Can We Safely Defer PCI Just Based on FFR>0.80? "No, >0.80 is not enough"

Akiko Maehara, MD

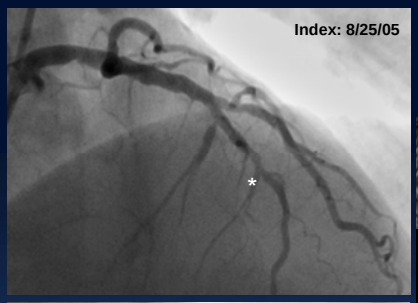
Cardiovascular Research Foundation/
Columbia University Medical Center
New York City, NY

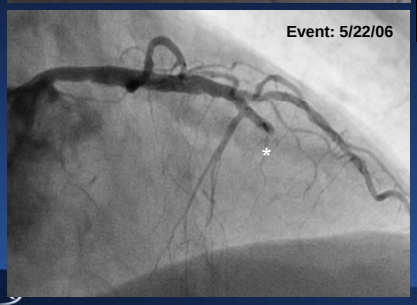
Disclosure Statement of Financial Interest

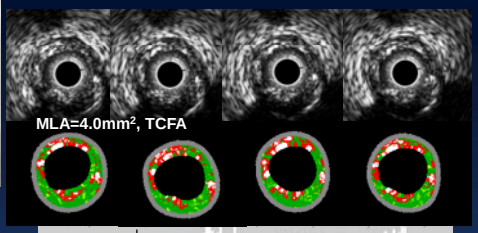
Within the past 12 months, I or my spouse/partner have had a financial Interest /arrangement or affiliation with the organization(s) listed below

Affiliation/Financial Relationship	Company
Grant/ Research Support:	Boston Scientific Corp.
Speaker Fee	Volcano Corp.

A PROSPECT Case







What do we know?

- DEFER Trial
- FAME Trial

DEFER Trial

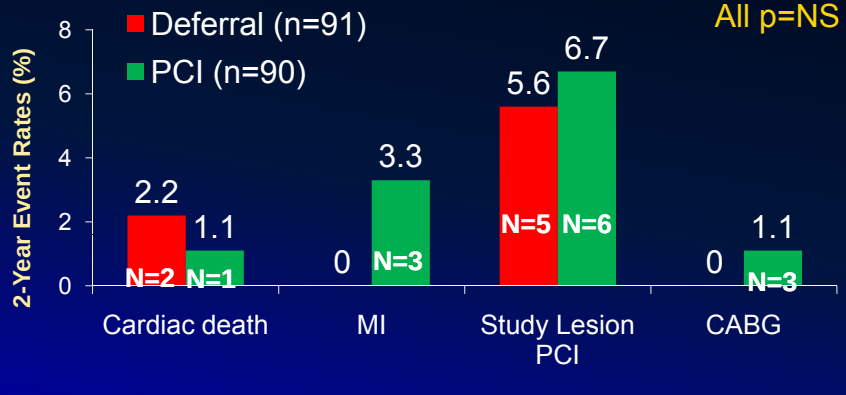
181 pts with FFR ≥0.75
were randomized to deferral vs. PTCA±BMS

	Defer group	PCI group
N pts	91	90
Single Vessel Disease	65%	68%
RVD (mm)	3.00±0.64	2.94±0.57
DS (%)	48±9	48±10
FFR (IV)	0.87±0.06	0.86±0.07
BMS implanted	-	46%

Bech GJW et al. Circulation. 2001;103:2928-2934

DEFER Trial

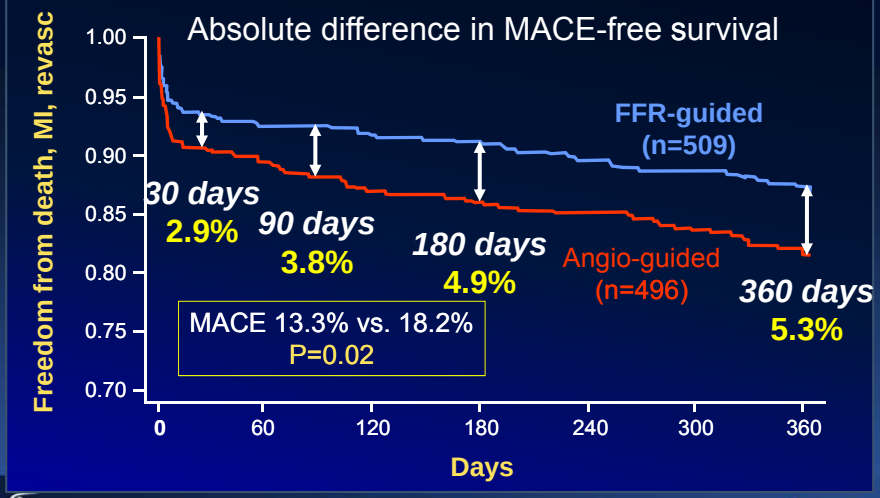
181 pts with FFR ≥0.75
were randomized to deferral vs. PTCA±BMS
2-year events



Bech GJW et al. Circulation. 2001;103:2928-2934

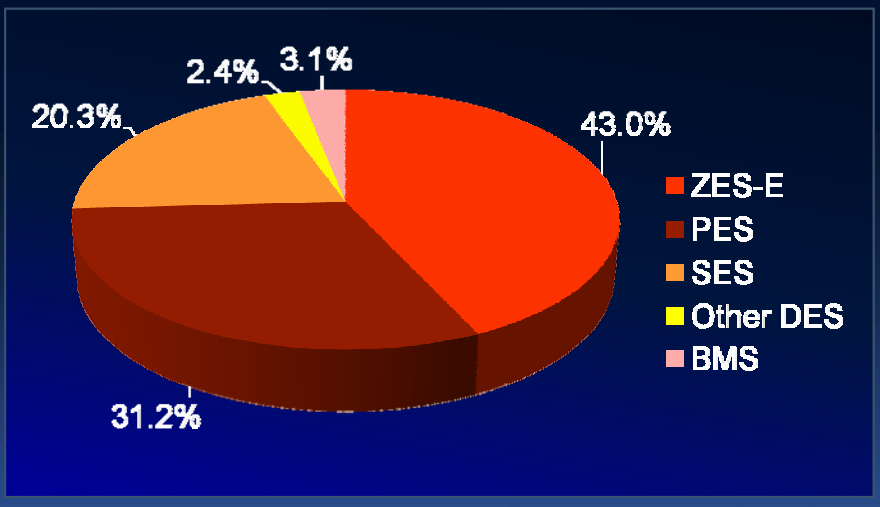
FAME: Primary Endpoint

1005 pts with MVD (83% CSA) undergoing PCI with DES were randomized to FFR-guided vs. angio-guided intervention

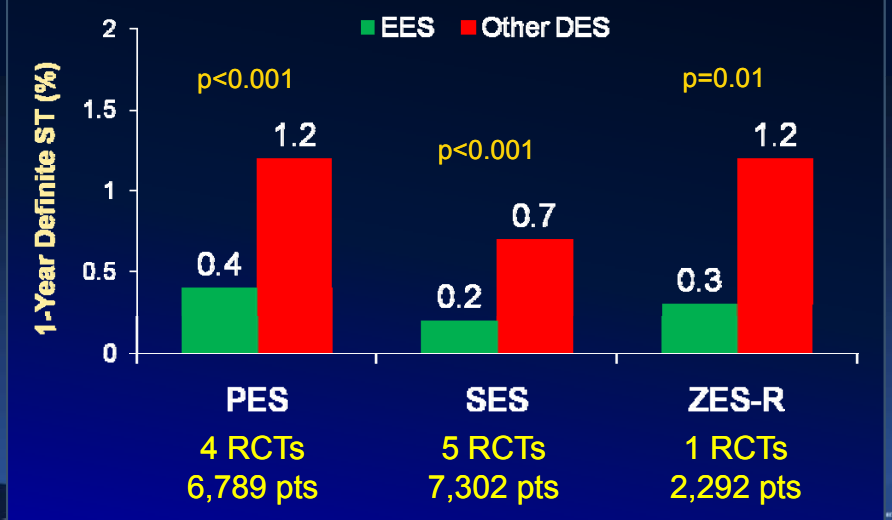


Tonino PAL et al. NEJM 2009;360:213–24

FAME Trial: Stent Use

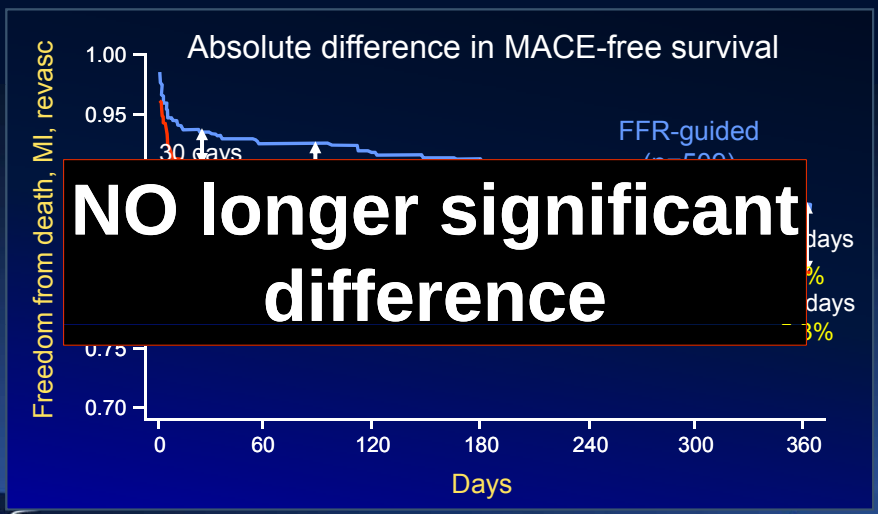


RCTs of EES vs. Other DES (n-16,383): 1-year definite stent thrombosis



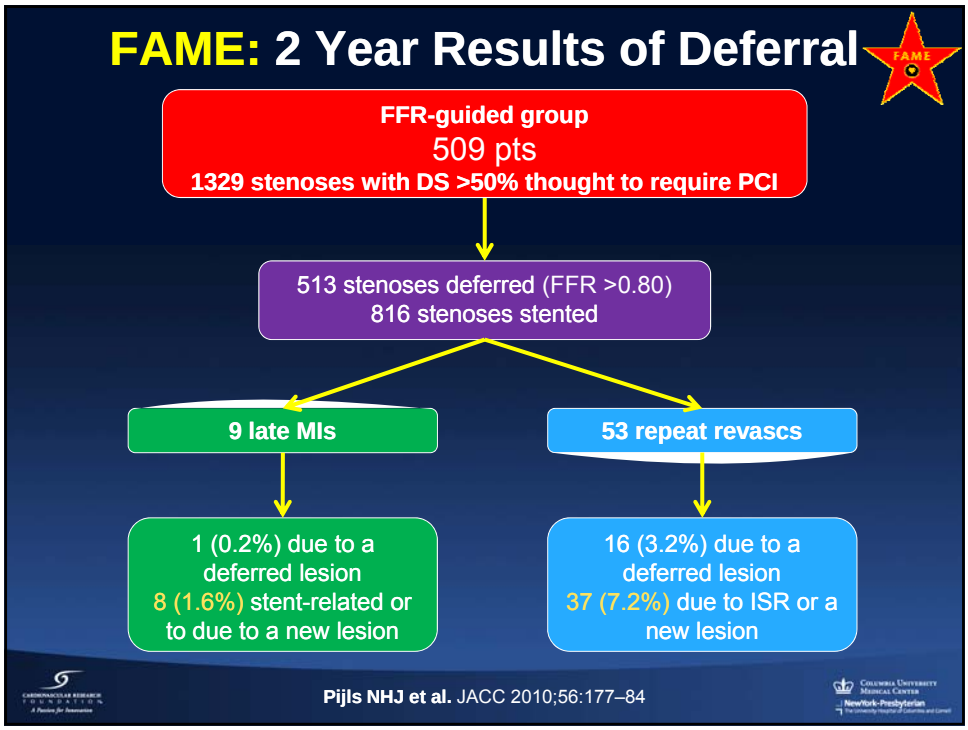
FAME: With better stents????

1005 pts with MVD (83% CSA) undergoing PCI with DES were randomized to FFR-guided vs. angio-guided intervention



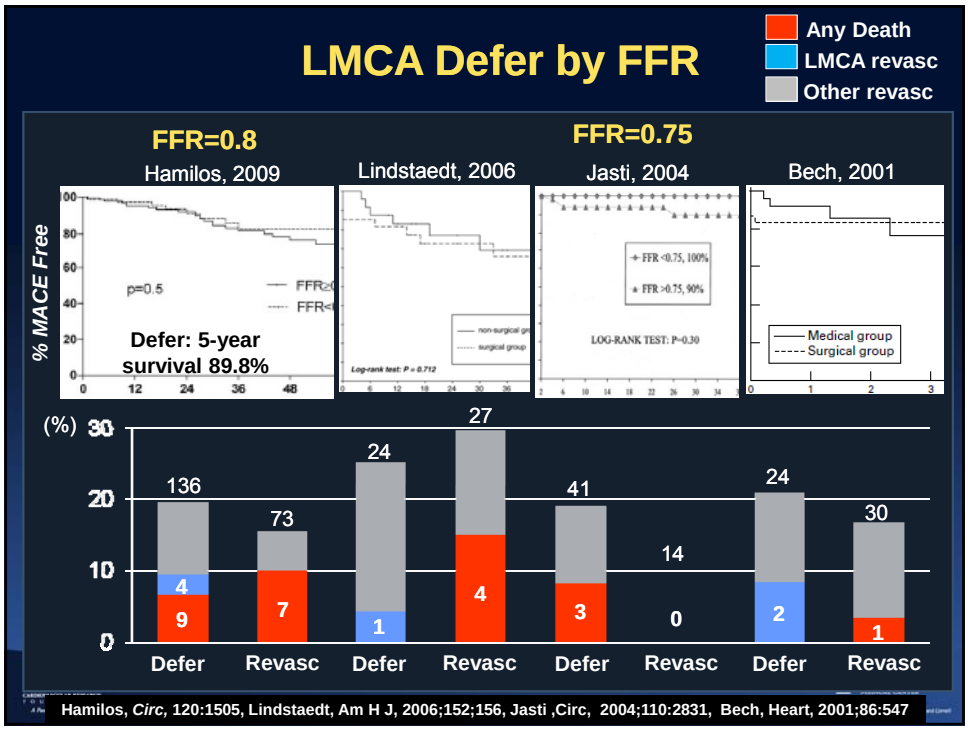
NO longer significant difference

Tonino PAL et al. NEJM 2009;360:213–24


FAME: 2 Year Results of Deferral
FFR-guided group
509 pts
1329 stenoses with DS >50% thought to require PCI
513 stenoses deferred (FFR >0.80)
816 stenoses stented
9 late MIs
53 repeat revascs
1 (0.2%) due to a deferred lesion
8 (1.6%) stent-related or to due to a new lesion
16 (3.2%) due to a deferred lesion
37 (7.2%) due to ISR or a new lesion
Pijls NHJ et al. JACC 2010;56:177–84

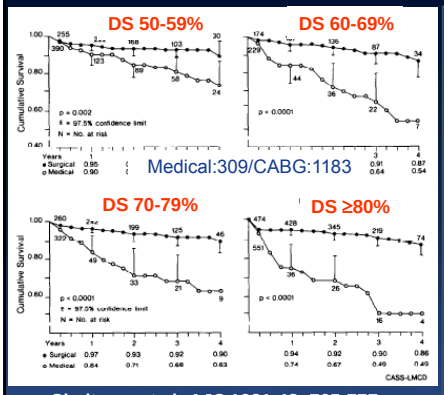

What do we know?
•Left Main

LMCA Defer by FFR

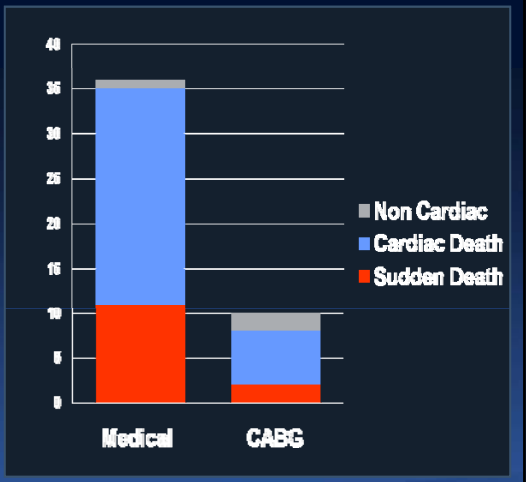


Hamilos, *Circ*, 120:1505, Lindstaedt, Am H J, 2006;152;156, Jasti ,Circ, 2004;110:2831, Bech, Heart, 2001;86:547

Natural History of Left Main Disease



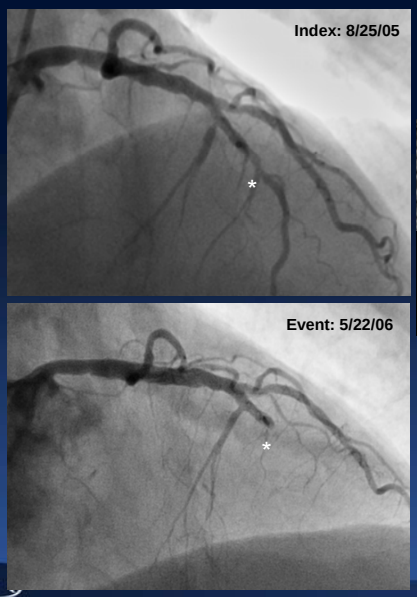
Chaitman et al, *AJC* 1981;48: 765-777

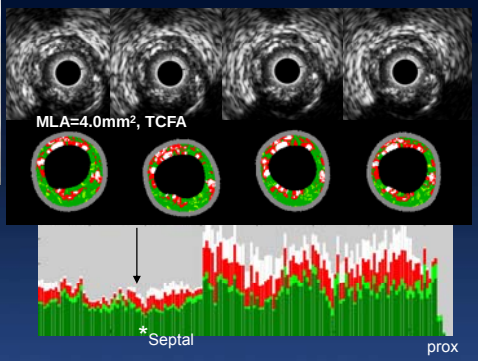


Can We Safely Defer PCI Just Based on FFR>0.80?

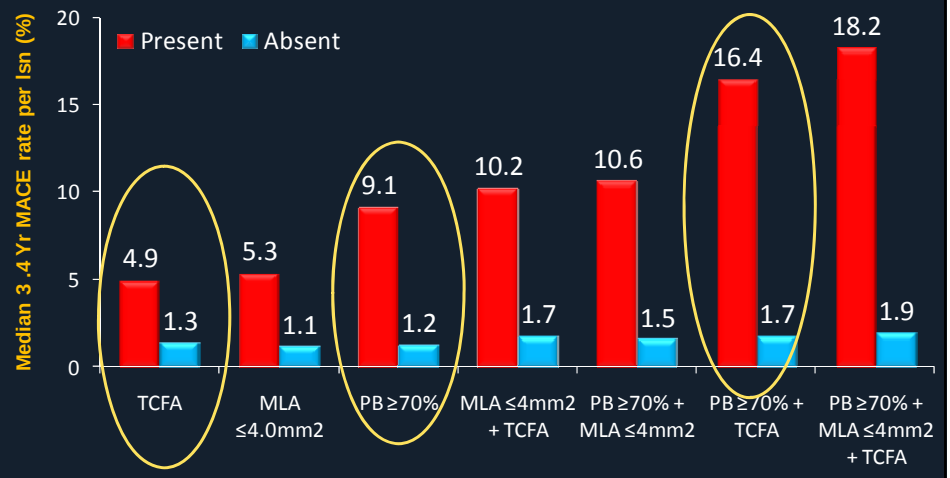
No, >0.80 is not enough. But how can we improve?

A PROSPECT Case





PROSPECT: Correlates of Non Culprit Lesion Related Events



	TCFA	MLA ≤4.0mm2	PB ≥70%	MLA ≤4mm2 + TCFA	PB ≥70% + MLA ≤4mm2	PB ≥70% + TCFA	PB ≥70% + MLA ≤4mm2 + TCFA
Lesion HR	3.9 (2.3, 6.8)	5.0 (2.9, 8.5)	8.7 (5.1, 14.8)	6.6 (3.4, 12.5)	7.3 (3.9, 13.6)	10.8 (5.6, 21.1)	11.1 (4.4, 27.8)
P value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Prevalence*	46.7%	53.3%	32.4%	15.9%	16.8%	10.1%	4.2%

*Likelihood of one or more such lesions being present per patient. PB = plaque burden at the MLA

OCT Predictor for Progression

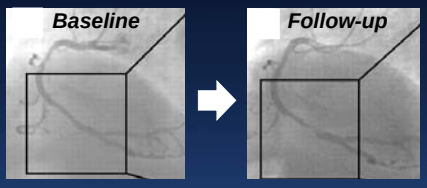
- **DESIGN:** Prospective, Single Center, Observational Study
- **OBJECTIVE:** To evaluate OCT predictor for disease progression in non-culprit lesions
- **METHODS:**

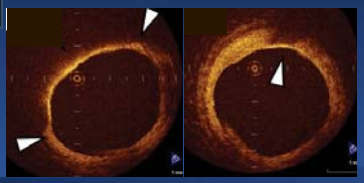
1. 3 vessel OCT after successful PCI of culprit lesions
2. 6-9 month follow-up
3. Progression: Late loss>0.4mm

69 Non-culprit lesion in 69 vessels in 53 pts

- 3 ACS events in 3pts
- 10 progression without event in 10 pts

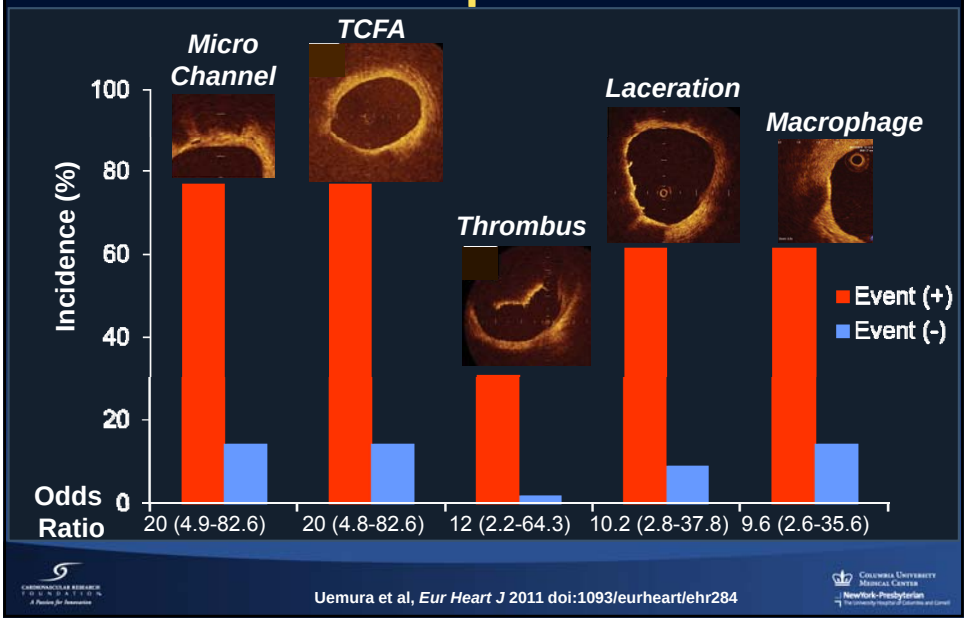
- 56 non-culprit lesion in 40 pts





Uemura et al, *Eur Heart J* 2011 doi:1093/eurheart/ehr284

OCT Predictors for Progression of Non-Culprit Lesions



Uemura et al, *Eur Heart J* 2011 doi:1093/eurheart/ehr284

My Opinion

1. DEFER Trial was based on relatively small cohort and inconclusive.
2. FAME trail may be no longer significant using the current better stent.
3. Evidence for left main FFR to predict future event may be immature.
4. Evaluation of plaque morphology such as plaque burden, TCFA which can predict future event (Odds ratio:11) should be considered for today's decision in consideration of tomorrow's event.