

ACTUALITES SUR CARDIOPATHIES ISCHEMIQUES/FERMETURE AG



G. Montalescot



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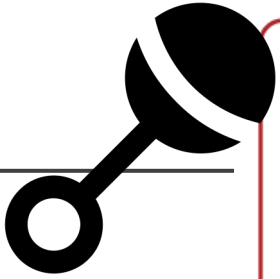


Paris, France

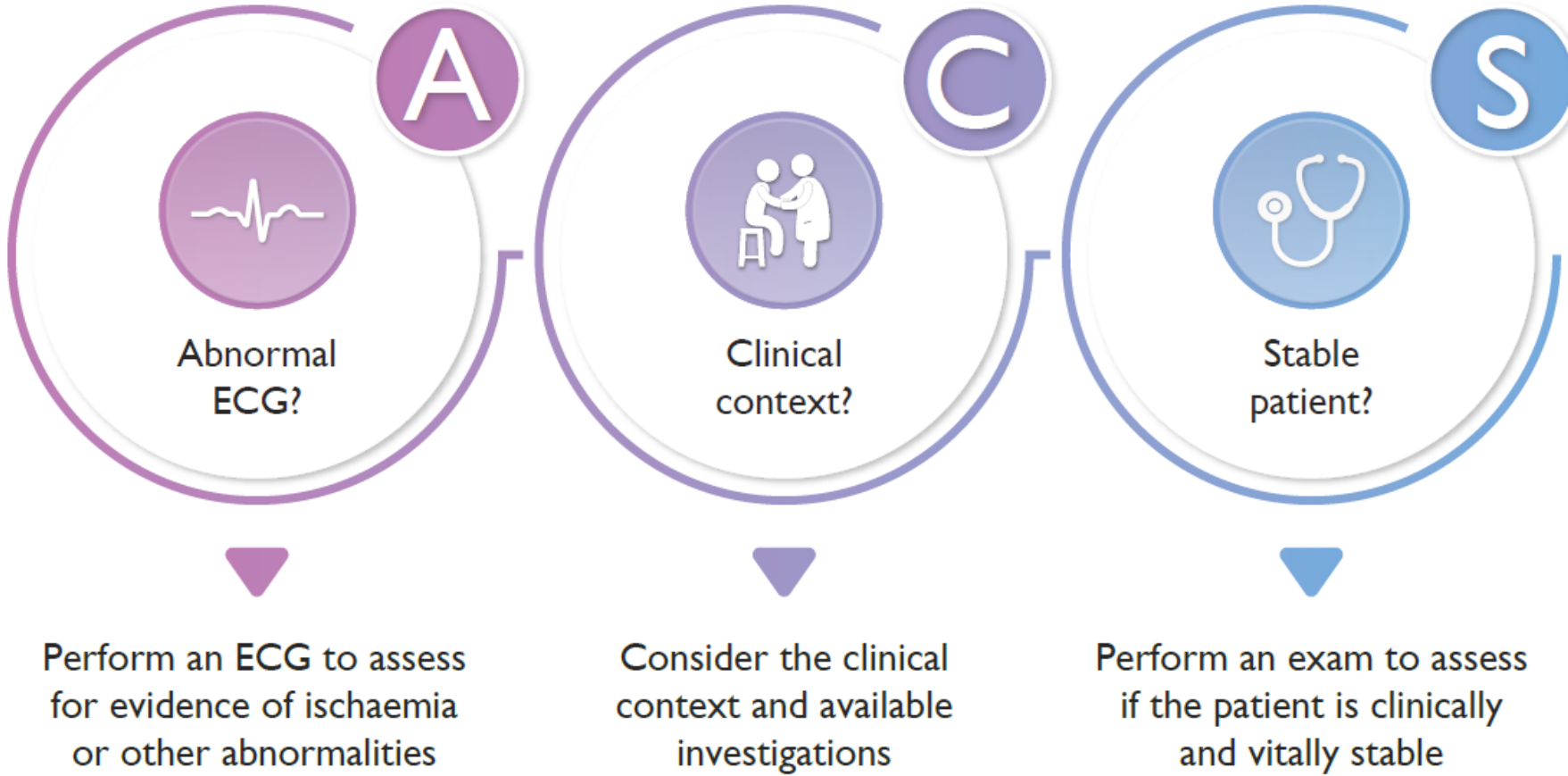
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The ACS spectrum



	Oligo/ asymptomatic	Increasing chest pain/symptoms	Persistent chest pain/symptoms	Cardiogenic shock/ acute heart failure	Cardiac arrest
Clinical presentation					
ECG findings	Normal 	ST segment depression 	ST segment elevation 	Malignant arrhythmia 	
Working diagnosis	NSTE-ACS			STEMI	
hs-cTn levels		Non-elevated 		Rise and fall 	
Final diagnosis	Unstable angina		NSTEMI	STEMI	

ECG pattern	Criteria	Signifying	Figure
i STEMI	New ST-elevation at the J-point in ≥ 2 contiguous leads ^a ≥ 2.5 mm in men <40 years, ≥ 2 mm in men ≥ 40 years, or ≥ 1.5 mm in women regardless of age in leads V2–V3 and/or ≥ 1 mm in the other leads (in the absence of LV hypertrophy or left bundle branch block) ^a Including V3R and V4R	Ongoing acute coronary artery occlusion	
ii Posterior STEMI	ST-segment depression in leads V1–V3, especially when the terminal T-wave is positive (ST-segment elevation equivalent), and concomitant ST-segment elevation ≥ 0.5 mm recorded in leads V7–V9	Posterior STEMI	
iii LCx occlusion/ right ventricular MI	ST-segment elevation in V7–V9 and V3R and V4R, respectively	Left circumflex (LCX) artery occlusion or right ventricular MI	
iv Multivessel ischaemia/ left main obstruction	ST depression ≥ 1 mm in six or more surface leads (inferolateral ST depression), coupled with ST-segment elevation in aVR and/or V1	Multivessel ischaemia or left main coronary artery obstruction, particularly if the patient presents with haemodynamic compromise	
v Left bundle branch block/ paced rhythm	QRS duration greater than 120 ms Absence of Q wave in leads I, V5 and V6 Monomorphic R wave in I, V5 and V6 ST and T wave displacement opposite to the major deflection of the QRS complex	Patients with a high clinical suspicion of ongoing myocardial ischaemia should be managed in a similar way to STEMI patients	
vi Right bundle branch block	QRS duration greater than 120 ms rsR' "bunny ear" pattern in the anterior precordial leads (leads V1–V3) Slurred S waves in leads I, aVL and frequently V5 and V6	Patients with a high clinical suspicion of ongoing myocardial ischaemia should be managed in a similar way to STEMI patients	

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ECG pattern	Criteria	Signifying	Figure
a Isolated T-wave inversion	T-wave inversion > 1 mm in ≥ 5 leads including I, II, aVL, and V2–V6	Only mildly impaired prognosis	
b ST-segment depression	J point depressed by ≥ 0.05 mm in leads V2 and V3 or ≥ 1 mm in all other leads followed by a horizontal or downsloping ST-segment for ≥ 0.08 s in ≥ 1 leads (except aVR)	More severe ischaemia	
c Transient ST-segment elevation	ST segment elevation in ≥ 2 contiguous leads of ≥ 2.5 mm in men <40 years, ≥ 2 mm in men ≥ 40 years, or ≥ 1.5 mm in women regardless of age in leads V2–V3 and/or ≥ 1 mm in the other leads lasting < 20 min	Only mildly impaired prognosis	
d De Winter ST-T	1–3 mm upsloping ST-segment depression at the J point in leads V1–V6 that continue into tall, positive, and symmetrical T waves	Proximal LAD occlusion/ severe stenosis	
e Wellens sign	Isoelectric or minimally elevated J point (< 1 mm) + biphasic T wave in leads V2 and V3 (type A) or symmetric and deeply inverted T waves in leads V2 and V3, occasionally in leads V1, V4, V5, and V6 (type B)	Proximal LAD occlusion/ severe stenosis	

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Clinical presentation



ECG

If a patient has signs/symptoms suggestive of ACS, perform an ECG within 10 min of FMC



Working diagnosis^a

STEMI



NSTE-ACS



Further investigations

hs-cTn levels



± Angiography



± Imaging



Final diagnosis^b

STEMI

NSTEMI

Unstable angina

Non-ACS diagnosis

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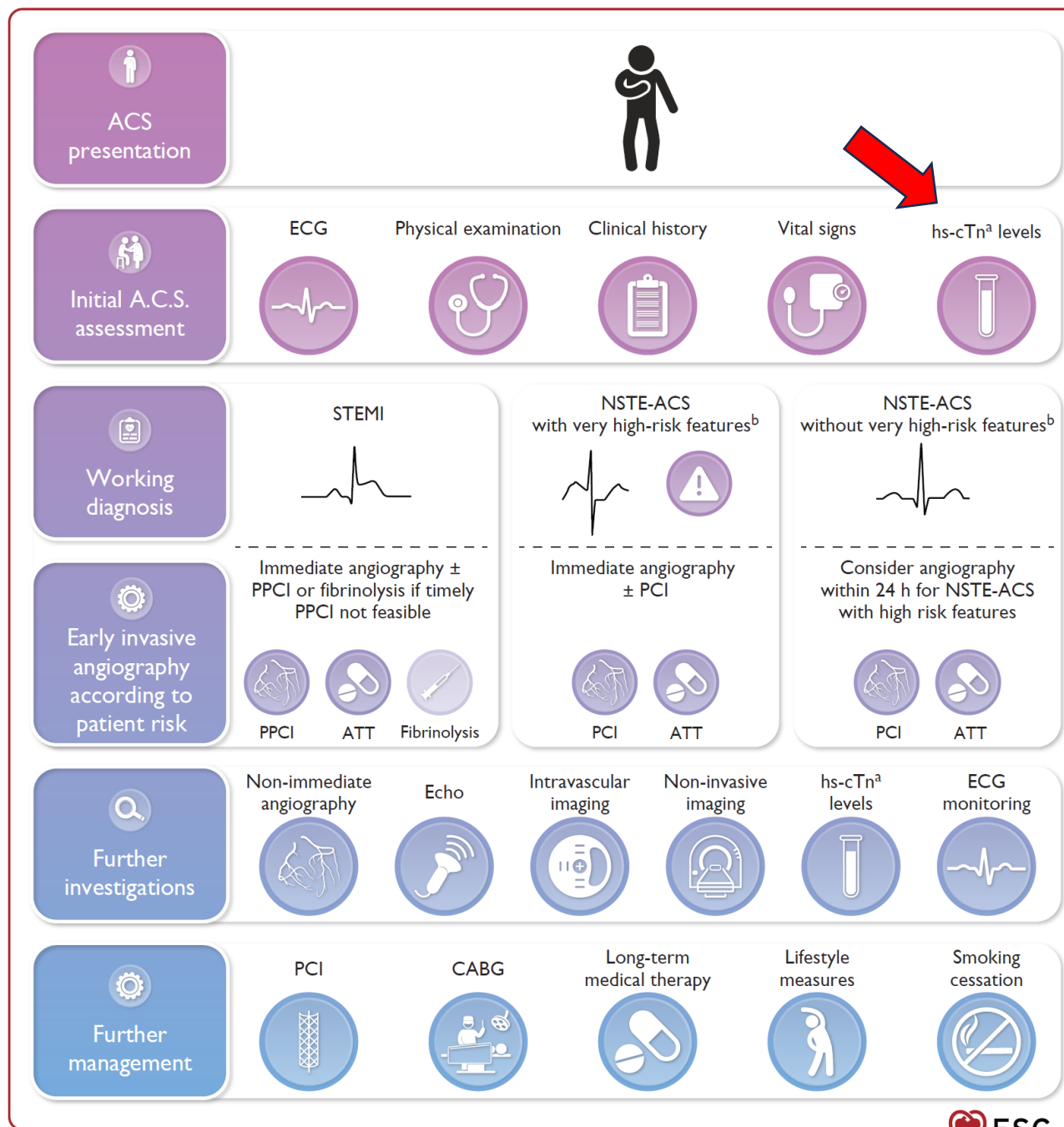
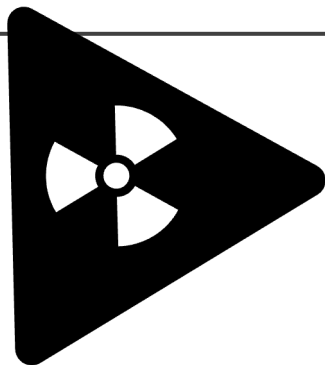
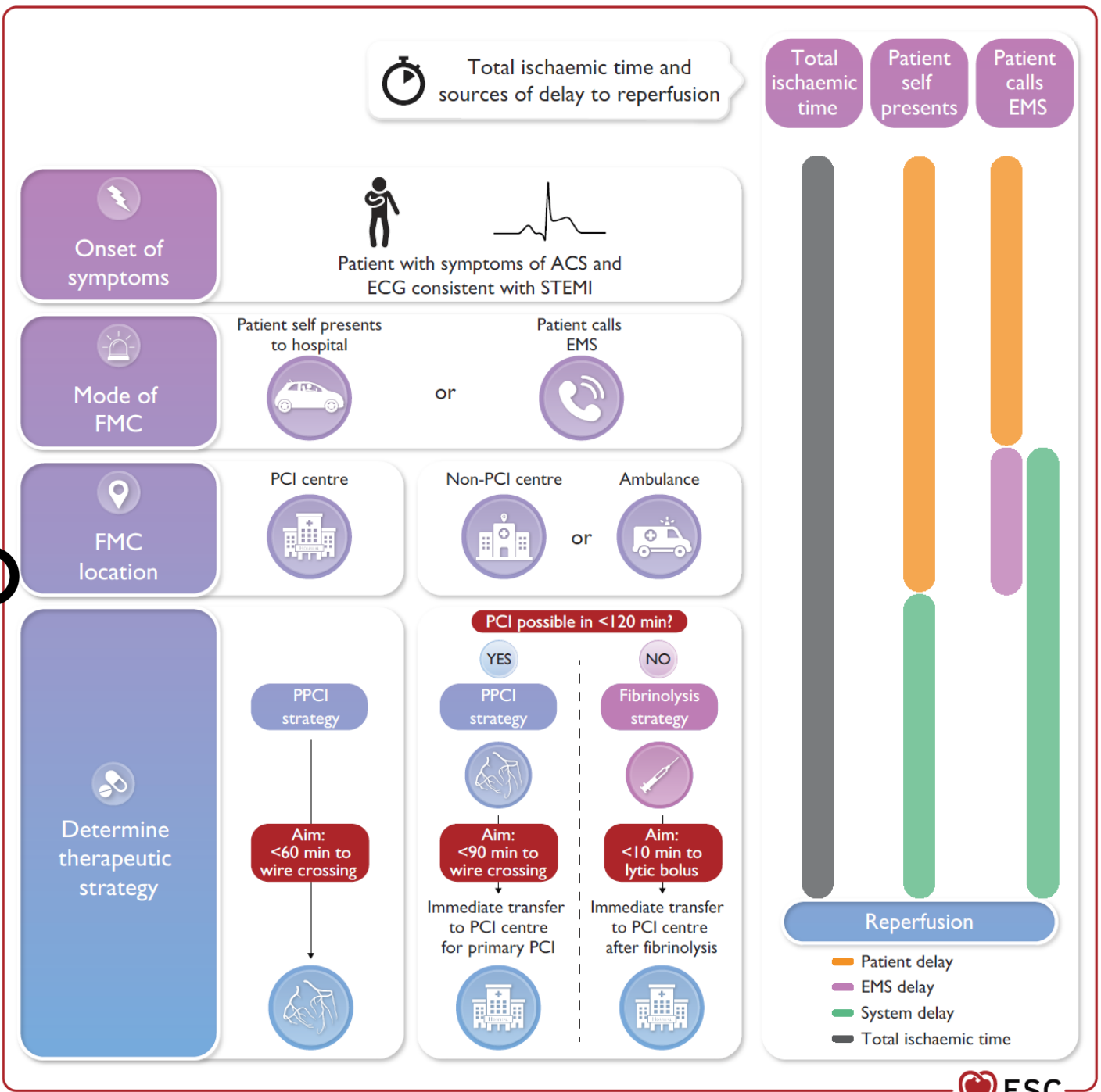
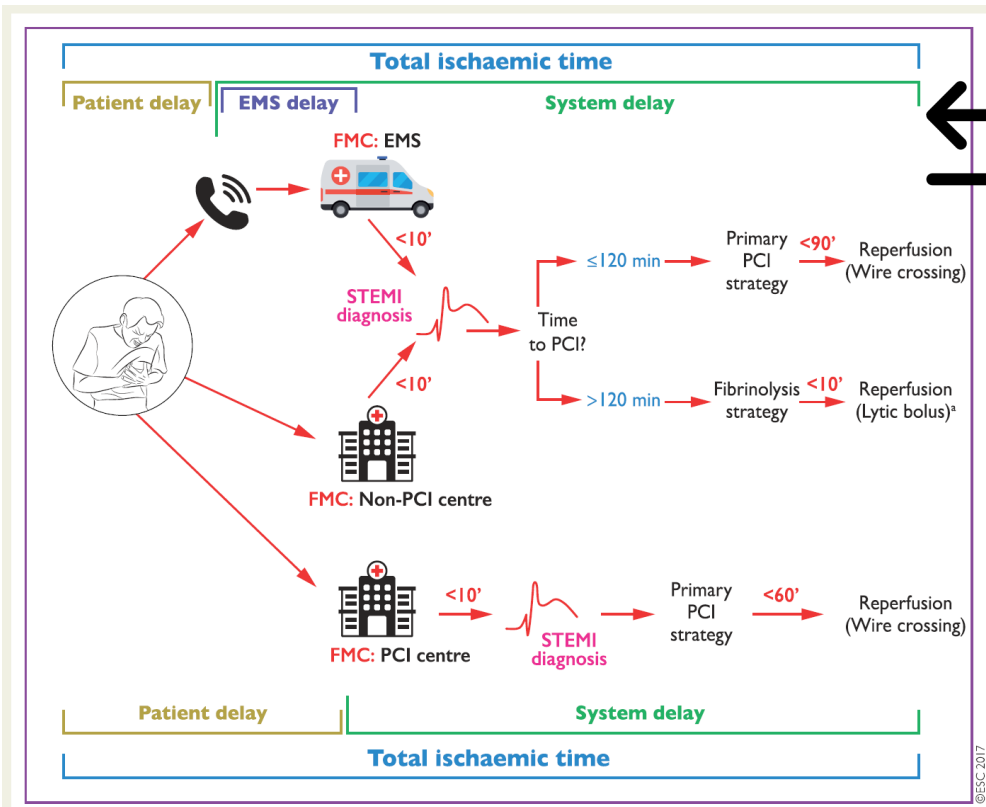


Figure 4 An overview of the initial triage, management and investigation of patients who present with signs and symptoms potentially consistent with acute coronary syndrome. ACS, acute coronary syndrome; ATT, antithrombotic therapy; CABG, coronary artery bypass grafting; ECG, electrocardiogram; hs-cTn, high-sensitivity cardiac troponin; NSTEMI-ACS, non-ST-elevation acute coronary syndrome; PPCI, primary percutaneous coronary intervention; STEMI, ST-elevation myocardial infarction. The 'A.C.S.' assessment is detailed in Figure 5. ^aResults of hs-cTn measurements are not required for the initial stratification of ACS and the initial emergency management (i.e. for patients with a working diagnosis of STEMI or very high-risk NSTEMI-ACS) should not be delayed based on this. ^bFor patients with NSTEMI-ACS with very high-risk features, immediate angiography is recommended. For patients with NSTEMI-ACS with high-risk features, early invasive angiography (i.e. <24 h) should be considered and inpatient invasive angiography is recommended. See Recommendation Table 4 for details.

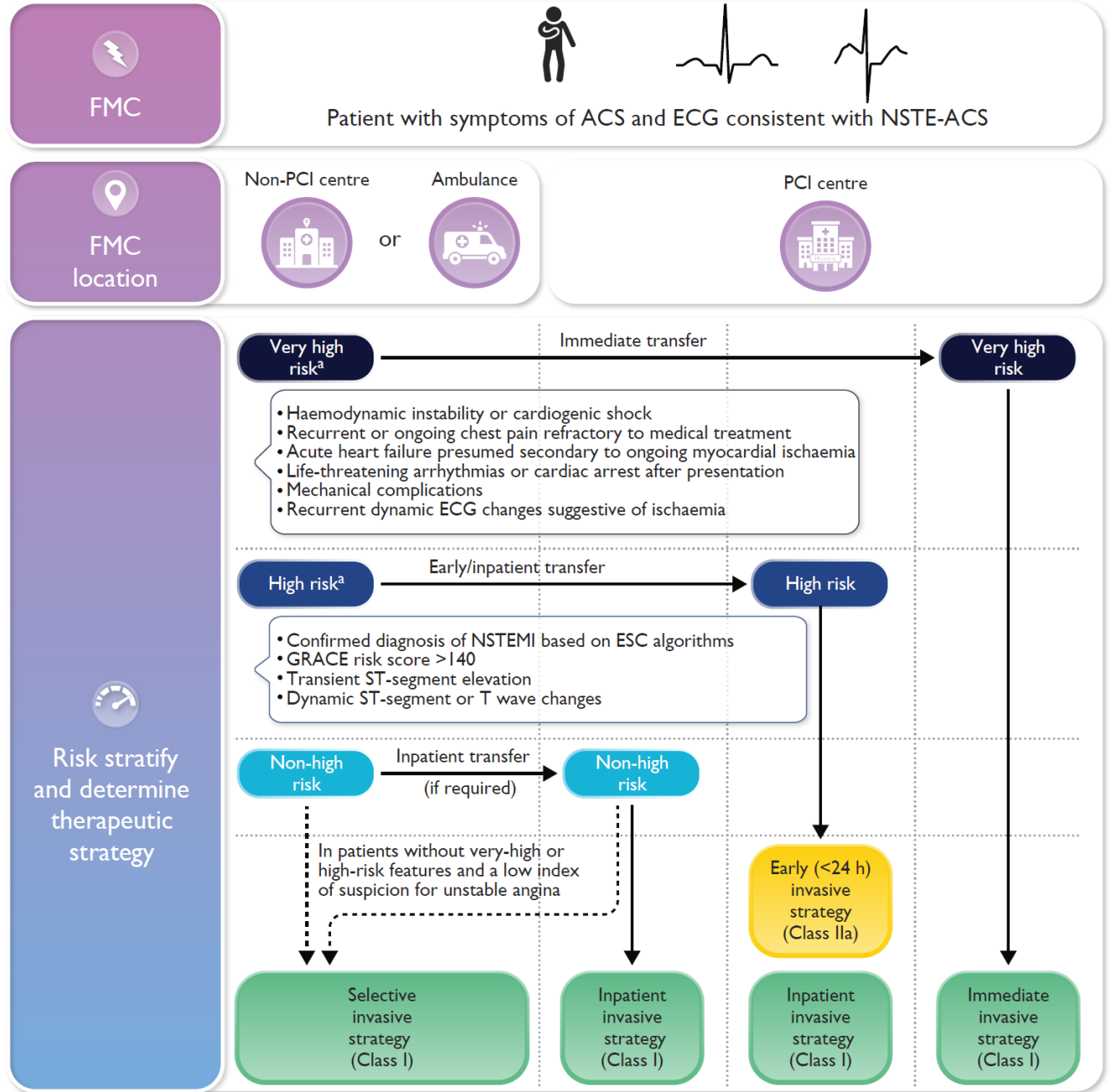
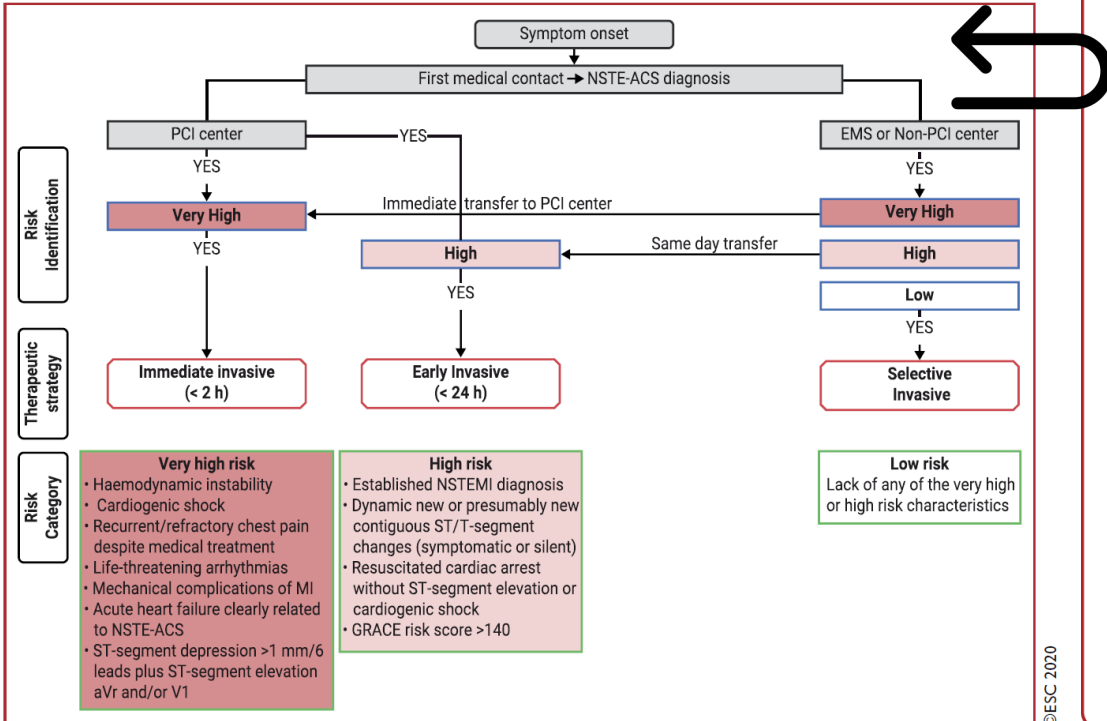
STEMI delays

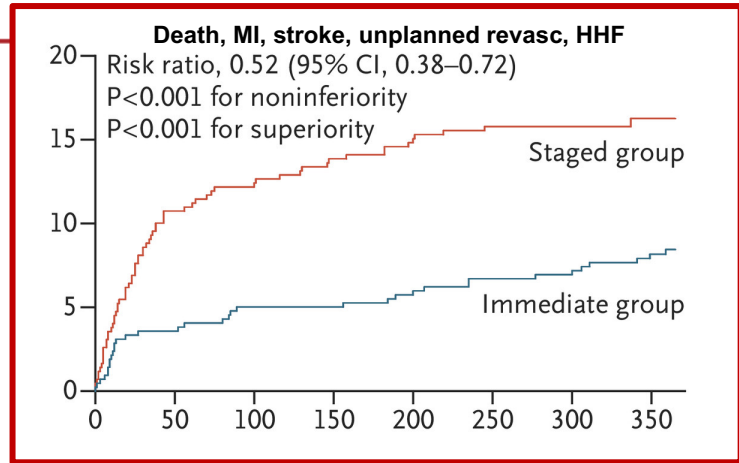
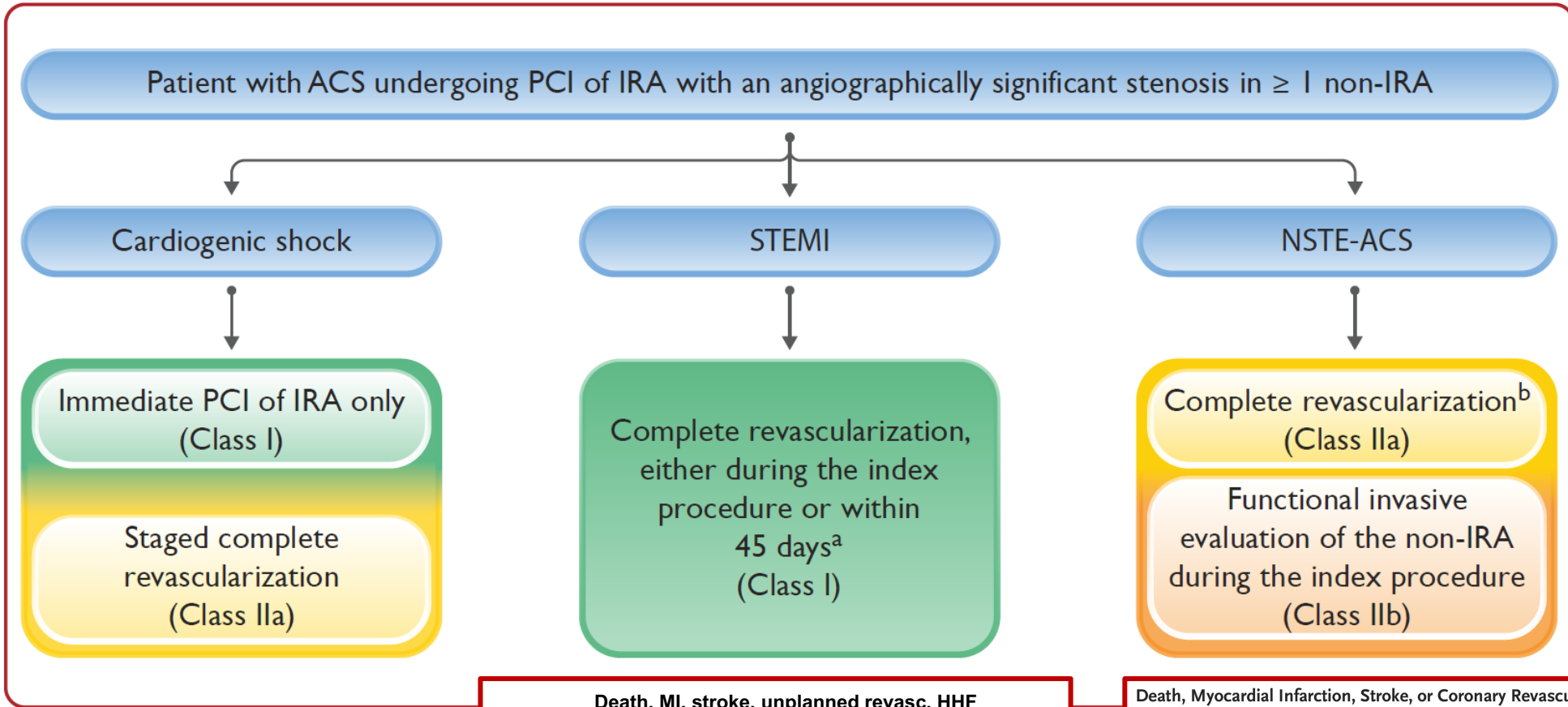
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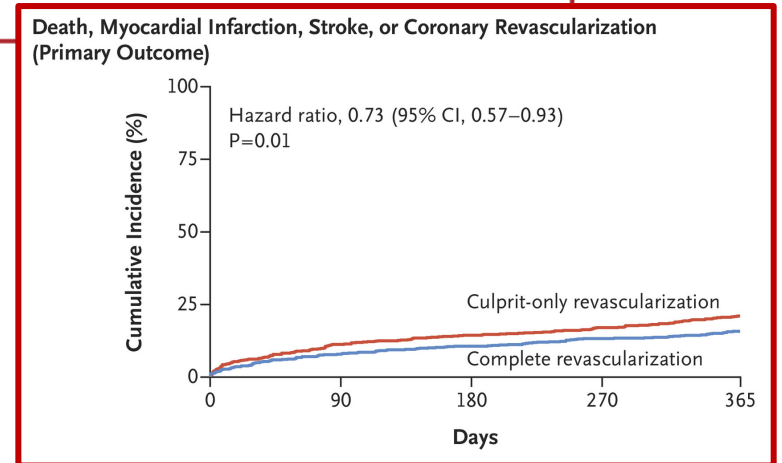
NSTEMI-ACS strategies

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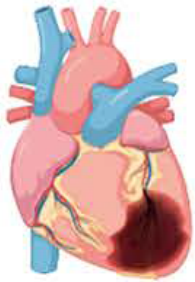
MULTISTARS AMI – NEJM 2023



FIRE AMI – NEJM 2023

Standard of care

NSTE-ACS



Before PCI

Aspirin I A

Routine P2Y₁₂ inhibitor III A

During PCI

Prasugrel I A

Ticagrelor I A

Clopidogrel I C

Prasugrel over ticagrelor IIa B

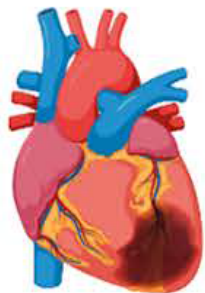
Fondaparinux (2.5 mg s.c. daily) is recommended as having the most favourable efficacy–safety profile regardless of the management strategy.

Bivalirudin (0.75 mg/kg i.v. bolus, followed by 1.75 mg/kg/h for up to 4 h after the procedure) is recommended as an alternative to UFH plus GPIIb/IIIa inhibitors during PCI.

UFH 70–100 IU/kg i.v. (50–70 IU/kg if concomitant with GPIIb/IIIa inhibitors) is recommended in patients undergoing PCI who did not receive any anticoagulant.

Enoxaparin (1 mg/kg s.c. twice daily) or UFH are recommended when fondaparinux is not available.

STE-ACS



Aspirin I B

Potent P2Y₁₂ inhibitor I A

UFH	70–100 IU/kg i.v. bolus when no GP IIb/IIIa inhibitor is planned 50–70 IU/kg i.v. bolus with GP IIb/IIIa inhibitors
Enoxaparin	0.5 mg/kg i.v. bolus
Bivalirudin	0.75 mg/kg i.v. bolus followed by i.v. infusion of 1.75 mg/kg/hour for up to 4 hours after the procedure

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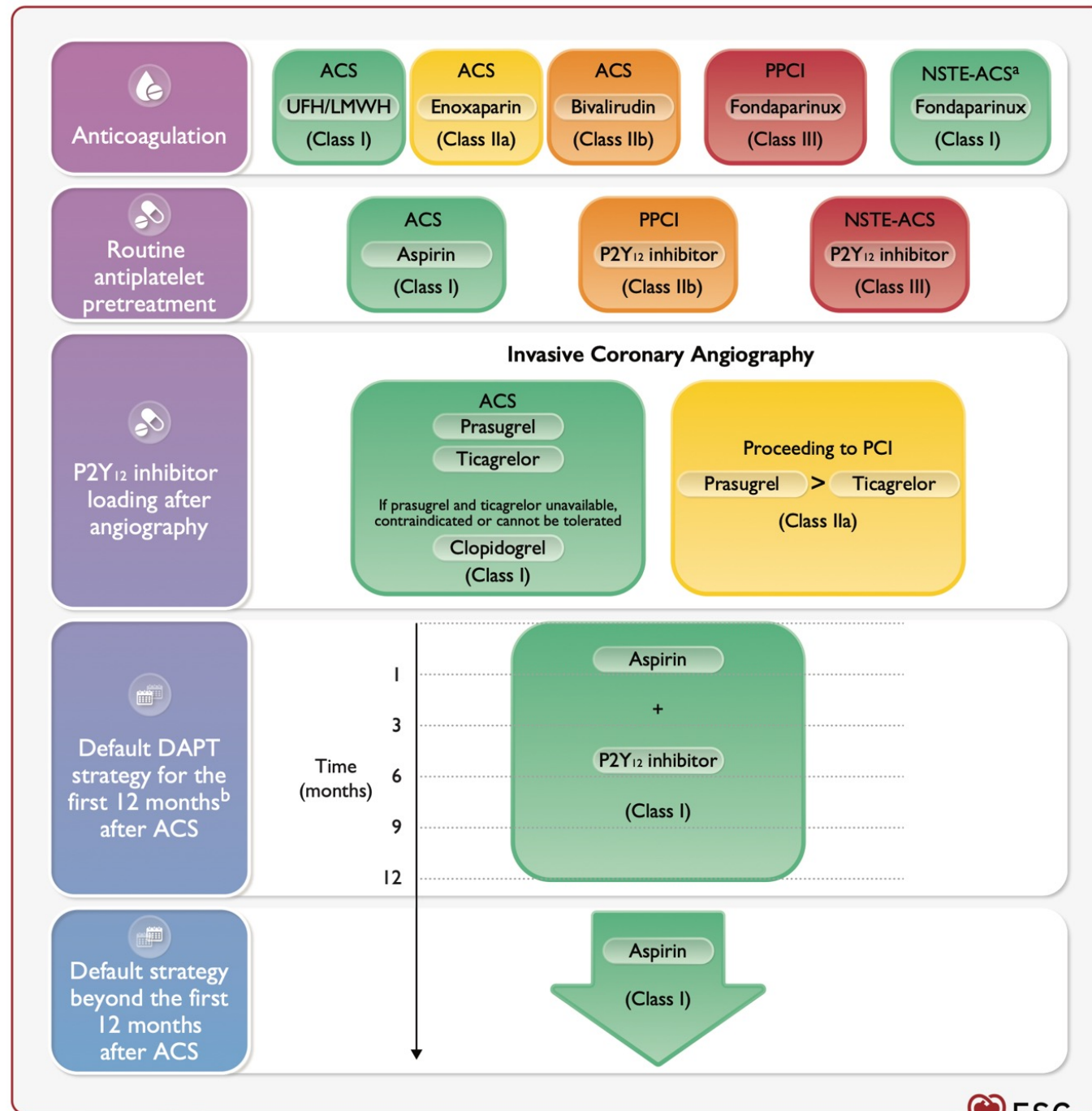
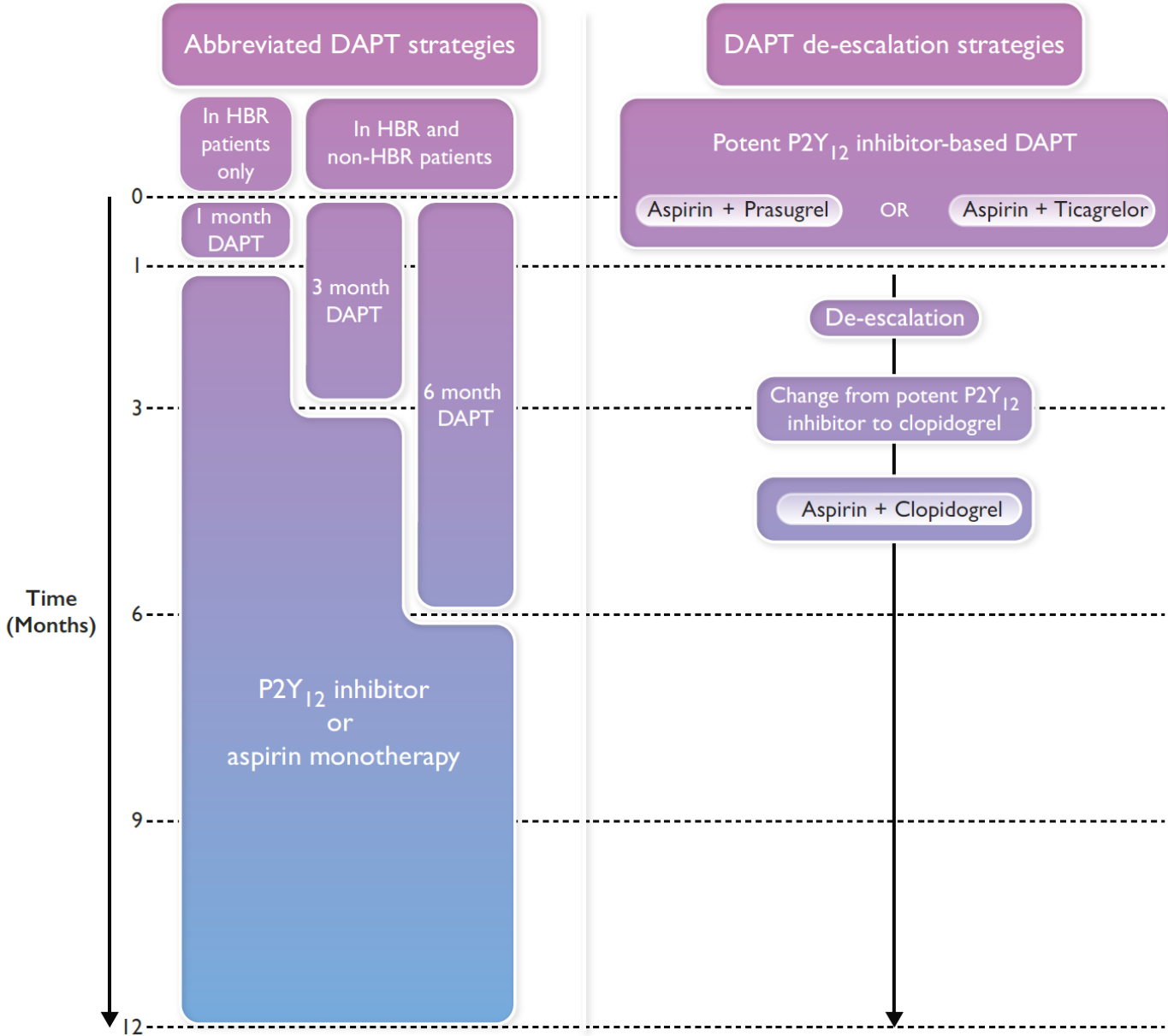


Figure 10v2



Antiplatelet strategies to reduce bleeding risk in the first 12 months after ACS



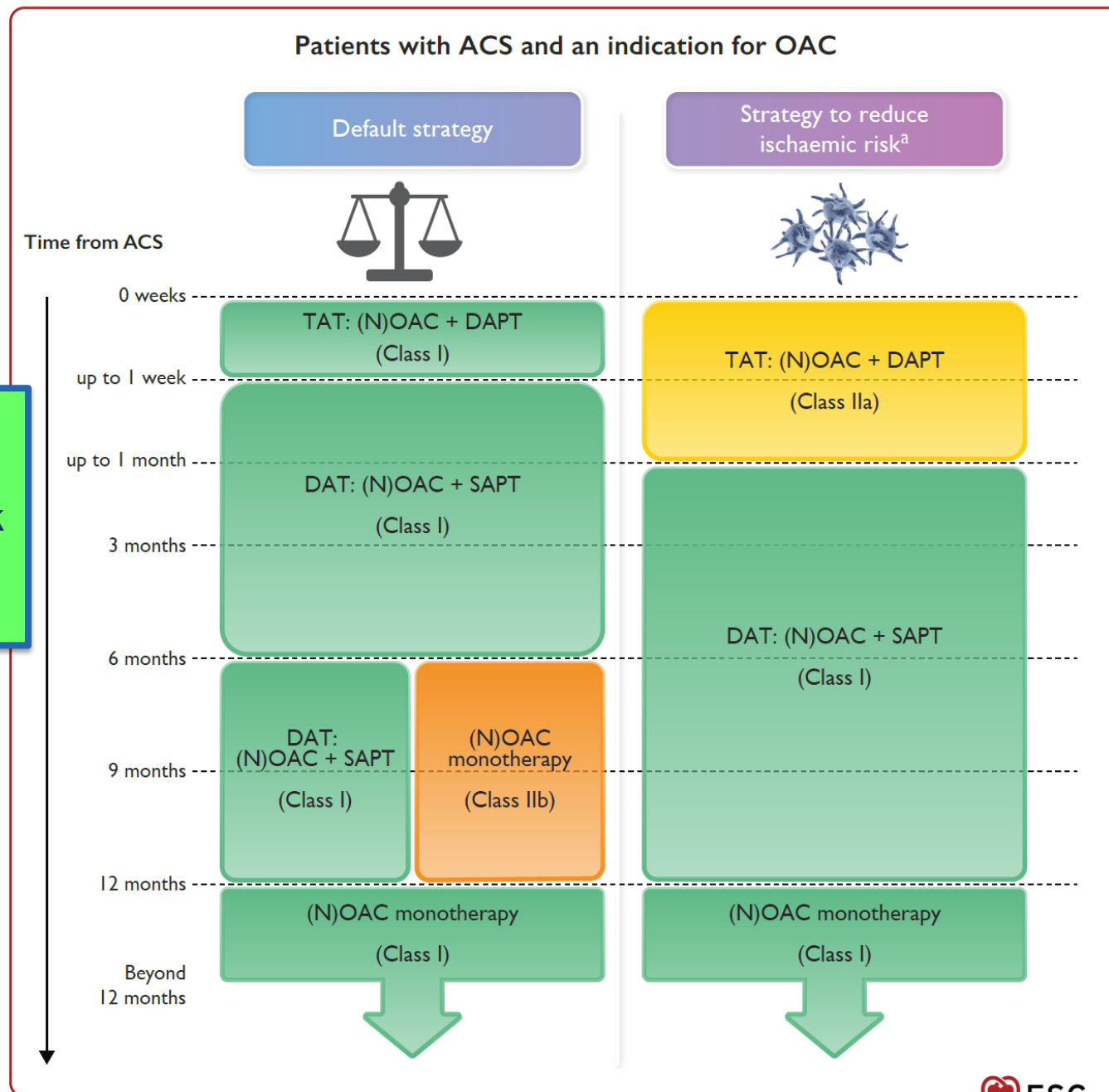
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e.g. AFib+ACS/PCI

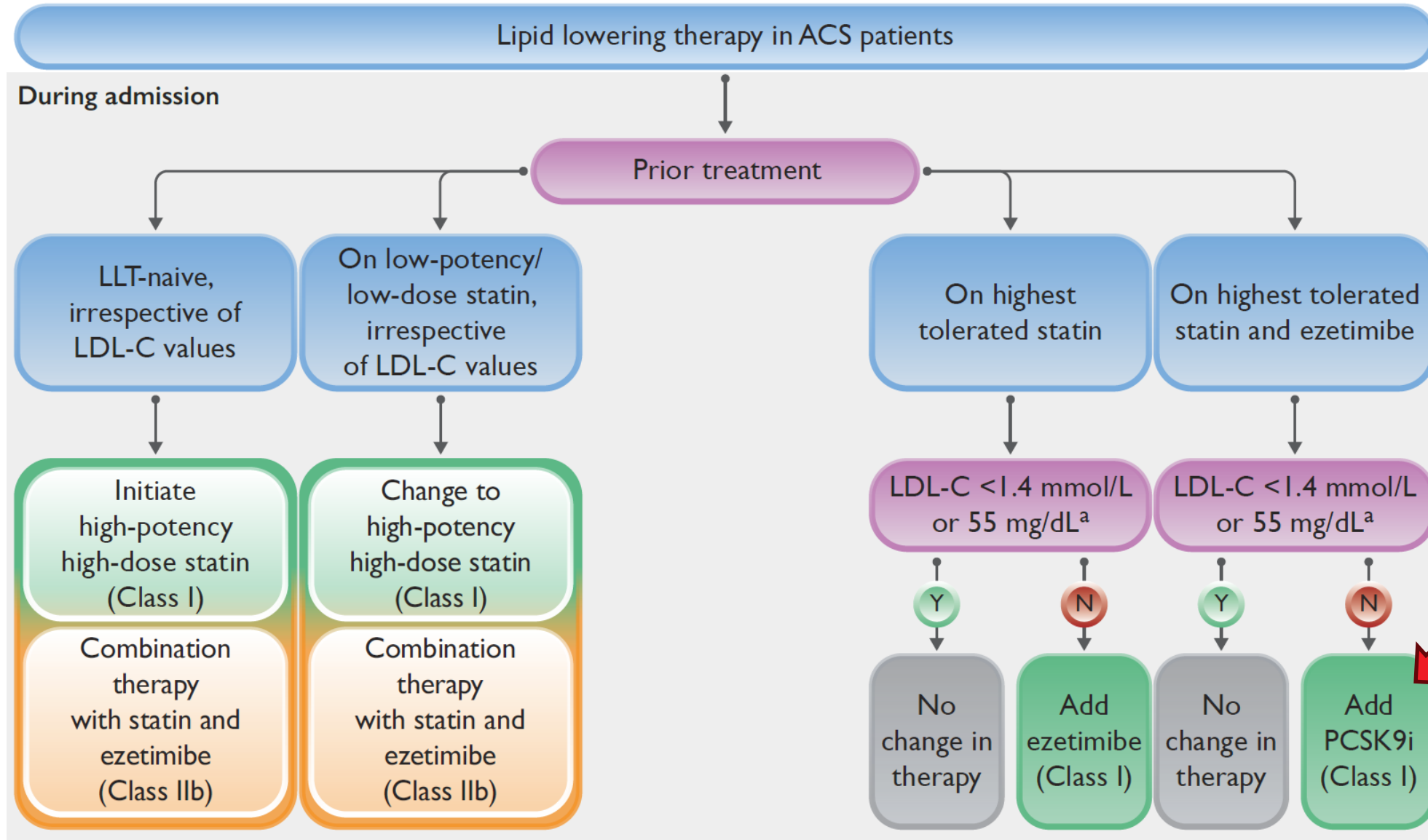
AFib → ARISTOTLE → apixaban 5mg bid

AFib+ACS/PCI → AUGUSTUS → drop ASA @1wk

AFib+ACS/PCI → AFIRE → drop clopi @1year



Guidelines 2023, Lipides



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If patients presenting with ACS stop DAPT to undergo coronary artery bypass grafting, it is recommended they resume DAPT after surgery for at least 12 months.



I

C

Intravascular imaging should be considered to guide PCI.



IIa

A

Invasive epicardial functional assessment of non-culprit segments of the IRA is not recommended during the index procedure.



III

C

Following an acute anterior MI, a contrast echocardiogram may be considered for the detection of LV thrombus if the apex is not well visualized on echocardiography.



IIb

C

It is recommended to base the choice of long-term glucose-lowering treatment on the presence of comorbidities, including heart failure, chronic kidney disease, and obesity.



I

A

Low-dose colchicine (0.5 mg once a day) may be considered, particularly if other risk factors are insufficiently controlled or if recurrent cardiovascular disease events occur under optimal therapy.



IIb

A

Assessment of mental well-being using a validated tool and onward psychological referral when appropriate should be considered.



IIa

B

A potent P2Y₁₂ inhibitor (prasugrel or ticagrelor), or clopidogrel if these are not available or are contraindicated, is recommended before (or at latest at the time of) PCI, and maintained over 12 months, unless there are contraindications such as excessive risk of bleeding.

I

A

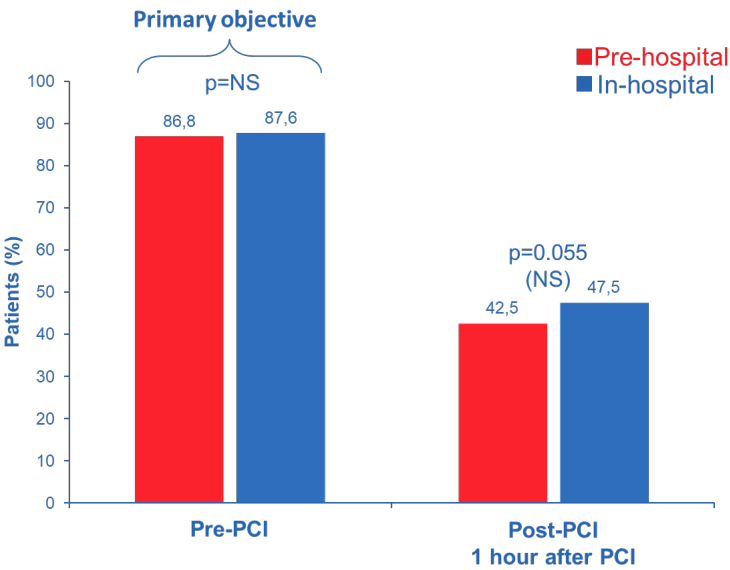
Pre-treatment with a P2Y₁₂ receptor inhibitor may be considered in patients undergoing a primary PCI strategy.



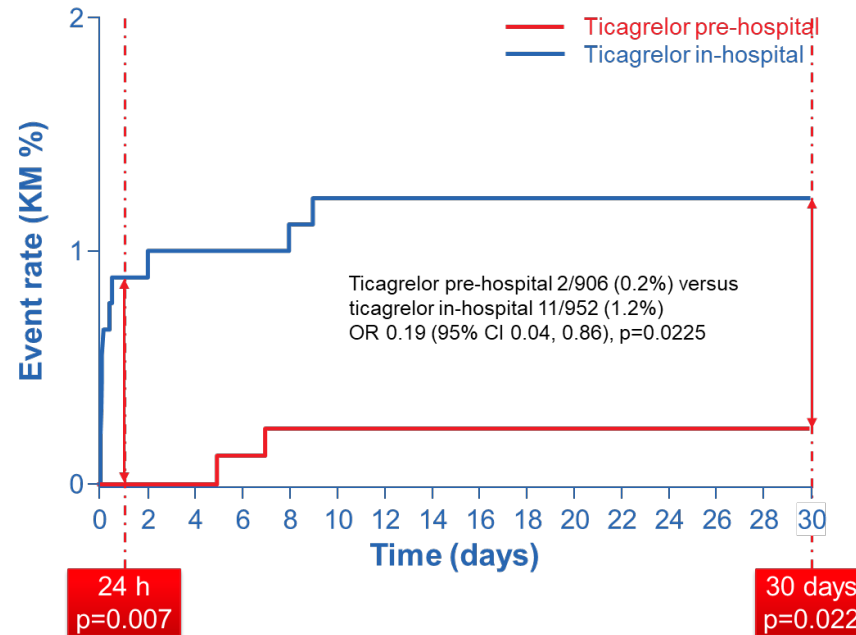
IIb

B

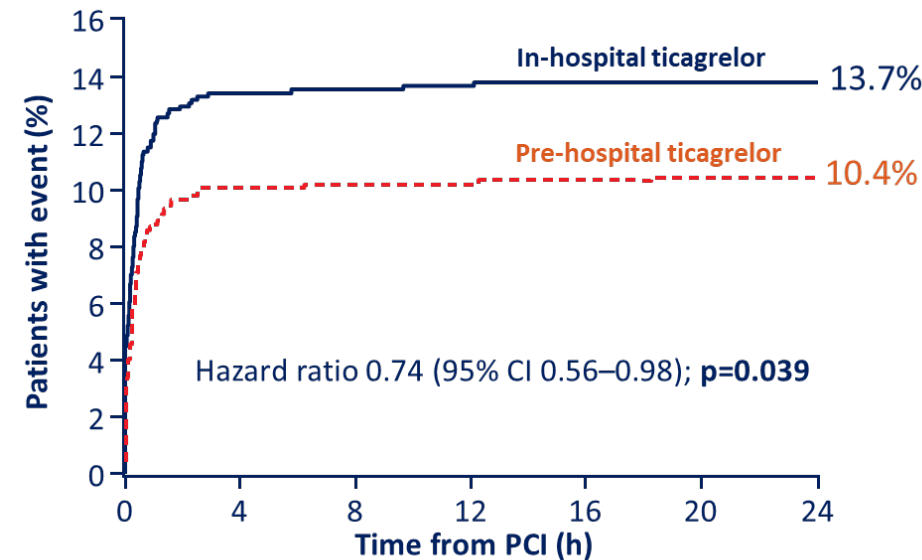
Time effect of P2Y₁₂ inhibition in STEMI



Absence of 70% ST elevation



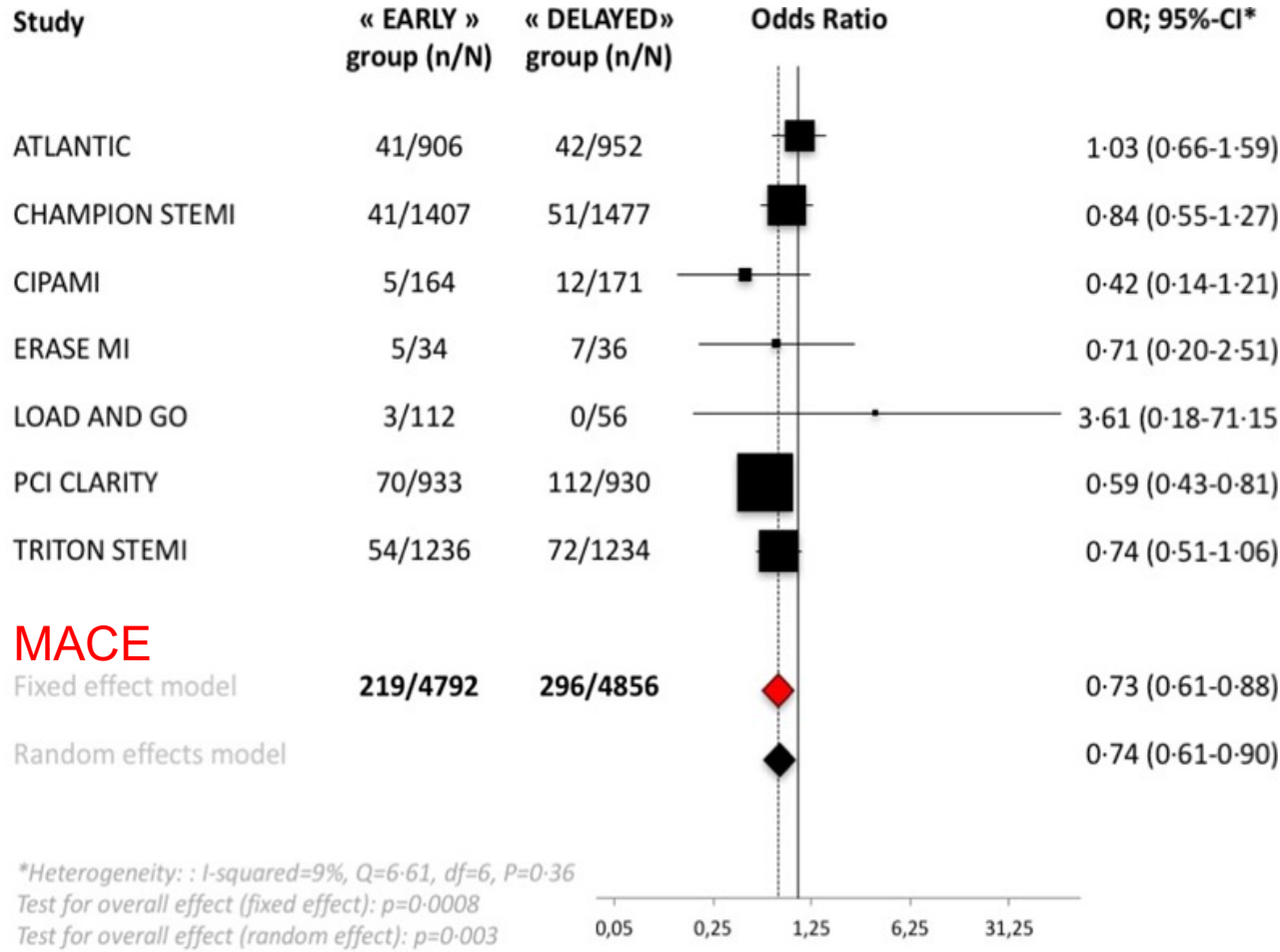
Definite stent thrombosis



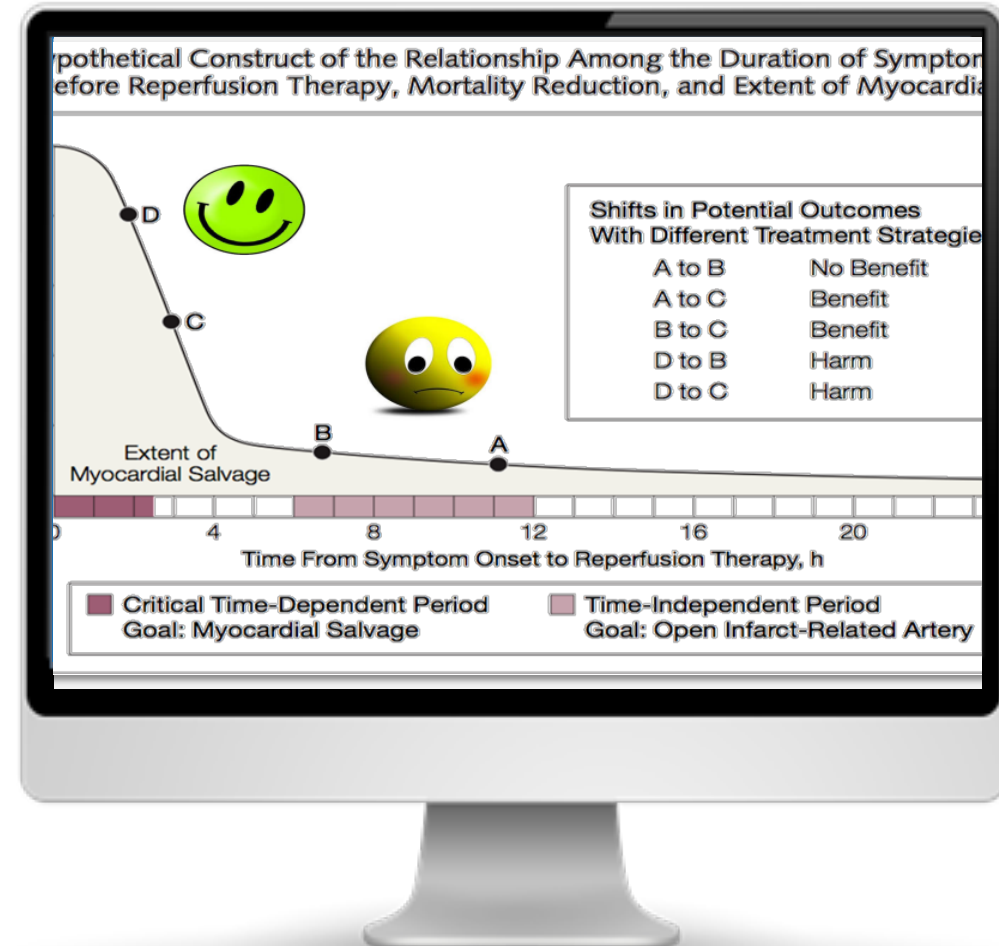
	Patients with event, no. (%)	Total no. of patients
Pre-hospital ticagrelor	83 (10.4)	799
In-hospital ticagrelor	114 (13.7)	830

Composite ischaemic endpoint: death, MI, urgent revasc, definite stent thrombosis or BO GP IIb/IIIa inhibitor

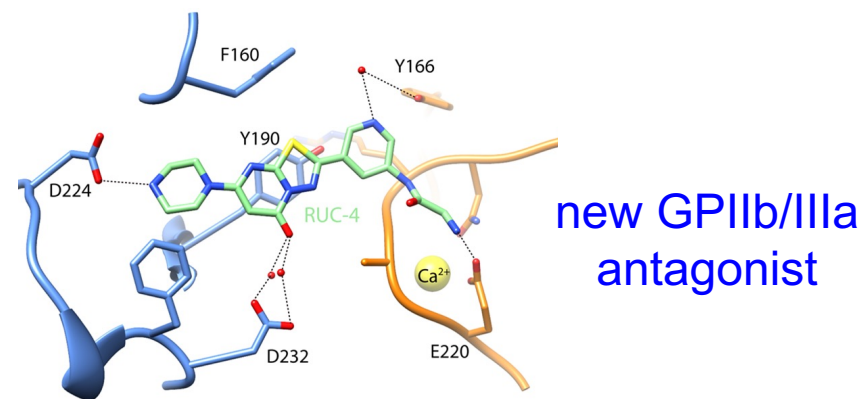
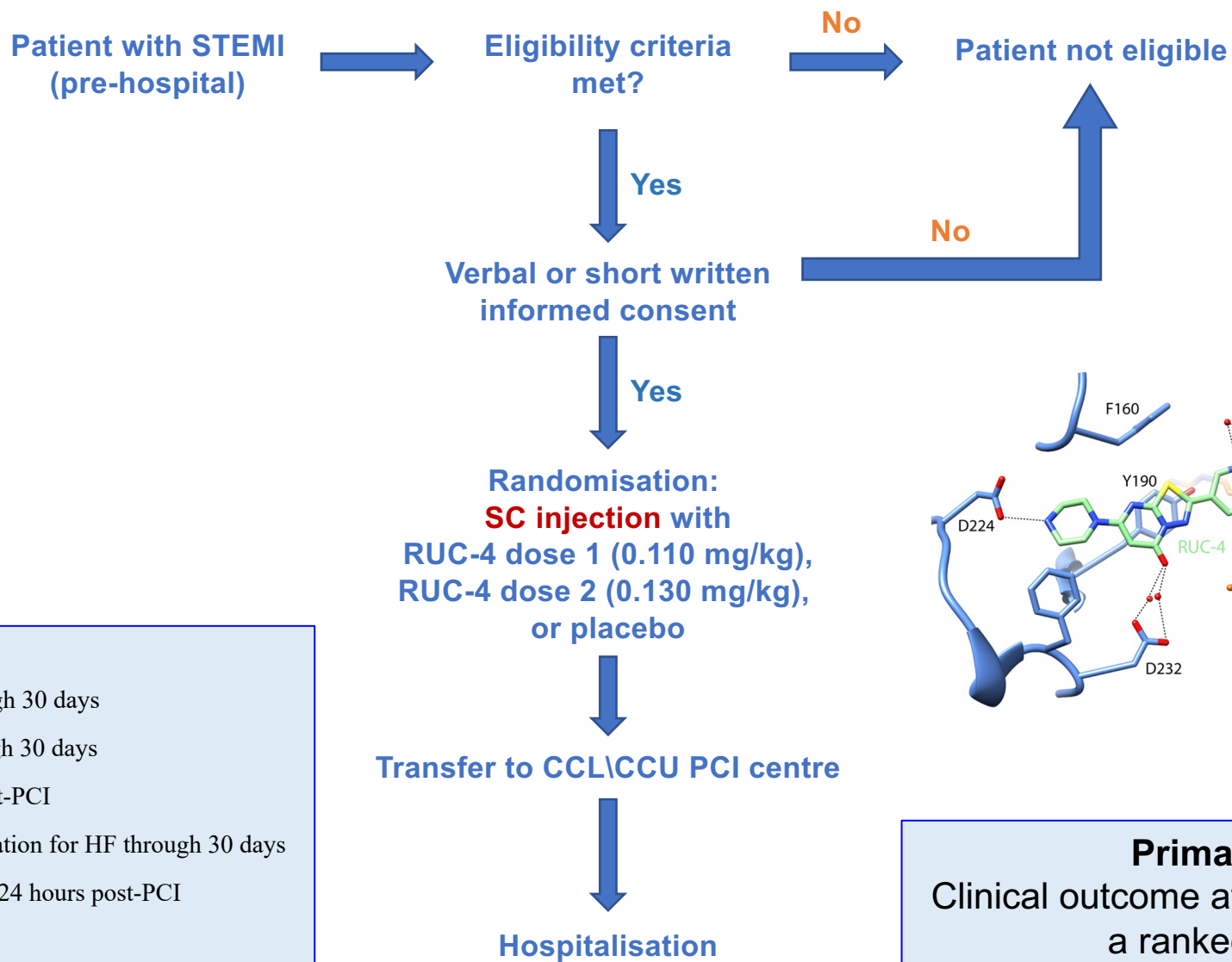
Early P2Y12 i. in STEMI



Favours Early P2Y12 inhibition Favours Delayed P2Y12 inhibition



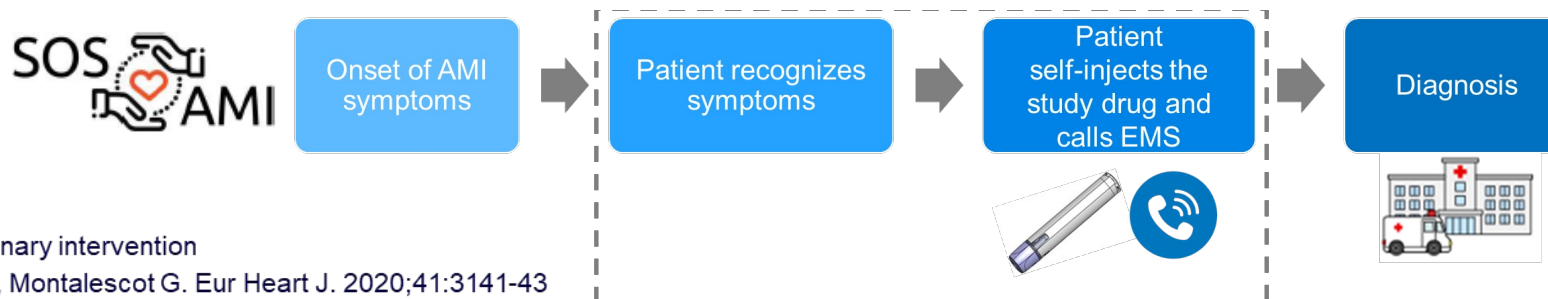
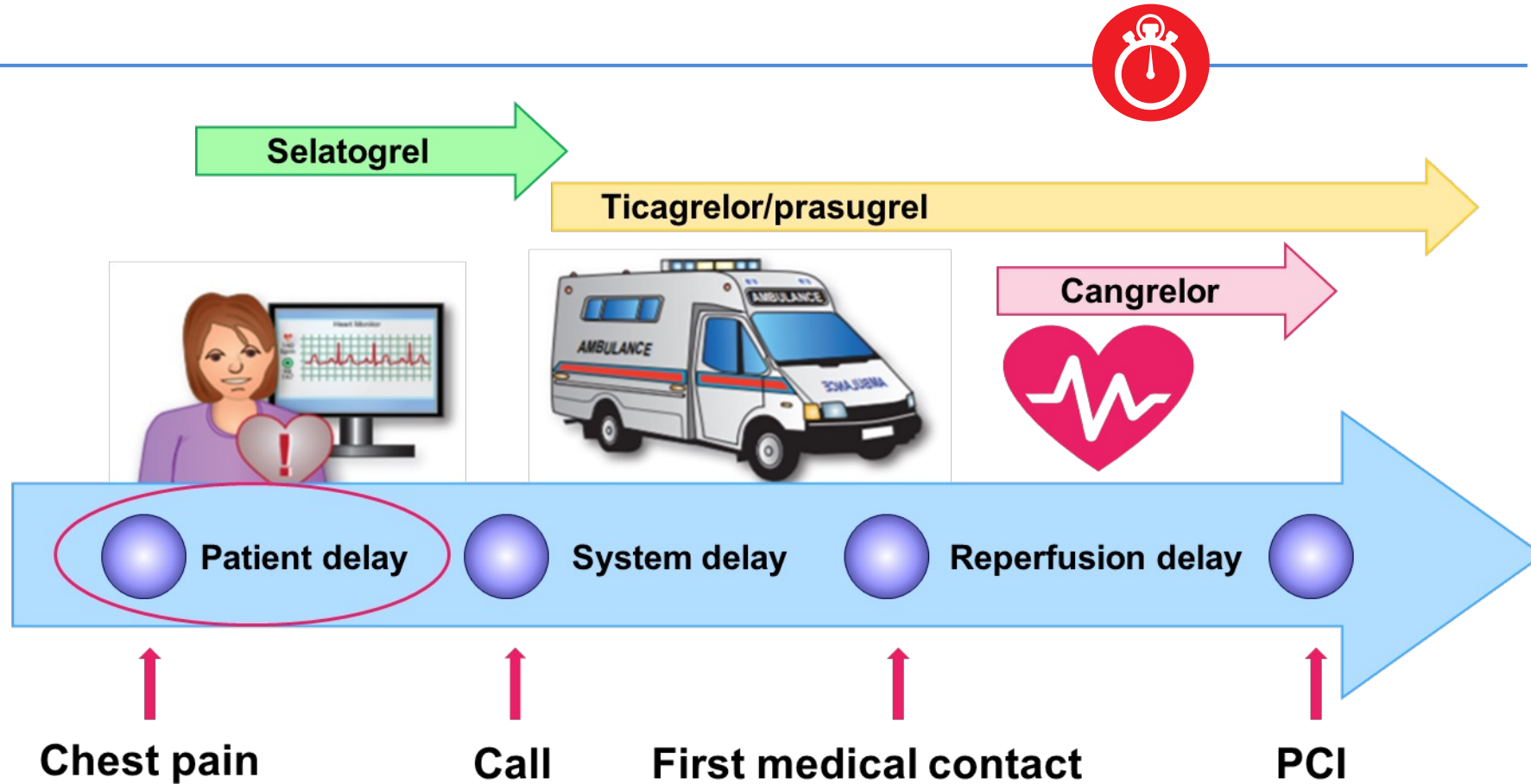
CELEBRATE trial (STEMI)



- 1) all-cause death through 30 days
- 2) hemorrhagic or ischemic stroke through 30 days
- 3) recurrent MI (type I to type IV) through 30 days
- 4) acute stent thrombosis at 24 hours post-PCI
- 5) new onset heart failure or rehospitalization for HF through 30 days
- 6) MI with hs-cTnT levels $\geq 10x$ ULN at 24 hours post-PCI
- 7) none of the above

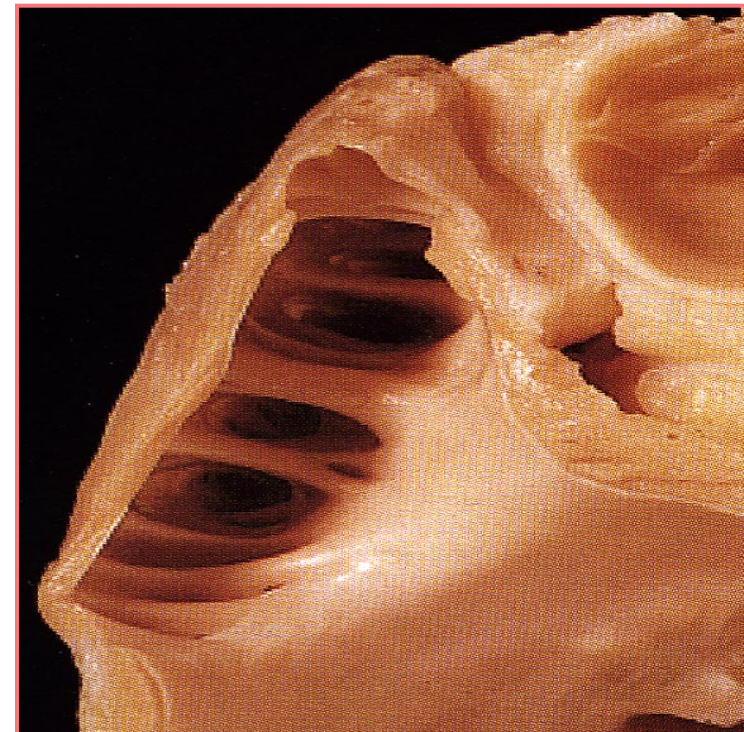
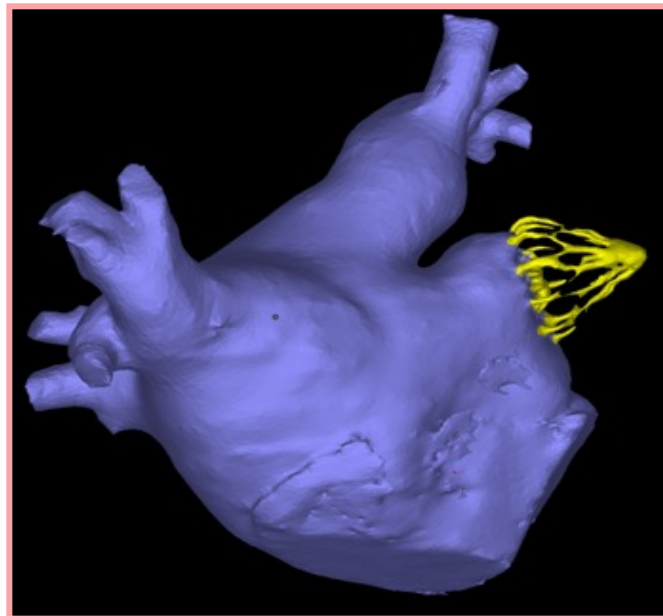
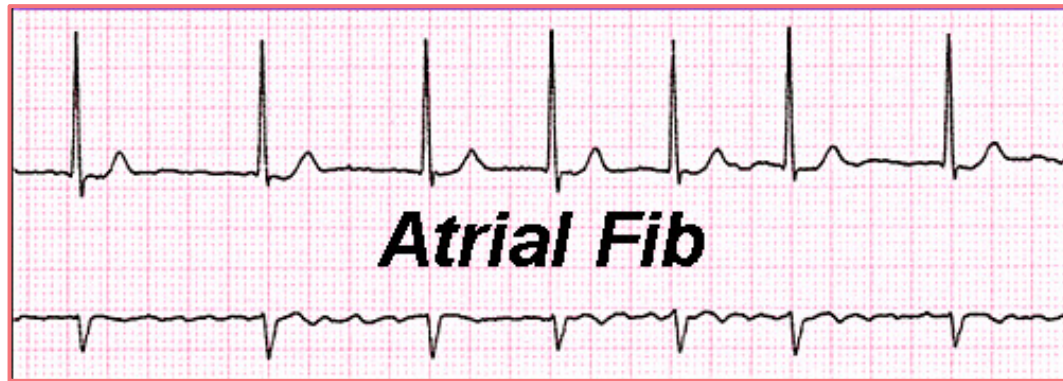
Primary endpoint:
Clinical outcome at 30 days as assessed on a ranked 7-point scale

Next frontier in AMI



PCI, percutaneous coronary intervention

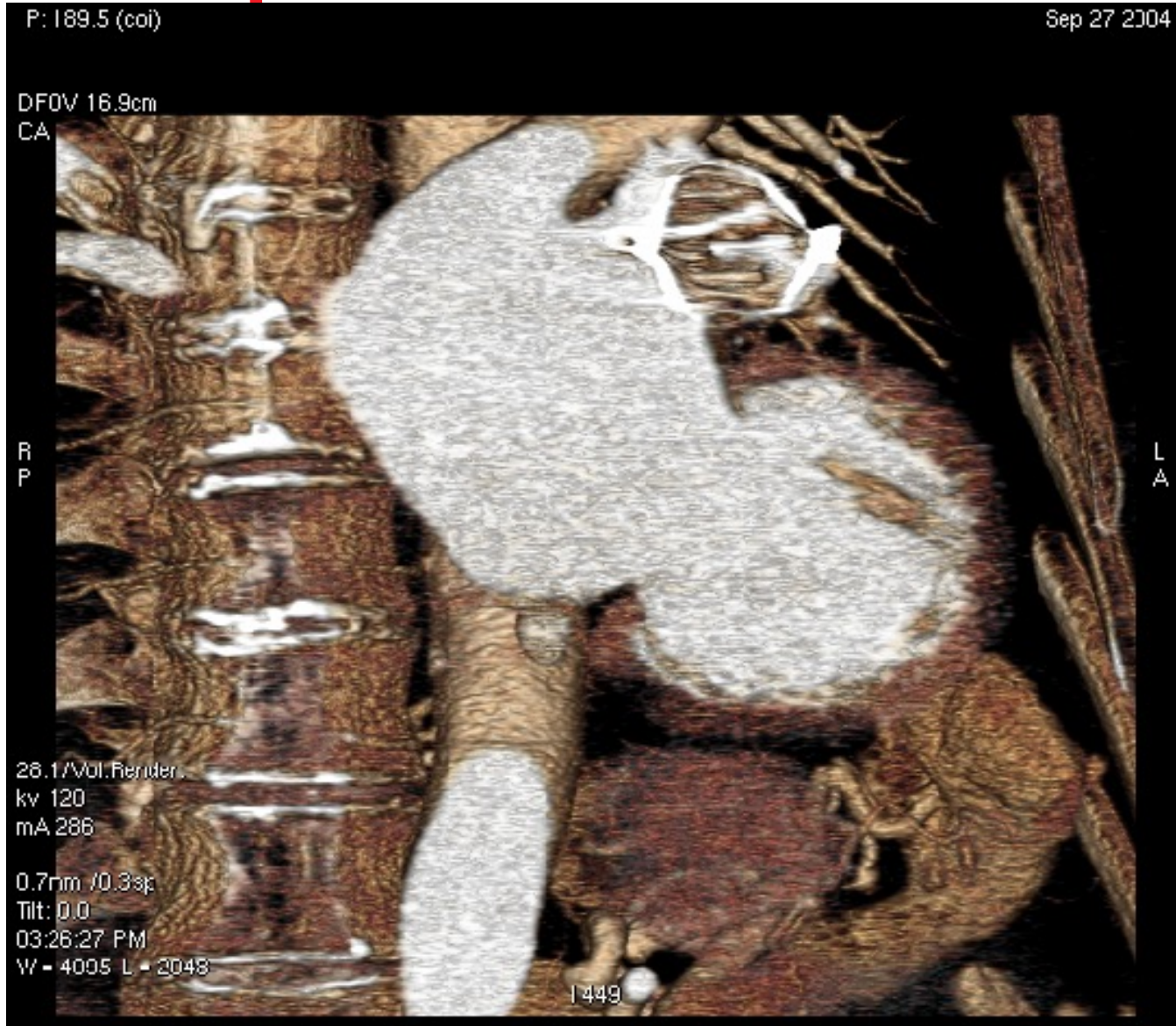
Adapted from: Hulot JS, Montalescot G. Eur Heart J. 2020;41:3141-43



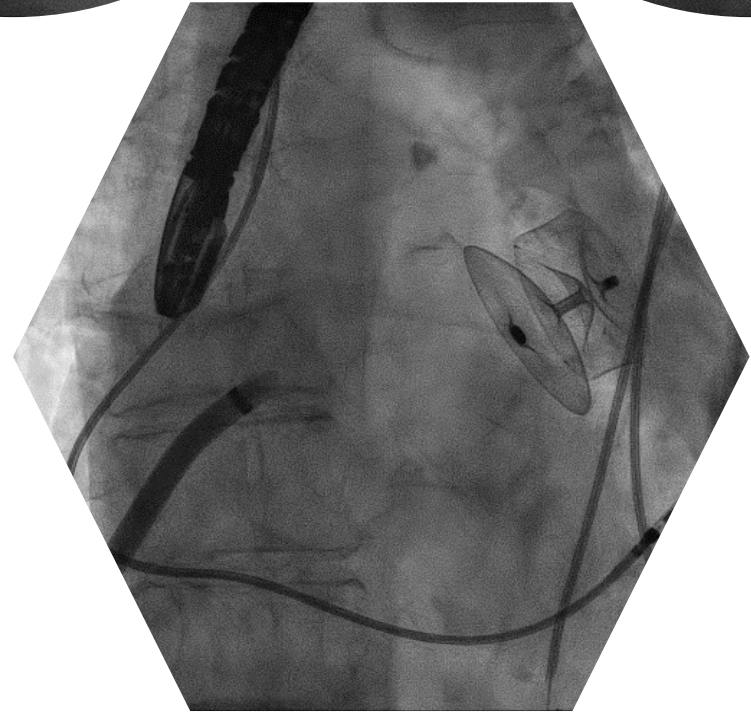
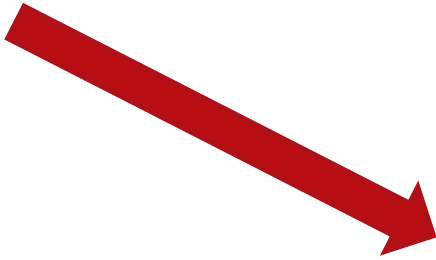
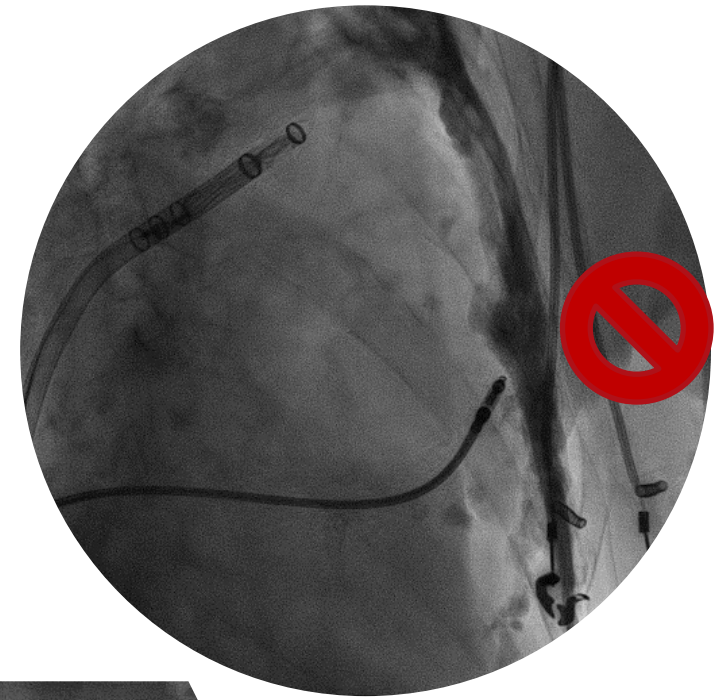
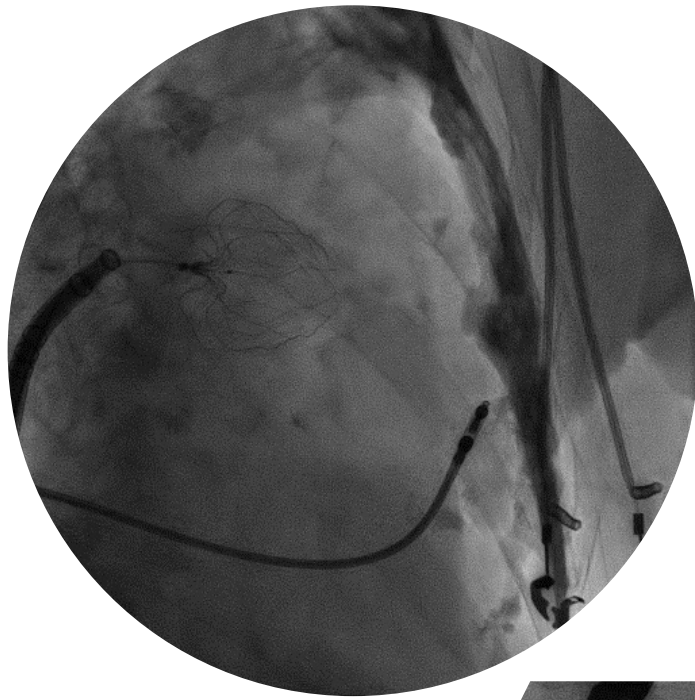
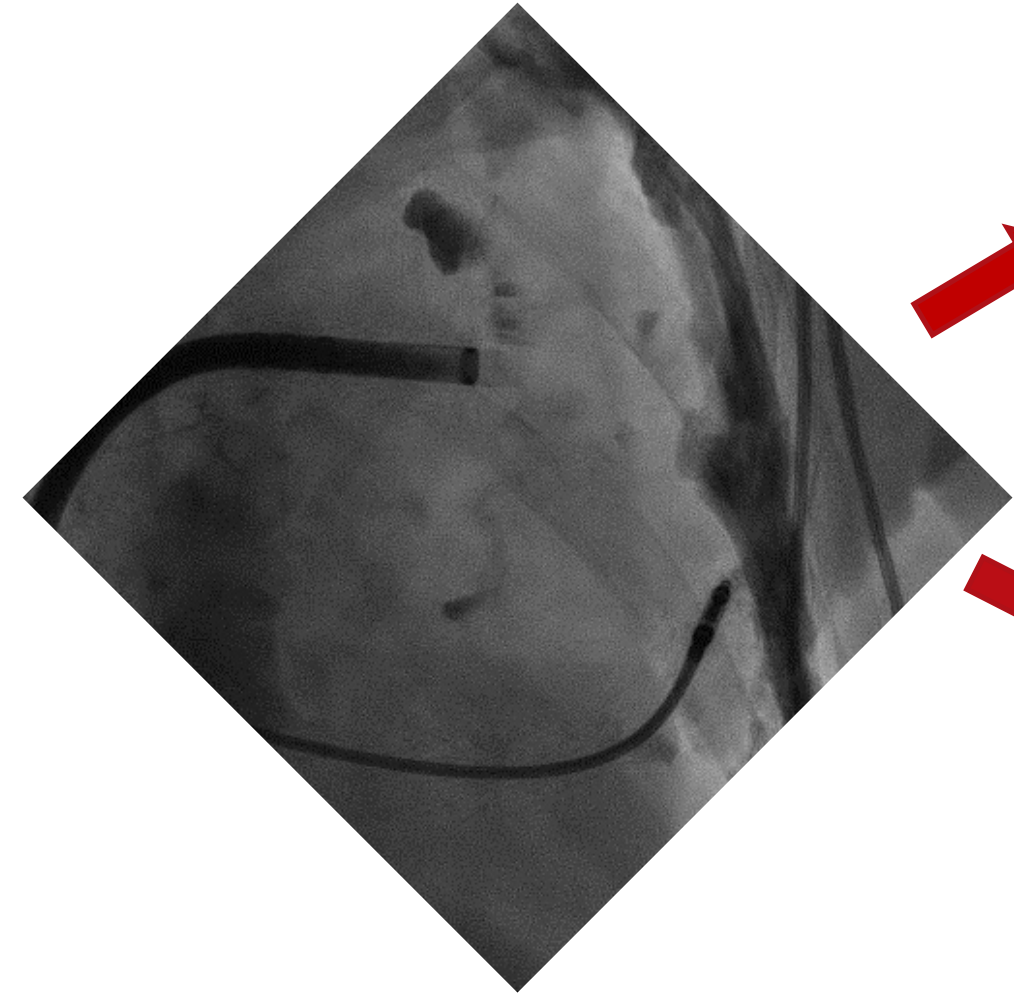
Expérience initiale



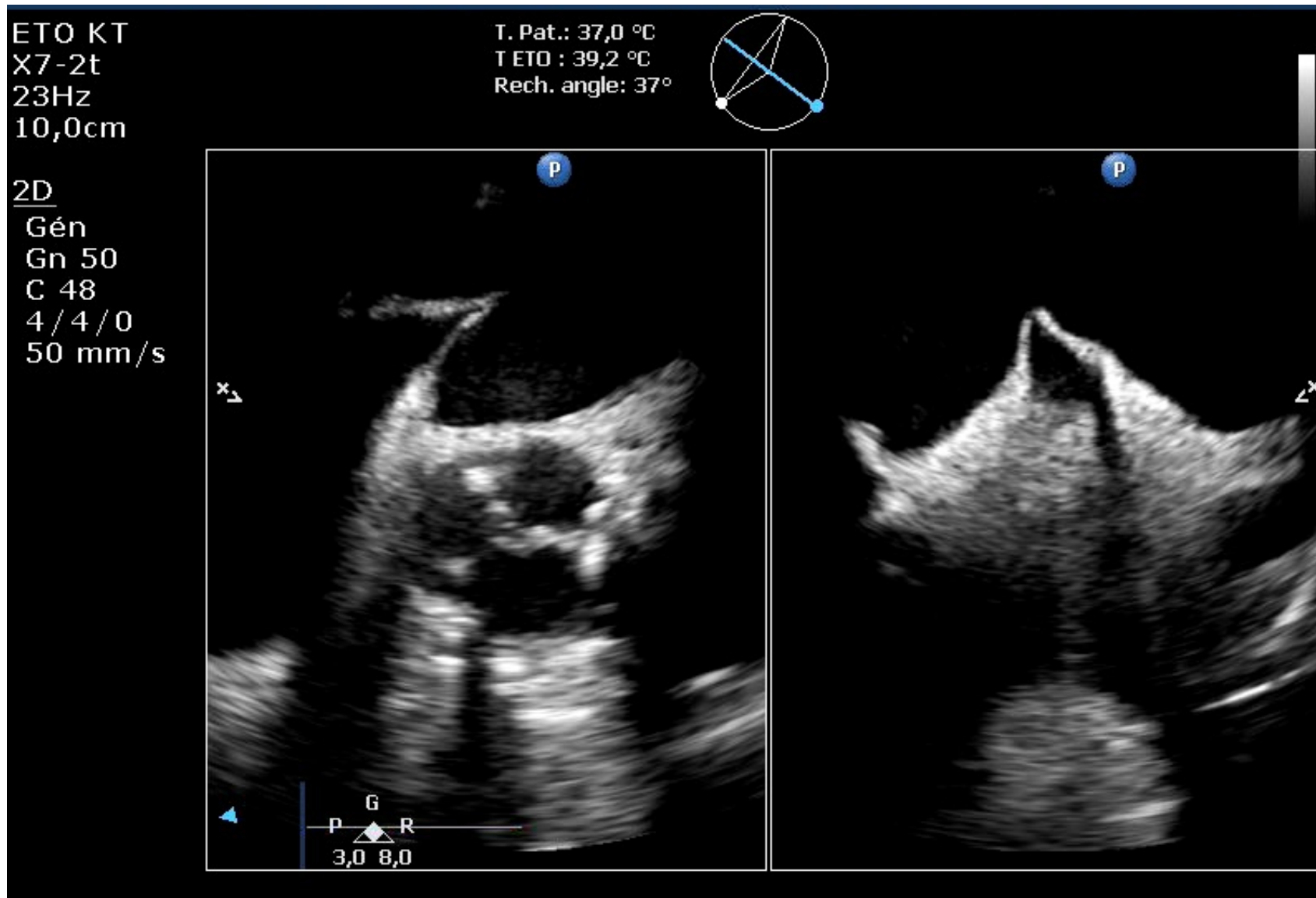
PLAATO®



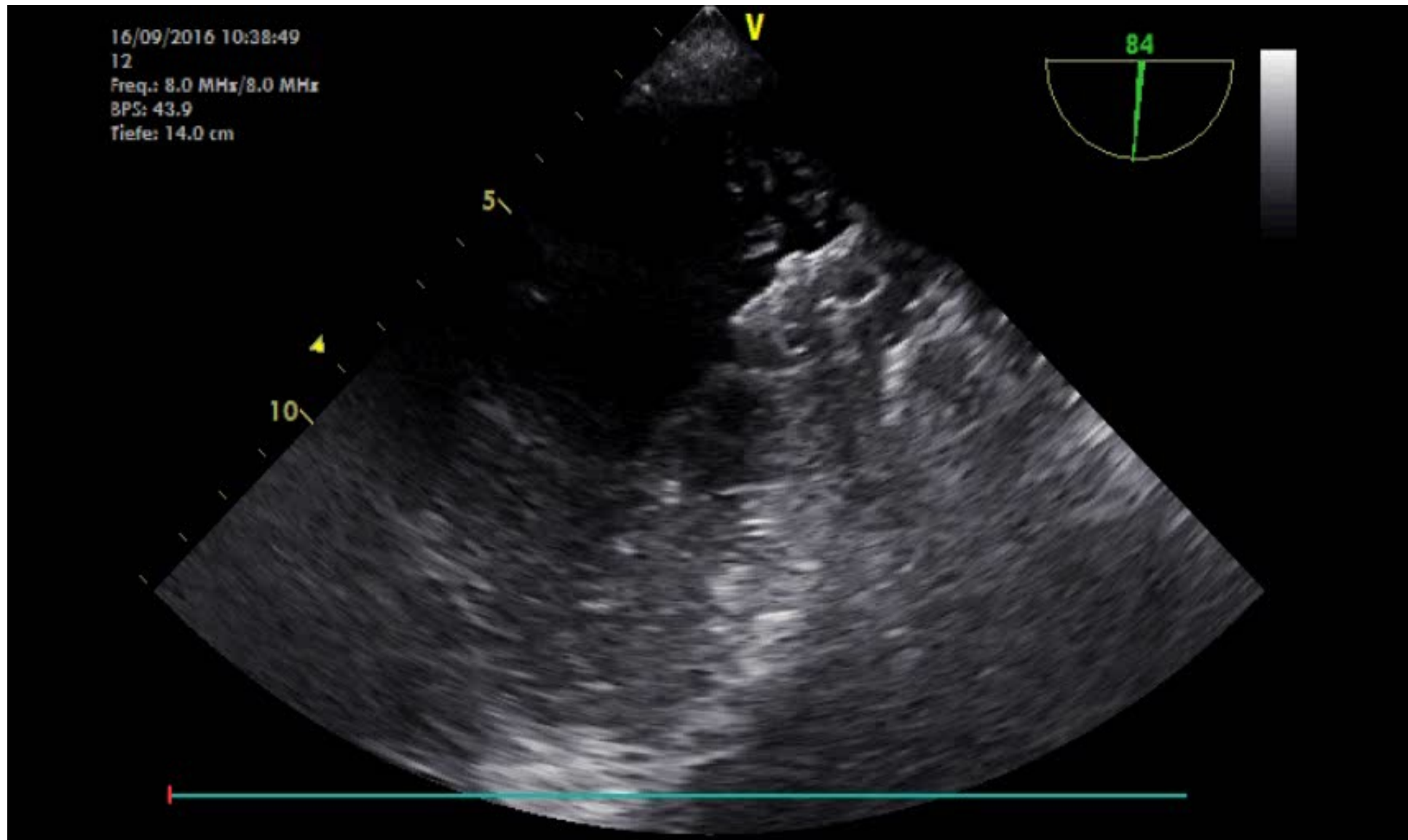
Fermer tout auricule



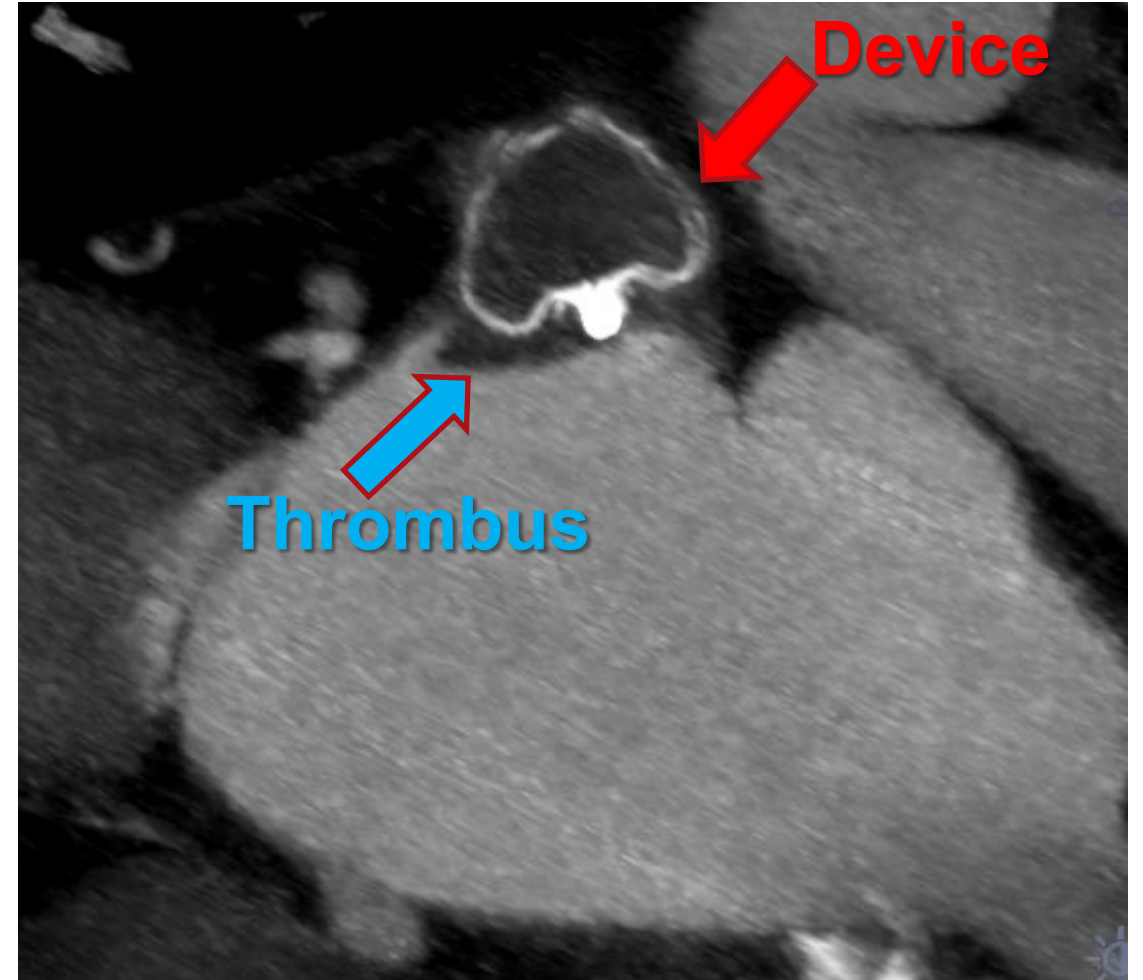
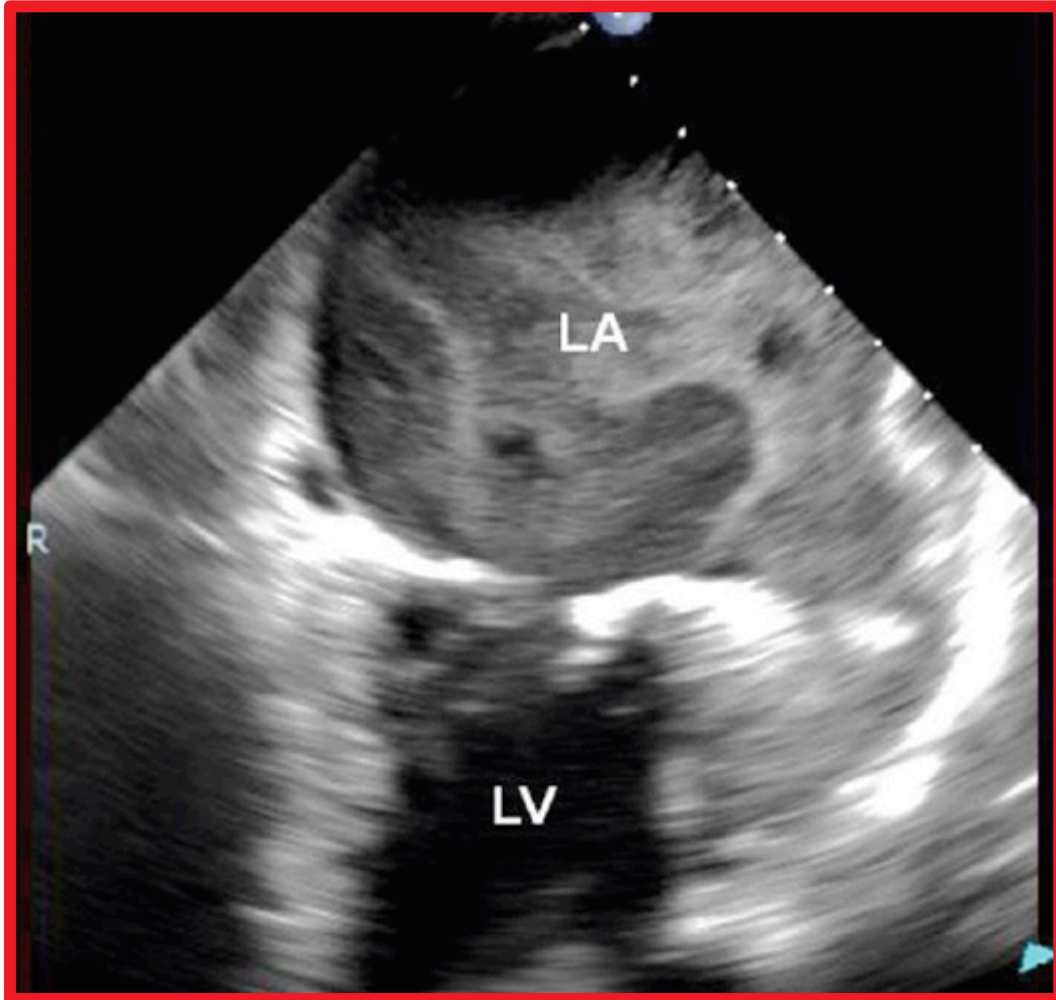
Eviter les complications



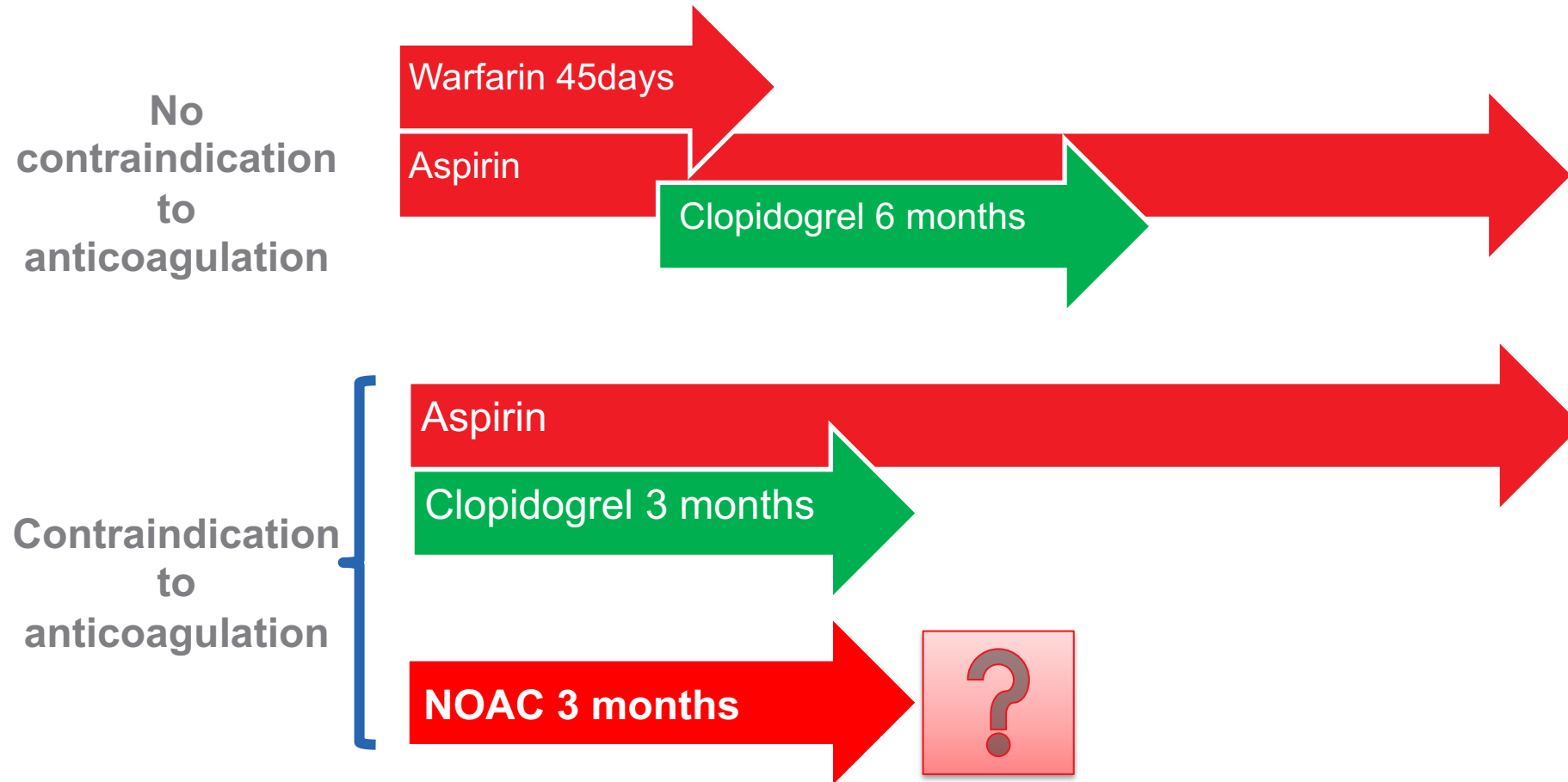
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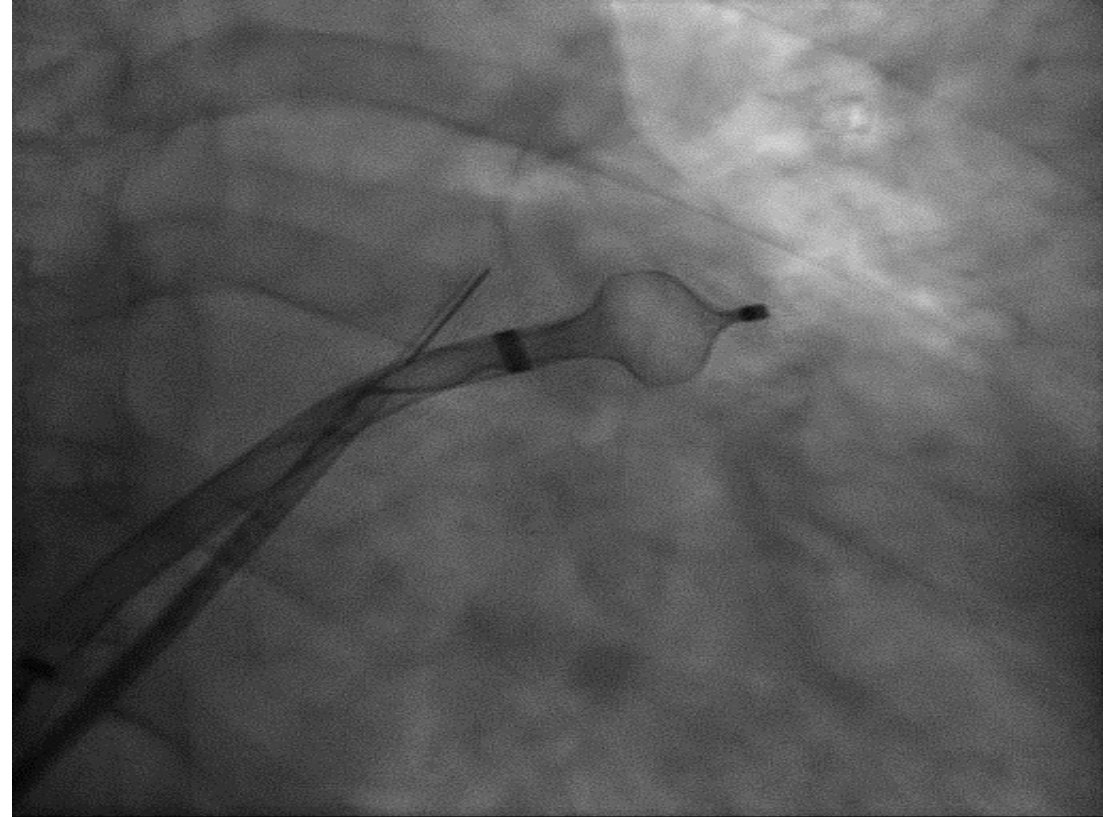
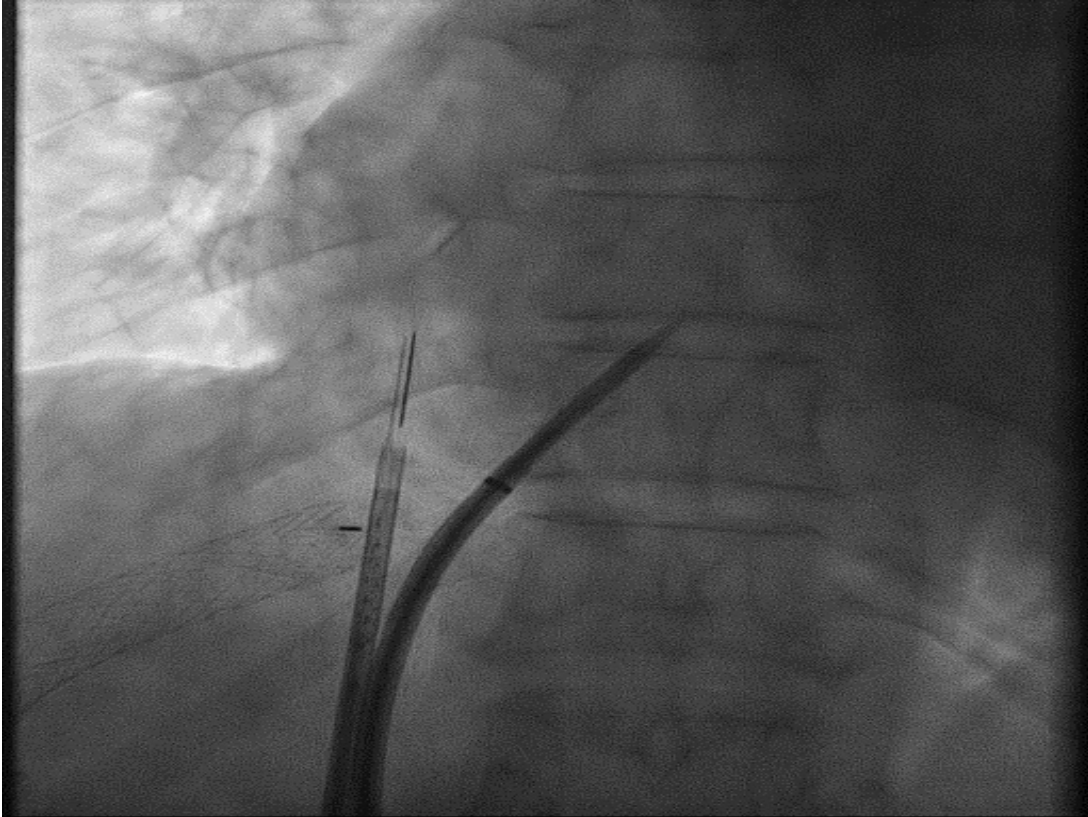
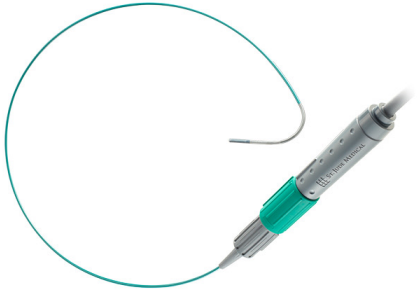
Eviter les complications



Post-LAAC antithrombotic treatment



Adapter les techniques aux patients



Indications

- **Intra-cranial bleeding** on anticoagulation
 - 1/3 of ischemic stroke develop hemorrhagic transformation on anticoagulation (Mudd P et al. 2010)
- **Extra-cranial bleeding** on anticoagulation
 - GI bleeding (e.g. angiodysplasia)
- **Contra-indication** to anticoagulation
 - Cerebral microbleeds or amyloid angiopathy
 - Low platelet count
- **Intolerance to NOAC**
 - Renal insufficiency; Liver dysfunction
 - GI intolerance
- **Stroke on anticoagulation**
- **No compliance** to anticoagulation
- **No prescription** of anticoagulation
 - Anticoagulation is not currently utilized in up to 50% of eligible AF patients (Patel et al. 2012)
 - Registry in 28,634 patients: 70% of females > 80 years were not on OAC 6 months after stroke (Palnum K et al. 2010)

Merci!



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