Place de la Thrombo Aspiration

APPAC

5 juin 2014

Session commune avec le GACI

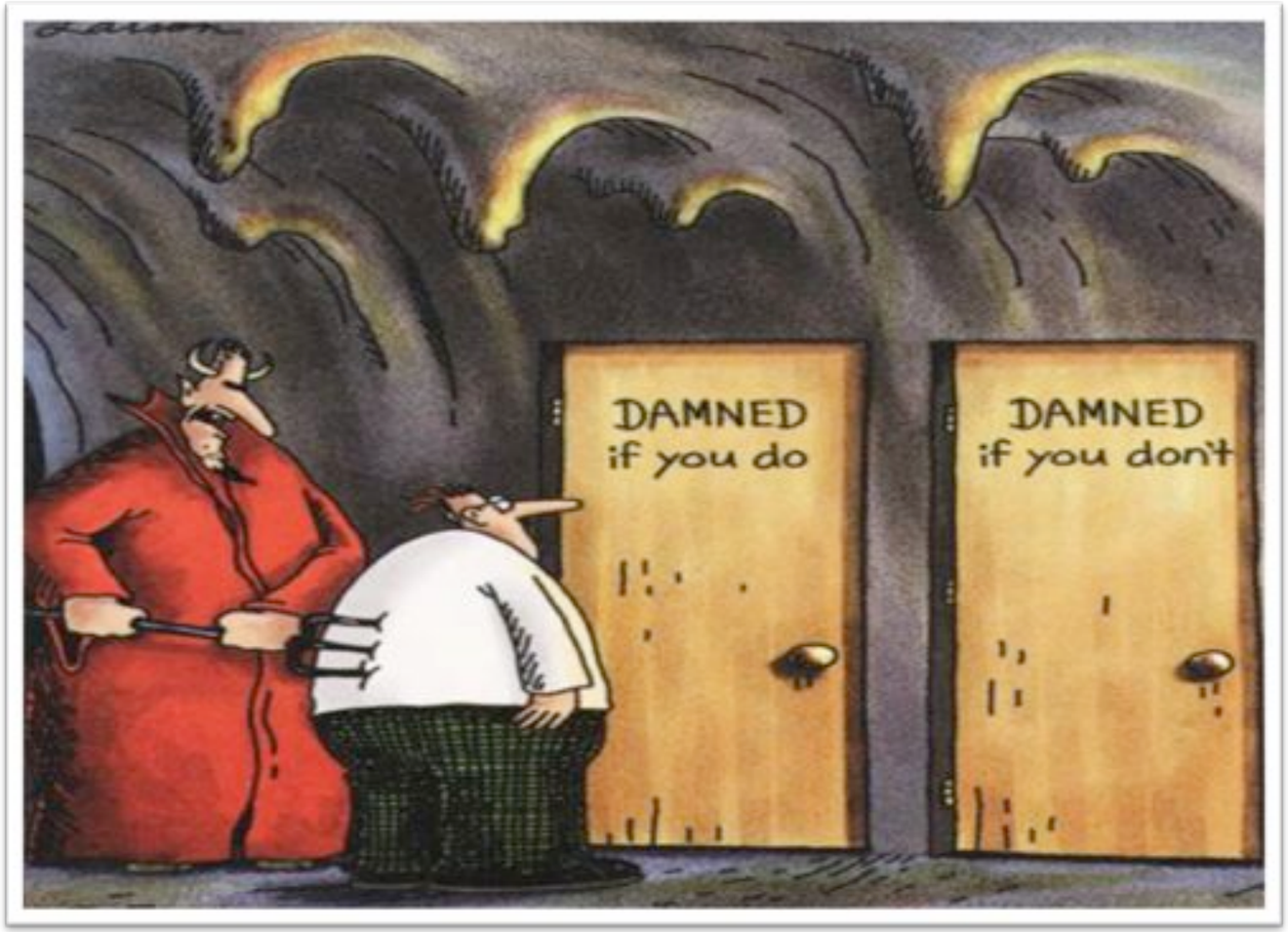
Dr Pierre BARNAY

CH Avignon

Conflit d’interêt

- Aucun concernant cette présentation

Place de la thrombo aspiration en 2014?



Toujours (TAPAS)

Plus Jamais (TASTE)

Parfois, oui mais quand ?

Conséquences du thrombus

AIGU	slow flow, No reflow taille IDM
30 jours	Thrombose aigue de stent mortalité
1 an	Mal apposition tardive Thrombose tardive

Gestion du thrombus : approches

Pharmacologique

- AAP
- GpIIbIIIa

Aspiration

- thromboaspiration

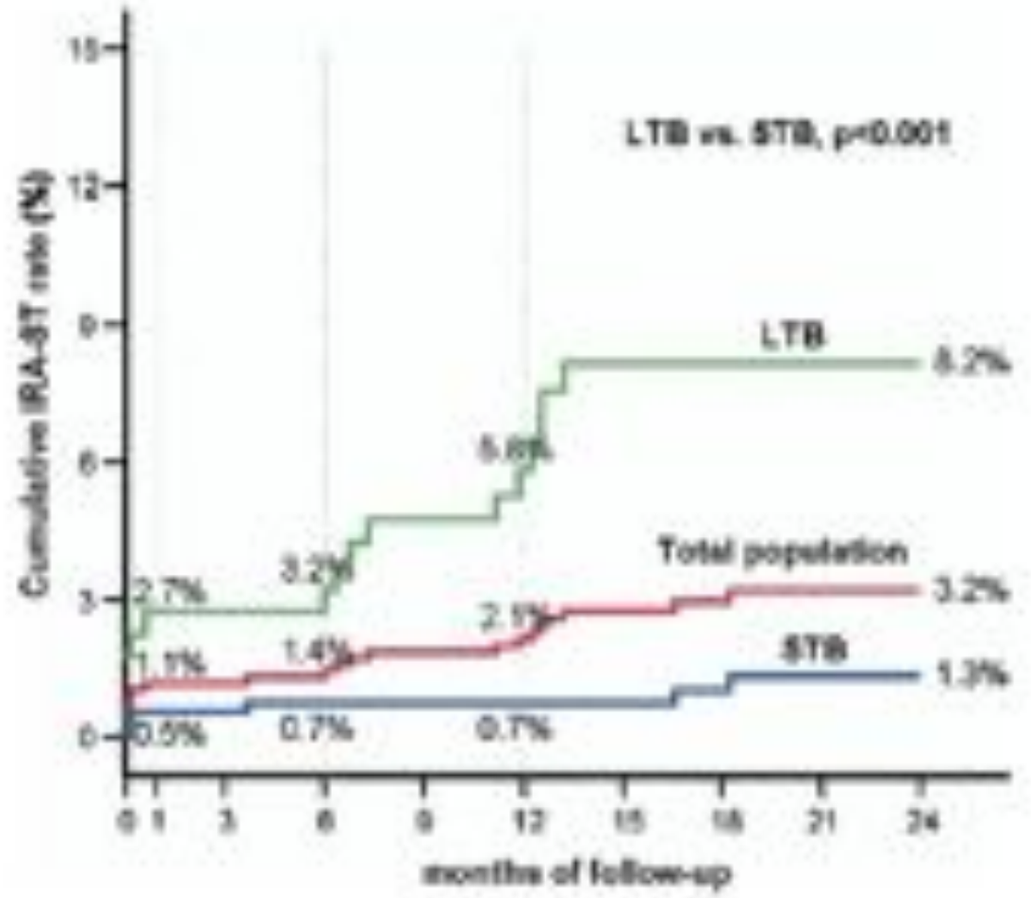
Stent

- M GUARD
- STENTYS

Stratégies

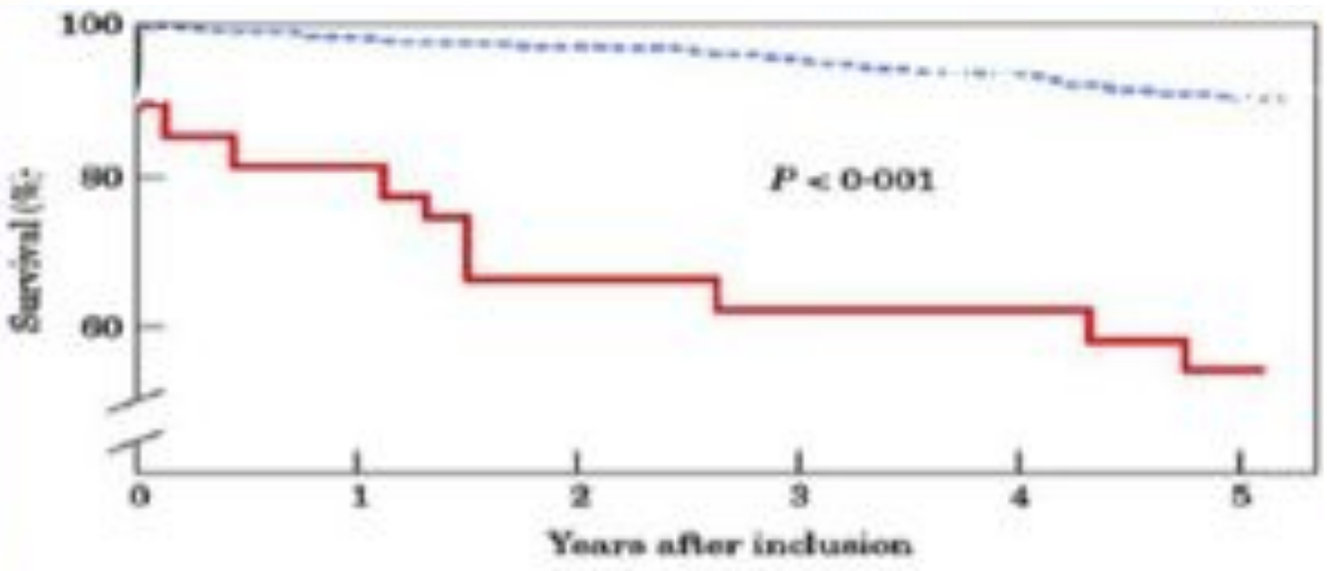
- ACT immédiate
- ACT différée

Ce que l'on sait



Une charge thrombotique importante est prédictive d'évènements cliniques à court et long terme

Mal apposition tardive
- après résorption du thrombus
- sous dimensionnement du stent
  - sous déploiement
  - vasoconstriction



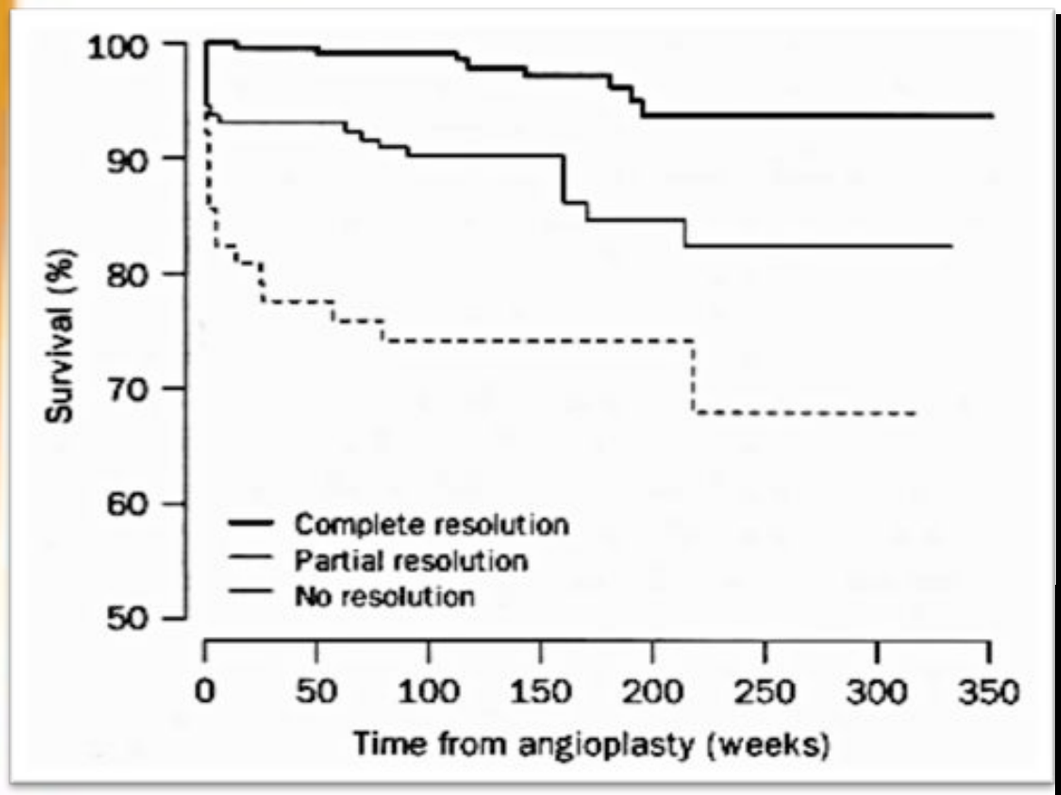
Migration thrombotique lors de l'angioplastie

Sianos JACC 2007

Werkum JACC 2009

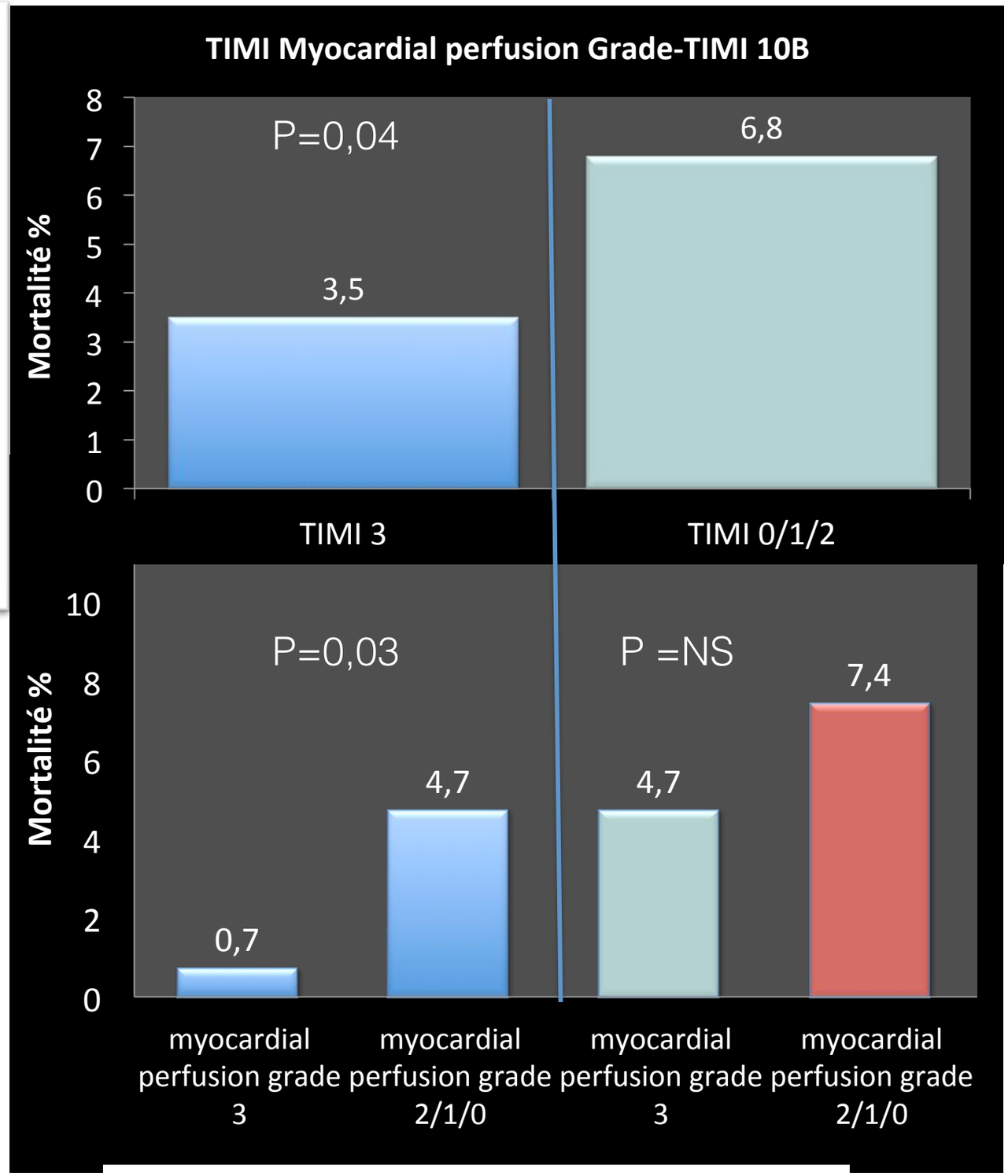
Henriques EHJ 2002

Ce que l'on sait



Van' t Hof, Lancet 1997

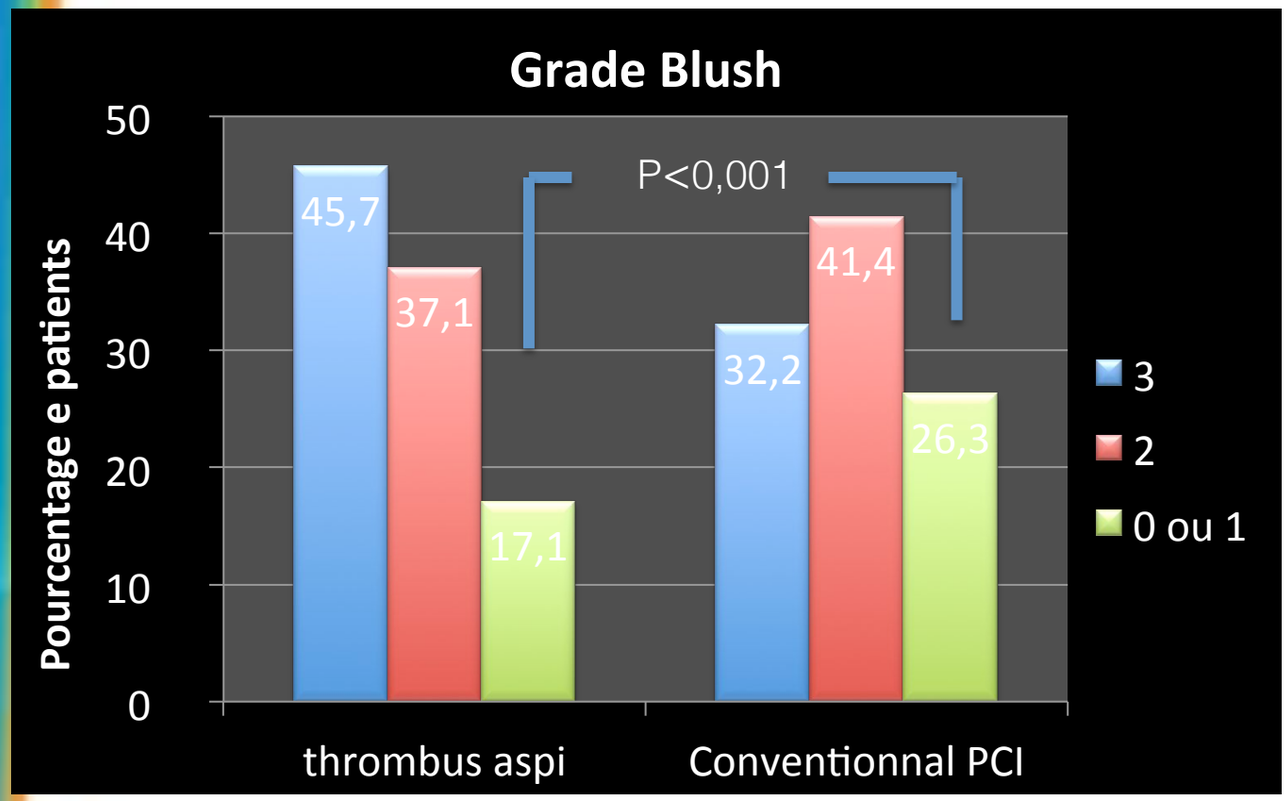
Le no reflow est associé à une réduction de la survie dans l' infarctus du myocarde



Gibson CM et al. Circulation 2000

TAPAS

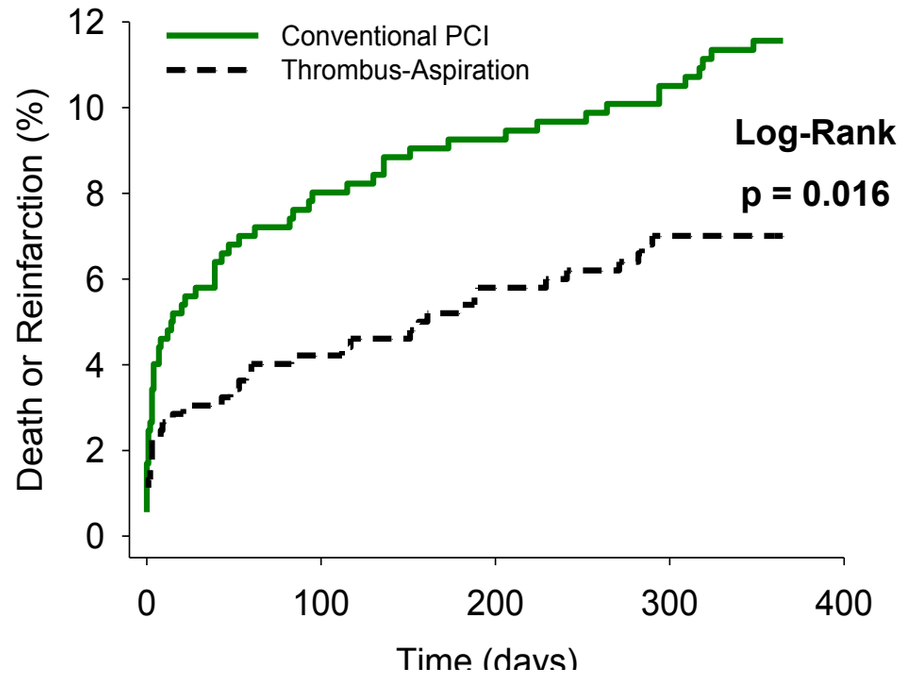
Endpoint primaire à 30j

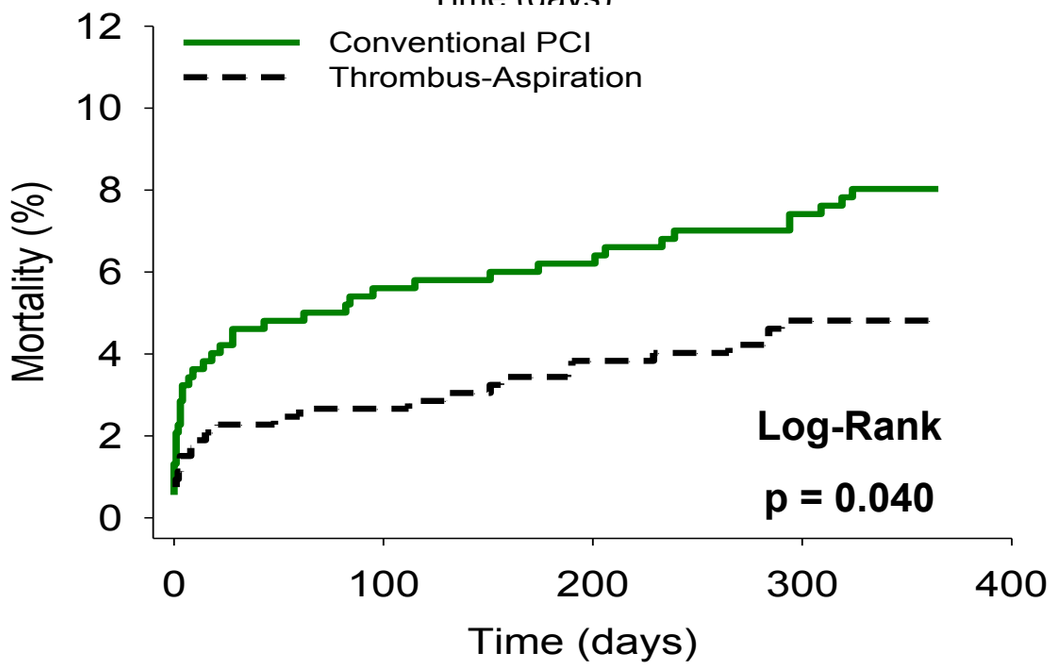


Statistiquement significatif:
- À 30j : MBG
- À 1 an : mortalité. Mortalité/IDM

96% Anti GpIIb/IIIa
N = 1071
Pré dilatation large dans le groupe PCI

Endpoint secondaire à 1 an





Silvas et al. NEJM 2008

Méta-analyses

Meta-analysis	Number of Trials	Number of Patients	TIMI 3 Flow	MBG	STR	No Re-flow	Distal Emboli	Mortality
Bavry et al[5]	13	3,026		positive	positive	positive		
De Luca et al[7]	9	2,417	positive	positive			positive	positive
Burgotta et al[8]	11	2,686						
Mongeon et al[10]	16	3,365	positive	positive	positive		positive	positive

TIMI-3 Flow = TIMI 3 Flow post-PCI; MBG = myocardial blush grade post-PCI; STR = ST-segment resolution post-PCI
Positive indicates significant benefit with aspiration thrombectomy compared with control.
Neutral indicates no significant difference between aspiration thrombectomy and control.

3 ⟹ Bénéfice sur la perfusion (MBG, TIMI, STR)

3 ⟹ Amélioration des résultats PCI (NR, embols)

2 ⟹ Réduction de mortalité

Brodie J Invas Cardiology 2010

TASTE

Enrolled in Denmark
N=247

All patients with STEMI in Sweden and Iceland undergoing primary or rescue PCI. N=11 709 *)

Enrolled in **TASTE**
N=7259

Erroneous enrollments
N=15

Randomized in **TASTE**
N=7244

N=3621 assigned to thrombus aspiration

N=3623 assigned to conventional PCI

N=3399 underwent thrombus aspiration
N=222 underwent conventional PCI

N=3445 underwent conventional PCI
N=178 underwent thrombus aspiration

N=3621 were followed up

N=3623 were followed up

Not enrolled
N=4697

N=1162 underwent thrombus aspiration

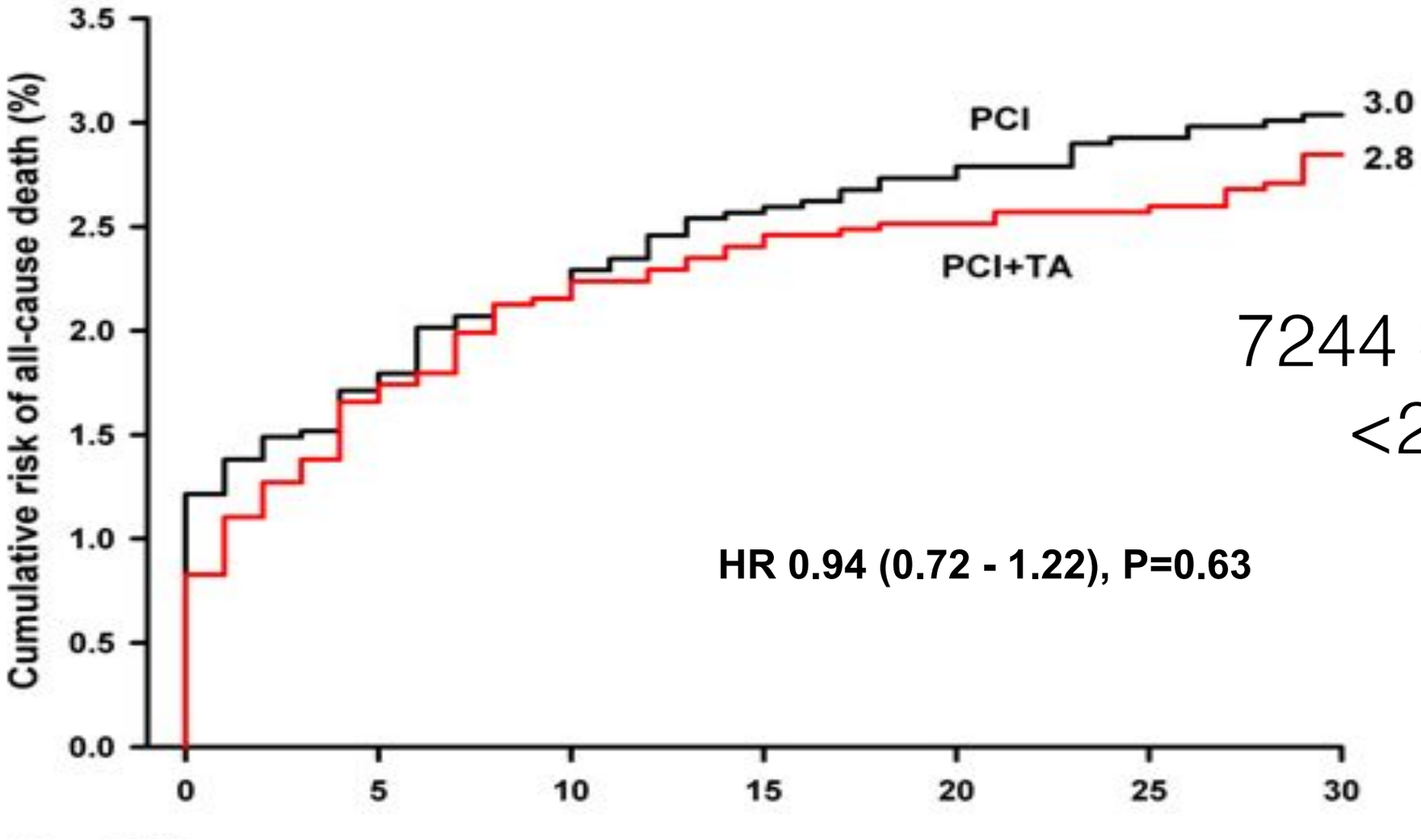
N=3535 underwent conventional PCI

N=1162 were followed up

N=3535 were followed up

TASTE

All cause mortality 30 days

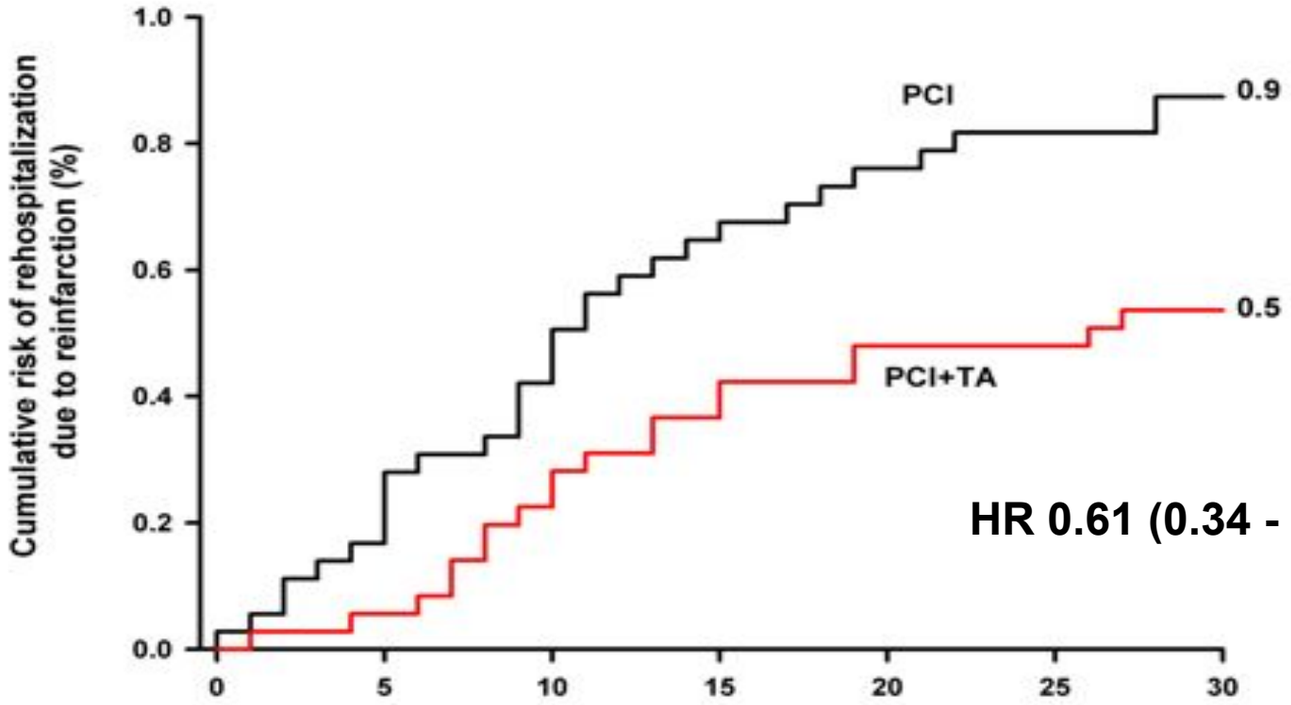


7244 STEMI
<24h

HR 0.94 (0.72 - 1.22), P=0.63

Frobert et al. NEJM 2013

TASTE



Reinfarction at 30 days

HR 0.61 (0.34 - 1.07), P=0.09

Randomized in *TASTE*

	PCI Only	Thrombus Aspiration	Point Estimate (95% confidence interval)	P Value
30 days				
All cause death or myocardial infarction - no. (%)	140 (3.9)	121 (3.3)	HR 0.86 (0.67 - 1.10)	0.23
Stent thrombosis - no. (%)	19 (0.5)	9 (0.2)	HR 0.47 (0.20 - 1.02)	0.06
Target vessel revascularization - no. (%)	76 (2.2)	63 (1.8)	HR 0.83 (0.59 - 1.15)	0.27
Target lesion revascularization - no. (%)	57 (1.6)	43 (1.2)	HR 0.75 (0.51 - 1.12)	0.16

Frobert et al. NEJM 2013

Que peut on reprocher à TASTE ?

Des points forts :

un critère dur => la mortalité

Une large population

Un gros point faible :

Ni comité d'adjudication, ni relecture centralisée des données.

- analyse ST
- Charge thrombotique
- Blush
- flux TIMI

Sélection des patients rando VS registre à discrétion

Comment lire TASTE ?

Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: Fröbert O, Lagerqvist B, Olivecrona GK, et al. Thrombus aspiration during ST-segment elevation myocardial infarction. N Engl J Med 2013;369:1587-97. DOI: 10.1056/NEJMoa1308789

Comment optimiser les résultats de la thrombo aspiration?

Pratique ciblée ? Charge thrombotique
Temps d'ischémie
IDM antérieurs

Stratégies associées ? Direct stenting
Anti GpIIbIIIa
Angioplastie différée

Il faut thrombo aspirer les artères avec une charge thrombotique importante !

Comment évaluer la charge thrombotique?

Classification TIMI Thrombus Scale

G0 : no thrombus
G1 : images suggestives de thrombus : contours irréguliers de la lésion, diminution de la densité de contraste…
G2 : image certaine de thrombus : lésion irrégulière, défaut de remplissage, dimension max du thrombus <1/2 diamètre du vaisseau
G3 : dimension >1/2 et <2 fois le diamètre du vaisseau
G4 : dimension max >2 fois le diamètre du vaisseau
G5 : occlusion

Gibson CM et al. Circulation 2001

L'évaluation de la charge thrombotique à l'angiographie est-elle fiable?

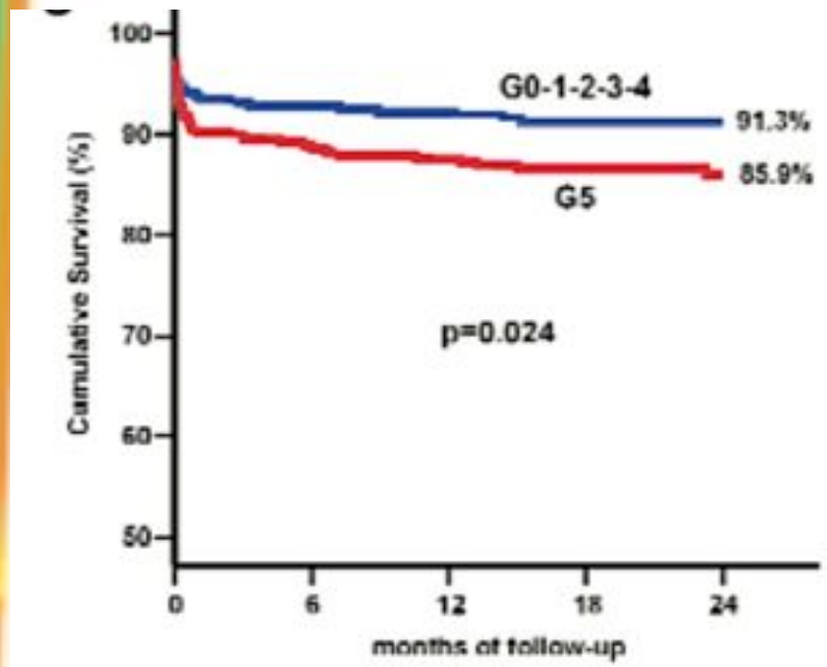
Angiographie thrombus	Angioscopic thrombus	
	Absent	présent
absent	21 (40,4%)	25 (48,1%)
présent	_	6 (11,5%)

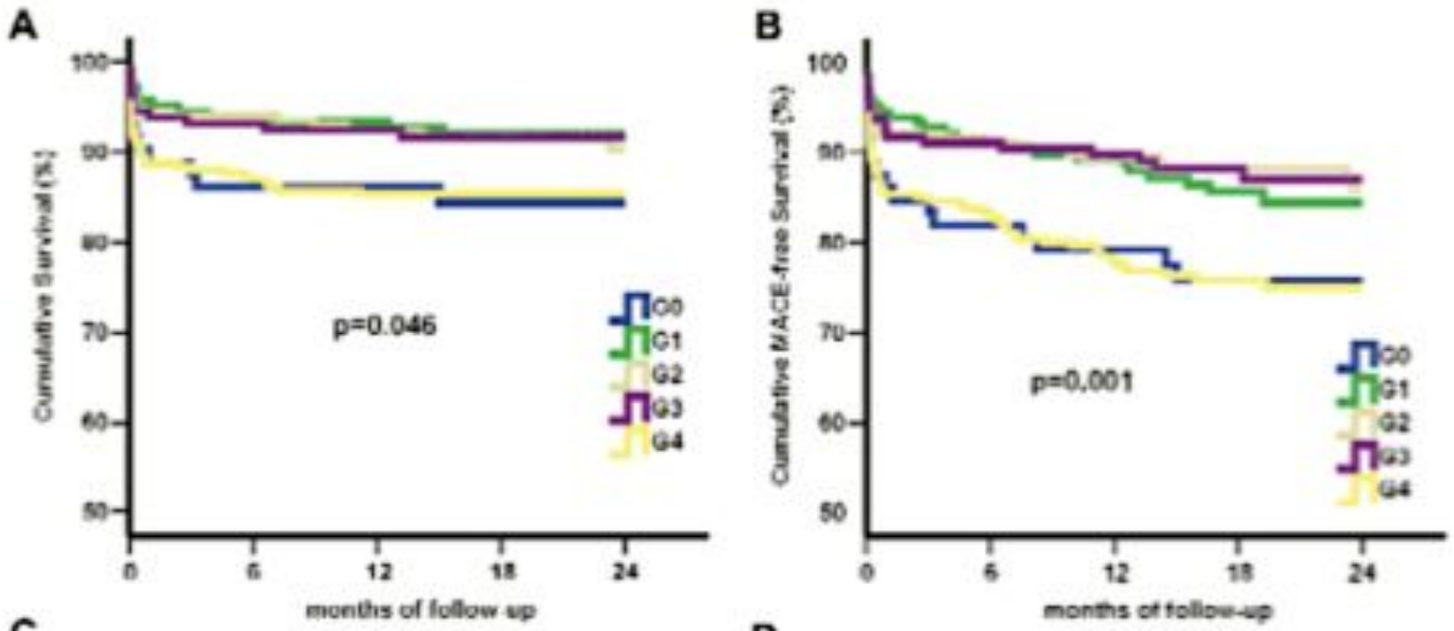
Den Heijer JACC 1994

Non

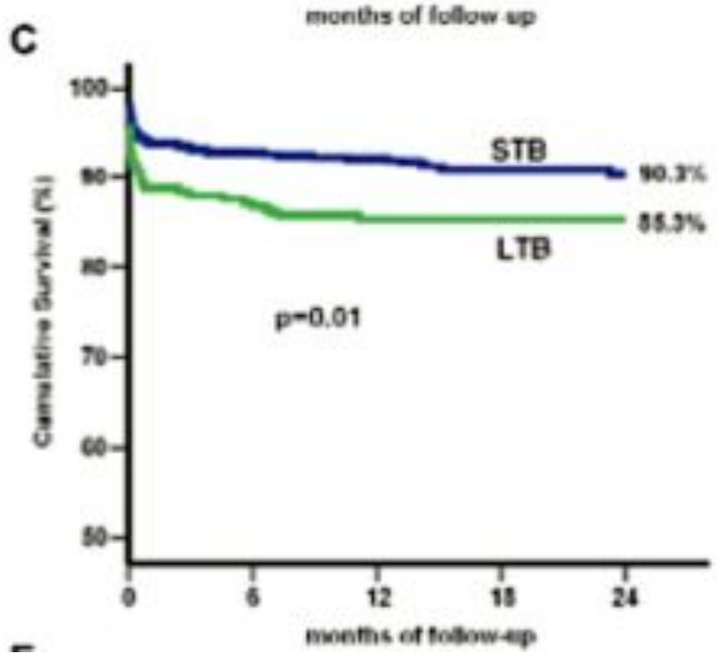
En particulier
pour les grades G1 et G2

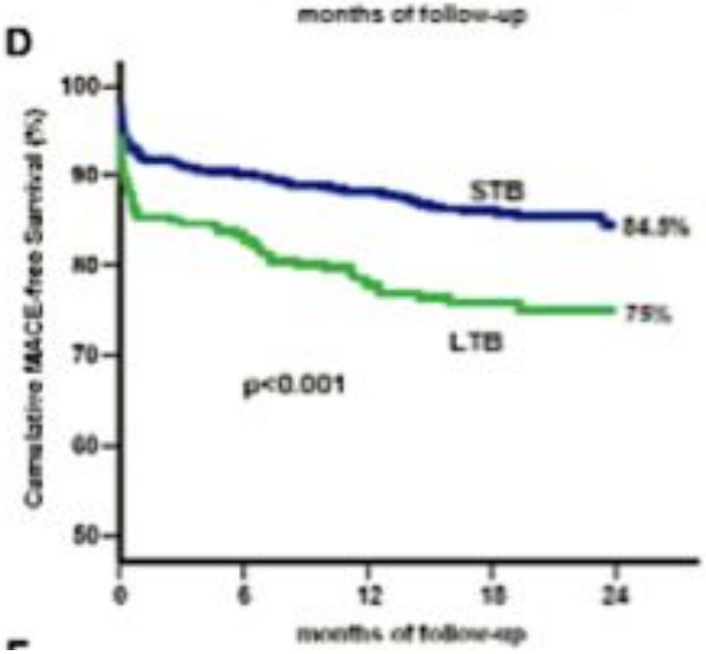
Cela a t'il une conséquence clinique?





Pas forcément.





Sianos et al. J Invasive Cardiol. 2010

Il faut thrombo aspirer les artères avec une charge thrombotique importante !

Que dit la littérature ?

Routine use

Dudek 2010 n = 196
Silvaas 2008 (Tapas) n=1071
Vlaar 2008 (Tapas 1 an) n=1071
Burzotta 2005 n = 99
Silva-Orrego 2006 n = 148

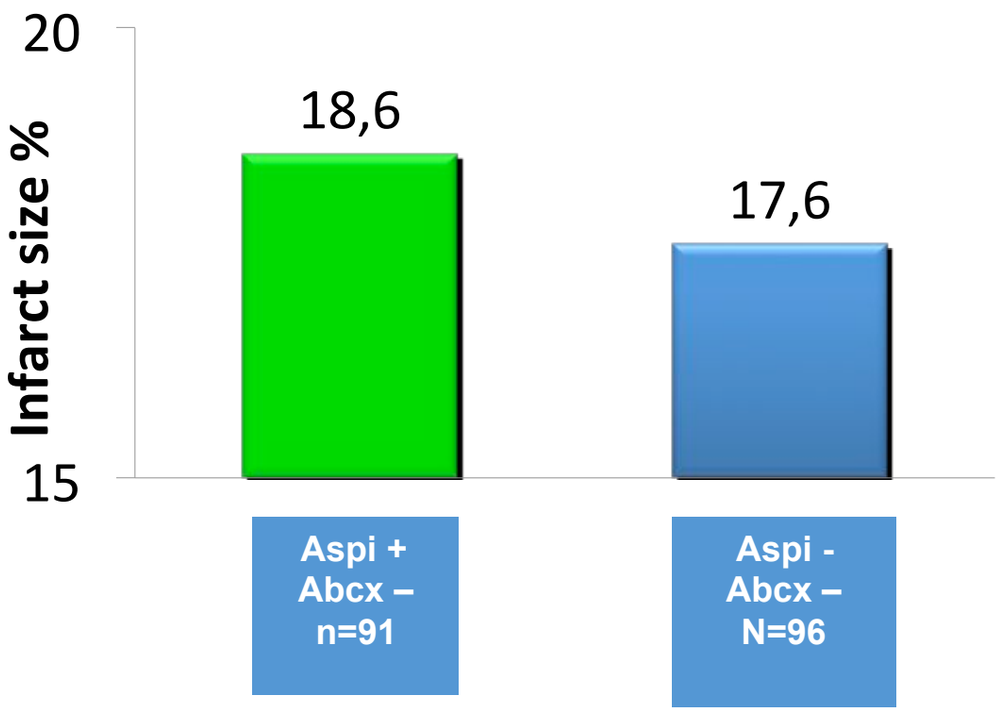
Thrombus driven use >G3

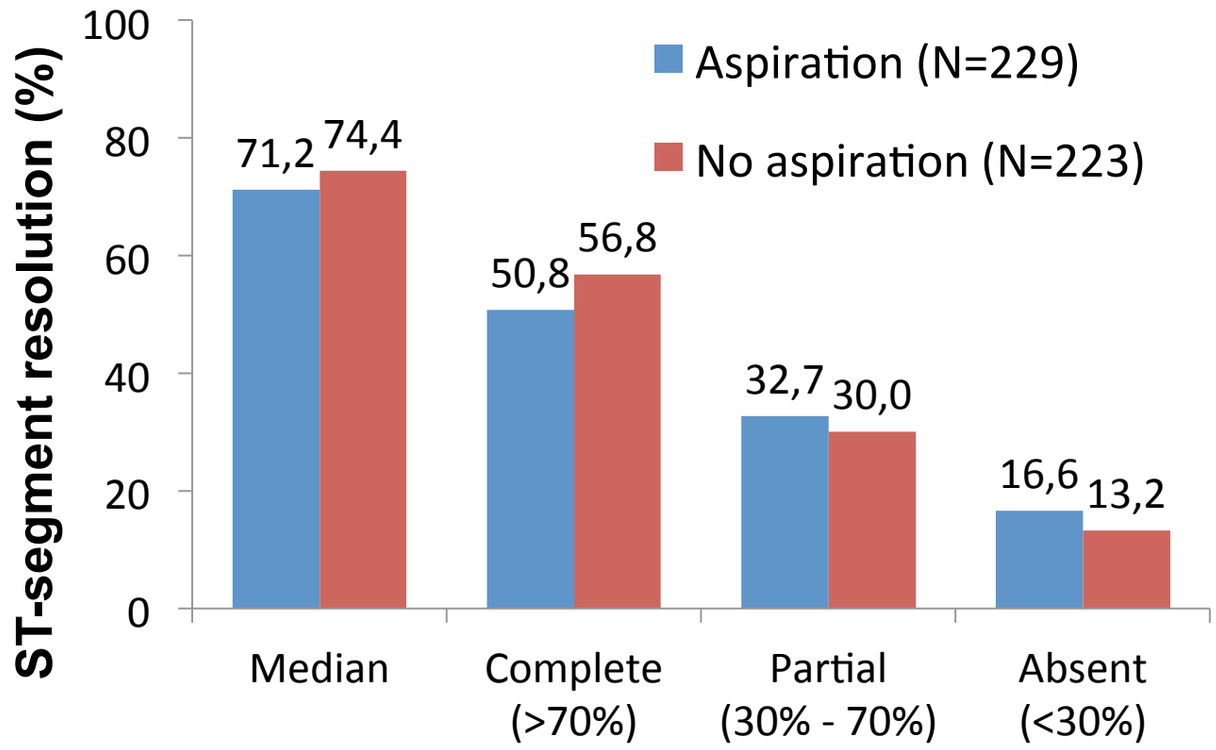
Sardella 2010 (Expira) n = 175
Saredlla 2010 FU 2 ans n = 175
Margheri 2007 n = 129
Ciszewski 2011 n = 137

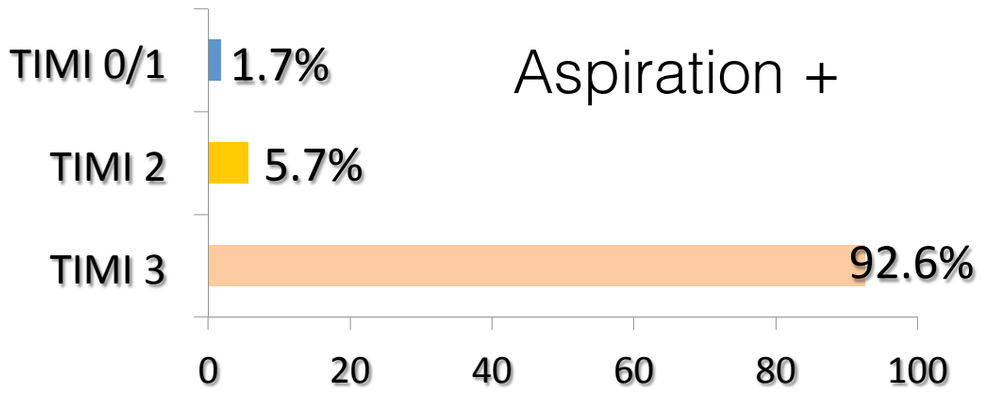
Tous positifs en faveur de la Thrombo aspiration

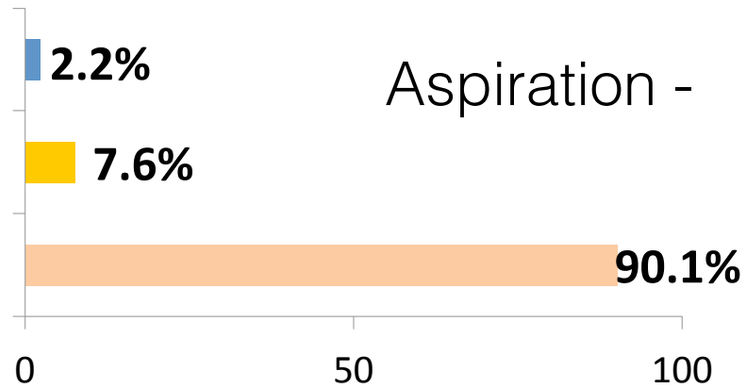
Pas d'étude comparant les deux stratégies.
Pas d'argument pour privilégier la forte charge thrombotique

Il faut thrombo aspirer les STEMI à haut risque : les IVA !



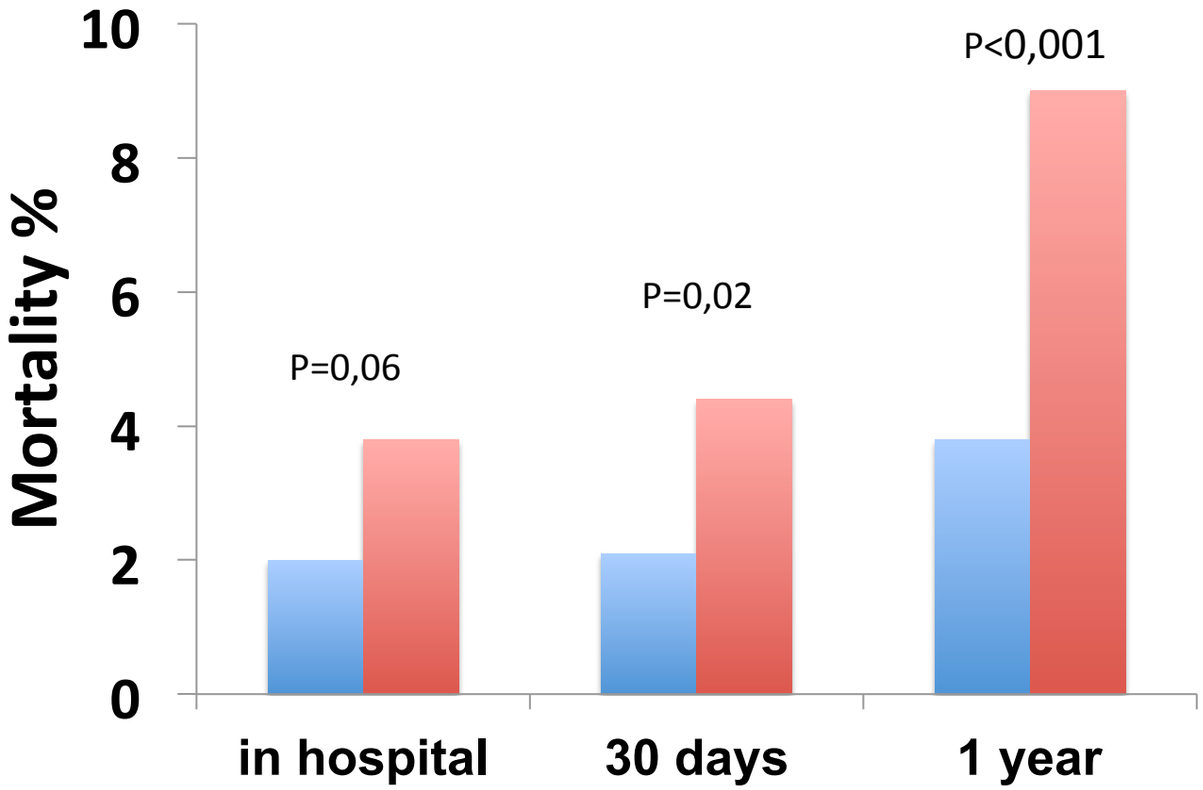






Stone JAMA 2012

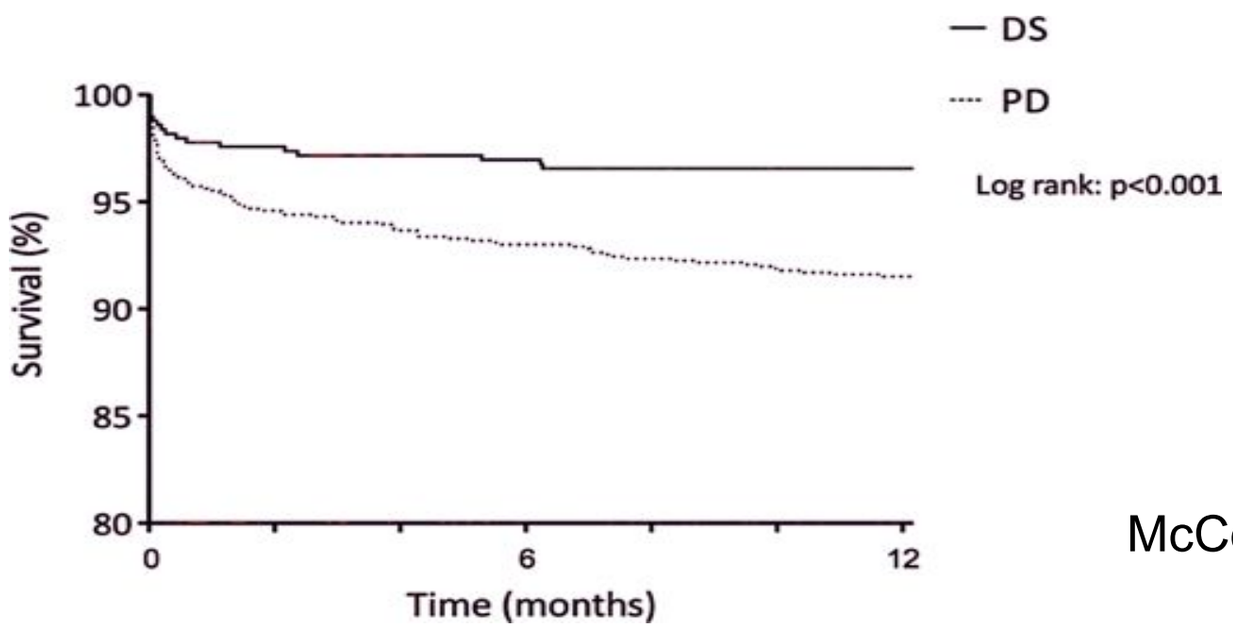
Il faut privilégier le direct stenting



N = 1562

PD 68,7%

DS 31,3%

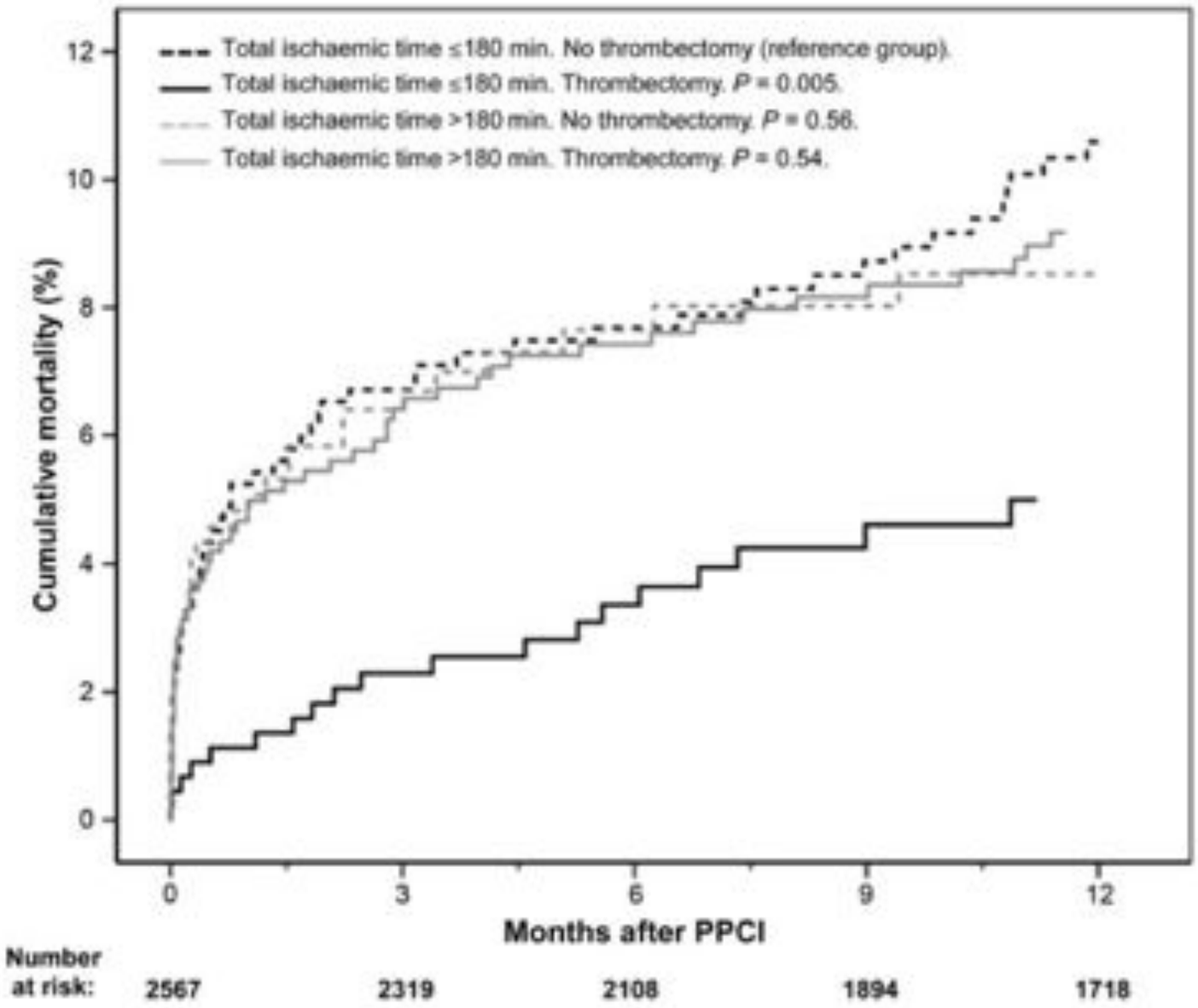


McCormick L M et al. European Heart Journal: Acute Cardiovascular Care 2014

L'efficacité de la thrombo aspiration dépend du temps d'ischémie

N = 2567

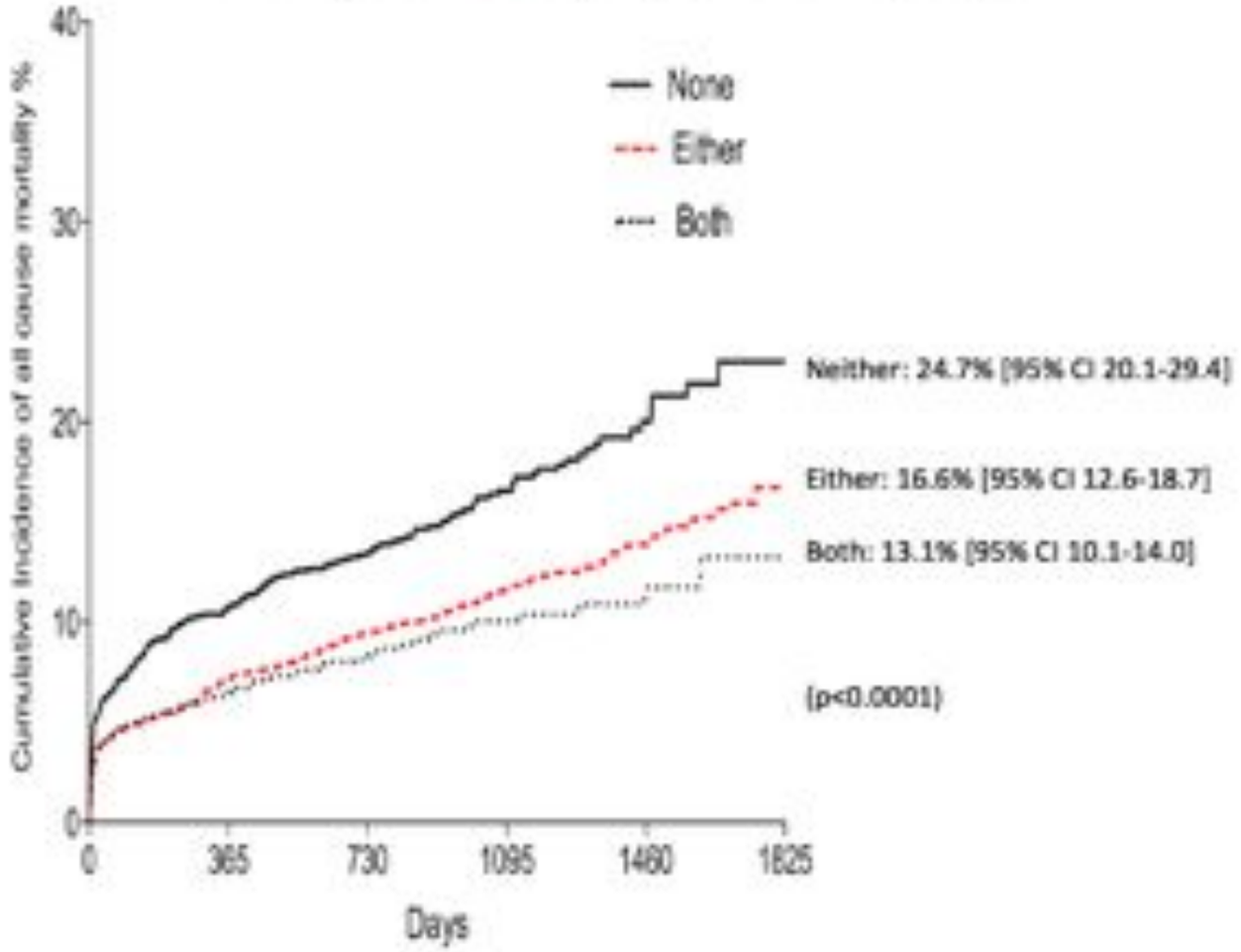
TA 42,7%



Noman et al. Eur Heart J 2012

Il faut associer à la thrombo aspiration des Anti GpIIbIIIa

Kaplan Meier curve showing cumulative incidence of all cause mortality after PPCI comparing the different groups



Cox Analysis:

•After multivariable adjustment, thrombectomy use with adjunctive GPIIb/IIIa was still associated with significantly decreased mortality rates when compared with those that had neither therapy (hazard ratio: 0.77, 95% confidence interval: 0.62-0.96, p = 0.02).

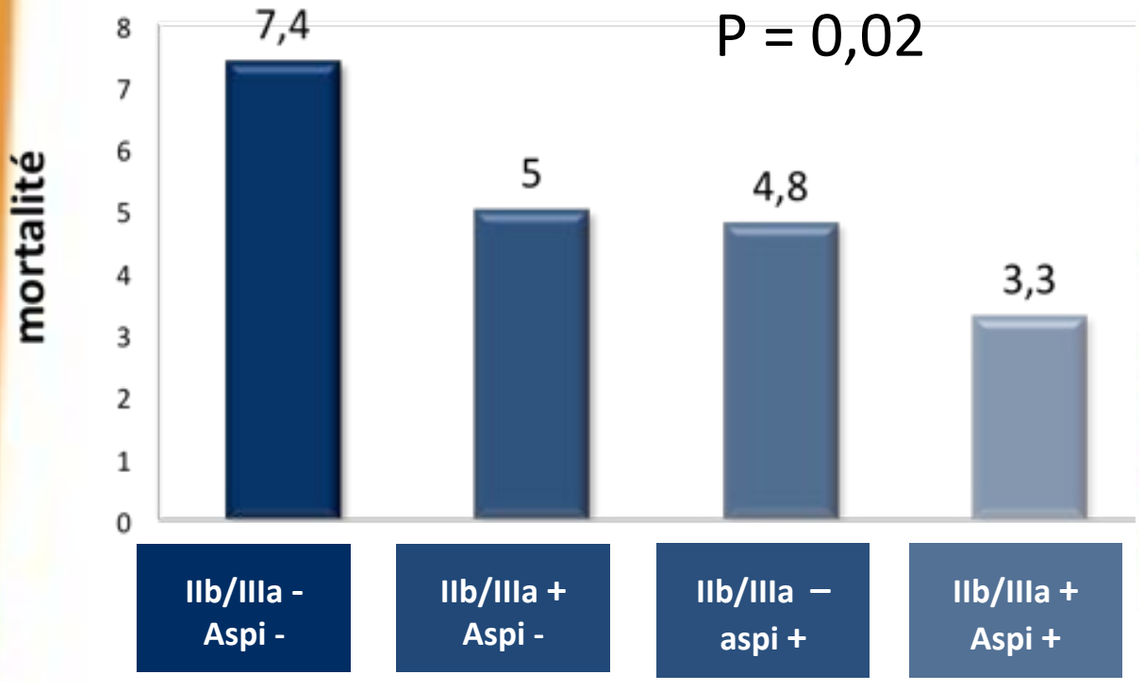
•Other independent predictors of mortality were

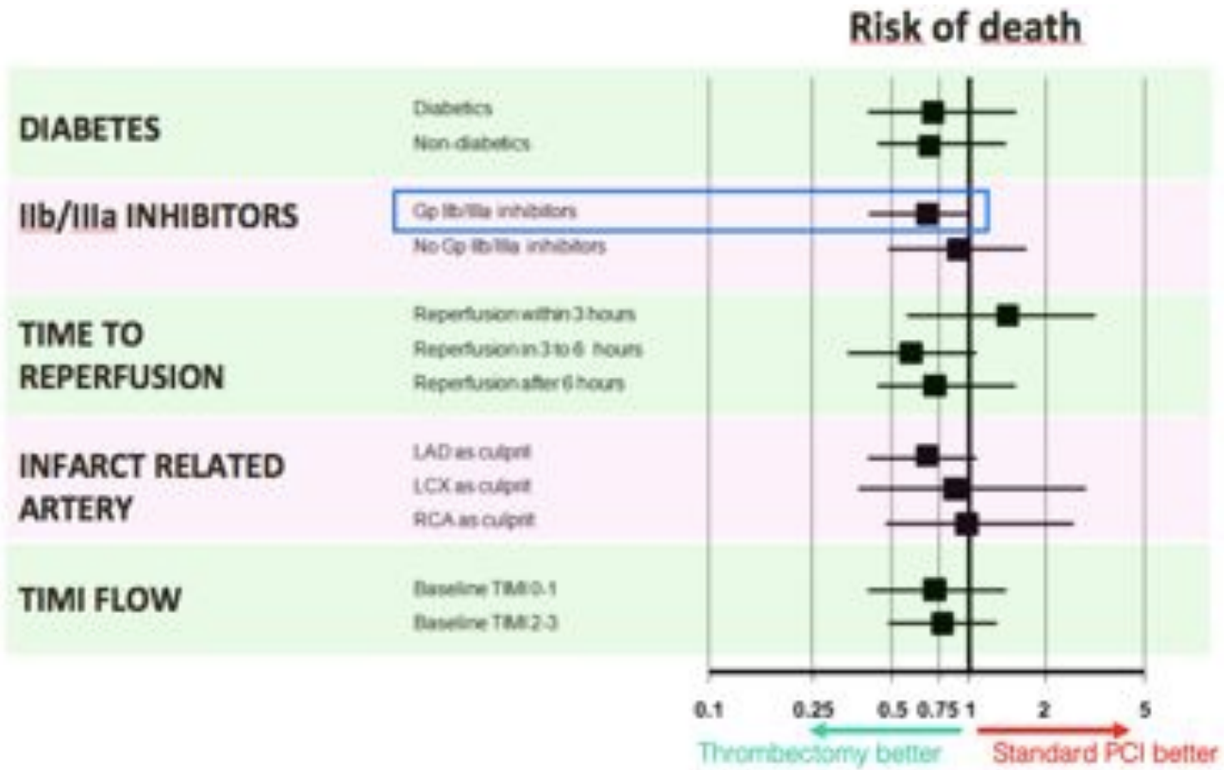
- Age:
- Cardiogenic shock
- Diabetes mellitus
- Procedural success

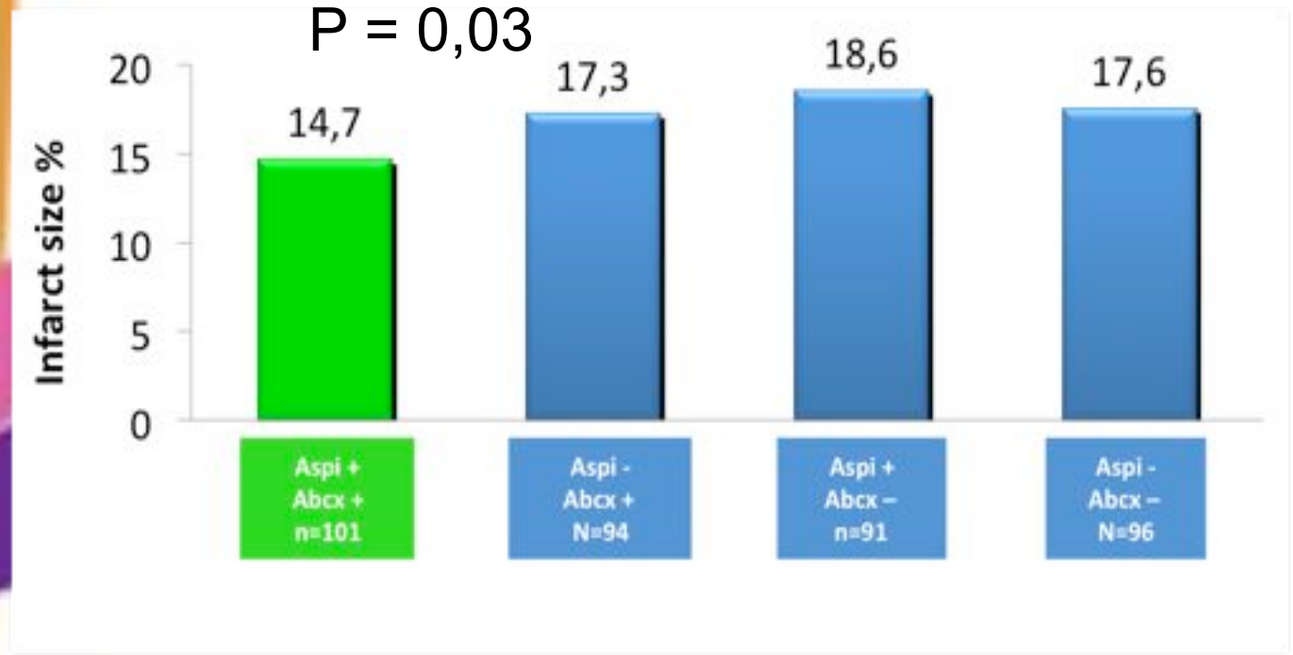
N=9266

Akhtar et al. ESC 2013

Thrombo aspiration et Anti GpIIb/IIIa







Des données encore discordantes sur la synergie thrombo aspiration et AntiGpIIbIIIa.

Burzotta EHJ 2009

Stone JAMA 2012

Et dans TASTE?

	TA	PCI
TIMI flow grade 0 or 1 before PCI - no. (%) [2)]	2821 (77.9)	2811 (77.6)
Thrombus score - no. (%) [3)]		*
G0: none	490 (13.5)	543 (15.0)
G1: possible	733 (20.2)	809 (22.3)
G2: small	341 (9.4)	329 (9.1)
G3: medium	887 (24.5)	818 (22.6)
G4: large	903 (24.9)	863 (23.8)
G5: vessel occlusion	235 (6.5)	215 (5.9)
Unknown	32 (0.8)	46 (1.2)
TIMI flow grade 0 or 1 before PCI - no. (%) [2)]	2821 (77.9)	2811 (77.6)
LAD	1612 (44.5)	1611 (44.5)

Killip class>= II – n°(%) 198 (5,5) 183 (5,1) | 195 (16,8) 533 (15,1)

Et dans TASTE?

	Randomized in *TASTE*			Not randomized in *TASTE*	
	PCI Only	**Thrombus Aspiration**	**P Value**	**PCI Only**	**Thrombus Aspiration**
Direct stenting – no. (%)	**843 (23.3)**	**1388 (38.3)**	**<0.001**	674 (19.1)	406 (34.9)
Stent no. per procedure. Mean (± SD)	**1.39 (0.81)**	**1.35 (0.77)**	**0.02**	1.24 (0.87)	1.24 (0.87)
Total stent length (mm). Mean (± SD)	**28.5 (16.4)**	**27.7 (15.9)**	**0.05**	27.5 (16.4)	27.7 (16.6)
Stent diameter (mm). Mean (± SD)	**3.1 (0.5)**	**3.1 (0.5)**	**0.12**	2.9 (0.5)	3.2 (0.5)
Drug-eluting stent implantation - no. (%)	**1742 (48.1)**	**1703 (47.0)**	**0.39**	1510 (42.7)	440 (37.9)
Treated vessel - no. (%)			**0.96**		
RCA	**1560 (43.1)**	**1543 (42.6)**		1324 (37.5)	478 (41.1)
LM	**38 (1.0)**	**40 (1.1)**		139 (3.9)	45 (3.9)
LAD	**1611 (44.5)**	**1612 (44.5)**		1690 (47.8)	540 (46.5)
LCx	**618 (17.1)**	**598 (16.5)**		675 (19.1)	171 (14.7)
By-pass graft	**33 (0.9)**	**31 (0.9)**		59 (1.7)	42 (3.6)
Procedural success (%)	**3510 (96.9)**	**3522 (97.3)**	**0.24**	3218 (91.0)	1083 (93.2)
Procedural x-ray time, sec (median (IQR))	**540 (349-878)**	**625 (438-923)**	**<0.001**	614 (390-989)	682 (462-985)

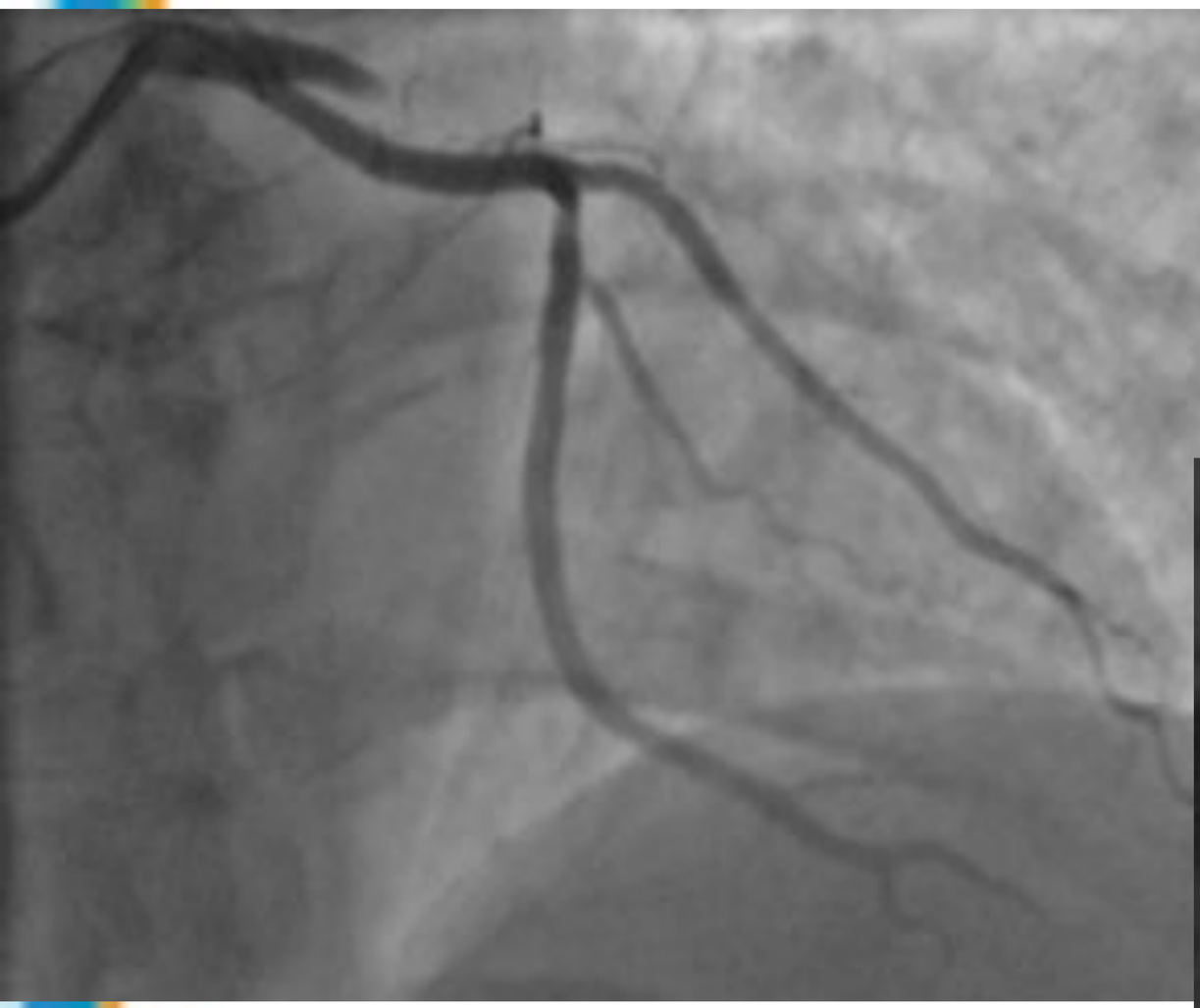
Et dans TASTE?

	Randomized in *TASTE*		Not randomized in *TASTE*	
	PCI Only	**Thrombus Aspiration**	PCI Only	Thrombus Aspiration
N	**3623**	**3621**	3535	1162
Age - yr. (mean (± SD))	**65.9 (11.7)**	**66.5 (11.5)**	69.4 (12.5)	66.8 (13.5)
Male sex - no. (%)	**2703 (74.6)**	**2721 (75.1)**	2360 (66.8)	829 (71.3)
Diabetes mellitus - no. (%)	**453 (12.5)**	**448 (12.4)**	635 (18.0)	162 (13.9)
Current smoker - no. (%)	**1173 (32.4)**	**1083 (29.9)**	878 (24.8)	317 (27.3)
Previous myocardial infarction - no. (%)	**439 (12.1)**	**402 (11.1)**	644 (18.2)	191 (16.4)
Previous PCI - no. (%)	**362 (10.0)**	**337 (9.3)**	438 (12.4)	138 (11.9)
Previous CABG - no. (%)	**74 (2.0)**	**70 (1.9)**	167 (4.7)	65 (5.6)
Symptom to PCI time, min (median (IQR))	**182 (120-315)**	**185 (120-330)**	210 (125-412)	180 (116-350)
Diagnostic ECG to PCI time, min (median (IQR))	**66 (47-93)**	**67 (48-94)**	72 (50-108)	65 (47-95)
Killip class ≥ 2 – no. (%)	**183 (5.1)**	**198 (5.5)**	533 (15.1)	195 (16.8)

Et dans TASTE?

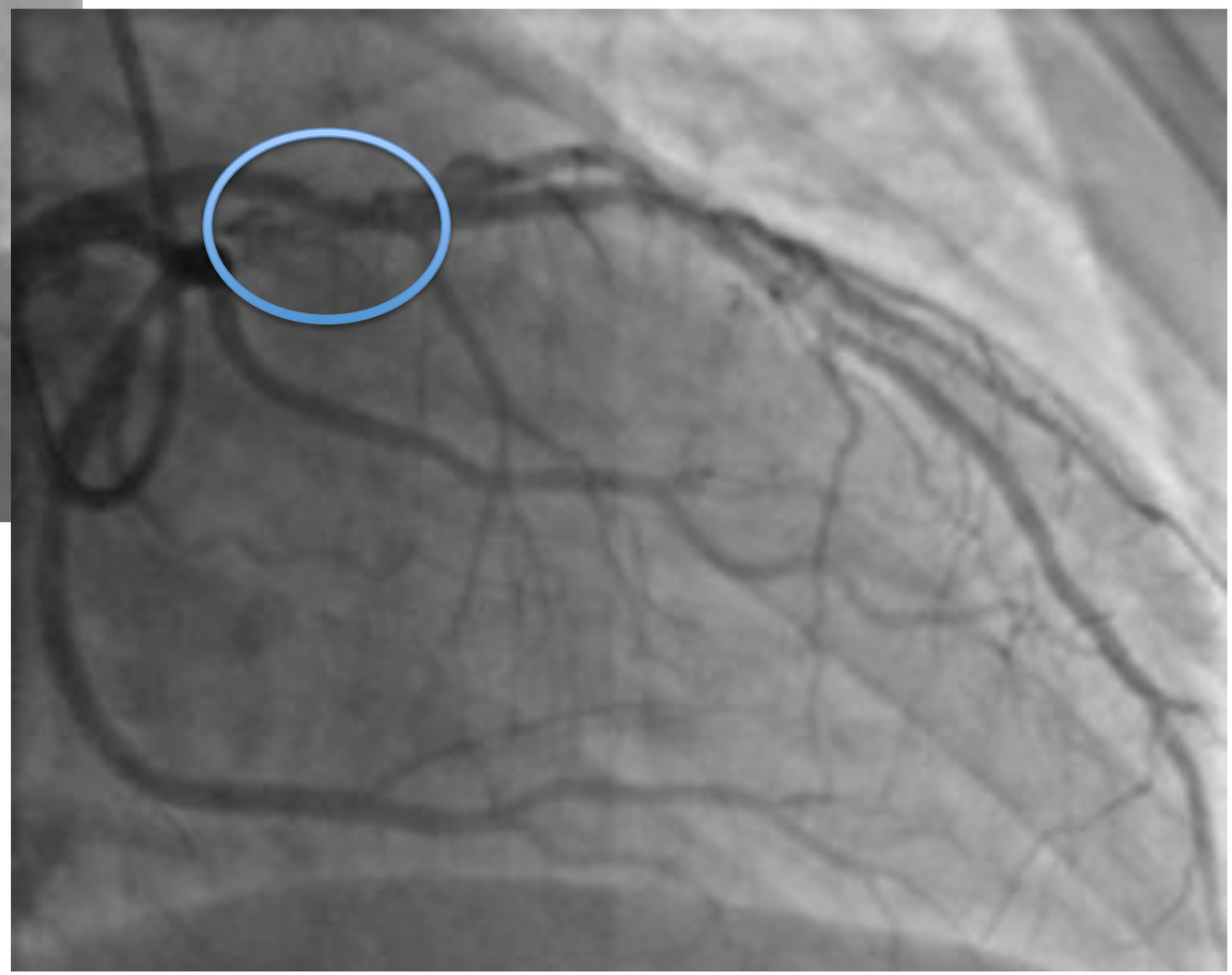
	Randomized in *TASTE*			Not randomized in *TASTE*	
	PCI Only	Thrombus Aspiration	P Value	PCI Only	Thrombus Aspiration
Thrombus aspiration - no. (%)	**178 (4.9)**	**3399 (93.9)**	**<0.001**	0 (0)	1162 (100)
Thrombus aspiration device - no. (%)					
Terumo Eliminate	**NA**	**1748 (48.3)**		NA	NA
Medtronic Export	**NA**	**1291 (35.7)**		NA	NA
Vascular Solutions Pronto	**NA**	**380 (10.5)**		NA	NA
Procedure-related medication - no. (%)					
Acetylsalicylic acid	**3542 (97.8)**	**3546 (97.9)**	**0.80**	3370 (95.3)	1096 (94.3)
Clopidogrel/ticlopidine	**2395 (66.1)**	**2384 (65.8)**	**0.77**	2220 (62.8)	760 (65.4)
Ticagrelor	**1015 (28.0)**	**1050 (29.0)**	**0.35**	957 (27.1)	351 (30.2)
Prasugrel	**538 (14.8)**	**562 (15.5)**	**0.44**	414 (11.7)	103 (8.9)
Heparin	**3074 (84.8)**	**3063 (84.6)**	**0.70**	2944 (83.3)	935 (80.5)
Bivalirudin	**2835 (78.3)**	**2874 (79.4)**	**0.29**	2373 (67.1)	764 (65.7)
Glucoprotein IIb/IIIa inhibitor	**630 (17.4)**	**558 (15.4)**	**0.02**	515 (14.6)	322 (27.7)

Pourquoi je continue de thrombo aspirer ?

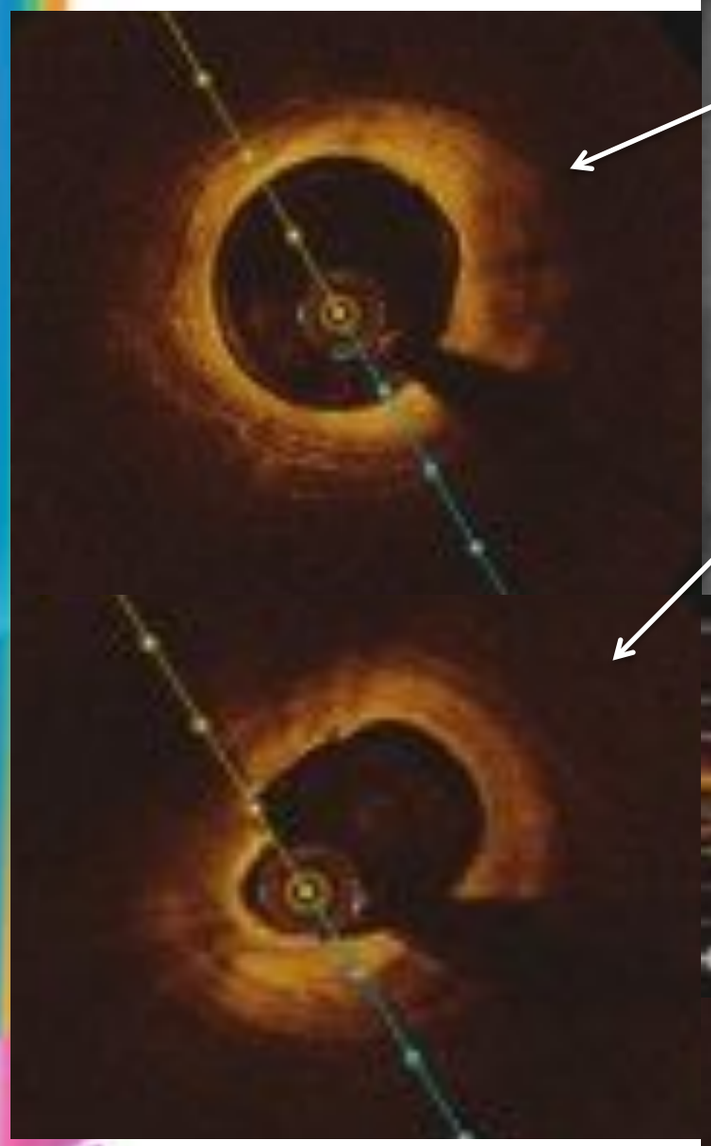


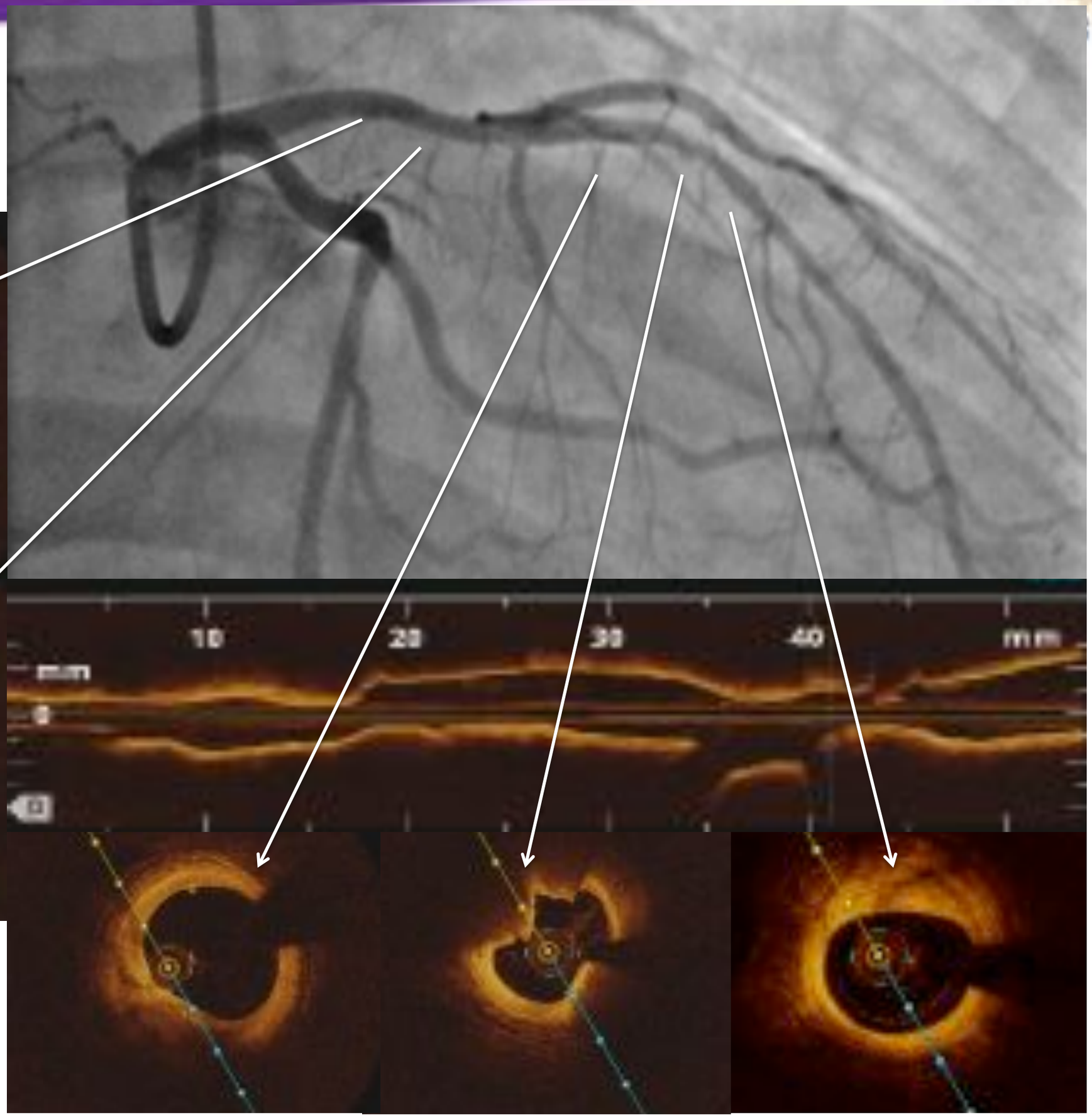
Patient de 38 ans, fumeur> IDM anterieur H2

Occlusion IVA 1, TIMI 0



Thrombo aspiration repetée
abcx IC par le catheter de TA
Flux TIMI 3
Normalisation du ST





Contrôle a J7

Conclusion

- Absence de bénéfice sur la mortalité dans TASTE
- Beaucoup de données issues de registres ou de petites séries.
- Mais aucune donnée fine exploitable dans TASTE.
- Aucun élément permettant de sélectionner une population à thrombo aspirer
- Pas d'argument contre une utilisation en routine

Perspectives :

- Attente des résultats de TASTE à un an et de TOTAL
- Tendances fortes sur thrombose de stent et réinfarctus
- Intérêt de l'association avec abcx
- permet l'élaboration de nouveaux concepts thérapeutiques: stratégies différées

Pour finir : tout ce qu'il ne faut pas faire….

Mr Rou.. 51 ans, admis le 3/6/2014

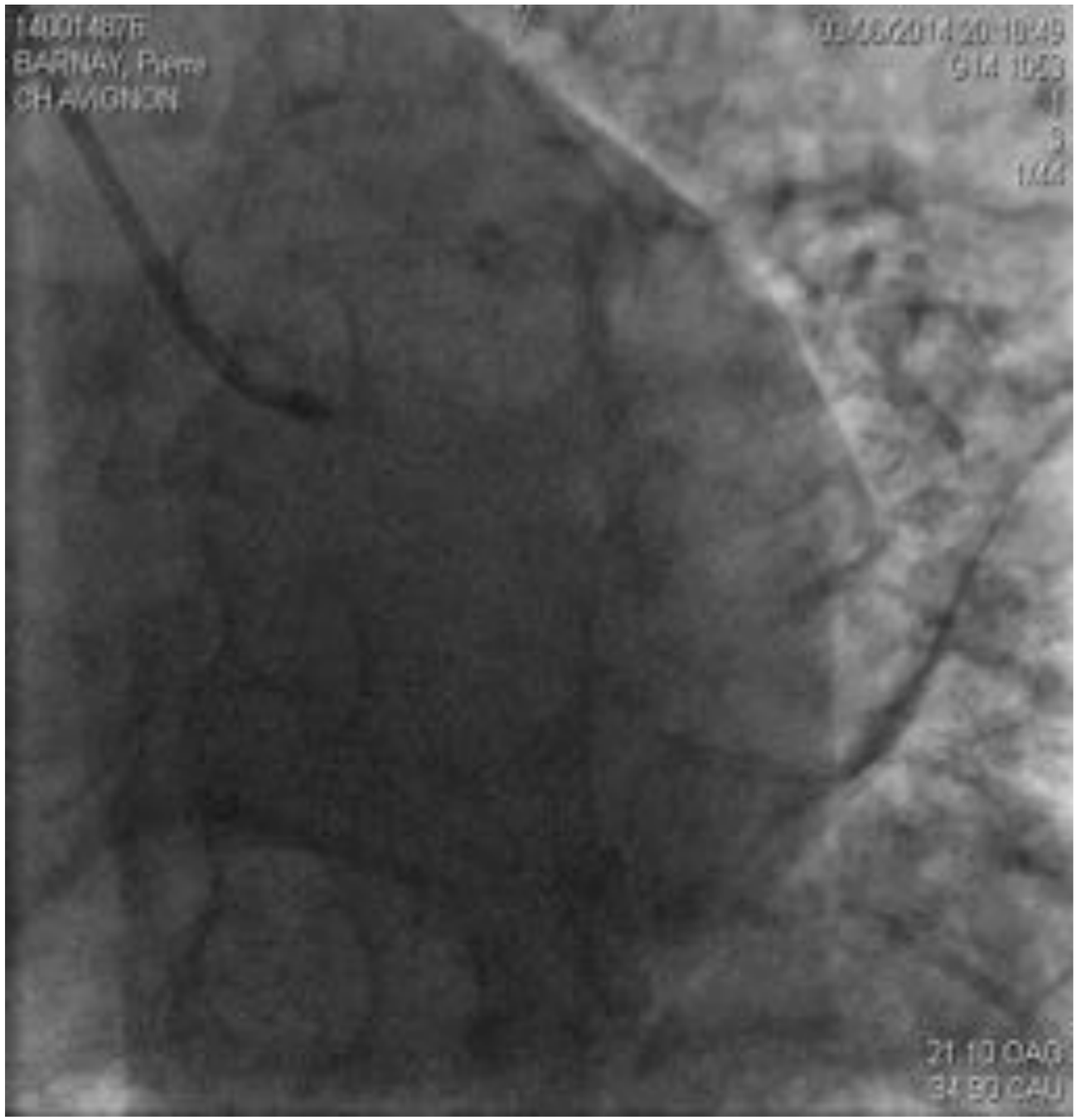
ST+ à H3

Killip 3

FEVG 30%

Sous AVK pour TVP

A reçu 60mg de prasugrel
0,4 ml de lovenox IV



Pour finir : tout ce qu'il ne faut pas faire….

TA répétée
(6 passages)

Sans anti GpIIbIIIa

Flux TIMI3

Régression du ST

Contre pulsion!