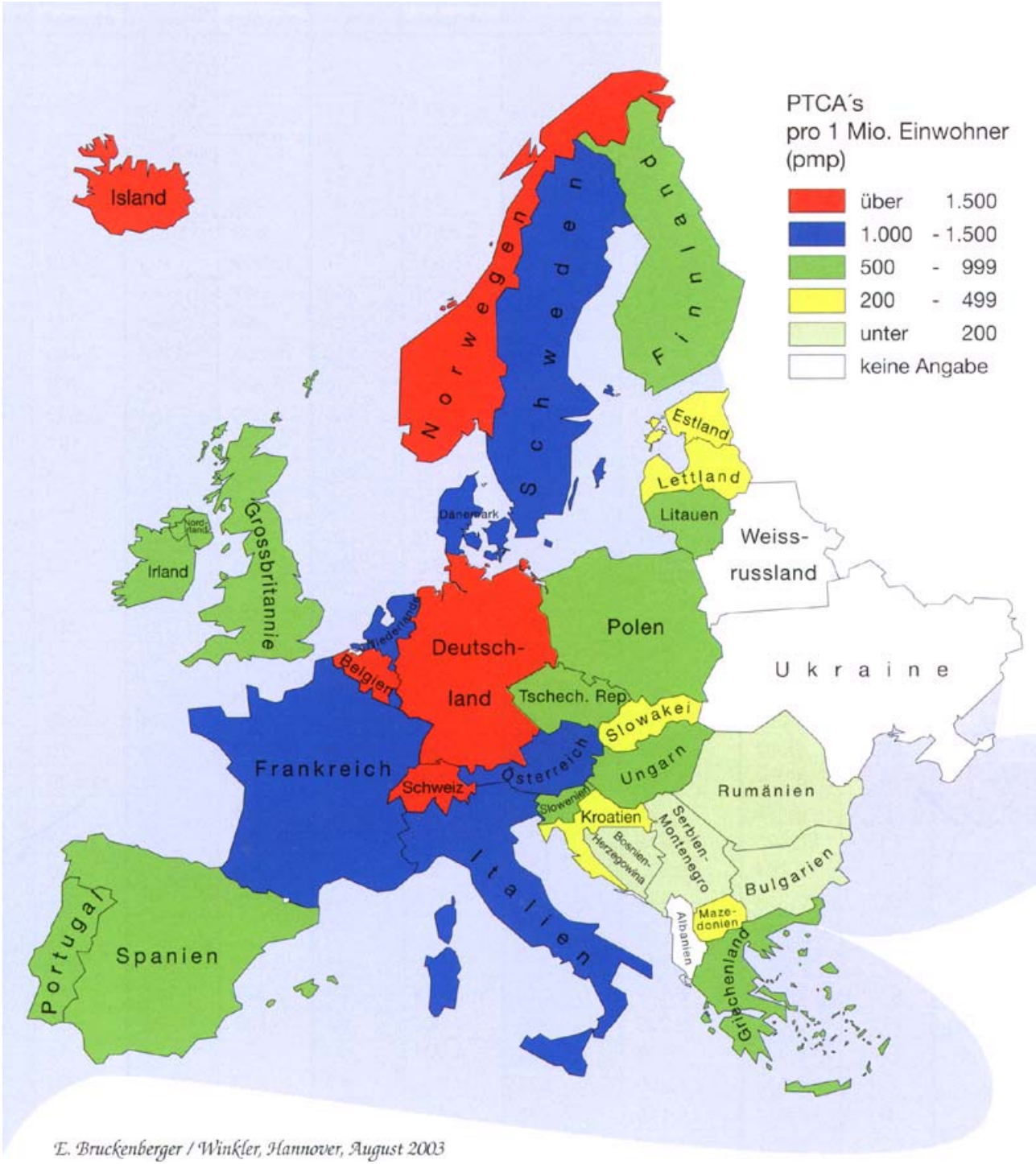
CTO- Strategies: European Perspective

Nicolaus Reifart
Professor of Medicine
Frankfurt University
Chief Cardiology Main Taunus Hospitals
Bad Soden, Germany



PCI / 1 Mio inhabitants in Europe

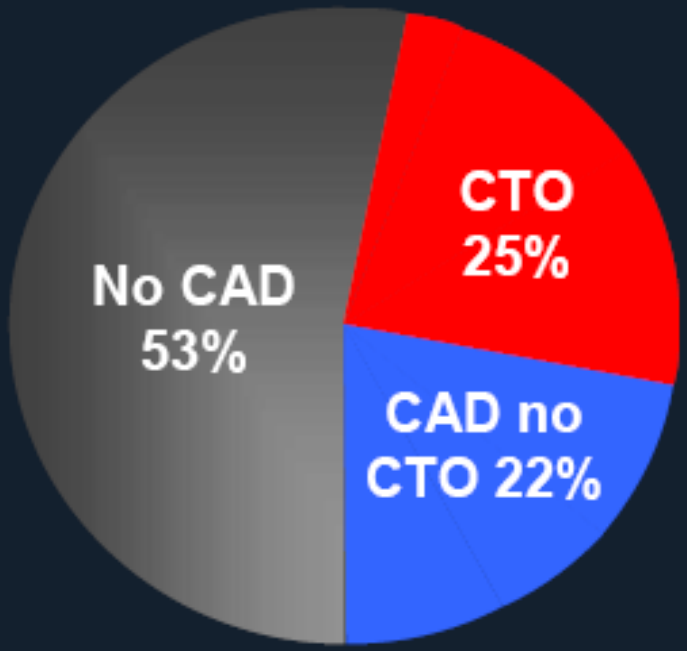
>1500/1 Mio

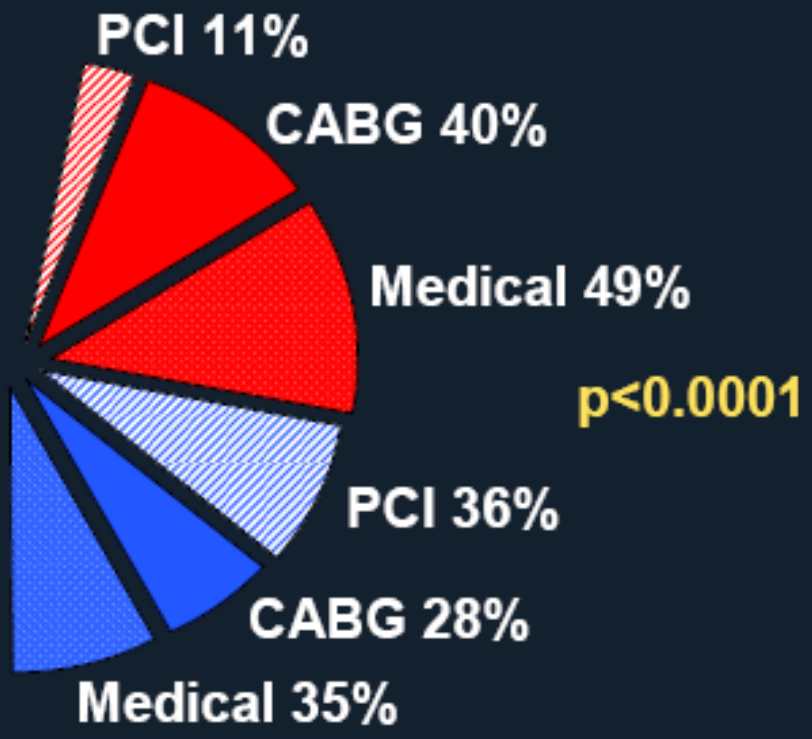
< 200/1Mio

CTOs are common and influence management

My Practice: about 20%

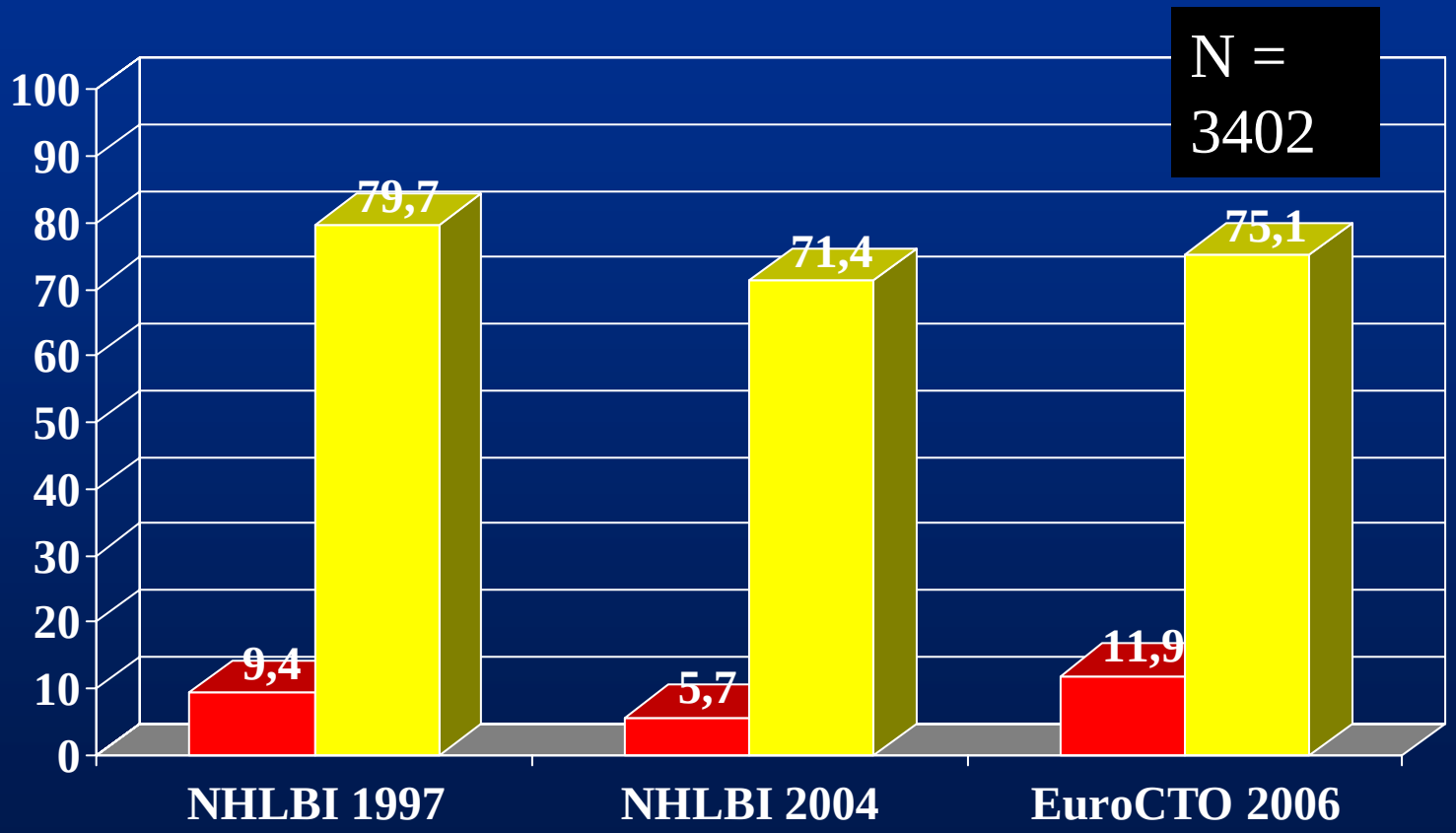
- Analysis of 6,581 consecutive patients undergoing angiography (1990-2000), CTO was found in 52% patients with significant (≥70% DS) coronary disease





Christofferson AJC 2005 1088-91

Attempted PCI in CTO and Success



15 high volume CTO-operators

CTO dedicated groups

- Japanese CTO Club 1991
- USCTO 2004
- EuroCTO 2006

21 operators > 50 CTO/year

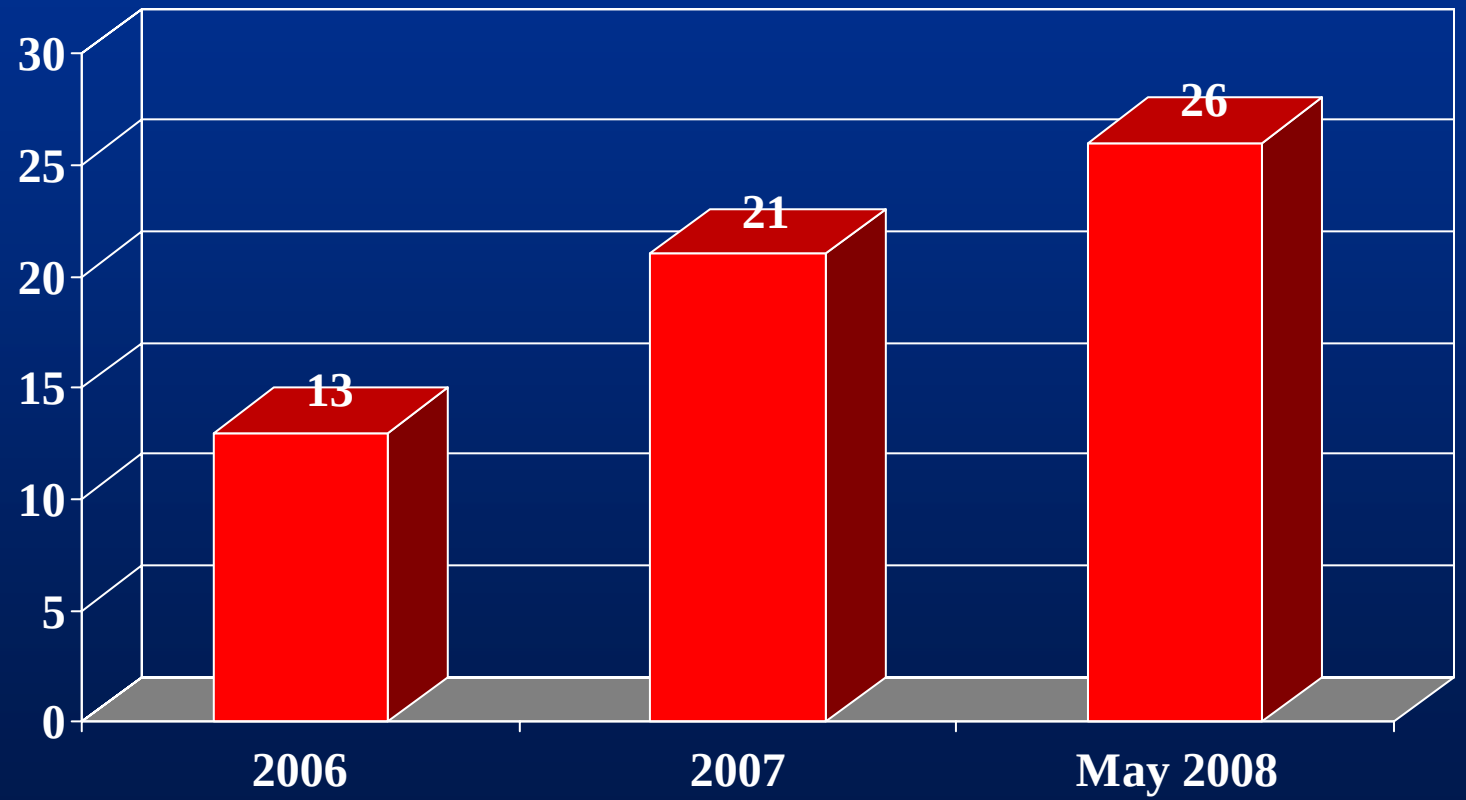
European perspective in the recanalisation of Chronic Total Occlusions (CTO): consensus document from the EuroCTO Club

Carlo Di Mario[1]*, MD, PhD, FRCP, FESC; Gerald S. Werner[2], MD, PhD, FESC; Georgios Sianos[3], MD, PhD, FESC; Alfredo R. Galassi[4], MD, FESC; Joachim Büttner[5], MD, PhD, FESC; Dariusz Dudek[6], MD, PhD, FESC; Bernard Chevalier[7], MD; Thierry Lefevre[8], MD, FESC; Joachim Schofer[9], MD, PhD; Jacques Koolen[10], MD, PhD, FESC; Horst Sievert[11], MD, PhD, FESC; Bernhard Reimers[12], MD, FESC; Jean Fajadet[13], MD, FESC; Antonio Colombo[14], MD, FESC; Anthony Gershlick[15], MD, FRCP, FESC; Patrick W. Serruys[3], MD, PhD, FESC; Nicolaus Reifart[16], MD, PhD, FESC for the EuroCTO Club

1. Royal Brompton Hospital and Imperial College, London, United Kingdom; 2. Klinikum Darmstadt, Darmstadt, Germany; 3. Thoraxcentre, Erasmus, Medical Center, Rotterdam, The Netherlands; 4. Ospedale Ferrarotto, University of Catania, Catania, Italy; 5. Heart Centre, Bad Krozingen, Germany; 6. Jagellonian University, Cracow, Poland; 7. Centre Cardiologique du Nord, Saint-Denis, France; 8. Institut Hospitalier Jacque Cartier, Massy, France; 9. Hamburg University Cardiovascular Center, MVZ Prof. Mathey, Prof. Schofer GmbH, Hamburg, Germany; 10. Catharina Ziekenhuis, Eindhoven, The Netherlands; 11. Frankfurt, Germany; 12. Ospedale di Mirano, Venice, Italy; 13. Toulouse, France; 14. Centro Cuore Columbus and San Raffaele Hospital, Milan, Italy; 15. Univ. of Leicester, Leicester, United Kingdom; 16. Bad Soden, Germany

Eurointervention
2007; 30

Euro CTO Club membership



> 200 CT & > 50 CTO / year

CTO Definition

- Intra-segment TIMI 0 flow despite vigorous injection
- Clinical evidence or high likelihood of occlusion age not less than 3 months

Eurointervention 2007; 30

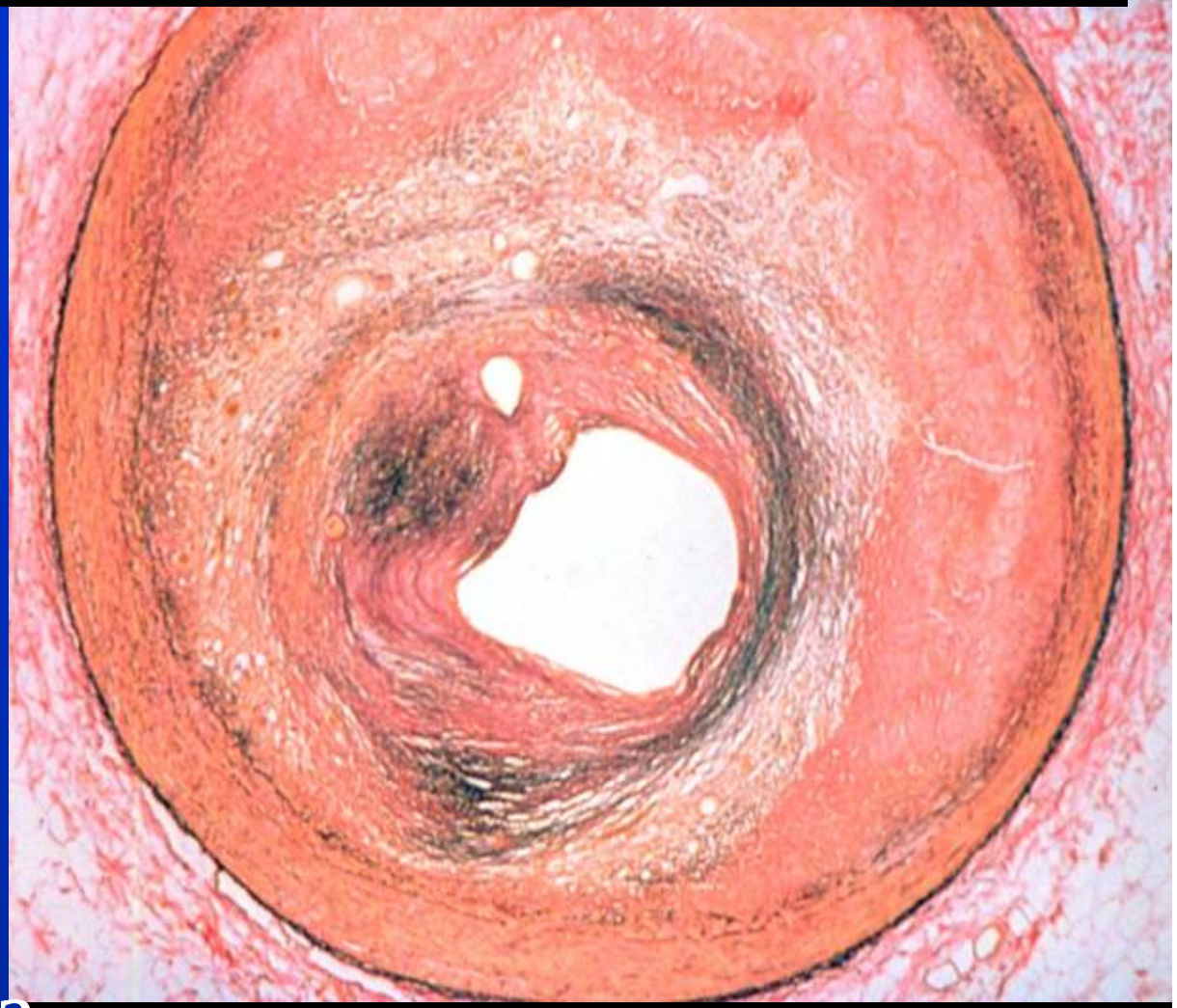
Common misconceptions still in 2007

59% of CTO s have large intracoronary channels

Recanalization

Large:

59% of All CTO



No, this is not a CTO !!!

R. Schwartz 2004

Based on strict definition:

- CTO very rarely crossed with soft-tipped wire
- Strategy and handling very different from PCI of stenotic lesions
- Success > 50% only achieved by dedicated operators

Common misconceptions

Why bother , there are good collaterals !

1. Yes collaterals sufficient to maintain viability
2. But almost never sufficient to prevent angina or ischemia, because they achieve at most **40% of the pressure** of an open artery *
3. **5%** will have **sufficient perfusion**, 30% will cause steal during exercise*

*Werner 2001/2002/2006

Common misconceptions

The „Open artery trials“ have shown that PCI of CTO does not improve outcome

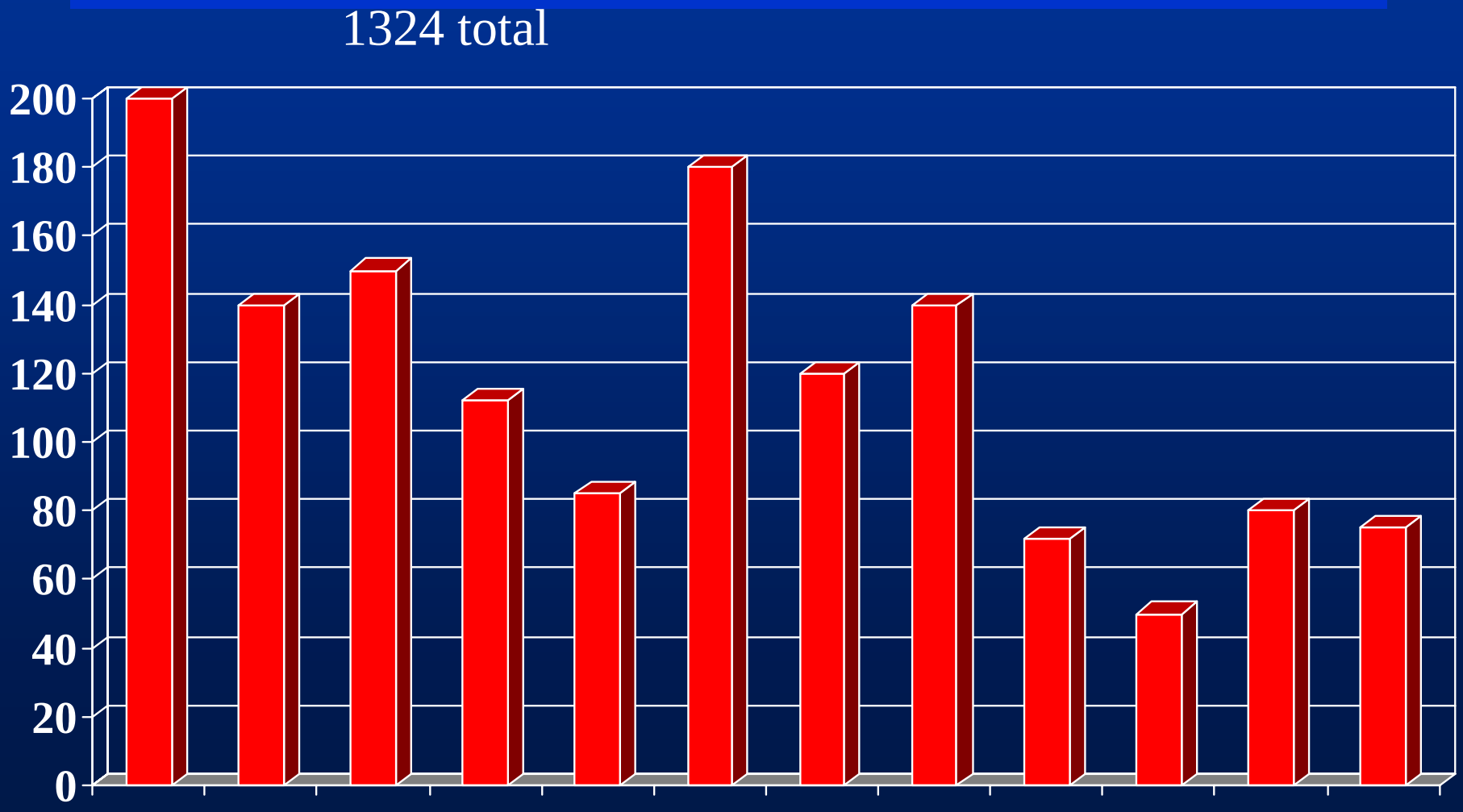
- TOAT, OAT and DECOPI
- < 30 d after infarction i.e. **no CTO**
- No **angina** or signs of **ischemia** required

Common misconceptions

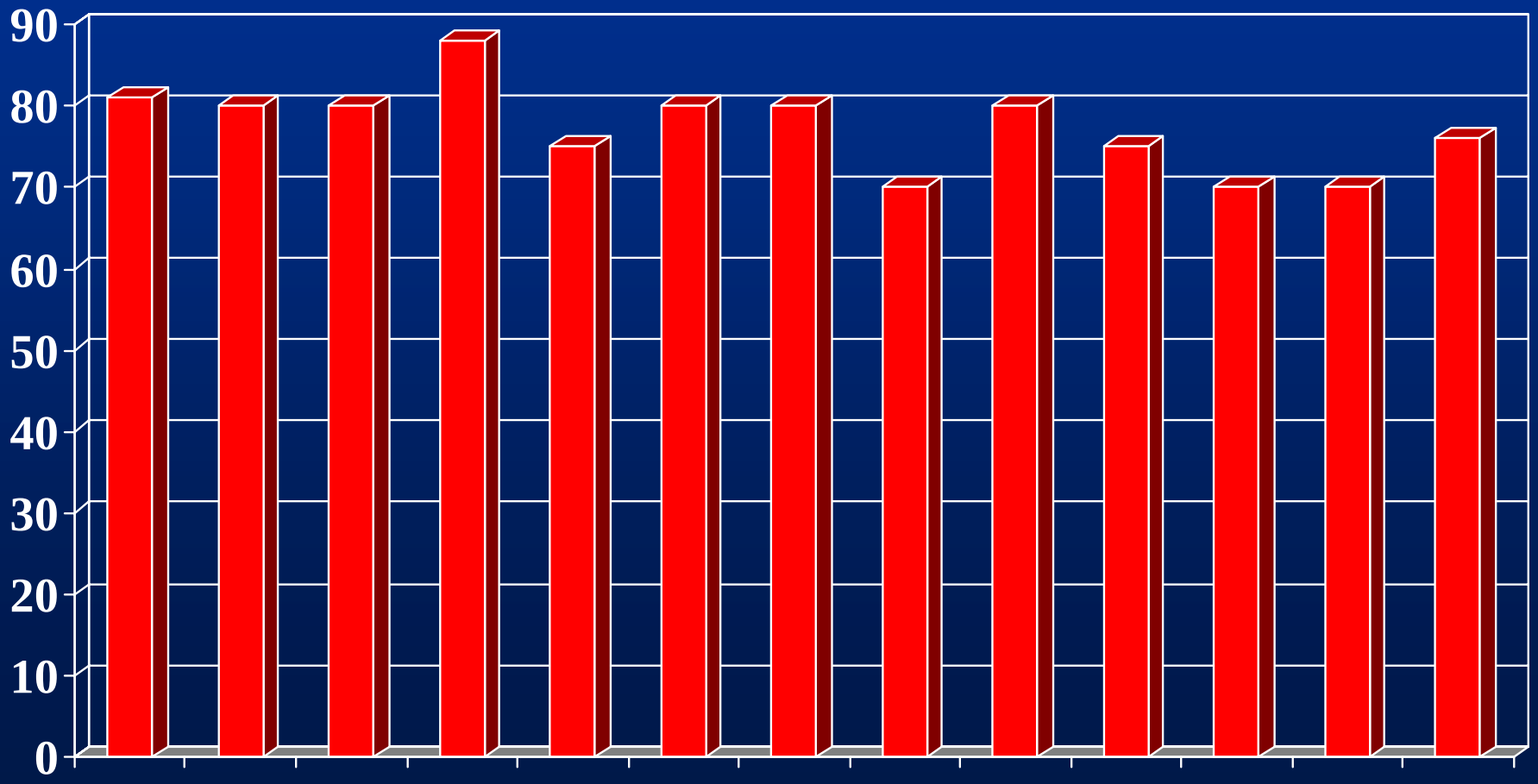
Considering the difficulties, costs and low successrate MVD and CTO deserves CABG

1. High success- and low complication-rates in experienced hands
2. Low restenosis with use of DES

Personal CTO Experience 2006: 110



EuroCTO-Club: Success 2006



CTO: Specific aproach and step-up techniques

- Well planned with comfortable „slot“ not ad hoc
- Dedicated operator
- Broad spectrum of dedicated equipment
- Allways visualize distal vessel during PCI
- No IIb IIIa inhibitors
- „Over the wire“ to start
- Knowledge of sophisticated wire techniques
- No intra-CTO injections
- Allways DES

EuroCTO: Useful (new) Strategies

- Visualisation with IVUS or OCT ?
- MSCTI ?
- Alternative devices to open CTO
  (Laserwire/Laser Catheter; Safe Cross (Kensey Nash, Crosser (Flowcardia), Frontrunner (Lumend))
- Tornus?
- Retrograde aproach ?

IVUS/OCT for CTO

- Identification of the direction of the occluded vessel (wire steering under guidance of forward looking ultrasound)
- Identification of ostium of occluded vessel in flush occlusions
- Guidance of reentry from subintimal tracks
- Guidance of appropriate coverage of the diseased segment
- Confirmation of appropriate stent expansion and apposition

IVUS/OCT for CTO

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Limited practical application

Role of MSCT in the treatment of chronic total occlusions

- MSCT adds important information but we do not know if this leads to an increase in success rate.
- MSCT today only regarded as important contributor to our understanding, but not sufficient to change our clinical practice.

Alternative devices to open CTO

- Success 50- 60% demonstrated in cases shortly(10 min) tried with wires
- Results are inferior to **C**urrent **C**onventional **S**ophisticated **A**proach (CCSA)
- Randomised non-biased trials impossible
- Not yet widely accepted by experts

Results of Tornus* in CTO Balloon Failures (44/421)

- Tornus passed completely 35 (79.5%) and 5 incompltely
- Overall T-enhanced success **91%**
- No complications

* Not yet available in Europe

Results of Tornus* in CTO Balloon Failures (44/421)

- Tornus passed co… y 35 (79.5%) and … mpltely
- Overall … anced success **91**
- … complications

Very useful

* Not yet available in Europe

EuroIntervention

European experience with the retrograde approach for the recanalisation of coronary artery chronic total occlusions. A report on behalf of the EuroCTO club

Georgios Sianos[1]*, Peter Barlis[1,2]; Carlo Di Mario[2]; Michail I. Papafaklis[1]; Joachim Büttner[3]; Alfredo R Galassi[4]; Joachim Schofer[5]; Gerald Werner[6]; Thierry Lefevre[7]; Yves Louvard[7]; Patrick W Serruys[1]; Nicolaus Reifart[8]

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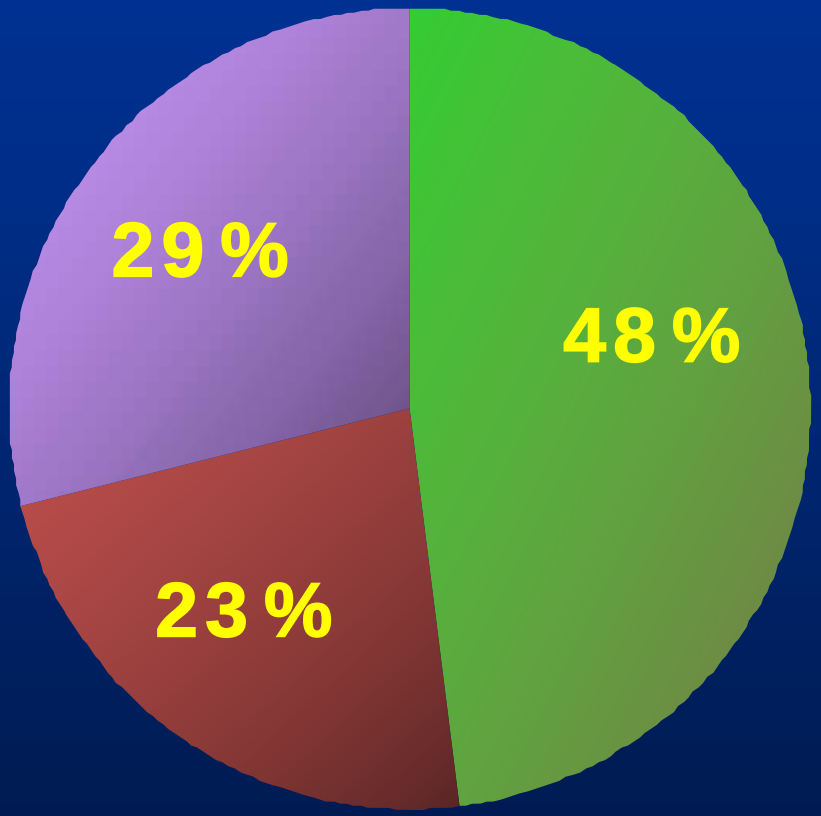
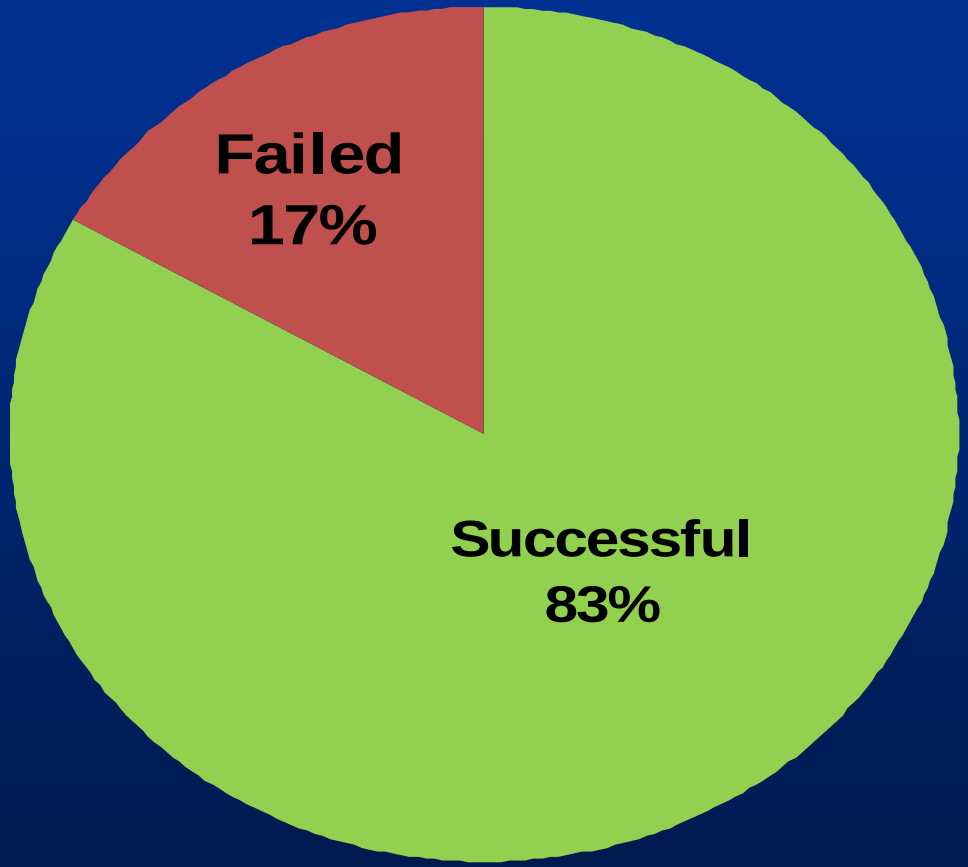
Treatment Strategy

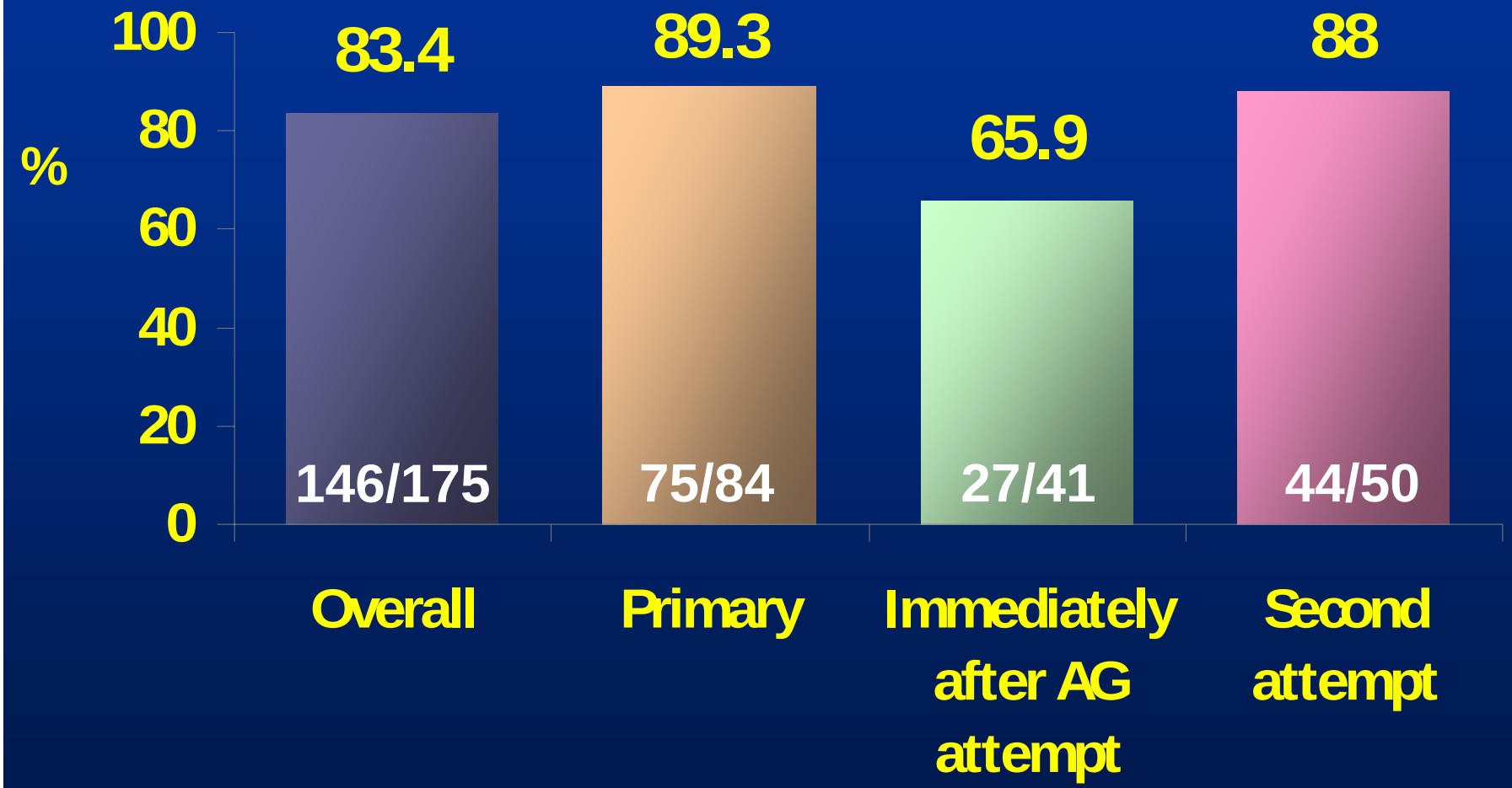


- Primary
- Immediately after antegrade failure
- Second attempt after antegrade failure

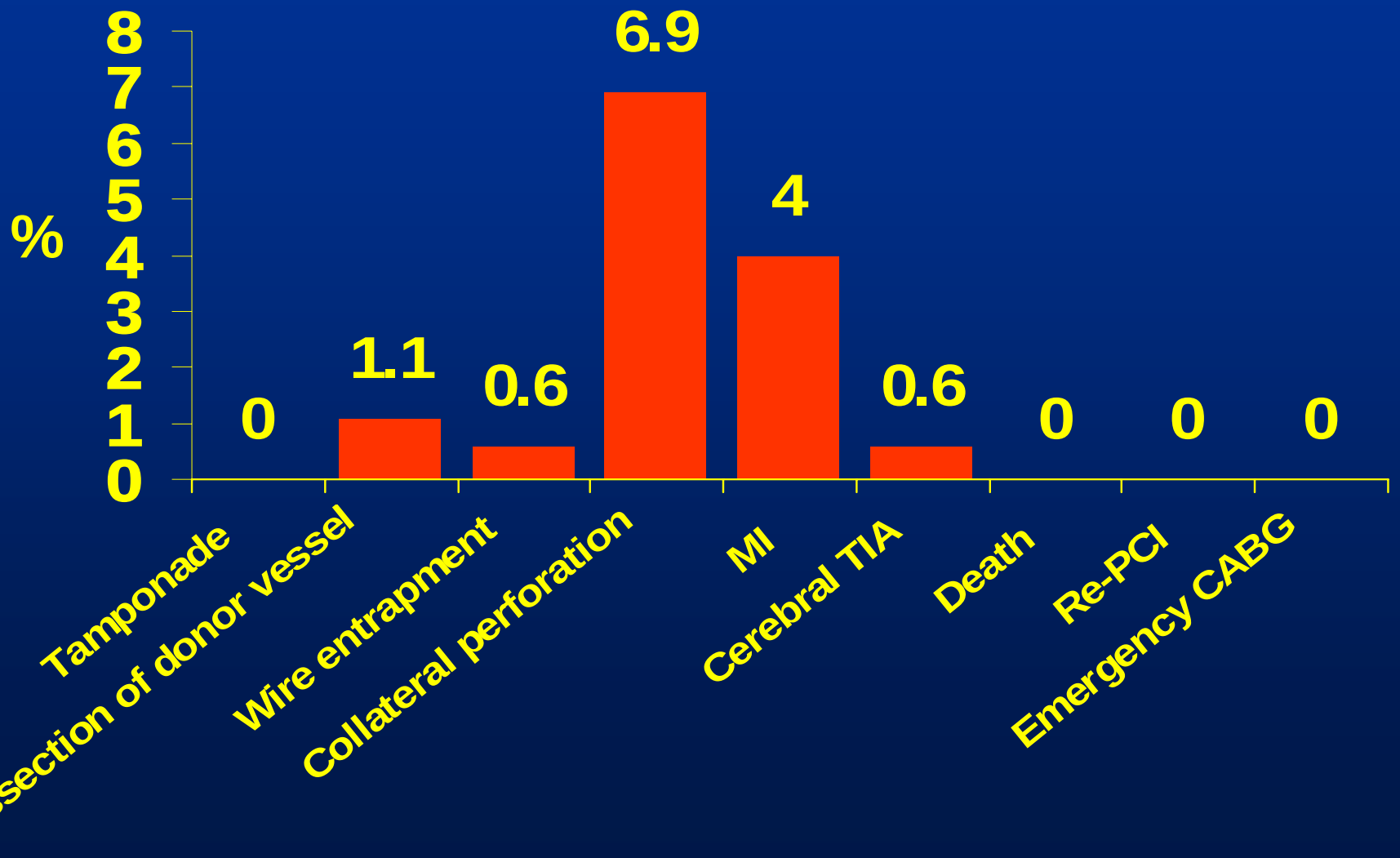
Overall Success



Overall success rates per strategy



Procedural and in-hospital outcomes



EuroCTO Conclusion „Retrograde“

- **Retrograde approach very promising new strategy for difficult CTO or after unsuccessfull attempts**
- **However it cannot replace sophisticated knowledge and skills of antegrade wiring**