

Quelle revascularisation pour la cardiomyopathie ischémique chronique avec dysfonction ventriculaire gauche?

Lionel MANGIN

Annecy

DÉCLARATION DE LIENS D'INTÉRÊT AVEC LA PRÉSENTATION

Nom de l'orateur : Lionel MANGIN, Annecy

Je n'ai pas de lien d'intérêt potentiel à déclarer

2021 © GRCI, Tous droits réservés - Toute reproduction même partielle est interdite.

2021 © GRCI, Tous droits réservés - Toute reproduction même partielle est interdite.

2018 ESC/EACTS Guidelines on myocardial revascularization

The Task Force on myocardial revascularization of the European Society of Cardiology (ESC) and European Association for Cardio-Thoracic Surgery (EACTS)

The choice between CABG and PCI should be made by the Heart Team after careful evaluation of the patient's clinical status and coronary anatomy, expected completeness of revascularization myocardial viability, coexisting valvular disease, and comorbidities.

PCI should be considered in older patients without diabetes in whom complete revascularization can be achieved, whereas CABG is preferred in younger patients with more extensive CAD or those with diabetes.

Eur Heart J 2019;40:87–165

Recommendation for the type of revascularization in patients with stable coronary artery disease with suitable coronary anatomy for both procedures and low predicted surgical mortality^d

Recommendations according to extent of CAD	CABG		PCI	
	Class ^a	Level ^b	Class ^a	Level ^b
One-vessel CAD				
Without proximal LAD stenosis.	IIb	C	I	C
With proximal LAD stenosis. ^{68,101,139–144}	I	A	I	A
Two-vessel CAD				
Without proximal LAD stenosis.	IIb	C	I	C
With proximal LAD stenosis. ^{68,70,73}	I	B	I	C
Left main CAD				
Left main disease with low SYNTAX score (0–22). ^{69,121,122,124,145–148}	I	A	I	A
Left main disease with intermediate SYNTAX score (23–32). ^{69,121,122,124,145–148}	I	A	IIa	A
Left main disease with high SYNTAX score (≥33). ^{c 69,121,122,124,146–148}	I	A	III	B
Three-vessel CAD without diabetes mellitus				
Three-vessel disease with low SYNTAX score (0–22). ^{102,105,121,123,124,135,149}	I	A	I	A
Three-vessel disease with intermediate or high SYNTAX score (>22). ^{c 102,105,121,123,124,135,149}	I	A	III	A
Three-vessel CAD with diabetes mellitus				
Three-vessel disease with low SYNTAX score 0–22. ^{102,105,121,123,124,135,150–157}	I	A	IIb	A
Three-vessel disease with intermediate or high SYNTAX score (>22). ^{c 102,105,121,123,124,135,150–157}	I	A	III	A

Recommendations on criteria for the choice between coronary artery bypass grafting and percutaneous coronary intervention

Recommendations	Class ^a	Level ^b
Assessment of surgical risk^c		
It is recommended that the STS score is calculated to assess in-hospital or 30 day mortality, and in-hospital morbidity after CABG. ^{112,114,138}	I	B
Calculation of the EuroSCORE II score may be considered to assess in-hospital mortality after CABG. ¹¹²	IIb	B
Assessment of CAD complexity		
In patients with LM or multivessel disease, it is recommended that the SYNTAX score is calculated to assess the anatomical complexity of CAD and the long-term risk of mortality and morbidity after PCI. ^{117–124}	I	B
When considering the decision between CABG and PCI, completeness of revascularization should be prioritized. ^{131,132,134–136}	IIa	B

2018 ESC/EACTS Guidelines on myocardial revascularization

The Task Force on myocardial revascularization of the European Society of Cardiology (ESC) and European Association for Cardio-Thoracic Surgery (EACTS)

Recommendations on revascularizations in patients with chronic heart failure and systolic left ventricular dysfunction (ejection fraction $\leq 35\%$)

Recommendations	Class ^a	Level ^b
In patients with severe LV systolic dysfunction and coronary artery disease suitable for intervention, myocardial revascularization is recommended. ^{81,250}	I	B
CABG is recommended as the first revascularization strategy choice in patients with multivessel disease and acceptable surgical risk. ^{68,81,248,255}	I	B
In patients with one- or two-vessel disease, PCI should be considered as an alternative to CABG when complete revascularization can be achieved.	IIa	C
In patients with three-vessel disease, PCI should be considered based on the evaluation by the Heart Team of the patient's coronary anatomy, the expected completeness of revascularization, diabetes status, and comorbidities.	IIa	C

Myocardial revascularization in patients with CAD, heart failure, and LVEF $\leq 35\%$

CABG preferred

PCI as alternative to CABG

© ESC 2018

2021 © GRCl, Tous droits réservés - Toute reproduction même partielle est interdite.

2018 ESC/EACTS Guidelines on myocardial revascularization

The Task Force on myocardial revascularization of the European Society of Cardiology (ESC) and European Association for Cardio-Thoracic Surgery (EACTS)

Recommendations on revascularizations in patients with chronic heart failure and systolic left ventricular dysfunction (ejection fraction $\leq 35\%$)

Recommendations	Class ^a	Level ^b
In patients with severe LV systolic dysfunction and coronary artery disease suitable for intervention, myocardial revascularization is recommended. ^{81,250}	I	B
CABG is recommended as the first revascularization strategy choice in patients with multivessel disease and acceptable surgical risk. ^{68,81,248,255}	I	B
In patients with one- or two-vessel disease, PCI should be considered as an alternative to CABG when complete revascularization can be achieved.	IIa	C
In patients with three-vessel disease, PCI should be considered based on the evaluation by the Heart Team of the patient's coronary anatomy, the expected completeness of revascularization, diabetes status, and comorbidities.	IIa	C

Myocardial revascularization in patients with CAD, heart failure, and LVEF $\leq 35\%$

CABG preferred

PCI as alternative to CABG

© ESC 2018

2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

Developed by the Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC)

Recommendations for myocardial revascularization in patients with heart failure with reduced ejection fraction

Recommendations	Class ^a	Level ^b
CABG should be considered as the first-choice revascularization strategy, in patients suitable for surgery, especially if they have diabetes and for those with multivessel disease. ^{581,587,588,590}	IIa	B
Coronary revascularization should be considered to relieve persistent symptoms of angina (or an angina-equivalent) in patients with HFrEF, CCS, and coronary anatomy suitable for revascularization, despite OMT including anti-anginal drugs.	IIa	C
In LVAD candidates needing coronary revascularization, CABG should be avoided, if possible.	IIa	C
Coronary revascularization may be considered to improve outcomes in patients with HFrEF, CCS, and coronary anatomy suitable for revascularization, after careful evaluation of the individual risk to benefit ratio, including coronary anatomy (i.e. proximal stenosis $>90\%$ of large vessels, stenosis of left main or proximal LAD), comorbidities, life expectancy, and patient's perspectives.	IIb	C
PCI may be considered as an alternative to CABG, based on Heart Team evaluation, considering coronary anatomy, comorbidities, and surgical risk.	IIb	C

© ESC 2021

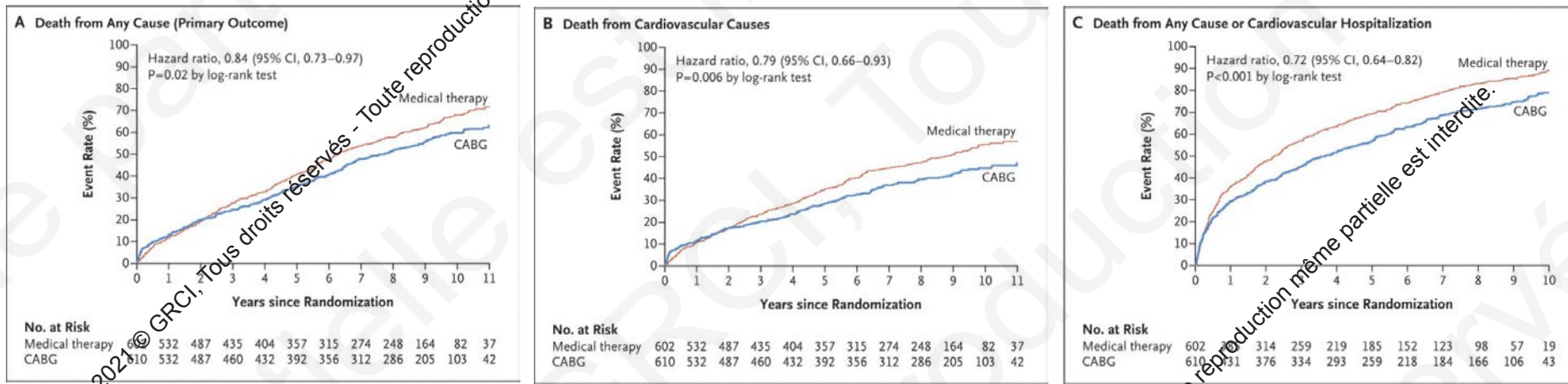
Faut-il revasculariser et comment?

- Bénéfice de la revascularisation chirurgicale?
- Bénéfice de la revascularisation par angioplastie ?
- Comparaison Xie / Angioplastie
- Intérêt de la recherche de viabilité et fiabilité des mesures FFR
- Les Recommandations

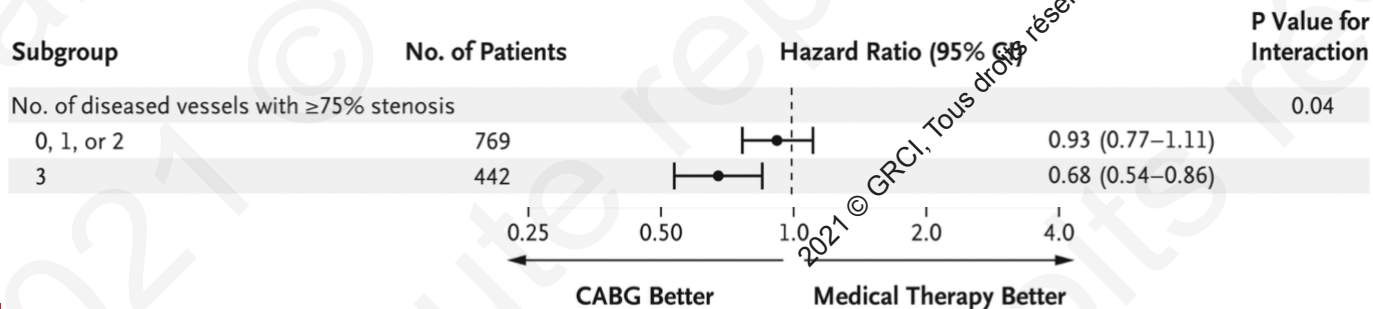
Bénéfices de la revascularisation chirurgicale

STICH à 10 ans

N Engl J Med. 2016 April 21; 374(16): 1511–1520

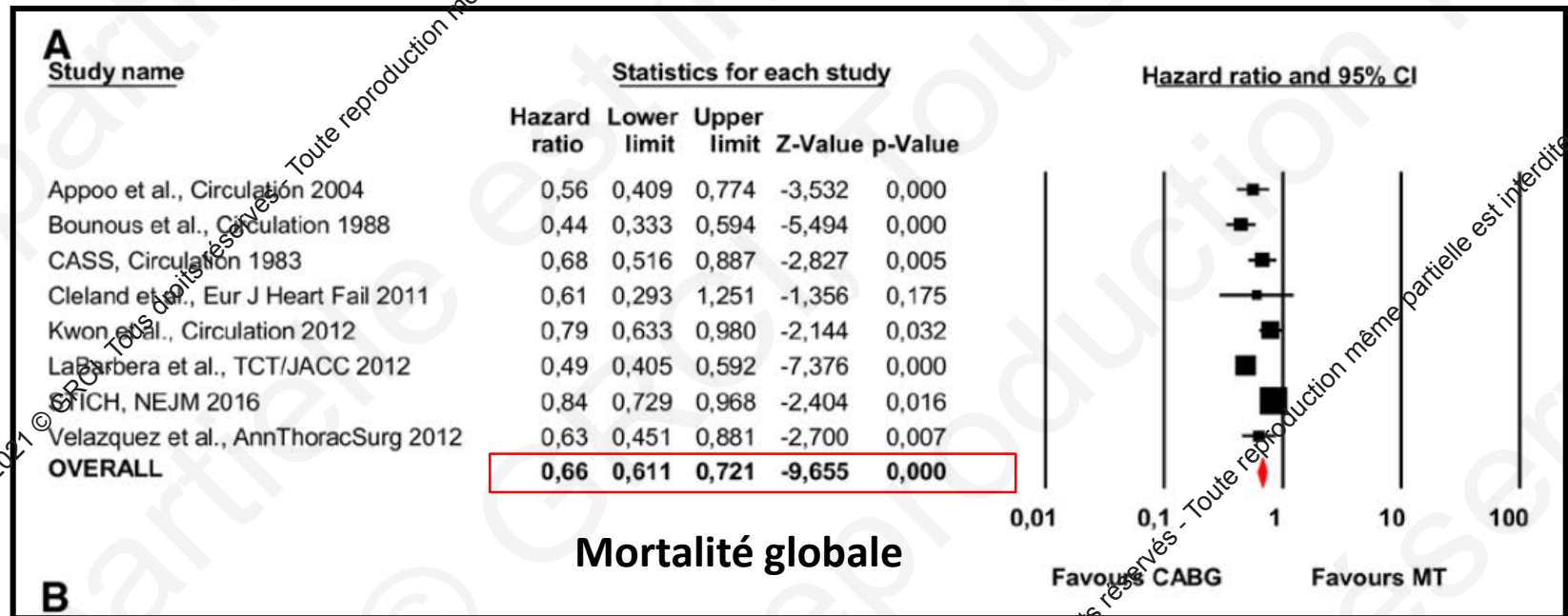


Durée de survie de 7,73 vs 6,29 ans : + 14 mois et NNT 14 (95% CI, 8-55)



Bénéfices de la revascularisation chirurgicale

Meta-analyse Revasc vs MI, 21 études (dont 3 randomisées), 16191 pts



Observationnelles surtout et pas de connaissance de l'exhaustivité des revascularisations

Circ Heart Fail. 2017;10:e003255

Bénéfices de la revascularisation par angioplastie

- Evolution clinique
- Récupération VG
- Revascularisation incomplète
- CTO
- Support par assistance mécanique

Impact de la PCI / évolution clinique

Le pronostic après angioplastie est moins bon si la FEVG est altérée

Mortalité

Meta-analyse (19 studies, n=4766 pts, FEVG 30% +/-3%)

Mortalité Intra-H = 1,8% (95% CI 1.0-2.9%).

Mortalité à 24 mois = 15.6% (95% CI 11.0-20.7%)

Coron Artery Dis 2012;23:469-79

Registre de 385 pts (1999-2009)

21% DC à 28 mois, indépendent predictors of death :

IDDM [HR] 2.64

multivessel disease [HR] 1.92

LVEF < 35 % [HR] 1.88

Symptoms of heart failure [HR] 1.67

BMC Cardiovasc Disord 2015;15:137

Thrombose de stent

Atteinte sévère de la FEVG :

4 fois plus de thrombose de stent

2 fois plus de MACE

(DC IDM ST TLR) à 1 an

« Patients with LVEF <40% appear to be at significantly higher risk for ST and therefore might benefit from interventional and pharmacologic strategies aimed at minimizing this risk »

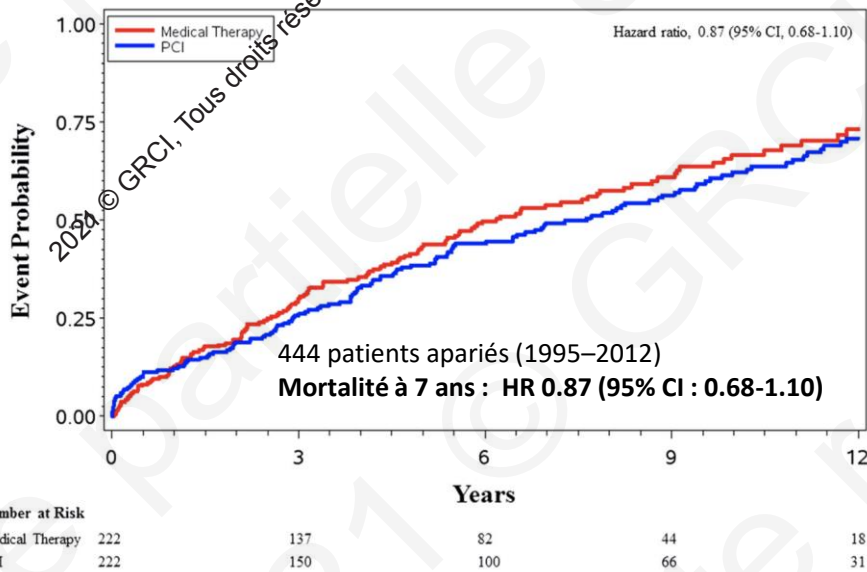
Am J Cardiol 2012;109:344-51

Impact de la PCI / évolution clinique

Comparaison au ttt médical

Percutaneous coronary intervention outcomes in patients with stable coronary disease and left ventricular systolic dysfunction

Duke University Medical Center



ESC Heart Fail 2019;6:1233–42

Meta-analyse Revasc vs MT

21 études (dont 3 randomisées), 16191 pts

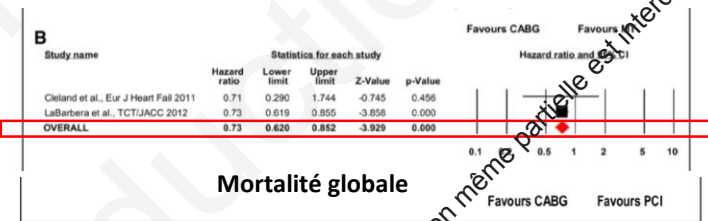


Figure 2. Individual and summary hazard ratios for mortality of studies stratified by treatment comparison: (A) coronary artery bypass grafting (CABG) vs medical treatment (MT)^{8,10,16,21,26,27,31,32,34}; (B) percutaneous coronary intervention (PCI) vs MT^{21,27}; and (C) CABG vs PCI.^{15,17–25,27–30,33,35} ASAN-MAIN indicates Asan Medical Center—Left Main Revascularization; AWESOME, Angina With Extremely Serious Operative Mortality Evaluation; CASS, Coronary Artery Surgery Study; CI, confidence interval; CREDO-Kyoto, Coronary Revascularization Demonstrating Outcome Study in Kyoto; IRIS-MAIN, Observational Study for Left Main Disease Treatment; REAL, Regional Registry of Coronary Angioplasties; REHEAT, Revascularization in Heart Failure Trial; and STICH, Surgical Treatment for Ischemic Heart Failure.

Circ Heart Fail. 2017;10:e003255

Etude REVIVED BCIS2

700 pts, FEVG ≤ 35%
4 sgts viables et revascularisables
DC ou HF à 24 mois

Impact de la PCI / Récupération VG

- **Données combinées de PROTECTII et cVAD Registry :**

57% avaient une augmentation d'au moins 5% de la FEVG
Augmentation de la FEVG de 25 à 31% (+ 6,5% P<0.001),
corrélée au nombre de vaisseaux traités (p 0,046)

- + 5,5% pour 1 v
- + 6.6% pour 2Vx
- + 8,3% pour 3 Vx

- ***Sous étude de PROTECT II :***

51% de reverse remodeling VG (+ 13% FEVG, p<0,001),

Lié à l'extention de la revascularisation (OR 7,52 IC 95% : 2,31-43,25)

Meilleure évolution clinique chez les répondeurs

- d'événements CardioV et CérébroV (9,7 vs 24,2% P = 0,009)

+ amélioration des SF (NHYA III/IV de 67 à 24% vs de 56 à 35% p =0,045)

Catheter Cardiovasc Interv 2020;96: 764–70

Revascularisation incomplète

> Registre CHART-2 (*Int J Cardiol* 2019;278:22-7)

Mortalité totale : 21.9% vs 11.6% (p = 0,027) HR 1,62 (CI 1,07-2,46 p=0.024)

> Moins bon pronostic en cas d'échec de revascularisation complète (*J Interv Cardiol* 2020:9506124)

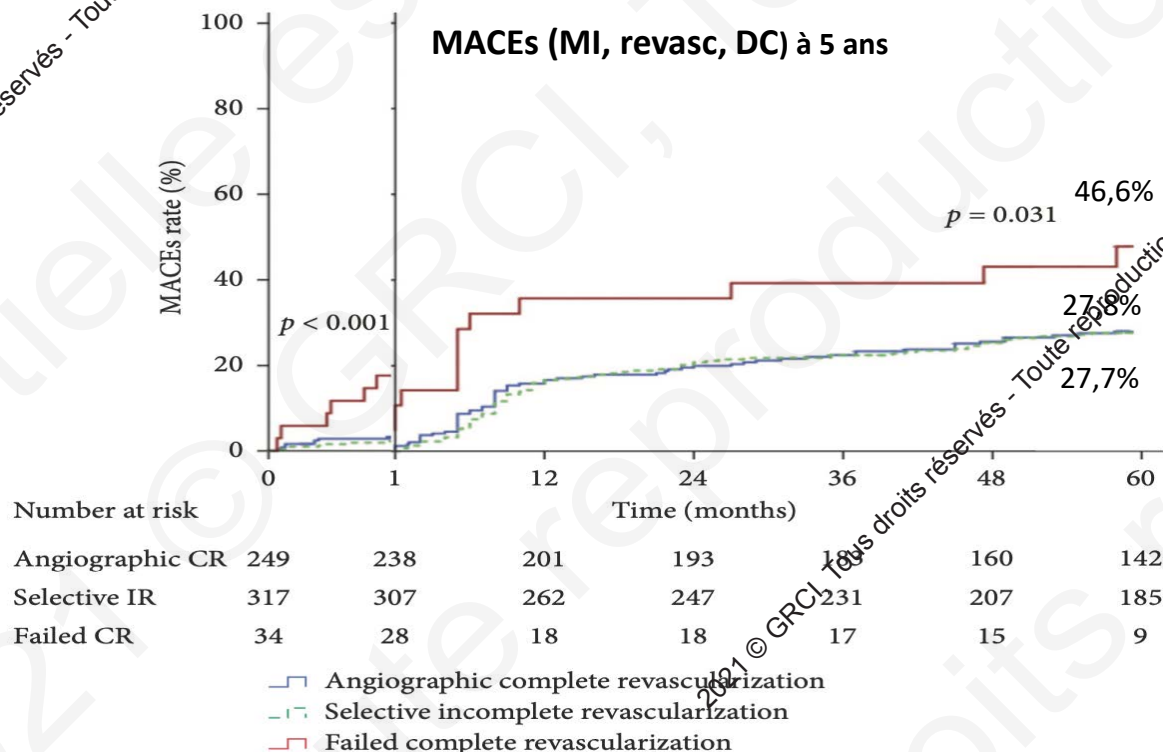
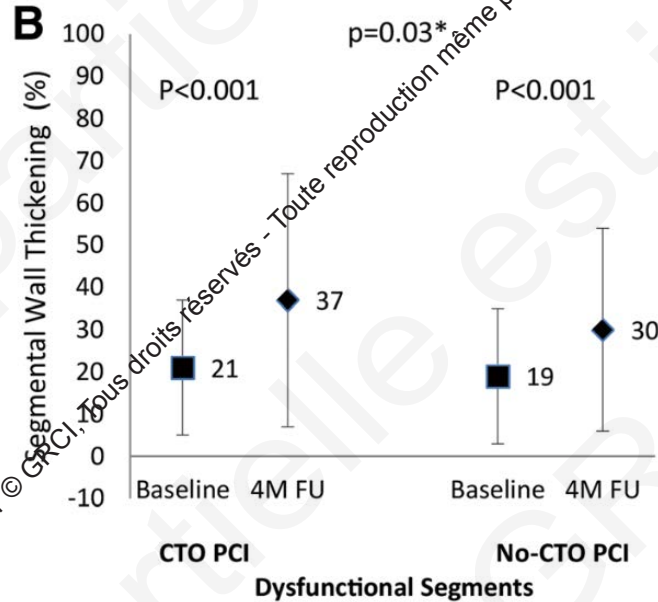


FIGURE 2: Kaplan-Meier curve of 5-year MACEs by revascularization status.

CTO

Deux études randomisées contradictoires

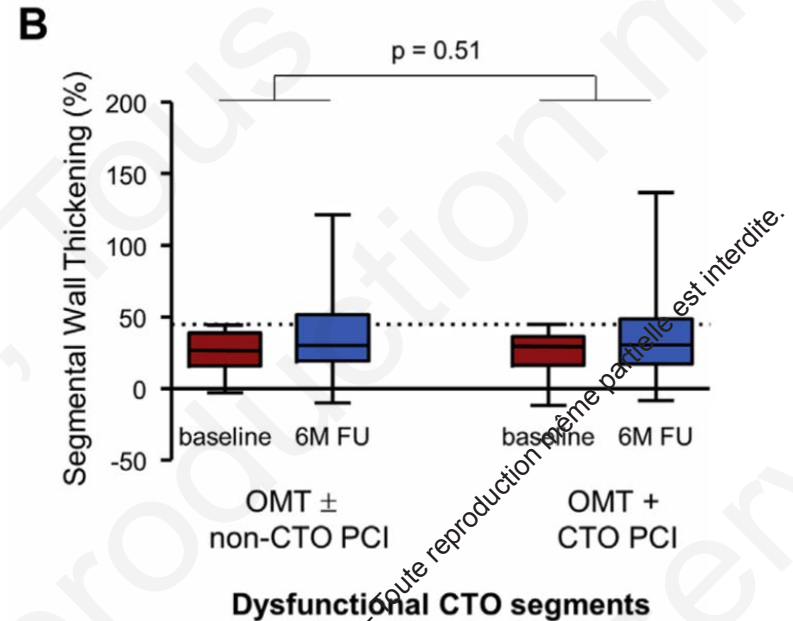


Etude ancillaire de **EXPLORE**

(stent Xience – post stemi avec cTO en sus)

180 pts

(J Cardiovasc Magn Reson 2017;19: 53)



REVASC

(récupération VG après PCI pour CTO vs OMT)

205 pts

(J Am Coll Cardiol Intv 2018;11:1982–91)

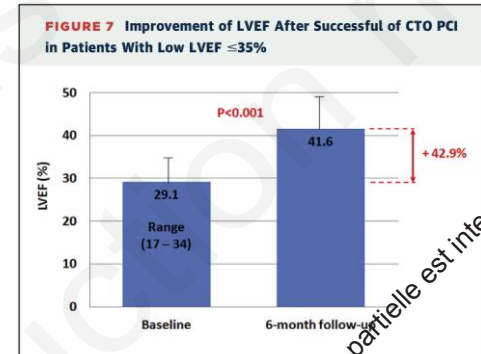
CTO

Etudes observationnelles

Etude prospective multicentrique,
(839 pts, comparaison selon la FEVG, 92% de succès)

→ **FEVG ≤ 35% et succès de PCI-CTO :**
augmentation de 12% de la FEVG

(Am Coll Cardiol Intv 2017;10: 2158–70)



Registre monocentrique (2002 pts, 17% avec une FEVG < 40%).

→ **Un Succès de procédure est un critère indépendant de baisse de mortalité :**

HR adj. de 0,48 (95% CI : 0,34-0,70) / FEVG préservée

HR adj. de 0,63 (95% CI : 0,41-0,98) / FEVG altérée

(Am J Cardiol 2017;120: 1780–6)

Assistance mécanique

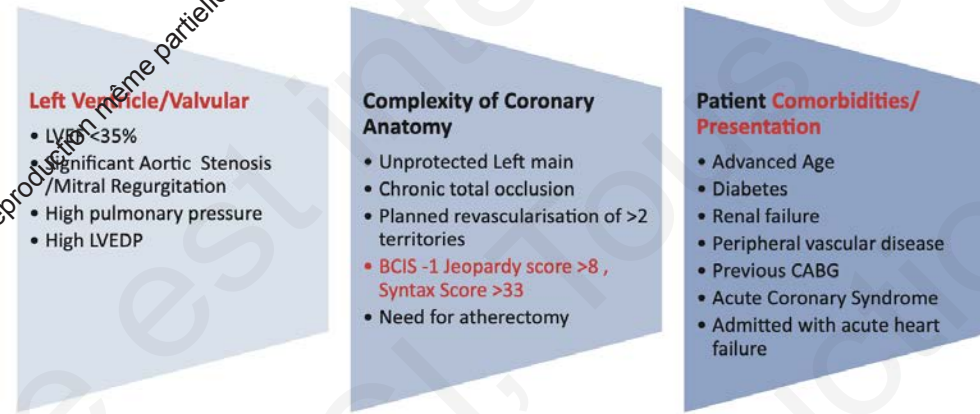


Figure 2. High risk PCI characteristics.

BCIS-1 (*JAMA* 2010;304:867–74) : 301 pts, FE<30%, CPBIA

MACCE intraH (mortalité AMI cerebrovasculaire ou revascularisation) idem avec CPBIA : 15-16% p=0,85

Mortalité idem à 6 mois : 4,6% (CPBIA) et 7,4% (no CPBIA) P=0,32 (95% CI, 0,24-1,62)

PROTECT II study (*Circulation* 2012;126:1717–27) : 327 pts, FE<= 35%, CPBIA ou IMPELLA 2,5 :

MAE J30 idem (35,1% et 40,1% P=0,23)

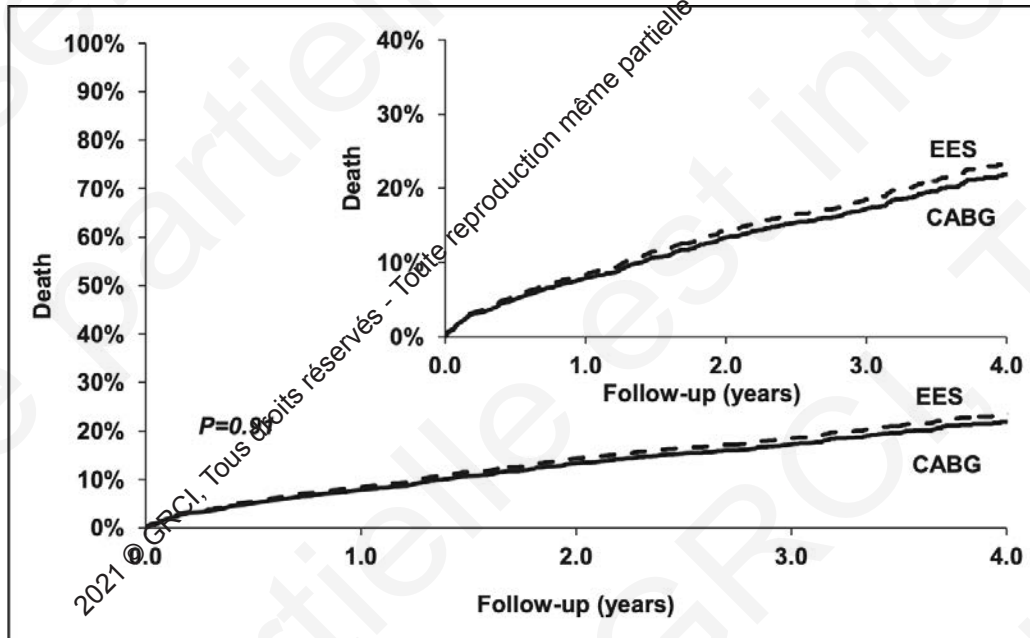
Mais MAE J90 dans la sous population effectivement implantée = 40% vs 51% (p=0,023)

PROTECT IV en cours avec l'Impella pour ATC à haut risque

Comparaison chirurgie / angioplastie

- Pas d'étude randomisée spécifique de la CMI
- Dans les études comparatives tout venant, moins de 20% des patients avaient une FEVG altérée (2% avaient une atteinte sévère de la FEVG dans la population SYNTAX)
- Etudes observationnelles

PAC vs ATC



2126 pts – **Etat de NY**
propensity-score adjusted analyses
FEVG ≤ 35%

A 2,9 ans

AVc OR 0,57 (0,33-0,97)
IdM OR 2,16 (1,42-3,28)
(sauf en cas de revasc complète)
Mortalité OR 1,01 (0,81-0,1,28)

« PCI multiple peut être une alternative chez les pts avec IC et atteinte pluri-TC si la revasc. complète est possible »

Circulation 2016 May 31;133(22):2132-40, Sripal Bangalore et al.

PAC vs ATC

Metaanalyse Revasc vs MT

21 études (3 randomisées)

16191 pts

« The present meta-analysis indicates that revascularization strategies are superior to medical treatment in improving survival in patients with ischemic heart disease and reduced ejection fraction. Between the 2 revascularization strategies, CABG seems more favorable compared with PCI in this particular clinical setting »

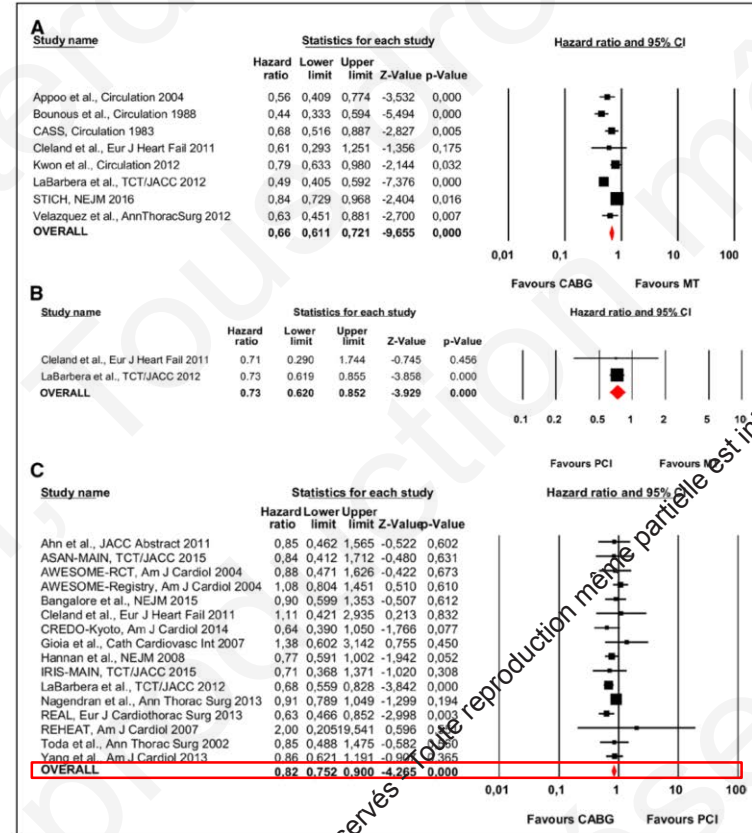


Figure 2. Individual and summary hazard ratios for mortality for studies stratified by treatment comparison: (A) coronary artery bypass grafting (CABG) vs medical treatment (MT); (B) percutaneous coronary intervention (PCI) vs MT; and (C) CABG vs PCI. ASAN-MAIN indicates Asan Medical Center—Left Main Revascularization; AWESOME, Angina With Extremely Serious Operative Mortality Evaluation; CASS, Coronary Artery Surgery Study; CI, confidence interval; CREDO-Kyoto, Coronary Revascularization Demonstrating Outcome Study in Kyoto; IRIS-MAIN, Observational Study for Left Main Disease Treatment; REAL, Regional Registry of Coronary Angioplasties; REHEAT, Revascularization in Heart Failure Trial; and STICH, Surgical Treatment for Ischemic Heart Failure.

Circ Heart Fail. 2017;10:e003255

PAC vs ATC

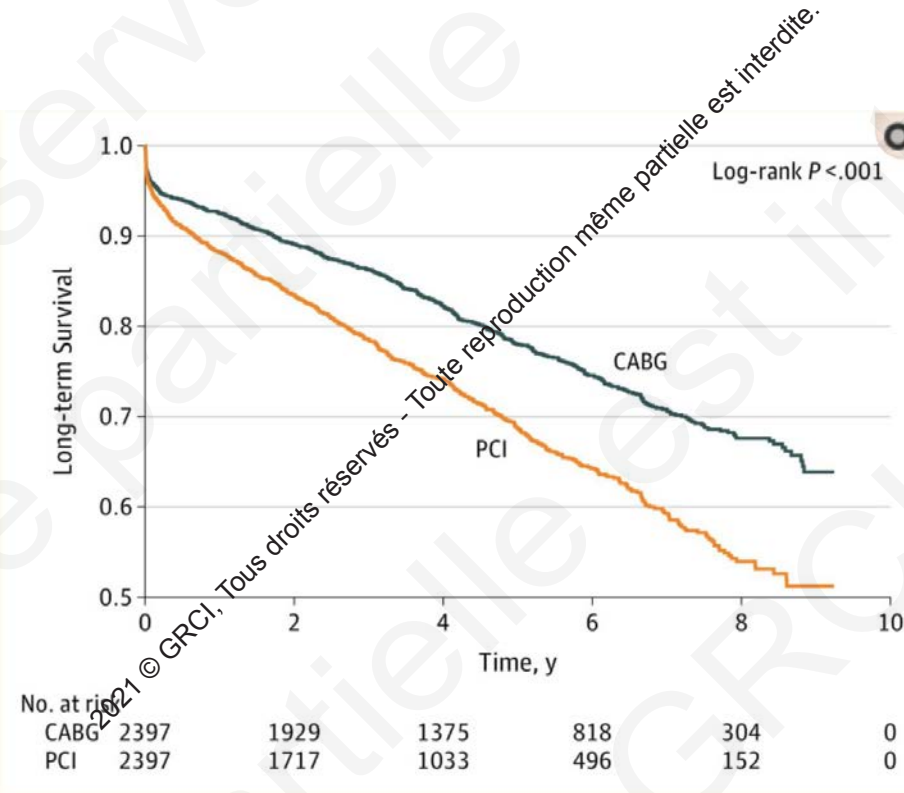


Figure 1. Estimated Long-term Survival After Percutaneous Coronary Intervention (PCI) vs Coronary Artery Bypass Grafting (CABG)

4794 pts – CANADA 2008-2016
propensity-score adjusted analyses

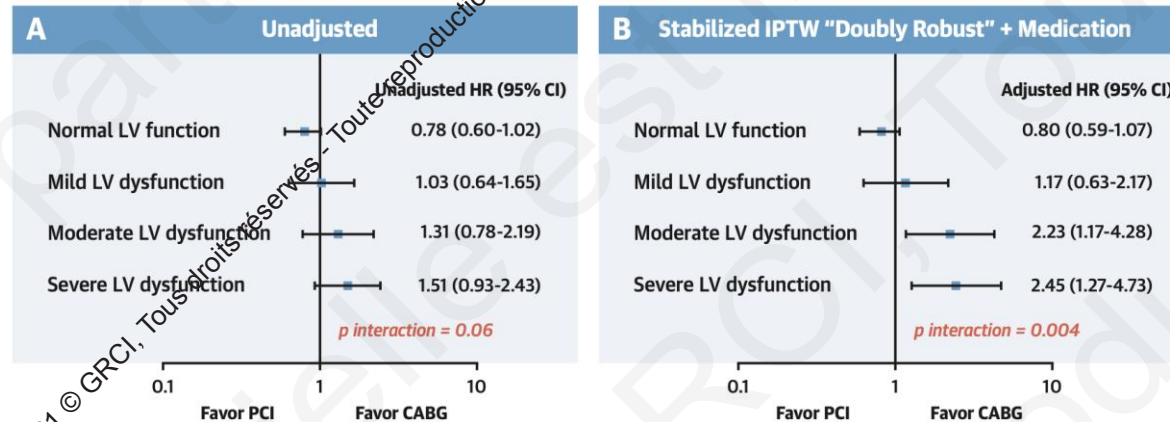
A 5 ANS

- Mortalité TOTALE** : HR 1,61 (95% CI 1,3-1,7)
- mortalité CV : HR 1,4 (95% CI 1,1-1,6)
- nouvelle ravasc : HR 3,7 (95% CI 3,2-4,3)
- H pou IC : HR 1,5 (95% CI 1,3-1,6)
- Idm : HR 3,2 (95% CI 2,6-3,8)

JAMA Cardiol. 2020 Jun 1;5(6):631-641

PAC vs ATC

CENTRAL ILLUSTRATION Unadjusted and Adjusted Hazard Ratios for the Primary Composite Outcome According to the Severity of Left Ventricular Dysfunction in Patients Who Underwent Percutaneous Coronary Intervention or Coronary Artery Bypass Grafting for Left Main Coronary Artery Disease



Park, S. et al. J Am Coll Cardiol. 2020;76(12):1395-406.

(A) Unadjusted hazard ratios and (B) adjusted hazard ratios according to the severity of left ventricular (LV) dysfunction are shown. In the final adjusted model, stabilized inverse probability of treatment weighting with the "doubly robust" method and further adjustment for the important post-treatment variables of cardioactive medications were used. The primary composite outcome was defined as the composite of death from any cause, myocardial infarction, or stroke. Hazard ratios (HRs) are for the percutaneous (PCI) group compared with the coronary artery bypass grafting (CABG) group; p interaction for the severity of LV dysfunction and revascularization strategy (PCI vs. CABG).

IRIS MAIN registry

(ASIE – T)

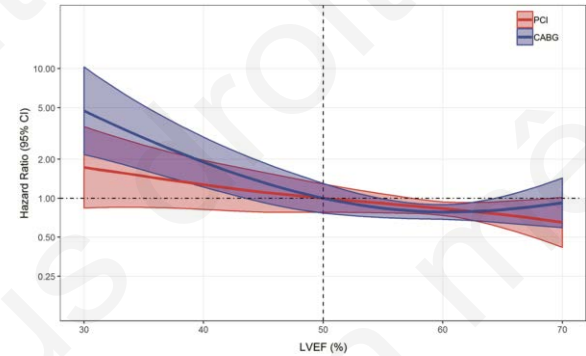
3488 pts

Crit. laire = DC/MI/AVC

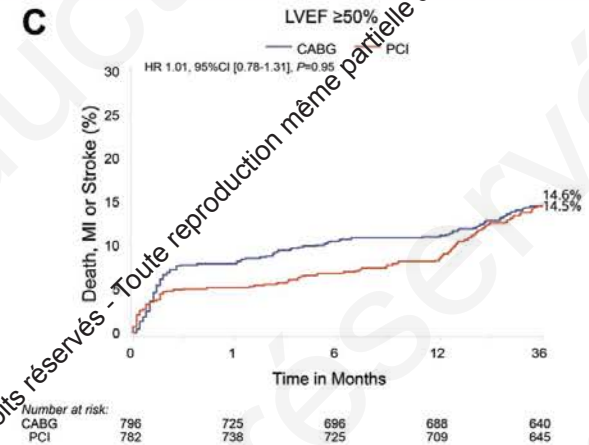
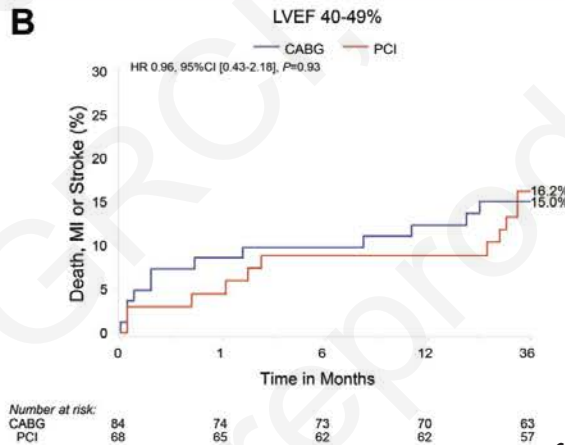
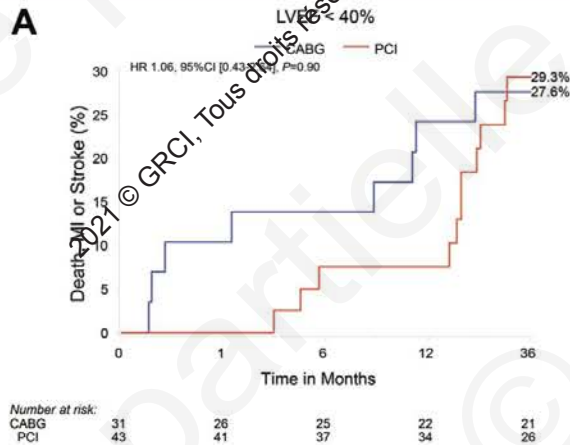
J Am Coll Cardiol. 2020 Sep 22;76(12):1395-1406

PAC vs ATC

sous étude de **EXCEL**
(Randomisée Xience ou PAC / TCG 1804pts)



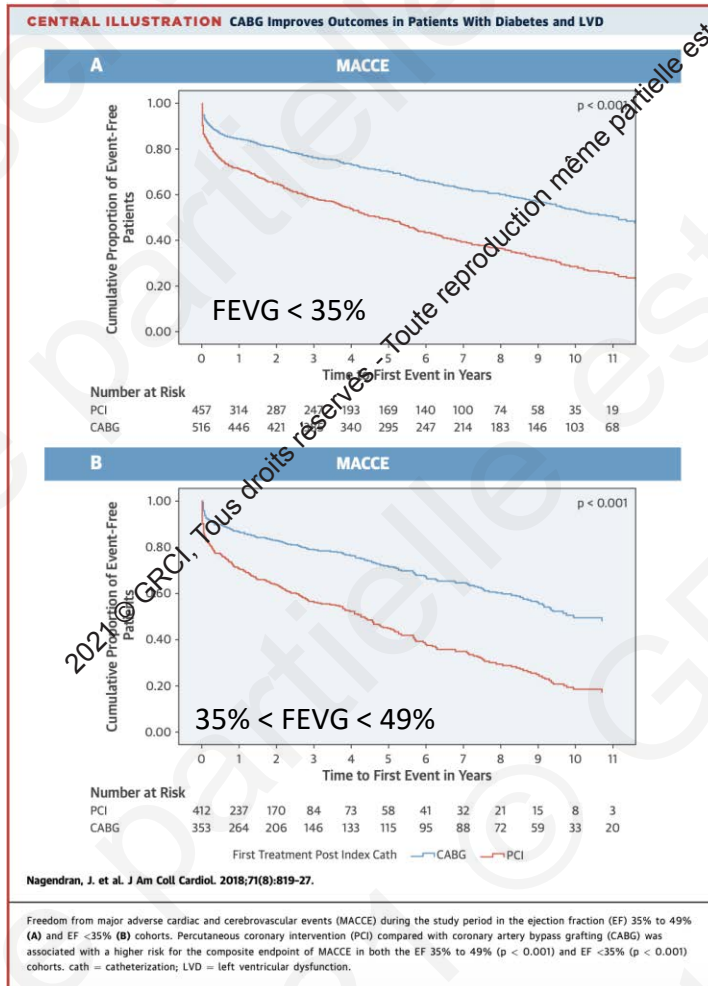
Mortalité toute cause à 3 ans



DC AMI AVC à 3 ans

Eur J Heart Fail. 2020 May;22(5):871-879

PAC vs ATC



Diabète et FEVG < 50%

1738 pts 2004-2016 en ALBERTA

Propensity score

At long-term follow-up, patients with CAD, DM, and LVD treated with CABG exhibited a significantly lower incidence of major adverse cardiac and cerebrovascular events* and better long-term survival over PCI, without a higher risk for stroke

(*composite of death, stroke, myocardial infarction)

J Am Coll Cardiol 2018;71:819-27

PAC vs ATC

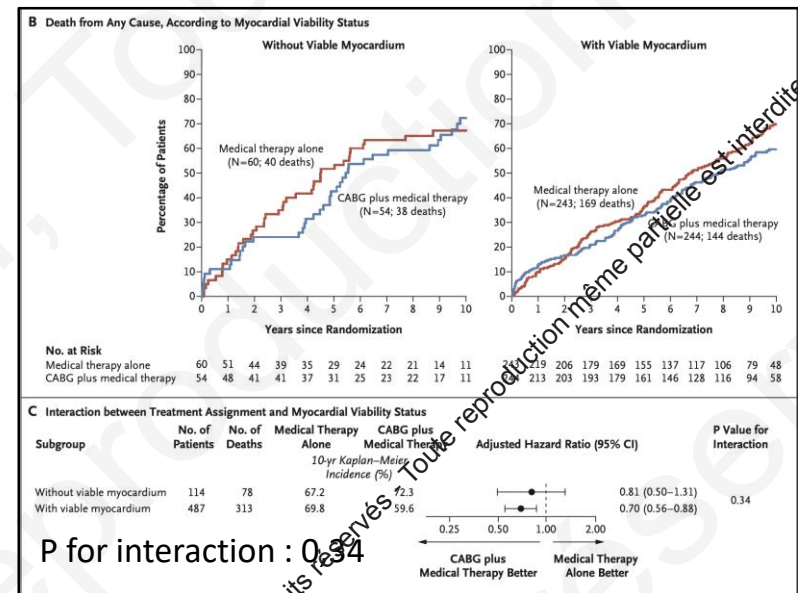
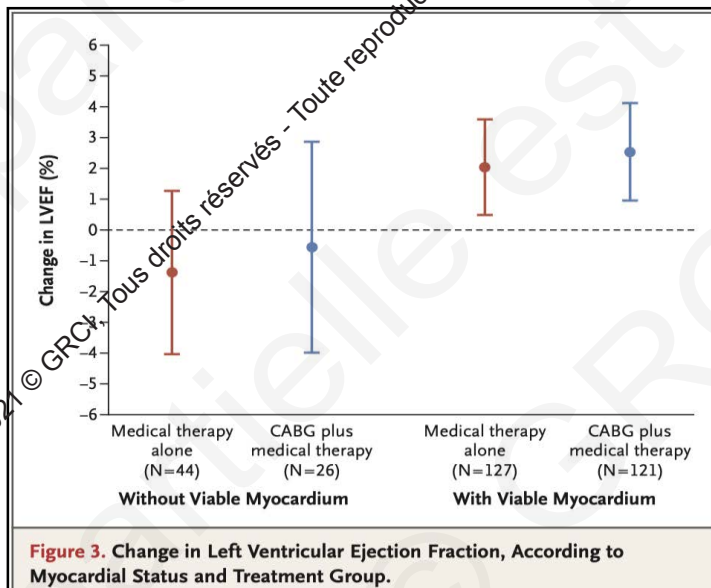
- PHRC PROVERB

2021 © GRCI, Tous droits réservés - Toute reproduction même partielle est interdite.

2021 © GRCI, Tous droits réservés - Toute reproduction même partielle est interdite.

Viabilité

Sous Groupe étude STICH, à 10 ans



CONCLUSIONS

The findings of this study do not support the concept that myocardial viability is associated with a long-term benefit of CABG in patients with ischemic cardiomyopathy.

n engl j med 381;8 nejm.org August 22, 2019

FFR

> Dans FAME 10% des patients avaient une FEVG < 40% :

FFR plus élevées pour des sténoses > 90% lorsque la FEVG est $\leq 40\%$

(0,55 vs 0,5 p=0,02)

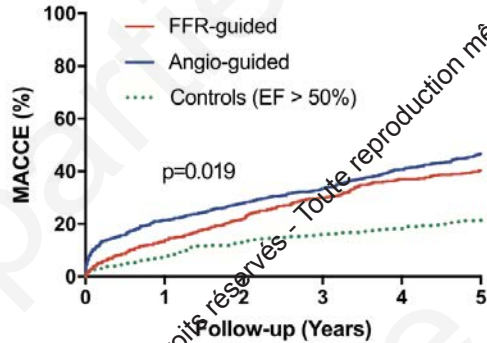
> Dans FAME 2 les patients avec FE < 30% avaient été exclus

> 1 étude observationnelle Monocentrique a évalué le bénéfice de la stratégie FFR guidée chez les lésions intermédiaires associées à une FEVG altérée

(*Eur Heart J* 2020 May 1;41(17):1665-1672)

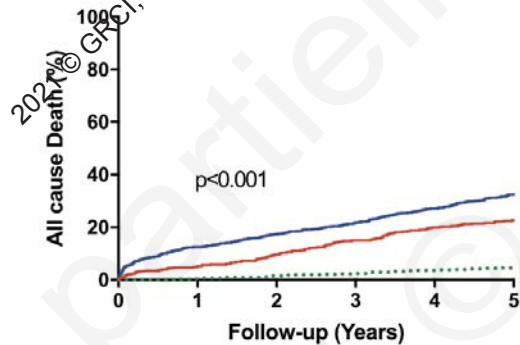
FFR

A



FFR-guided	429	330	333	299	268	249
Angio-guided	842	661	602	551	488	436

C



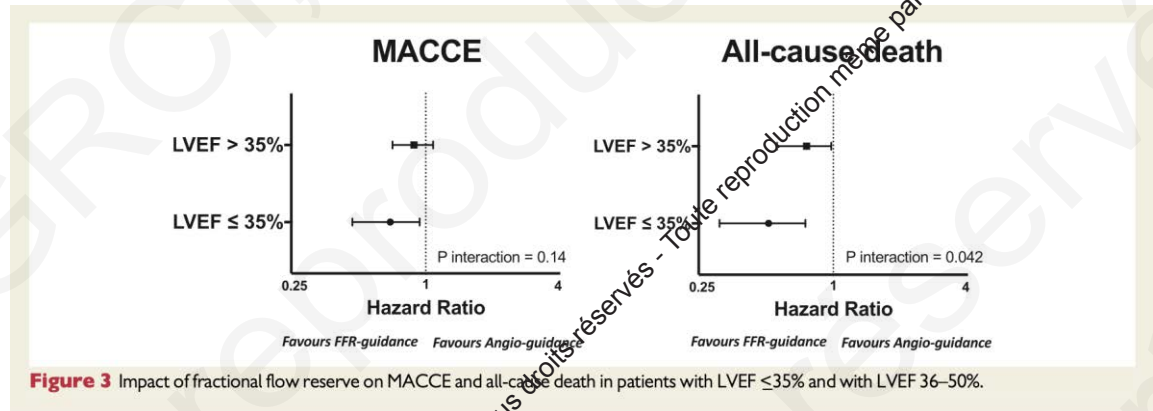
FFR-guided	429	405	385	361	338	322
Angio-guided	842	735	694	651	604	556

bénéfice de la stratégie FFR guidée en présence d'une FEVG altérée

Moins de revascularisations (52% vs. 62%; P < 0.001)

Moins de DC à 5 ans : HR 0.64 (0.51-0.81); P < 0.001

Moins de MACCE : HR 0.81 (0.67-0.97); P = 0.019.



Eur Heart J 2020 May 1;41(17):1665-1672

Myocardial revascularization

Recommendations for myocardial revascularization in patients with heart failure with reduced ejection fraction

Recommendations	Class ^a	Level ^b
CABG should be considered as the first-choice revascularization strategy, in patients suitable for surgery, especially if they have diabetes and for those with multivessel disease. <small>589,587,588,590</small>	IIa	B
Coronary revascularization should be considered to relieve persistent symptoms of angina (or an angina-equivalent) in patients with HFrEF, CCS, and coronary anatomy suitable for revascularization, despite GMT including anti-anginal drugs.	IIa	C
In LVAD candidates needing coronary revascularization, CABG should be avoided, if possible.	IIa	C
Coronary revascularization may be considered to improve outcomes in patients with HFrEF, CCS, and coronary anatomy suitable for revascularization, after careful evaluation of the individual risk to benefit ratio, including coronary anatomy (i.e. proximal stenosis >90% of large vessels, stenosis of left main or proximal LAD), comorbidities, life expectancy, and patient's perspectives.	IIb	C
PCI may be considered as an alternative to CABG, based on Heart Team evaluation, considering coronary anatomy, comorbidities, and surgical risk.	IIb	C

© ESC 2021

European Heart Journal (2021) 42, 3599-3726

Myocardial revascularization

Recommendations for myocardial revascularization in patients with heart failure with reduced ejection fraction

Recommendations	Class ^a	Level ^b
CABG should be considered as the <u>first-choice</u> revascularization strategy, in patients suitable for surgery, especially if they have diabetes and for those with <u>multivessel disease</u> . ^{589,590,591,592,593,594,595,596,597,598,599}	IIa	B
Coronary revascularization should be considered to relieve persistent symptoms of angina (or an angina-equivalent) in patients with HFrEF, CCS, and coronary anatomy suitable for revascularization, despite GDMT including anti-anginal drugs.	IIa	C
In LVAD candidates needing coronary revascularization, CABG should be avoided, if possible.	IIa	C
Coronary revascularization may be considered to improve outcomes in patients with HFrEF, CCS, and coronary anatomy suitable for revascularization, after careful evaluation of the individual risk to benefit ratio, including coronary anatomy (i.e. proximal stenosis >90% of large vessels, stenosis of left main or proximal LAD), comorbidities, life expectancy, and patient's perspectives.	IIb	C
PCI may be considered as an alternative to CABG, based on Heart Team evaluation, considering coronary anatomy, comorbidities, and surgical risk.	IIb	C

© ESC 2021

European Heart Journal (2021) 42, 3599–3726

Viabilité

■ ESC IC 2021

« Post hoc analyses of the STICH trial suggested that neither myocardial viability, angina, nor ischaemia were related with outcomes after revascularization ».

Non-invasive stress imaging (CMR, stress echocardiography, SPECT, PET) may be considered for the assessment of myocardial ischaemia and viability in patients with CAD who are considered suitable for coronary revascularization.^{90–93}

IIb

B

European Heart Journal (2021) 42, 3599-3726

Assistance mécanique

→ ACC/AHA/SCAI (J Am Coll Cardiol 2015; 65:e7–26) : **Class IIb** recommendation for use of MCS in elective and acute settings as an adjunct to HR PCI

→ ESC/ EACTS (Eur Heart J 2019; 40:87–165) : MCS only in setting of CS complicating AMI (class IIb),
It does not recommend use of IABP in CS (Class III)

Conclusions

Quelle revascularisation pour la CMI chronique avec dysfonction ventriculaire gauche ?

- Les preuves scientifiques sont pauvres et parfois contradictoires quand à l'efficacité de la revascularisation pour améliorer le pronostic des patients
 - → PAC meilleur que le ttt médical à 10 ans (IIa B)
 - Pour le diabétique et anatomie complexe le PAC serait meilleur que la PCI
 - La PCI serait une alternative au PAC mais rien ne prouve formellement sa > à l'OMT (IIb C)
 - Le Bénéfice de l'assistance mécanique reste à prouver
- En terme de stratégie
 - Pas de preuve solide en faveur d'une stratégie intégrant une recherche de viabilité (IIb B)
 - Privilégier le traitement qui offrira la revascularisation la plus complète possible (IIa B)
 - Privilégier les techniques modernes (tout artériel / tout stent actif)
- Des études randomisées sont en cours ou à venir
 - Comparaison PCI / PAC avec les techniques contemporaines (mais ce sont généralement les résultats à très long terme qui permettent de les départager) : PHRC PROVERB
 - PCI vs Traitement médical optimal : REVIVED BCIS2
 - Assistance mécanique dans l'angioplastie à haut risque : PROTECT IV

TAKE HOME MESSAGE

Décision en Heart Team

- Anatomie
- Risque (STS = reco I B)
- Contexte

Priorité au pontage d'autant plus que les lésions sont complexes et que le patient est diabétique

Bénéfice d'une revascularisation la plus complète possible /
risque

Merci de votre attention

2021 © GRCI, Tous droits réservés - Toute reproduction même partielle est interdite.

2021 © GRCI, Tous droits réservés - Toute reproduction même partielle est interdite.

Percutaneous Coronary Revascularization VERSus Coronary-Artery Bypass Grafting for Multivessel Disease in Patients With Left Ventricular Dysfunction:

PROVERB

Patients with LV dysfunction (LVEF $\leq 35\%$) and multi-vessel disease accessible to both PCI and CABG
N=1040

Randomization
1:1

Revascularization by PCI

Revascularization by CABG

Duration of enrolment period: 36 months

Duration of follow-up period: 36 months after inclusion of the last patient

Primary outcome:
death, stroke, myocardial infarction and unplanned hospitalization for heart failure or urgent revascularization

Study duration: 6 years

Démarrage courant 2022

➤ 40 centres

Informations: romain.galet@aphp.fr



ALBERT CHENEVIER - JOFFRE-DUPLY/TREN
EMILE ROUX - GEORGES CLEMENEAU



MINISTÈRE
DES SOLIDARITÉS
ET DE LA SANTÉ

Liberté
Égalité
Fraternité