

Occlusions chroniques: les données scientifiques

Dr E Bressollette

conflits d'intérêt

- Consultant CTO
 - Terumo
 - Boston Scientific

Introduction

- environ 1500 articles scientifiques récents
- choix orienté par un triptyque:
 - pourquoi traiter une CTO?
 - comment?
 - par qui?
 - (avec quels stents?)

Recommendations for the treatment of specific lesion subsets

Recommendations	Class ^a	Level ^b	Ref ^c
DES should be considered for PCI of ostial lesions.	IIa	B	769–772
For PCI of bifurcation lesions, stent implantation in the main vessel only, followed by provisional balloon angioplasty with or without stenting of the side branch, should be the preferred treatment.	IIa	A	725–731
Percutaneous recanalization of CTOs should be considered in patients with expected ischaemia reduction in a corresponding myocardial territory and/or angina relief.	IIa	B	740–743, 745
Retrograde recanalization of CTOs may be considered after a failed antegrade approach or as the primary approach in selected patients.	IIb	C	

CTO = chronic total occlusion; DES = drug-eluting stent; PCI = percutaneous coronary intervention.

Ca n'est pas interdit!

Pourquoi?

Percutaneous recanalization of chronic total occlusions: Wherein lies the body of proof?

Corrado Tamburino, MD, PhD,^{a,b} Piera Capranzano, MD,^{a,b} Davide Capodanno, MD, PhD,^{a,b} George Dangas, MD, PhD,^c Marco Zimarino, MD, PhD,^d Theodore A. Bass, MD,^e Roxana Mehran, MD,^c David Antoniucci, MD,^f Antonio Colombo, MD,^g Alessio La Manna, MD,^a Maria E. Di Salvo, MD,^a and Gregg W. Stone, MD^h *Catania, Chieti, Florence, and Milan, Italy; New York, NY; and Jacksonville, FL*

Although interventional technology and skills have markedly advanced, percutaneous coronary intervention (PCI) for coronary chronic total occlusion (CTO) lesions remains challenging. Indeed, CTO PCI is technically complex, carries the potential for a relatively high likelihood of failure and acute complications, and requires specifically skilled operators and a demanding use of resources. In addition, controversy persists surrounding appropriate indications for attempting CTO revascularization. Finally, there is a wide uncertainty on the actual benefits achieved with successful CTO recanalization. A growing number of studies have reported procedural results and/or assessed functional effects and long-term clinical outcomes of CTO PCI. We therefore sought to review and critically appraise the evidence base for procedural outcomes and potential clinical benefits of CTO PCI. (Am Heart J 2013;165:133-42.)

Pourquoi(2)?

- diminution de l'angor
- diminution de l'ischémie
- amélioration de la FEVG

Pourquoi(3)?

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ORIGINAL INVESTIGATIONS

Long-Term Follow-Up of Elective Chronic Total Coronary Occlusion Angioplasty

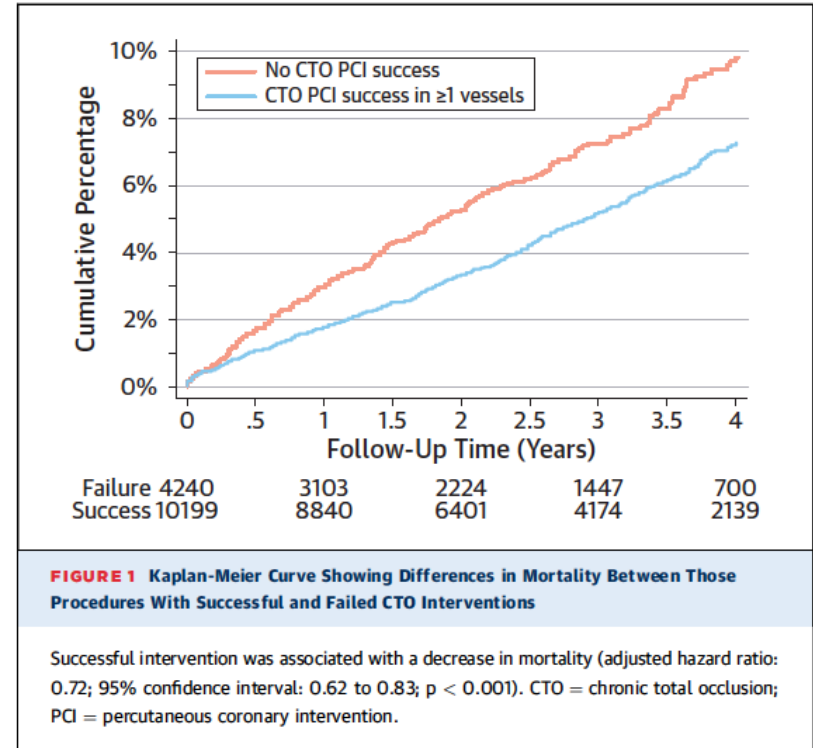


Analysis From the U.K. Central Cardiac Audit Database

Sudhakar George, MD,* James Cockburn, MD,* Tim C. Clayton, MSc,† Peter Ludman, MD,‡ James Cotton, MD,§ James Spratt, MA,|| Simon Redwood, MD,# Mark de Belder, MD,¶ Adam de Belder, MD,* Jonathan Hill, MA,** Angela Hoye, MBChB, PhD,†† Nick Palmer, MD,‡‡ Sudhir Rathore, MD,§§ Anthony Gershlick, MB BS,|||| Carlo Di Mario, MD, PhD,## David Hildick-Smith, MD,* on behalf of the British Cardiovascular Intervention Society and the National Institute for Cardiovascular Outcomes Research

Pourquoi (4)?

- 2005-2009
- >13 000 patients
- Suivi moyen 2.6 ans
- 70% succès
- Diminution de la mortalité $p < 0.001$



Pourquoi (5)

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<http://dx.doi.org/10.1016/j.jcin.2014.10.010>

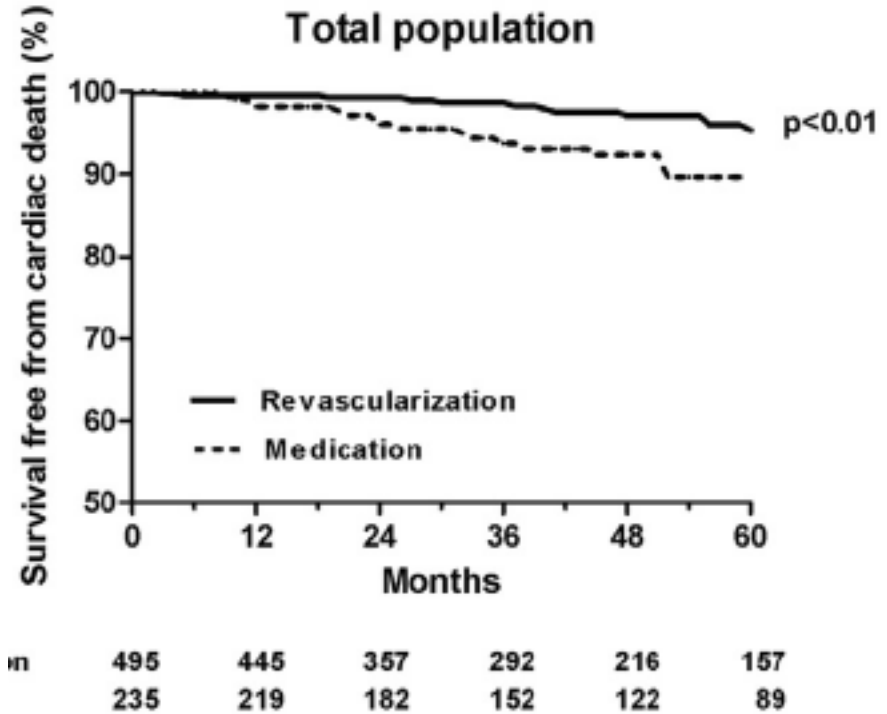
Long-Term Survival Benefit of Revascularization Compared With Medical Therapy in Patients With Coronary Chronic Total Occlusion and Well-Developed Collateral Circulation



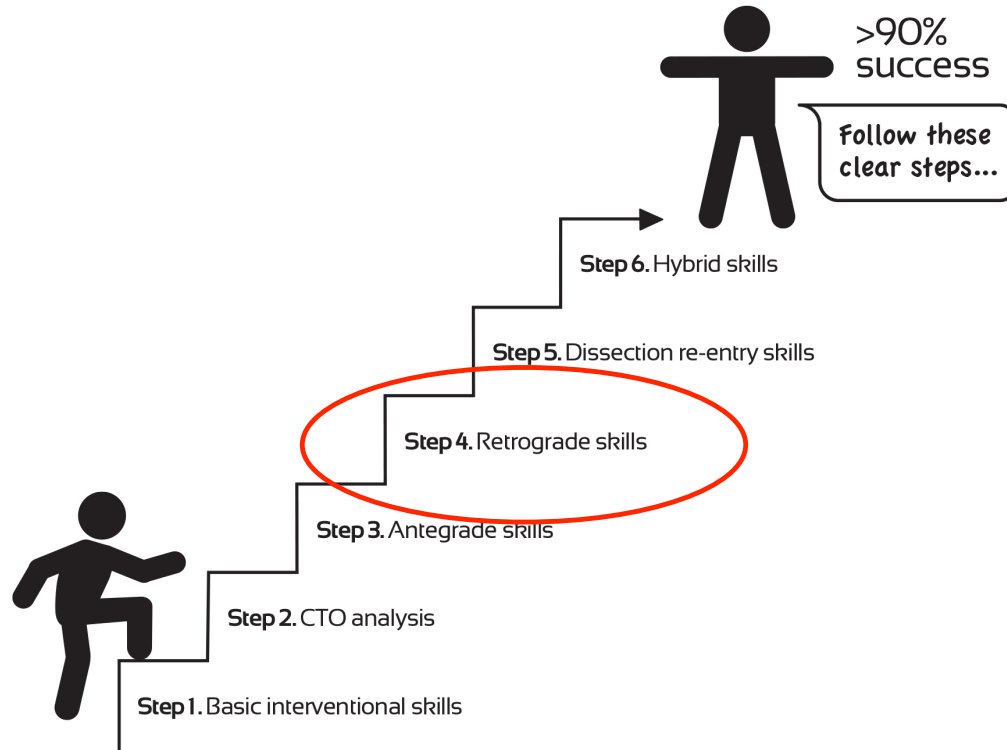
Woo Jin Jang, MD,* Jeong Hoon Yang, MD, PhD,* Seung-Hyuk Choi, MD, PhD,* Young Bin Song, MD, PhD,*
Joo-Yong Hahn, MD, PhD,* Jin-Ho Choi, MD, PhD,* Wook Sung Kim, MD, PhD,† Young Tak Lee, MD, PhD,†
Hyeon-Cheol Gwon, MD, PhD*

Pourquoi (6)?

- 738 pts avec 1 CTO
Rentrop 3
- 236 tt med seul, 170 chir, 332 angioplastie
- diminution de la mortalité



Comment?



Comment?

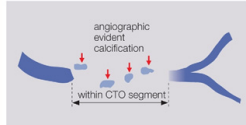
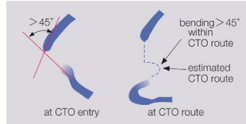
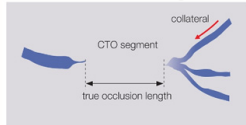
- En étant le plus performant et le moins « toxique » (Rx, Iode)
 - screening des cas
 - J-CTO score
 - Approche hybride
 - utiliser l'algorithme hybride

J-CTO score

J-CTO score
Morino et al. JACC Int
2011;4:213

J-CTO SCORE SHEET

Version 1.0

Variables and definitions		
Tapered 	Blunt 	Entry shape ☐ Tapered (0) ☐ Blunt (1)
		point
Calcification 		Regardless of severity, 1 point is assigned if any evident calcification is detected within the CTO segment. Calcification ☐ Absence (0) ☐ Presence (1)
		point
Bending >45degrees 		One point is assigned if bending > 45 degrees is detected within the CTO segment. Any tortuosity separated from the CTO segment is excluded from this assessment. Bending >45° ☐ Absence (0) ☐ Presence (1)
		point
Occlusion length 		Using good collateral images, try to measure "true" distance of occlusion, which tends to be shorter than the first impression. Occl.Length ☐ <20mm (0) ☐ ≥20mm (1)
		point
Re-try lesion Is this Re-try (2 nd attempt) lesion ? (previously attempted but failed)		Re-try lesion ☐ No (0) ☐ Yes (1)
		point
Category of difficulty (total point) ☐ easy (0) ☐ Intermediate (1) ☐ difficult (2) ☐ very difficult (≥3)		Total points

J-CTO Score

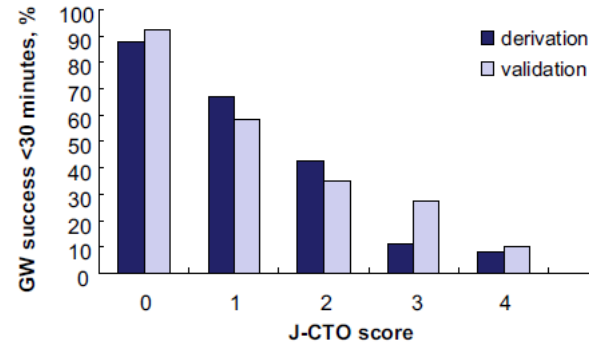
Lesion Length
>20 mm

Calcification

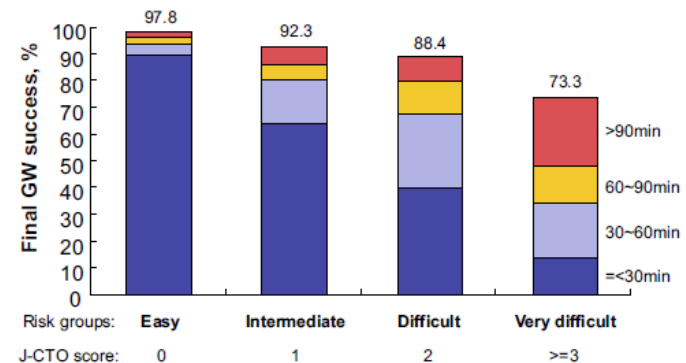
>45 bend

Blunt stump

Prior
Failure

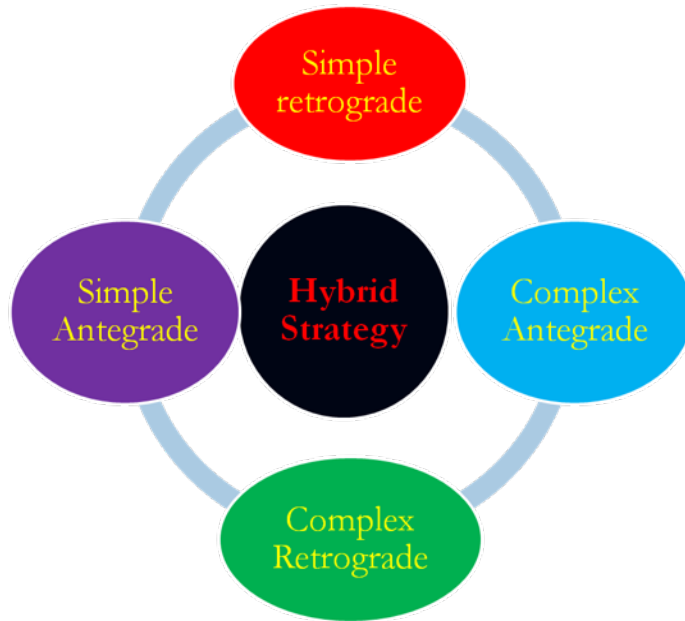


Patient number	329	65	82	92	63	24
	165	26	48	46	33	10



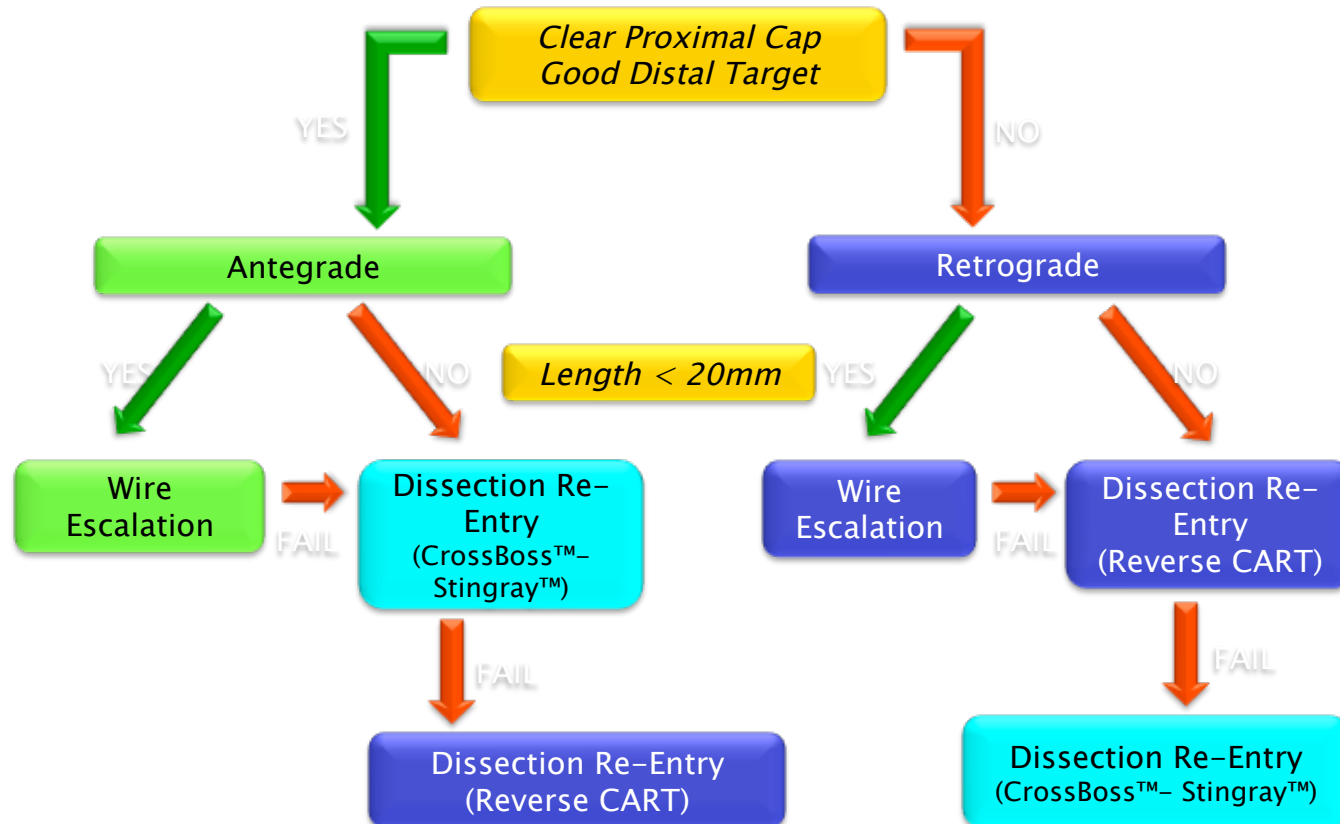
Patient number	494	91	130	138	135
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Approche hybride



- 4 questions/coro
 - ambiguïté de l'origine O/N
 - longueur
 - collatérales utilisables
 - zone d'atterrissage en aval de la CTO

approche hybride(2)?



Approche hybride (3)

Use of a Novel Crossing and Re-Entry System in Coronary Chronic Total Occlusions That Have Failed Standard Crossing Techniques

Results of the FAST-CTOs (Facilitated Antegrade Steering Technique in Chronic Total Occlusions) Trial

Patrick L. Whitlow, MD,* M. Nicholas Burke, MD,† William L. Lombardi, MD,‡ R. Michael Wyman, MD,§ Jeffrey W. Moses, MD,|| Emmanouil S. Brilakis, MD, PhD,¶ Richard R. Heuser, MD,# Charanjit S. Rihal, MD,** Alexandra J. Lansky, MD,†† Craig A. Thompson, MD,†† for the FAST-CTOs Trial Investigators

Cleveland, Ohio; Minneapolis, Minnesota; Bellingham, Washington; Torrance, California; New York, New York; Dallas, Texas; Phoenix, Arizona; Rochester, Minnesota; and New Haven, Connecticut

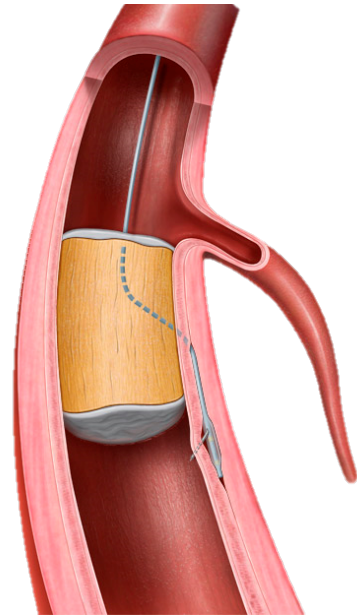
Objectives This study sought to examine the efficacy and safety of 3 novel devices to recanalize coronary chronic total occlusions (CTOs).

Background Successful percutaneous coronary intervention (PCI) of CTOs improves clinical outcome in appropriately selected patients. CTO PCI success, however, remains suboptimal.

Methods A new crossing catheter and re-entry system was evaluated in a prospective, multicenter, single-arm trial of CTO lesions refractory to standard PCI techniques. The primary efficacy endpoint was the frequency of true lumen guidewire placement distal to the CTO (technical success).



CTO crossing through the subintimal space, advancing across the occlusion, re-entering into the distal true lumen



approche hybride(4)?

Catheterization and Cardiovascular Interventions 85:1115–1122 (2015)

Original Studies

Procedural Failure of Chronic Total Occlusion Percutaneous Coronary Intervention: Insights From a Multicenter US Registry

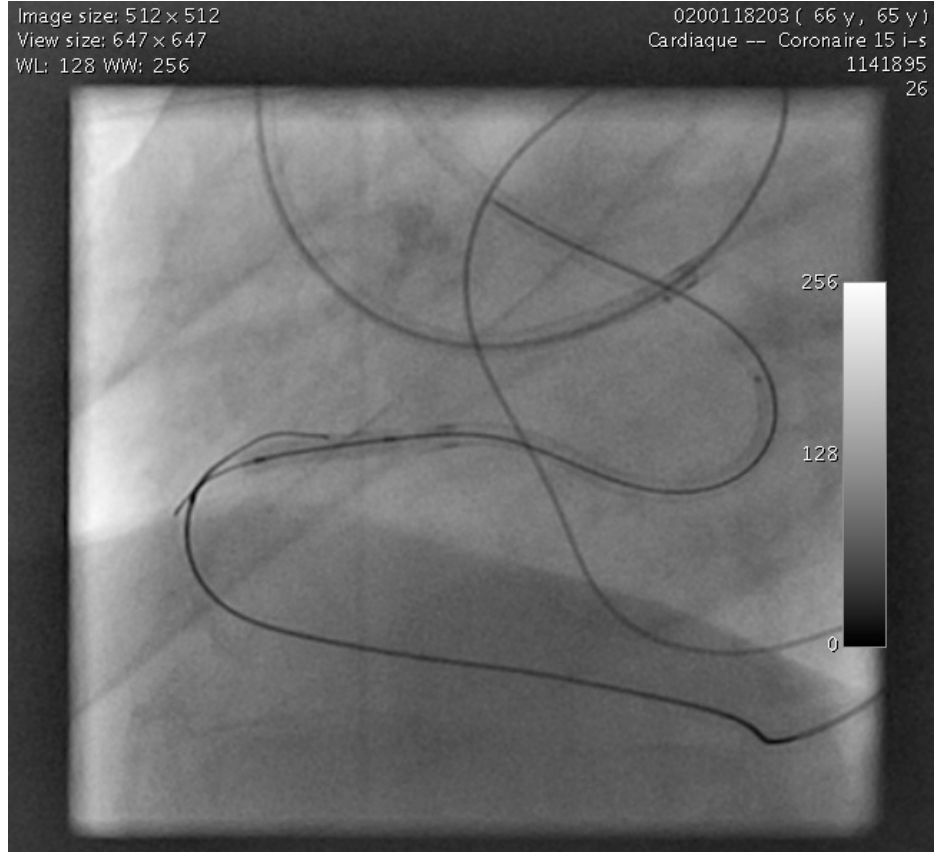
James Sapontis,¹ MBBCH, Georgios Christopoulos,² MD, J. Aaron Grantham,¹ MD,
R. Michael Wyman,³ MD, Khaldoon Alaswad,⁴ MD, Dimitri Karpaliotis,⁵ MD,
William L. Lombardi,⁶ MD, James M. McCabe,⁶ MD, Steven P. Marso,² MD,
Anna P. Kotsia,² MD, Bavana V. Rangan,² BDS, MPH, Georgios E. Christakopoulos,² MD,
Santiago Garcia,⁷ MD, Craig A. Thompson,⁸ MD, Subhash Banerjee,² MD, and
Emmanouil S. Brilakis,^{2*} MD, PhD

Approche hybride (5)

- 4 centres US, 380 CTO
- J-CTO score 2.9
- Scopie 39mn, lode 240 Ak 3.2
- durée 109 mn
- 91.3% succès

par qui?

- qui dit approche hybride dit...
 - retrograde (RC)
 - Dissection réentrée antérograde (ADR)
- formation/volume suffisants >50/an
- succès > si proctorship



Par qui (2)?

- plus de succès chez les opérateurs retrogrades

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Retrograde Techniques and the Impact of Operator Volume on Percutaneous Intervention for Coronary Chronic Total Occlusions

An Early U.S. Experience

Craig A. Thompson, MD, MMSc,* John E. Jayne, MD,† John F. Robb, MD,†
Bruce J. Friedman, MD,† Aaron V. Kaplan, MD,† Bruce D. Hettleman, MD,†
Nathaniel W. Niles, MD,† William L. Lombardi, MD‡

Par qui (3)?

- plus de succès après proctorship
- lésions plus complexes

Coronary artery disease

openheart Impact of proctoring on success rates for percutaneous revascularisation of coronary chronic total occlusions

Vinoda Sharma,¹ S T Jadhav,¹ A A Harcombe,¹ P A Kelly,² A Mozid,² A Bagnall,³ J Richardson,³ M Egred,³ M McEntegart,⁴ A Shaukat,⁴ K Oldroyd,⁴ G Vishwanathan,⁵ O Rana,⁵ S Talwar,⁵ M McPherson,⁶ J W Strange,⁷ C G Hanratty,⁸ S J Walsh,⁸ J C Spratt,⁶ W H T Smith¹

Conclusion/THM

- diminution de la mortalité et de l'ischémie
- importance du J-CTO score/approche hybride
- Operateurs dédiés

Merci beaucoup

<http://www.CTOfundamentals.org>