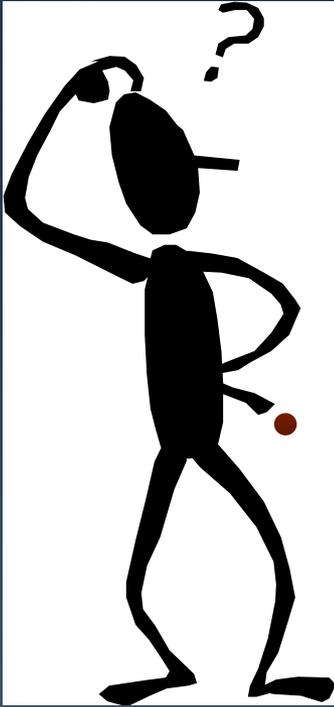




CTO techniques: is there any room in daily practice?

Prof. Alfredo R. Galassi MD, FESC, FACC, FSCAI

*Department of Medical Sciences and Pediatrics
Cannizzaro Hospital, University of Catania, Italy*



CTO techniques: is there any room in daily practice?

✓ *Looking at the advance in CTO PCI*

**YES
INDEED!!!!**

In-hospital outcomes of percutaneous coronary intervention in patients with chronic total occlusion: insights from the ERCTO (European Registry of Chronic Total Occlusion) registry

Alfredo R. Galassi^{1*}, MD, FACC, FSCAI, FESC; Salvatore D. Tomasello¹, MD; Nicolaus Reifart², MD, FESC, FACC, RANS; Gerald S. Werner³, MD FACC, FSCAI, FESC; George Sianos⁴, MD; Hans Bonnier⁵, MD; Horst Sievert⁶, MD; Stephan Ehlrad⁷, MD; Alexander Bufe⁸, MD; Joachim Shofer⁹, MD; Anthony Gershlick¹⁰, MD; David Hildick-Smith¹¹, MD; Javier Escaned¹², MD; Andrejs Erglis¹³, MD; Imad Sheiban¹⁴, MD; Leif Thuesen¹⁵, MD; Anthony Serra¹⁶, MD; Evald Christiansen¹⁵, MD; Achim Buettner¹⁷, MD; Luca Costanzo¹, MD; Giombattista Barrano¹, MD; Carlo Di Mario¹⁸, MD, FESC FACC

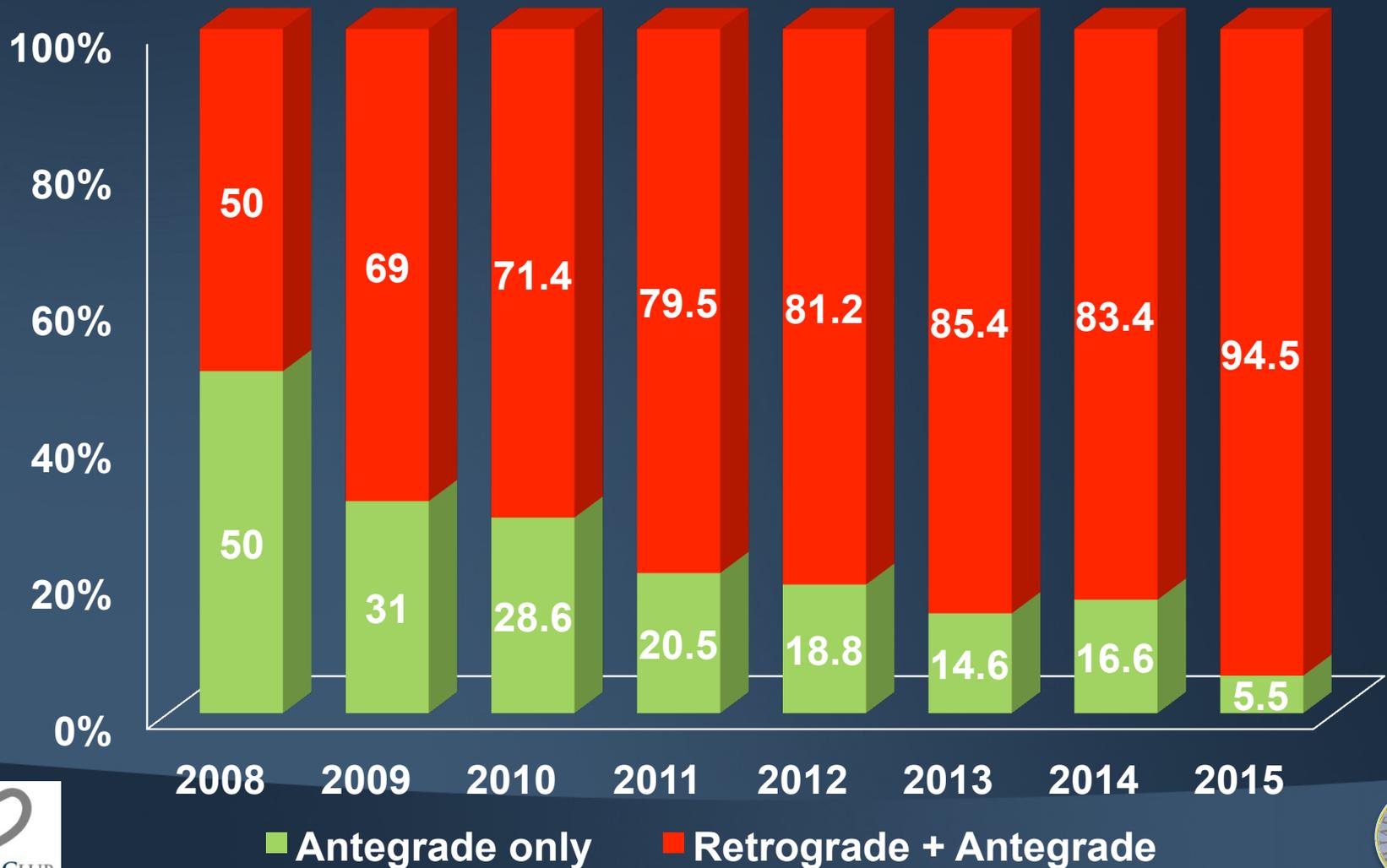
Procedural complications and in-hospital outcome

	All procedures n=1983	Anterograde n=1749	Retrograde n=234	p
Procedural complication				
Contrast induced nephropathy, (%)	18 (0.9)	15 (0.8)	3 (1.2)	0.5
Coronary perforation, (%)	53 (2.6)	42 (2.1)	11 (4.7)	0.04
Cardiac tamponade, (%)	11 (0.5)	9 (0.5)	2 (0.8)	0.5
Emergent CABG, (%)	3 (0.1)	3 (0.2)	0	0.5
Vascular access site complication, (%)	14 (0.7)	12 (0.6)	2 (0.8)	0.5
In-hospital outcome				
Death, (%)	7 (0.3)	6 (0.3)	1 (0.4)	0.8
Non-Q wave myocardial infarction, (%)	23 (1.2)	18 (1)	5 (2.1)	0.08
Q wave myocardial infarction, (%)	3 (0.1)	2 (0.1)	1 (0.4)	0.1
Stent thrombosis, (%)	1 (0.05)	1 (0.05)	0	0.8
TVR	1 (0.05)	1 (0.05)	0	0.8
Stroke, (%)	1 (0.05)	1 (0.05)	0	0.8

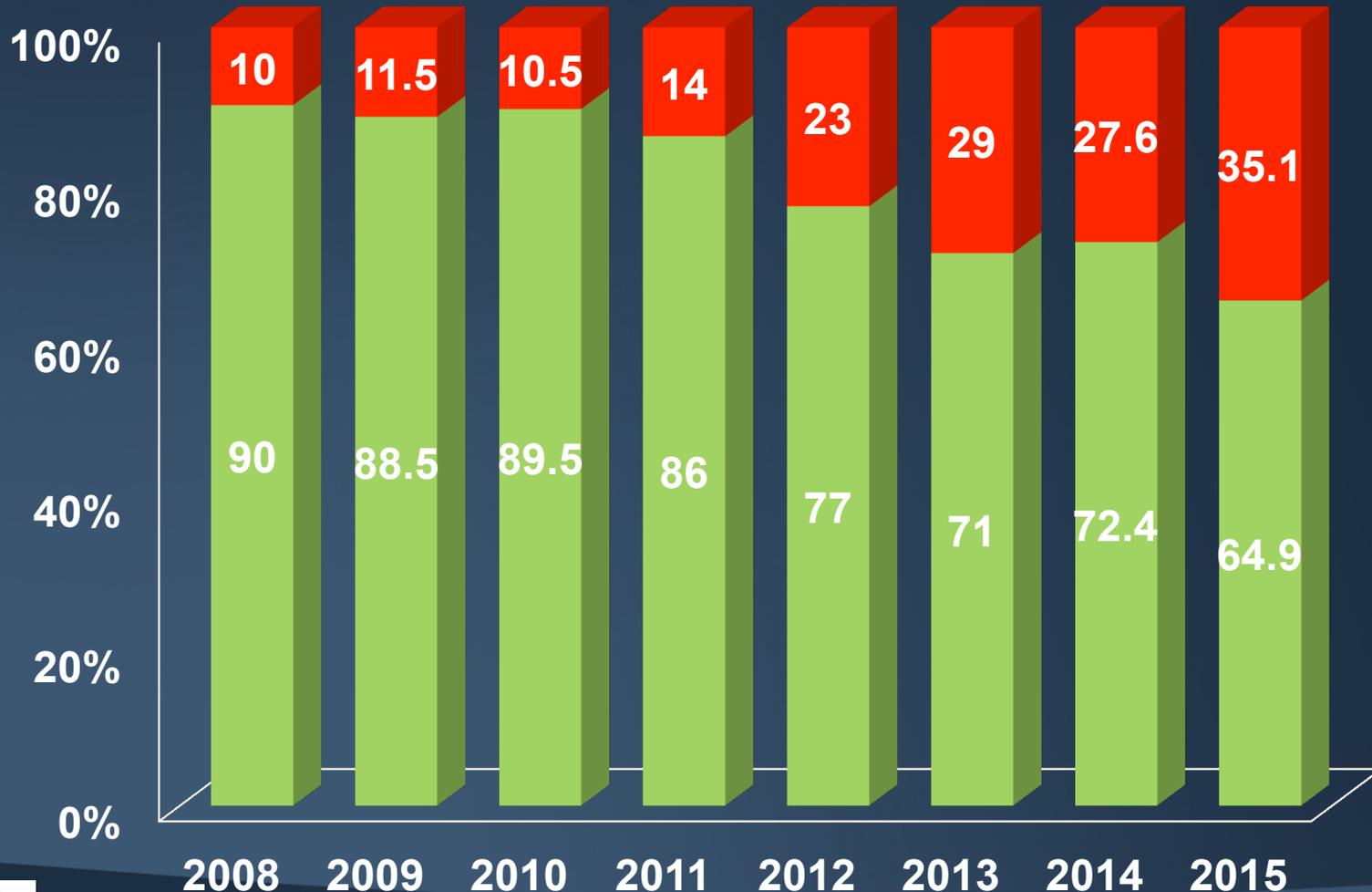
Online Registry 2008-2015



Antegrade/Retrograde Operators

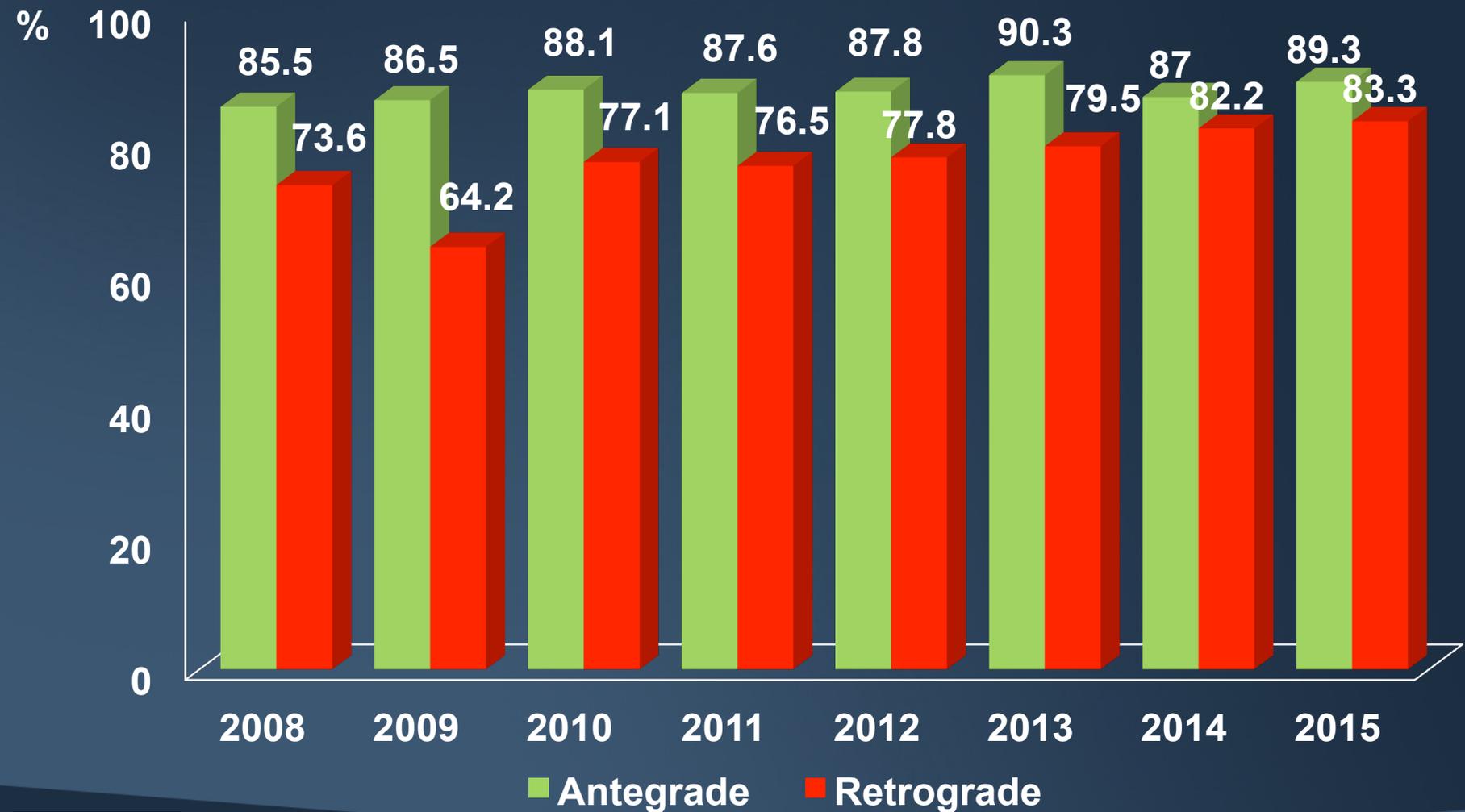


Antegrade/Retrograde Procedures

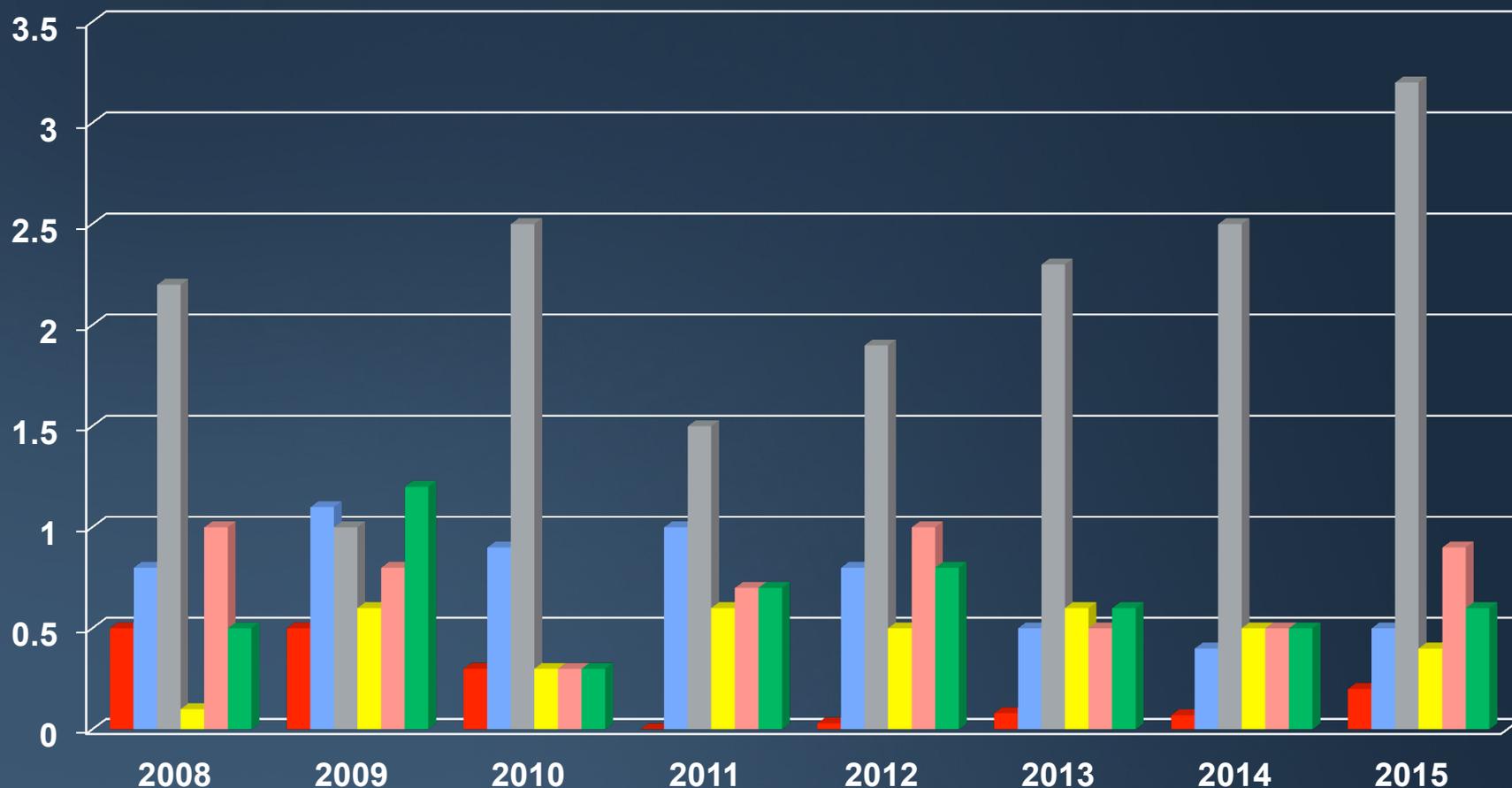


■ Antegrade ■ Retrograde ± Antegrade

Angiographic Success



Procedural Complications



Death



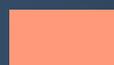
Myocardial infarction



Coronary perforation



Cardiac tamponade



Vascular complication



Donor vessel dissection



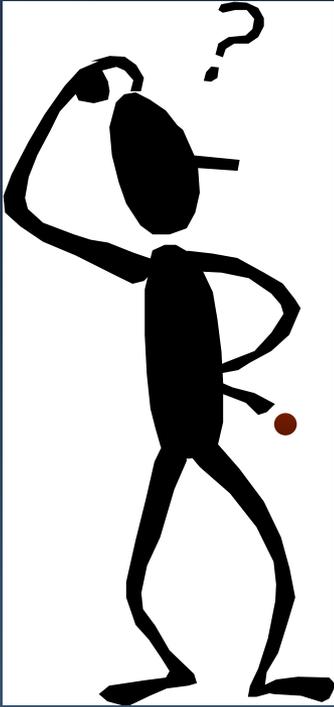
EURO CTO CLUB



Recanalisation of chronic total coronary occlusions: 2012 consensus document from the EuroCTO club

Georgios Sianos^{1*}, MD, PhD, FESC; Gerald S. Werner², MD, PhD, FESC, FACC, FSCI; Alfredo R. Galassi³, MD, FESC, FACC, FSCAI; Michail I. Papafaklis⁴, MD, PhD; Javier Escaned⁵, MD, PhD, FESC; David Hildick-Smith⁶, MD, FESC; Evald Høj Christiansen⁷, MD, PhD; Anthony Gershlick⁸, MD, FRCP, FESC; Mauro Carlino⁹, MD, FESC; Angelos Karlas¹, MD; Nikolaos V. Konstantinidis¹, MD; Salvatore D. Tomasello³, MD; Carlo Di Mario¹⁰, MD, PhD, FRCP, FESC; Nicolaus Reifart¹¹, MD, PhD, FESC for the EuroCTO Club

1. AHEPA University Hospital, Thessaloniki, Greece; 2. Klinikum Darmstadt, Darmstadt, Germany; 3. Cannizzaro Hospital, University of Catania, Catania, Italy; 4. Michailideion Cardiac Centre, University of Ioannina, Ioannina, Greece; 5. Hospital Clínico San Carlos, Madrid, Spain; 6. Sussex Cardiac Centre, Brighton & Sussex University Hospital Trust, Brighton, United Kingdom; 7. Aarhus University Hospital, Skejby, Denmark; 8. University Hospitals of Leicester, Leicester, United Kingdom; 9. San Raffaele Scientific Institute, Milan, Italy; 10. Royal Brompton Hospital and Imperial College, London, United Kingdom; 11. Main Taunus Kliniken, Bad Soden, Germany



CTO techniques: is there any room in daily practice?

✓ *Looking at the importance on Health Outcomes*

**YES
INDEED!!!!**

Health outcomes

(symptoms, functional status, and quality of life)

The concept of health outcomes involves:

- ✓ Angina
- ✓ Dyspnea
- ✓ Exercise tolerance
- ✓ Limitation of activities
- ✓ Medication burden
- ✓ Self-image
- ✓ Social functioning



Retrograde Recanalization of Chronic Total Occlusions in Europe

Procedural, In-Hospital, and Long-Term Outcomes From the Multicenter ERCTO Registry

Alfredo R. Galassi, MD,* Georgios Sianos, MD, PhD,† Gerald S. Werner, MD,‡ Javier Escaned, MD, PhD,§ Salvatore D. Tomasello, MD,* Marouane Boukhris, MD,*|| Marine Castaing, MSc,* Joachim H. Büttner, MD,¶ Alexander Bufe, MD,# Artis Kalnins, MD,** James C. Spratt, MD,†† Roberto Garbo, MD,‡‡ David Hildick-Smith, MD,§§ Simon Elhadad, MD,||| Andrea Gagnor, MD,¶¶ Bernward Lauer, MD,||## Leszek Bryniarski, MD, PhD,*** Evald H. Christiansen, MD, PhD,††† Leif Thuesen, MD, DMSc,††† Markus Meyer-Geßner, MD,‡‡‡ Omer Goktekin, MD,§§§ Mauro Carlino, MD,||||| Yves Louvard, MD,¶¶¶ Thierry Lefèvre, MD,¶¶¶ Aigars Lismanis, MD,### Valery L. Gelev, MD,**** Antonio Serra, MD, PhD,†††† Francesco Marzà, MD,* Carlo Di Mario, MD,†††† Nicolaus Reifart, MD, PhD,§§§§ on behalf of the Euro CTO Club

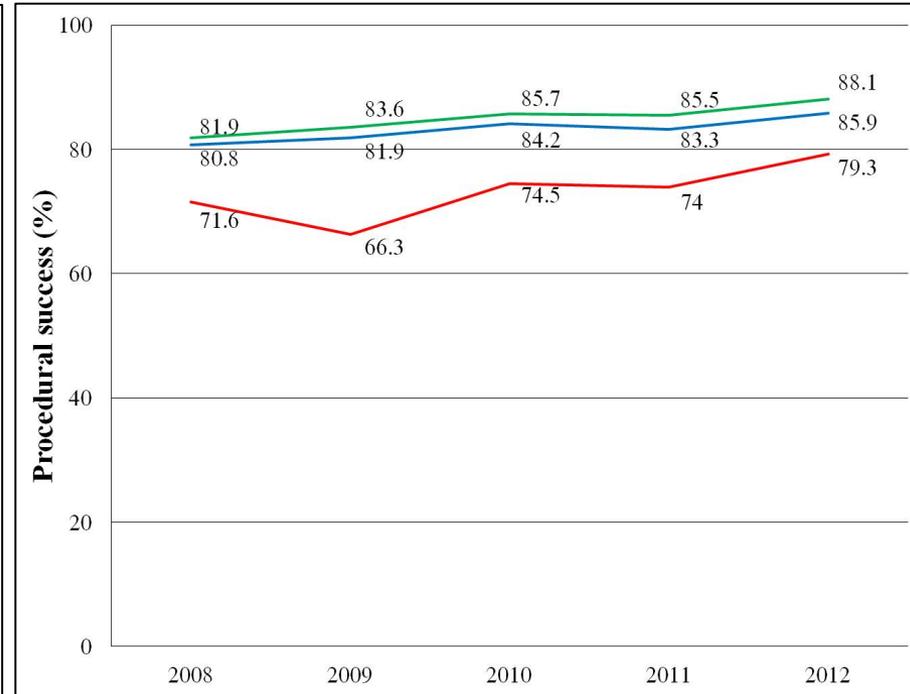
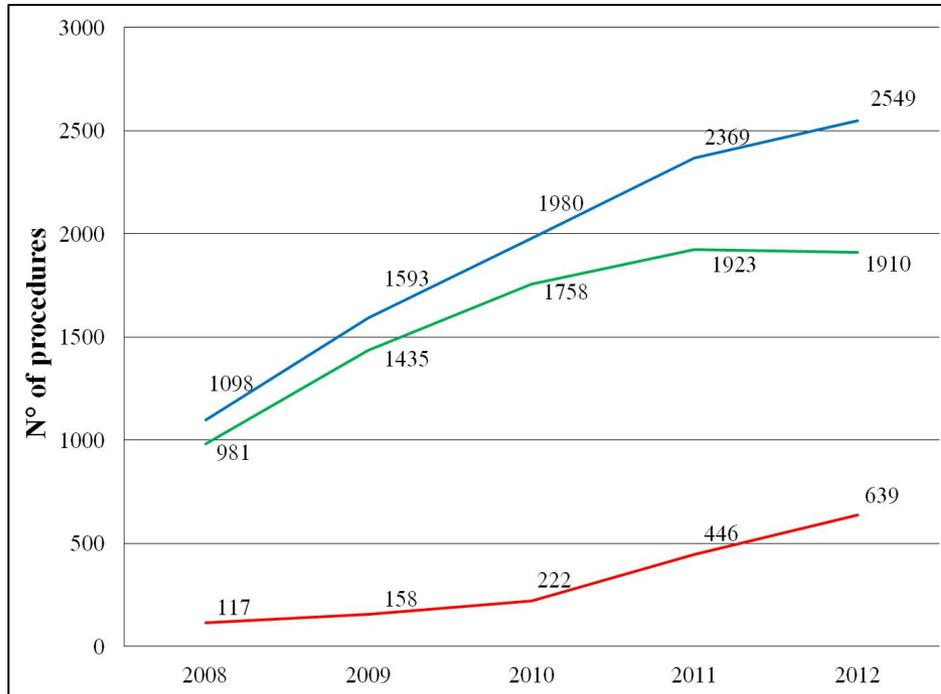


EURO CTO CLUB
www.eurocto.eu

Endorsed by



Accreditation



— Overall

— Antegrade

— Retrograde

1582 pts enrolled in 44 European centers



Endorsed by



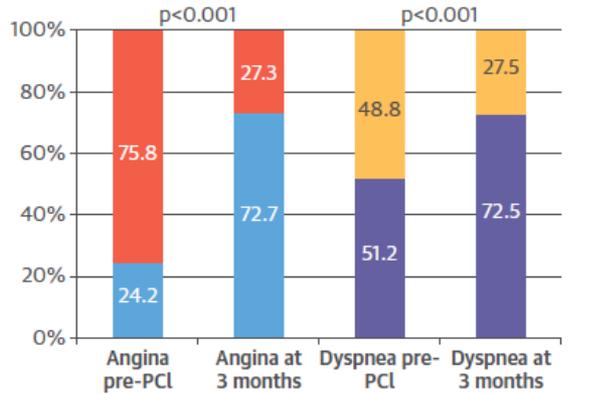
Accreditation



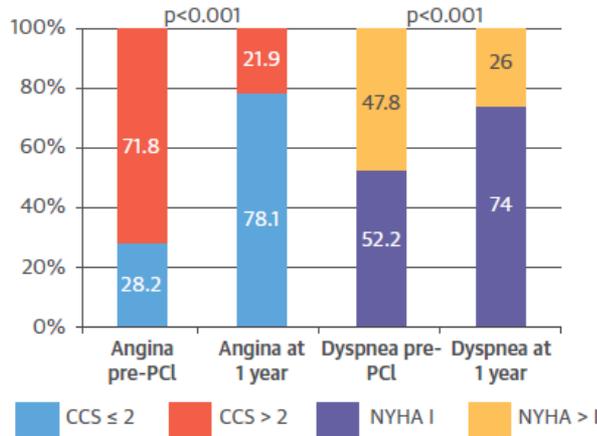
Follow-up data were collected in 931 patients

Changes in Angina and Dyspnea Status After Retrograde CTO PCI

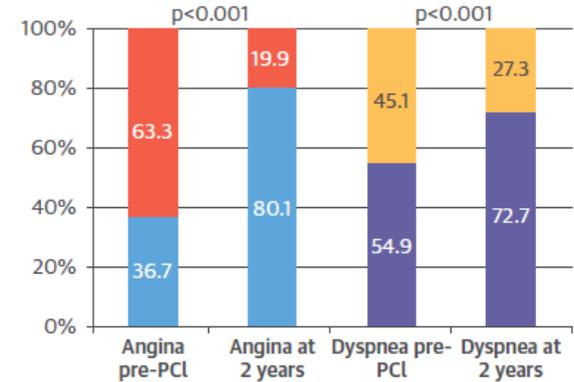
3 months (N=931)



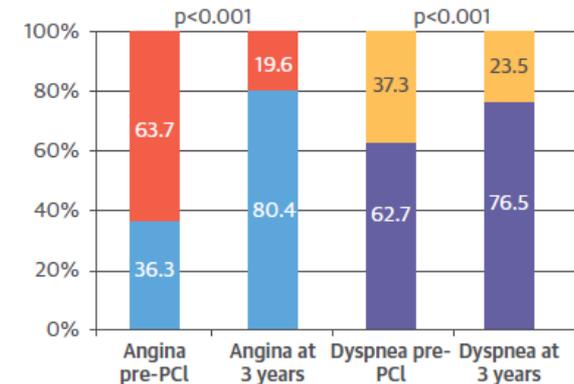
1 year (N=787)



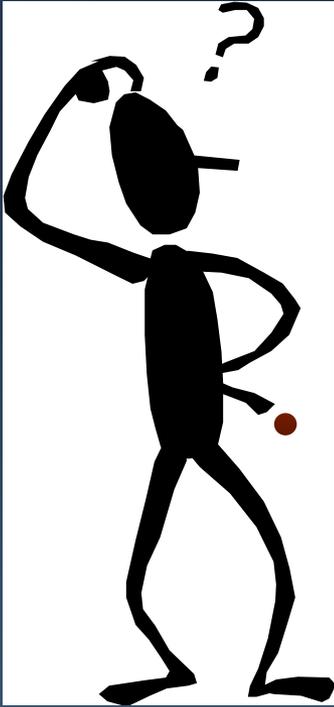
2 years (N=455)



≥ 3 years (N=195)



CCS ≤ 2 CCS > 2 NYHA I NYHA > I



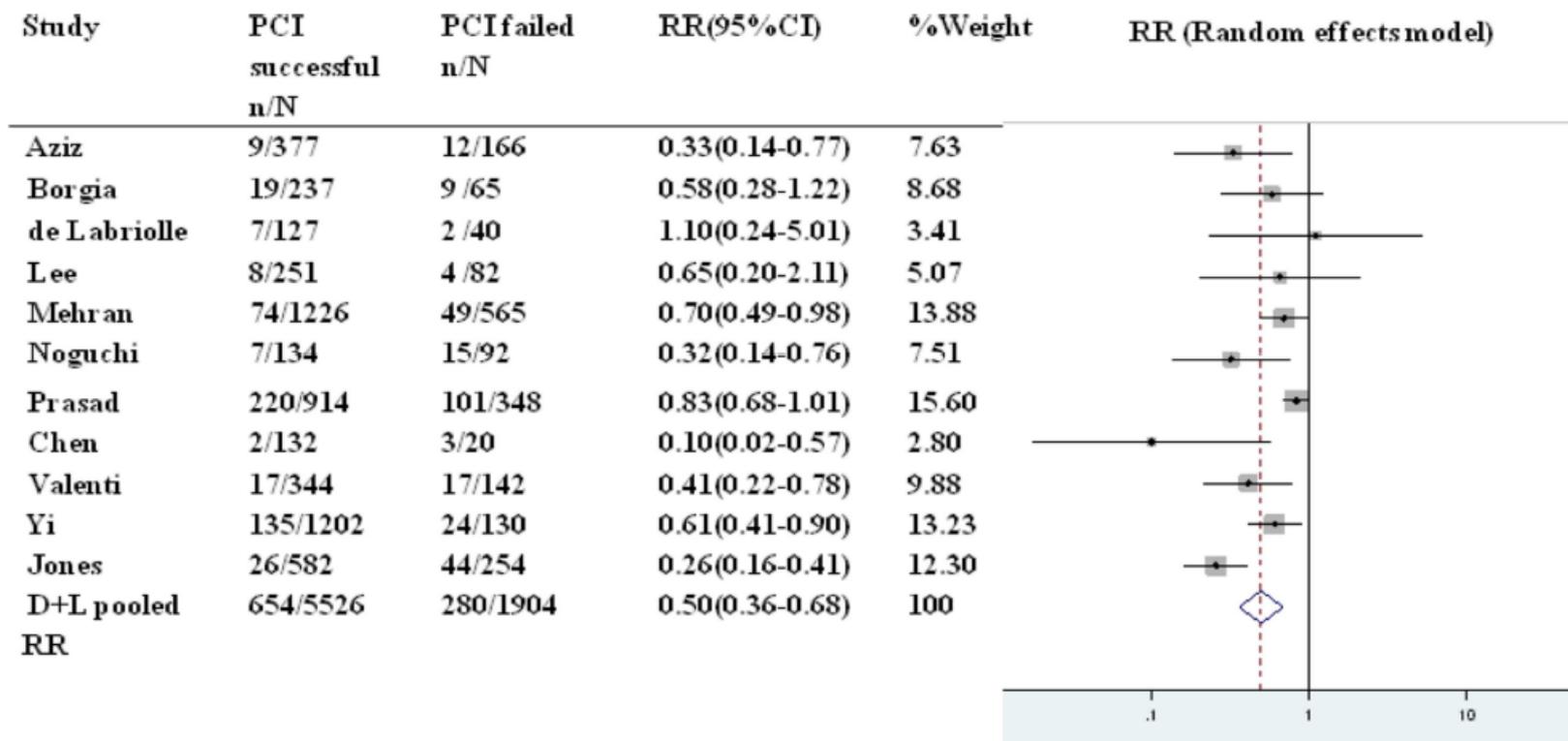
CTO techniques: is there any room in daily practice?

✓ *Looking at the importance on Survival Outcome*

**YES
INDEED!!!!**

CTO Long-term survival and overall clinical outcomes

Meta-analysis of 23 studies (12.970 pts at a mean FU of 3.7+2.1 years)



Heterogeneity chi-squared = 33.11 (d.f. = 10) p = 0.000

I-squared (variation in RR attributable to heterogeneity) = 69.8%

Estimate of between-study variance Tau-squared = 0.1572

Favors successful PCI

Favors failed PCI

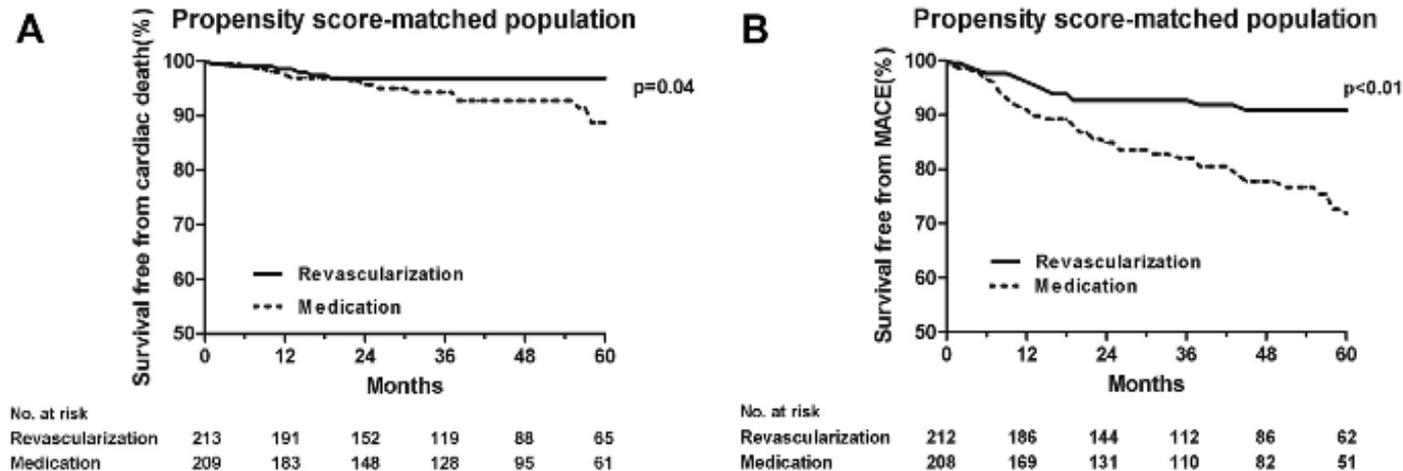
Comparison between successful and failed procedures





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

FIGURE 2 Kaplan-Meier Curves for Clinical Outcomes in Propensity-Matched Patients



(A) Kaplan-Meier curves for cardiac death. **(B)** Kaplan-Meier curves for major adverse cardiac events (MACE).

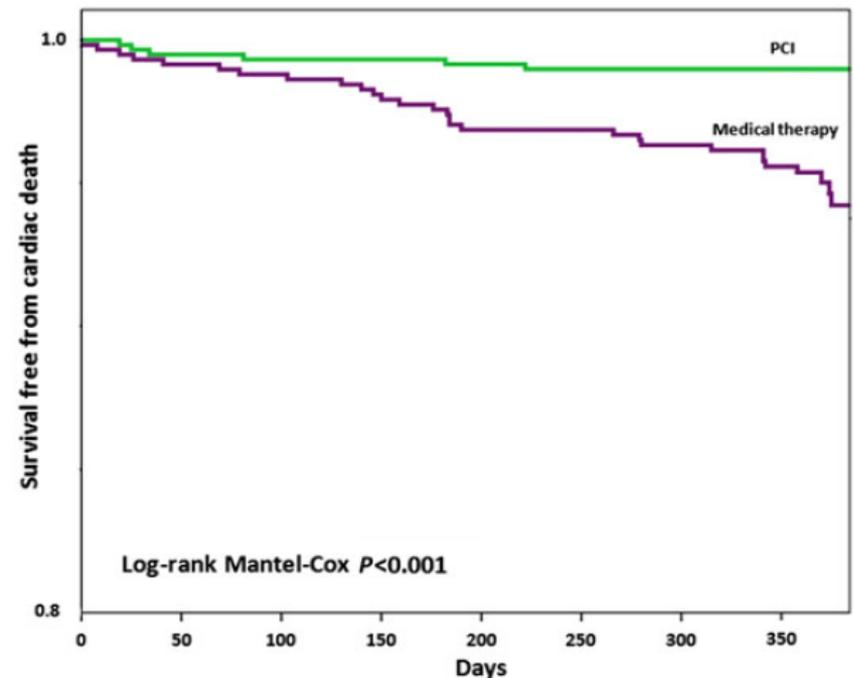
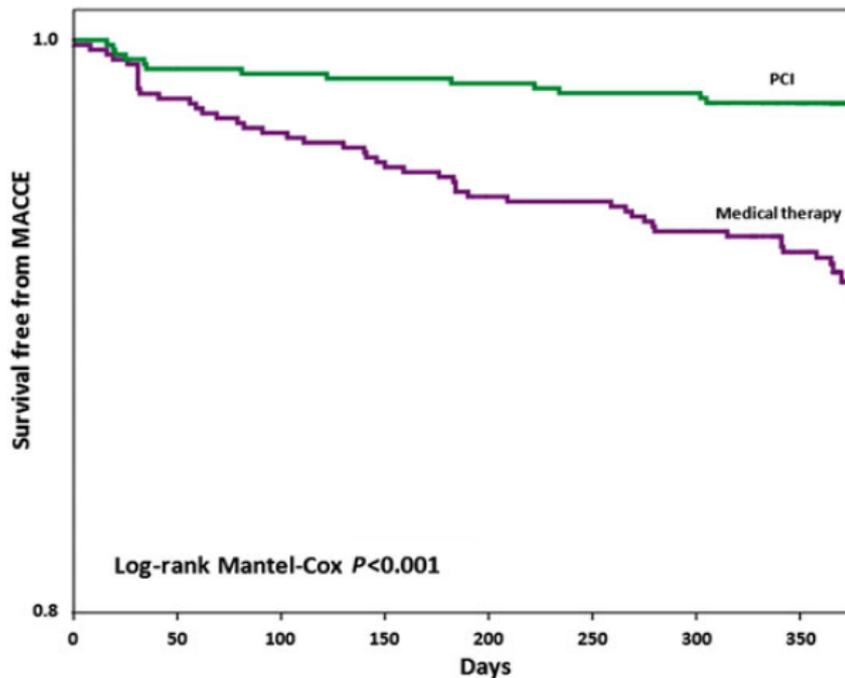


Management strategies in patients affected by chronic total occlusions: results from the Italian Registry of Chronic Total Occlusions

Salvatore D. Tomasello¹, Marouane Boukhris^{1†}, Simona Giubilato¹, Francesco Marzà¹, Roberto Garbo², Gaetano Contegiacomo³, Antonio Marzocchi⁴, Giampaolo Niccoli⁵, Andrea Gagnor⁶, Ferdinando Varbella⁶, Alessandro Desideri⁷, Paolo Rubartelli⁸, Angelo Cioppa⁹, Giorgio Baralis¹⁰, and Alfredo R. Galassi^{1*}

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Survival free from MACCE and cardiac death in pts (No:619) treated with PCI or medical therapy after propensity score adjustment



The EURO-CTO Trial (NCT01760083)

Evaluation of the Utilisation of Revascularisation vs Optimal medical therapy for CTOs

450 patients

40 operators

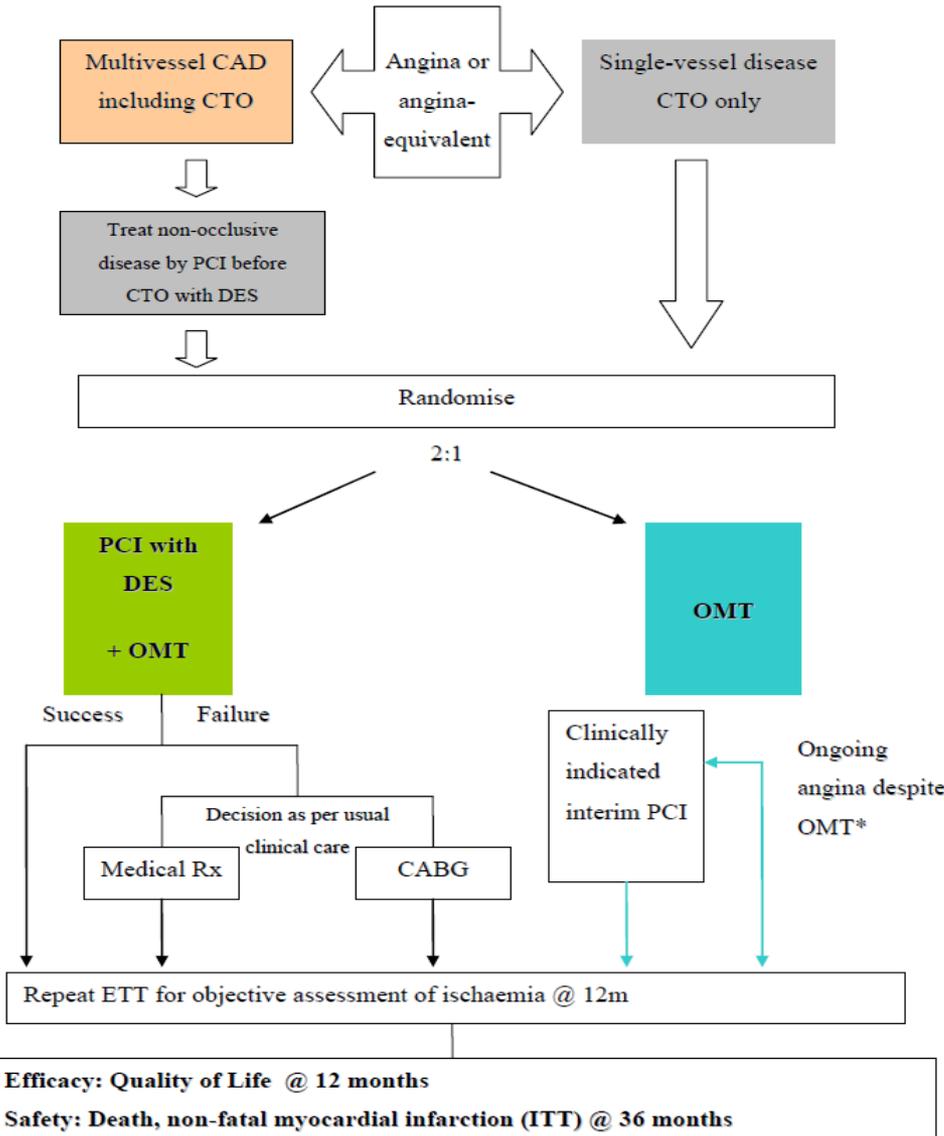
>80% success rate

Started 2012

Summer 2016 expected result

Primary efficacy endpoint: Quality of life after 1 year

Primary safety endpoint: MACE from procedure through 3 years



Clinical update

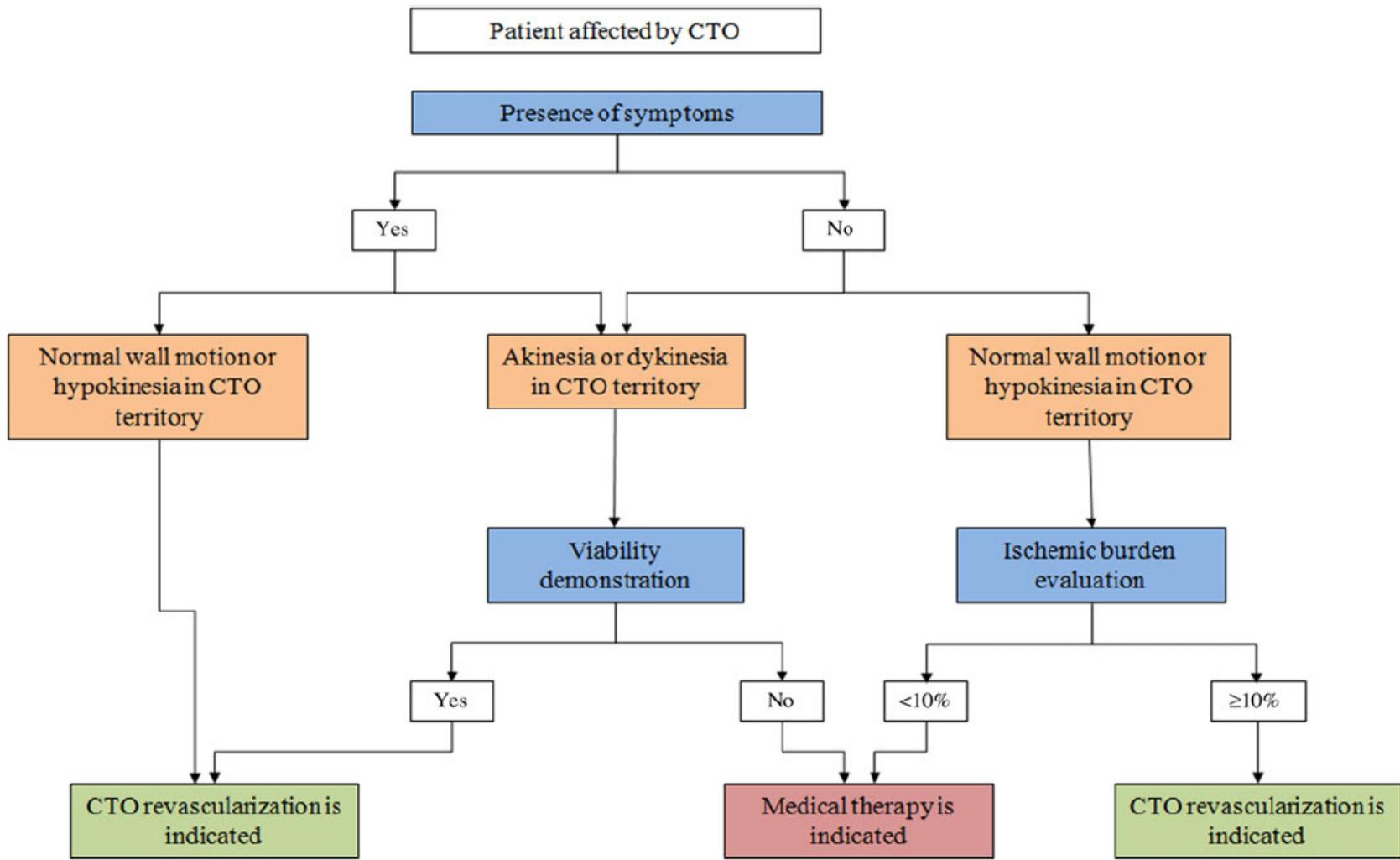
Appropriateness of percutaneous revascularization of coronary chronic total occlusions: an overview

**Alfredo R. Galassi^{1*}, Emmanouil S. Brilakis², Marouane Boukhris^{1,3},
Salvatore D. Tomasello¹, Georgios Sianos⁴, Dimitri Karmpaliotis⁵,
Carlo Di Mario⁶, Bradley H. Strauss⁷, Stephane Rinfret⁸, Masahisa Yamane⁹,
Osamu Katoh¹⁰, Gerald S. Werner¹¹, and Nicolaus Reifart¹²**

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Indications of CTO revascularization according to symptoms, ischemia and viability



EURO CTO CLUB
Sept 30th – Oct 01st, 2016
Krakow, Poland



8th Experts "Live" CTO Workshop 2016

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For Your Attention*

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