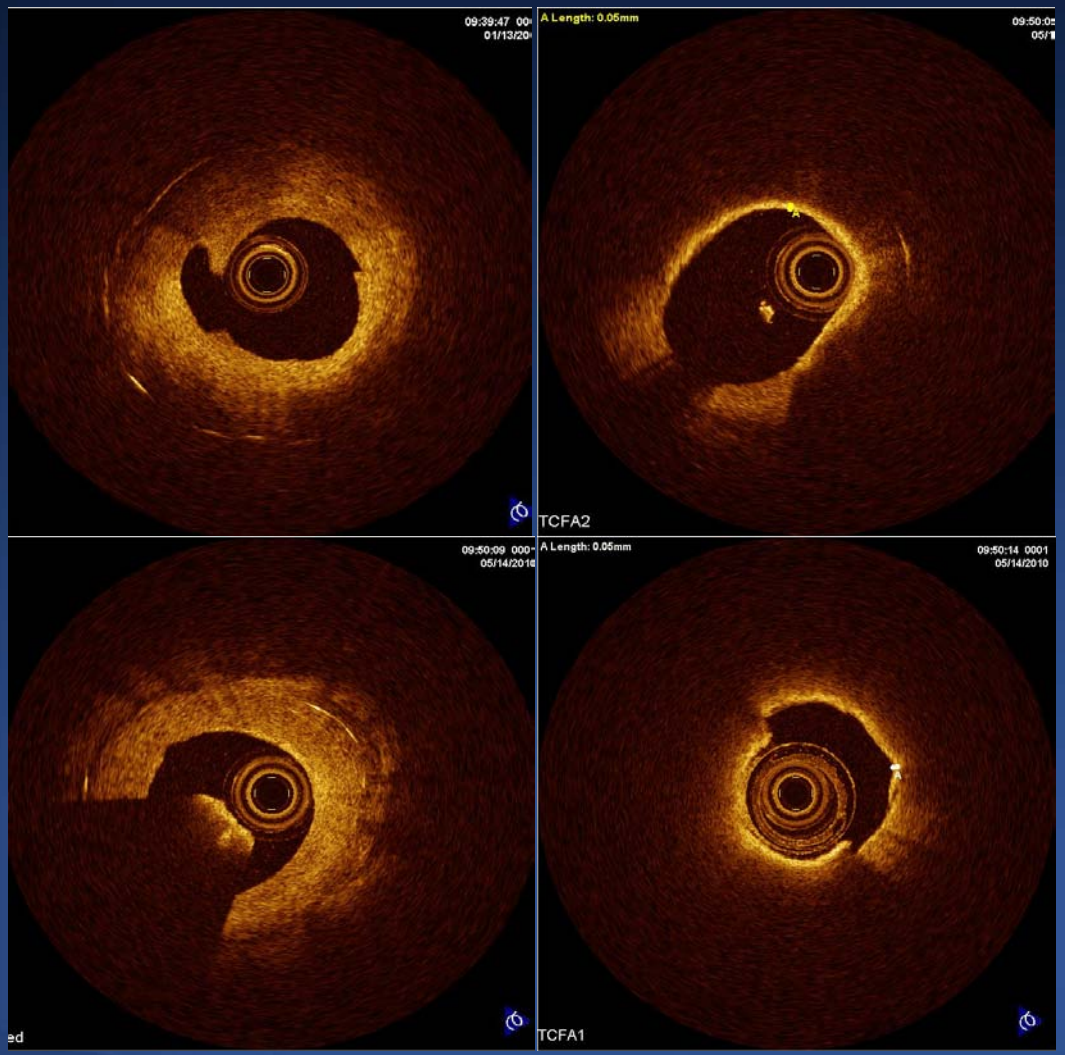


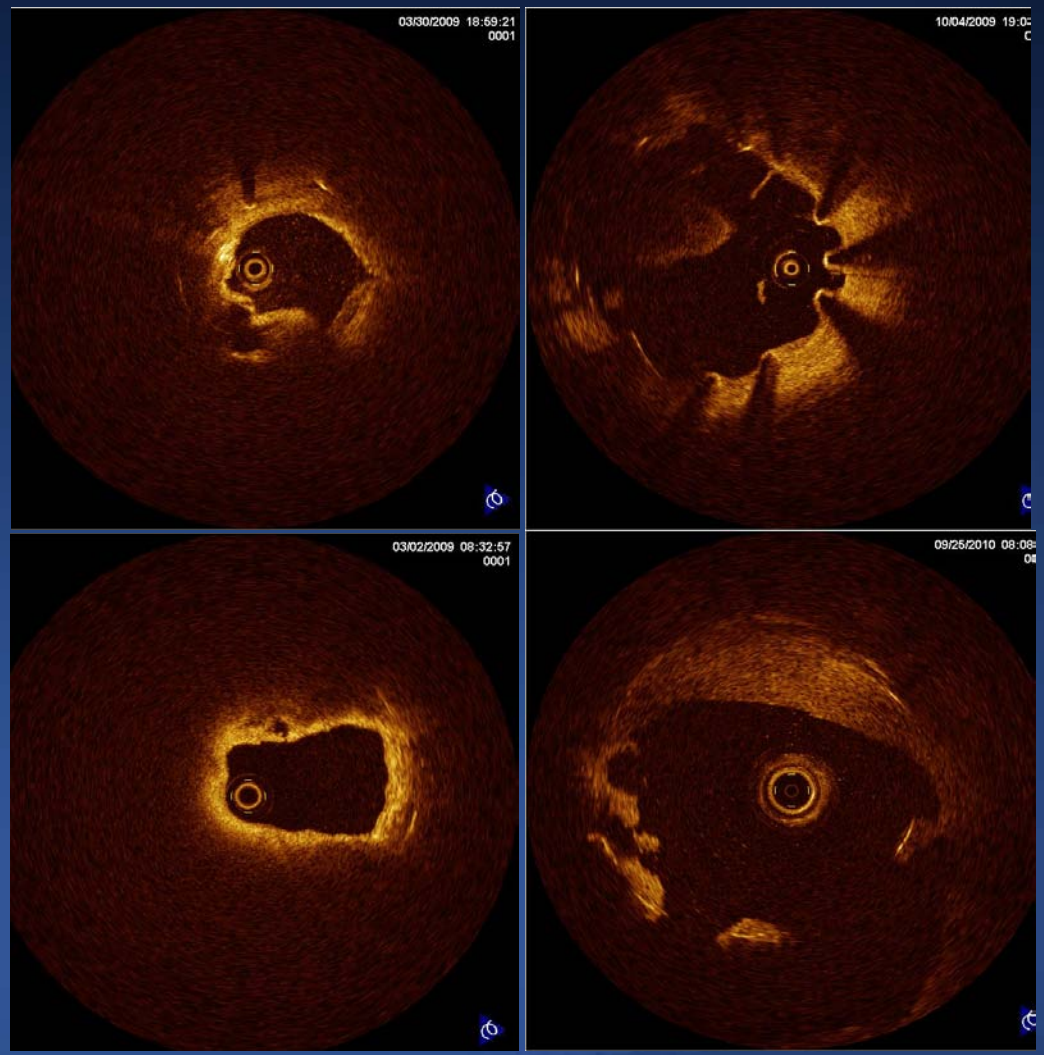
Virmani et al. TCT2010

Mechanism of Late Stent Failure

In-stent Restenosis

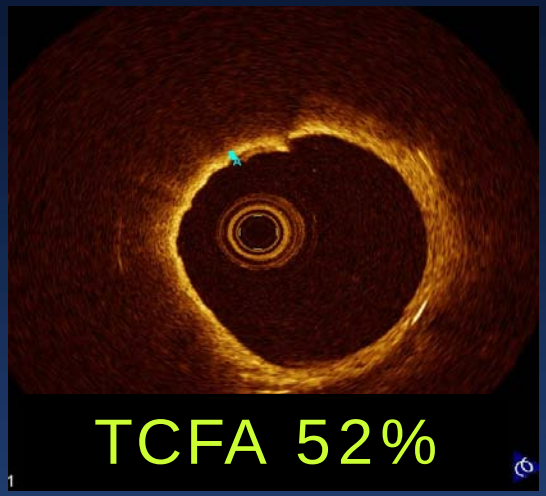
Stent Thrombosis



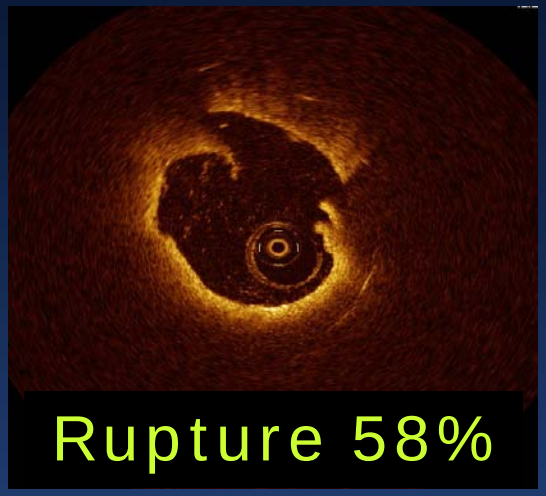


Kang et al. Circulation 2011;123:2954-63

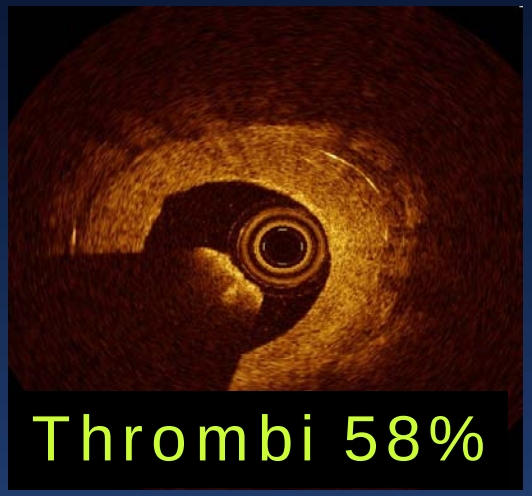
OCT Analysis of In-stent Neoatherosclerosis



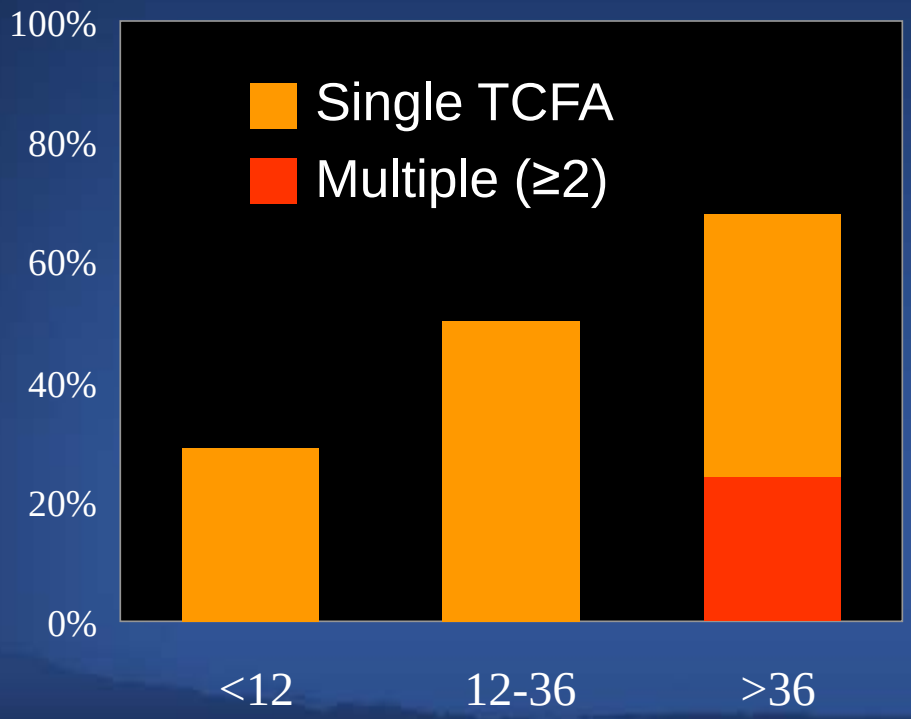
TCFA 52%



Rupture 58%



Thrombi 58%



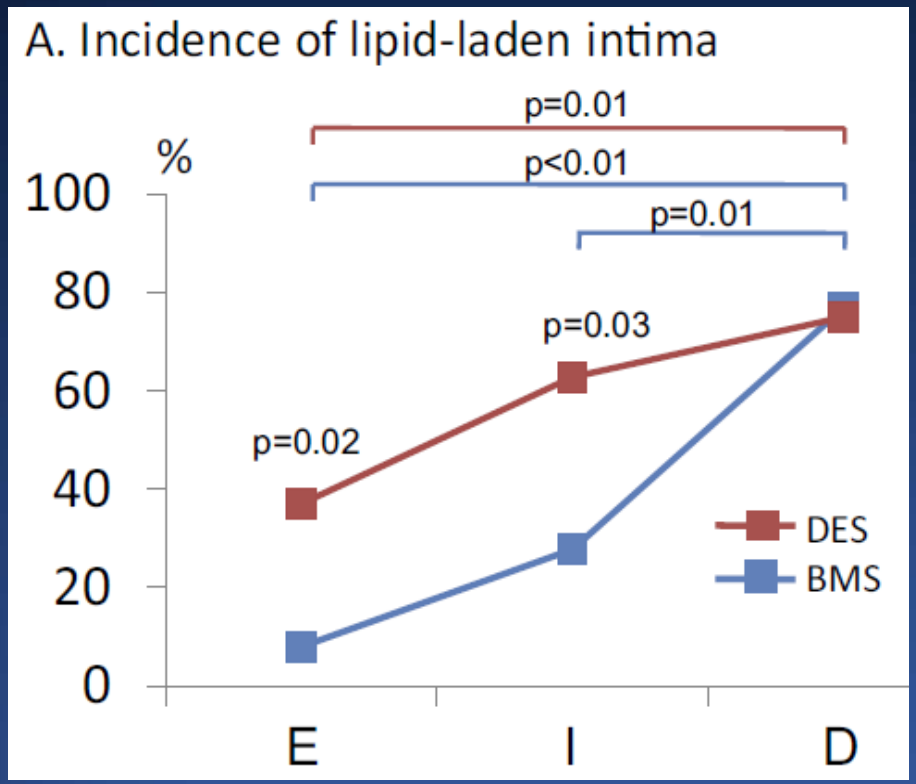
DES Duration >20 Months

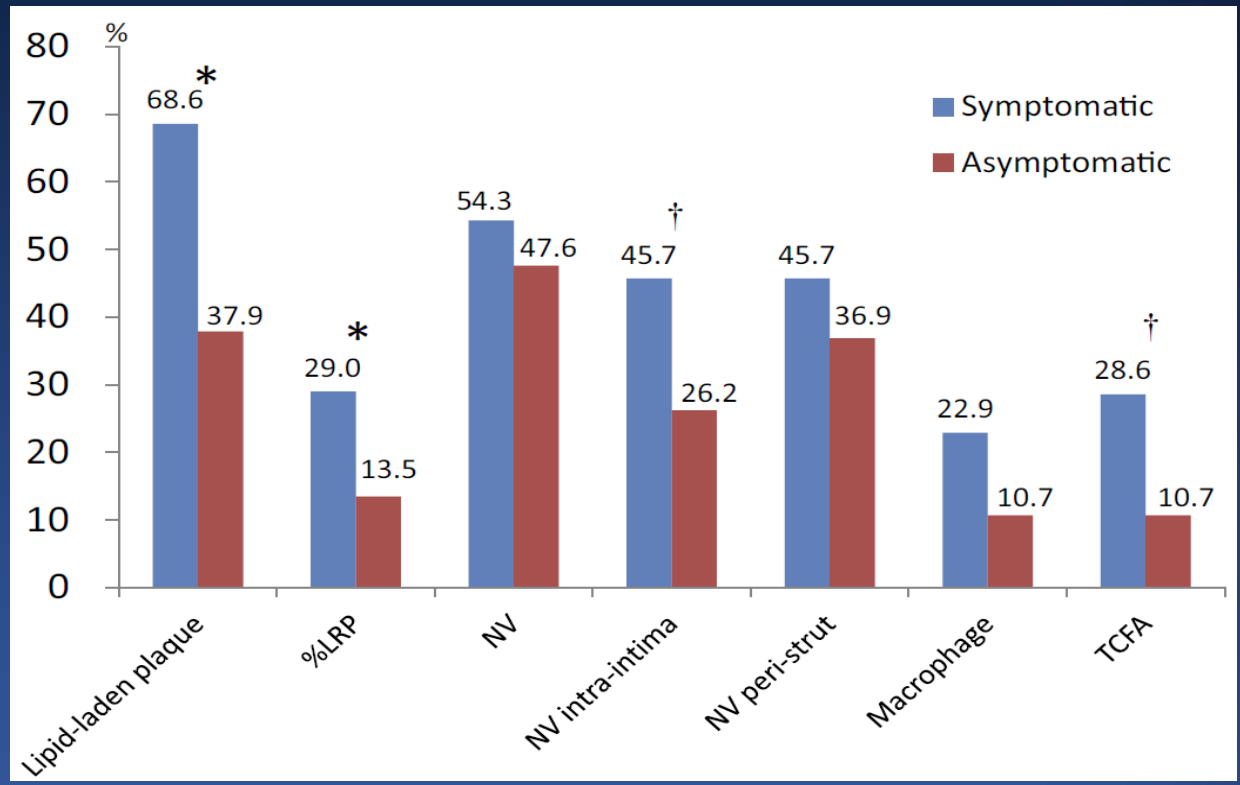
Predict TCFA-Containing Neointima

Sensitivity 75%
Specificity 68%

Kang et al. Circulation 2011;123:2954-63

Incidence and Time Course of Neoatherosclerosis; from MGH OCT registry

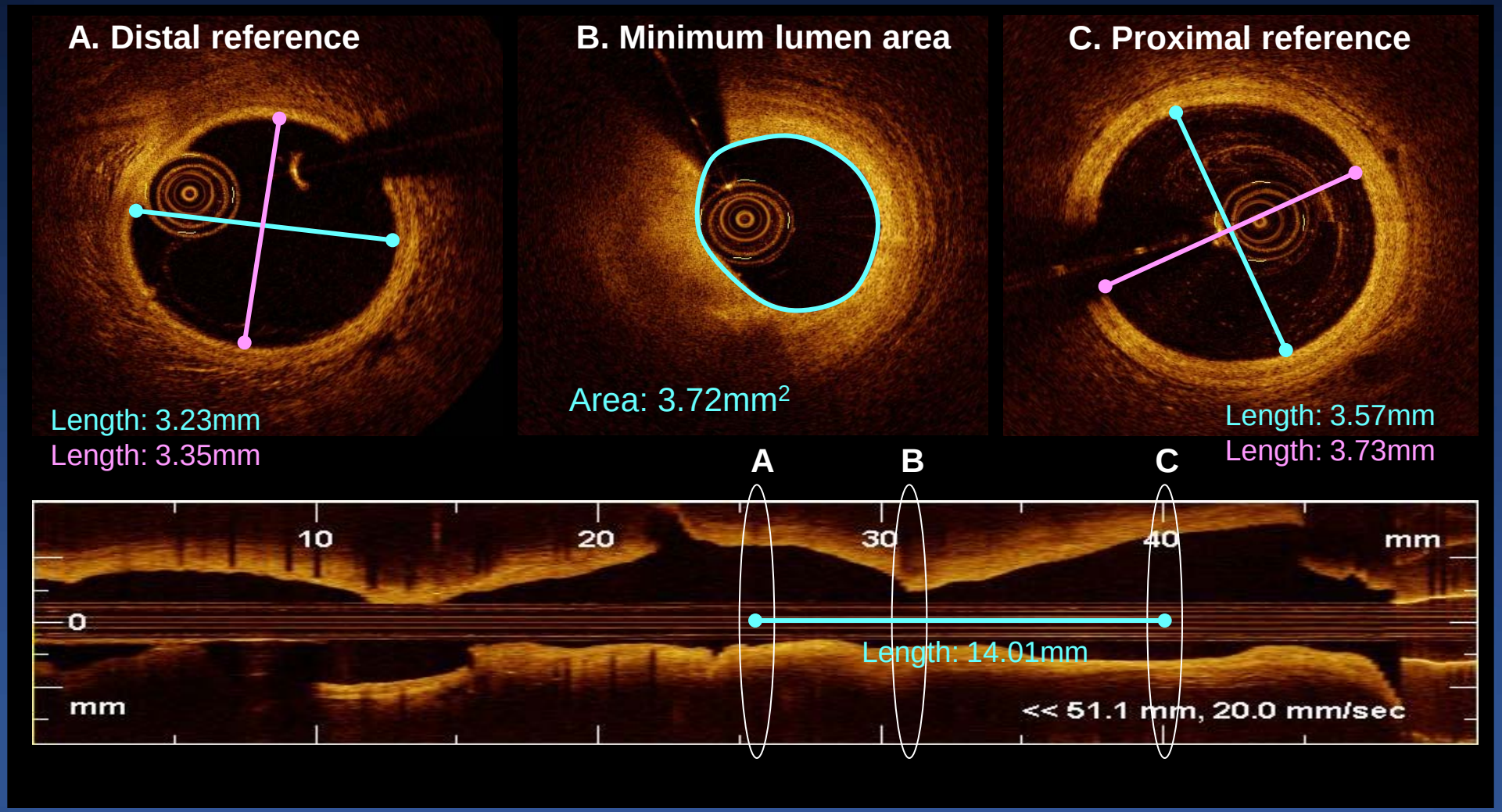




<9 mo 9–48 mo >48 mo

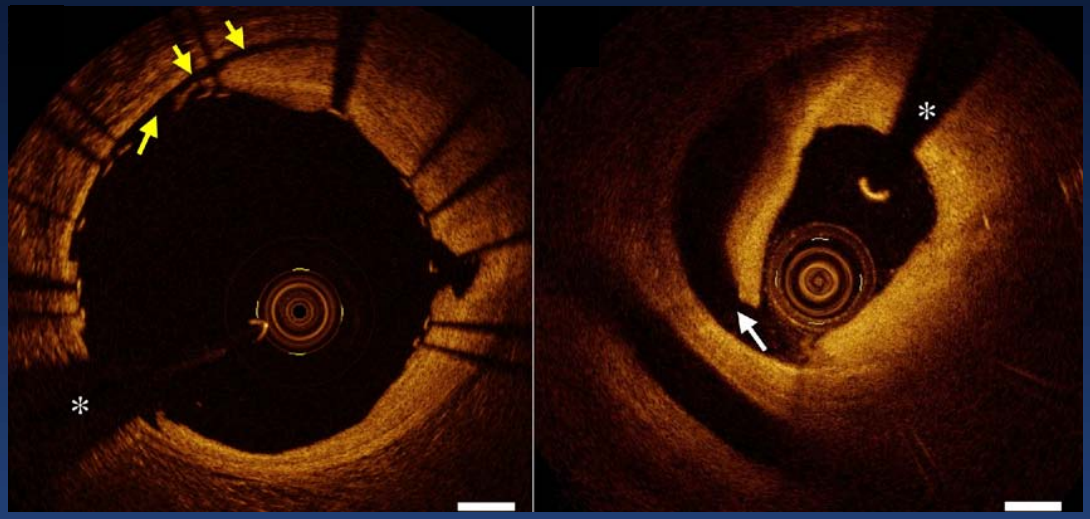
Yonetsu et al. Am J Cardiol 2012;110:933–9

Pre-PCI OCT Evaluation

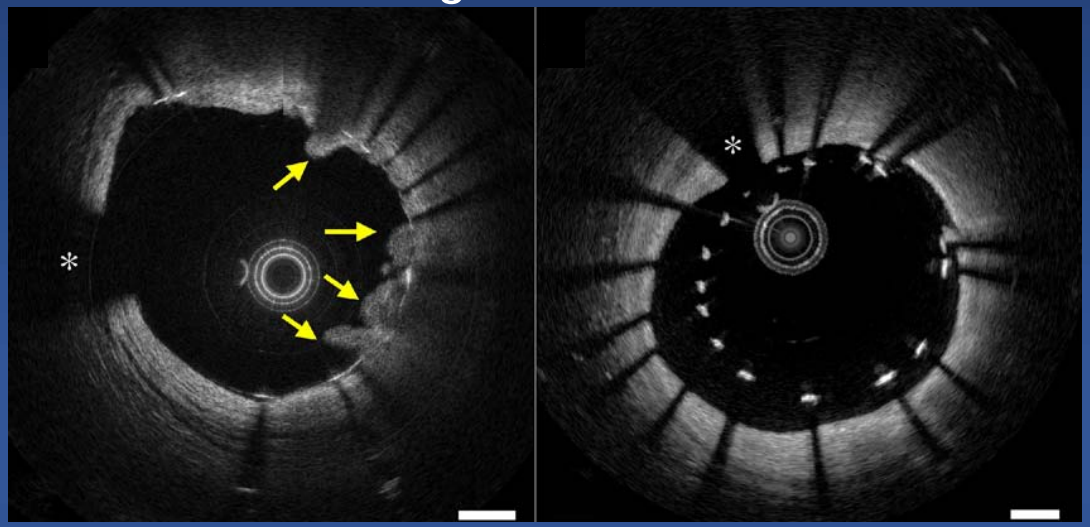


Kubo, Akasaka et al. CVIT 2010;25:2-10

Post-stenting OCT Evaluation



Edge dissection



Tissue prolapse Acute Malapposition

Intracoronary OCT vs IVUS

	IVUS	OCT (C7XR)
Advantages	• assessment of lumen and vessel wall • well validated, gold standard • documented clinical data for impact on clinical outcome • established indications	• very high resolution • fast data aquisition • high contrast between lumen and vascular wall • plaque type, TCFA • apposition, coverage
Disadvantages		• poor penetration • limited scan field, length • need to clear the artery from blood • use of contrast

The clinical importance and the prognostic value of OCT findings need further evaluation

Discussion

- **OCT in Clinical Practice**
  - **Current consensus standards and application of OCT**
  - **Risk stratification by OCT**
  - **Role of OCT in stent failure**
  - **OCT-guided vs. IVUS-guided PCI, advantage and pitfall**