

Optical Coherence Tomography During PCI: A Research Tool or a Valued Clinical Asset?

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Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial Interest /arrangement or affiliation with the organization(s) listed below

Affiliation/Financial Relationship
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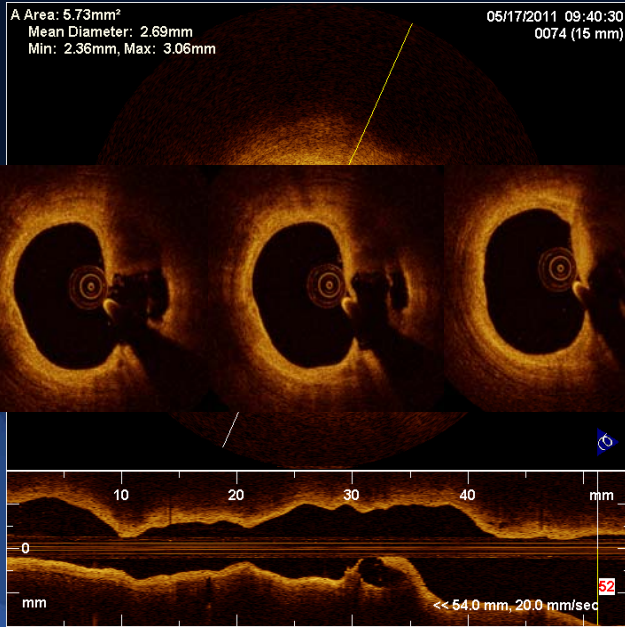
Speaker Fee

Company
Boston Scientific Corp.

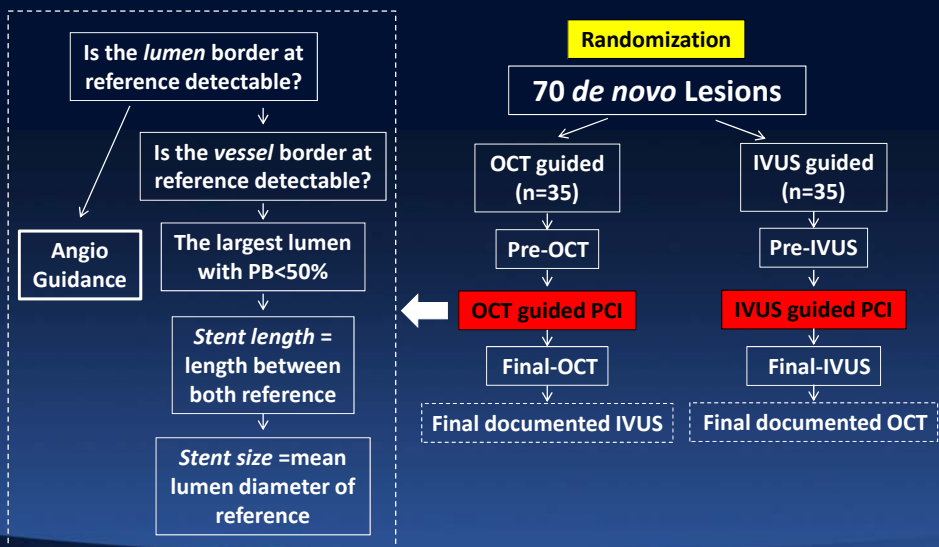
Volcano Corp.



OCT guided PCI



OCT vs IVUS guided PCI



IVUS guided showed bigger stent area.

	OCT n=35	IVUS n=35	p- value
Balloon Diameter (mm)	3.4±0.6	3.2±0.4	0.3
Balloon Pressure (atm)	13.5±3.4	16.1±4.7	0.03
QCA RVD (mm)	3.0±0.5	3.0±0.5	0.56
QCA MLD (mm)	2.8±0.5	2.9±0.4	0.22
IVUS Reference Area (mm ²)	9.2±3.3	9.1±3.1	0.98
IVUS MSA (mm ²)	6.1±2.2	7.1±2.1	0.04
OCT MSA (mm ²)	5.7±2.1	6.9±2.4	0.03
OCT Stent malapposition (%)	0.4±0.7	0.6±0.8	0.34

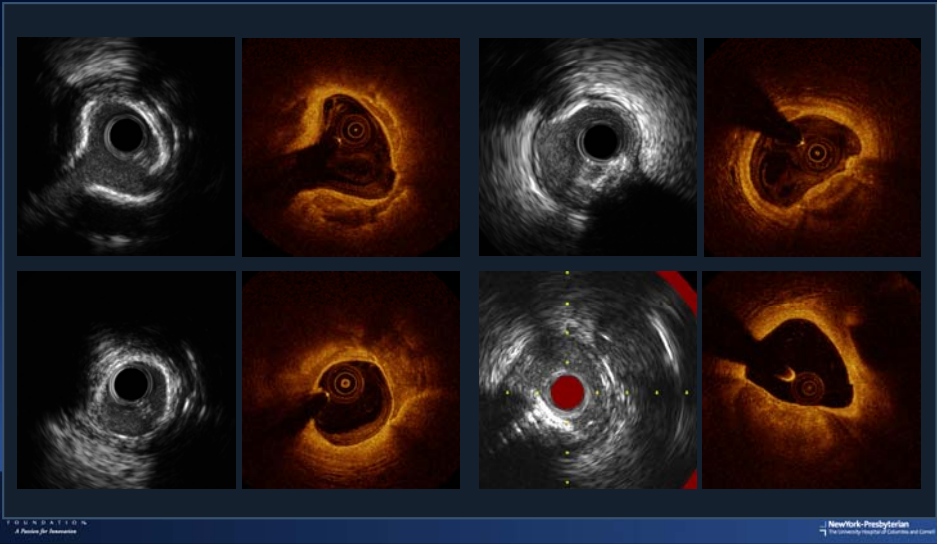
In vivo Comparison between OCT and IVUS Occlusion Technique

33 stents

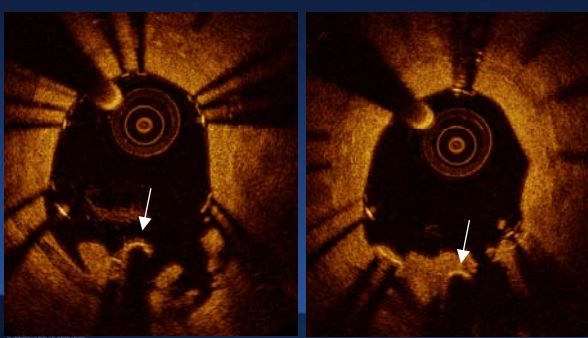
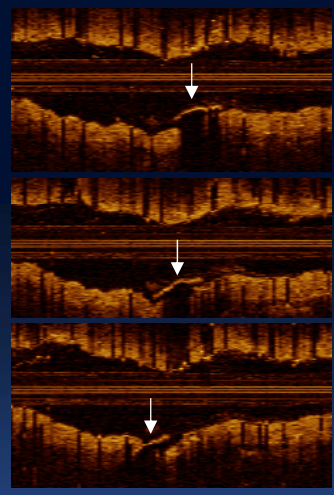
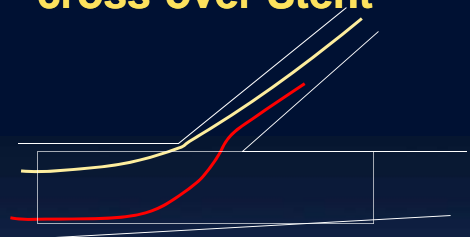
	Histology	OCT	IVUS
Lumen area (mm ²)	3.28±1.36	3.47±1.38	3.96±1.51
Stent area (mm ²)	5.44±1.26	5.63±1.23	5.70±1.48
NIH area(mm ³)	2.16±1.08	2.17±1.20	1.68±1.48
% NIH (%)	40.7±19.2	38.9±20.3	29.9±20.1

**OCT with occlusion < OCT
without occlusion < IVUS**

Quantification of Calcium in relation to the efficacy of PCI



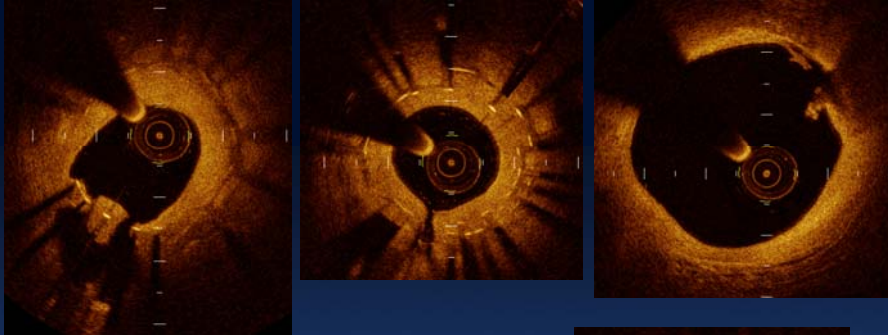
Wire Passage through cross-over Stent



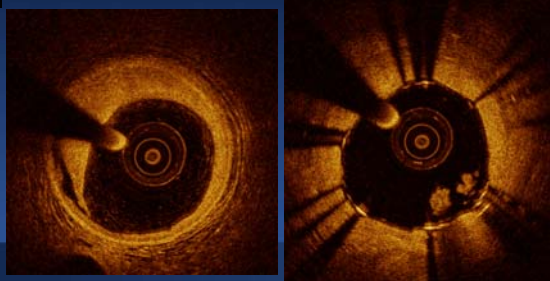
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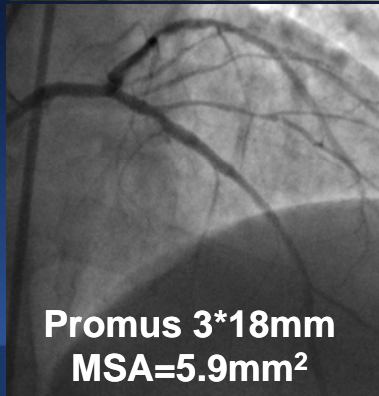
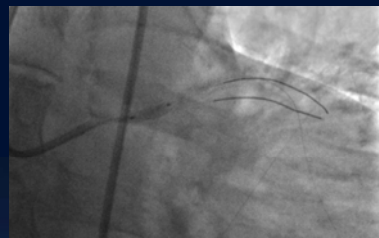
Old Double Layered Stent Before PCI



After PCI



Case: PCI to LAD, 1 month ago

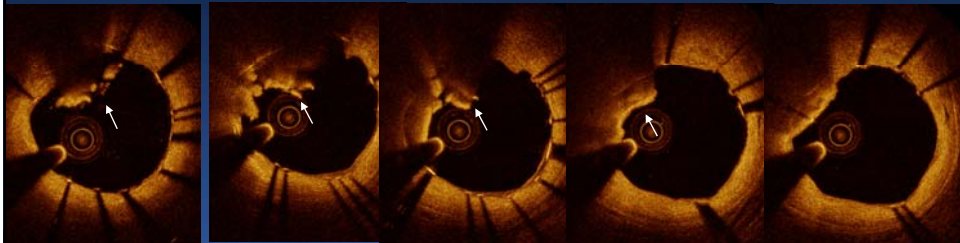


Promus 3*18mm
MSA=5.9mm²

Red Cell Rich Thrombus



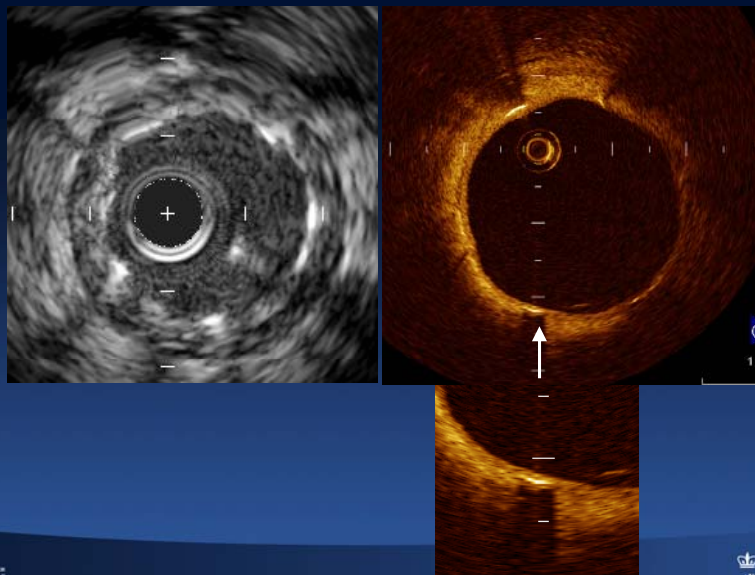
Uncovered Strut



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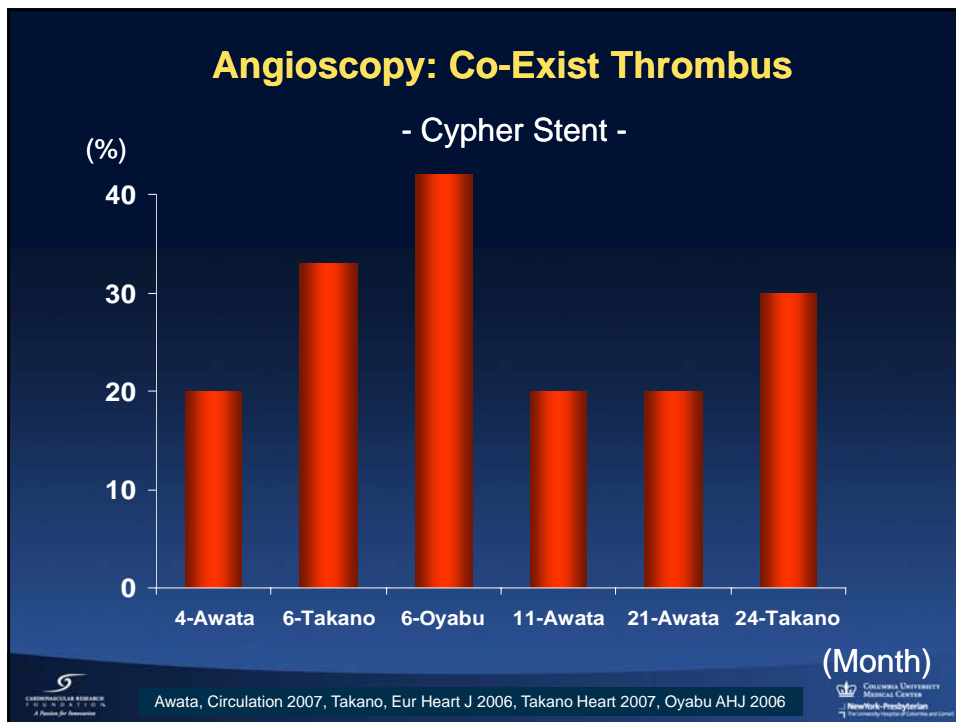
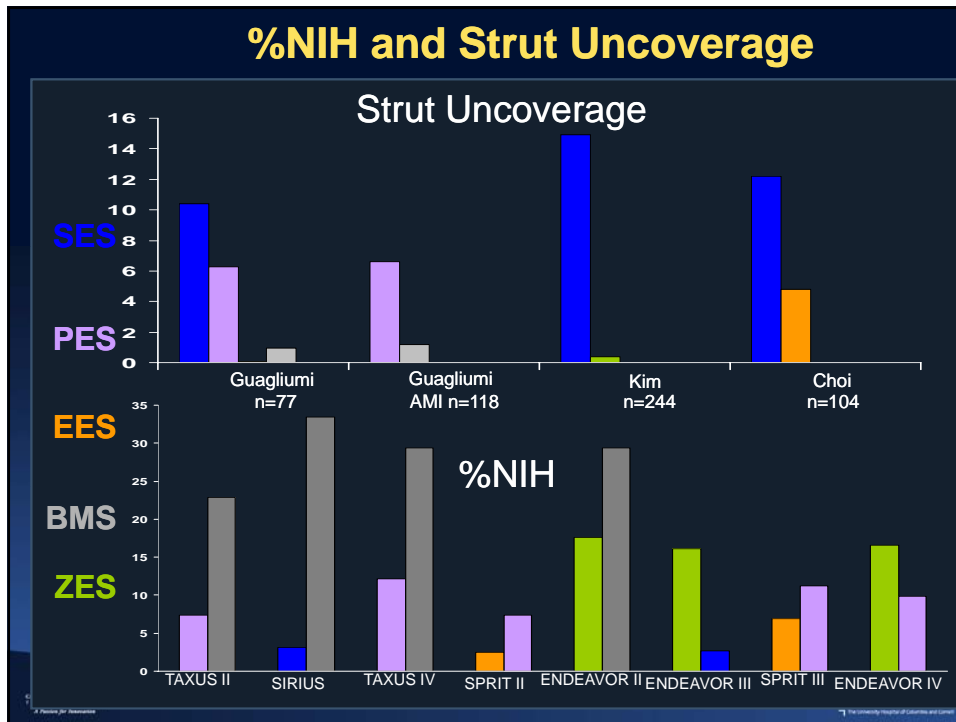
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Neointimal Coverage

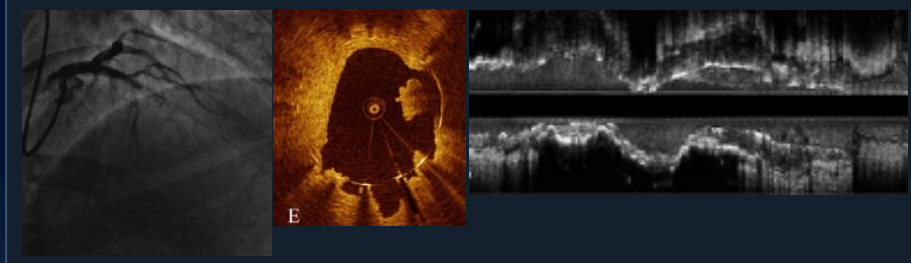


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18 Late Stent Thrombosis Cases



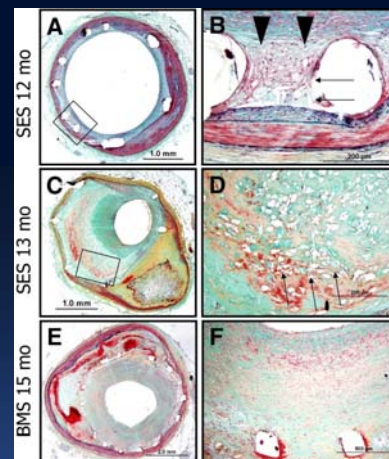
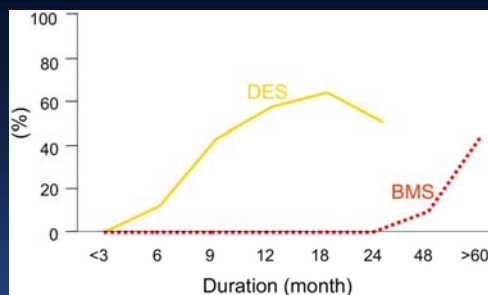
	LST (n=18)	Control (n=36)	p-value
IVUS remodeling index	1.24	0.99	<0.001
IVUS malapposition	78%	42%	0.01
IVUS malappo area (mm ²)	4.1 ±2.3	1.2±1.5	0.001
OCT max uncoverage length	3.3	0.9	<0.001
OCT uncovered strut	12.3%	4.1%	0.001

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Guagliumi et al, JACC Interv 2012

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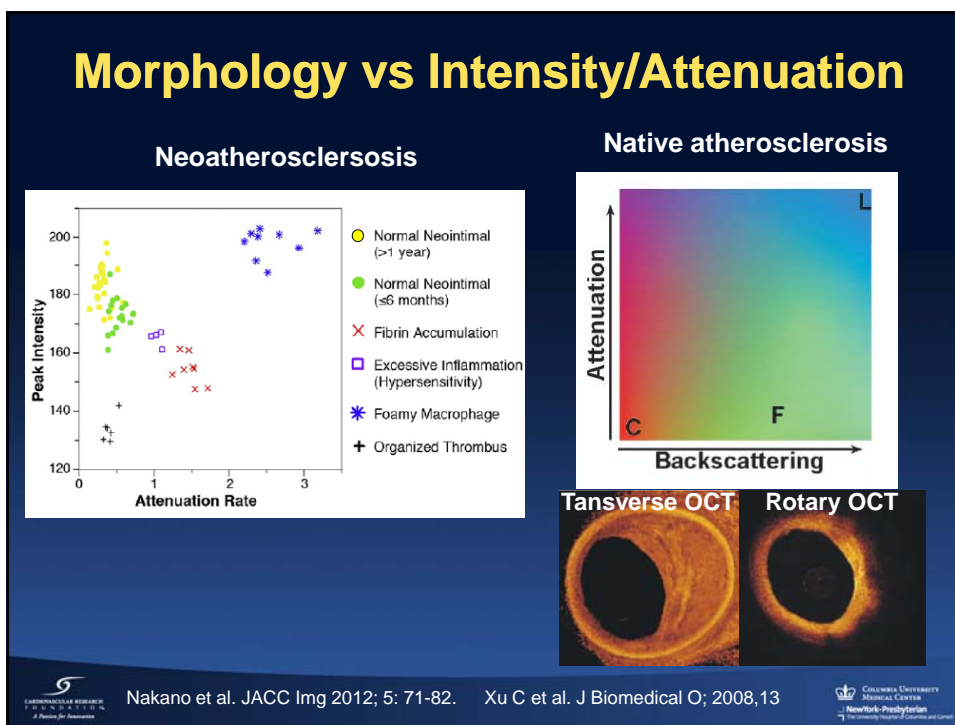
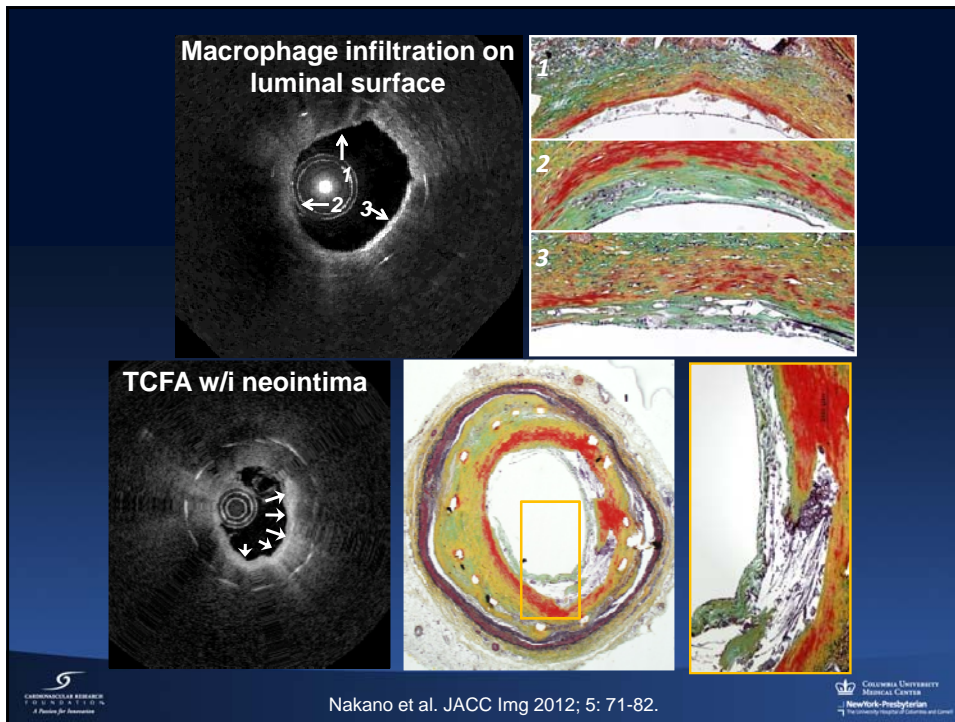
Percentage of Patients With Atherosclerotic Changes in DES Versus BMS in Relation to Duration of Implant at Autopsy



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Nakazawa et al. J Am Coll Cardiol Img 2009;2:625-8

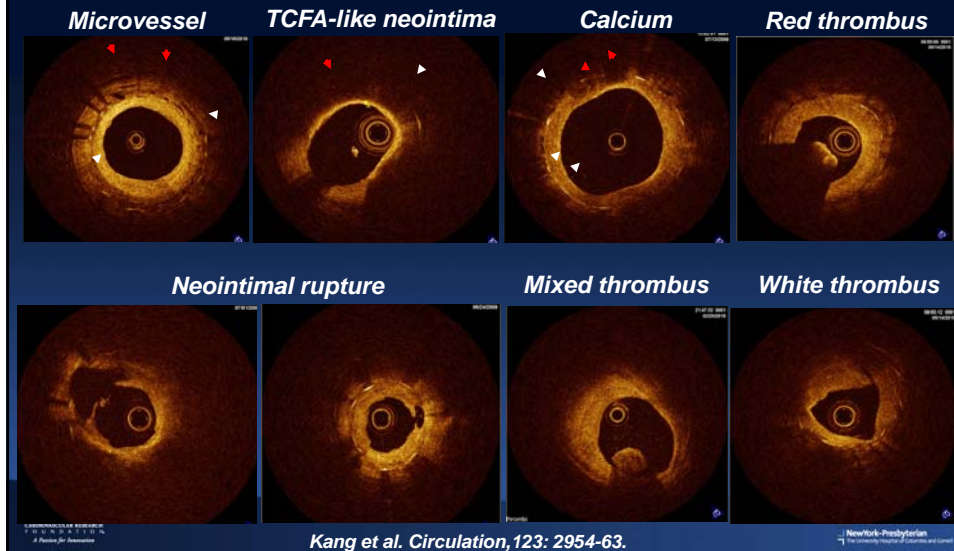
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Late in-stent neoatherosclerosis in DES

(n=50, median follow-up of 32 months)

20 months post-implantation was the best cut-off to predict TCFA-like neointima.



A Research Tool or Valued Clinical Asset?

1. To find “true culprit lesion”
2. PCI guidance
3. Stent thrombosis (prediction, evaluation of cause?)
4. Neoatherosclerosis