

JMC
5TH JOINT MEETING
WITH MAYO CLINIC



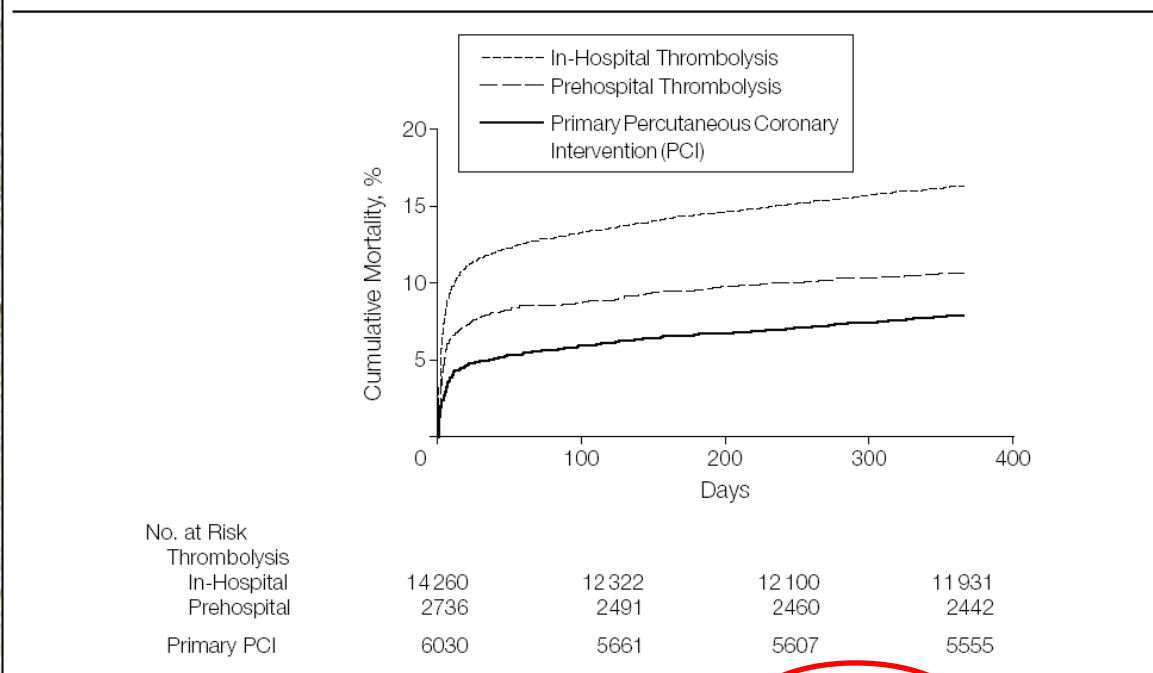
What's ideal stenting in primary intervention for AMI

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San Giovanni Battista di Torino*

REPERFUSION STRATEGIES IN AMI

Long-term Outcome of Primary Percutaneous Coronary Intervention vs Prehospital and In-Hospital Thrombolysis for Patients With ST-Elevation Myocardial Infarction

Figure 2. Unadjusted Cumulative Mortality During the First Year After the Index Event Admission



Unadjusted mortality (Kaplan-Meier) first year after index admission for the 26 205 patients with ST-segment elevation myocardial infarction receiving reperfusion therapy between 1999-2004.

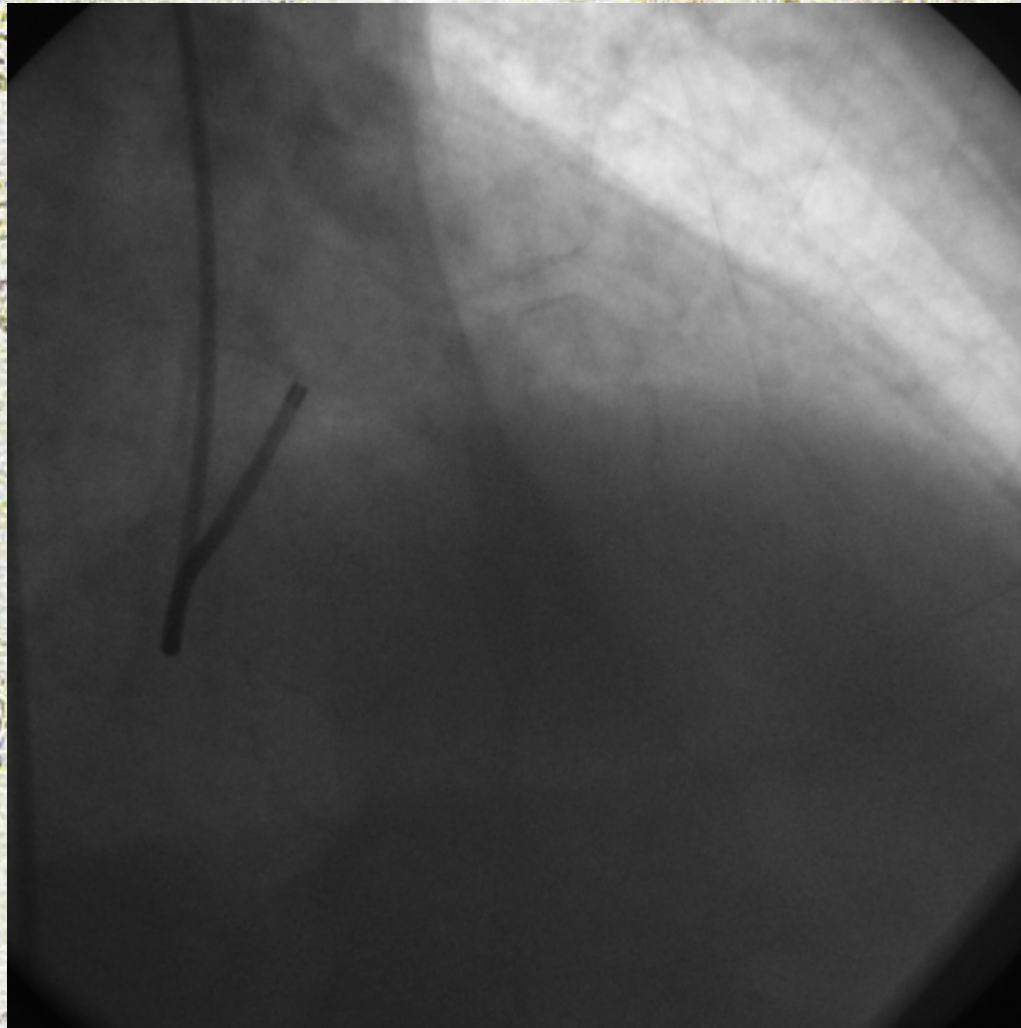
Stenstrand U. JAMA 2006; 296(14):1749-1756



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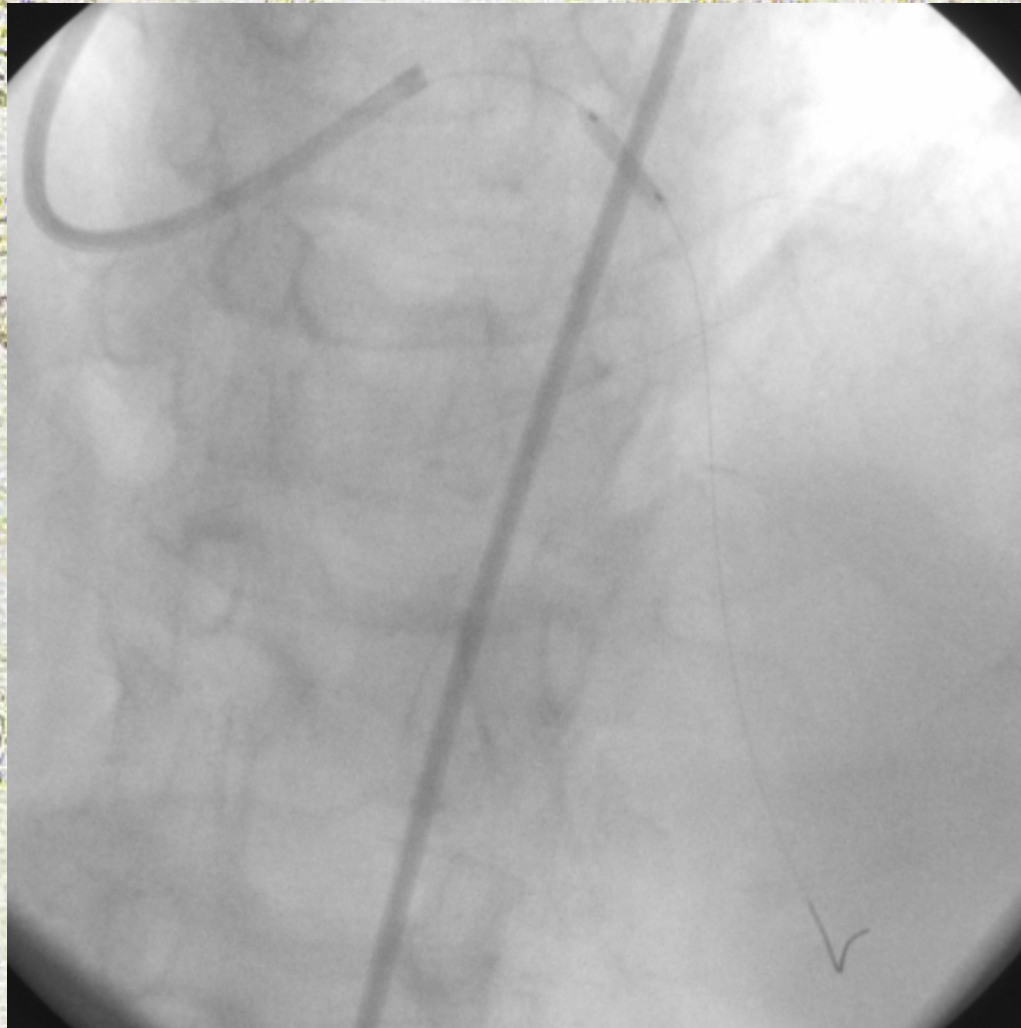
AMI CONTEXT



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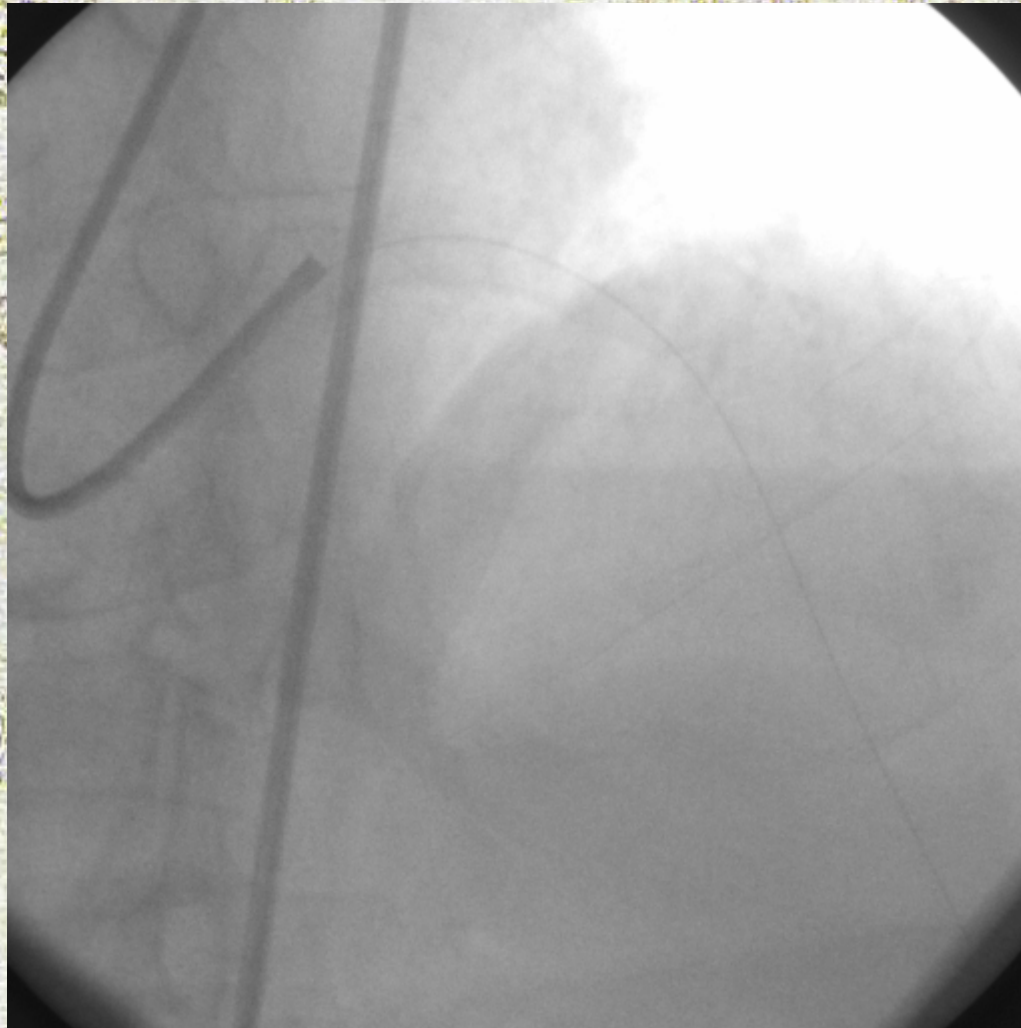
AMI CONTEXT



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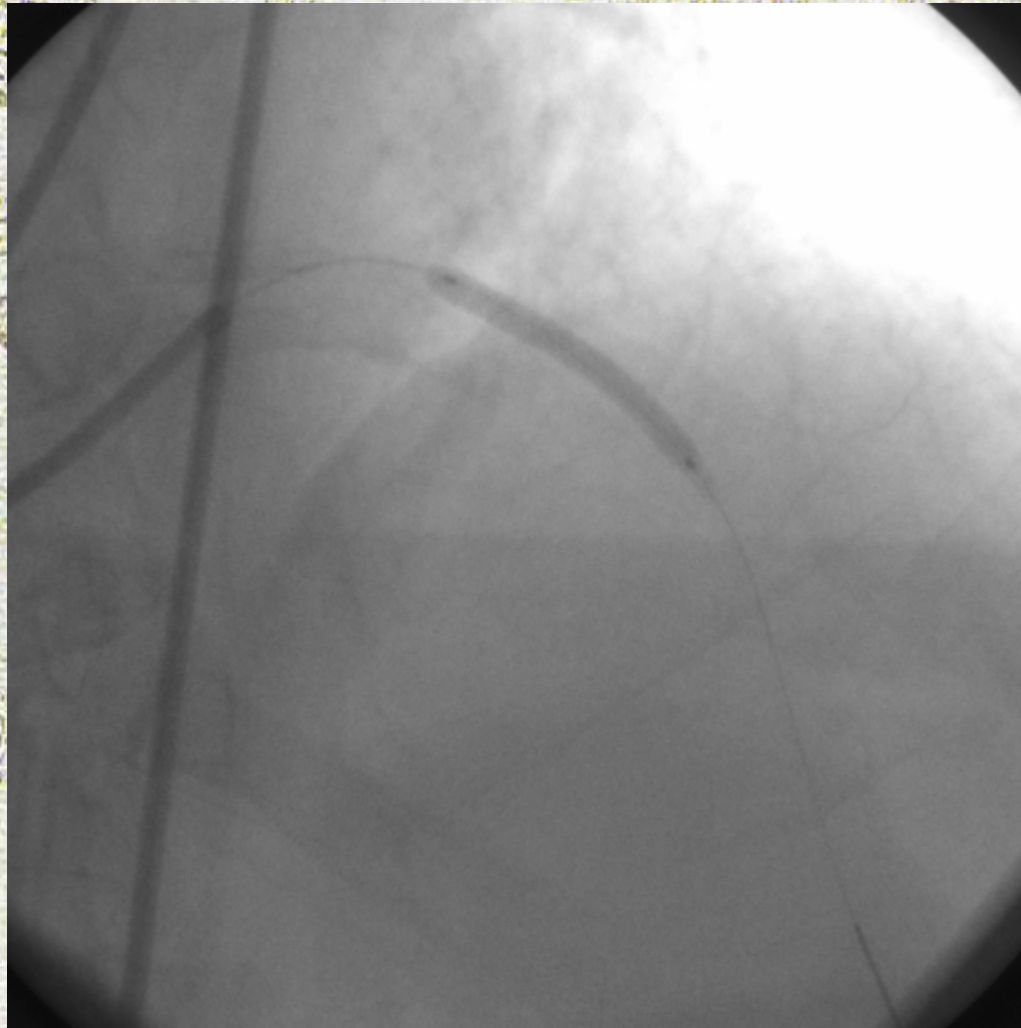
AMI CONTEXT



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AMI CONTEXT



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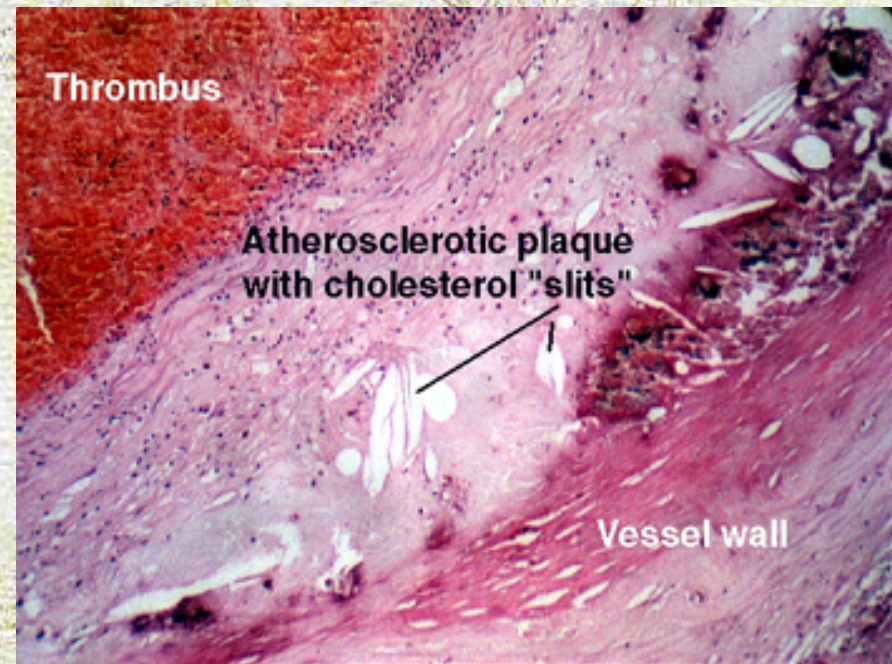
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AMI CONTEXT



AMI CONTEXT

- ✓ DISRUPTED ENDOTHELIUM WITH OVERLYING THROMBUS
- ✓ THINNED FIBROUS CAP, RICH LIPID CORE
- ✓ MARKED INFLAMMATION
- ✓ LESS ATHEROSCLEROTIC BURDEN



AMI CONTEXT

FACTORS FAVOURING STENT THROMBOSIS AND RESTENOSIS

- ✓ Thrombotic milieu
- ✓ Disrupted endothelium
- ✓ Vasoconstriction
- ✓ Difficult stent sizing
- ✓ Suboptimal stent expansion
- ✓ Late malapposition



PRIMARY STENTING IN AMI



European Heart Journal (2007) 28, 2706–2713
doi:10.1093/eurheartj/ehm402

Clinical research
Interventional cardiology

Meta-analysis of randomized trials on drug-eluting stents vs. bare-metal stents in patients with acute myocardial infarction

Adnan Kastrati^{1*}, Alban Dibra¹, Christian Spaulding², Gerrit J. Laarman³, Maurizio Menichelli⁴, Marco Valgimigli⁵, Emilio Di Lorenzo⁶, Christoph Kaiser⁷, Ilkka Tierala⁸, Julinda Mehilli¹, Melchior Seyfarth¹, Olivier Varenne², Maurits T. Dirksen³, Gianfranco Percoco⁵, Attilio Varricchio⁶, Schömig¹

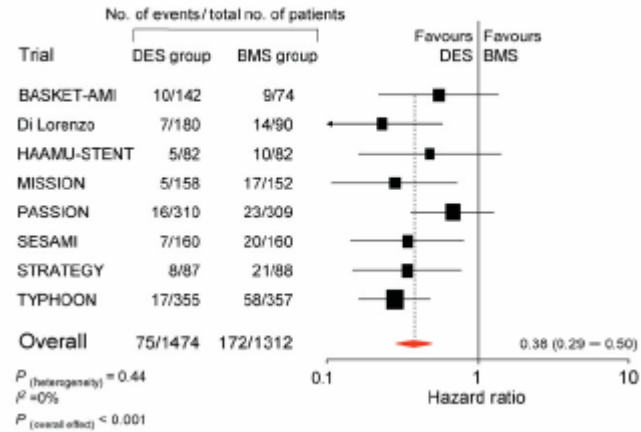
Table 2 Main characteristics of the trials

Study	No. of patient	Mean age (years)	Type of DES	Availability of individual patient data	Primary endpoint	Length of thienopyridine therapy (months)	Mean length of follow-up (months)
BASKET-AMI ²²	216	62.2	PES SES	Yes	Cardiac death, myocardial infarction, or reintervention	6	18.0
Di Lorenzo ²¹	270	64.0	PES SES	Yes	Death, myocardial infarction, or reintervention	6	12.0
HAAMU-STENT ²³	164	63.0	PES	Yes	Angiographic late lumen loss	12	16.7
MISSION ²⁵	310	59.2	SES	No	Angiographic late lumen loss	12	12.0
PASSION ¹³	619	60.8	PES	Yes	Cardiac death, myocardial infarction, or reintervention	6	12.0
SESAMI ²⁴	320	61.6	SES	Yes	Angiographic binary restenosis	12	12.3
STRATEGY ¹⁵	175	62.6	SES	Yes	Death, myocardial infarction, stroke, or angiographic binary restenosis	3	24.2
TYPHOON ¹⁴	712	59.3	SES	Yes	Cardiac death, myocardial infarction, or reintervention	6	12.1

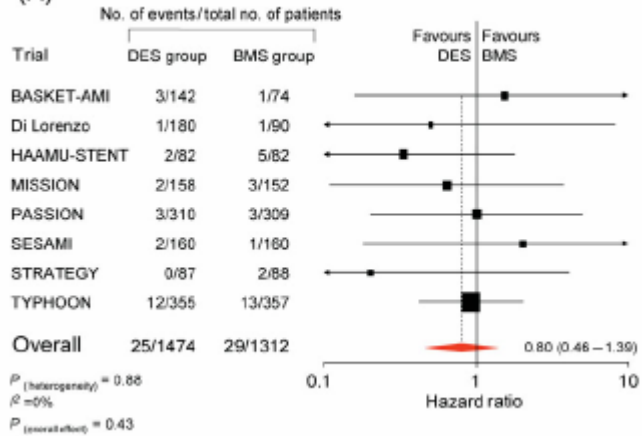


PRIMARY STENTING IN AMI

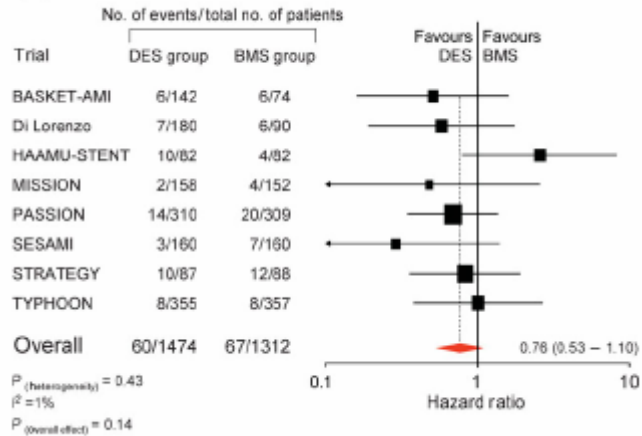
(A) REINTERVENTION (TLR) 12 months **5% vs 13%**



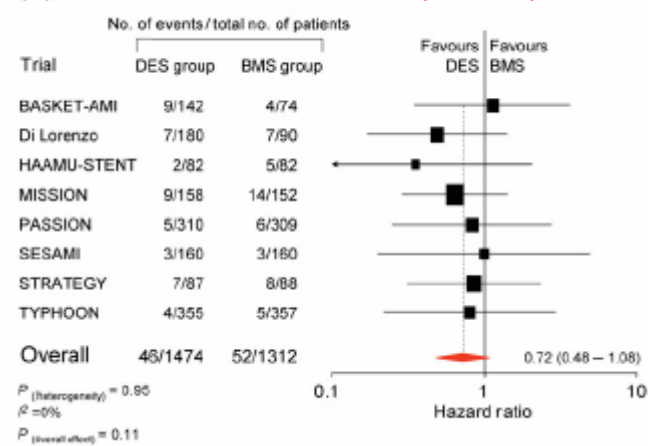
(A) STENT THROMBOSIS 12 months **1,6% vs 2,2%**



(A) DEATH 12 months **4% vs 5%**

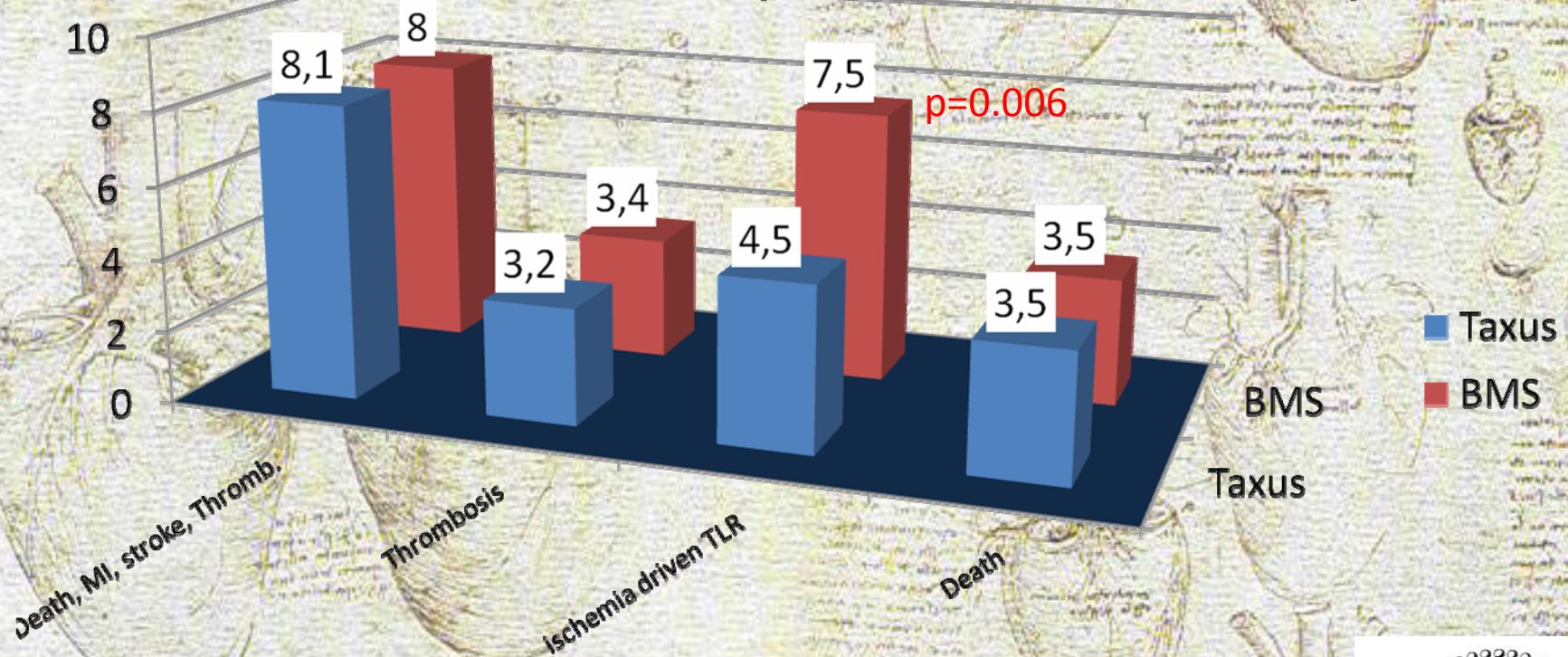


(A) RECURRENT MI 12 months **2,5% vs 3,3%**



PRIMARY STENTING IN AMI

HORIZONS AMI (3006 pts, 12 months f.u.)

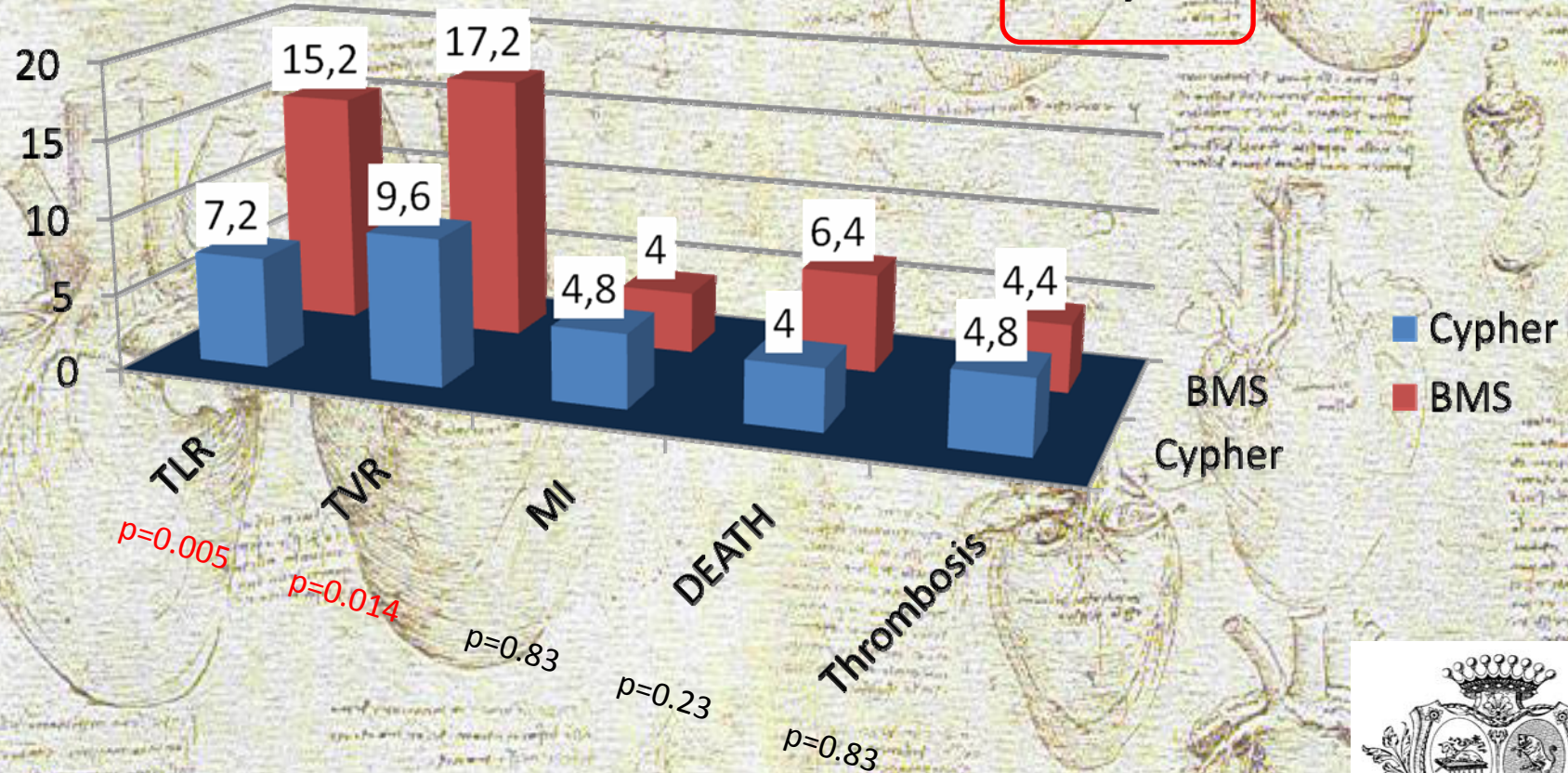


Stone GW. *N Engl J Med* 2009; 360: 1946



PRIMARY STENTING IN AMI

TYPHOON Clinical outcomes at four years

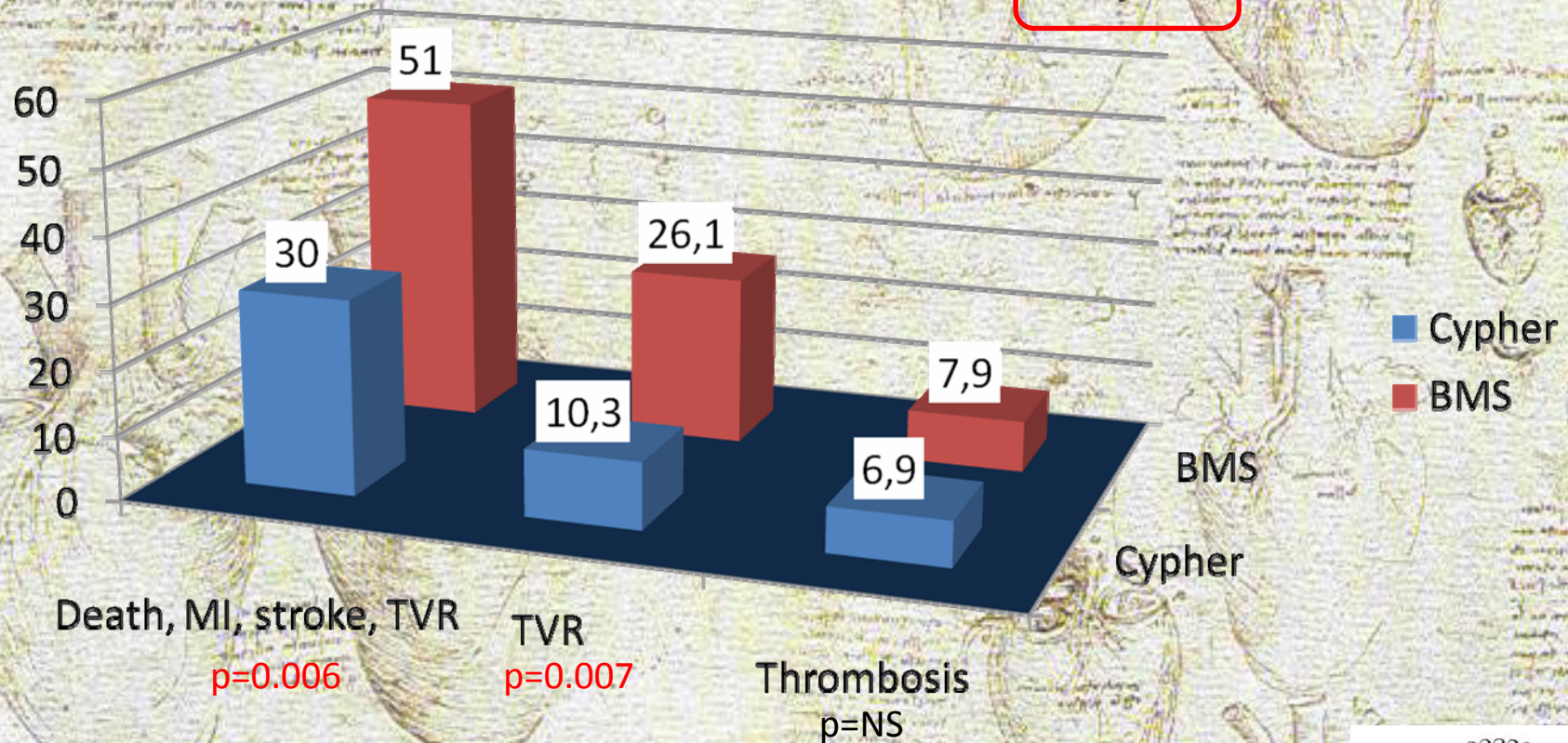


EuroPCR 2009, Barcelona



PRIMARY STENTING IN AMI

STRATEGY Clinical outcomes at **five years**



EuroPCR 2009, Barcelona



OPTIMAL STENTING

TO DES
OR
TO BMS....

12 months outcome
for PPCI with DES
3% thrombosis
5% TLR isch. driven



BACK TO THE BENCH

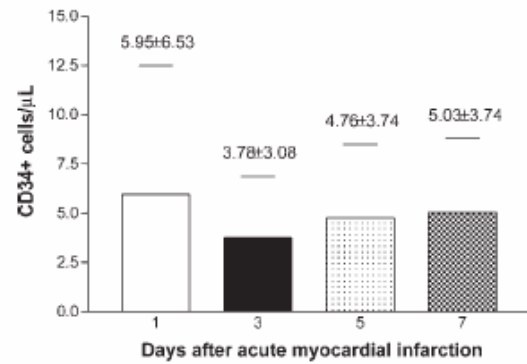


Figure 1 Number of circulating CD34+ cells after AMI.

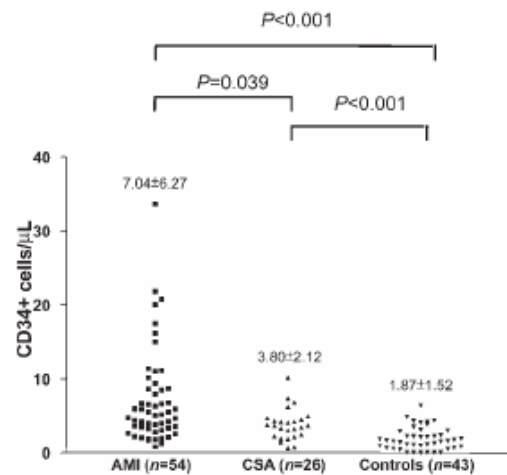


Figure 2 Number of circulating CD34+ cells in patients with AMI (peak value), CSA, and in healthy controls. Values on the top of individual data points are mean ± SD.

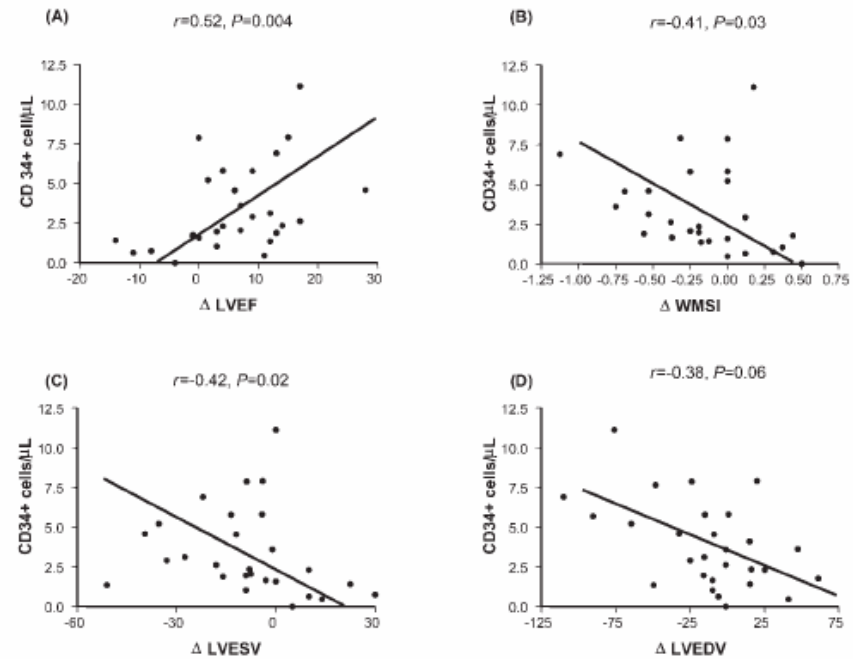
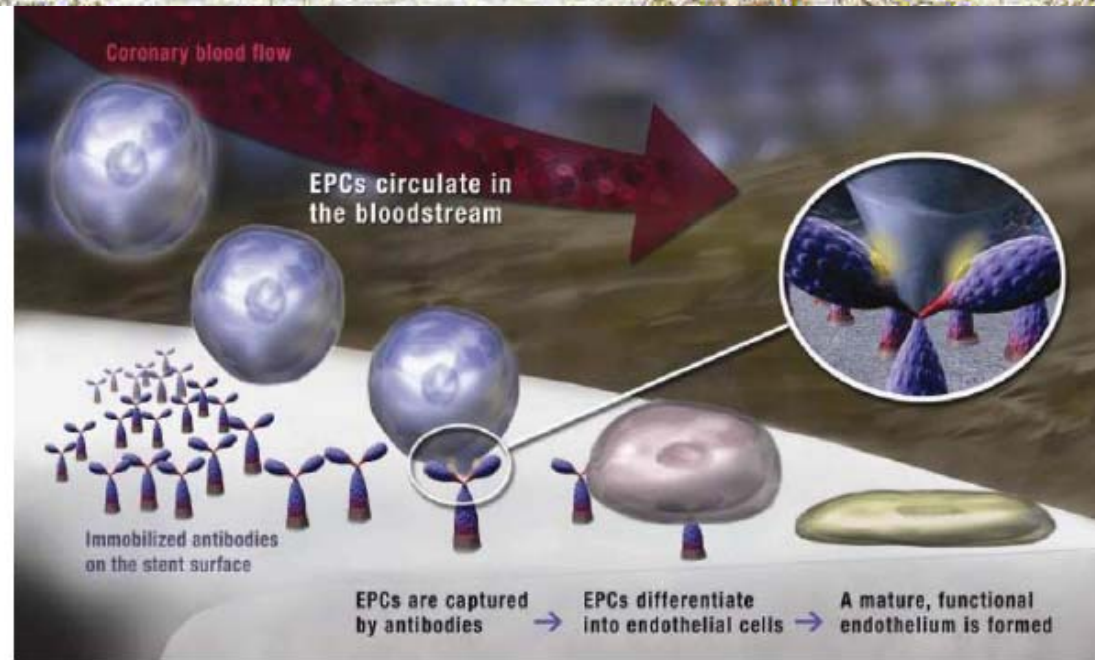


Figure 5 Correlation between CD34+ cell concentration at follow-up and variations of LVEF (A), WMSI (B), LVESV (C), and LVEDV (D) in the 28 AMI patients reassessed at 1 year follow-up.

Leone AM. *Eur Heart J* 2005; 26: 1196



AN "HEALING" STRATEGY



GENOUS AMI is a phase II study aimed to demonstrate the ***FEASIBILITY AND SAFETY*** of a bioengineered EPC capture stent and to describe the ***bioKINETICS*** of EPC CD34⁺ in AMI patients



GENOUS AMI preliminary data

Inclusion criteria

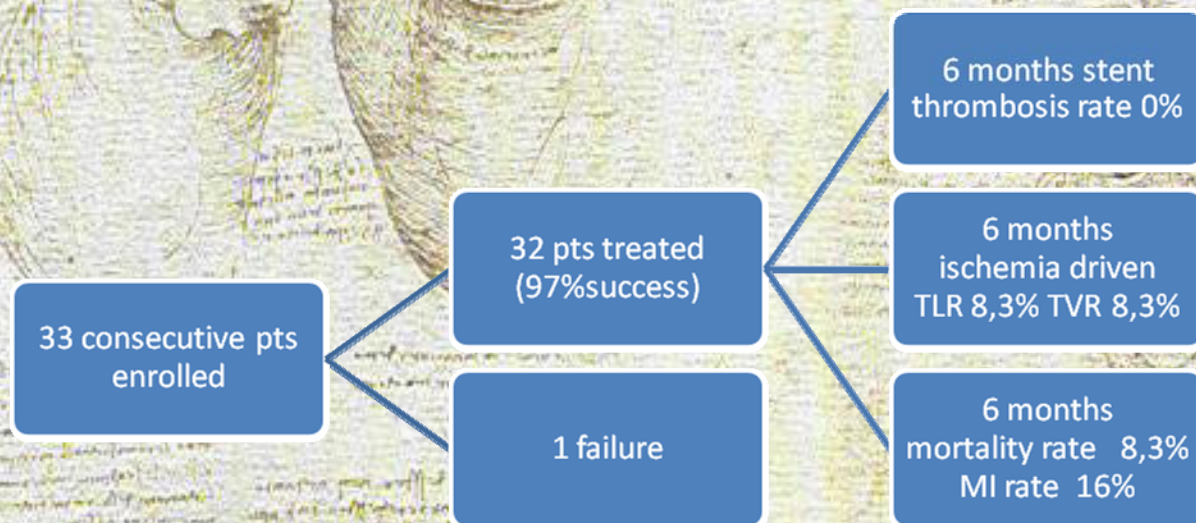
STEMI < 12 hours
suitable for PPCI

Exclusion criteria

- Cardiogenic shock
- Malignancy
- Infect. or immunol. disease
- Bone marrow disease
- Pregnancy

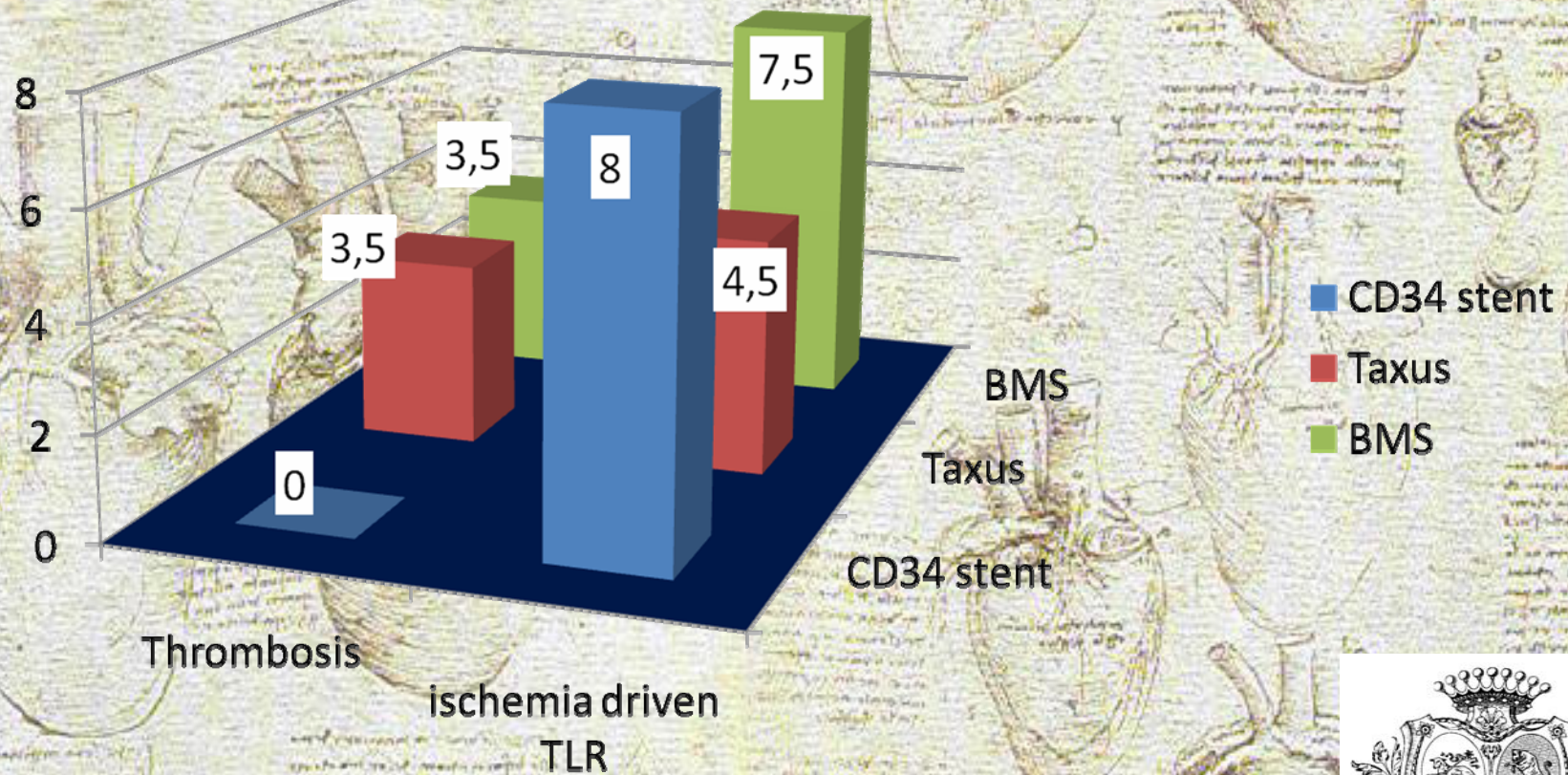
Clinical characteristics

Male	94%
Age	60,2 ± 10,9 years
Diabetes	16%
DtoB	106 min (25-250)
Anterior MI	40%
Acute EF	0,48 ± 0,09
Multivessel disease	27%
IIb/IIIa	100%
Stent/pt	1,4

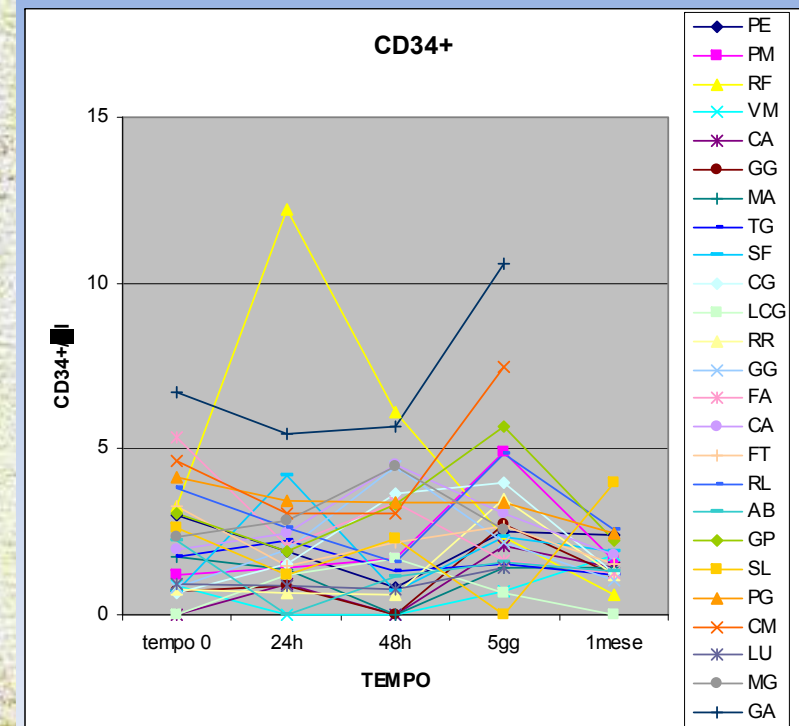
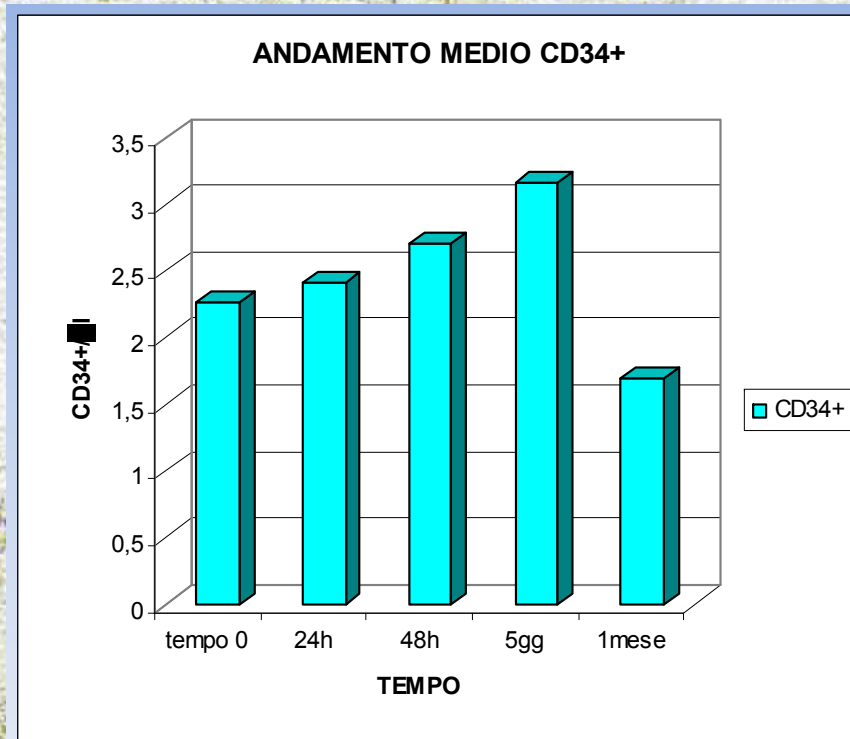


GENOUS AMI preliminary data

HORIZONS AMI vs GENOUS AMI



GENOUS AMI preliminary data



Mean peak 4,8 CD34/μl (1,46-19,6)
Higher peak concentration (trend) in :

- male
- age < 60y
- not diabetes
- anterior MI
- low acute EF
- higher EF at 6 months



GENOUS AMI preliminary data

Variabile	n	Media valori mobilizzazione CD34+/ μ L	P-value
Età			
< 60 anni	12	2,80 \pm 1,60	NS
\geq 60 anni	13	1,97 \pm 0,99	
Sesso			
Maschi	23	2,40 \pm 1,42	NS
Femmine	2	1,97 \pm 0,14	
Fattori di rischio			
\geq 3	17	2,12 \pm 1,45	NS
<3	8	2,89 \pm 1,06	
Diabete			
Si	4	1,90 \pm 1,05	NS
No	21	2,40 \pm 1,41	
Tempo ischemia			
<180 min	5	1,84 \pm 0,79	NS
\geq 180 min	20	2,50 \pm 1,47	
IMA			
anteriore	9	3,12 \pm 1,97	< 0,05
inferiore	14	1,95 \pm 0,62	
FE in acuto			
\geq 50%	11	1,75 \pm 0,79	NS
<50%	14	2,40 \pm 1,07	
FE in dimissione			
\geq 50%	17	2,23 \pm 1,46	NS
<50%	8	2,66 \pm 1,17	
FE a 6° mese			
<50%	4	1,94 \pm 0,68	NS
\geq 50%	7	2,05 \pm 1,11	



CONCLUSION

- PPCI is the best reperfusion strategy for AMI
- The stenting efficacy is conditioned by the physiopathology of coronary artery
- DES are superior to BMS in terms of TLR-revascularization rate
- No excess of thrombosis for DES at 12 months
- Preliminary data seem to confirm long term DES safety



PERSPECTIVES

- 2nd generation DES could improve safety profile
- The “healing” strategy could be the best approach to prevent stent thrombosis but not the TLR
- The combination of EPC capture technology and anti-proliferative drug may be more effective and safe
- “Customized” approach



THANK YOU !

