

The background of the slide features a faint, light gray ECG (heart rate) tracing. The tracing shows several leads, with labels 'U4', 'U5', and 'U6' visible on the right side. The ECG shows a regular rhythm with distinct P waves, QRS complexes, and T waves.

Thrombectomy in AMI Still controversial ?

T. Lefèvre

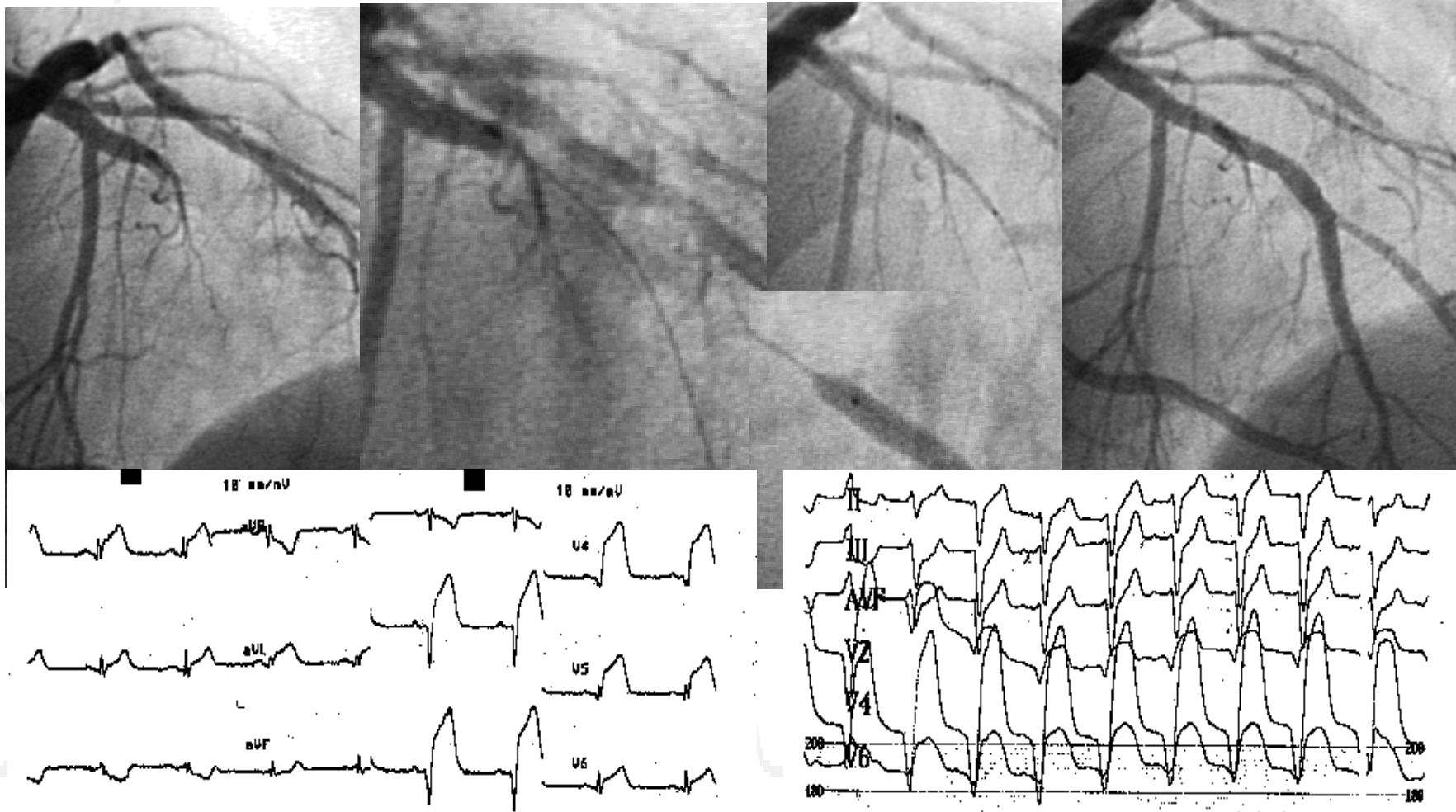


Institut Cardiovasculaire Paris Sud

Introduction

- ✓ PCI and Stent is now the gold standard treatment in AMI.
- ✓ Angiographic success rate is high (TIMI 3 > 90%)
- ✓ But true myocardial reperfusion rate is 50-70%

Male, 42 yo. AMI 3 h 30



Mechanisms of No Reperfusion in AMI

Leucocytes

Endothelial cells

Platelets

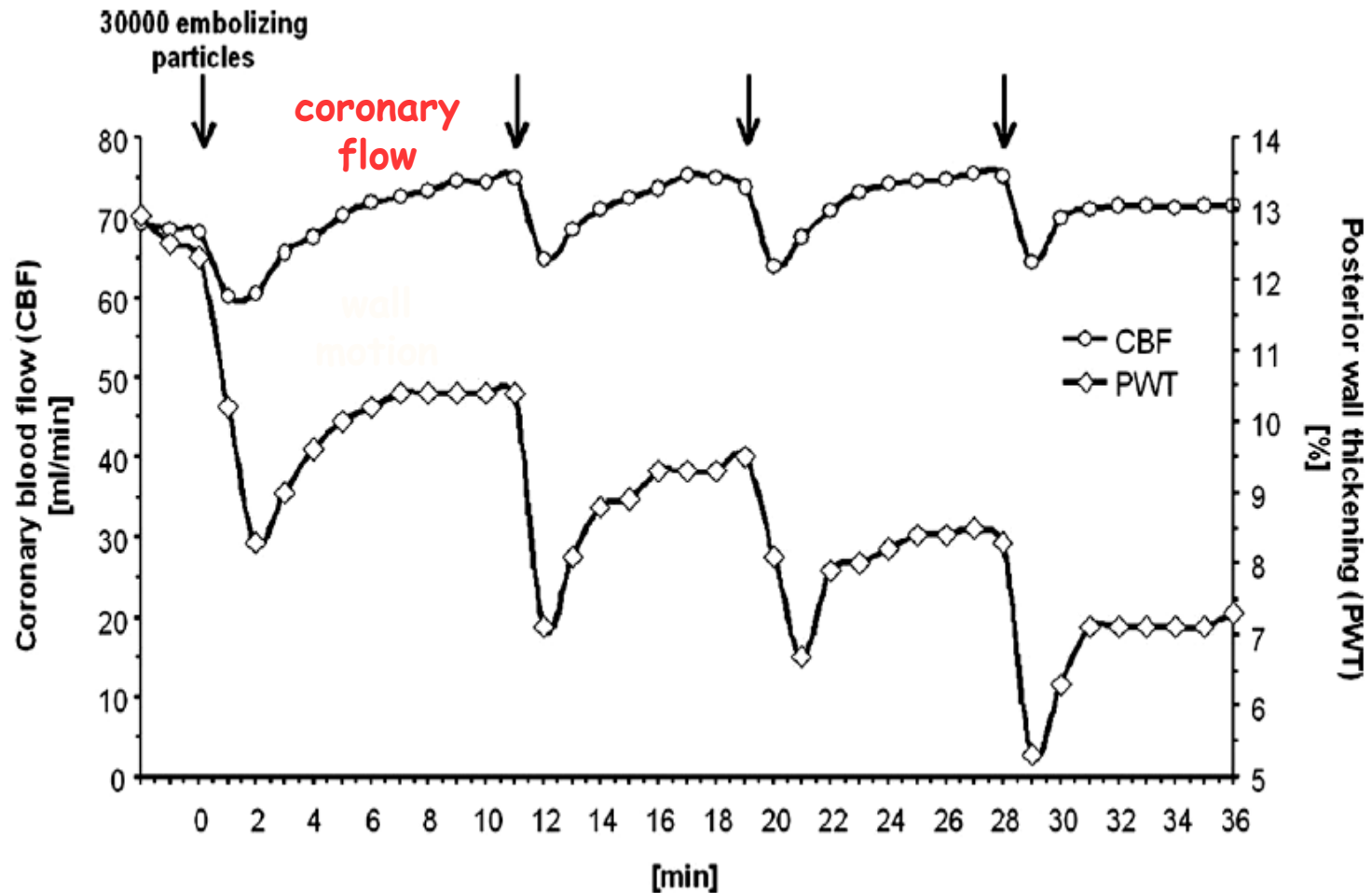
Free radicals

Interstitial Oedema

Distal embolization

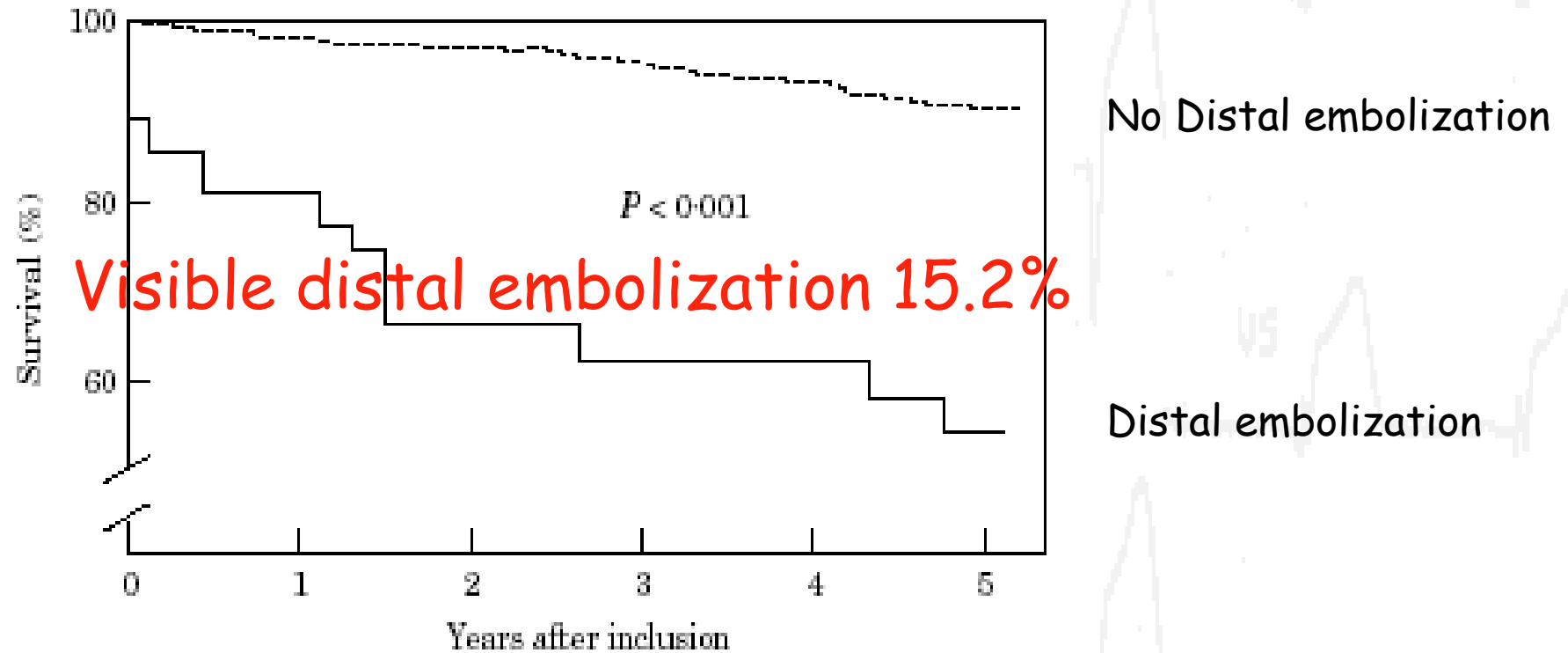


Perfusion-Contraction Mismatch With Coronary Microembolization



A. Skyschally et al, Am J Circ Physio 2002; 282: 611-4

Incidence and Clinical Significance of Distal Embolization during Primary Angioplasty for AMI



Henriquez et al Eur J Cardiol 2002; 23: 1112-7

Distal Embolization

Prevention Better than Cure

- ✓ Decrease thrombus burden before Stenting
- ✓ Limit the risk of distal embolization

Distal Embolization

Prevention Better than Cure

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The background of the slide features a faint, light-colored ECG (heart rate) tracing. The tracing shows several leads, with labels 'U4', 'U5', and 'U6' visible on the right side. The ECG lines are thin and light gray, providing a medical context for the text.

Decrease Thrombus Burden before stenting

- ✓ Up stream Intravenous/Intracoronary Gp2b3a inhibitors
- ✓ Thrombectomy

Intracoronary Gp2b3a inhibitors

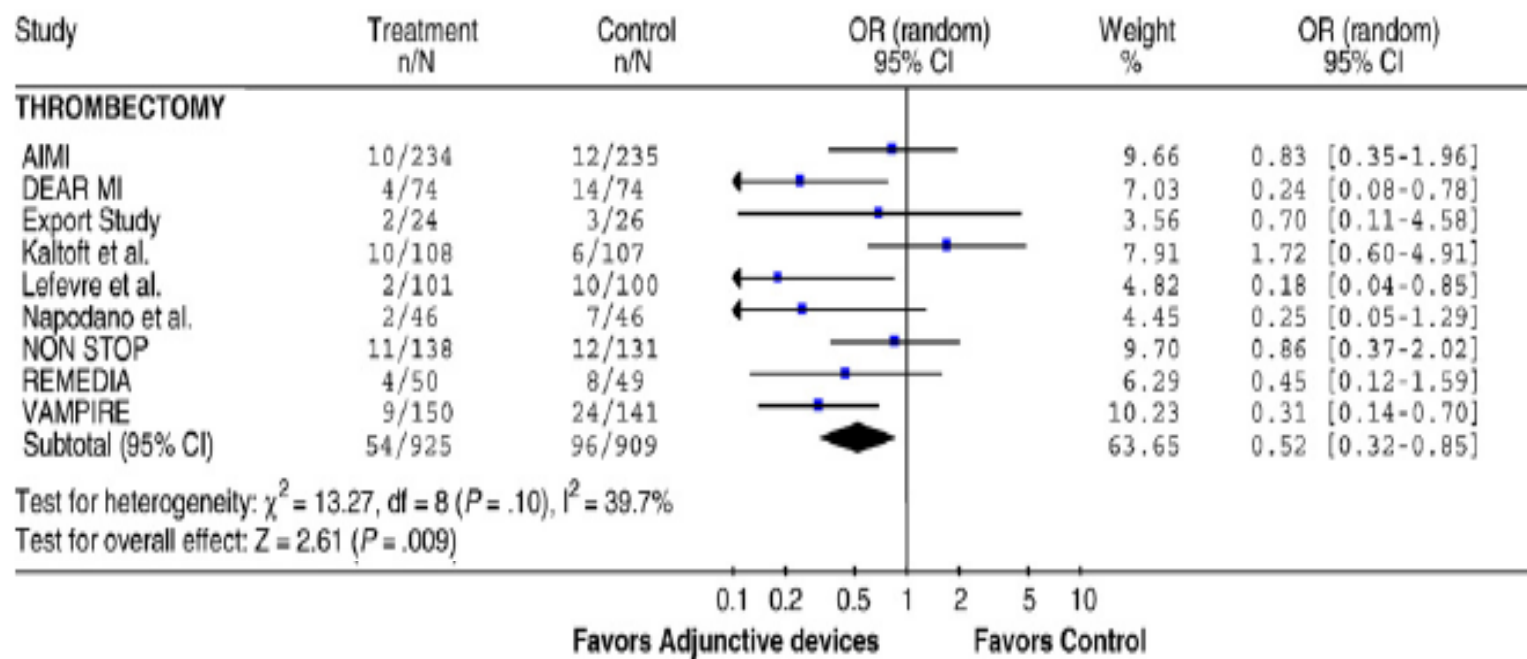
Brief Rapid Communications

Reduction of Major Adverse Cardiac Events With Intracoronary Compared With Intravenous Bolus Application of Abciximab in Patients With Acute Myocardial Infarction or Unstable Angina Undergoing Coronary Angioplasty

Jochen Wöhrle, MD*; Olaf C. Grebe, MD; Thorsten Nusser, MD;
Eyas Al-Khayer, MD; Stefan Schaible; Matthias Kochs, MD; Vinzenz Hombach, MD; Martin Höher, MD*

Circulation 2003; 14: 1840-3

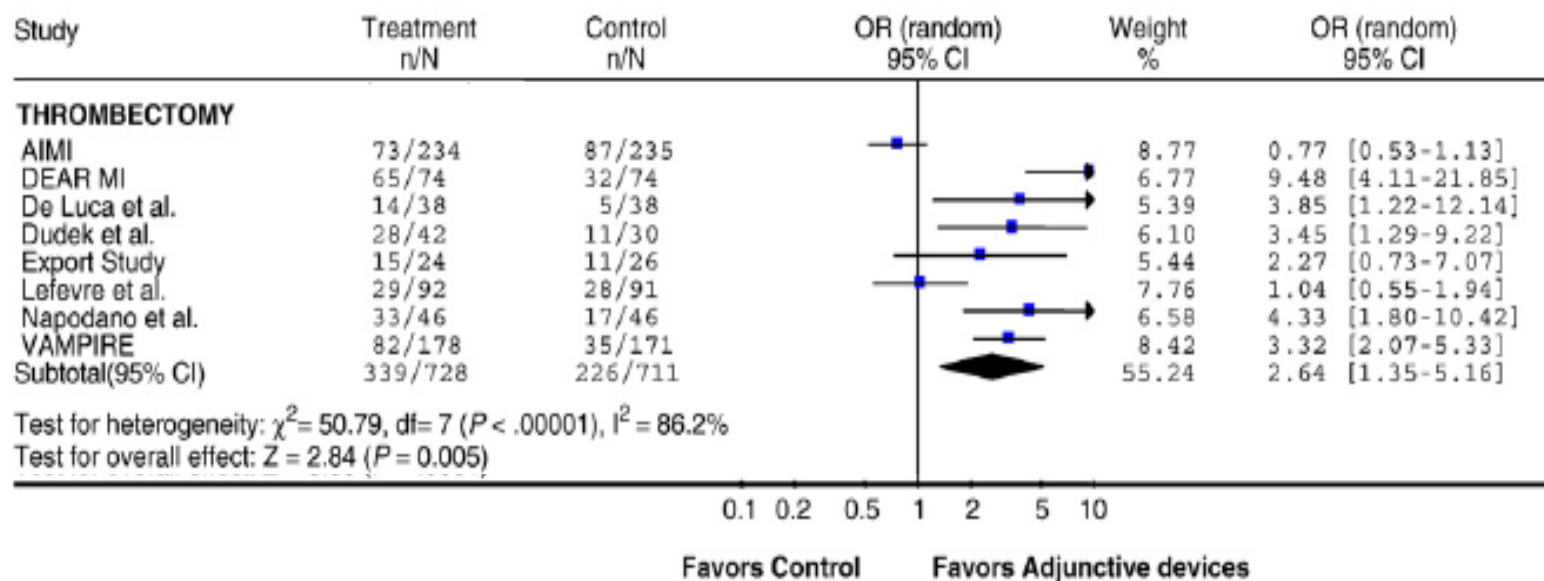
Thrombectomy in AMI



Distal Embolization

De Luca et al. Am Heart J 2007; 153:343-53

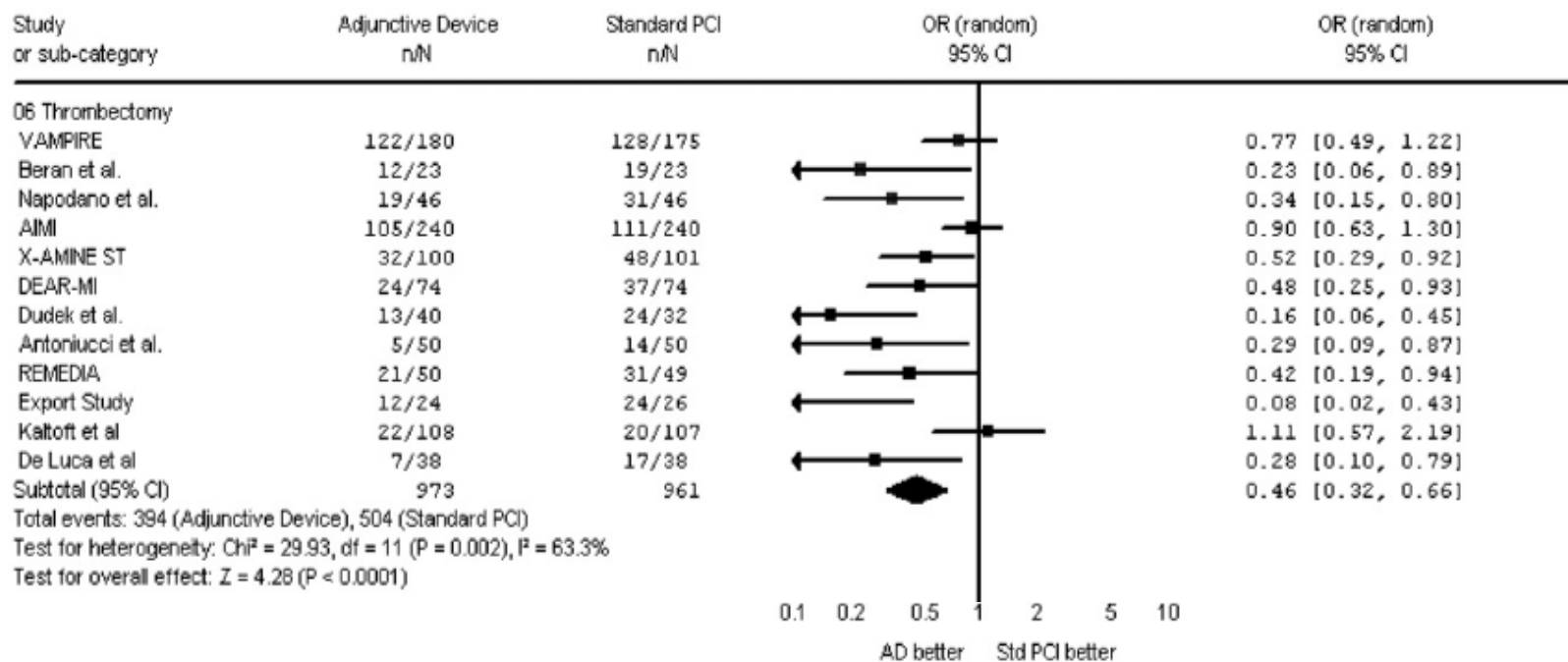
Thrombectomy in AMI



Blush

De Luca et al. Am Heart J 2007; 153:343-53

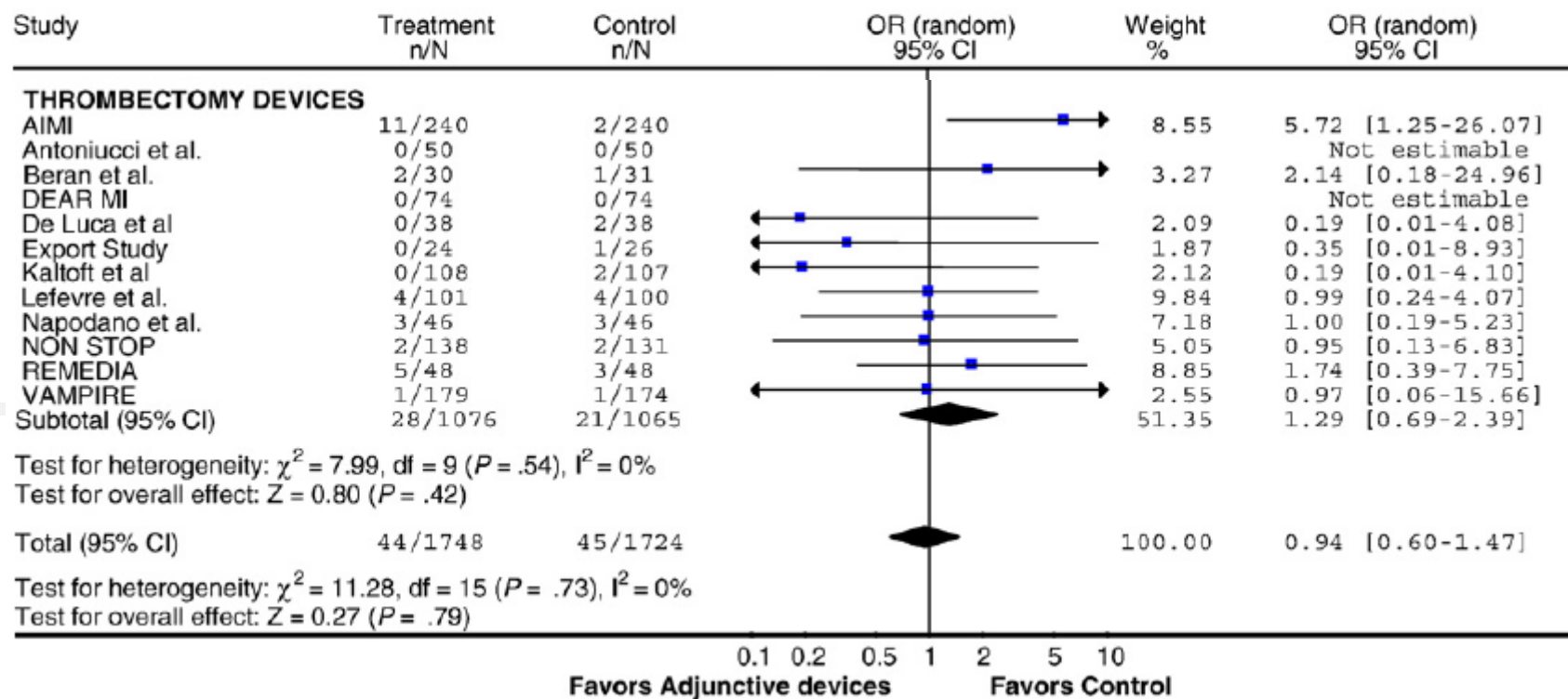
Thrombectomy in AMI



ST Segment Resolution

F. Burzotta et al. Int. J Cardiol 2007

Thrombectomy in AMI



30 day Death

De Luca et al. Am Heart J 2007; 153:343-53

Routine Thrombectomy in Percutaneous Coronary Intervention for Acute ST-Segment–Elevation Myocardial Infarction

A Randomized, Controlled Trial

Anne Kaltoft, MD, PhD; Morten Bøttcher, MD, PhD; Søren Steen Nielsen, MD; Hans-Henrik Tilsted Hansen, MD; Christian Terkelsen, MD, PhD; Michael Mæng, MD, PhD; Jens Kristensen, MD; Leif Thuesen, MD, DMSci; Lars Romer Krusell, MD; Steen Dalby Kristensen, MD, DMSci; Henning Rud Andersen, MD, DMSci; Jens Flensted Lassen, MD, PhD; Klaus Rasmussen, MD, DMSci; Michael Rehling, MD, DMSci; Torsten Toftegaard Nielsen, MD, DMSci; Hans Erik Bøtker, MD, DMSci

Background—Distal embolization during primary percutaneous coronary intervention (PCI) for ST-elevation myocardial infarction may result in reduced myocardial perfusion, infarct extension, and impaired prognosis.

Methods and Results—In a prospective randomized trial, we studied the effect of routine thrombectomy in 215 patients with ST-segment–elevation myocardial infarction lasting <12 hours undergoing primary PCI. Patients were randomized to thrombectomy pretreatment or standard PCI. The primary end point was myocardial salvage measured by sestamibi SPECT, calculated as the difference between area at risk and final infarct size determined after 30 days (percent). Secondary end points included final infarct size, ST-segment resolution, and troponin T release. Baseline variables, including ST-segment elevation and area at risk, were similar. Salvage was not statistically different in the thrombectomy and control groups (median, 13% [interquartile range, 9% to 21%] and 18% [interquartile range, 7% to 25%]; $P=0.12$), but 24 patients in the thrombectomy group and 12 patients in the control group did not have an early SPECT scan, mainly because of poor general or cardiac condition ($P=0.04$). In the thrombectomy group, final infarct size was increased (median, 15%; [interquartile range, 4% to 25%] versus 8% [interquartile range, 2% to 18%]; $P=0.004$).

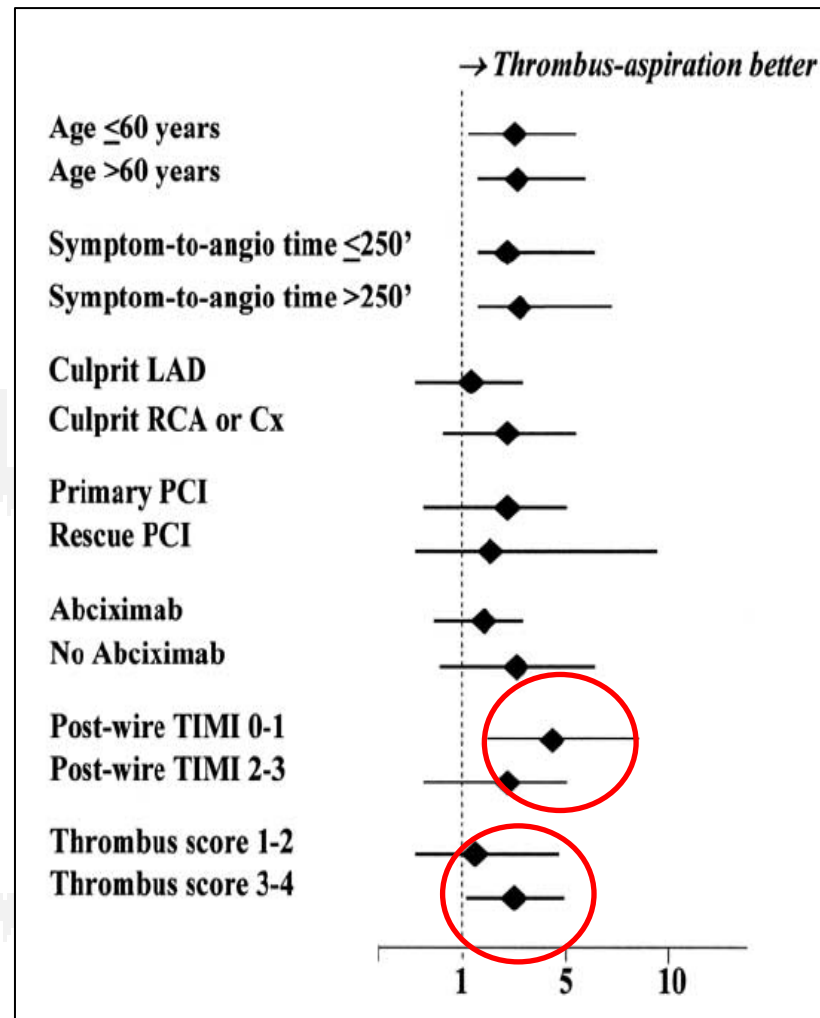
Conclusions—Thrombectomy performed as routine therapy in primary PCI for ST-elevation myocardial infarction does not increase myocardial salvage. The study suggests a possible deleterious effect of thrombectomy, resulting in an increased final infarct size, and does not support the use of thrombectomy in unselected primary PCI patients.

Methodological Problems

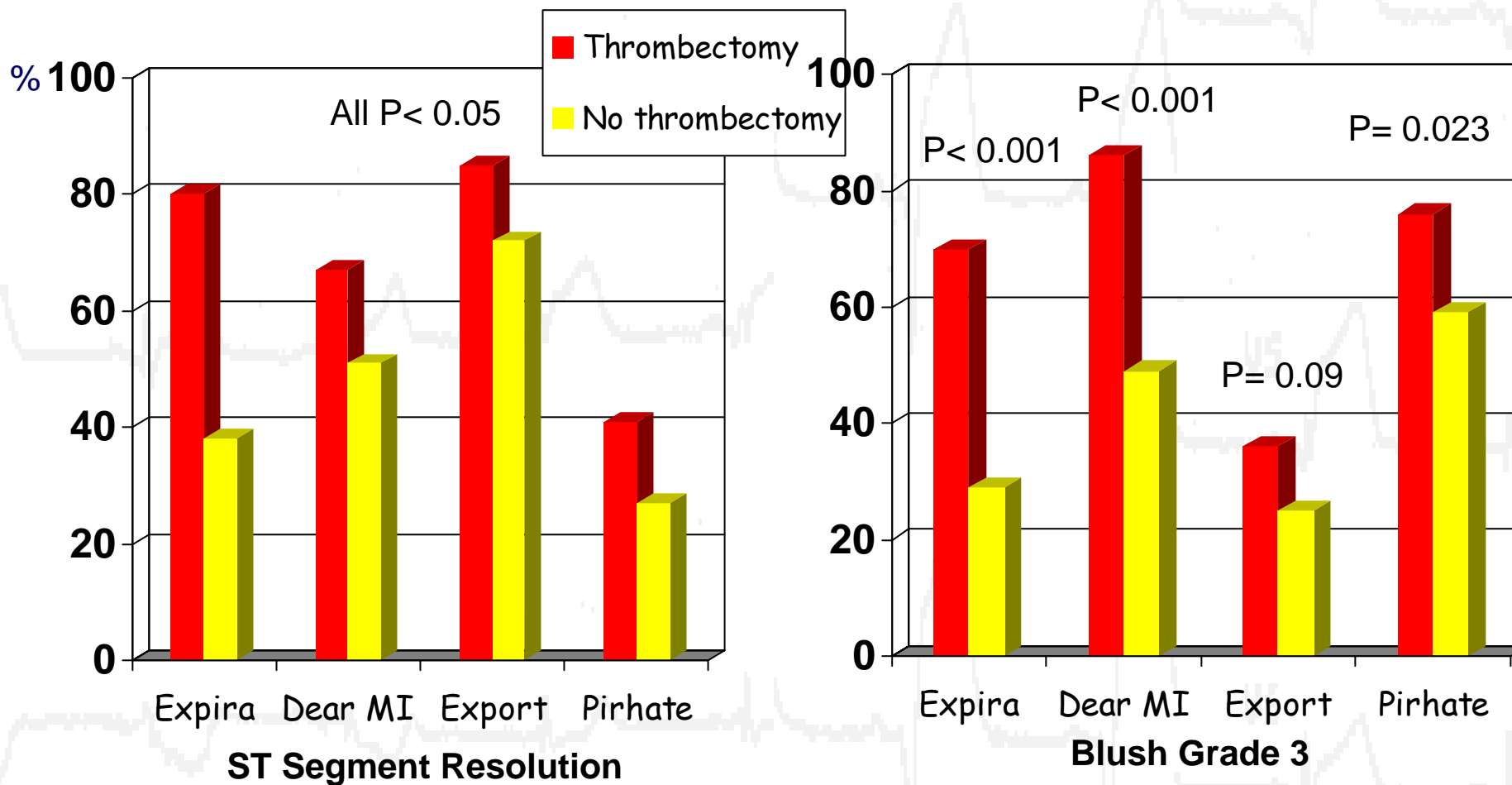
- ✓ What is the « good » Primary Endpoint ?
- ✓ How to avoid the learning phase with new devices in multicenter randomized studies ?
- ✓ Which kind of patients we should include ?

Manual Thrombus-Aspiration Improves Myocardial Reperfusion

The Randomized Evaluation of the Effect of
Mechanical Reduction of Distal Embolization by
Thrombus-Aspiration in Primary and Rescue Angioplasty (REMEDIA) Trial



Thrombectomy in AMI (TCT 2007)





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Thrombus Aspiration during Primary
Percutaneous Coronary Intervention

Tone Svilaas, M.D., Pieter J. Vlaar, M.Sc., Iwan C. van der Horst, M.D., Ph.D., Gilles F.H. Diercks, M.D., Ph.D.,
Bart J.G.L. de Smet, M.D., Ph.D., Ad F.M. van den Heuvel, M.D., Ph.D., Rutger L. Anthonio, M.D., Ph.D.,
Gillian A. Jessurun, M.D., Ph.D., Eng-Shiong Tan, M.D., Albert J.H. Suurmeijer, M.D., Ph.D.,
and Felix Zijlstra, M.D., Ph.D.

1071 STEMI patients randomized before angiography

535 were assigned to
thrombus aspiration

33 did not undergo PCI
502 underwent primary PCI
295 TA followed by direct stenting
153 TA and additional balloon
dilatation
54 Crossover to conventional PCI

530 complete follow-up at 1 year

536 were assigned to
conventional PCI

33 did not undergo PCI
503 underwent primary PCI
485 balloon dilation + stenting
12 conventional PCI + TA
6 Crossover to TA

530 complete follow-up at 1 year

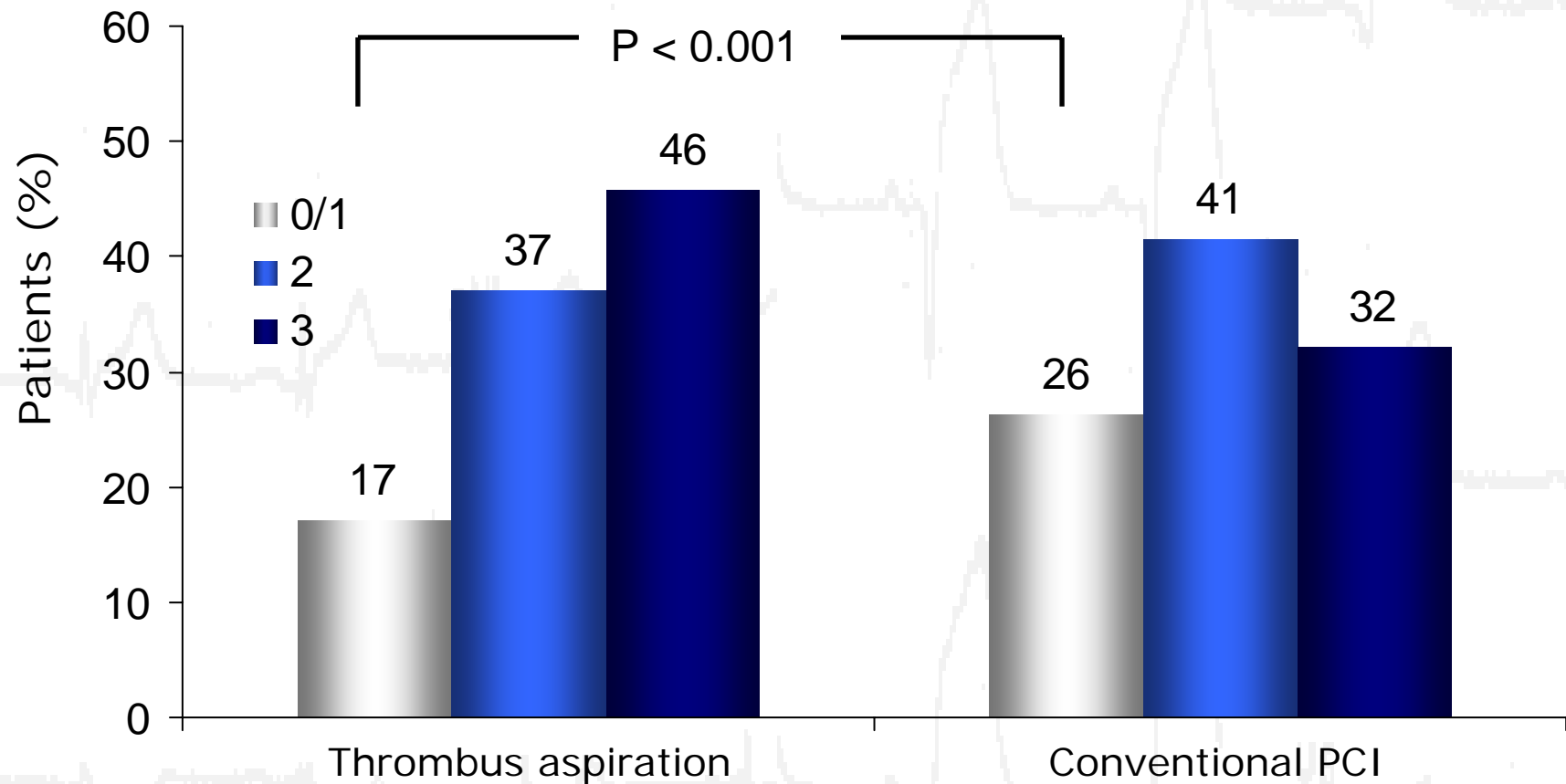
Baseline clinical characteristics

Characteristic	Thrombus aspiration N = 535	Conventional N = 536
Age, years	63±13	63±13
Male gender	68%	73%
Body mass index	27±4	27±4
Hypertension	33%	37%
Family history	46%	45%
Diabetes	11%	13%
Hypercholesterolemia	24%	27%
Current smoking	46%	48%
Previous MI	10%	11%
Total ischemic time (min)	190 (110-270)	185 (107-263)

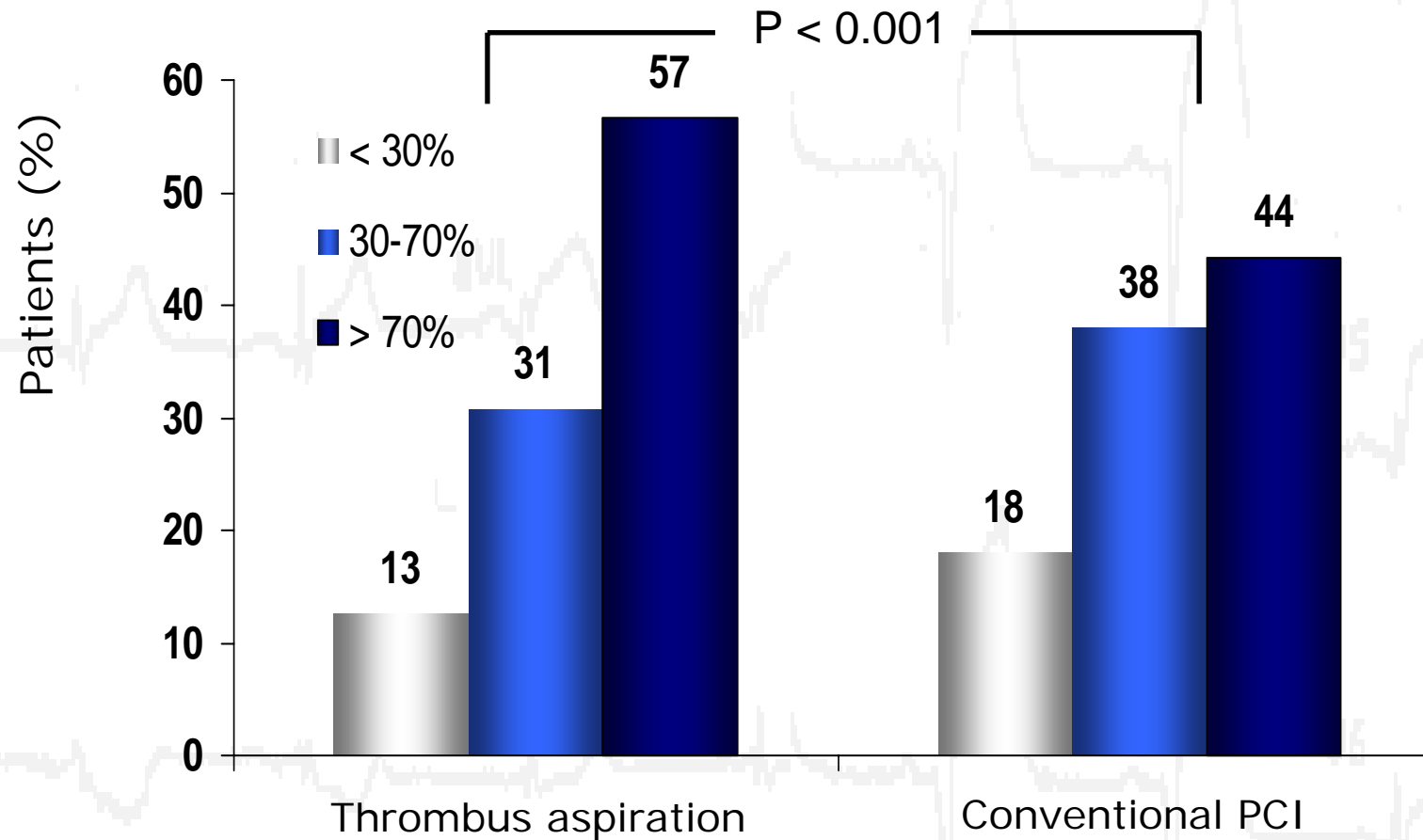
Baseline angiographic characteristics

Characteristic	Thrombus aspiration N = 535	Conventional N = 536
Infarct related vessel		
LAD	43%	43%
LCX	18%	15%
RCA	37%	40%
Multivessel disease	66%	69%
TIMI flow grade		
0 or 1	55%	60%
2	19%	16%
3	26%	25%
Thrombus	49%	46%

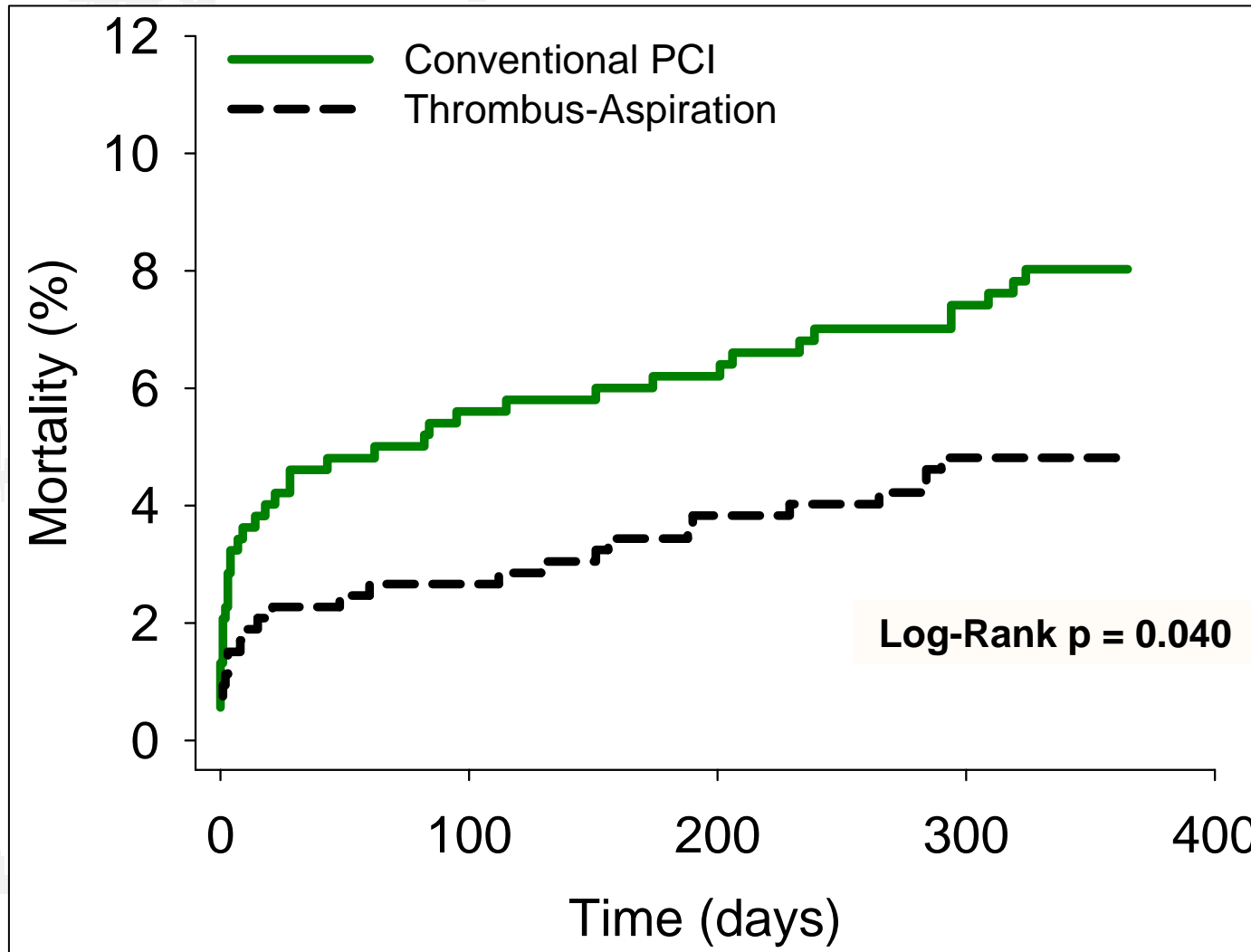
Primary endpoint: Myocardial blush grade 0-1



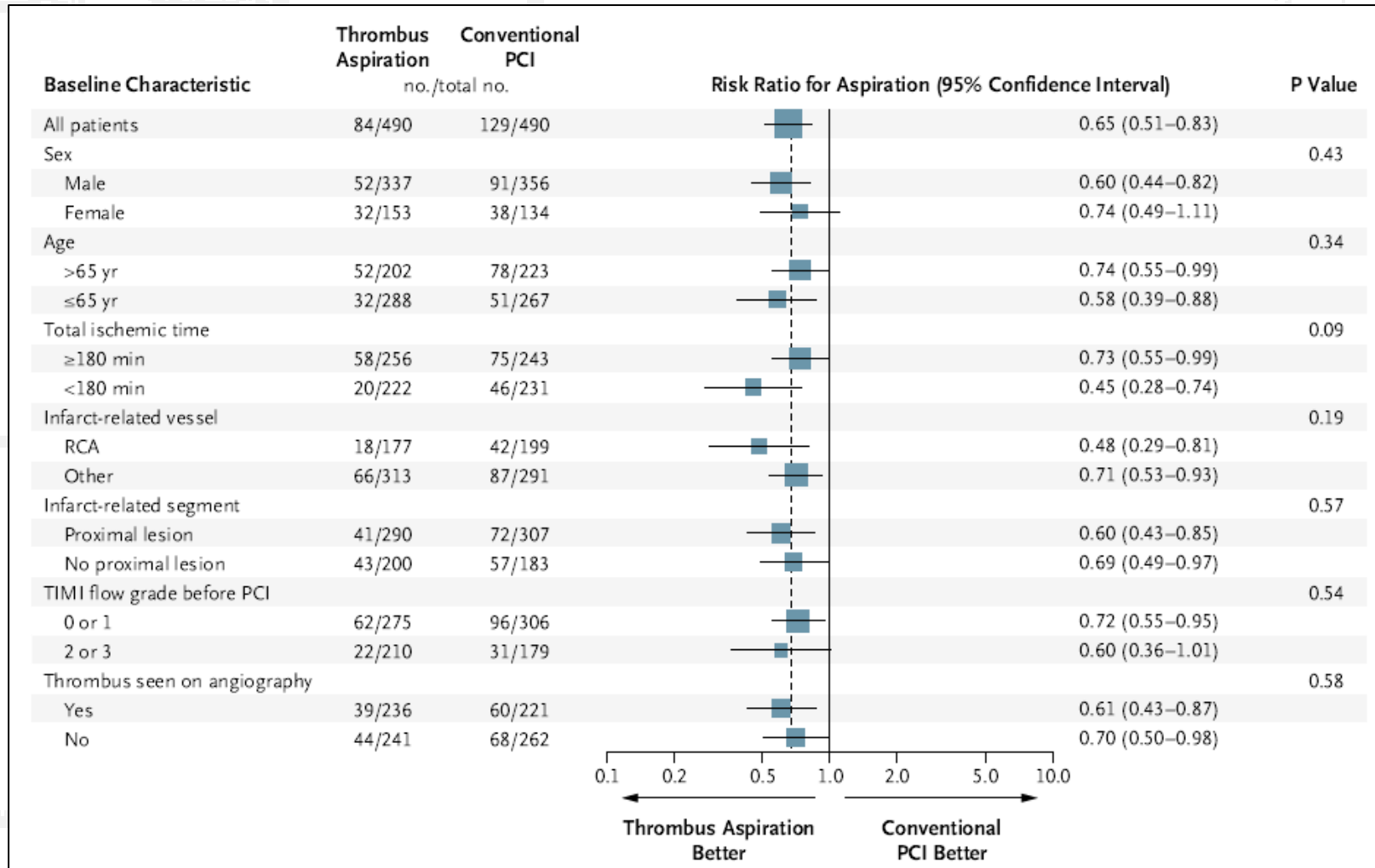
ST-segment elevation resolution



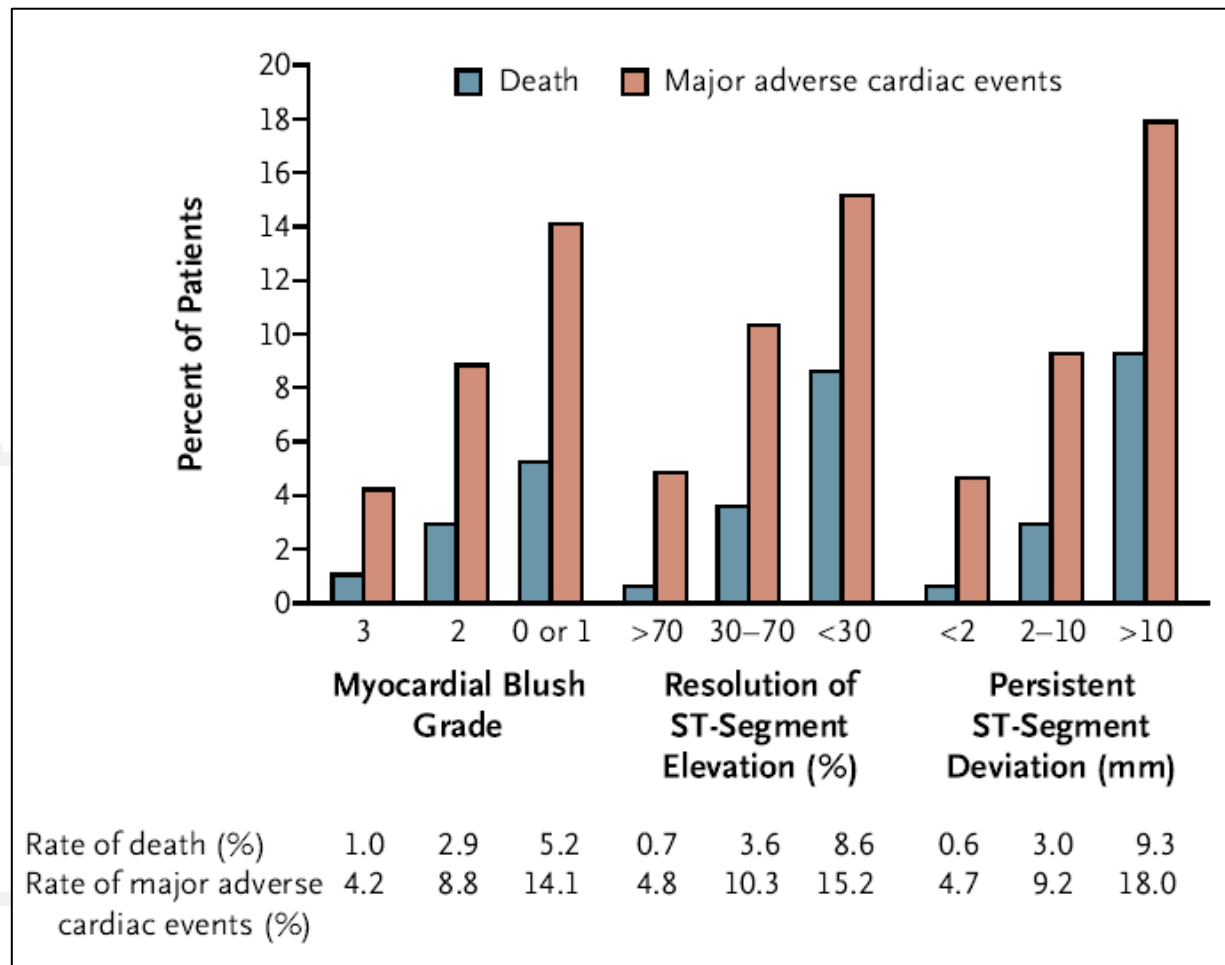
Mortality at 1 year



Risk ratio for MBG 0 or 1



Rate of Death and MACE According to MPG and ST Segment Resolution



Conclusion

Thrombectomy in AMI before stenting is now the gold standard.

- ✓ It decreases the risk of distal embolization and improves myocardial tissue reperfusion (as assessed by ST segment resolution and myocardial blush).
- ✓ It helps to perform optimal “one shot” stenting by restoring optimal TIMI flow and selecting stent size and length
- ✓ And finally improves clinical outcome

Export Debris (Case Examples)

Thank you !

