Autour d’un cas coronaire: un patient pluritronculaire

Congrès High Tech 2025

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Présentation du Cas

Homme de 63 ans, actif, vivant en couple

Tabac actif, hypercholestérolémie

Atorvastatine 40

Histoire Clinique

Angor d'effort depuis 3 mois avec angor **aggravatif depuis 3 jours**

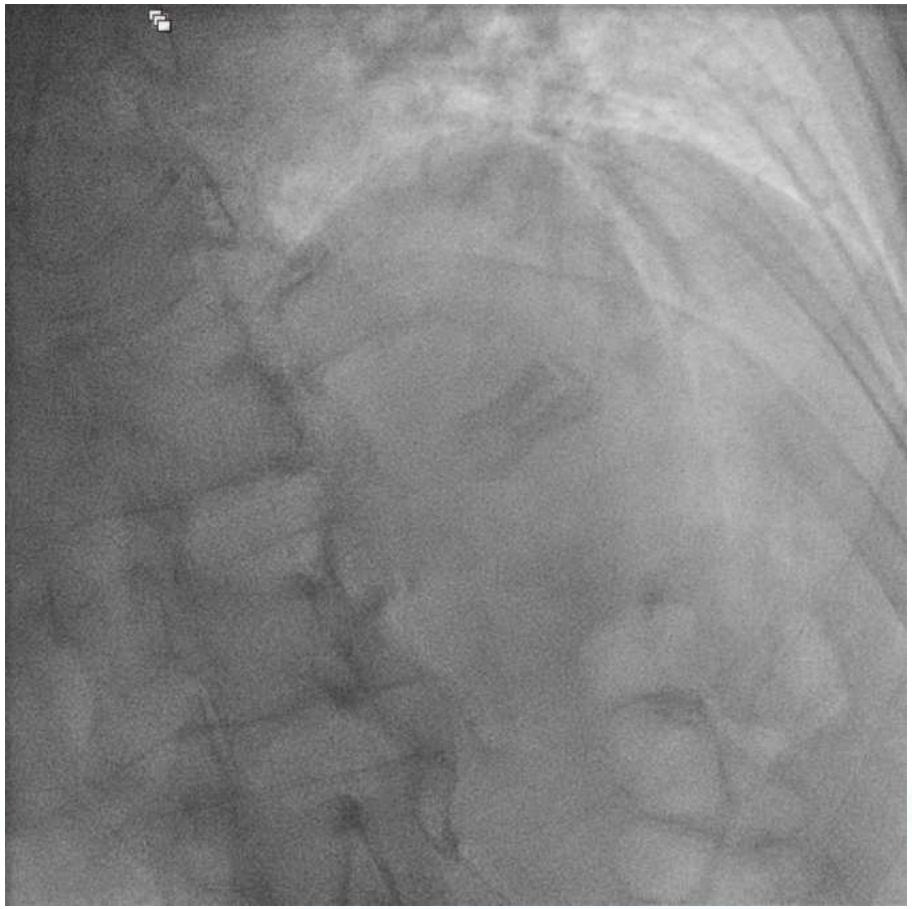
Appel SAMU 7h30 -> Transfert UDT, CHU Timone

Pas de douleur résiduelle, ECG non modifié, TnI à 125

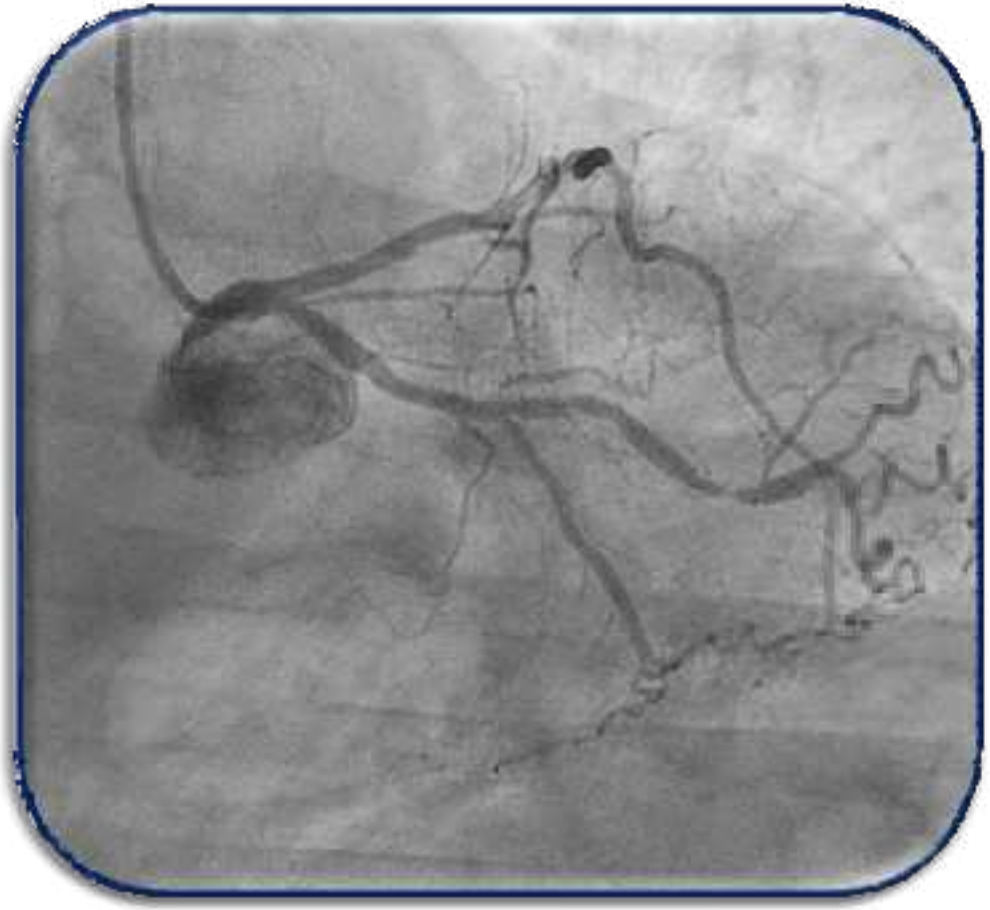
Scope / Mise sous Aspirine

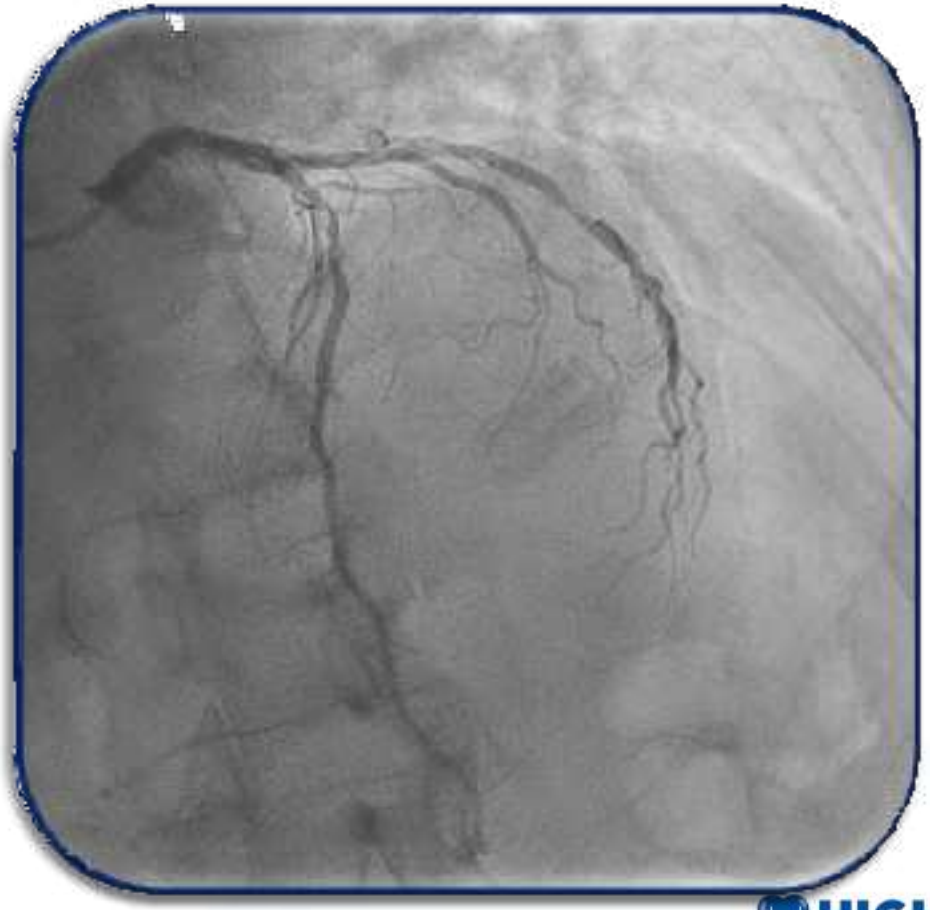
Stratégie invasive le jour même

Coronarographie - Réseau gauche



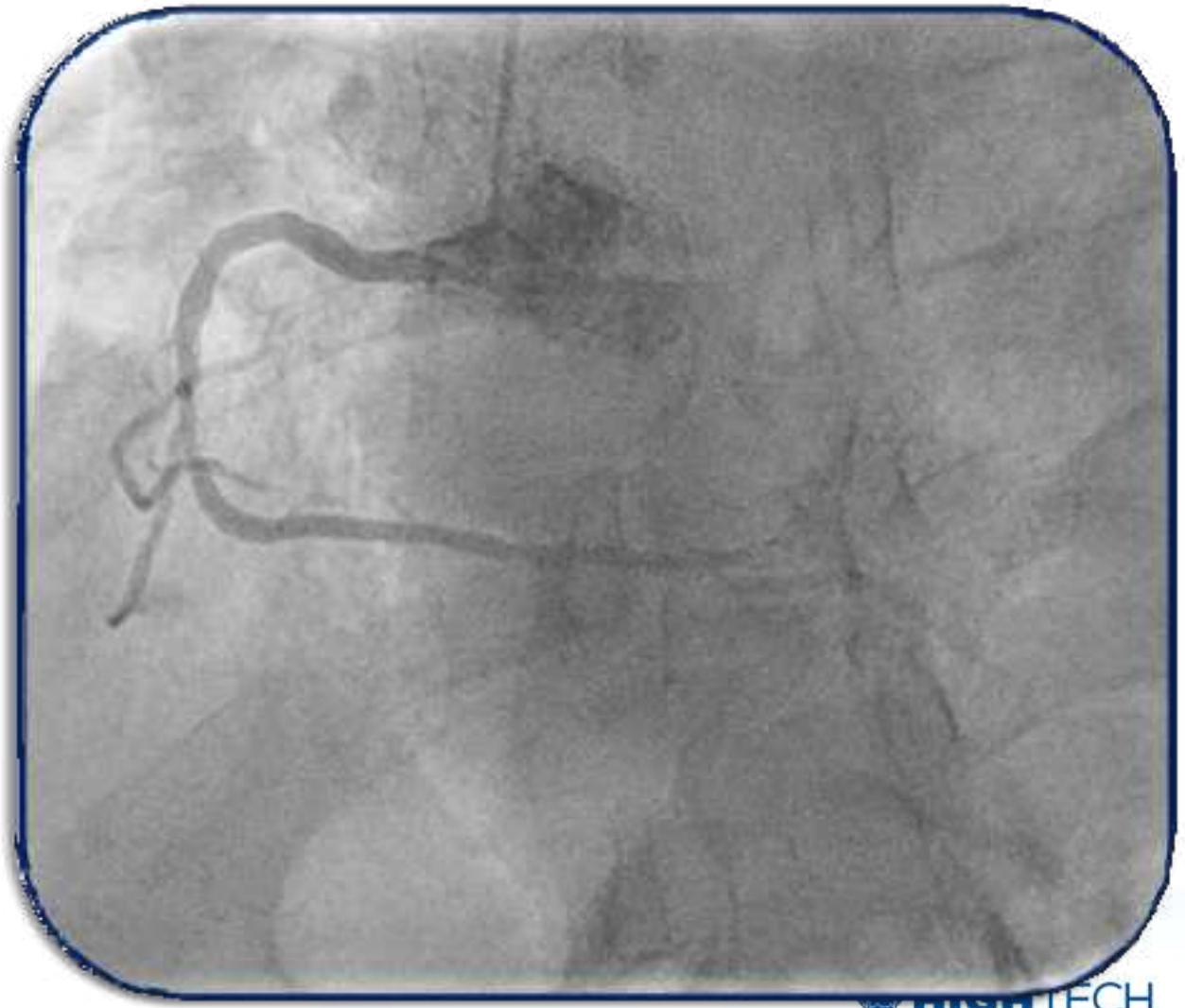
Coronarographie - Réseau gauche





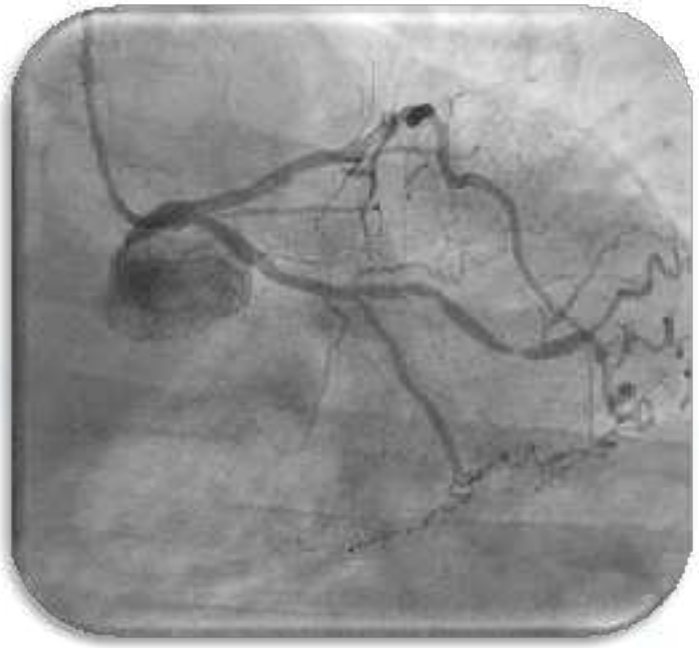
Coronarographie - Réseau droit

Coronarographie - Réseau droit



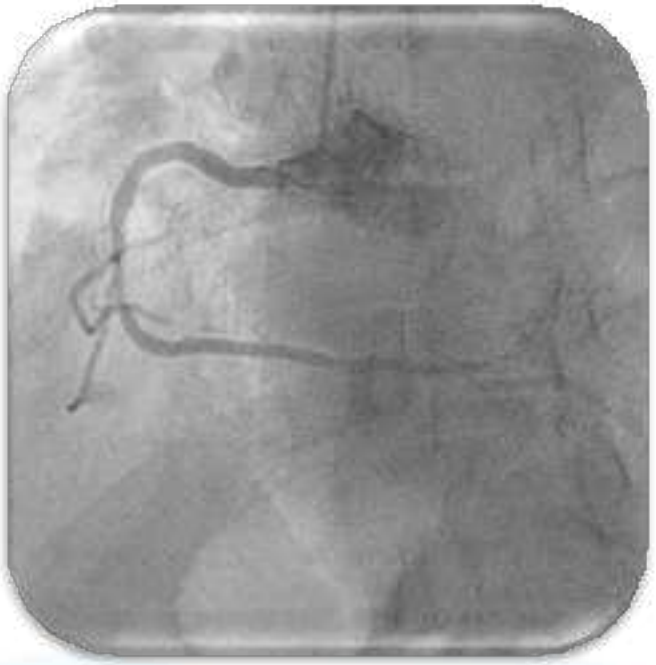
Résumé du cas

Patient jeune, NSTEMI



Sub-occlusion Mg

Lésion serrée calcifiée IVA



Lésion CDt

Stratégie ?

Quelle **modalité** de revascularisation ?

Si angioplastie: Lésion **coupable**

Comment l'identifier ? « Culprit only » ?

Lésions **non coupables:**

Quel timing de revascularisation ?

Comment guider la revascularisation ?

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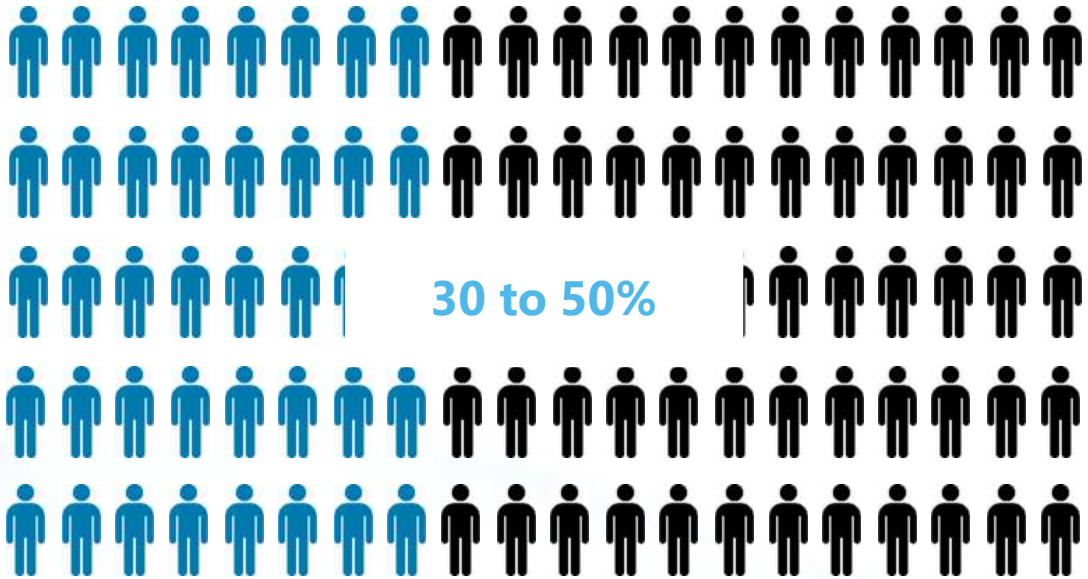
Maladie pluritronculaire post SCA : État de l'art

Frédéric BOUISSET [1,2]

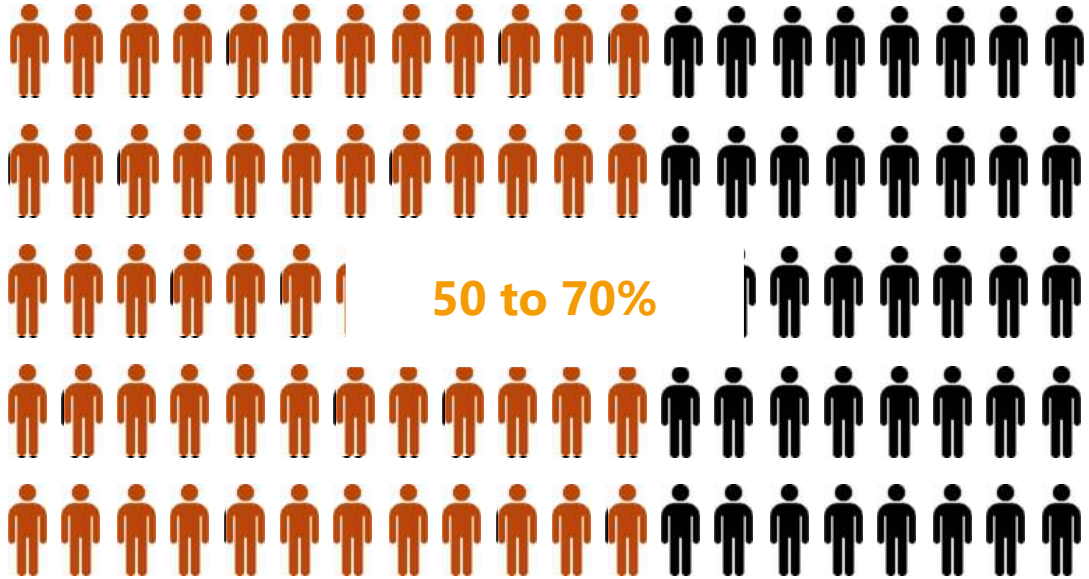
1: CHU Toulouse Rangueil, Toulouse – France
2: CoreAalst BV, Aalst – Belgium

Scope of the problem

A frequent problem



STEMI population



Non- STEMI population

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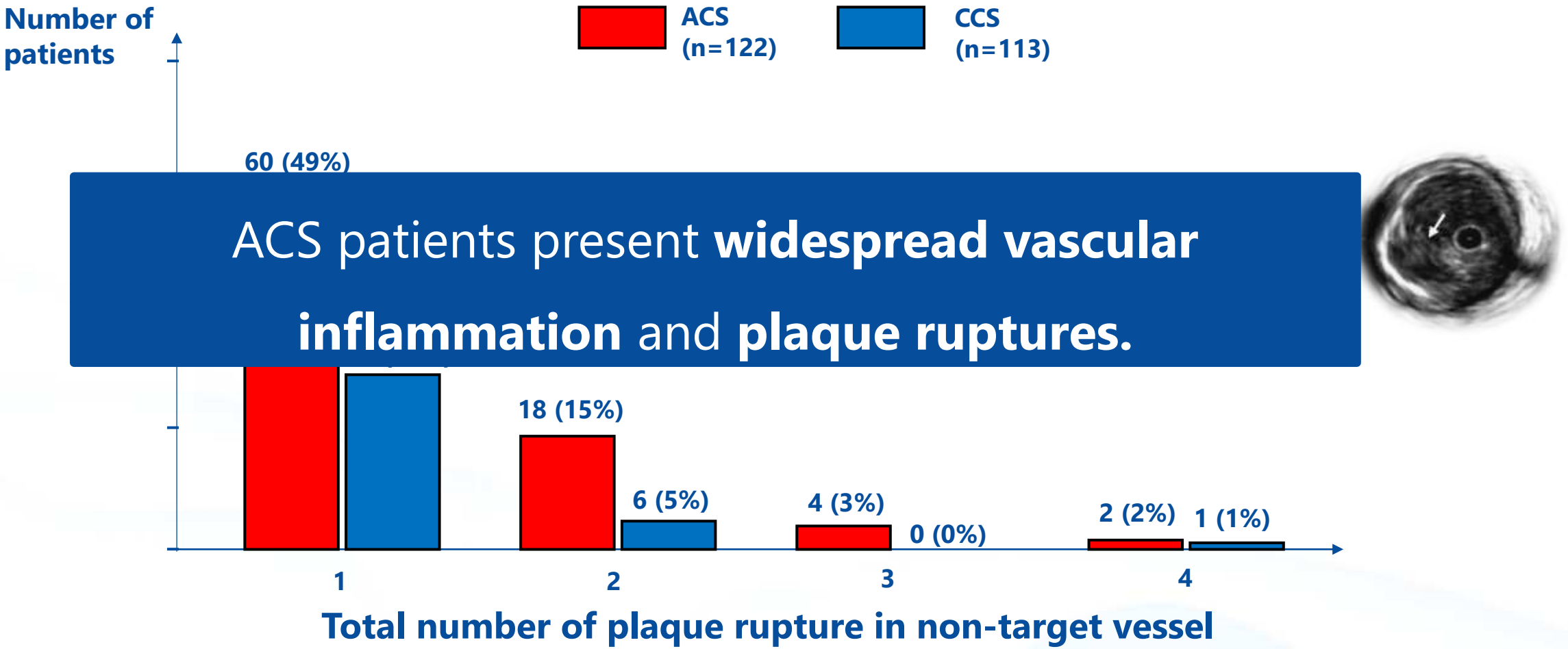
A specific pathophysiology

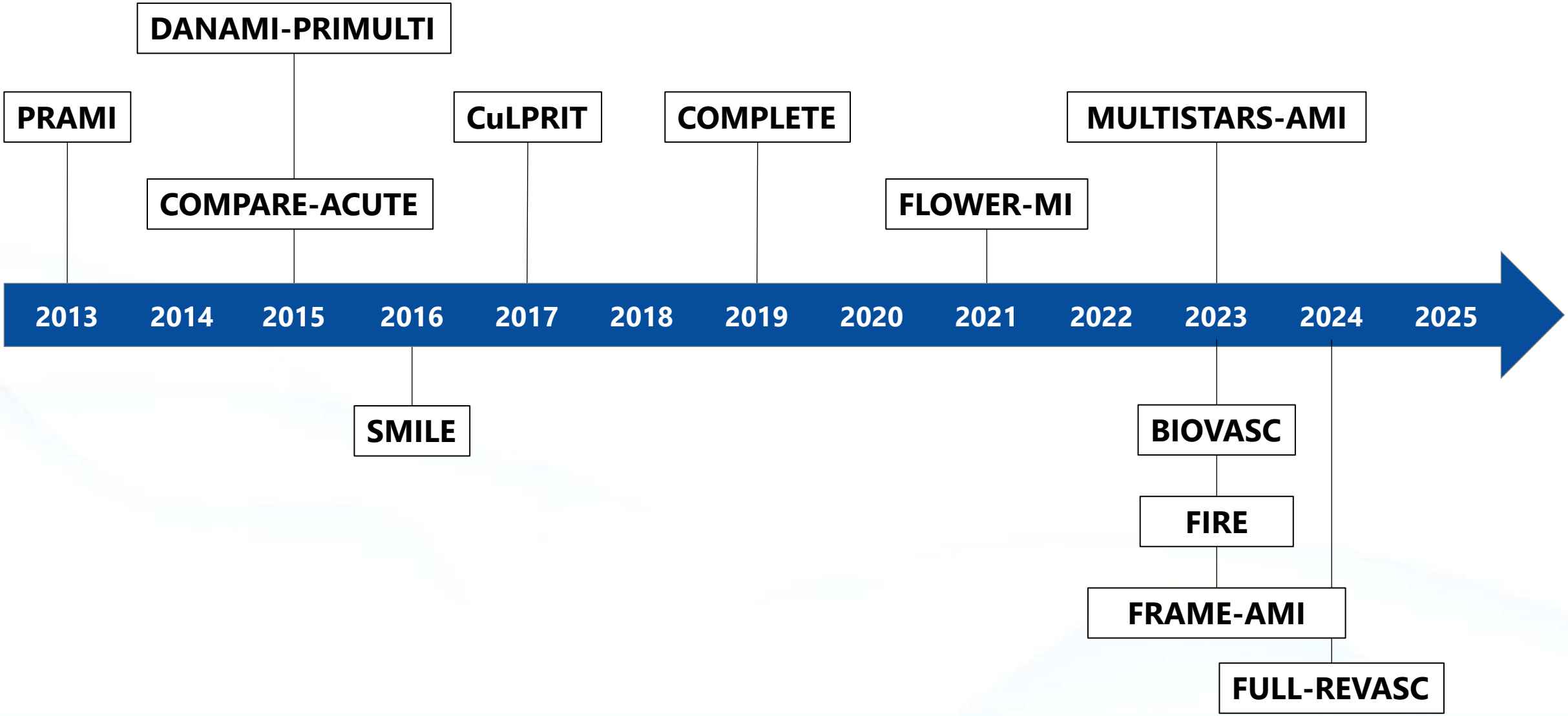


ACS patients present **widespread vascular inflammation** and **plaque ruptures.**

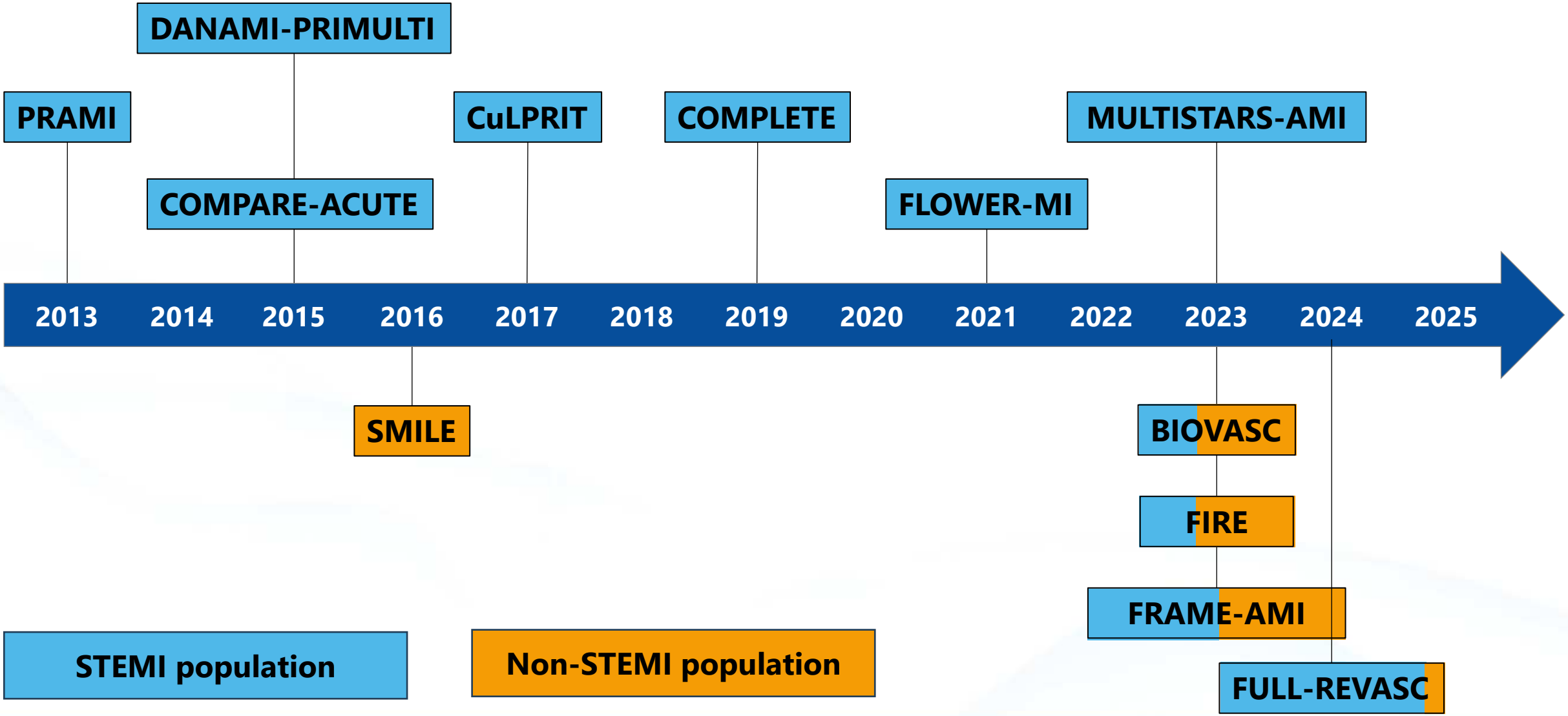
Adapted from Circulation 2004, Hong MK et al.

The data

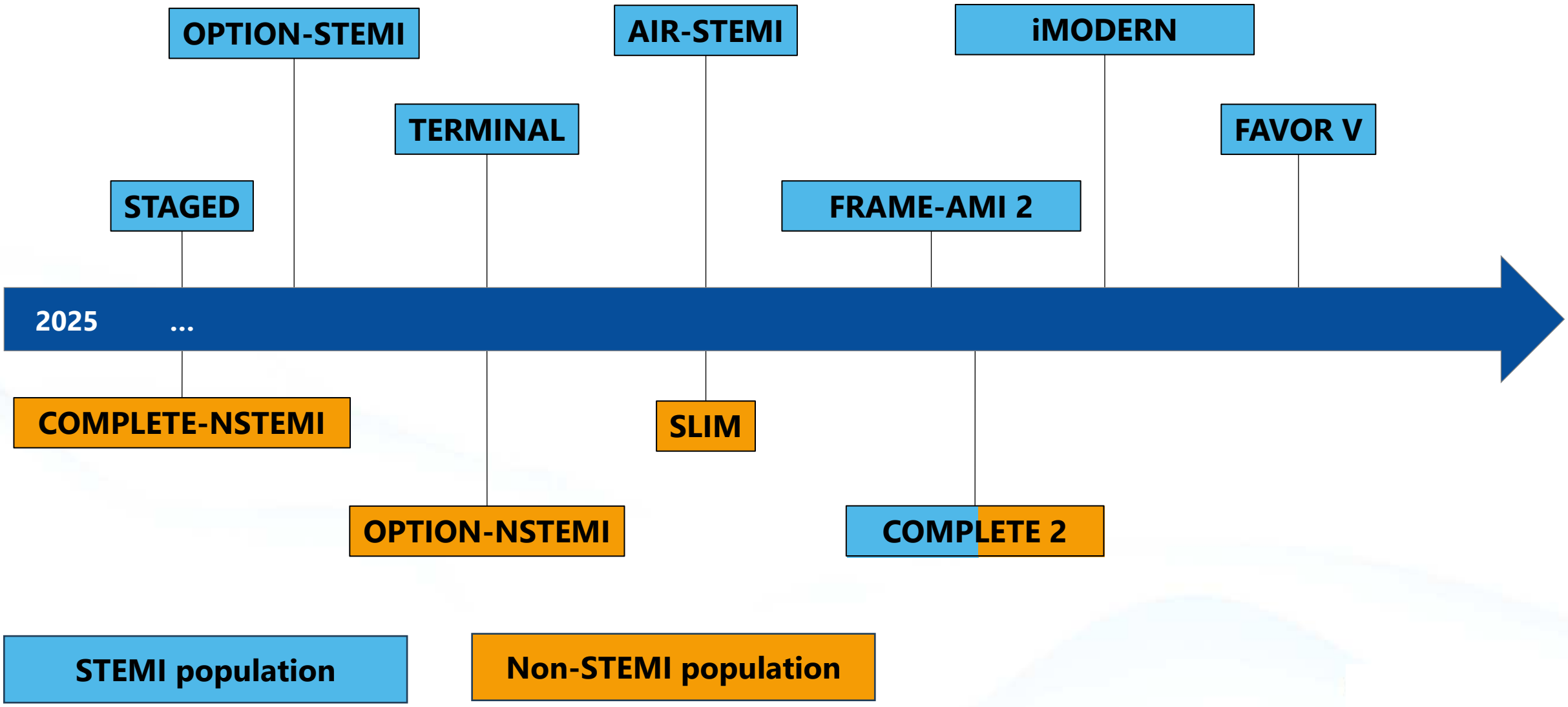
NCL management: a decade of clinical research…



NCL management: a decade of clinical research…

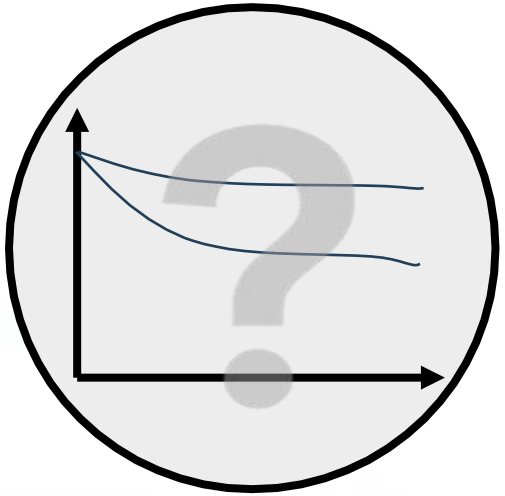


… and more to come

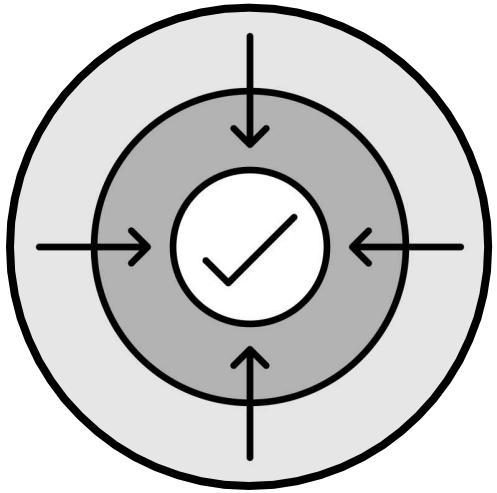


What is the point?

NCL management



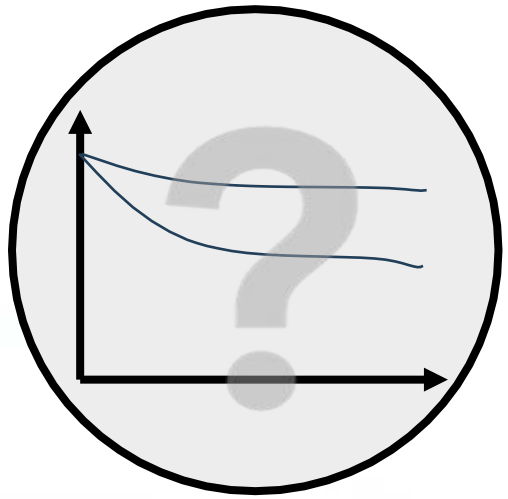
Is complete revascularisation beneficial?



Which Lesions Should Be Revascularized?

When Should Revascularization Completion Be Performed?

NCL management



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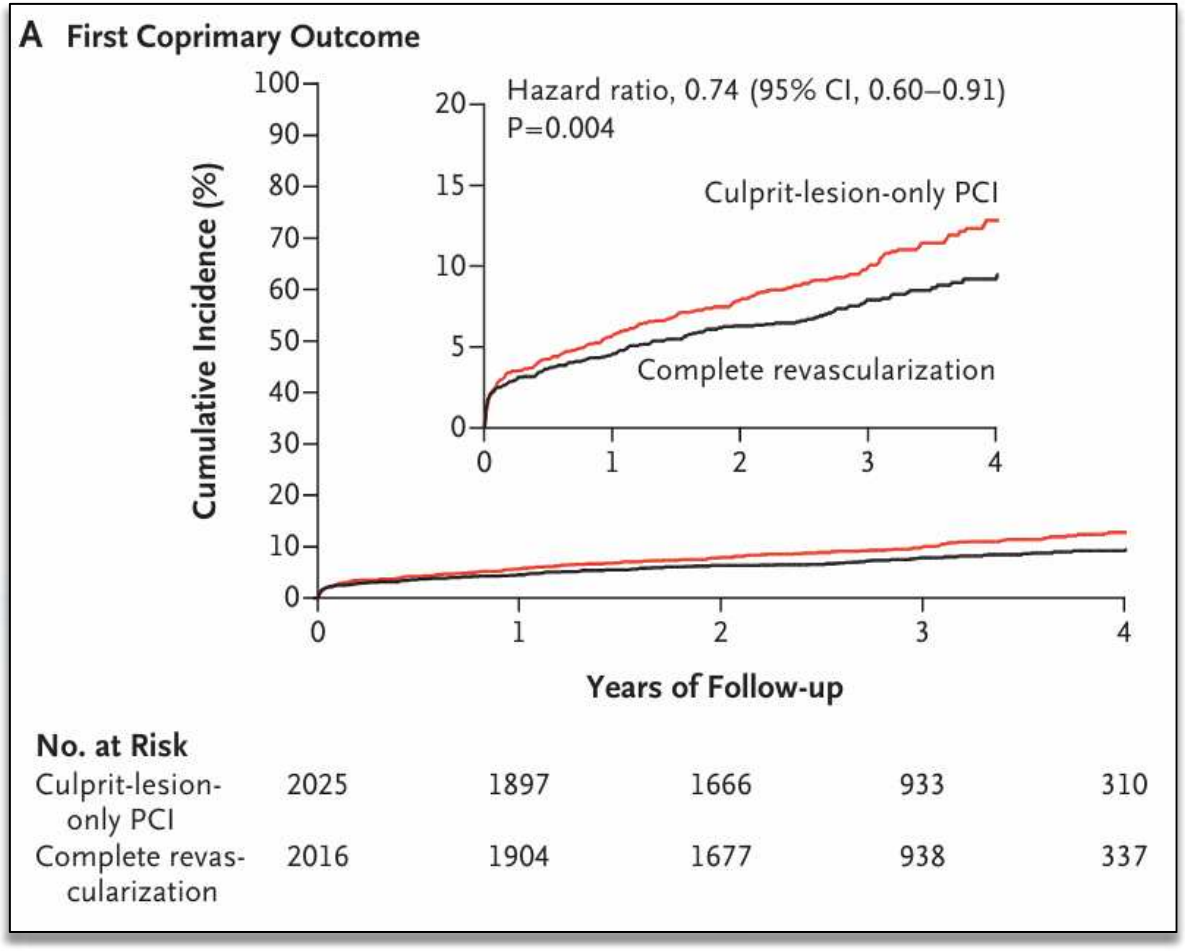
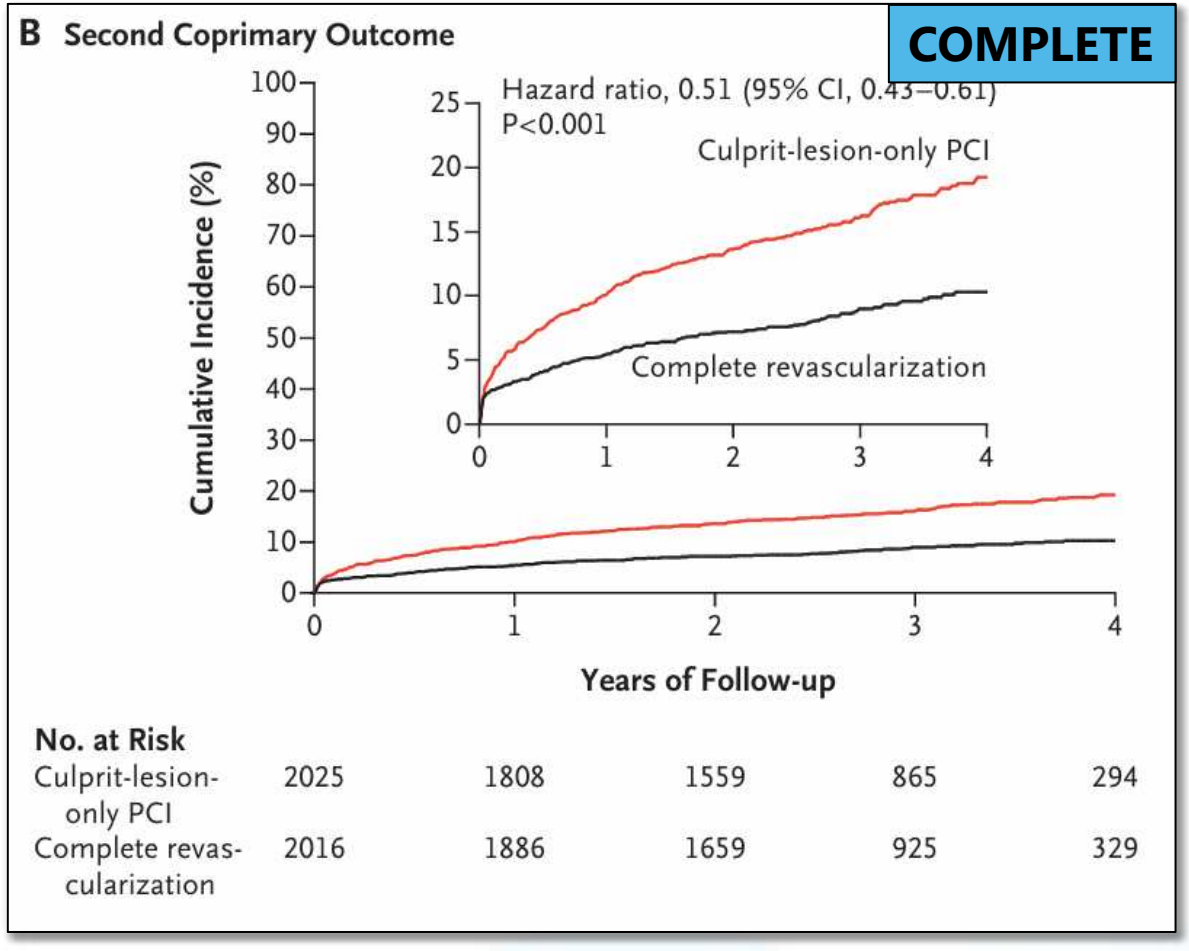


Cardiovascular death or MI

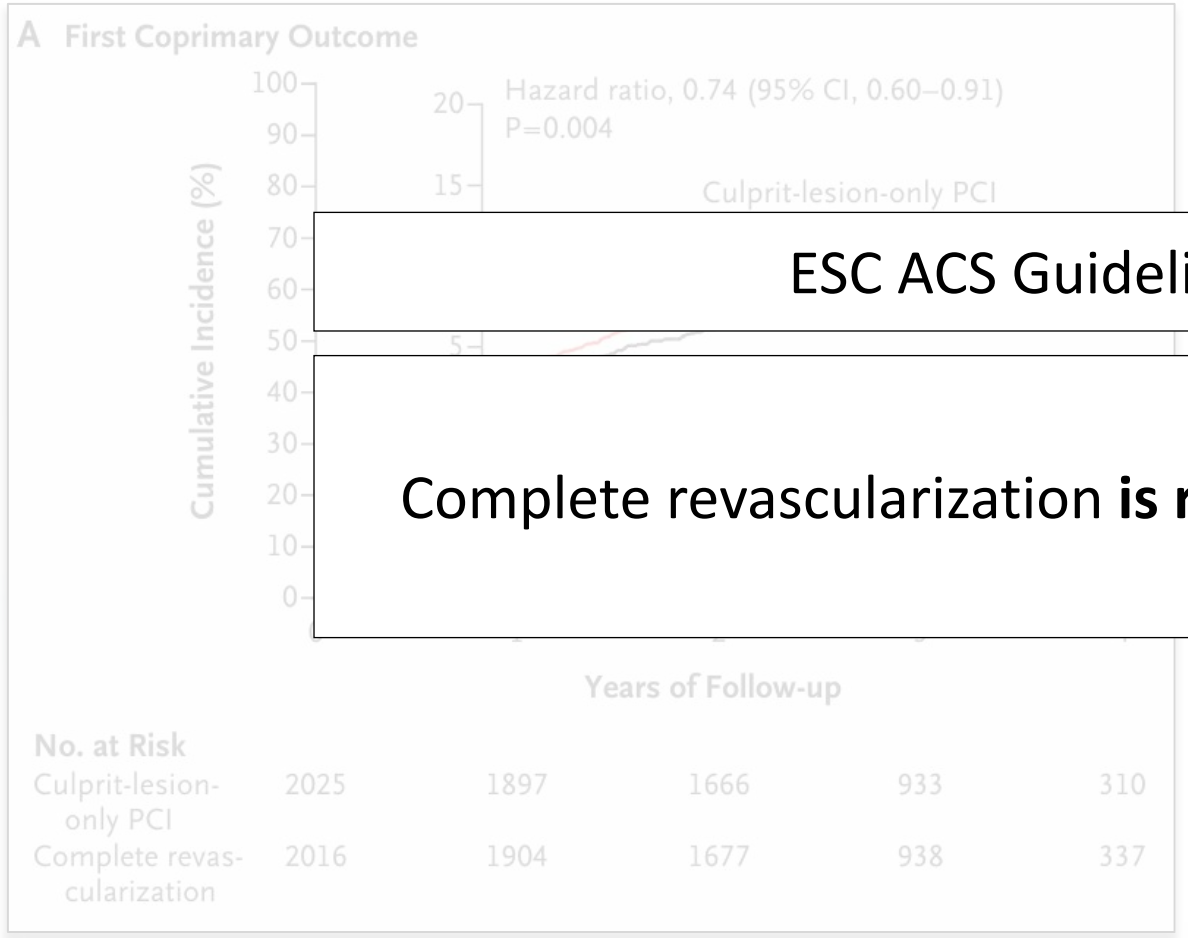


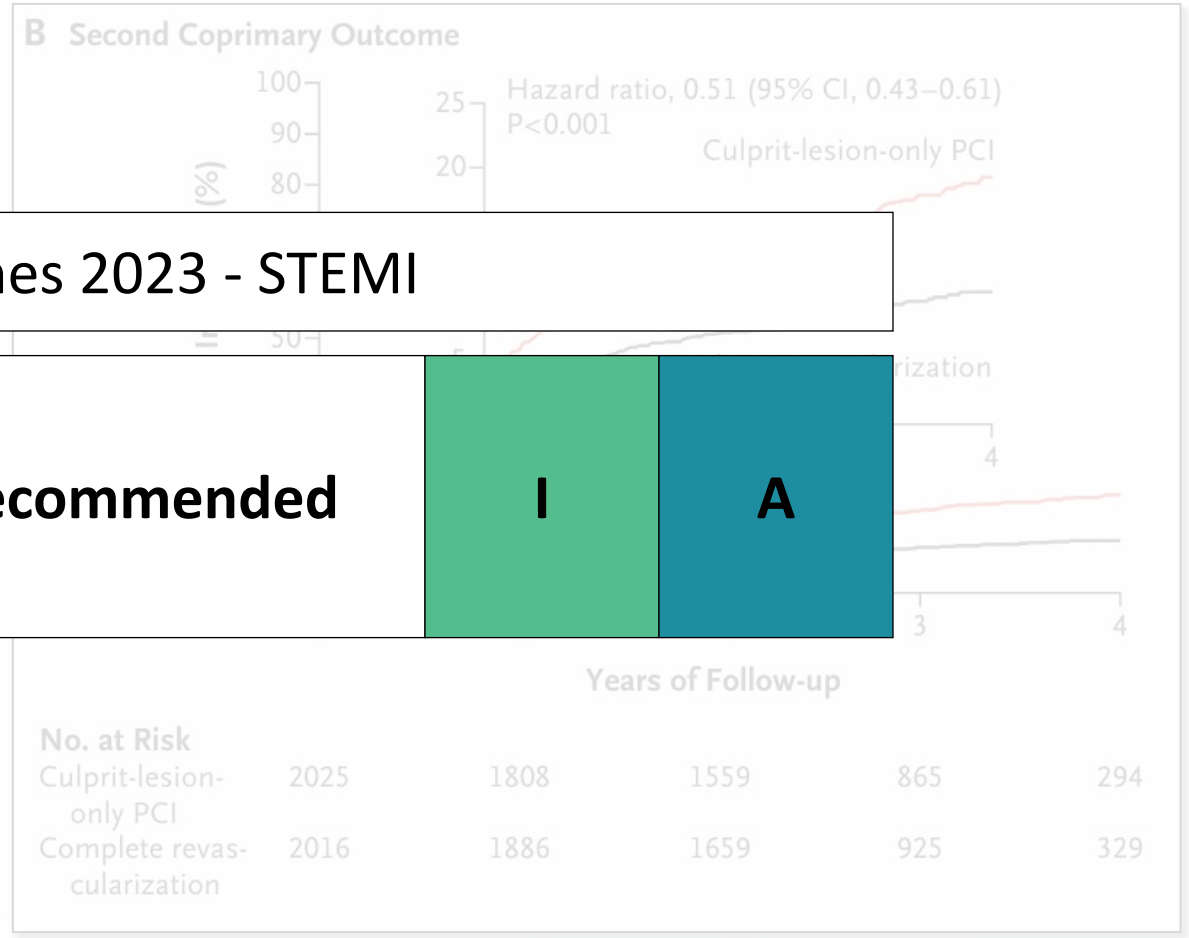
Cardiovascular death, MI or IDR

NEJM 2019, Metha SR et al.

Is complete revascularisation beneficial?

STEMI population





ESC ACS Guidelines 2023 - STEMI

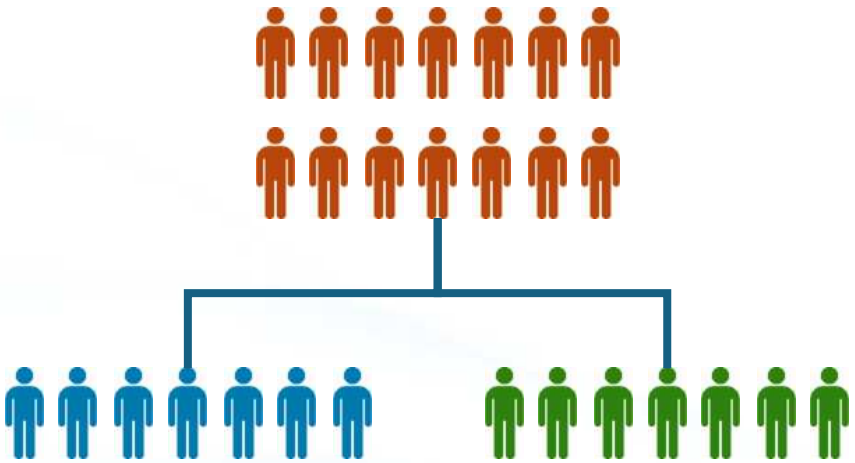
Complete revascularization **is recommended**	**I**	**A**

NEJM 2019, Metha SR et al.

Is complete revascularisation beneficial?

Non-STEMI population

Randomized control trial



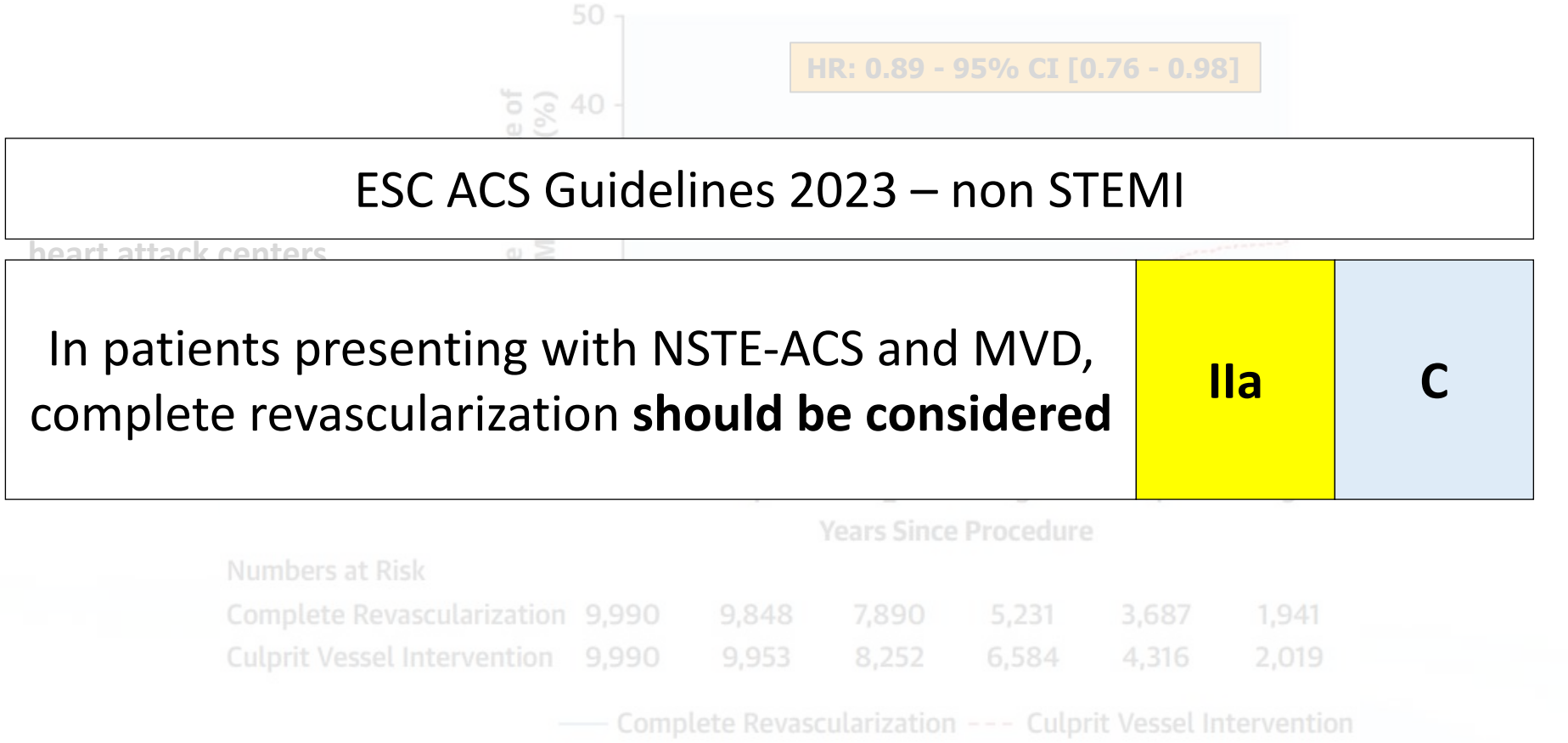
n=0

Registries

Is complete revascularisation beneficial?

Non-STEMI population

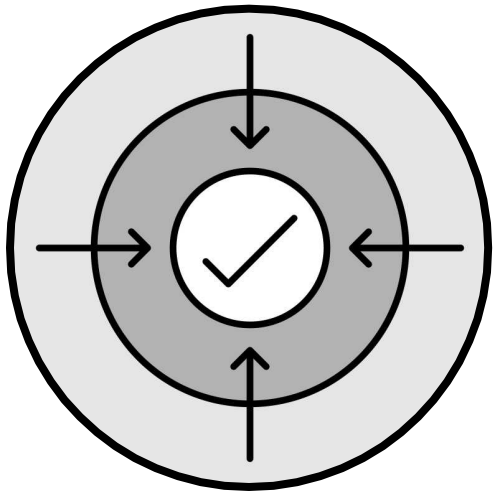
ESC ACS Guidelines 2023 – non STEMI		
In patients presenting with NSTE-ACS and MVD, complete revascularization **should be considered**	**IIa**	**C**



JACC 2018, Rathod et al.

NCL management

Is complete revascularisation beneficial?

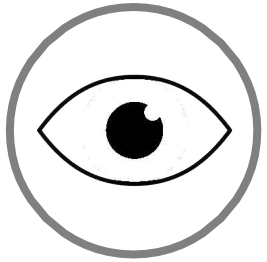


Which Lesions Should Be Revascularized?

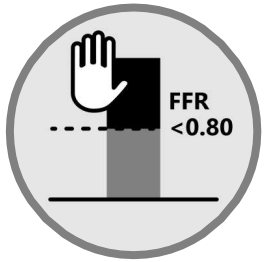
When Should Revascularization Completion Be Performed?

Which Lesions Should Be Revascularized?

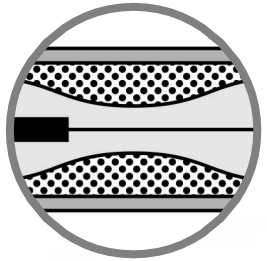
Lesion-level decision



Angiographic?



Physiology?

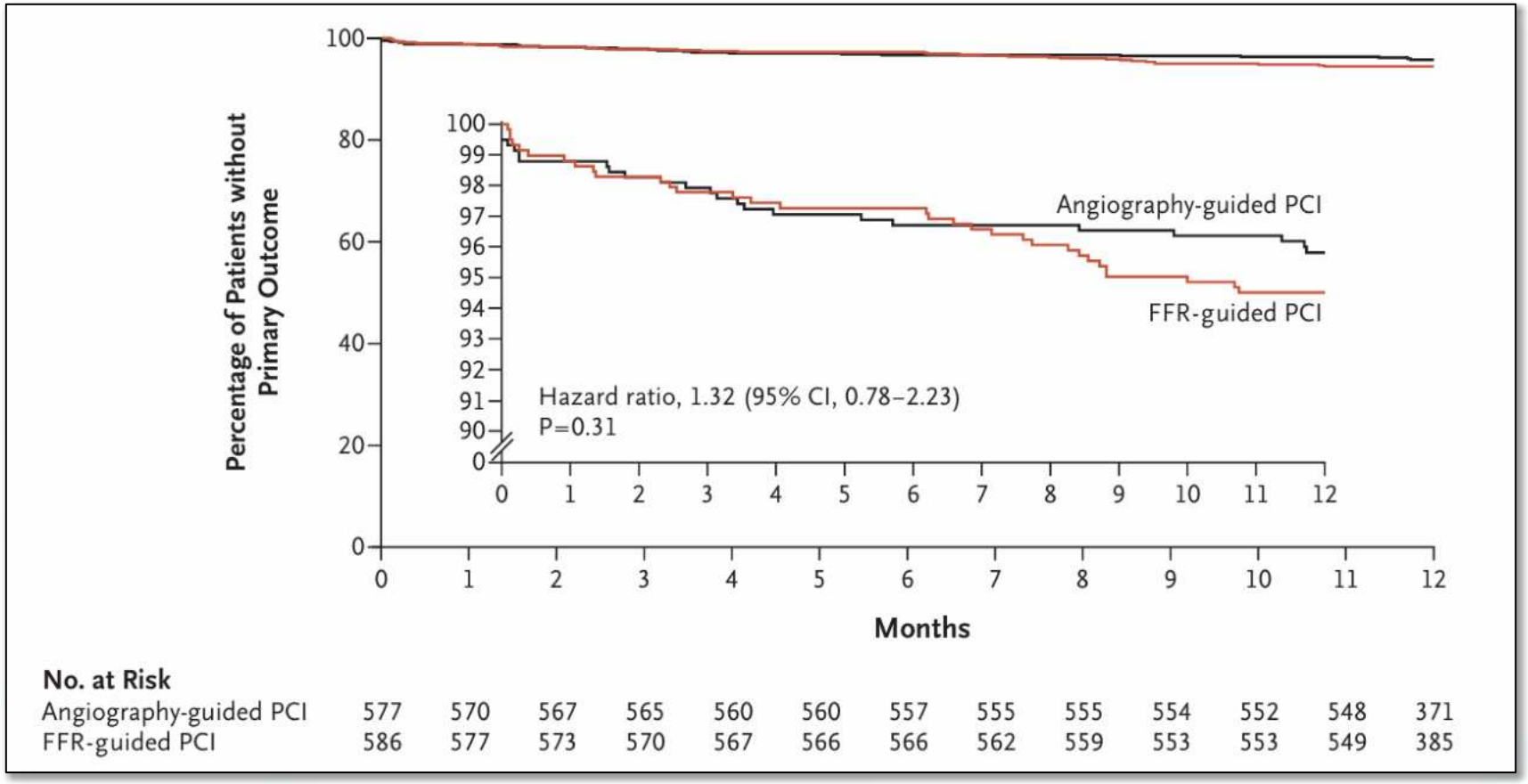


Intra-vascular Imaging?

Which Lesions Should Be Revascularized?

STEMI population

FLOWER-MI



Death from any cause, nonfatal myocardial infarction, or urgent revascularization

NEJM 2019, Puymirat E et al.

Which Lesions Should Be Revascularized?

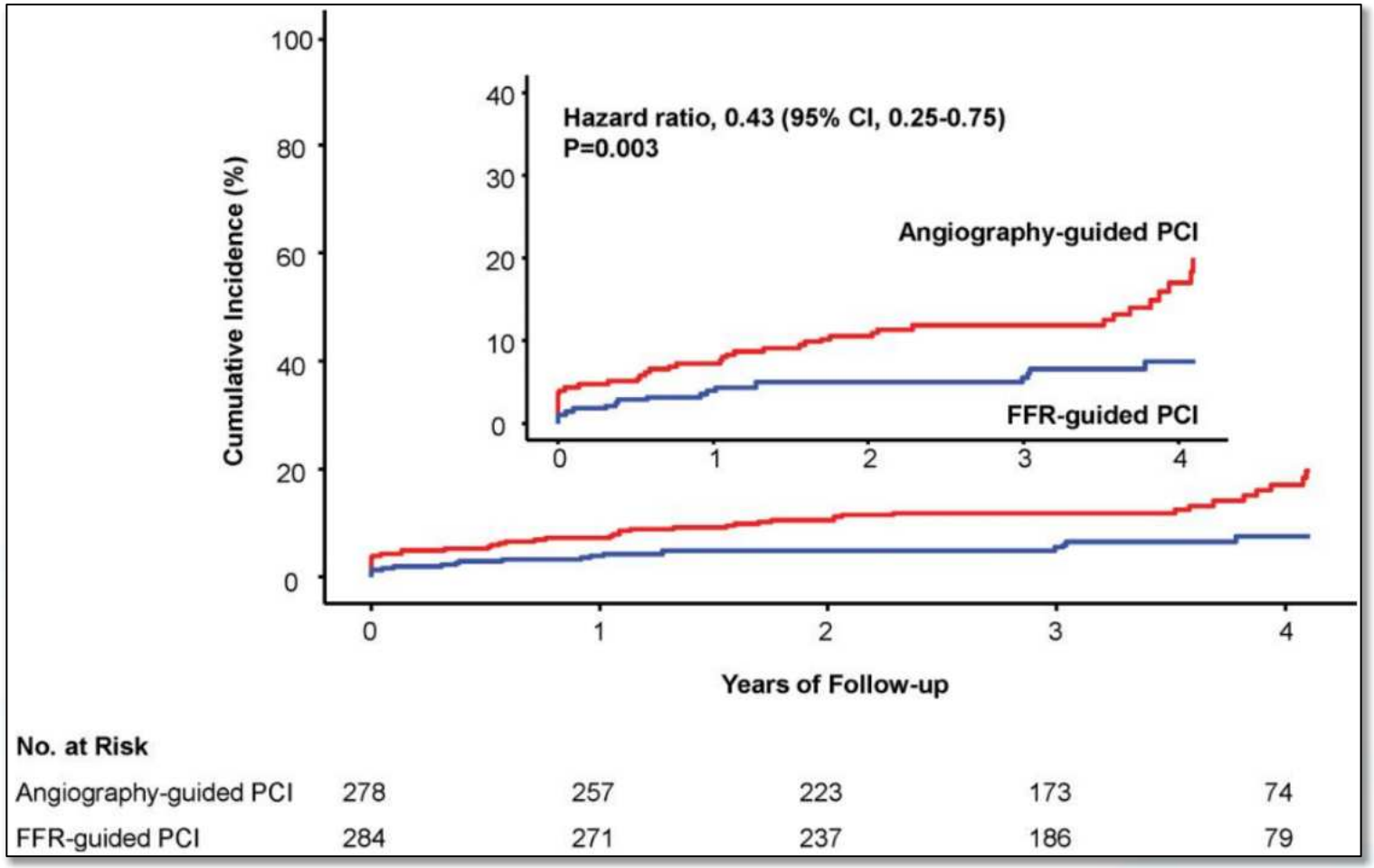
STEMI population

ESC ACS Guidelines 2023 - STEMI		
It is recommended that PCI of the non-IRA is based on **angiographic** severity	**I**	**A**
Invasive epicardial functional assessment of non-culprit segments of the IRA is **not recommended during the index procedure**.	**III**	**C**

Which Lesions Should Be Revascularized?

Non-STEMI population

FRAME-AMI



Death, myocardial infarction, and repeat revascularization

EHJ 2023, Lee J.M.. et al.

Which Lesions Should Be Revascularized?

Non-STEMI population

ESC ACS Guidelines 2023 – non-STEMI		
Functional invasive evaluation of non-IRA severity during the index procedure may be considered	**IIb**	**B**

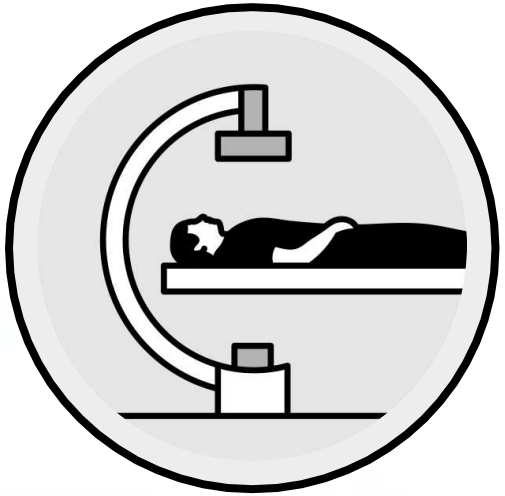
NCL management

Is complete revascularisation beneficial?

Which Patients / Lesions Should Be Revascularized?

When Should Revascularization Completion Be Performed?

When Should Revascularization Completion Be Performed?

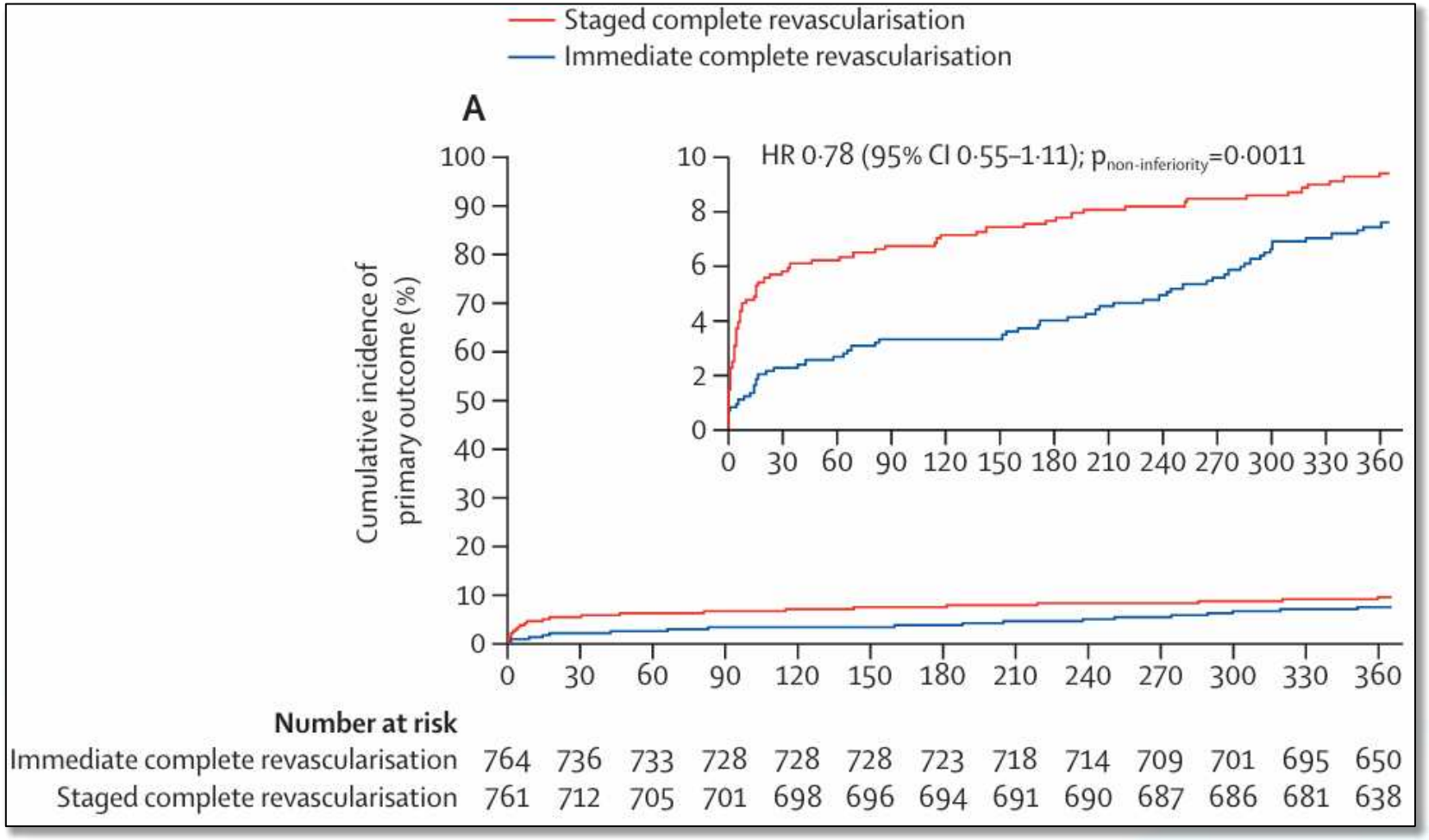


Index Procedure

Stagged Within The Index Hospitalization

Stagged During A Subsequent Hospitalization

When Should Revascularization Completion Be Performed?

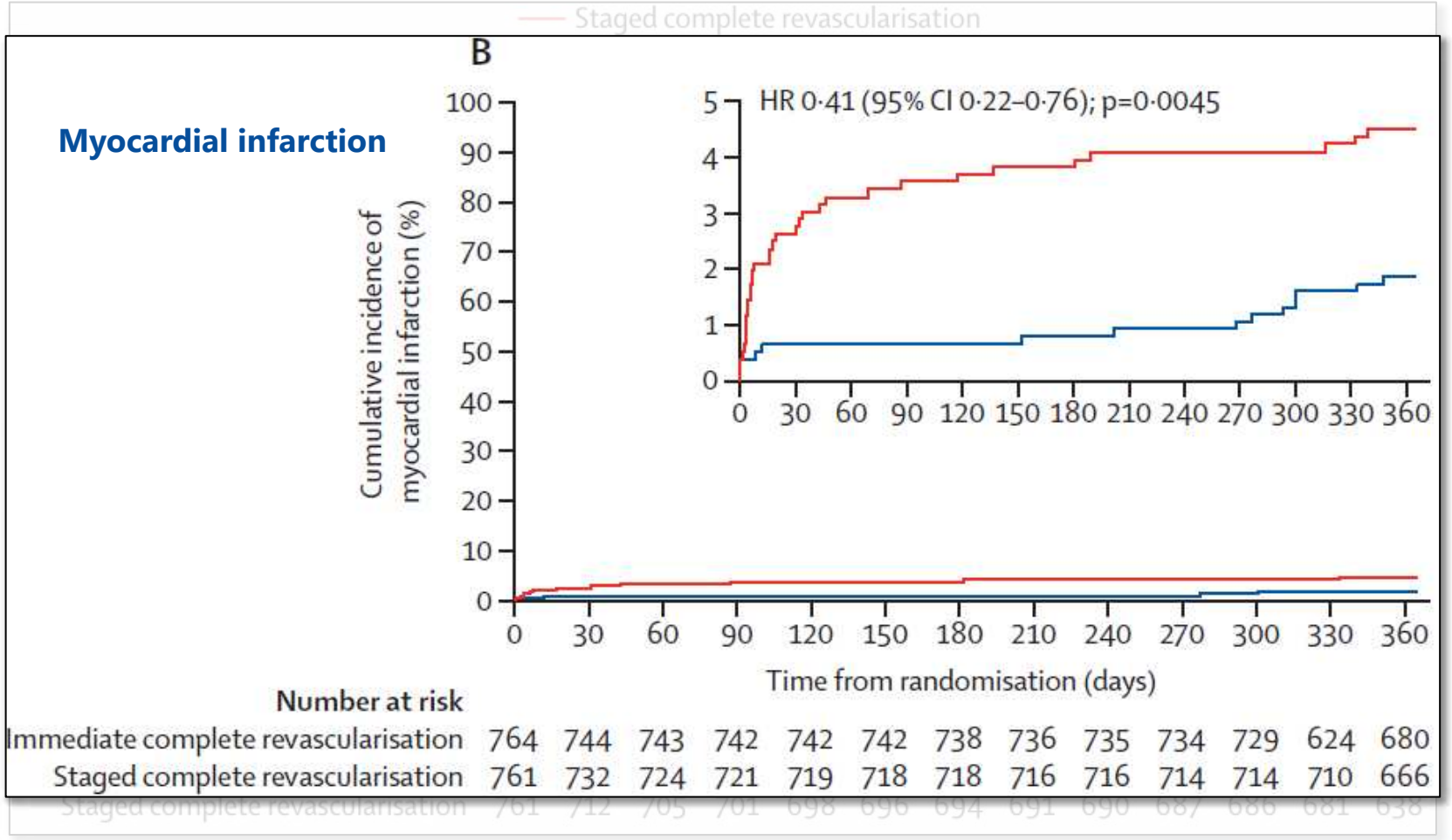


BIOVASC

All-cause death, myocardial infarction, unplanned ischemia-driven revascularization, or cerebrovascular events

Lancet 2023, Diletti R.. et al.

When Should Revascularization Completion Be Performed?



BIOVASC

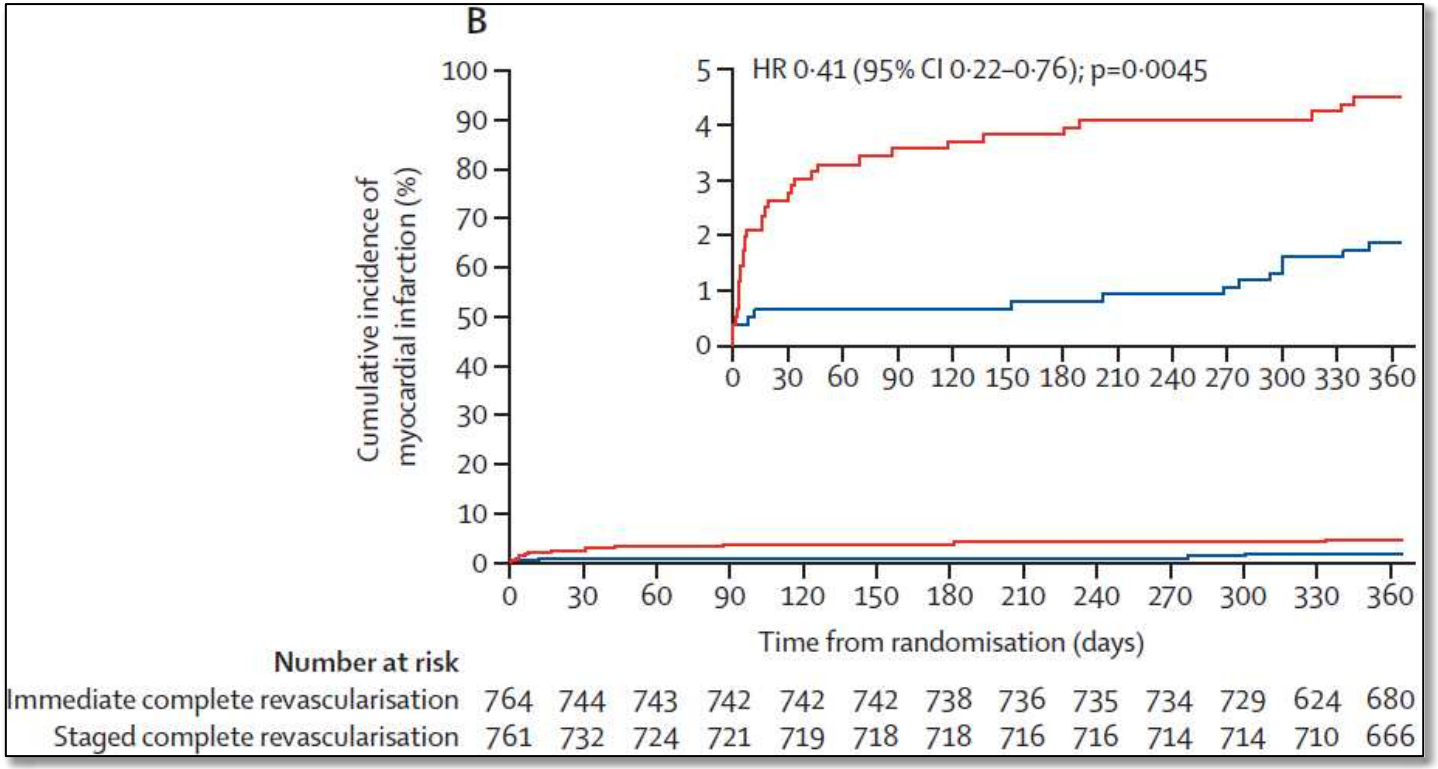
Lancet 2023, Diletti R.. et al.

When Should Revascularization Completion Be Performed?

BIOVASC

The excess of myocardial infarctions in the staged strategy was mainly driven by early events that predominantly occurred in the time window between the index procedure and the planned date for the staged intervention.

Those events were not procedure-related events but spontaneous myocardial infarctions.



Myocardial infarction

A post-hoc exploratory analysis excluding procedure-related type 4a myocardial infarctions corroborated our main findings.

Lancet 2023, Diletti R.. et al.

When Should Revascularization Completion Be Performed?

STEMI population

ESC ACS Guidelines 2023 - STEMI		
Complete revascularization is recommended either **during the index PCI procedure or within 45 days**	**I**	**A**

When Should Revascularization Completion Be Performed?

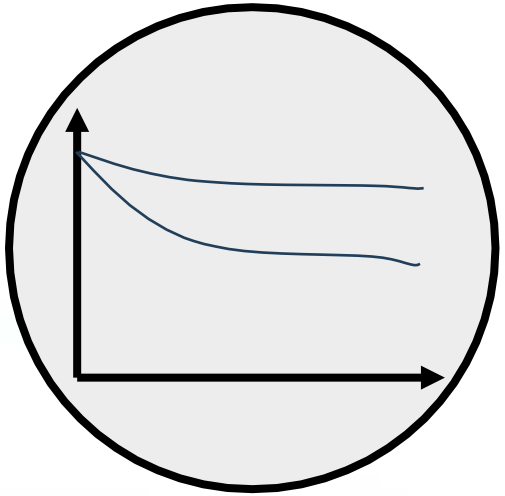
Non-STEMI population

ESC ACS Guidelines 2023 - STEMI		
In patients presenting with NSTE-ACS and MVD, complete revascularization **should be considered preferably during the index procedure.**	**IIa**	**C**

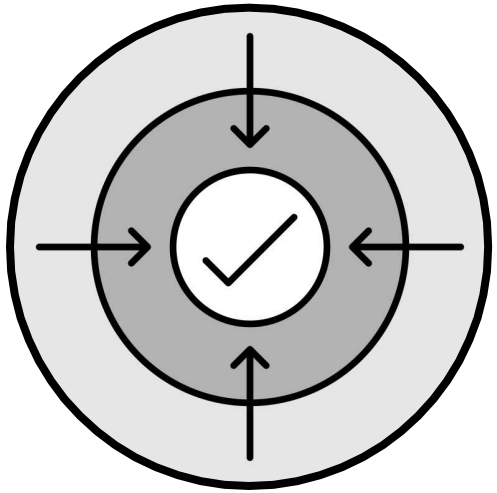
Conclusion

Conclusion

STEMI population



Complete revascularization is beneficial



Angiographic guidance

During the index procedure or within 45 days

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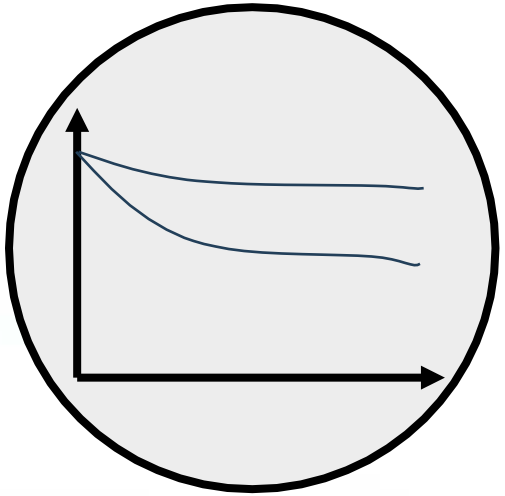
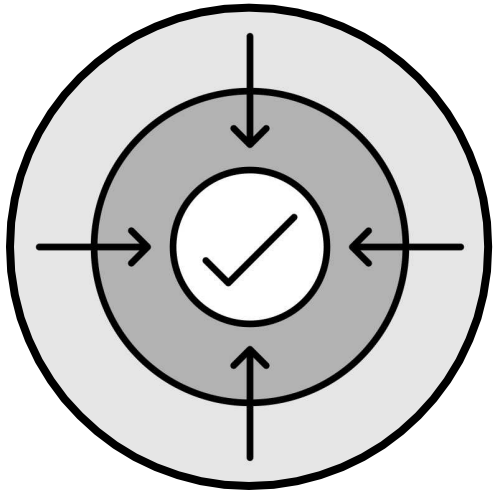
Conclusion

Non-STEMI population



Complete revascularization is likely to be beneficial



Angiographic or FFR guidance

Preferentially during the index procedure

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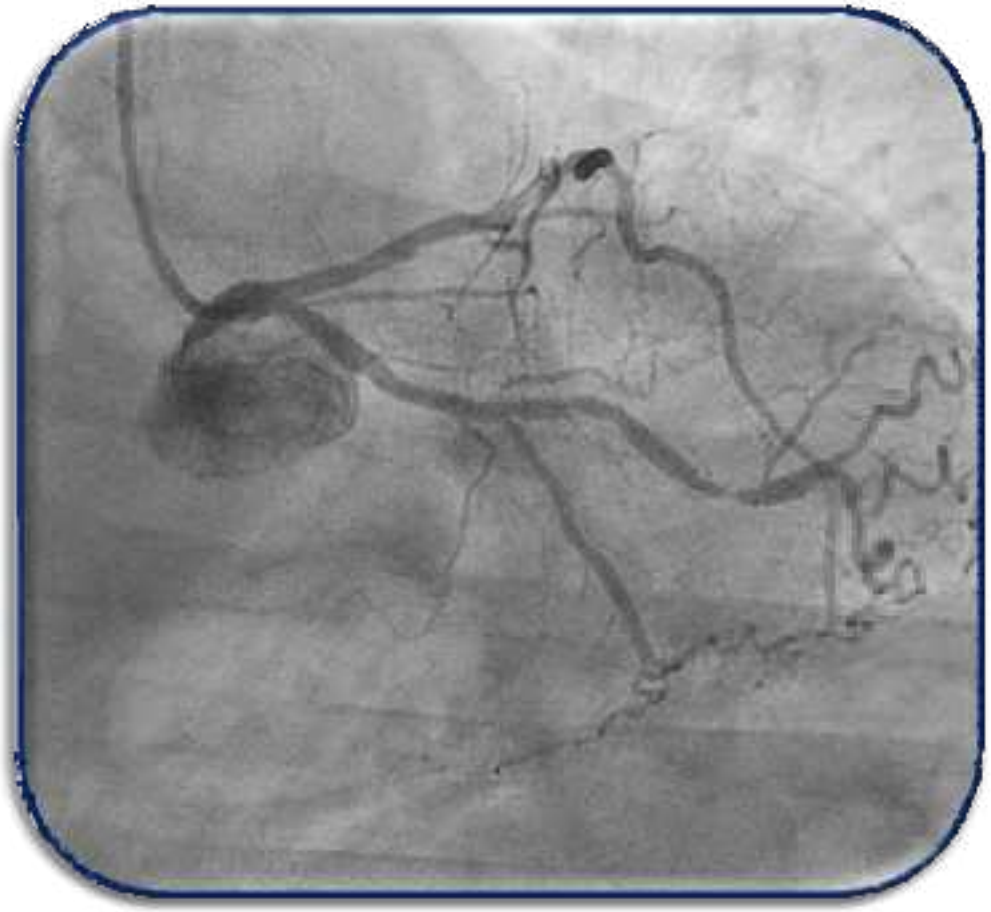
Stratégie

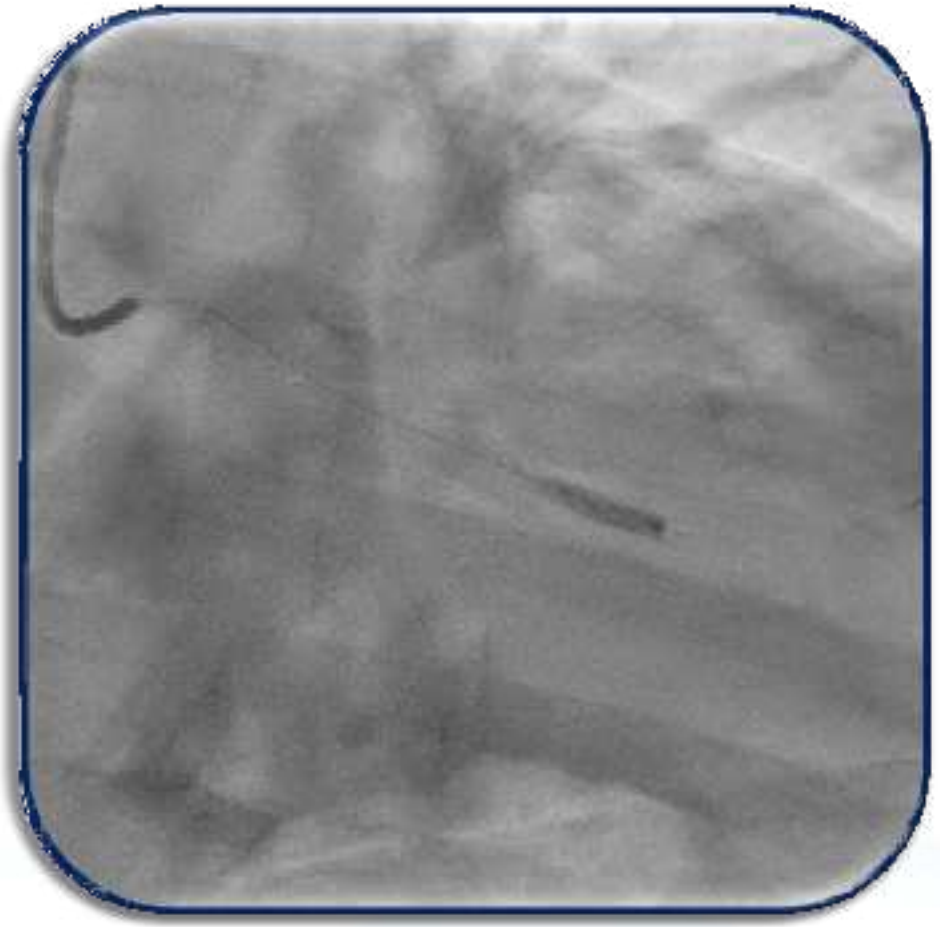
Angioplastie de la lésion coupable Mg

Dose charge Prasugrel 60 mg pré PCI

Prise en charge secondaire lésions associées

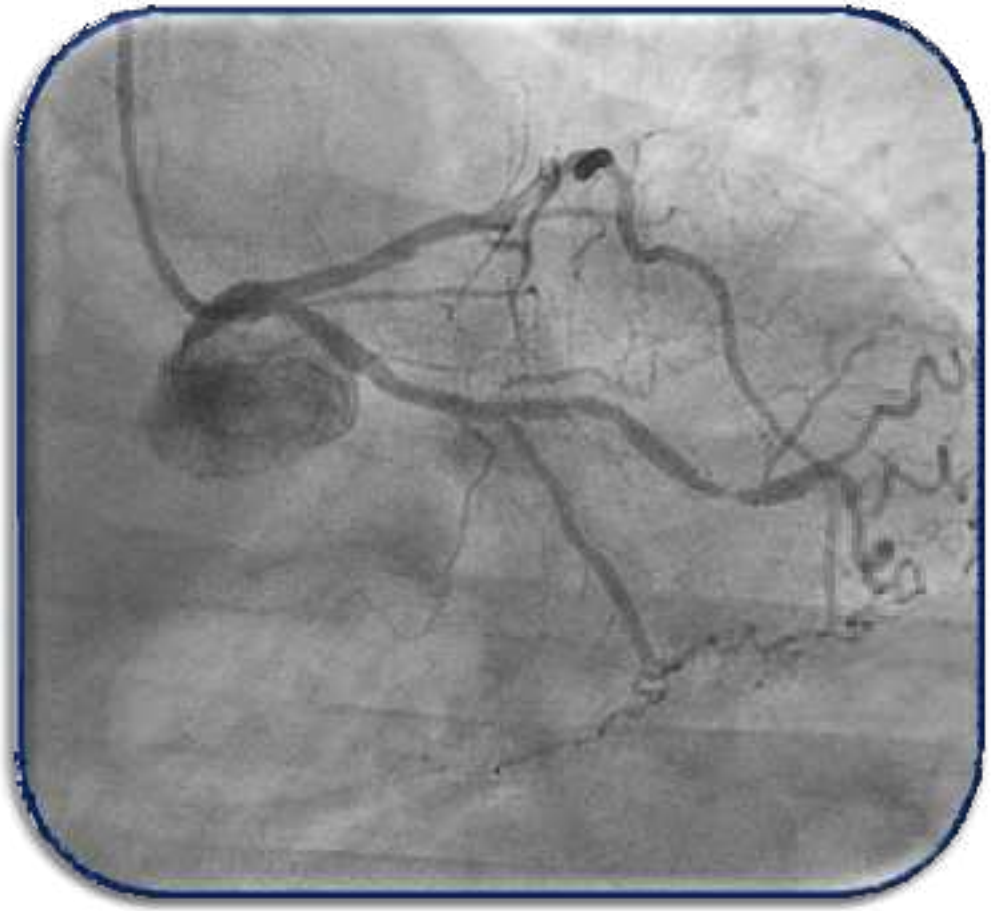
Angioplastie Mg





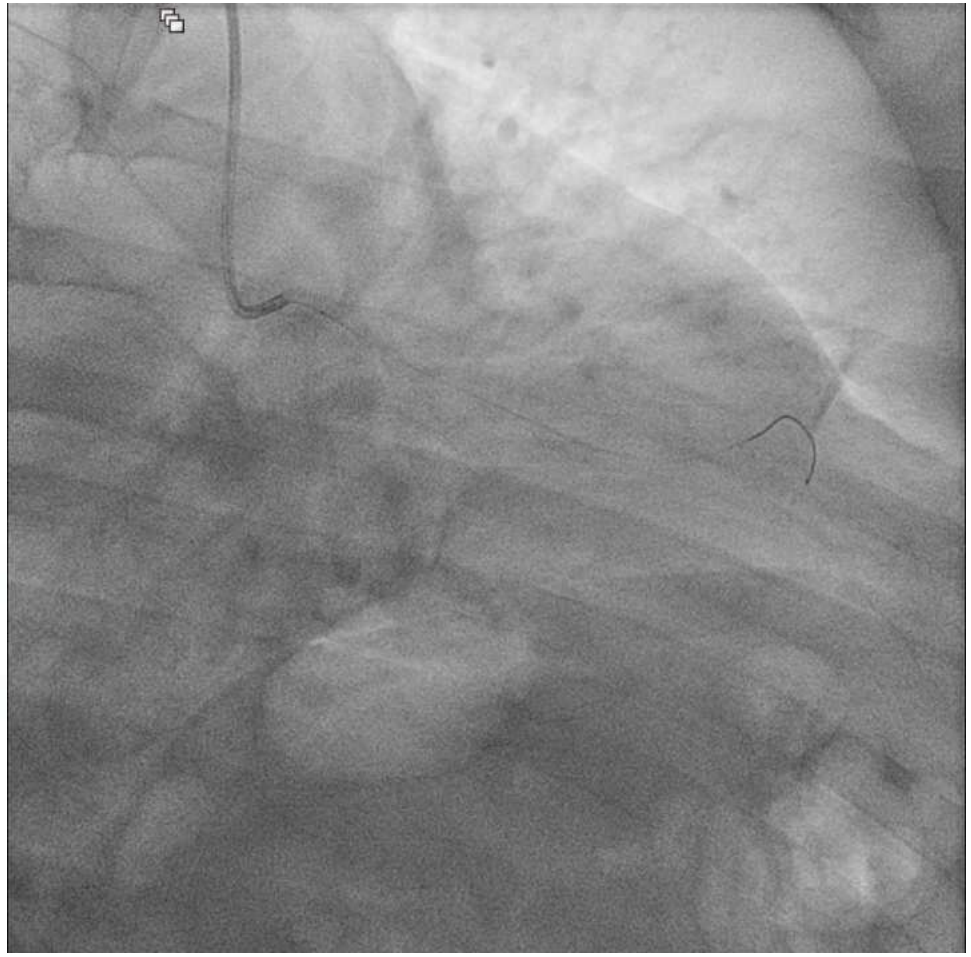
EBU 3.5 / BMW / Ballon 3.0-12

Angioplastie Mg



Stent actif 3.5-16, 14 ATM

Angioplastie Mg: Résultat



Notre plan de vol

Lésions « non coupables »: Stratégie

Timing: staged à 15 jours

Angioplastie des lésions associées

PCI guidée par physiologie

PCI guidée et optimisée par imagerie

Notre plan de vol

Lésions « non coupables »: Stratégie

Timing: staged à 15 jours

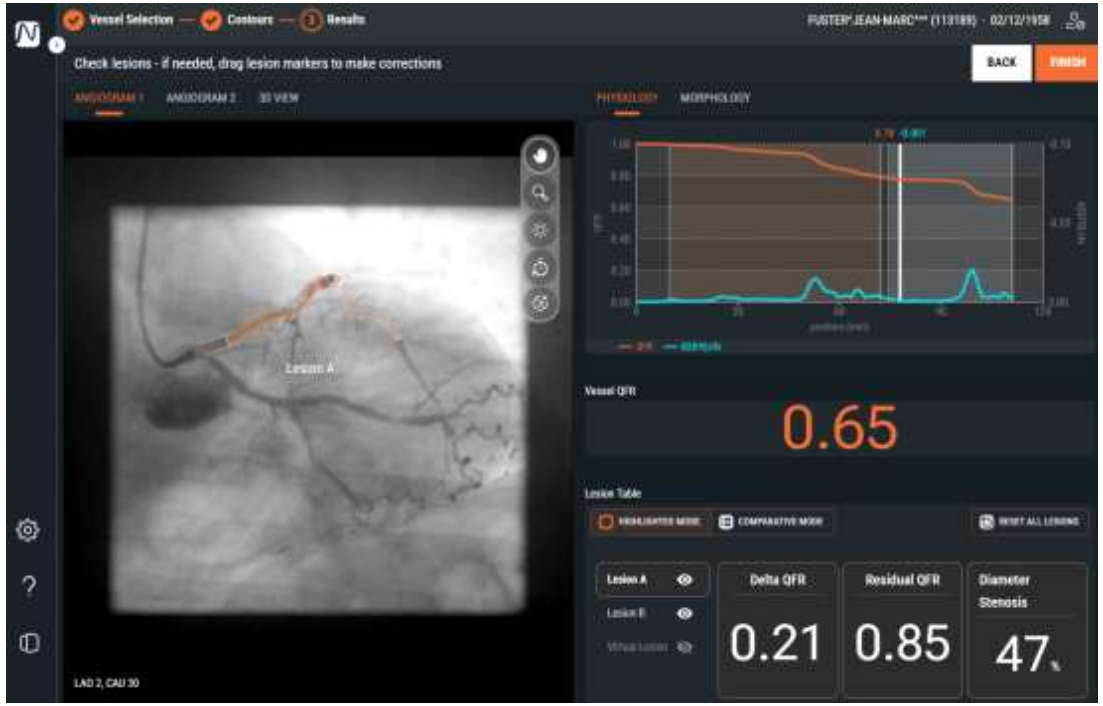
Angioplastie des lésions associées

PCI guidée par physiologie: réalisation «off line» de QFR

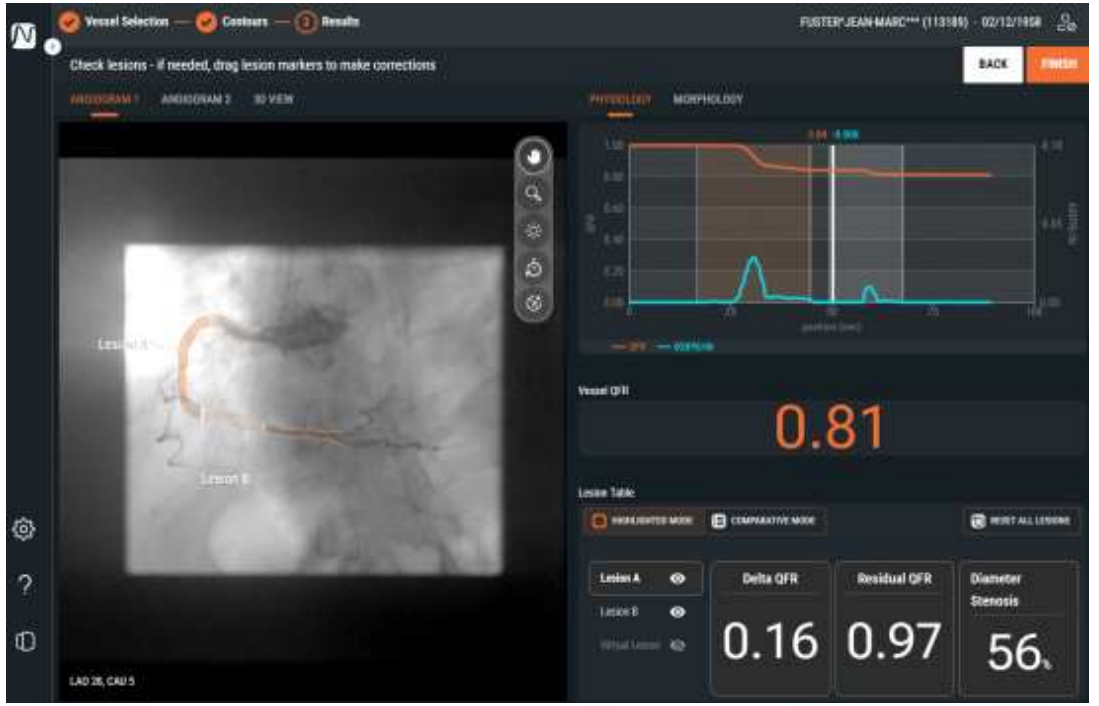
PCI guidée et optimisée par imagerie

Lésions « non coupables »: Stratégie

PCI guidée par physiologie: réalisation «off line» de QFR



IVA significative



CD « borderline » -> FFR

Lésions « non coupables »: Stratégie

Quel **timing** de revascularisation ?

Comment guider la revascularisation ?

Comment optimiser la revascularisation ?

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Lésions « non coupables »: Stratégie

Voie radiale 6F

CD: Evaluation CD2 par FFR avec adenosine IC +/- PCI

IVA: Évaluation par FFR
Angioplastie
Evaluation par **IVUS pour PCI planning** et analyse calcium
Si calcium sévère -> Rotablator
Angioplastie avec contrôle **IVUS final**

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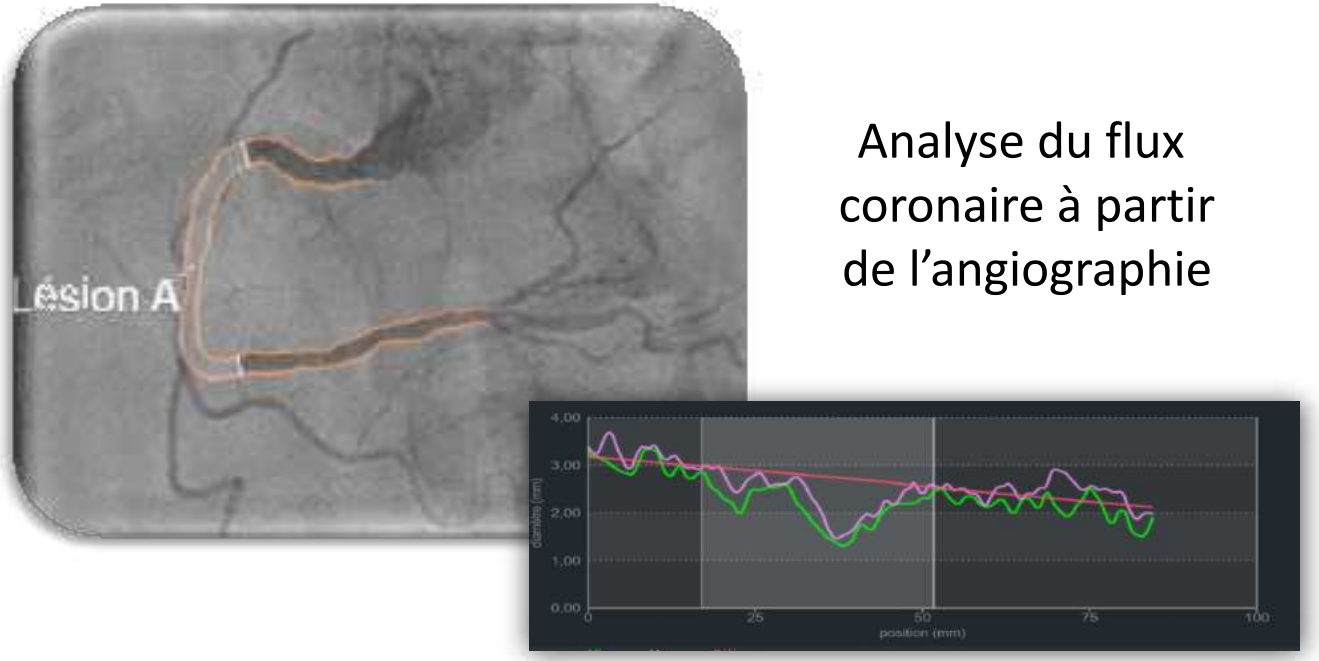
Evaluation hémodynamique sans guide

Quantitative Flow Ratio

- **Estimation de la FFR <u>sans</u>** utilisation de guide ou d'agent pharmacologique
- Evaluation **moins invasive**
- Analyse **rapide**
- Absence d'adénosine
- Coût ?



Analyse du flux coronaire à partir de l'angiographie

QFR résiduelle	0,99
Diamètre de Sténose (%)	52
Diamètre min. de la lumière (mm)	1,3
Diamètre de référence (mm)	2,7
Longueur de la lésion (mm)	34,6

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Quelles données pour la QFR ?

Concordance à la FFR	FAVOR I (2016) FAVOR II (2018) DECISION QFR (2024) Nombreuses cohortes	**75 à 94%**
QFR et PCI : prédicteur de bon résultat clinique	HAWKEYE (2019)	**QFR > 0.89 en post PCI**
QFR et SCA : évaluation lésion non coupable vs FFR	FIRE sous étude (2024) Meta-analyse (2024)	**VPP : 88% - VPN : 91%**
QFR vs Angiographie	FAVOR III China (2020)	**Réduction MACE (3% à 2 ans)** **Décès + IDM + revasc**

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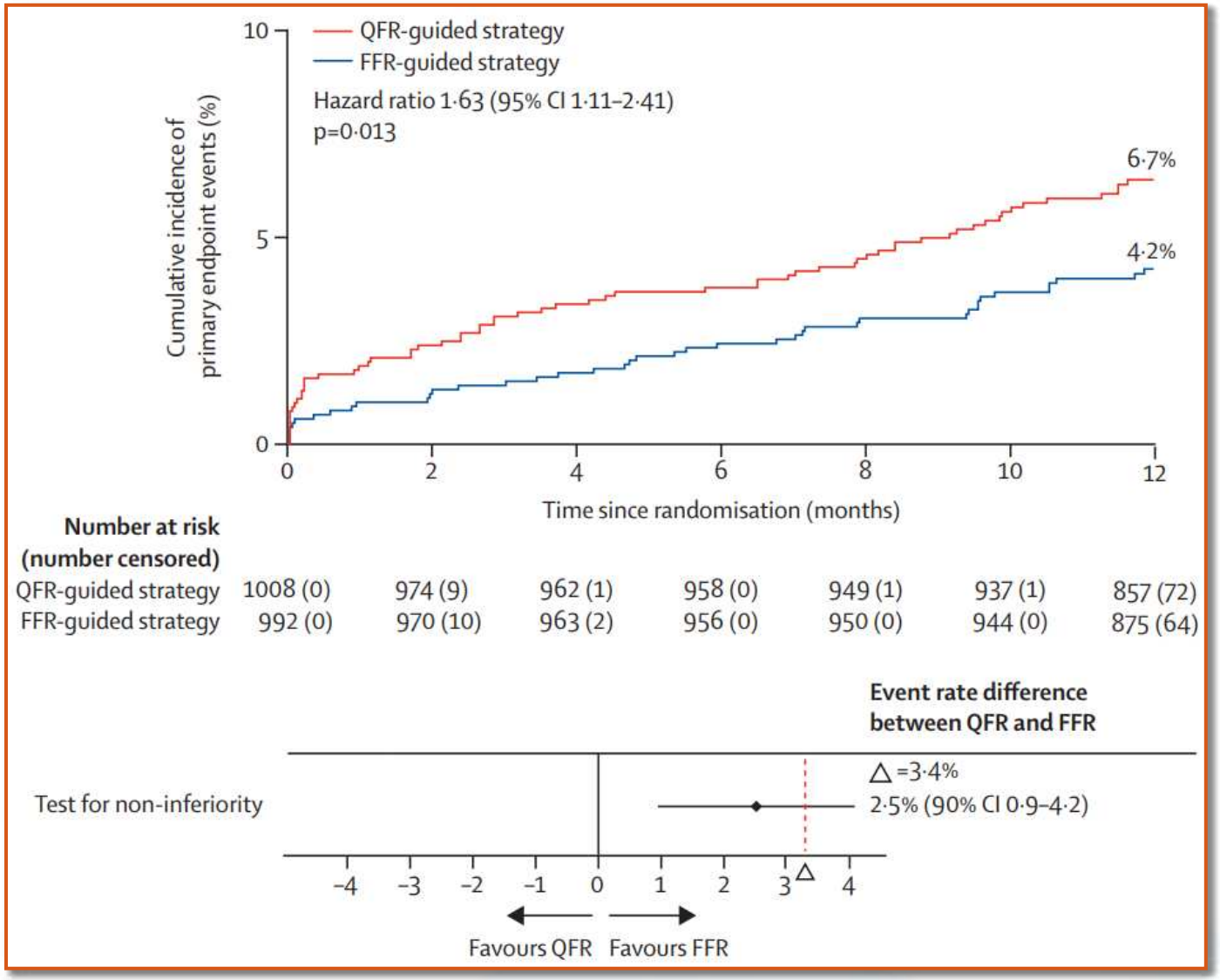
Et QFR vs FFR sur les événements ?

FAVOR III - Europe

Essai randomisé de **non infériorité**
N= 2000 patients stables
Lésions de **40 à 90%**
QFR moyenne 0.81 – FFR moyenne 0.84
Revascularisation : QFR 54% – FFR : 46%

QFR n'atteint pas la non-infériorité
Plus de « any MI » et TVMI

MAIS Essai en ouvert
Pas de corelab QFR (vraie vie)
Moins d'évènements qu'attendus
Réévaluation possible des QFR



Krogsgaard Andersen B et al. Lancet 2024

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Quelle place de la QFR en pratique ?

D'abord s'assurer d'une bonne qualité d'images !

Sonde **sélective**

Peu/pas de **superposition**

Zones saines visibles

Angulation suffisante entre 2 incidences

Pas de **calcification** etendue

15 images/sec

Reprise très limitée du contouring (bifurcations)

Et pour quelles indications ?

(dans l'attente des données à venir…)

Lésion **simples**

Lésion **non coupables d'un SCA**

Bilan de **Rao**

Cas rétrospectifs

Et surtout quand je n'ai aucun doute !

FFR à maintenir pour la zone grise ou en cas de qualité d'images imparfaites

HIGHTECH

HIGH TECH

MARSEILLE


30 46

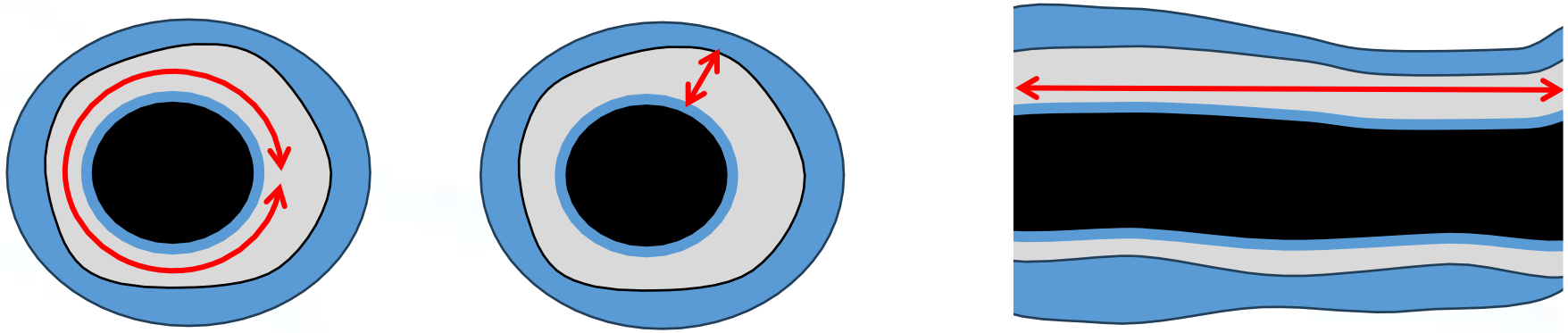
HIGH TECH

MARSEILLE

IVUS baseline = temps essentiel

- Sous-estimation angiographique des calcifications
- Validation d'une stratégie de préparation

Ca ++ > 180° d'arc / > 0.5mm épaisseur / > 5mm longueur



> 180° 0.5 mm 5 mm

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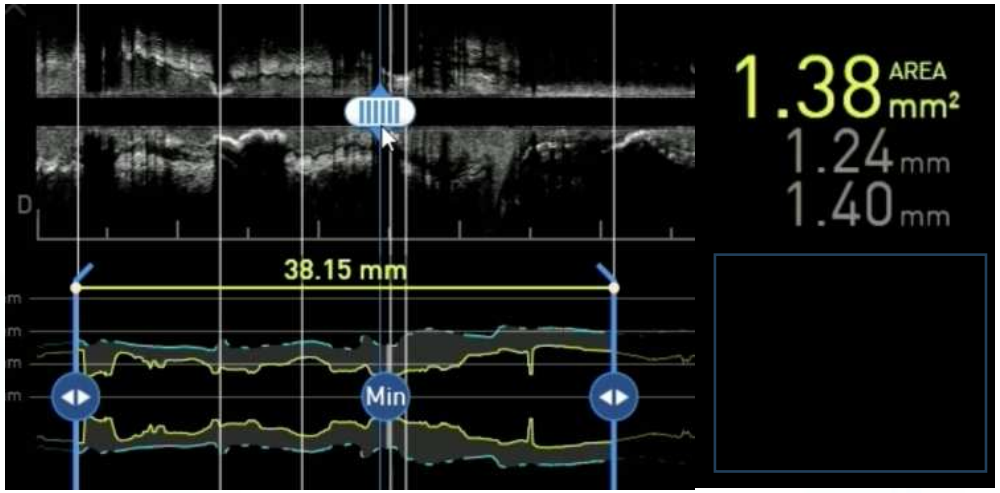
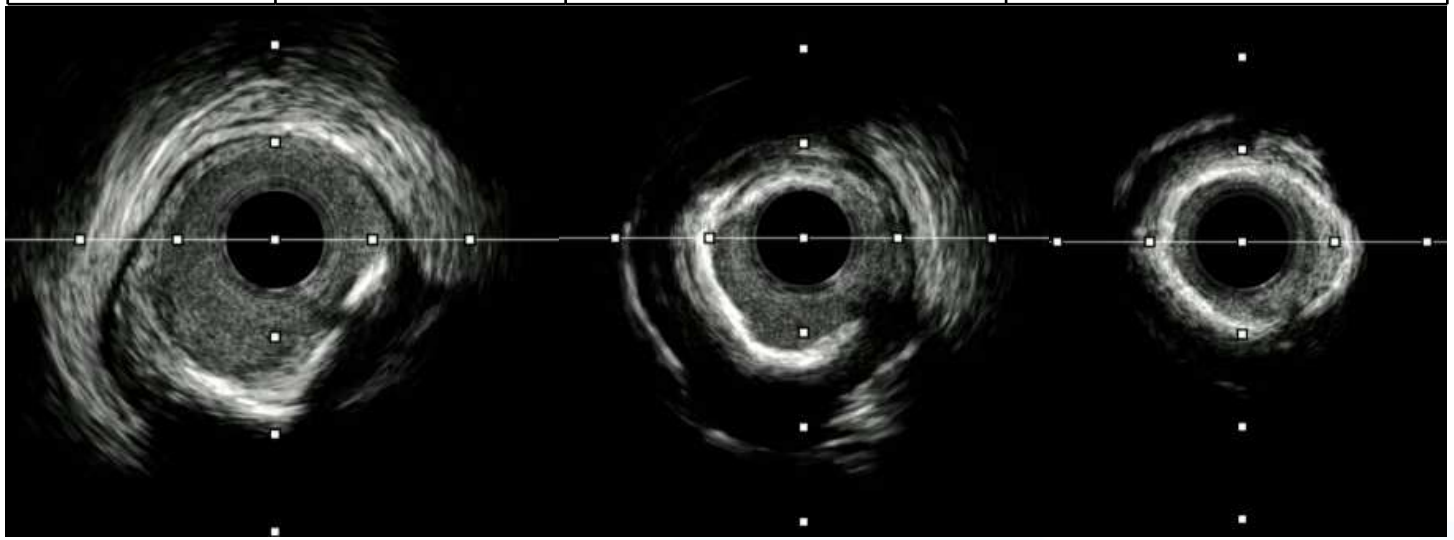
IVUS baseline = temps essentiel

- Analyse quantitative de la lésion : MLA, longueur, Ø de références
- Analyse morphologique :



Epaisseur	Longueur	Arc calcaire	Distance/lumière
Fin ☒ Epais ☑	Focal ☒ Diffus ☑	Degrés = 360° Circonférentiel ☑	Nodulaire ☒ Superficiel ☑ Profond ☒



- Stratégie : sizing - landing zone - choix de la **technique de préparation**

HIGH TECH
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HIGH TECH

MARSEILLE

Les Règles D'or Du Rotablator

Radial GC 6Fr

Patient préparé et pré médiqué

1 fraise/patient

Ratio fraise/artère 0,5

Vitesse ≈ 160/180,000 rpm

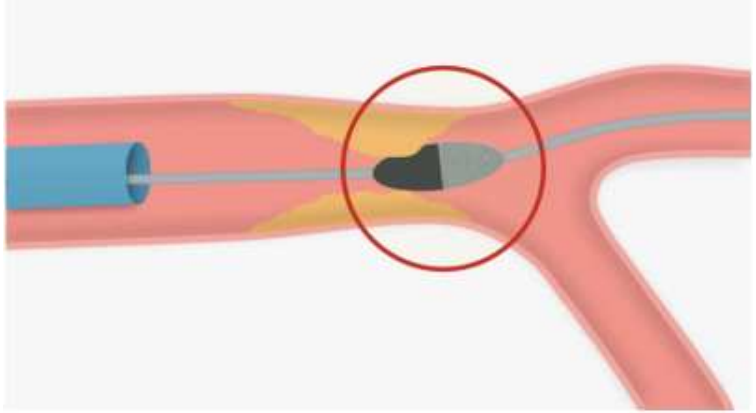
« Pecking motion ou picorage »

Runs courts (10sec)

Polissage systématique

HIGHTECH

Quelques pièges à éviter



Utilisation en bail out

Trop sous sizer sa fraise et ne pas picorer assez

Lésions très tortueuses

Ne pas fraiser sur la partie radio opaque du guide

« Pré traiter » (5000 HNF, 5mg isoptine, 5 mg RSD)

⚠ Dissection

⚠ Fraise bloquée

⚠ Perforation

⚠ Fracture

⚠ No reflow

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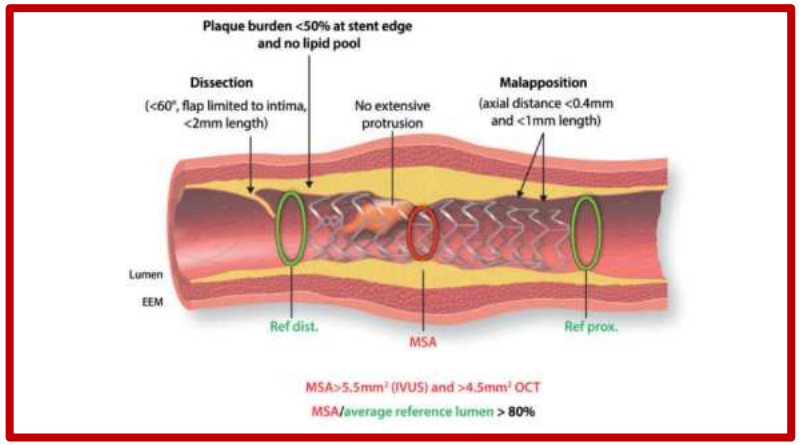
HIGH TECH

MARSEILLE

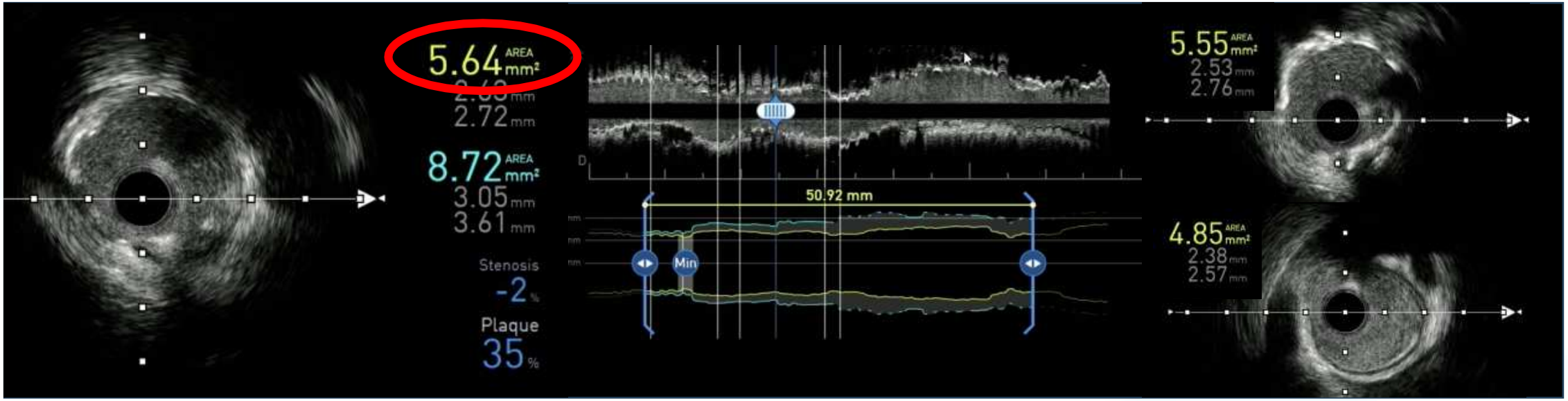
IVUS post-PCI



Räber L, Eurointervention 2018

- Absence de complications
  (hématome, dissection, thrombus)

- Bonnes expansion et apposition > 80% expansion, **MSA >5.5mm²**



- Geste additionnel ?

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