

Timing of coronary angiography after cardiac arrest without ST-elevation

An individual patient data meta-analysis

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Declaration of interest

- I have nothing to declare

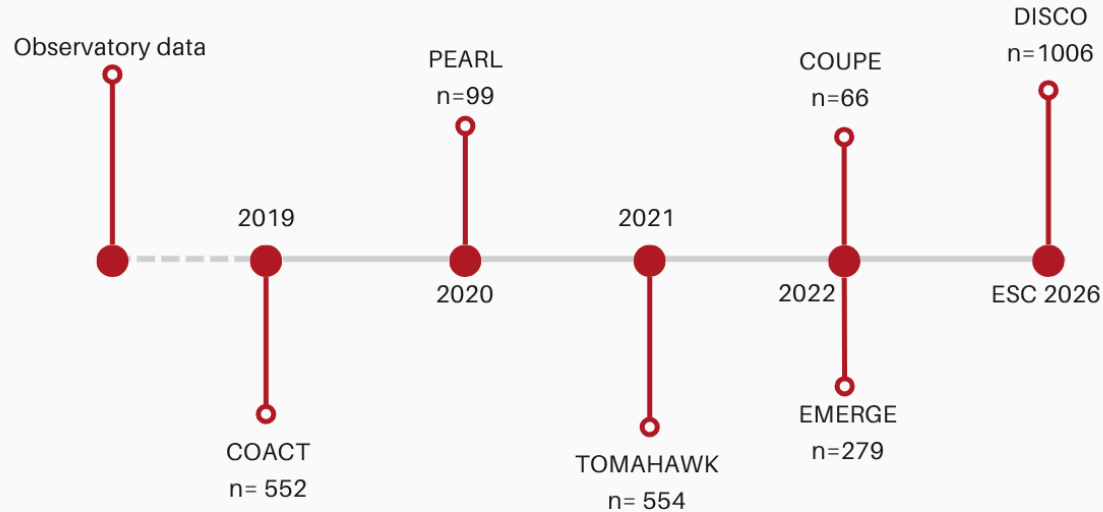
Introduction

- Acute coronary syndrome is common in out of hospital cardiac arrest (OHCA) patients

Recommendations	Class ^a	Level ^b
Cardiac arrest and OHCA		
A PPCI strategy is recommended in patients with resuscitated cardiac arrest and an ECG with persistent ST-segment elevation (or equivalents). ^{368,387,388}	I	B
Routine immediate angiography after resuscitated cardiac arrest is not recommended in haemodynamically stable patients without persistent ST-segment elevation (or equivalents). ^{373–377}	III	A

Introduction

- Randomized controlled trials (RCTs) compared immediate CAG with deferred CAG in OHCA patients without ST-segment elevation

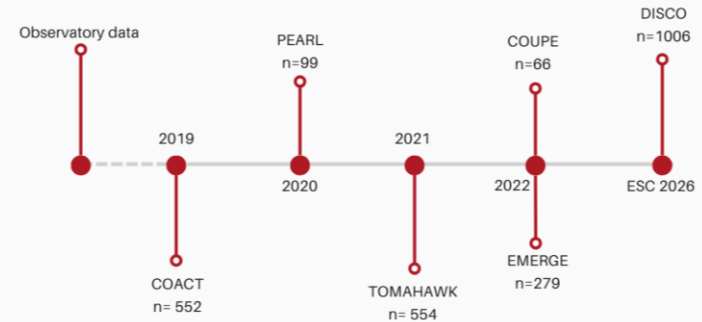


Introduction

- Randomized controlled trials (RCTs) compared immediate CAG with deferred CAG in OHCA patients without ST-segment elevation
- Combined >2000 patients → individual patient data meta-analysis

Aim:

- To determine the effect of timing of CAG on 30-day survival in comatose OHCA patients without ST-segment elevation



Methods

- A one-stage individual pooled patient data meta-analysis following PRISMA-IPD guidelines
- Systematic literature search
 -  RCT on effect of immediate vs deferred CAG
 -  Adult out of hospital cardiac arrest patients without ST-segment elevation
 -  Minimum follow-up of 30 days
 -  Able to share data on an individual patient level
- Statistical analysis → cox proportional hazards model
 - Stratified by study and country
 - Subgroup analyses by adding covariates as interaction terms

Results – Included studies

	COACT	PEARL	TOMAHAWK	COUPE	DISCO	EMERGE
Country						
Publication year	2019	2020	2021	2022	2026	2022
Patients*(n)	552	99	554	66	1006	279
Initial rhythm	Shockable	All	All	All	All	All
Immediate CAG	<2 hours	<2 hours	As soon as possible	<2 hours	<2 hours	<1 hour
Deferred CAG	After neurological recovery	>6 hours	>24 hours and assessment at ICU	After neurological recovery	>72 hours	48-96 hours
*Randomized						

88% of all patients included in RCTs

Contributors

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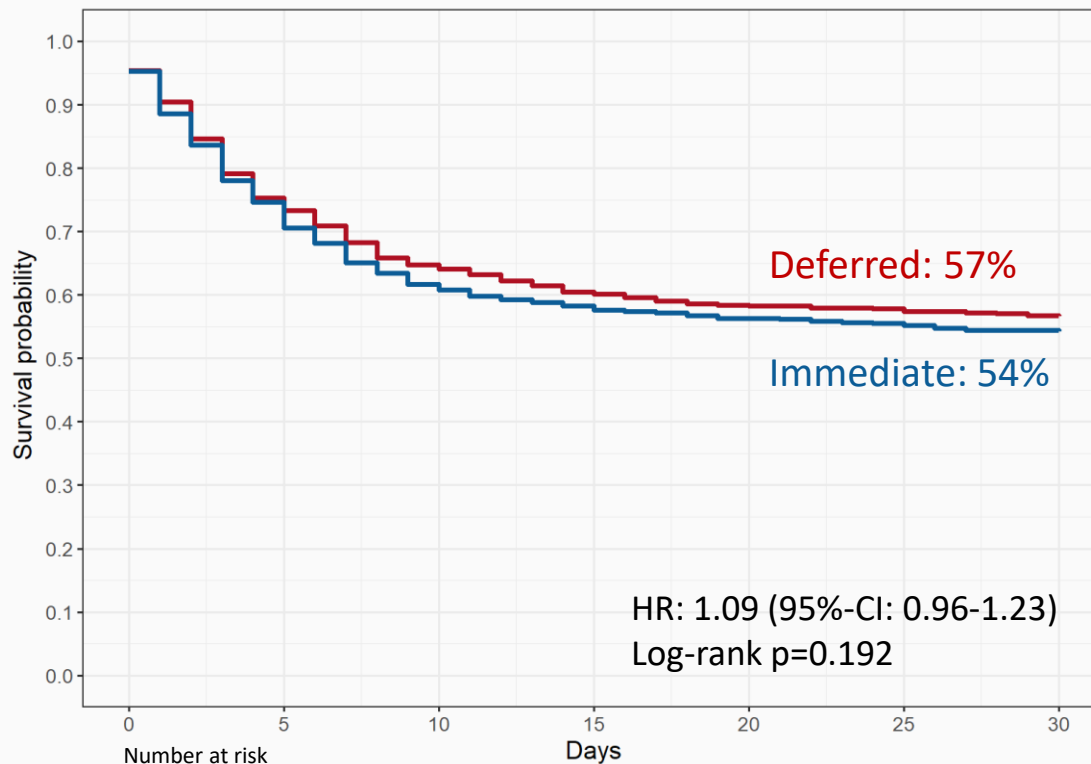
Results – Baseline and cardiac arrest characteristics

Baseline and cardiac arrest characteristics		
	Immediate N = 1091	Deferred N = 1082
Baseline		
Age	69 (59-77)	68 (59-76)
Female	262 (24%)	290 (27%)
Diabetes	227 (21%)	222 (21%)
Previous myocardial infarction	181 (18%)	189 (19%)
Previous coronary artery disease	288 (27%)	287 (28%)
Previous stroke/transient ischemic attack	99 (9.4%)	86 (8.2%)
Cardiac arrest		
Shockable rhythm	749 (72%)	760 (74%)
Time to return of spontaneous circulation [min]	20 (12-27)	20 (12-28)
Witnessed cardiac arrest	974 (92%)	945 (91%)
Bystander CPR performed	776 (79%)	755 (77%)

Results – Coronary angiography

Coronary angiography characteristics			
	Immediate N = 1091	Deferred N = 1082	p-value ¹
CAG performed	1043 (96%)	585 (57%)	<0.001
Time from inclusion to CAG [hours]	1 (1-1)	90 (30-170)	<0.001
Culprit lesion found	233 (22%)	140 (24%)	0.460
Number of vessels affected			0.031
None	449 (43%)	223 (38%)	
1-vessel	232 (22%)	126 (22%)	
2-vessel	159 (15%)	89 (15%)	
3-vessel	197 (19%)	146 (25%)	
PCI performed	312 (30%)	202 (35%)	0.059
¹ Fisher's exact test; Wilcoxon rank sum test			

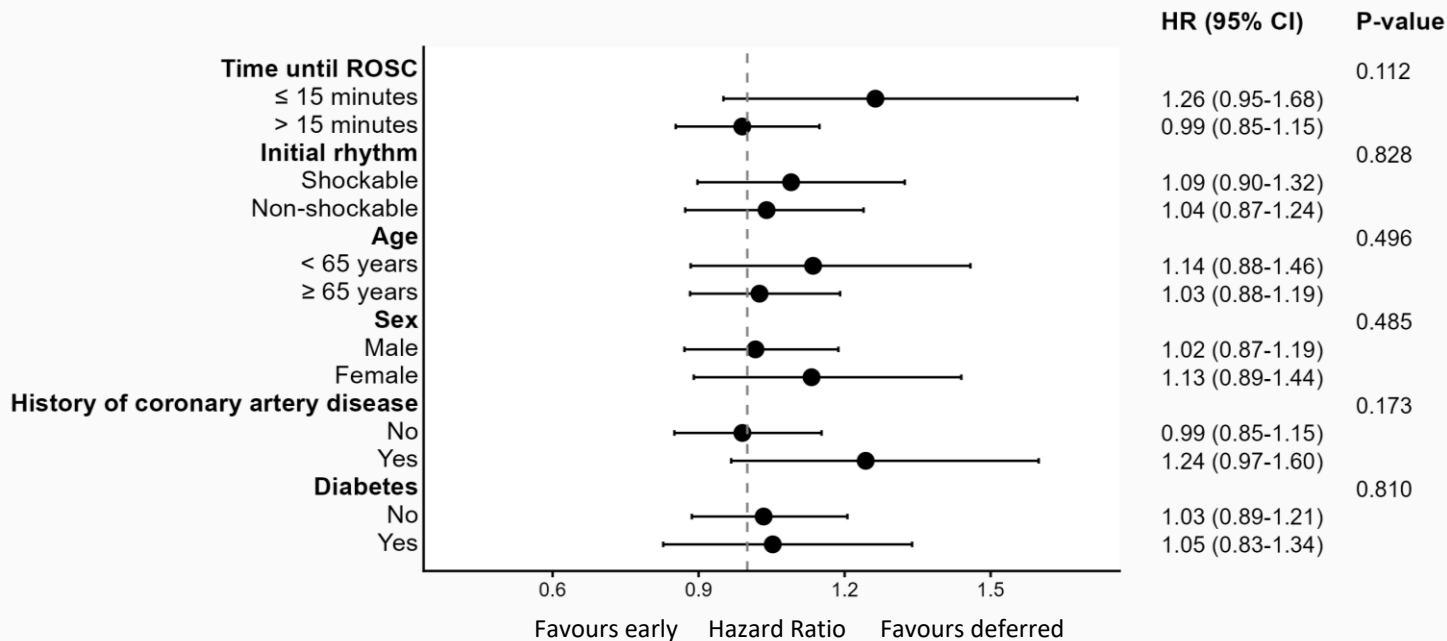
Results – primary endpoint



Results – Secondary endpoints

Secondary analysis			
	Immediate N = 1091	Deferred N = 1082	p-value
Survival until hospital discharge	636 (59%)	657 (61%)	0.334 ¹
Time until death [days]	4 (2-7)	4 (2-8)	0.599
Acute kidney failure	64 (6%)	52 (5%)	0.398 ¹
Major bleeding	16 (2%)	19 (2%)	0.611 ¹
Poor neurological outcome [CPC 3 or 4 at follow-up]	34 (6%)	20 (3%)	0.054 ¹
¹ Corrected for covariates			

Results – Subgroup analyses



Conclusion

- No difference in survival in comatose OHCA patients without ST-segment elevation between immediate and deferred CAG
- 23% had a culprit lesion on CAG
- Subgroup analyses did not show any significant interaction with timing of CAG

Implications

- Immediate CAG is not beneficial in OHCA patients without ST-segment elevation