



Stable Angina – The Great Debate Pro Intervention

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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

- Grant/Research Support
- Consulting Fees/Honoraria

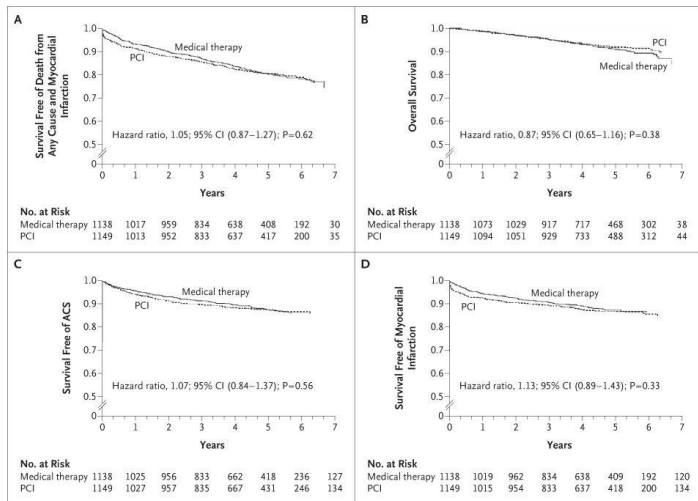
Company

Medtronic, Mitralign, Millipede, Amaranth Medical, Nuvera, Supira, Philips, Acist Medical, Abbott Vascular, Keystone Heart, ICS, InnovHeart, Cardiovalve

Mortality

COURAGE

- 35, 539 screened; only 6% enrolled
- Numerous exclusions
- Coronary anatomy known before rand
- High-risk anatomy and low EF excluded
- 1 in 3 crossed over to PCI
- BMS in 97.4%
- High MedRx adherence levels at 3-yr



N Engl J Med 356: 1503-1516

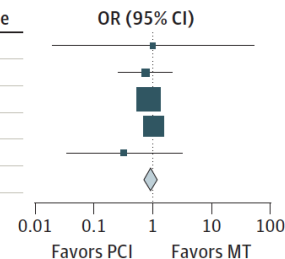
Meta-analysis

- 5 trials enrolling 5286 patients

Death

A

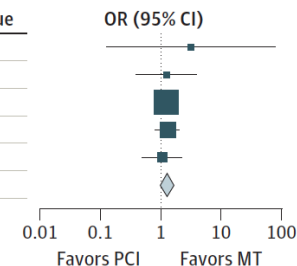
Source	OR (95% CI)	P Value
Hambrecht ¹⁵	1.02 (0.02-52.43)	.99
MASS II ¹³	0.76 (0.27-2.16)	.60
COURAGE ¹⁷	0.84 (0.61-1.18)	.32
BARI 2D ¹⁴	1.06 (0.71-1.58)	.78
FAME 2 ¹⁶	0.33 (0.03-3.16)	.33
Overall	0.90 (0.71-1.16)	.42



B

Non-fatal MI

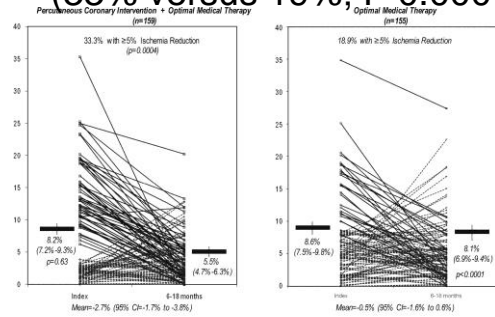
Source	OR (95% CI)	P Value
Hambrecht ¹⁵	3.12 (0.12-78.45)	.49
MASS II ¹³	1.24 (0.40-3.88)	.71
COURAGE ¹⁷	1.24 (0.94-1.65)	.13
BARI 2D ¹⁴	1.29 (0.82-2.04)	.27
FAME 2 ¹⁶	1.06 (0.51-2.22)	.88
Overall	1.24 (0.99-1.55)	.06



Ischemia

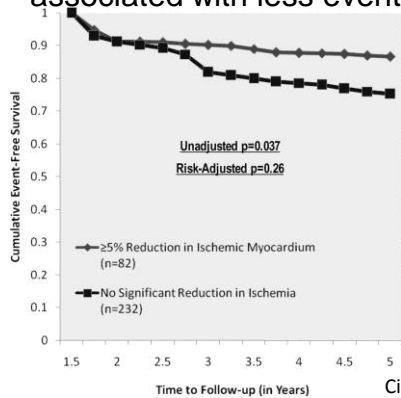
COURAGE Nuclear Sub-study

PCI results in a greater reduction of ischemia
(33% versus 19%; P 0.0004)

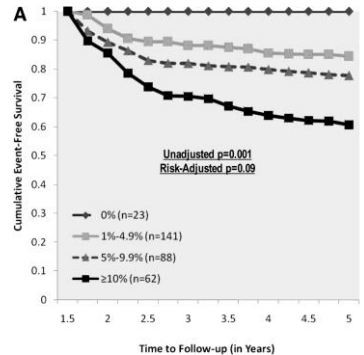


*Changes by treatment were adjusted by index ischemia. Dotted lines indicate no significant reduction in ischemia. Solid lines indicate ≥5% reduction in myocardial ischemia.

Reduction of ischemia associated with less events



Severity of residual ischemia linked to future events

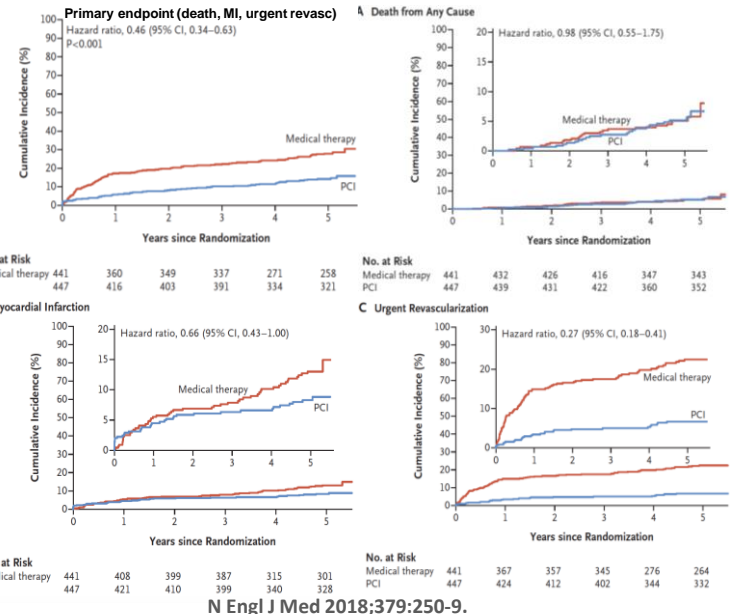


Circulation 2008;117:1283-1291

FAME-2

- 888 pts with hemodynamically significant lesions (FFR<0.8)

PCI results in reduction of urgent revascularization and MI at 5-years

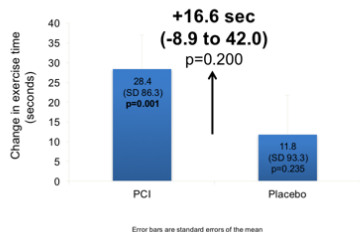


ORBITA

Sham-controlled RCT of PCI in 230pts with stable angina & single vessel CAD

Improvement in exercise time at 6-weeks not significant in pts with a baseline exercise time of 8.8mins. No significant differences in improvements in angina

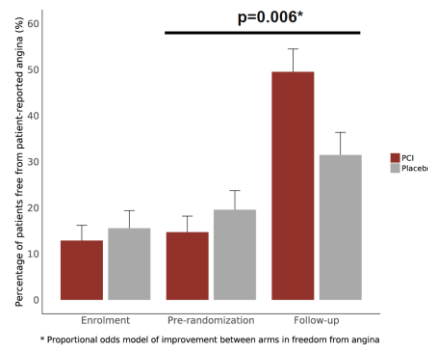
Primary endpoint result
Change in total exercise time



Error bars are standard errors of the mean



1 in 5 more pts free from angina



Ischemia by dobutamine stress echo was improved by PCI

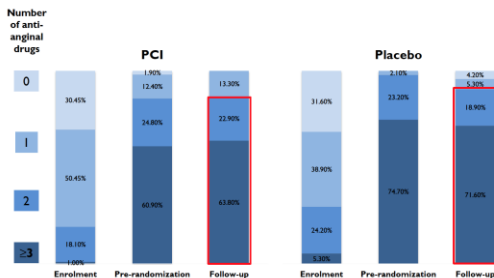
Secondary endpoint results

Blinded evaluation of ischaemia reduction

Peak stress wall motion index score	PCI n = 80	Placebo n = 57
Pre-randomization	1.11 (0.18)	1.11 (0.18)
Follow-up	1.03 (0.06)	1.13 (0.19)
Δ (Pre-randomization to follow-up)	-0.08 (0.17)	0.02 (0.16)
	p<0.0001	p=0.433
Difference in Δ between arms	-0.09 (-0.15 to -0.04) p=0.0011	

70% of pts taking 3 or more anti-anginals

Medical therapy optimization



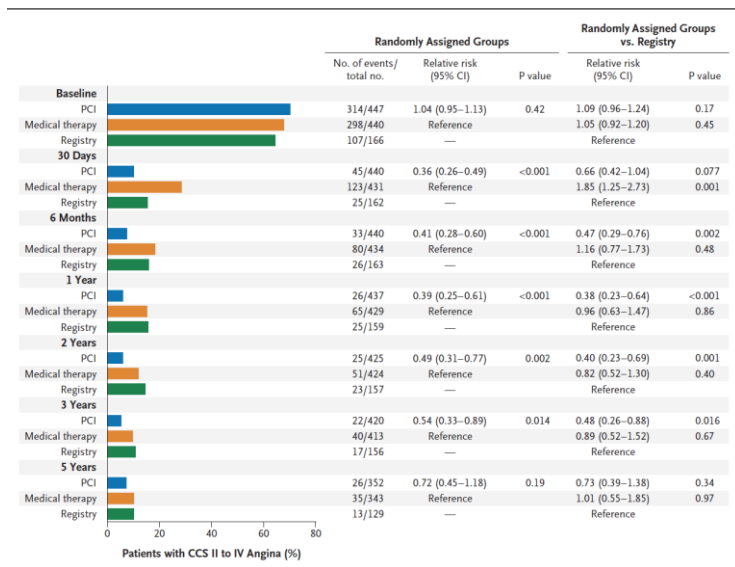
Limitations

- 6-week follow-up
- Telephone contact by cardiologist 1-3/week
- 32% of eligible pts excluded because pt or MD refused
- 1 in 6 pts had no angina
- 1 in 3 had normal FFR/IFR at time of PCI
- 25% had Class 0-1 angina
- 85% of sham opted for PCI

Symptoms

FAME-2

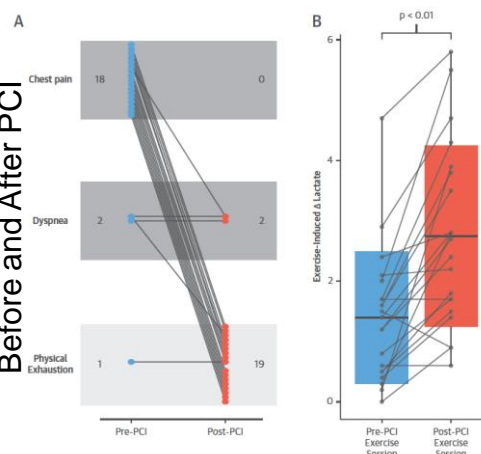
The percentage of patients with angina of CCS grade II, III, or IV was lower among in at all time points during the first 3 years of follow-up.



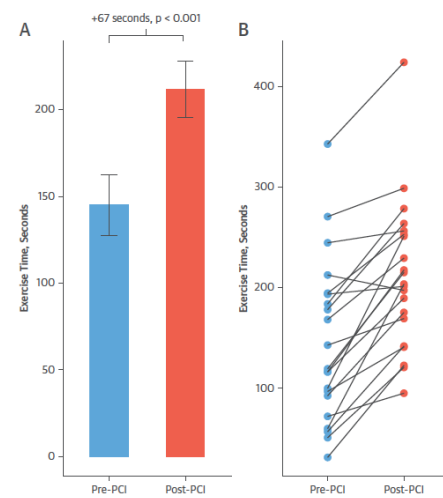
Impact of PCI on Exercise Hemodynamics in Stable Angina

- 21 pts with inlege vessel disease, cath lab supine ergometry pre and post PCI

Limiting Symptoms on Exercise Before and After PCI



Exercise Time Before and After PCI



Take-home messages

- Decision to perform PCI and benefit in stable angina depends on **indication**
- Not PCI or OMT but **PCI in addition to medical therapy**
- **Risk stratification**: coronary anatomy, LV function, magnitude of ischemia
- Revascularization impacts **prognosis** for stable angina if:
 - Left main or proximal LAD significant stenosis
 - MVD with LVEF<35%
 - Single remaining vessel
(with documented ischemia or hemodynamically significant)
 - Large area of ischemia by functional testing (>10% LV)
- PCI does not impact mortality or reduce MI in stable angina without above
- PCI is effective in reducing **ischemia** and treating FFR significant lesions reduces urgent revascularization (and probably MI)
- PCI of hemodynamically significant stenosis relieves **angina**, reduces the use of **anti-anginal drugs**, and improves exercise capacity and quality of life