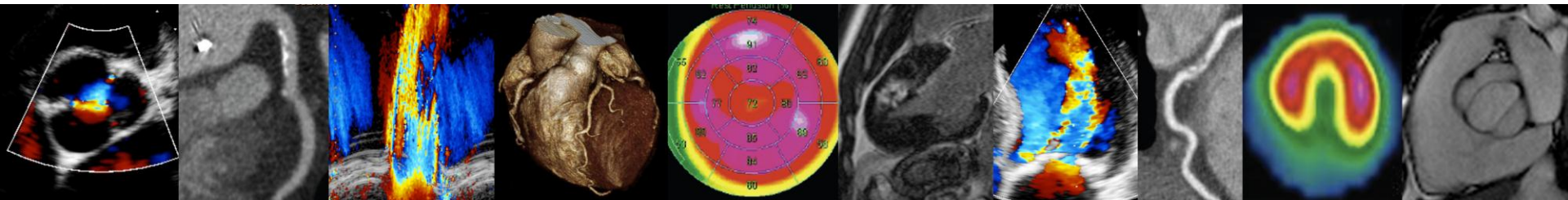


Prise en charge péri-opératoire du coronarien

Evaluation préopératoire par le cardiologue



Dr Olivier LAIREZ

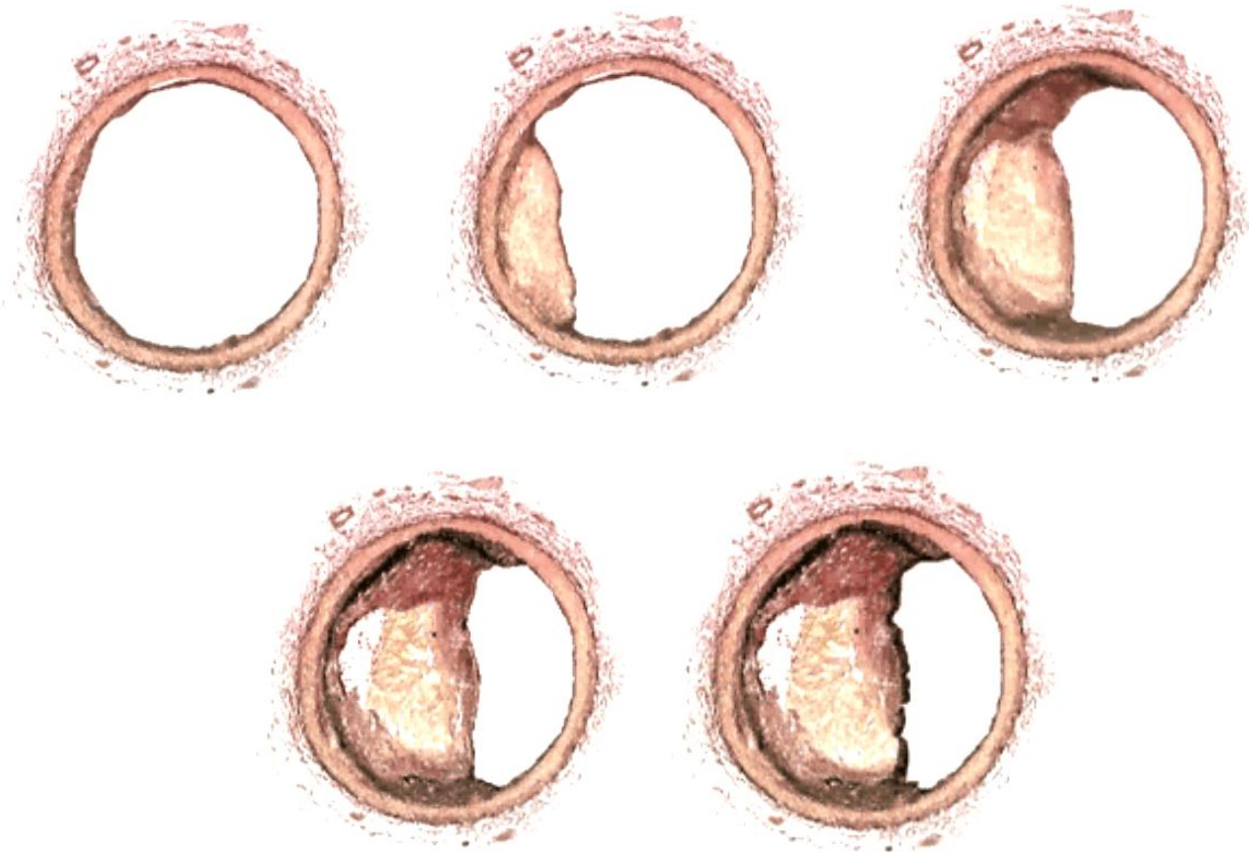
**Fédération de service de cardiologie & département de médecine nucléaire
CHU Rangueil, Toulouse**

QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?



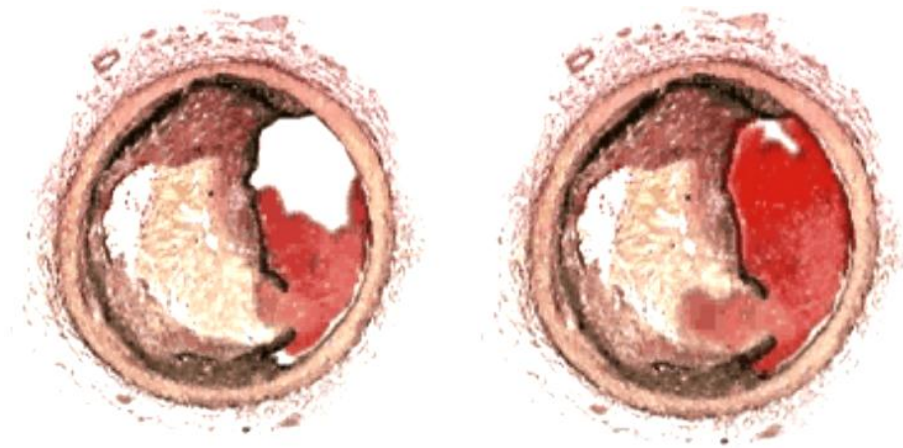
QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

La **sténose**, le chemin de l'ischémie myocardique



QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

La **rupture de plaque**, la porte de l'infarctus du myocarde



QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

Un phénomène
chronique qui aboutit à
l'ischémie

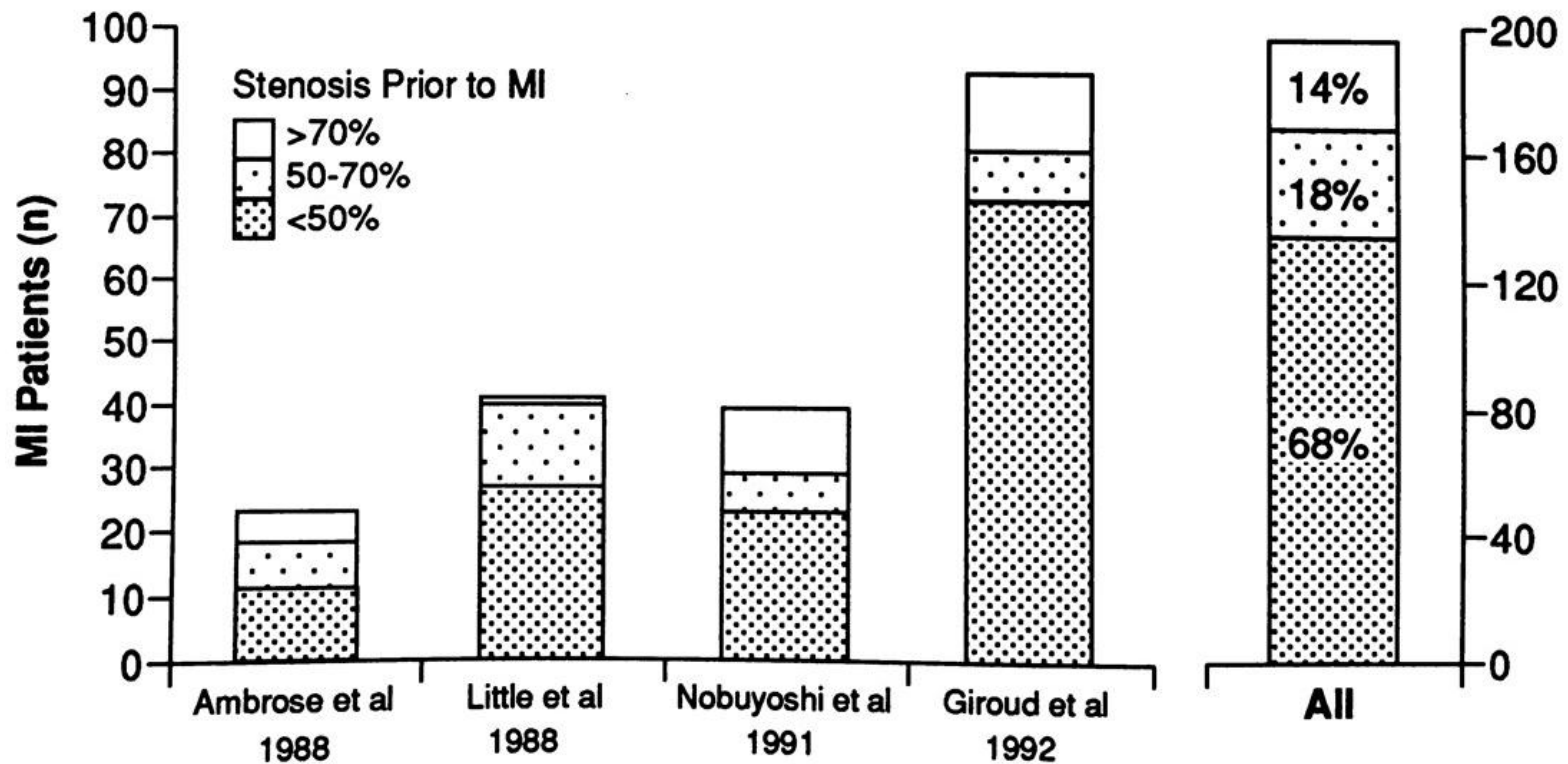


Un phénomène
aigu qui aboutit à
la nécrose



QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

La rupture de plaque



QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

La rupture de plaque

QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

La rupture de plaque

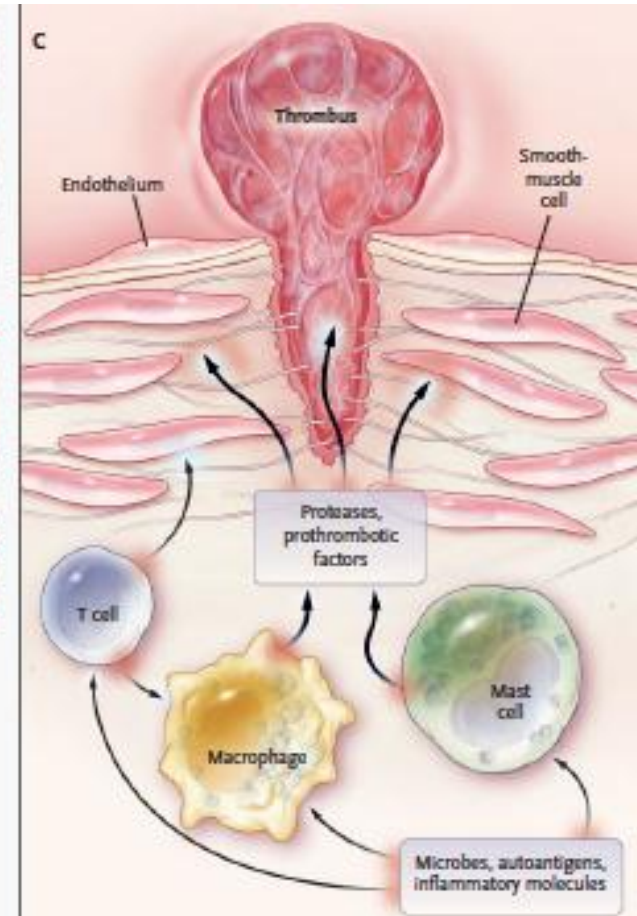
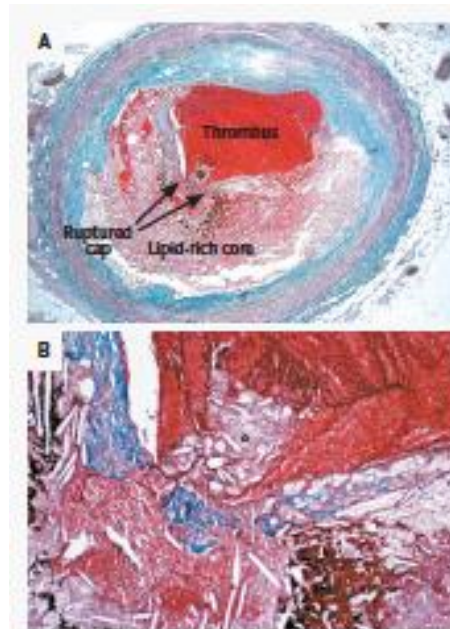
THE NEW ENGLAND JOURNAL of MEDICINE

REVIEW ARTICLE

MECHANISMS OF DISEASE

Inflammation, Atherosclerosis, and Coronary Artery Disease

Göran K. Hansson, M.D., Ph.D.



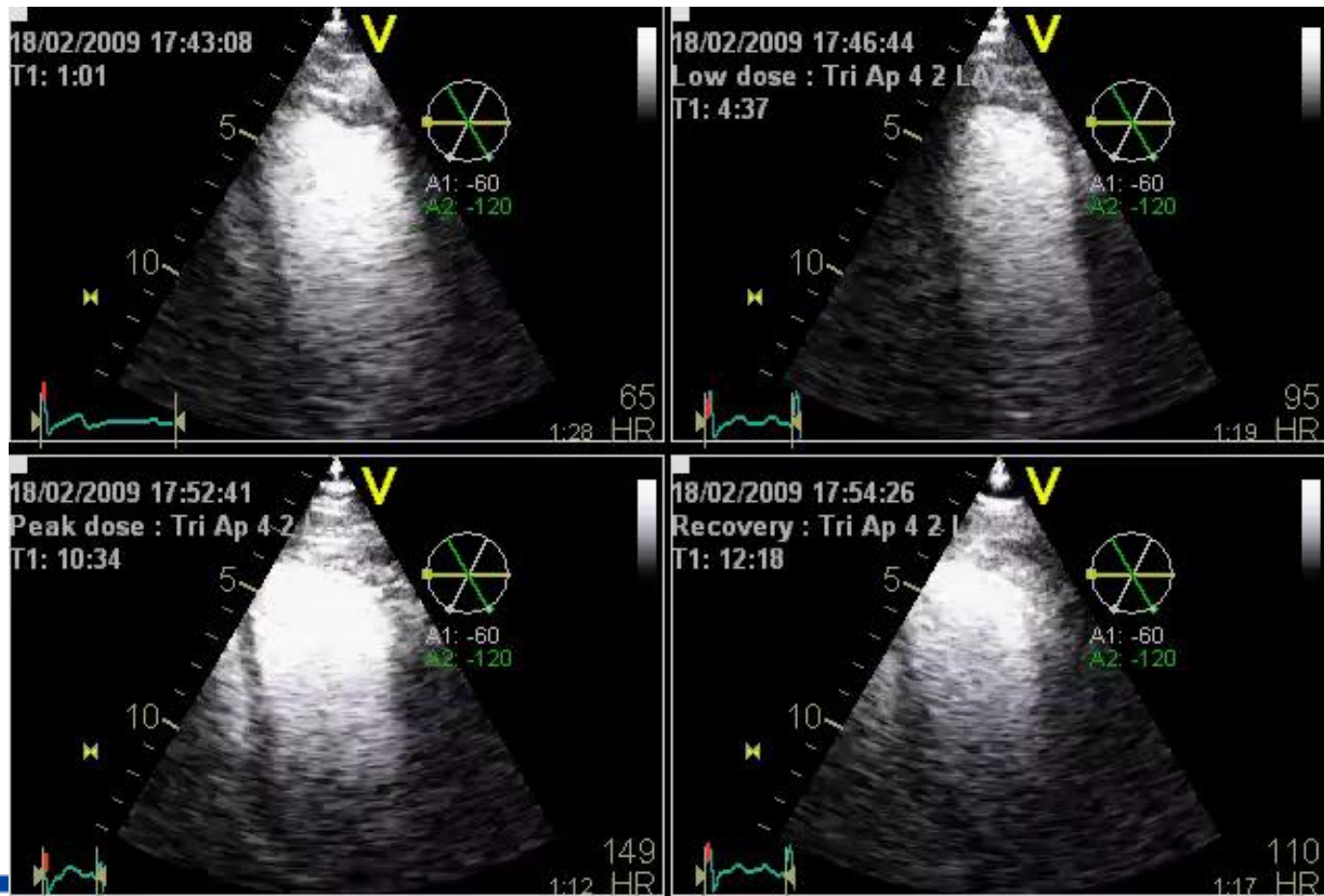
QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

La rupture de plaque

La chirurgie est pourvoyeuse d'un déséquilibre entre facteurs prothrombotiques et fibrinolytiques

QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

L'ischémie



QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

L'ischémie

QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

L'ischémie

Ischémie myocardique

Inadéquation entre les besoins et les apports du myocarde en oxygène

QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

L'ischémie

Toute chirurgie suscite une réponse de stress

Cette réponse est initiée par l'agression tissulaire et relayée par des facteurs neuro-endocrines à l'origine d'un déséquilibre sympatho-vagal

Les variations de volémie péri-opératoire viennent s'ajouter au stress chirurgical

QUEL EST LE RISQUE D'UNE CORONAROPATHIE ?

L'ischémie

L'ensemble augmente la consommation du myocarde en oxygène et est susceptible d'induire une ischémie myocardique

L'ampleur du phénomène dépend de la durée de l'intervention, de la température corporelle, des variations volémiques et du type d'anesthésie

L'ÉVALUATION PRÉ-OPÉRATOIRE



European Heart Journal (2014) **35**, 2383–2431
doi:10.1093/eurheartj/ehu282

ESC/ESA GUIDELINES

European
Society of
Anaesthesiology **ESA**

2014 ESC/ESA Guidelines on non-cardiac surgery: cardiovascular assessment and management

**The Joint Task Force on non-cardiac surgery: cardiovascular
assessment and management of the European Society of Cardiology
(ESC) and the European Society of Anaesthesiology (ESA)**

L'ÉVALUATION PRÉ-OPÉRATOIRE

Less
invasive anaesthetic techniques may reduce early mortality in patients at intermediate-to-high cardiac risk and limit post-operative complications.

L'ÉVALUATION PRÉ-OPÉRATOIRE

Type de chirurgie

L'ÉVALUATION PRÉ-OPÉRATOIRE

Type de chirurgie

Low-risk: < 1%	Intermediate-risk: 1–5%	High-risk: > 5%
• Superficial surgery • Breast • Dental • Endocrine: thyroid • Eye • Reconstructive • Carotid asymptomatic (CEA or CAS) • Gynaecology: minor • Orthopaedic: minor (meniscectomy) • Urological: minor (transurethral resection of the prostate)	• Intraperitoneal: splenectomy, hiatal hernia repair, cholecystectomy • Carotid symptomatic (CEA or CAS) • Peripheral arterial angioplasty • Endovascular aneurysm repair • Head and neck surgery • Neurological or orthopaedic: major (hip and spine surgery) • Urological or gynaecological: major • Renal transplant • Intra-thoracic: non-major	• Aortic and major vascular surgery • Open lower limb revascularization or amputation or thromboembolectomy • Duodeno-pancreatic surgery • Liver resection, bile duct surgery • Oesophagectomy • Repair of perforated bowel • Adrenal resection • Total cystectomy • Pneumonectomy • Pulmonary or liver transplant

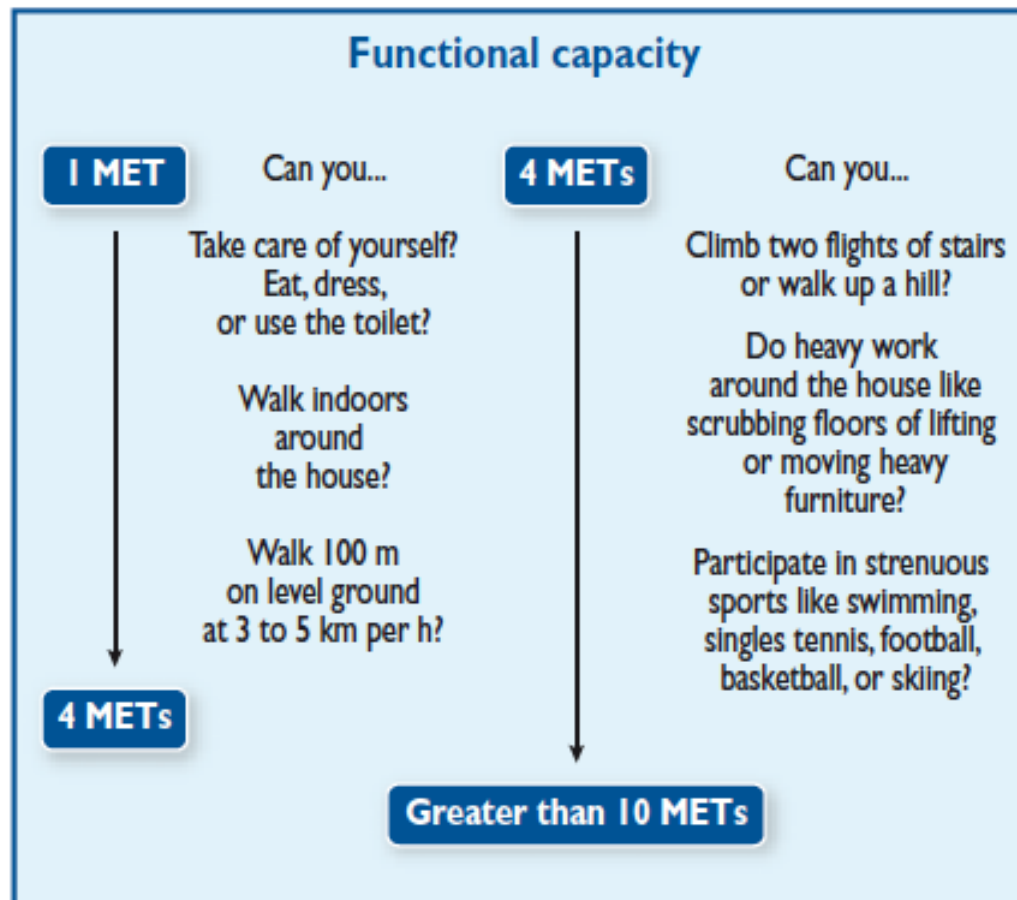
The majority of patients with stable heart disease can undergo low and intermediate-risk surgery (*Table 3*) without additional evaluation.

L'ÉVALUATION PRÉ-OPÉRATOIRE

Capacité fonctionnelle

L'ÉVALUATION PRÉ-OPÉRATOIRE

Capacité fonctionnelle



L'ÉVALUATION PRÉ-OPÉRATOIRE

Indices de risque

L'ÉVALUATION PRÉ-OPÉRATOIRE

Indices de risque

Derivation and Prospective Validation of a Simple Index for Prediction of Cardiac Risk of Major Noncardiac Surgery

Rates of Major Cardiac Complications and Multivariate ORs* Among Patients With Individual Risk Factors In Derivation and Validation Sets

	Derivation Set (n=2893)		Validation Set (n=1422)	
	Crude Data	Adjusted OR (95% CI)	Crude Data	Adjusted OR (95% CI)
Revised Cardiac Risk Index				
1. High-risk type of surgery	27/894 (3%)	2.8 (1.6, 4.9)	18/490 (4%)	2.6 (1.3, 5.3)
2. Ischemic heart disease	34/951 (4%)	2.4 (1.3, 4.2)	26/478 (5%)	3.8 (1.7, 8.2)
3. History of congestive heart failure	23/434 (5%)	1.9 (1.1, 3.5)	19/255 (7%)	4.3 (2.1, 8.8)
4. History of cerebrovascular disease	17/291 (6%)	3.2 (1.8, 6.0)	10/140 (7%)	3.0 (1.3, 6.8)
5. Insulin therapy for diabetes	7/112 (6%)	3.0 (1.3, 7.1)	3/59 (5%)	1.0 (0.3, 3.8)
6. Preoperative serum creatinine >2.0 mg/dL	9/103 (9%)	3.0 (1.4, 6.8)	3/55 (5%)	0.9 (0.2, 3.3)

L'ÉVALUATION PRÉ-OPÉRATOIRE

Indices de risque

Development and Validation of a Risk Calculator for Prediction of Cardiac Risk After Surgery

Type de chirurgie
Statut fonctionnel
Insuffisance rénale
ASA score
Âge

L'ÉVALUATION PRÉ-OPÉRATOIRE

Indices de risque

Estimate risk of perioperative myocardial infarction or cardiac arrest.

Age

Creatinine

≥1.5 mg/dL / 133 µmol/L

ASA Class

ASA 1

ASA 1 = Normal healthy patient

ASA 2 = Patients with mild systemic disease

ASA 3 = Patients with severe systemic disease

ASA 4 = Patients with severe systemic disease

that is a constant threat to life

ASA 5 = Moribund patients who are not expected
to survive without the operation

Preoperative Function

Totally Independent

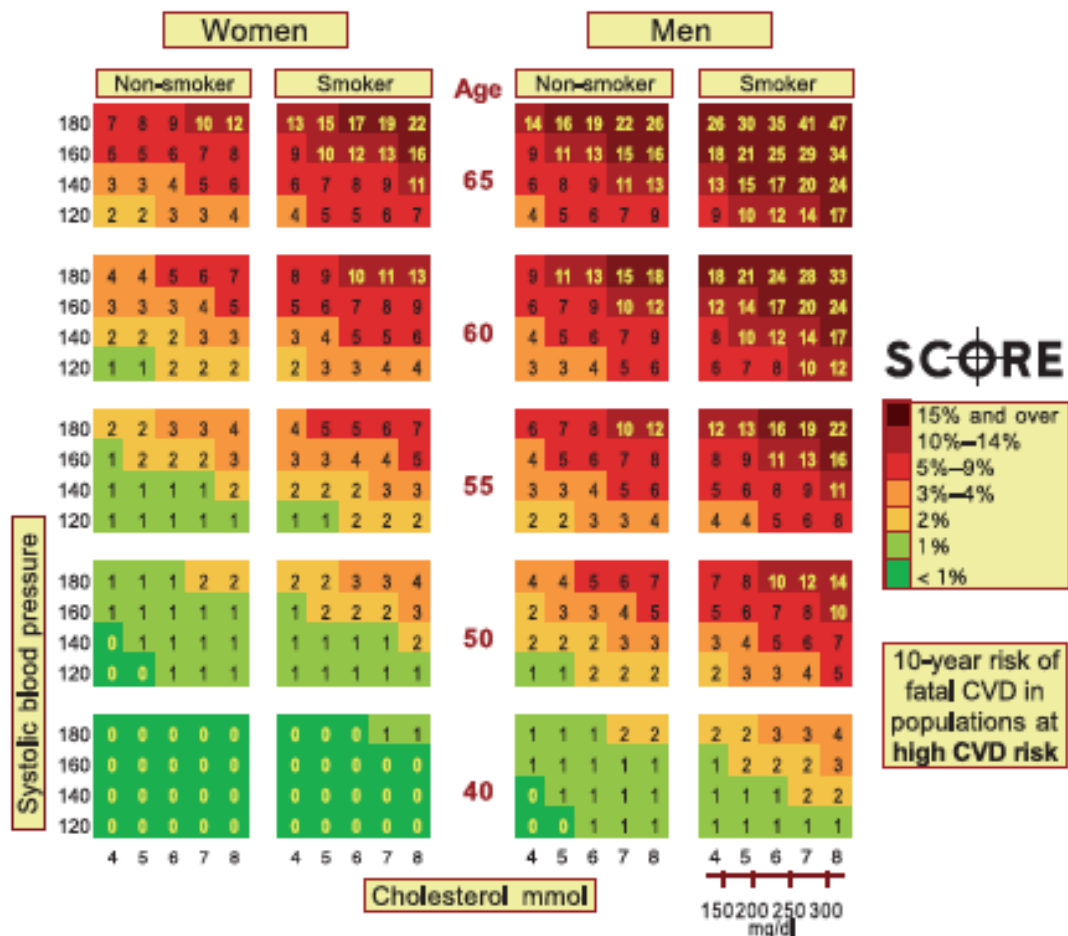
Procedure

Intestinal

Submit

L'ÉVALUATION PRÉ-OPÉRATOIRE

Indices de risque

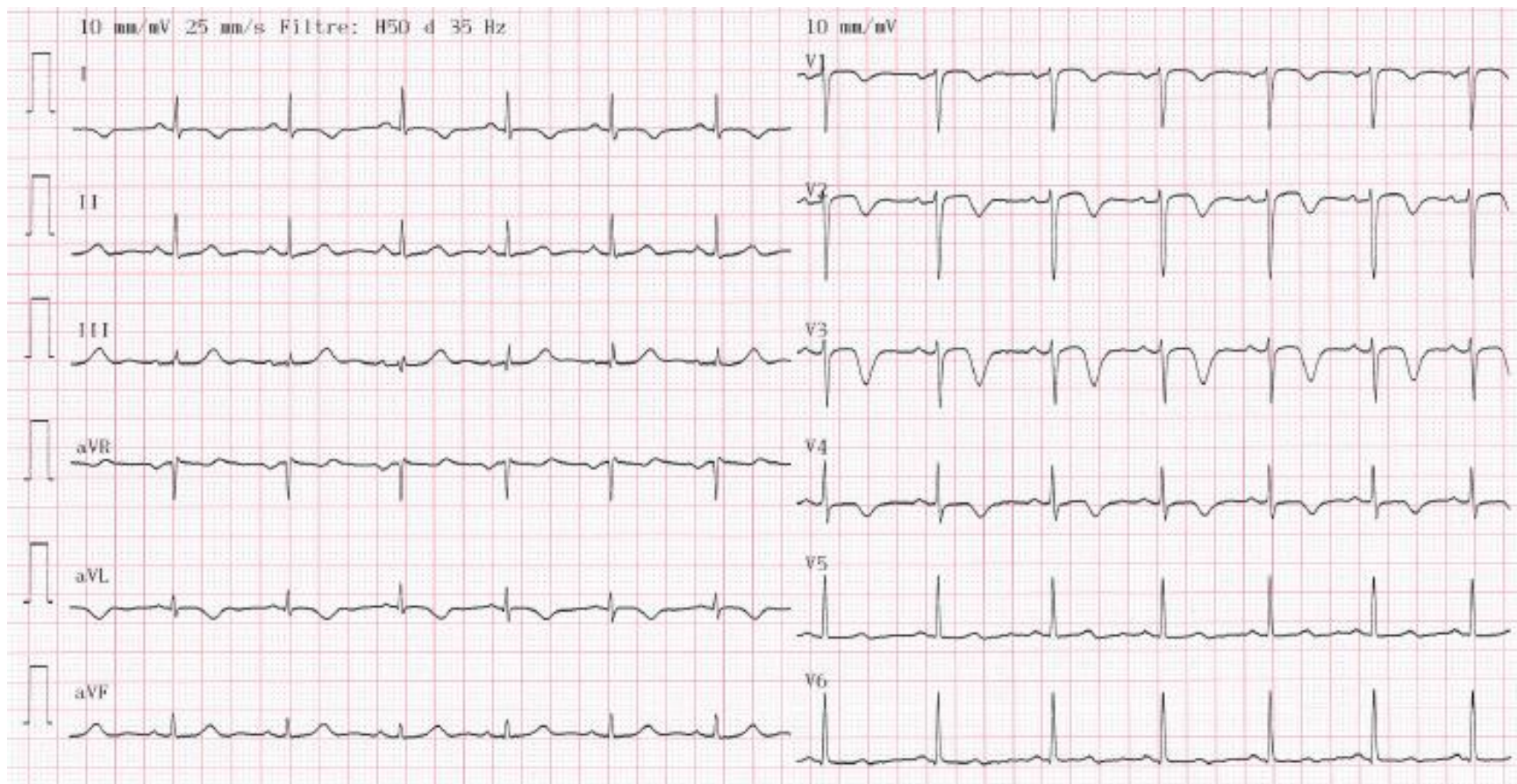


L'ÉVALUATION PRÉ-OPÉRATOIRE

Tests non invasifs

L'ÉVALUATION PRÉ-OPÉRATOIRE

Tests non invasifs



L'ÉVALUATION PRÉ-OPÉRATOIRE

Tests non invasifs

Recommendations	Class ^a	Level ^b
Pre-operative ECG is recommended for patients who have risk factor(s) ^d and are scheduled for intermediate- or high-risk surgery.	I	C
Pre-operative ECG may be considered for patients who have risk factor(s) and are scheduled for low-risk surgery.	IIb	C
Pre-operative ECG may be considered for patients who have no risk factors, are above 65 years of age, and are scheduled for intermediate-risk surgery.	IIb	C
Routine pre-operative ECG is not recommended for patients who have no risk factors and are scheduled for low-risk surgery.	III	B

L'ÉVALUATION PRÉ-OPÉRATOIRE

Tests non invasifs

Cascade ischémique

Anomalie du métabolisme cellulaire



Anomalie de la diastole



Anomalie de la systole

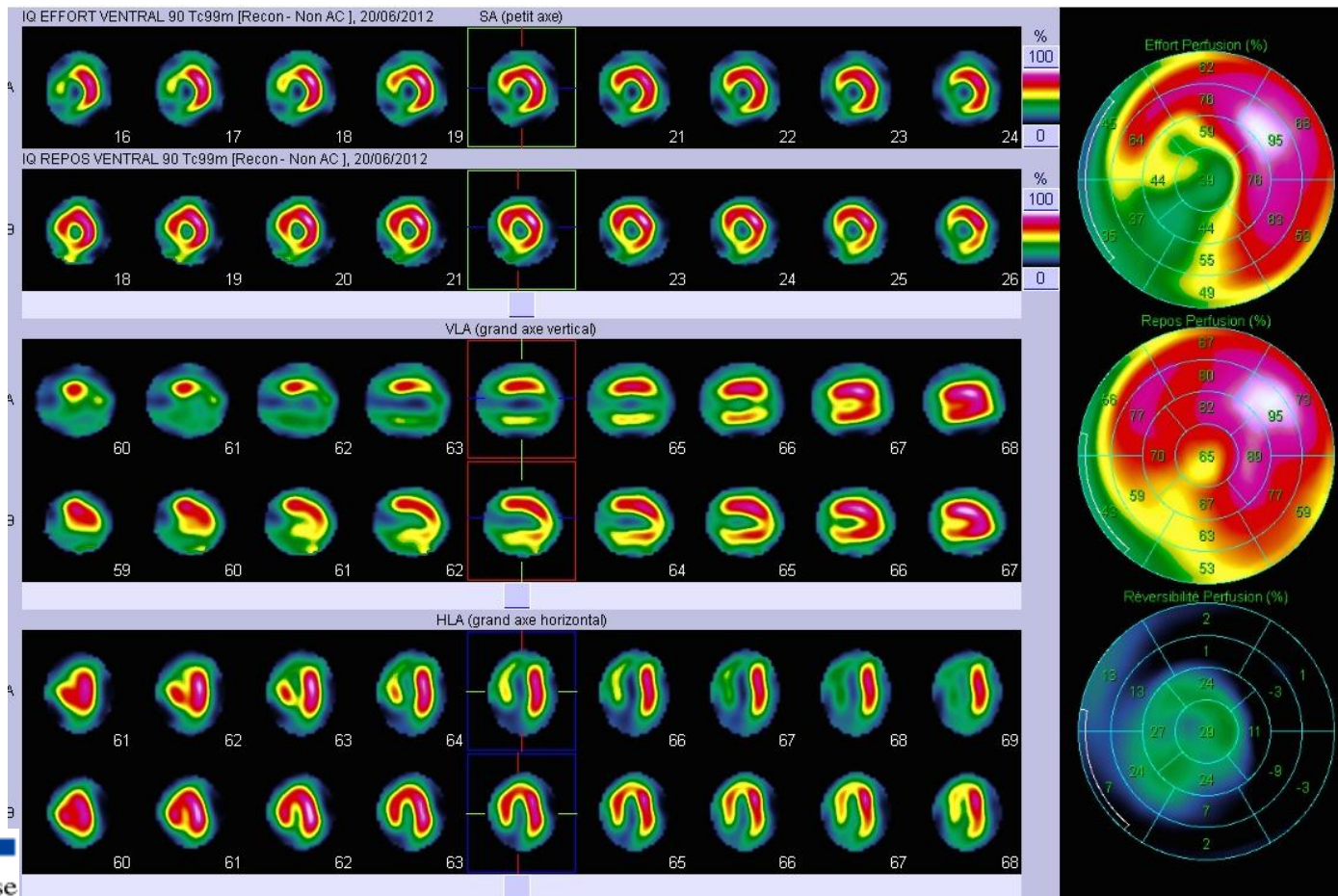


Modification ECG



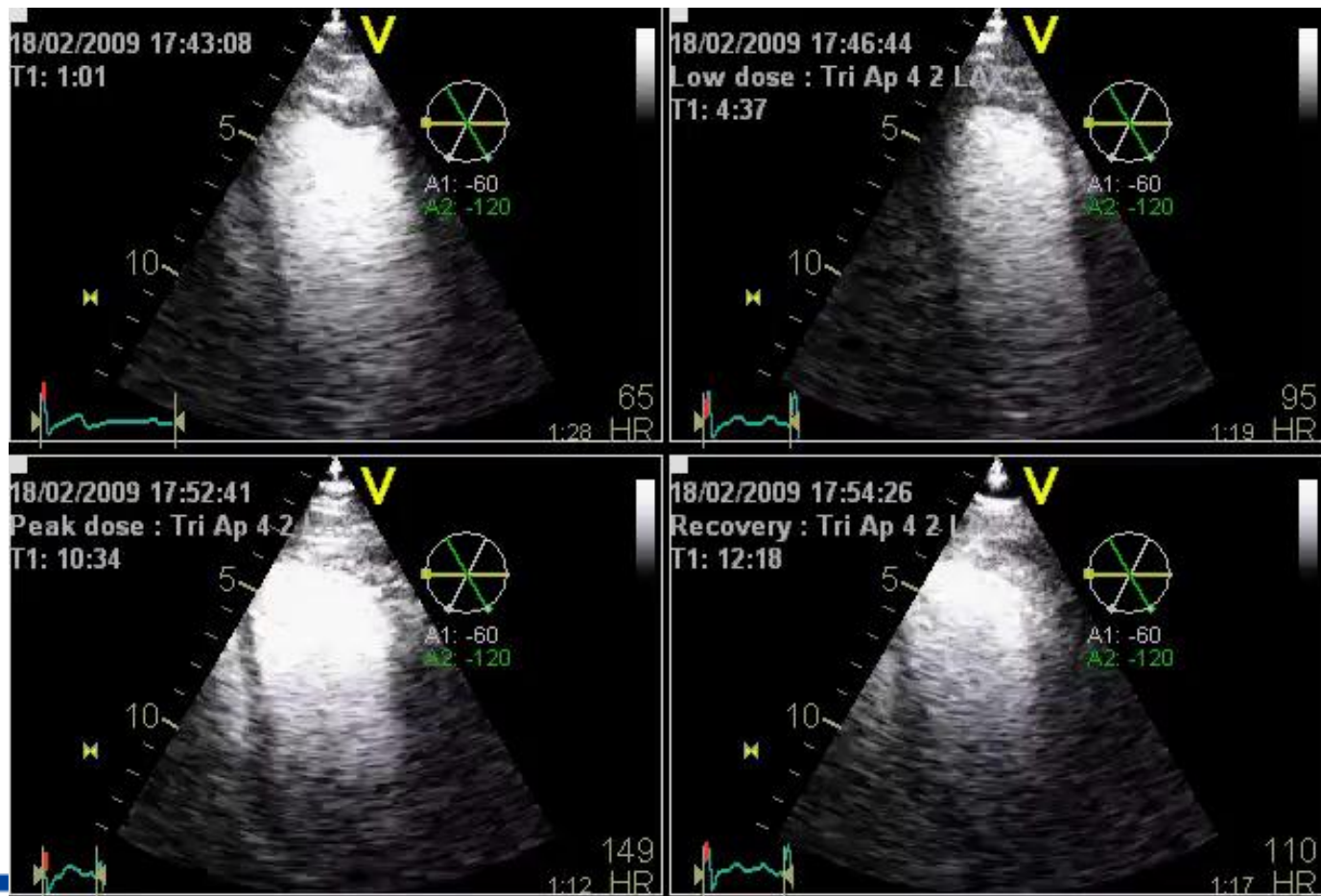
Douleur

Tests non invasifs



L'ÉVALUATION PRÉ-OPÉRATOIRE

Tests non invasifs



L'ÉVALUATION PRÉ-OPÉRATOIRE

Tests non invasifs

Recommendations	Class ^a	Level ^b
Imaging stress testing is recommended before high-risk surgery in patients with more than two clinical risk factors and poor functional capacity (<4 METs). ^c	I	C
Imaging stress testing may be considered before high- or intermediate-risk surgery in patients with one or two clinical risk factors and poor functional capacity (<4 METs). ^c	IIb	C
Imaging stress testing is not recommended before low-risk surgery, regardless of the patient's clinical risk.	III	C

L'ÉVALUATION PRÉ-OPÉRATOIRE

Tests non invasifs

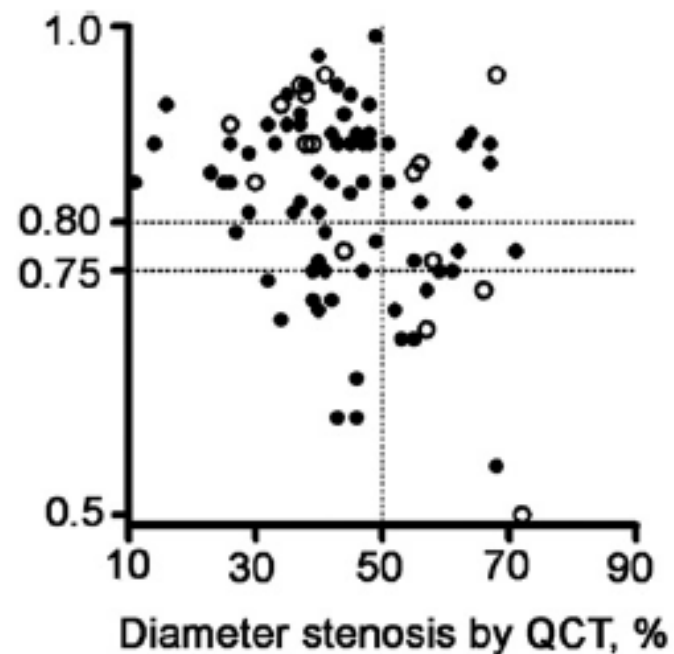
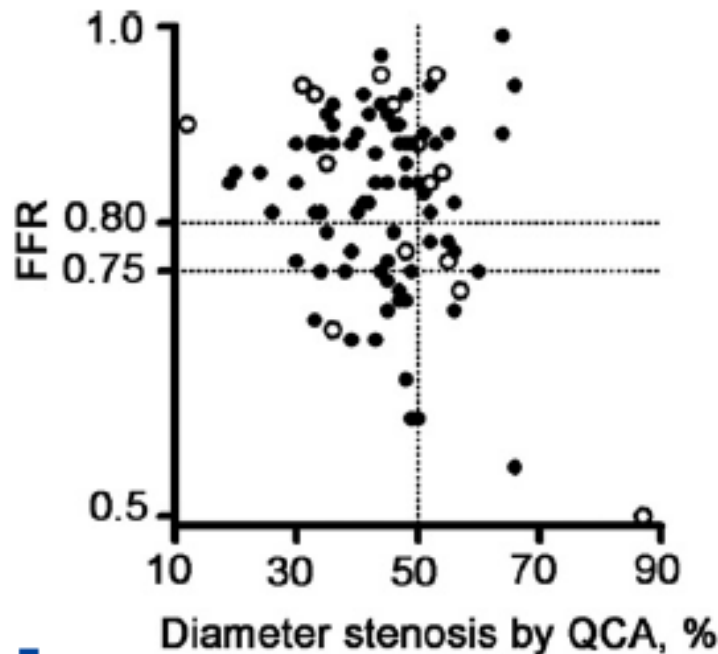
Considering the low event rate of patients scheduled for low-risk surgery, it is unlikely that test results will alter perioperative management in stable cardiac patients.

L'ÉVALUATION PRÉ-OPÉRATOIRE

Coronarographie (?)

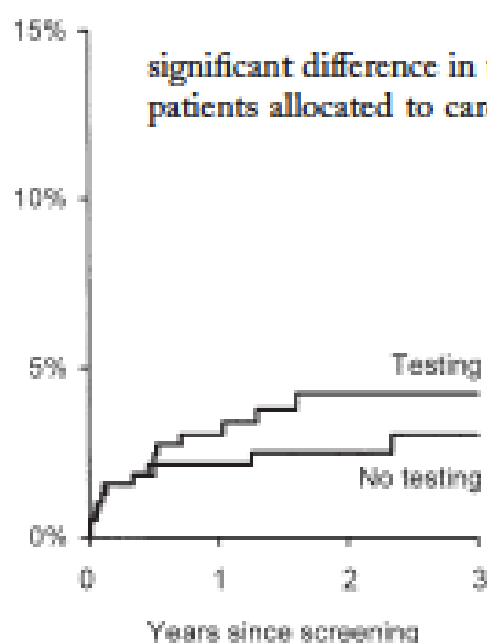
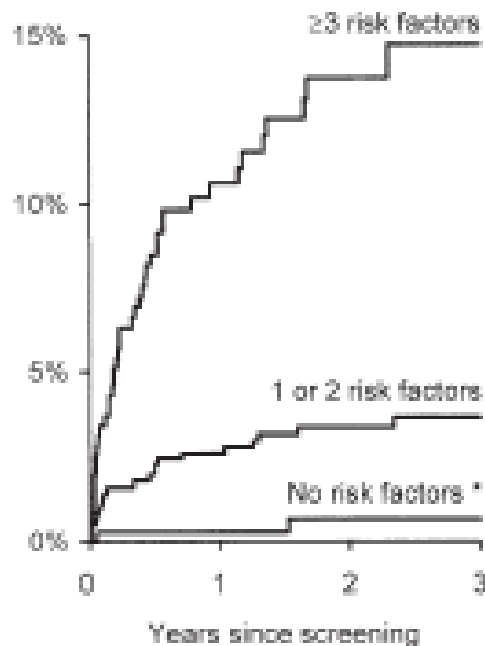
Comprehensive Assessment of Coronary Artery Stenoses

Computed Tomography Coronary Angiography
Versus Conventional Coronary Angiography and Correlation
With Fractional Flow Reserve in Patients With Stable Angina



L'ÉVALUATION PRÉ-OPÉRATOIRE

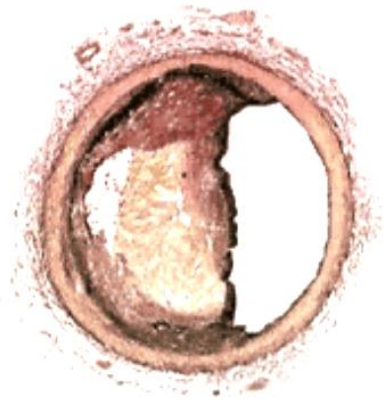
Should Major Vascular Surgery Be Delayed Because of Preoperative Cardiac Testing in Intermediate-Risk Patients Receiving Beta-Blocker Therapy With Tight Heart Rate Control?



There was no significant difference in the long-term incidence of cardiac events between patients allocated to cardiac testing or no testing (log-rank $p = 0.30$).

Les tests retardent la chirurgie de 3 semaines

STRATÉGIE DE RÉDUCTION DU RISQUE



Prévenir l'ischémie



Prévenir la nécrose

STRATÉGIE DE RÉDUCTION DU RISQUE

Prévenir la nécrose

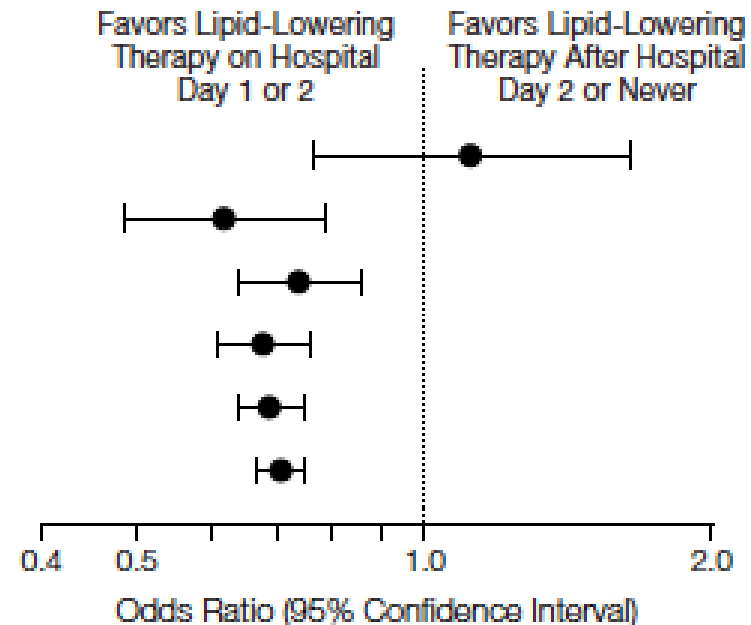


STRATÉGIE DE RÉDUCTION DU RISQUE

Lipid-Lowering Therapy and In-Hospital Mortality Following Major Noncardiac Surgery

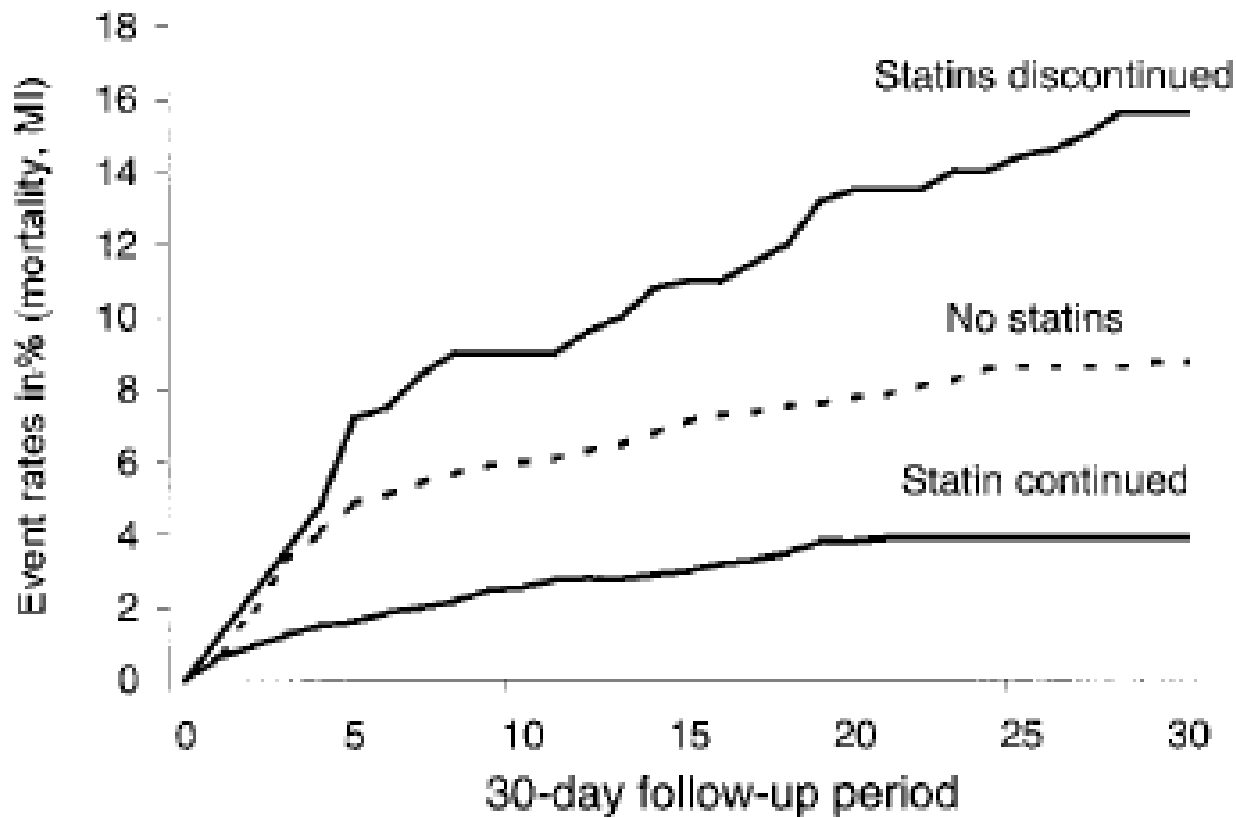
	Revised Cardiac Risk Index Score					Overall
	0	1	2	3	≥4	
Patients, No. (%)	45 371 (34)	43 756 (33)	27 853 (21)	11 706 (9)	3149 (2)	131 835 (100)
In-hospital mortality, No. (%)*	647 (1.43)	1136 (2.60)	1253 (4.50)	828 (7.07)	294 (9.34)	4158 (3.15)

Quintile	Odds Ratio (95% Confidence Interval)
1	1.12 (0.77-1.64)
2	0.62 (0.49-0.79)
3	0.74 (0.64-0.86)
4	0.68 (0.61-0.76)
5	0.69 (0.64-0.75)
Overall	0.71 (0.67-0.75)



STRATÉGIE DE RÉDUCTION DU RISQUE

Withdrawal of Statins Increases Event Rates in Patients With Acute Coronary Syndromes



STRATÉGIE DE RÉDUCTION DU RISQUE

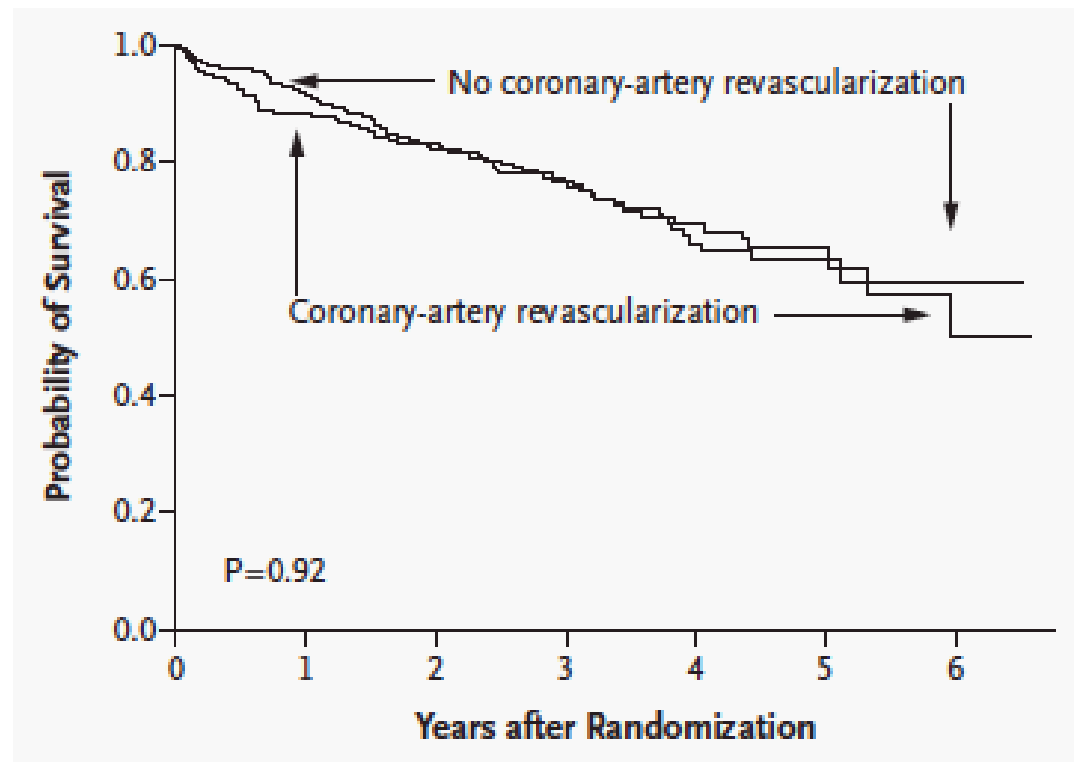
Prévenir l'ischémie



STRATÉGIE DE RÉDUCTION DU RISQUE

Revascularisation

Coronary-Artery Revascularization
before Elective Major Vascular Surgery



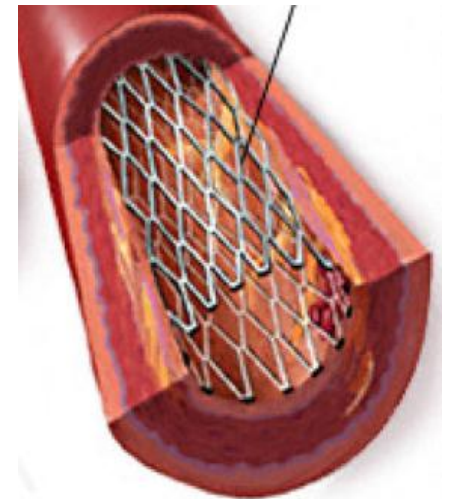
STRATÉGIE DE RÉDUCTION DU RISQUE

Revascularisation

Catastrophic Outcomes of Noncardiac Surgery Soon After Coronary Stenting

Chirurgie dans les 6 semaines suivant la mise en place d'un stent nu :

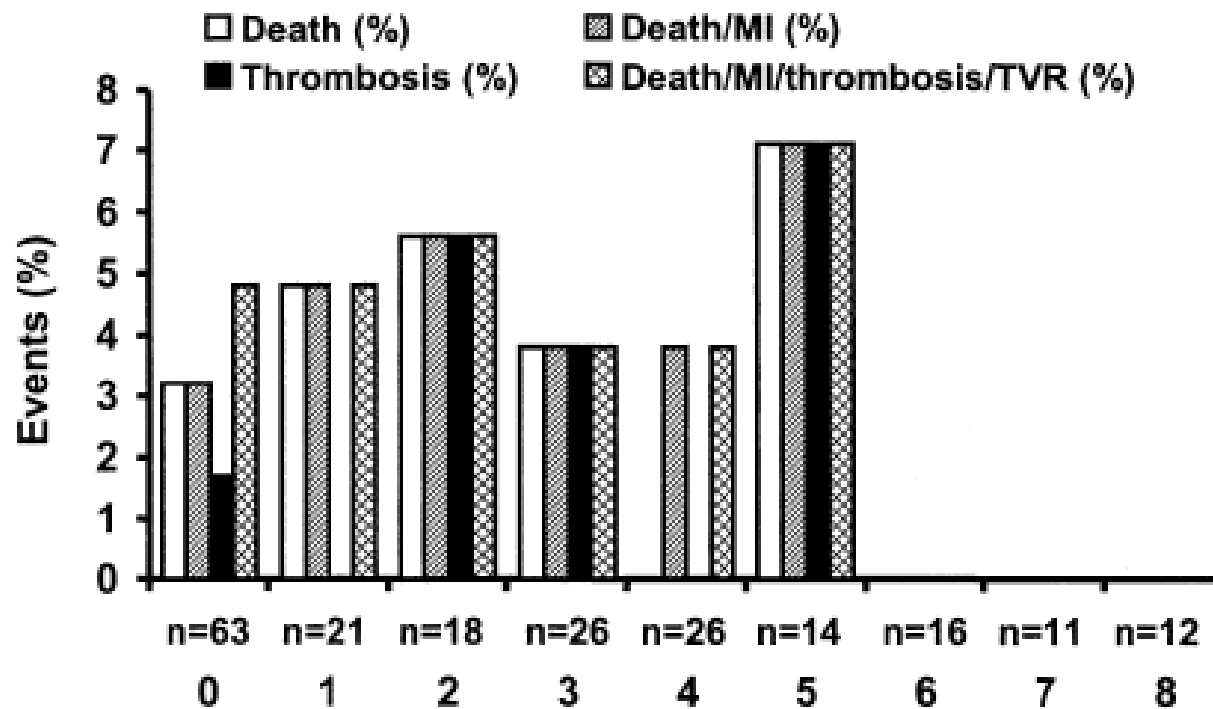
- 40 patients
- 7 IDM, 11 saignements majeurs
- 8 décès



STRATÉGIE DE RÉDUCTION DU RISQUE

Revascularisation

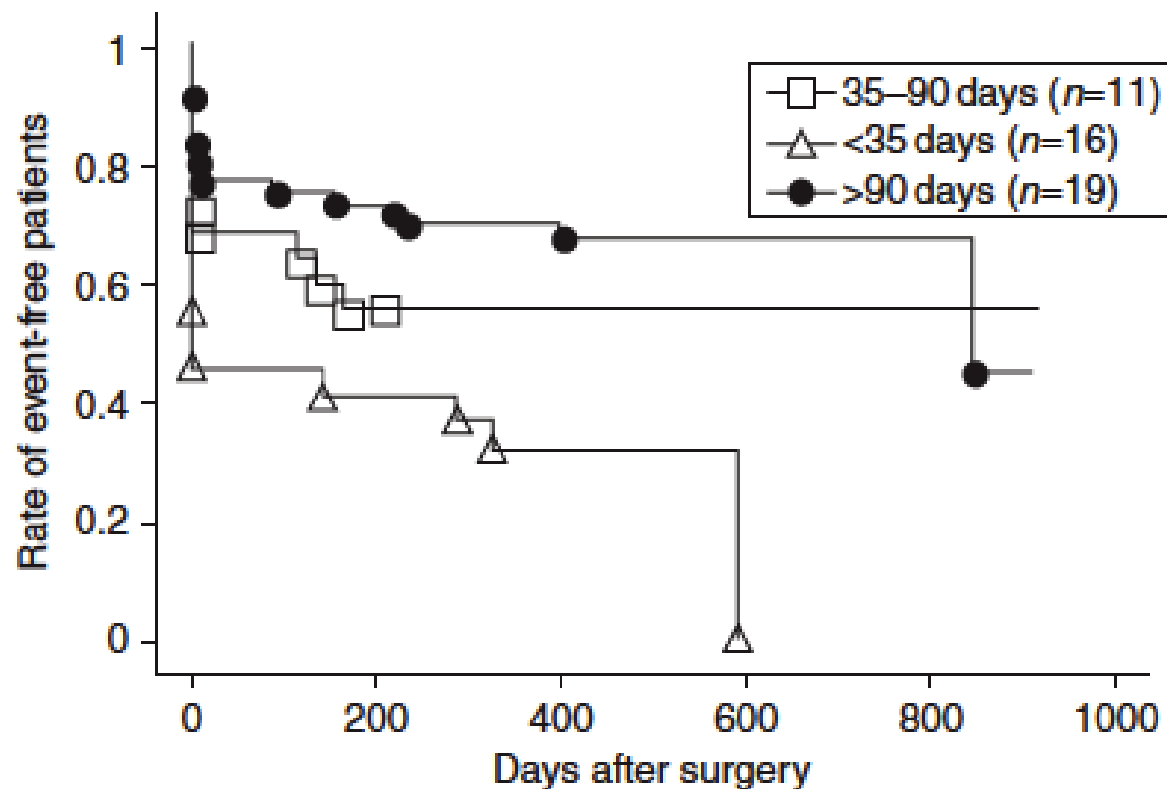
Clinical Outcome of Patients
Undergoing Non-Cardiac Surgery in the
Two Months Following Coronary Stenting



STRATÉGIE DE RÉDUCTION DU RISQUE

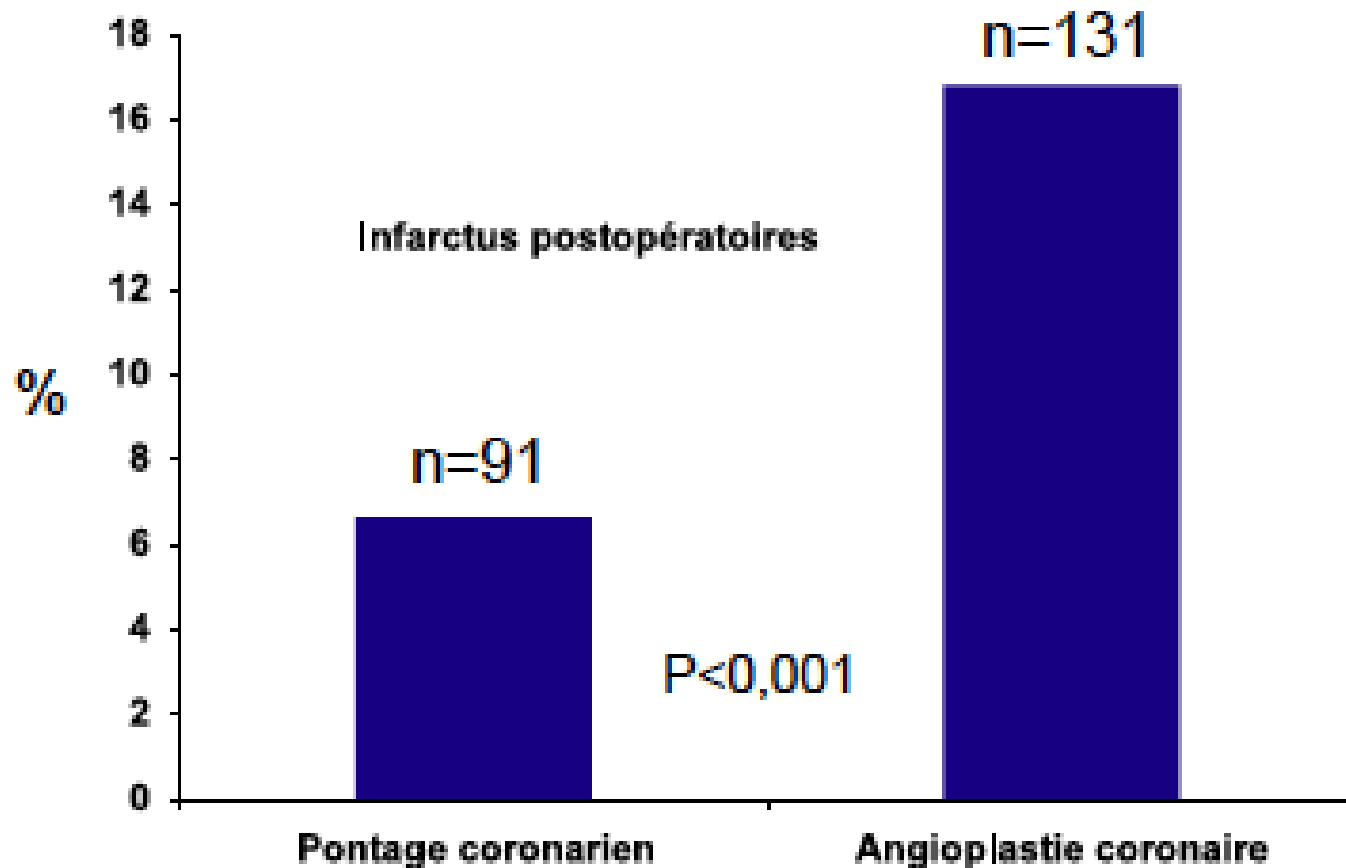
Revascularisation

Coronary artery stenting and non-cardiac surgery—a prospective outcome study^{†‡}



STRATÉGIE DE RÉDUCTION DU RISQUE

Revascularisation

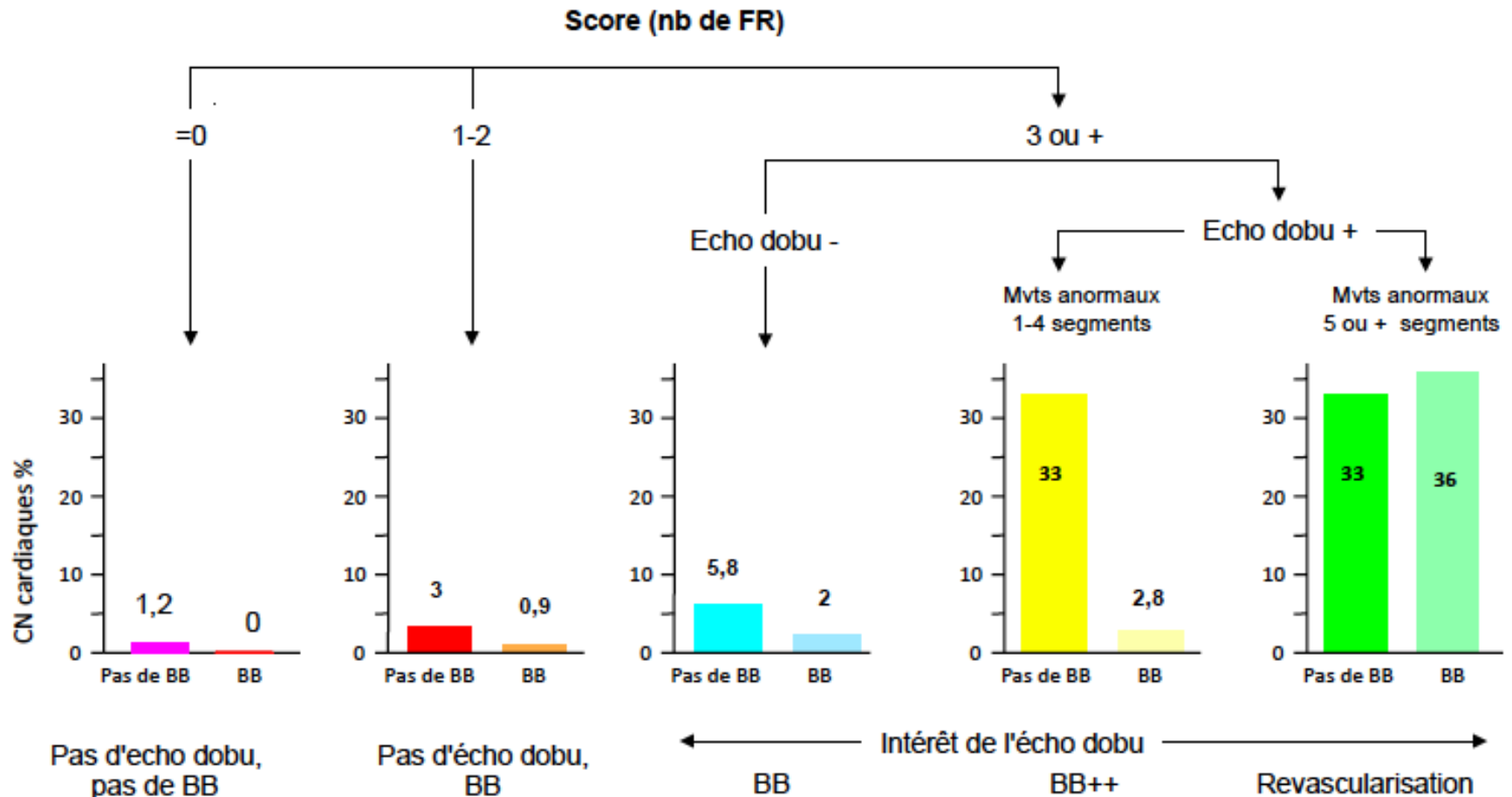


STRATÉGIE DE RÉDUCTION DU RISQUE

Béta-bloquants

Study	n	Vascular Surgery (%)	Beta-blocker				Patient selection according to cardiac risk	30-day mortality, n/N (%)		30-day rate of non-fatal MI, n/N (%)	
			Type	Onset (before Surgery)	Duration (days after surgery)	Dose Titration		Beta-blocker	Control	Beta-blocker	Control
Mangano et al. ⁸³	200	40	Atenolol	30 min	7	No	IHD or ≥2 risk factors	5/99 (5.1 ^a)	10/101 (9.9 ^a)	-	-
POBBLE ⁸²	103	100	Metoprolol tartrate	<24 h	7	No	No	3/55 (5.4)	1/48 (2.1)	3/55 (5.5)	5/48 (10.4)
MaVS ⁸⁰	496	100	Metoprolol succinate	2 h	5	No	No	0/246 (0)	4/250 (1.6)	19/246 (7.7)	21/250 (8.4)
DIPOM ⁸¹	921	7	Metoprolol succinate	12 h	8	No	Diabetes	74/462 (16.0)	72/459 (15.7)	3/462 (0.6)	4/459 (0.9)
BBSA ⁷⁹	219	5	Bisoprolol	>3 h	10	Yes	IHD or ≥2 risk factors	1/110 (0.9)	0/109 (0)	0/110 (0)	0/109 (0)
POISE ⁷⁸	8351	41	Metoprolol succinate	2–4 h	30	No	IHD or atherosclerosis or major vascular surgery or ≥3 risk factors	129/4174 (3.1) ^b	97/4177 (2.3)	152/4174 (3.6) ^c	215/4177 (5.1)

STRATÉGIE DE RÉDUCTION DU RISQUE

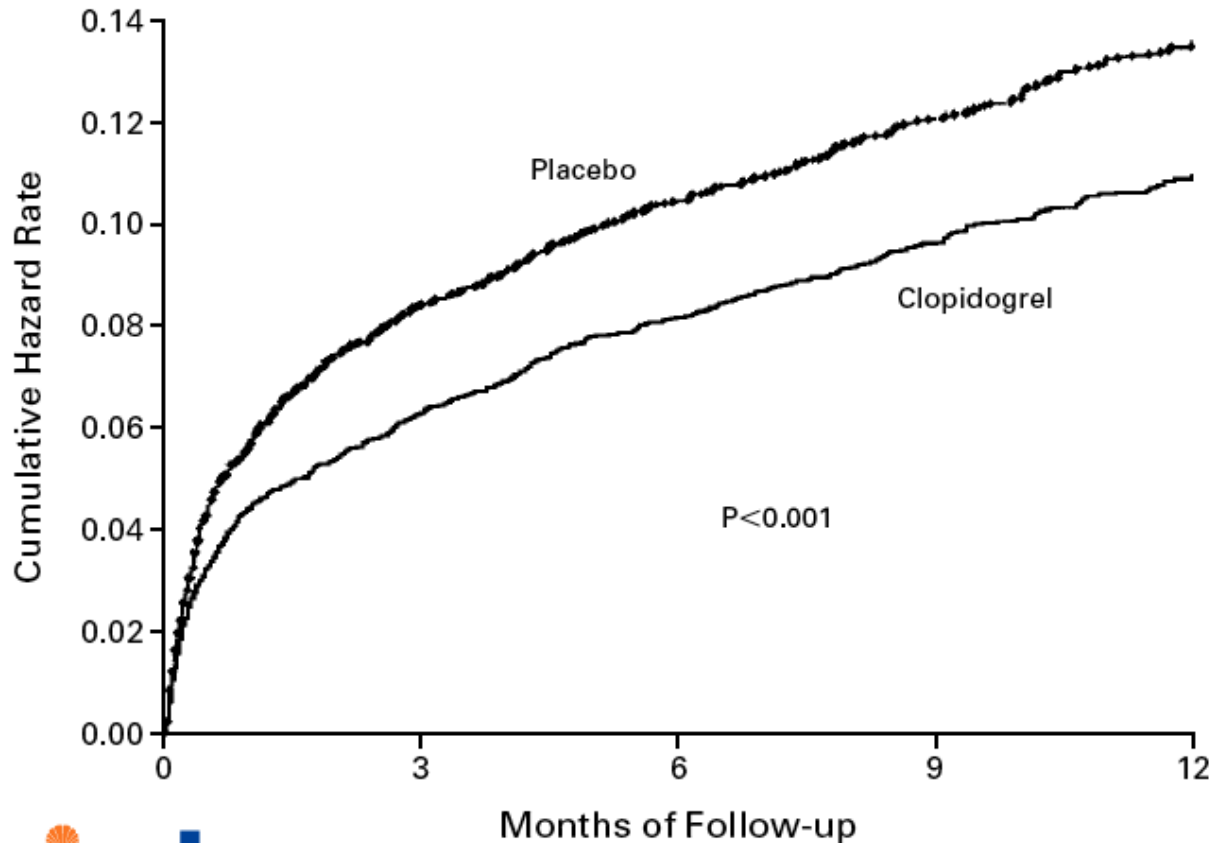


Facteurs de risque (analyse multivariée, [OR]) : Age >70 ans [1,9], ATCD angor [2,1], IDM [2,5], IC [3,0], AVC [3,4]

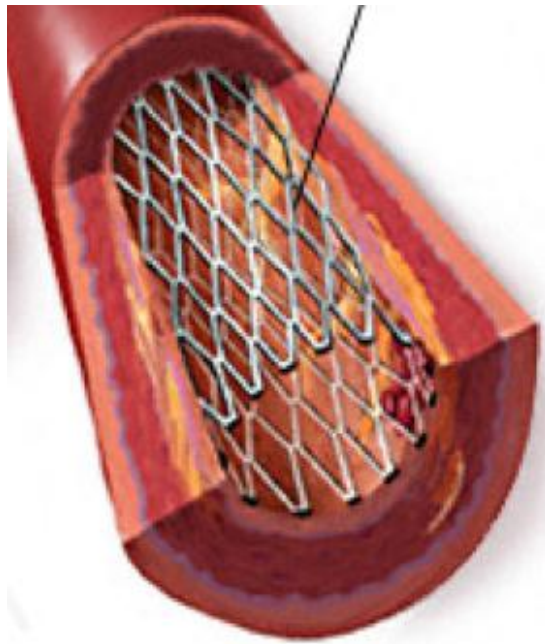
LA DOUBLE ANTI-AGRÉGATION PLAQUETTAIRE

EFFECTS OF CLOPIDOGREL IN ADDITION TO ASPIRIN IN PATIENTS WITH ACUTE CORONARY SYNDROMES WITHOUT ST-SEGMENT ELEVATION

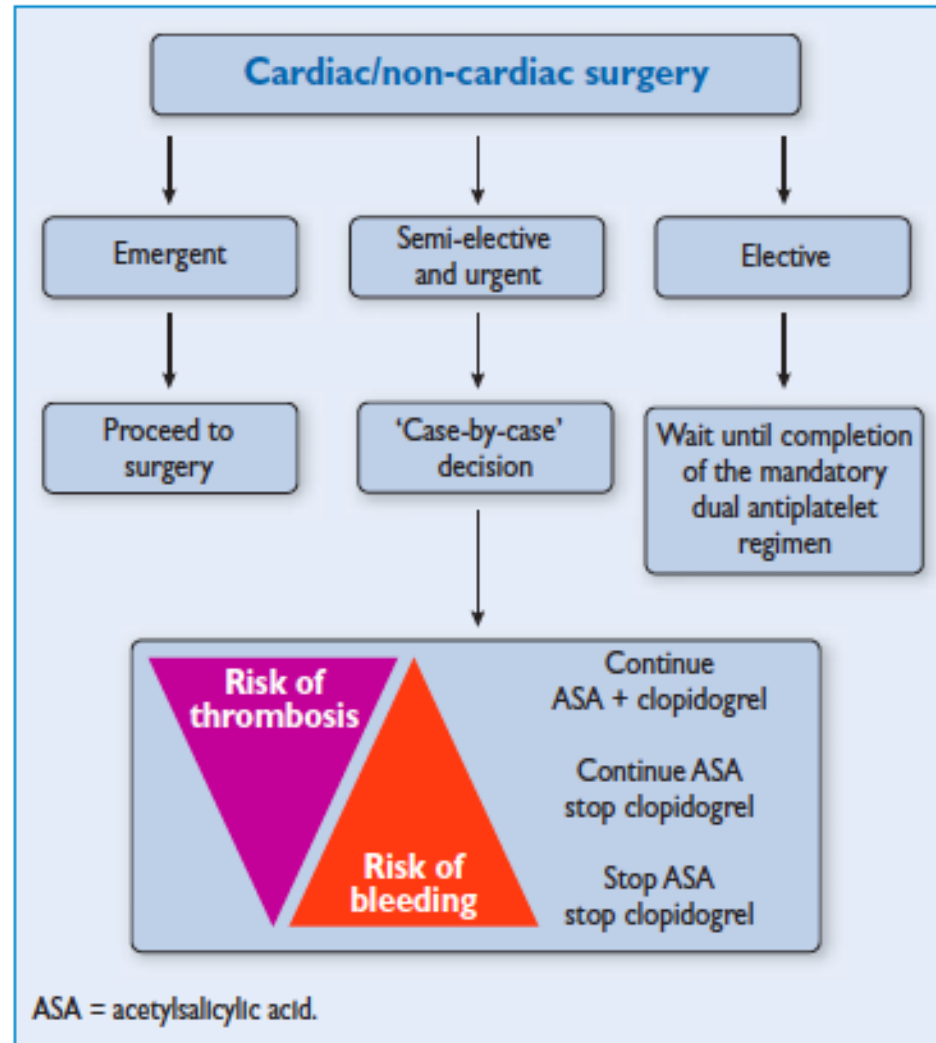
THE CLOPIDOGREL IN UNSTABLE ANGINA TO PREVENT RECURRENT EVENTS TRIAL INVESTIGATORS*



LA DOUBLE ANTI-AGRÉGATION PLAQUETTAIRE



LA DOUBLE ANTI-AGRÉGATION PLAQUETTAIRE



MERCI POUR VOTRE ATTENTION