MATRIX

2016 euro PCR

Radial vs. femoral access in patients with ACS with or without ST-segment elevation (Matrix access)

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Potential conflicts of interest

Speaker's name: Bernardo Cortese

☑ I have the following potential conflicts of interest to report (last 2 years):

Consultant: Aachen Resonance, Abbott Vascular, Astra Zeneca, Kardia, Innova, Stentys

Honorarium: Hexacath, Amgen

Institutional grant/research support: AB Medica, Movi

Study Organization and Sites

Italian society of interventional cardiology

Grant suppliers: The Medicines Company and Terumo

Principal Investigator: Marco Valgimigli, *MD, PhD*

78 Sites, 4 EU countries recruited 8404 patients

Executive Committee

Marco Valgimigli, Andrea Gagnor; Paolo Calabrò, Paolo Rubartelli, Stefano Garducci, Giuseppe Andò, Andrea Santarelli, Mario Galli; Roberto Garbo; Ezio Bramucci; Salvatore Ierna, Carlo Briguori, Bernardo Cortese; Ugo Limbruno, Roberto Violini; Patrizia Presbitero; Nicoletta de Cesare; Paolo Sganzerla; Arturo Ausiello; Paolo Tosi; Gennaro Sardella; Manel Sabate'; Salvatore Brugaletta.

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Data Mng

E. Frigoli, *Eustrategy*
Project Leader

MATRIX Access

NSTEACS or STEMI with invasive management

Aspirin+P2Y12 blocker

Randomization stratified for type of ACS

1:1

Trans-Radial Access

Trans-Femoral Access

1:1

Bivalirudin

Mono-Tx

Heparin

±GPI

1:1

Stop Infusion

Prolong≥ 6 hs infusion

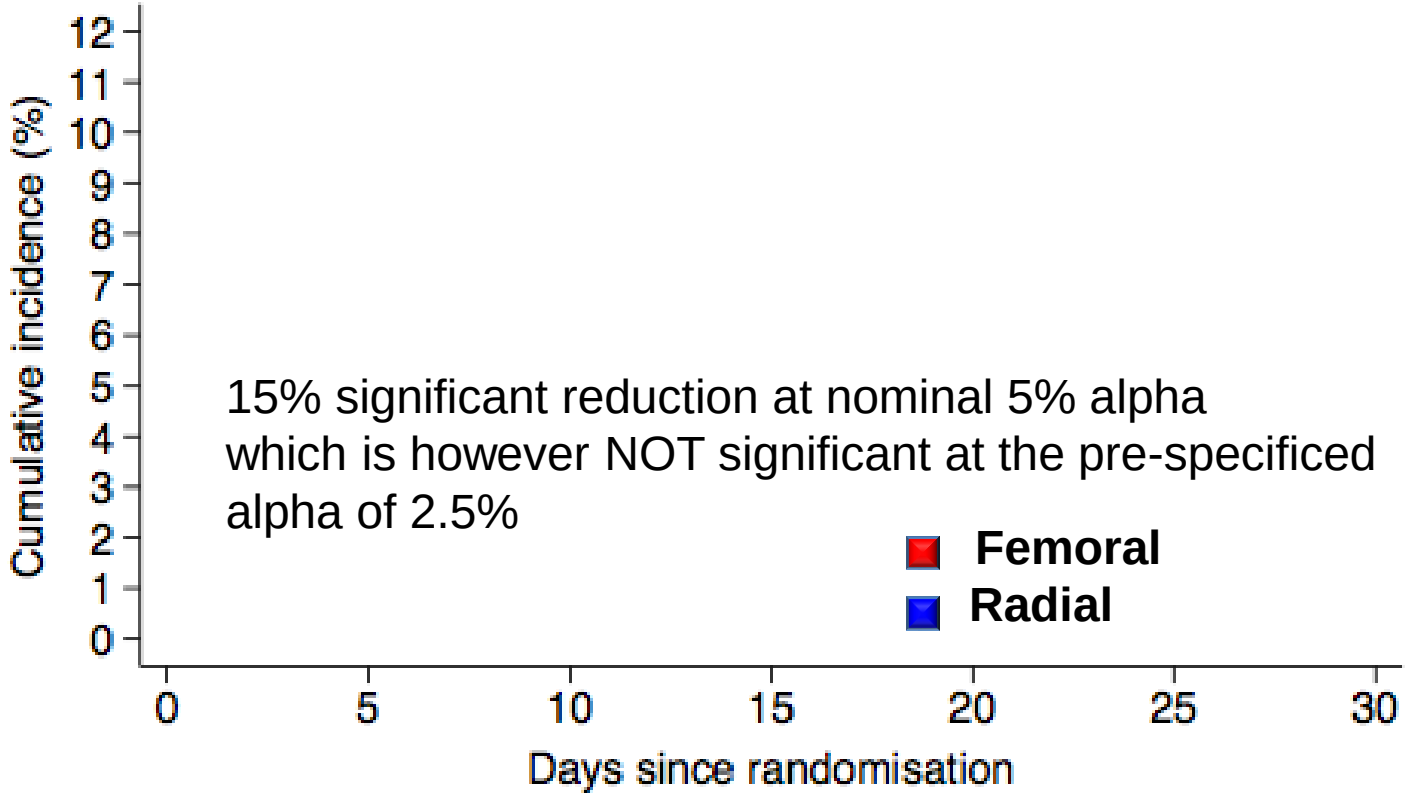
ClinicalTrials.gov NCT01433627

Am Heart J. 2014 Dec;168(6):838-45.e6.

Endpoints of the study

- The MATRIX Access substudy had two pre-specified primary superiority endpoints at 30 days:
  - MACE: composite of death, MI and stroke
  - NACE: composite of death, MI or stroke and major bleeding (BARC 3 or 5)
- Major 2 EPs: each component of the co-primary endpoints, any bleeding according to BARC, TIMI and GUSTO scales and stent thrombosis

Results of the main study: MACE

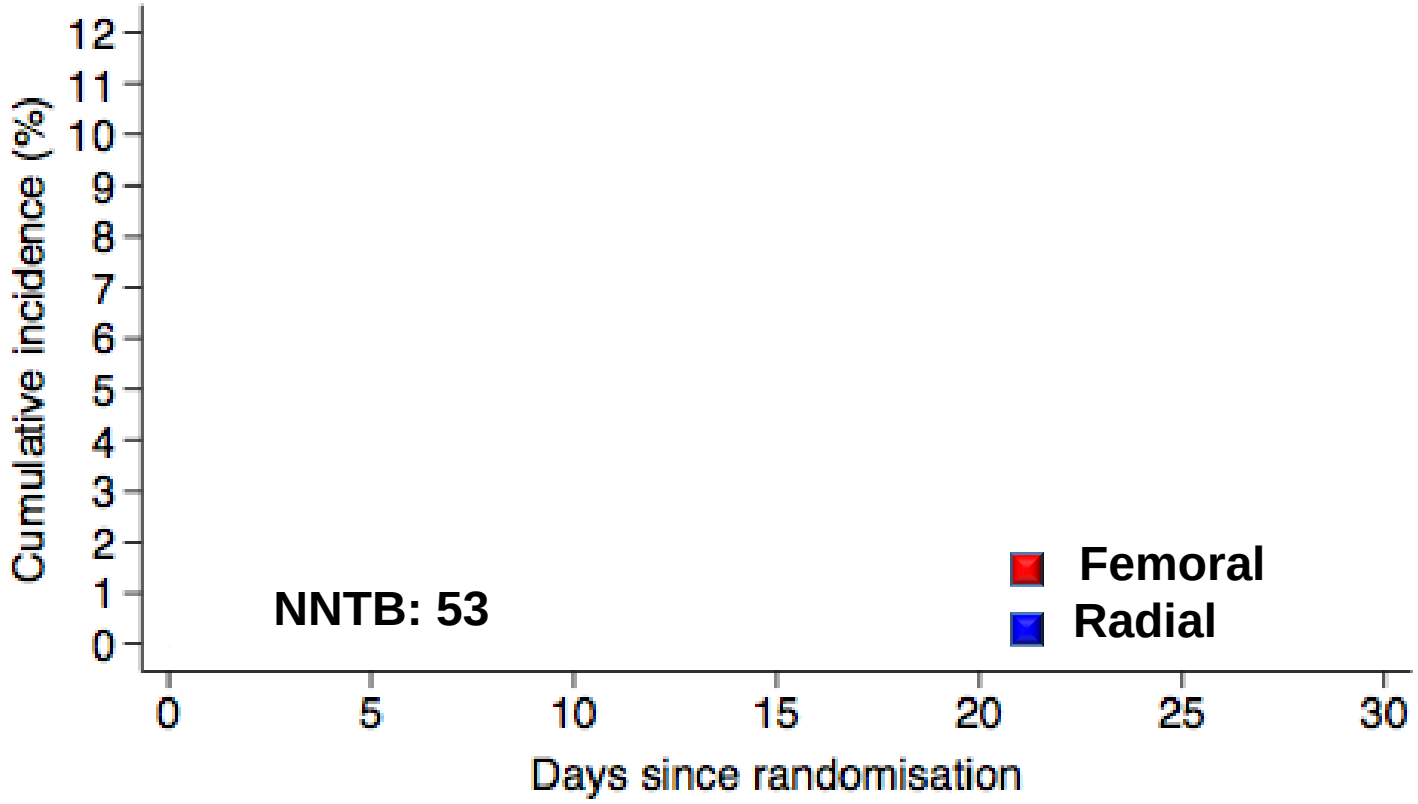


Number at risk

Femoral Access	4207	3846	3792	3776	3753	3713	3498
Radial Access	4197	3874	3834	3811	3785	3748	3545

Valgimigli, Lancet 2015

Results of the main study: NACE



Number at risk

Femoral Access	4207	3801	3738	3725	3700	3659	3445
Radial Access	4197	3848	3798	3771	3744	3708	3505

Valgimigli, Lancet 2015

Patient Eligibility

UA/NSTEMI

- New or worsening ischaemia, occurring at rest or with minimal activity within 7 days

AND

At least 2 high-risk criteria:

- Age > 60
- High Tp T I or CK-MB
- ECG changes suggesting ischemia

STEMI

- Chest pain for >20 min with ST-segment elevation ≥1 mm in two or more contiguous leads, or with a new left LBBB or true posterior myocardial infarction

AND

- Admission <12 hs

OR

- Between 12 and 24 hs with evidence of continuing ischemia or lysis

Cardiogenic shock, severe PVD and prior CABG were eligible

baseline characteristics

	STEMI			NSTE-ACS		
	Radial Access (n=2001)	Femoral Access (n=2009)	*p* value	Radial Access (n=2196)	Femoral Access (n=2198)	*p* value
Age - yr	63.7±12.1	64.0±12.1	0.43	67.2±11.3	67.5±11.3	0.33
≥75 yr	424 (21.2)	444 (22.1)	0.48	644 (29.3)	658 (29.9)	0.66
Male sex	1552 (77.6)	1541 (76.7)	0.52	1574 (71.7)	1505 (68.5)	0.020
Diabetes mellitus	371 (18.5)	352 (17.5)	0.013	588 (26.8)	592 (26.9)	0.42
Hypercholesterolemia	754 (37.7)	814 (40.5)	0.066	1045 (47.6)	1078 (49.0)	0.33
Hypertension	1093 (54.6)	1141 (56.8)	0.70	1532 (69.8)	1545 (70.3)	0.70
Previous myocardial infarction	198 (9.9)	186 (9.3)	0.49	387 (17.6)	432 (19.7)	0.084
Previous PCI	215 (10.7)	171 (8.5)	0.017	395 (18.0)	414 (18.8)	0.47
Cardiac arrest	71 (3.5)	68 (3.4)	0.78	14 (0.6)	15 (0.7)	0.85
Killip class III, IV	84 (4.1)	48 (2.4)	NS	49 (2.3)	58 (2.6)	NS
eGFR	85.2±25.7	84.5±25.6	0.36	83.2±25.2	82.3±25.4	0.21

drugs administered

	STEMI			NSTE-ACS			
	Radial Access (n=2001)	*Femoral Access (n=2009)*	*p value*	*Radial Access (n=2196)*	*Femoral Access (n=2198)*	*p value*	*p for interaction*
Aspirin	99 (4.9)	105 (5.2)	0.69	123 (5.6)	154 (7.0)	0.055	0.34
Clopidogrel	127 (6.3)	114 (5.7)	0.37	142 (6.5)	140 (6.4)	0.90	0.57
Prasugrel	264 (13.2)	237 (11.8)	0.18	71 (3.2)	54 (2.5)	0.12	0.45
Ticagrelor	248 (12.4)	265 (13.2)	0.45	133 (6.1)	131 (6.0)	0.89	0.58
GPI	435 (21.7)	382 (19.0)	0.032	137 (6.2)	139 (6.3)	0.91	0.21
Planned	328 (16.4)	284 (14.1)	0.047	90 (4.1)	87 (4.0)	0.81	0.43
Bailout	107 (5.3)	98 (4.9)	0.50	47 (2.1)	52 (2.4)	0.61	0.42
UFH	1014 (50.7)	964 (48.0)	0.088	1017 (46.3)	900 (40.9)	0.00034	0.21
Bivalirudin	936 (46.8)	952 (47.4)	0.70	783 (35.7)	784 (35.7)	0.99	0.79
Prolonged inf. post-PCI	470 (23.5)	484 (24.1)	0.65	399 (18.2)	386 (17.6)	0.60	0.49
Average duration	345.5±207.8	369.9±291.0	0.14	384.2±239.7	393.0±245.5	0.61	0.51
Full regimen post-PCI	215 (10.7)	195 (9.7)	0.28	109 (5.0)	108 (4.9)	0.94	0.56
Low regimen post-PCI	255 (12.7)	289 (14.4)	0.13	290 (13.2)	278 (12.6)	0.58	0.14
Intra aortic balloon pump	60 (3.0)	72 (3.6)	0.30	25 (1.1)	30 (1.4)	0.50	1.00

procedural results

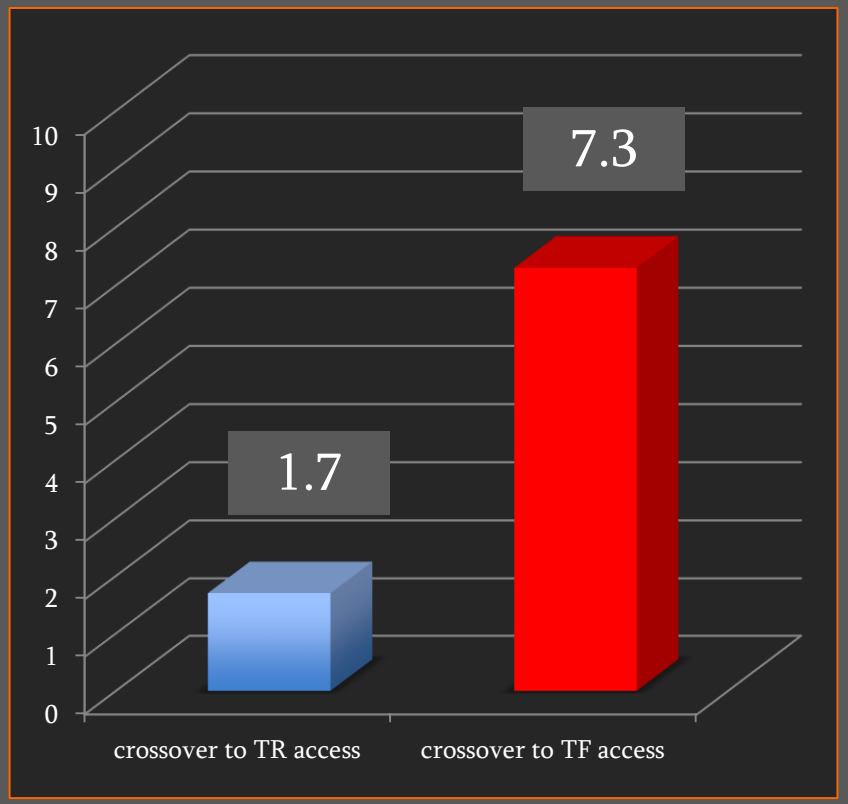
90% PCI

70% PCI

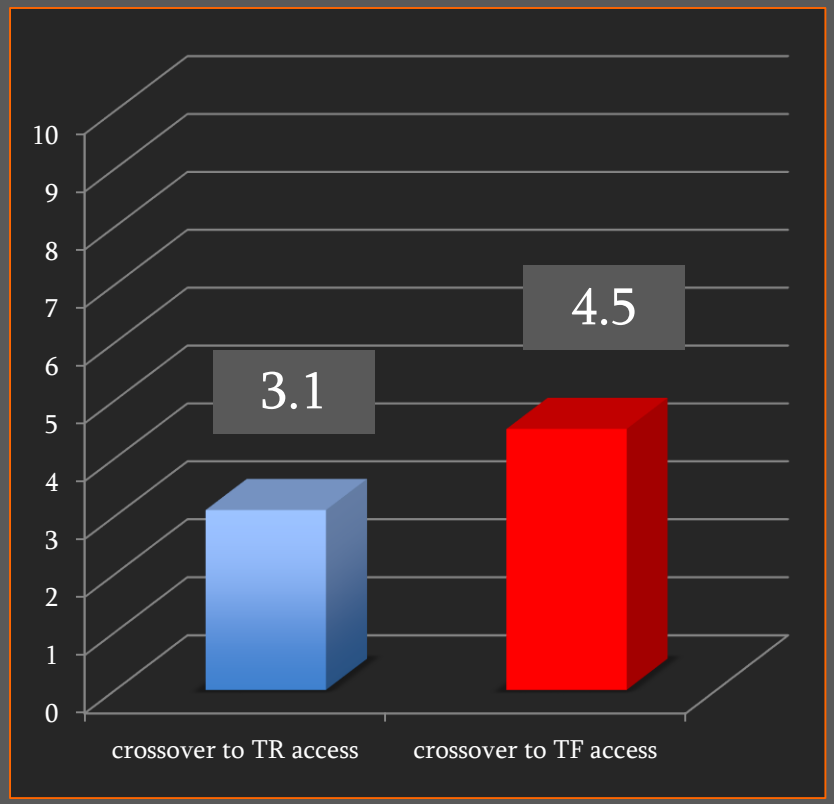
	STEMI			NSTE-ACS			
	Radial Access (n=2001)	*Femoral Access (n=2009)*	*p value*	*Radial Access (n=2196)*	*Femoral Access (n=2198)*	*p value*	*p for interaction*
At least two vessels treated	151 (8.2)	137 (7.5)	0.45	300 (19.7)	303 (19.7)	0.97	0.53
Lesions treated per patient (i.q. range)	1.0 (1.0-1.0)	1.0 (1.0-1.0)	0.90	1.0 (1.0-2.0)	1.0 (1.0-2.0)	0.57	0.62
One lesion	1545 (84.0)	1532 (84.4)		1099 (72.0)	1117 (72.7)		
Two lesions	256 (13.9)	232 (12.8)		330 (21.6)	349 (22.7)		
Three or more lesions	38 (2.1)	52 (2.9)		97 (6.4)	71 (4.6)		
Overall stent length per patient	30.5±17.4	30.6±18.1	0.92	33.3±21.3	32.4±21.2	0.29	0.36
Final coronary stenosis <30%	2104 (96.7)	2080 (96.3)	0.61	1981 (95.5)	1958 (95.9)	0.91	0.66
Final TIMI 3 flow in all treated lesions	1727 (93.9)	1722 (94.7)	0.26	1468 (96.1)	1472 (95.6)	0.49	0.22
Procedural success	92.8	93.2	0.62	94.5	94.6	0.94	0.79

crossover rates

STEMI

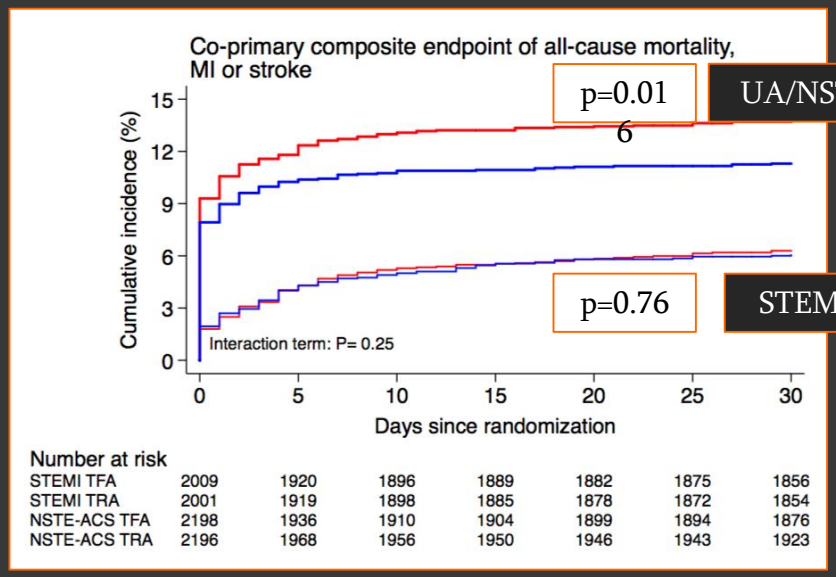


UA/NSTEMI



Primary outcome

MACE



p=0.016

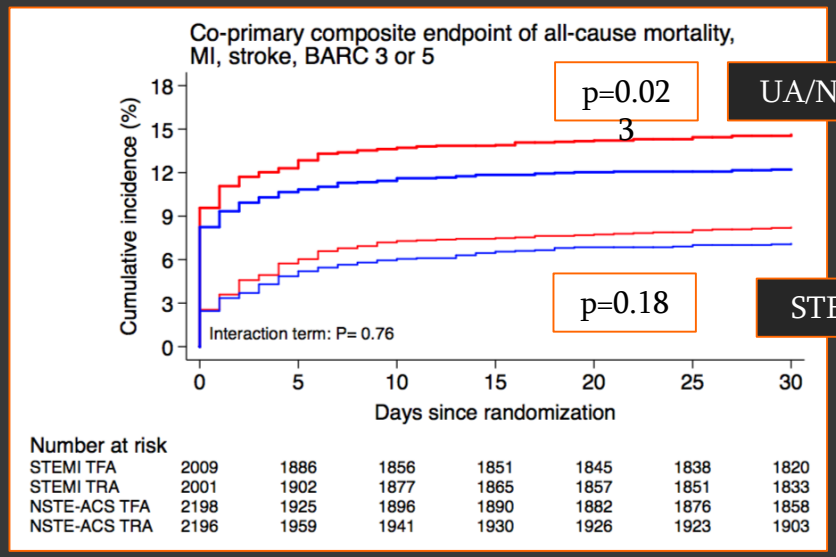
UA/NSTEMI

p=0.76

STEMI

p for interaction=0.25

NACE



p=0.023

UA/NSTEMI

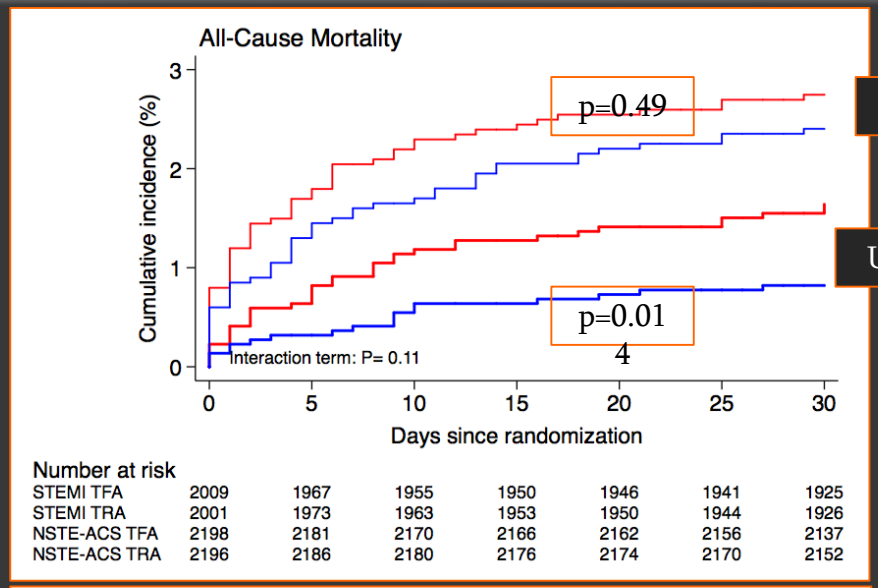
p for interaction=0.76

p=0.18

STEMI

Secondary outcomes

mortality

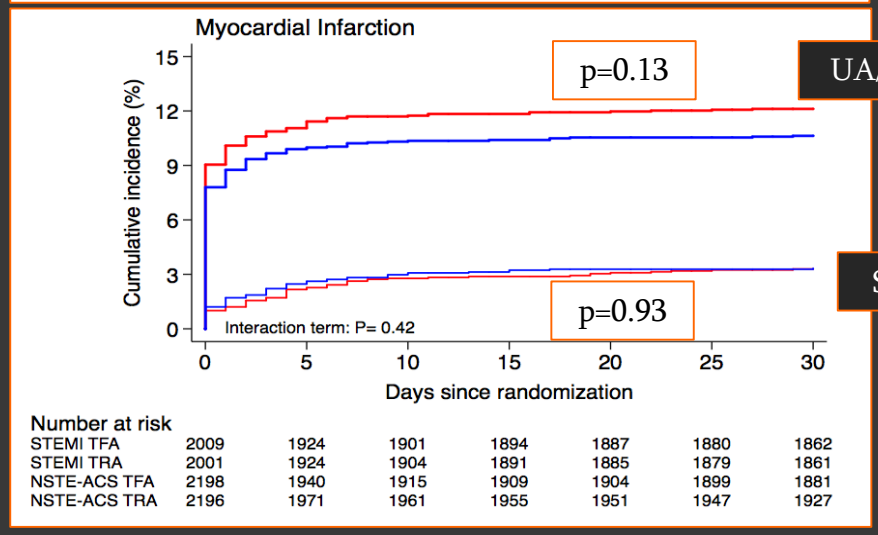


STEMI

UA/NSTEMI

p for interaction=0.11

MI



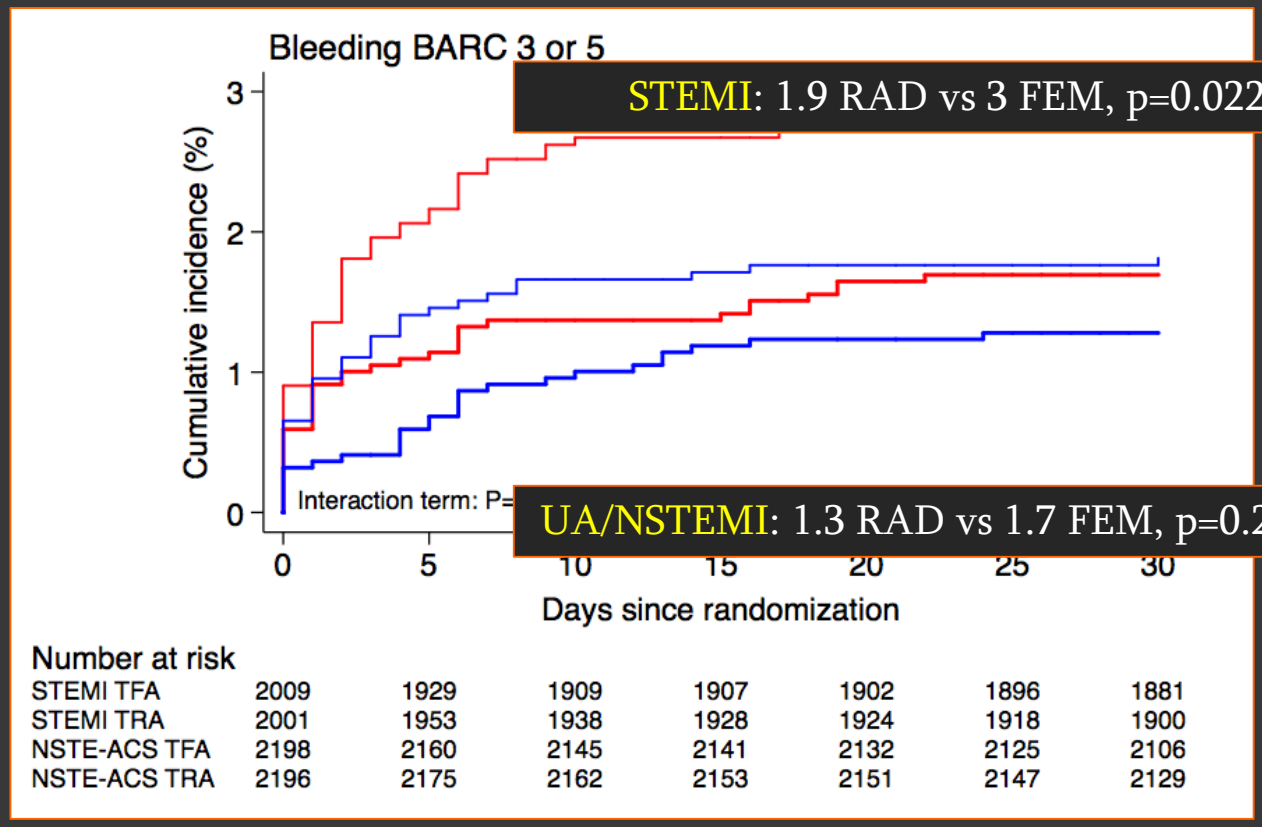
UA/NSTEMI

p for interaction=0.42

STEMI

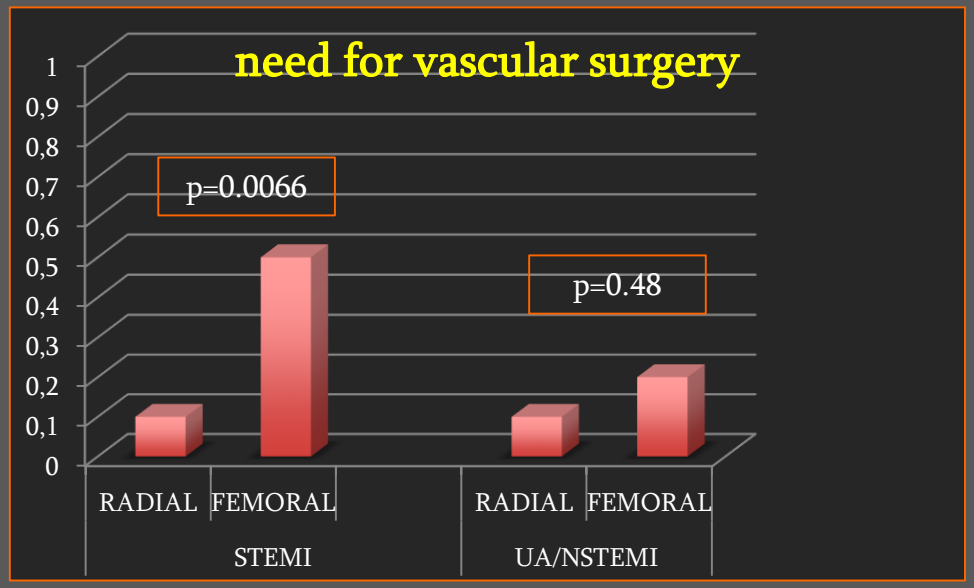
Secondary outcomes

BARC 3 or 5

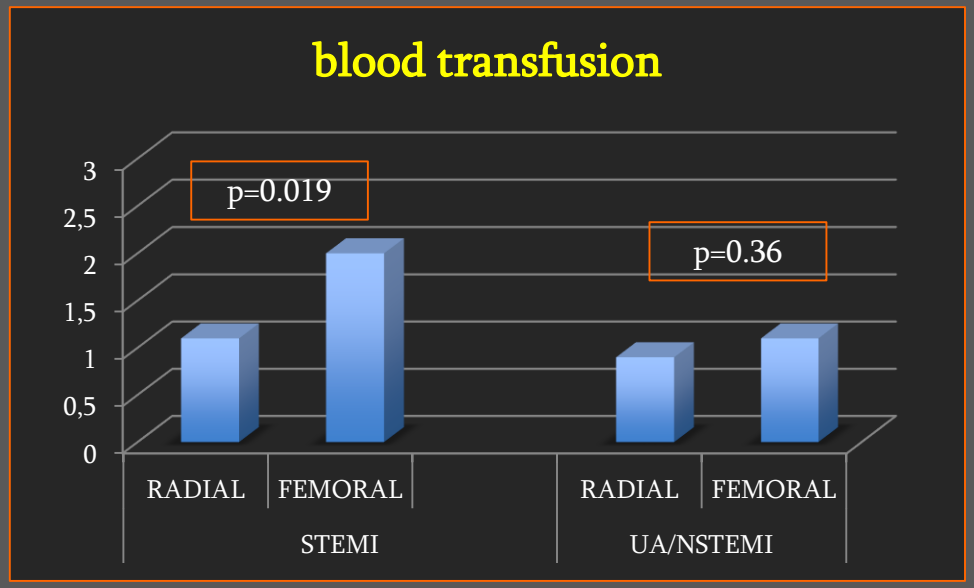


p for interaction=0.54

Secondary outcomes



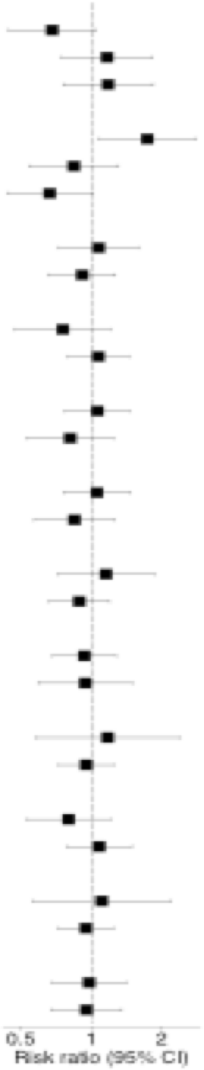
p for interaction=0.13



p for interaction=0.39

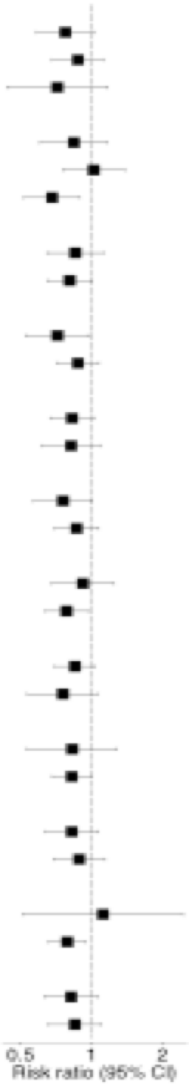
Stratified analysis for NACE-STEMI

Composite endpoint: death, MI or stroke	Radial access	Femoral access	Risk Ratio (95% CI)	p Value	p Value for trend or interaction
Centre's annual volume of PCI					0.066*
Low (247-544)	36/677	53/685	0.68 (0.44-1.04)	0.074	
Intermediate (548-991)	42/723	36/718	1.16 (0.74-1.82)	0.51	
High (1000-1950)	43/601	37/606	1.18 (0.75-1.83)	0.47	
Centre's proportion of radial PCI					0.0029*
Low (14.9-64.4%)	44/686	28/740	1.73 (1.07-2.78)	0.023	
Intermediate (65.4-79.0%)	37/719	44/725	0.84 (0.54-1.30)	0.44	
High (80.0-98.0%)	40/596	54/544	0.66 (0.44-1.00)	0.050	
Age					0.53
≥75 yr	52/424	51/444	1.07 (0.72-1.59)	0.73	
<75 yr	69/1577	75/1565	0.91 (0.65-1.27)	0.58	
Gender					0.22
Women	31/449	42/468	0.75 (0.47-1.20)	0.23	
Men	90/1552	84/1541	1.07 (0.79-1.44)	0.67	
BMI					0.32
≥25 kg/m²	81/1317	78/1341	1.06 (0.77-1.45)	0.73	
<25 kg/m²	40/684	48/668	0.81 (0.53-1.24)	0.33	
Intended start or continuation of prasugrel or ticagrelor					0.40
Yes	75/1358	71/1353	1.05 (0.76-1.46)	0.75	
No	46/643	55/656	0.85 (0.57-1.26)	0.41	
Diabetes					0.36
Yes	39/371	32/352	1.15 (0.72-1.85)	0.56	
No	82/1630	94/1657	0.89 (0.66-1.19)	0.42	
Estimated glomerular filtration rate (eGFR)					0.98
≥60 ml/min	77/1670	84/1692	0.93 (0.68-1.27)	0.65	
<60 ml/min	37/310	37/298	0.94 (0.59-1.49)	0.78	
History of peripheral vascular disease					0.59
Yes	16/106	16/123	1.17 (0.58-2.37)	0.66	
No	105/1895	110/1886	0.95 (0.72-1.24)	0.70	
Previous UFH					0.26
Yes	41/952	51/949	0.80 (0.53-1.21)	0.28	
No	80/1049	75/1060	1.08 (0.78-1.48)	0.64	
Planned GPI					0.67
Yes	19/328	15/284	1.10 (0.56-2.18)	0.77	
No	102/1673	111/1725	0.94 (0.72-1.24)	0.68	
Randomization to anti-thrombin type					0.92
Bivalirudin	58/1002	60/1010	0.97 (0.68-1.40)	0.89	
UFH	63/999	66/999	0.95 (0.67-1.35)	0.77	



Stratified analysis for NACE-UA/NSTEMI

Composite endpoint: death, MI, stroke or BARC 3 or 5	Radial access	Femoral access	Risk Ratio (95% CI)	p Value	p Value for trend or interaction
Centre's annual volume of PCI					0.95*
Low (247-544)	115/769	134/716	0.77 (0.58-1.02)	0.066	
Intermediate (548-991)	125/956	147/994	0.87 (0.68-1.12)	0.28	
High (1000-1950)	28/471	40/488	0.71 (0.43-1.17)	0.18	
Centre's proportion of radial PCI					0.26*
Low (14.9-64.4%)	72/730	88/760	0.84 (0.60-1.17)	0.30	
Intermediate (65.4-79.0%)	93/758	88/727	1.02 (0.75-1.38)	0.91	
High (80.0-98.0%)	103/708	145/711	0.68 (0.51-0.89)	0.0054	
Age					0.77
≥75 yr	106/644	125/658	0.85 (0.64-1.12)	0.25	
<75 yr	162/1552	196/1540	0.80 (0.64-1.00)	0.053	
Gender					0.30
Women	73/622	110/693	0.71 (0.52-0.98)	0.035	
Men	195/1574	211/1505	0.87 (0.71-1.07)	0.19	
BMI					0.96
≥25 kg/m²	173/1485	205/1475	0.82 (0.66-1.02)	0.075	
<25 kg/m²	95/711	116/723	0.82 (0.61-1.09)	0.17	
Intended start or continuation of prasugrel or ticagrelor					0.46
Yes	96/882	123/875	0.75 (0.57-1.00)	0.050	
No	172/1314	198/1323	0.86 (0.69-1.07)	0.18	
Diabetes					0.40
Yes	88/588	96/592	0.92 (0.67-1.25)	0.58	
No	180/1608	225/1606	0.78 (0.63-0.96)	0.019	
Estimated glomerular filtration rate (eGFR)					0.56
≥60 ml/min	204/1797	234/1769	0.85 (0.69-1.03)	0.10	
<60 ml/min	64/390	87/417	0.75 (0.53-1.06)	0.10	
History of peripheral vascular disease					0.99
Yes	40/235	50/249	0.82 (0.53-1.28)	0.39	
No	228/1961	271/1949	0.82 (0.68-0.99)	0.039	
Previous UFH					0.69
Yes	121/796	145/802	0.82 (0.63-1.07)	0.14	
No	136/800	152/805	0.88 (0.69-1.14)	0.34	
Planned GPI					0.40
Yes	17/90	15/87	1.11 (0.51-2.44)	0.79	
No	231/2106	288/2111	0.79 (0.65-0.95)	0.010	
Randomization to anti-thrombin type					0.85
Bivalirudin	116/796	140/802	0.82 (0.62-1.07)	0.14	
UFH	123/800	143/805	0.85 (0.65-1.10)	0.21	



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CONCLUSIONS

MATRIX

- The results of this pre-specified sub-analysis of the MATRIX-Access study suggest that the overall trial results remain entirely consistent in patients with NSTE-ACS and STEMI.
- Unselected ACS patients, ***irrespective of the type of ACS***, undergoing invasive mng should receive a TR approach.
- In STEMI more than NSTEACS, adequate TR operator's experience is key to maximaze TR vs TF benefits.

GISE Società Italiana di Cardiologia