

MEET 2015

MULTIDISCIPLINARY EUROPEAN
ENDOVASCULAR THERAPY



Get organized for in-hospital stroke (iatrogenic or not) acute rescue

Prof. Luigi Inglese

Emodinamica e Radiologia Interventistica
IRCCS Policlinico San Donato



Disclosure

Speaker name: **Prof. Luigi Inglese**

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Shareholder in a healthcare company
- Owner of a healthcare company
- Other(s)
- I do not have any potential conflict of interest

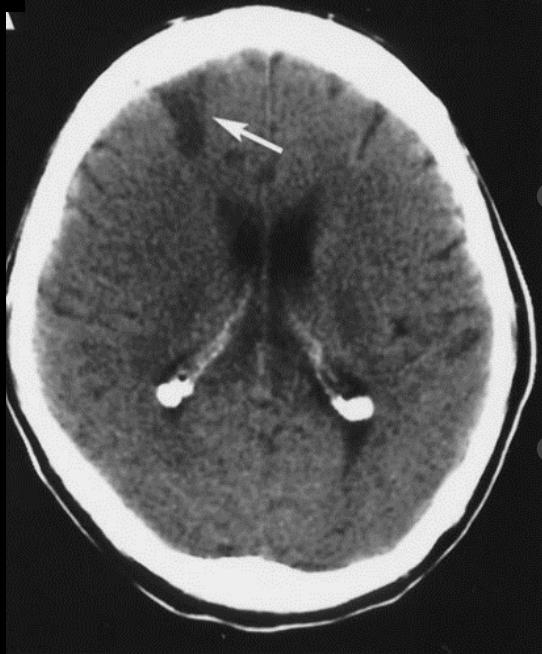


"Road map"



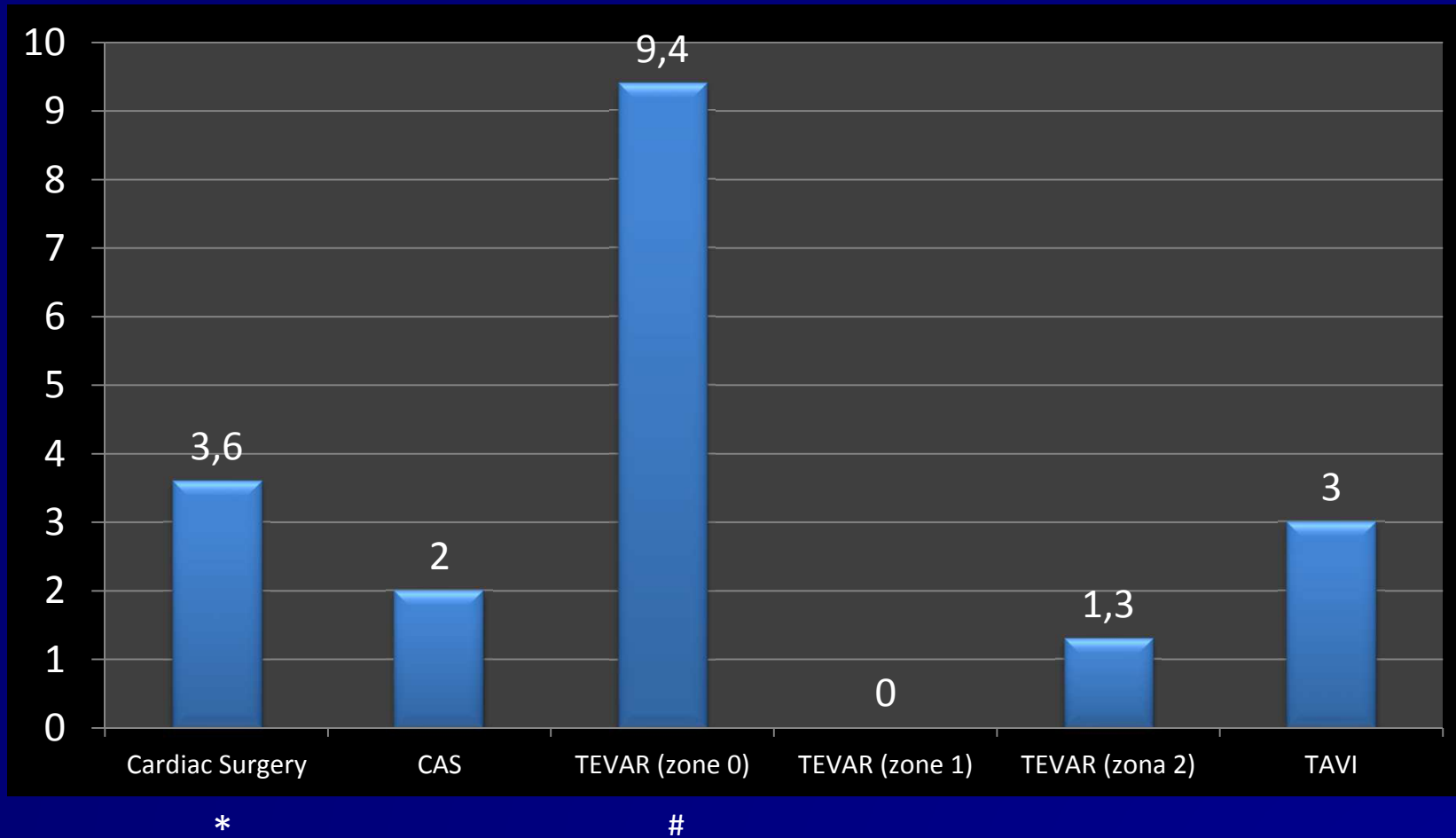
- Scope of the problem
- Catheter-based therapy (CBT) for stroke
- Updates from the recent literature
- Is there a role for the interventional cardiologist?
- A proposal for a diagnostic and therapeutic strategy

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Incidence of post-procedural stroke



* Salazar JD et al. Ann Thorac Surg 2001

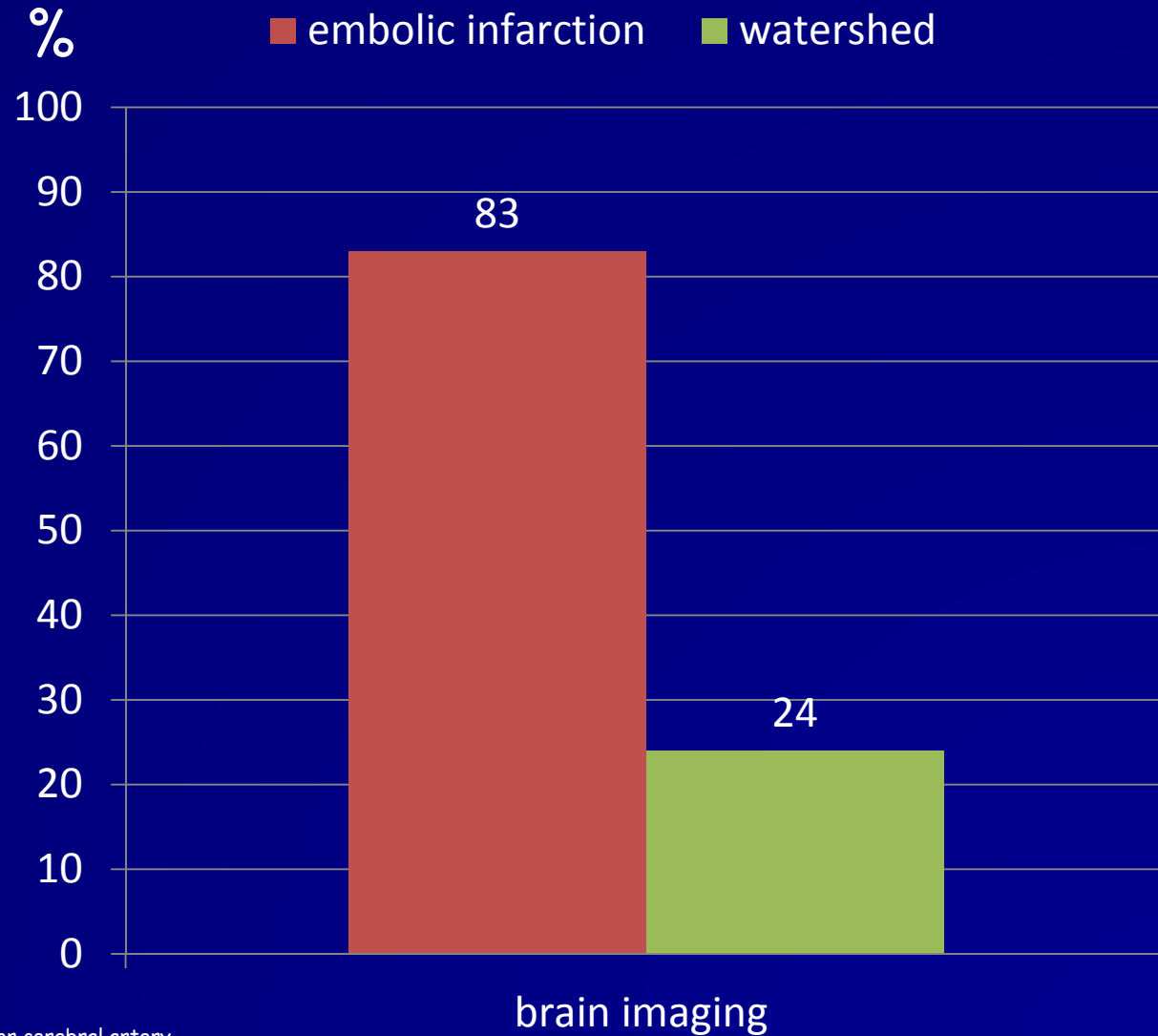
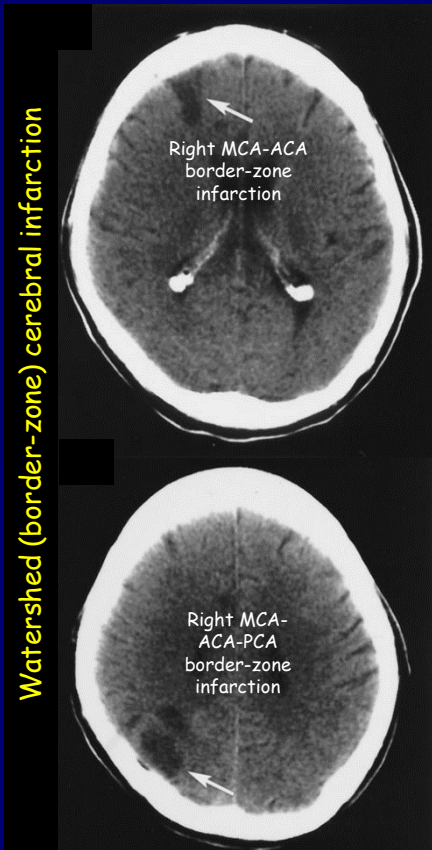
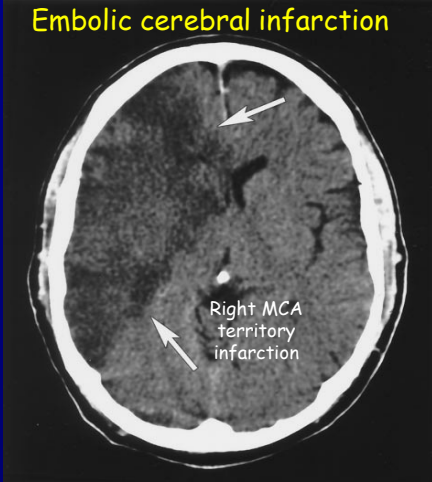
Melissano G et al. Eur J Vasc Endovasc Surg 2012; 43 (3): 269-75

Stroke incidence after cardiac surgical procedures

- Johns Hopkins Hospital
- 1992-1997 (5.5 year period)
- n= 5971 consecutive adult cardiac surgery patients

Procedure	Total Patients	Clinical Stroke	Acute Infarct
CABG	3,974	3.2%	2.3%
Valve	828	2.8%	1.9%
CABG/valve	463	6.7%	3.7%
CABG/CEA	52	17.3%	15.4%
CABG/other	76	9.2%	3.9%
Aortic procedures	310	4.2%	3.9%
Heart transplant	94	1.1%	1.1%
Other	174	1.1%	1.1%
<small>Cardiac procedures requiring cardiopulmonary bypass (repair of atrial septal defect or left ventricular aneurysm)</small>			
Total	5,971	3.6%	2.5%

Stroke type after cardiac surgery



ACA anterior cerebral artery
MCA middle cerebral artery
PCA posterior cerebral artery

Salazar JD et al. Ann Thorac Surg 2001

Stroke incidence in the catheterization laboratory

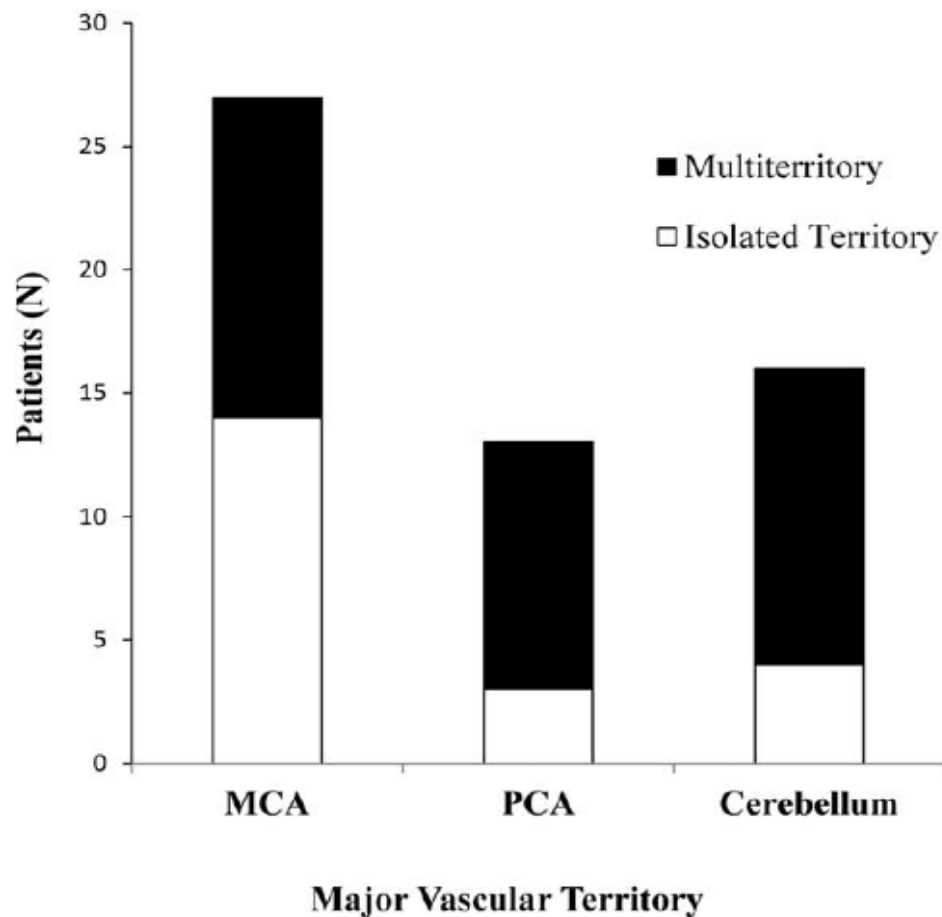
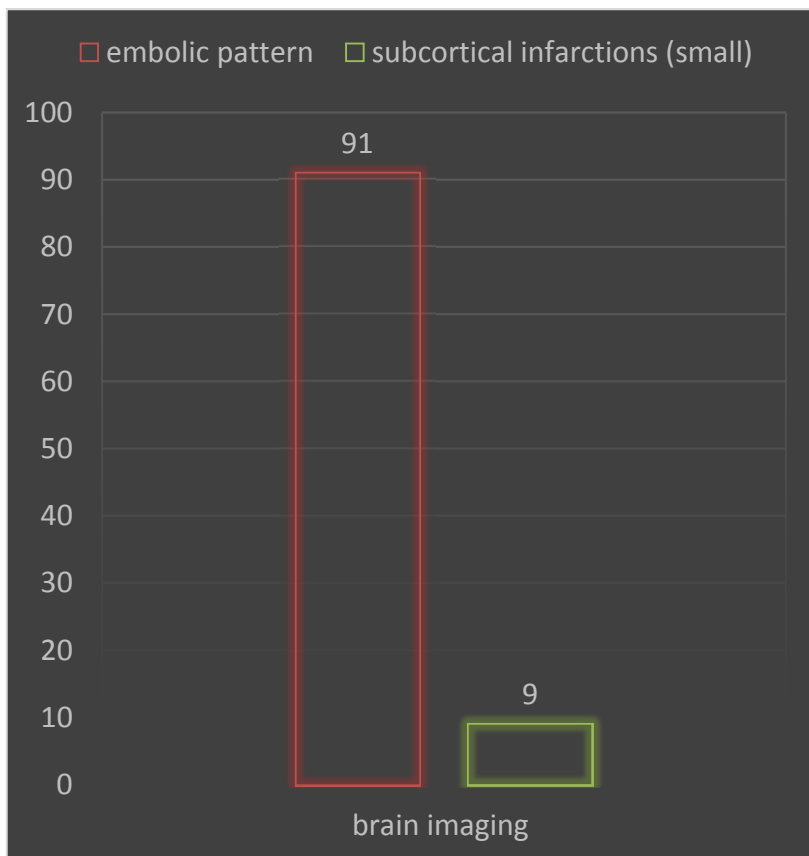
- PCI-stroke incidence of **0.37%** over a 16-year period (> 24,000 PCI) Mayo Clinic in Rochester, Minnesota

Hoffman SJ et al. *JACC. Cardiovasc Interv* 2011; 4: 415-22

- Two primary mechanisms of PCI-related ischemic stroke have been proposed:
 - Embolization of atheromatous debris from the aorta that can occur during catheter manipulation
 - Hemodynamic insufficiency with or without an associated fixed stenosis of cervical or cerebral arteries

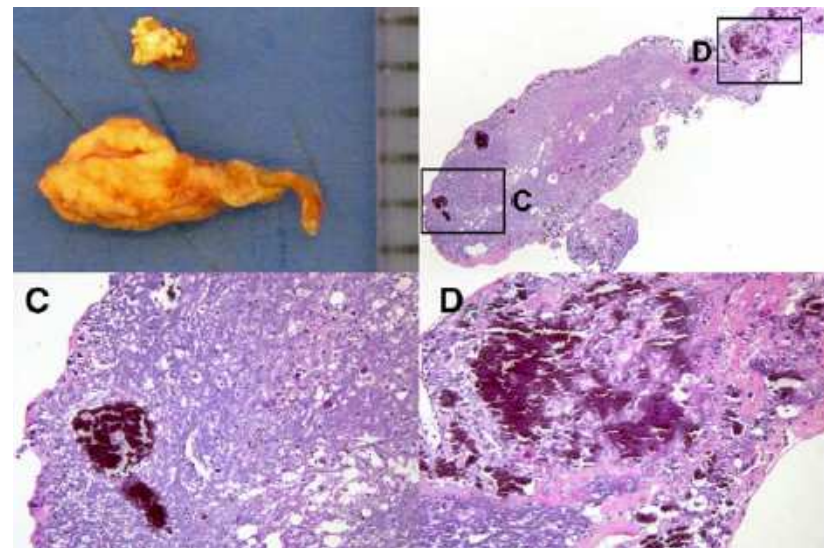
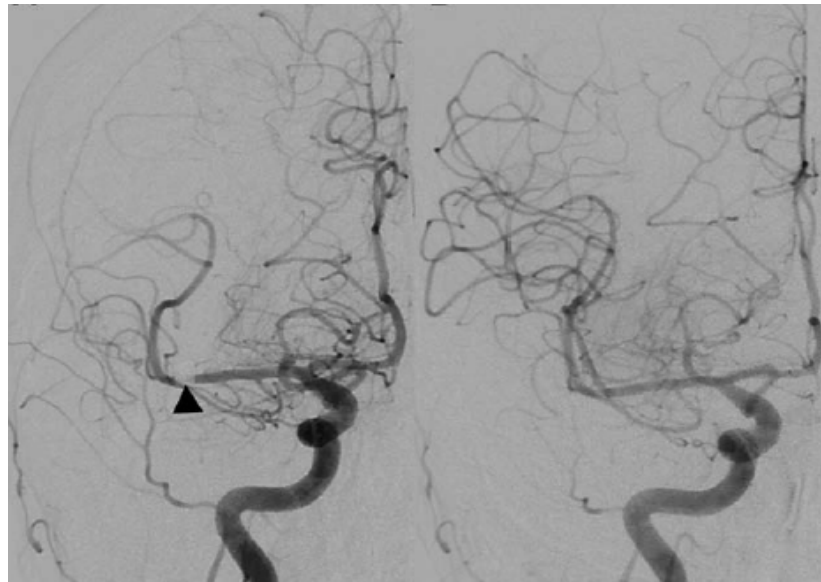
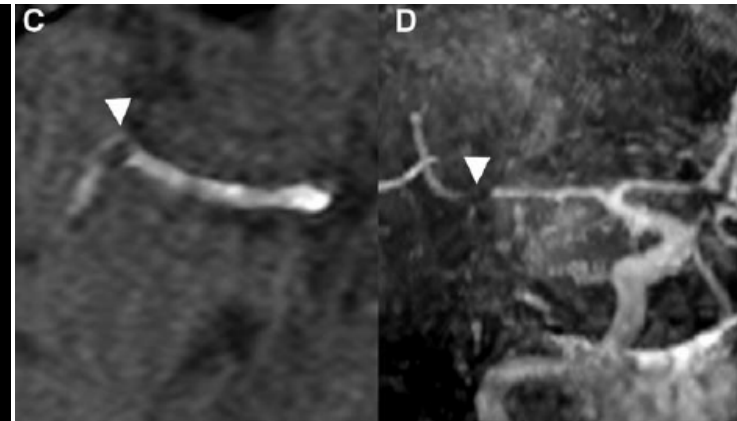
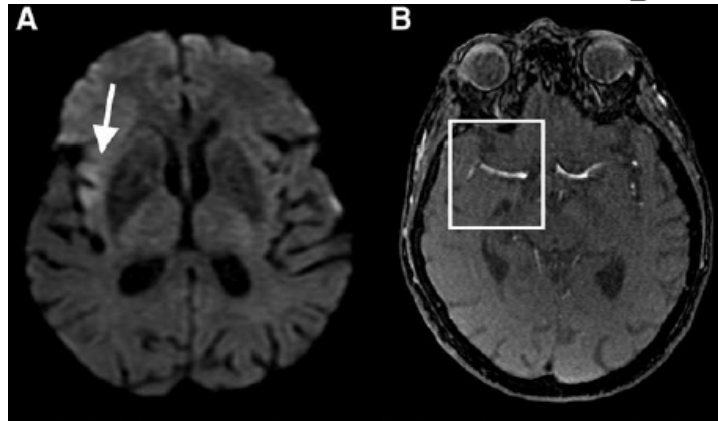
Hoffman SJ et al. *Catheter Cardiovasc Interv* 2015; 85: 1033-40

Neuroimaging Patterns of Ischemic Stroke After Percutaneous Coronary Intervention



Images and Case Reports in Interventional Cardiology

Successful Endovascular Stroke Rescue With Retrieval of an Embolized Calcium Fragment After Transcatheter Aortic Valve Replacement

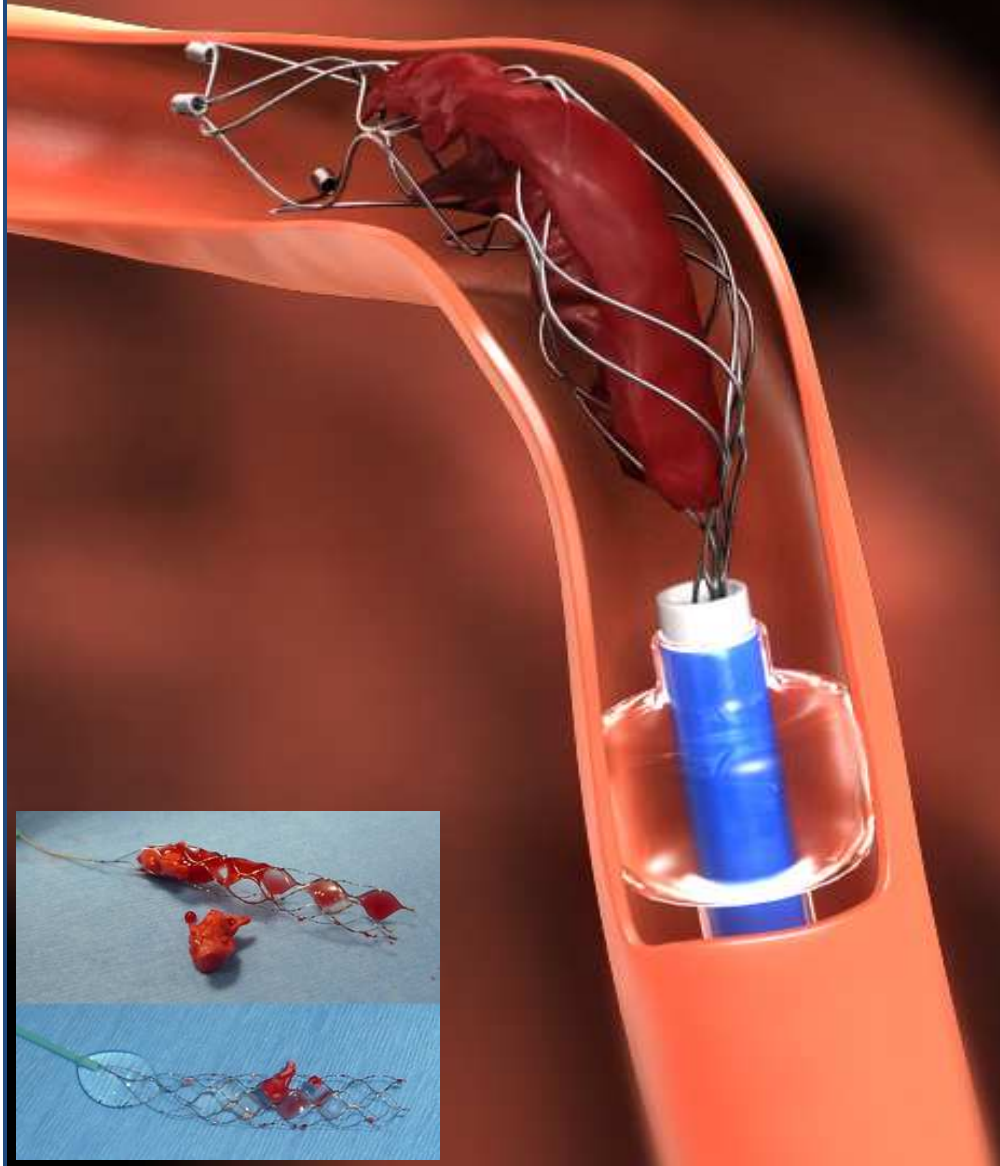


Debris recovered during endovascular revascularization

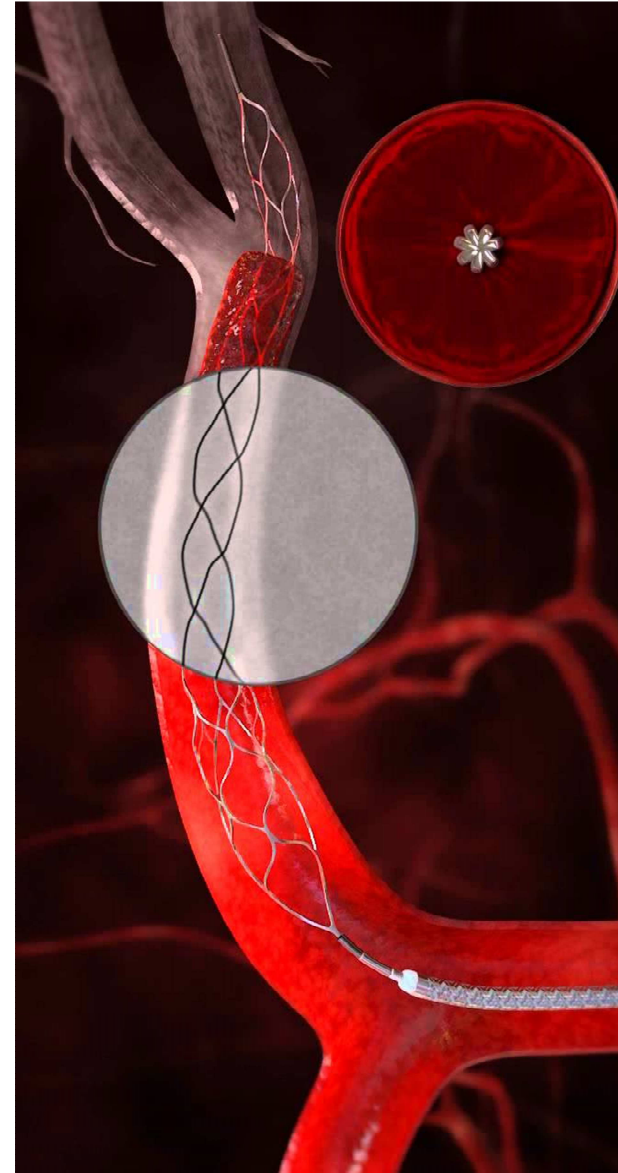
CBT: devices

- Suction thrombectomy
- Stent retriever thrombectomy
- Self-expanding stents
- Microwire manipulations
- Snare devices
- Balloon angioplasty

Solitaire ev3



Trevo XP ProVue Retriever



Late data from the literature

- Many called for the end of CBT after the publication of 3 trials in NEJM in 2013
 - IMS III
 - SYNTHESIS
 - MR RESCUE
- These trials concluded that there is no difference between standard medical therapy and endovascular therapy

Updates from the recent literature

- This year has seen the publication of 5 major studies evaluating the role of endovascular therapy in stroke treatment
 - MR CLEAN
 - EXTEND-IA
 - ESCAPE
 - SWIFT PRIME
 - REVASCAT
- ALL 5 trials stopped because of significant benefit in the Endovascular arms

in-Hospital “stroke rescue” by an interventional team

- 9 randomized trials evaluating pts with large vessel, anterior circulation stroke showed that CBT significantly improved the rate of functional independence when compared to IV fibrinolysis
- Analyses from only the recent trials (reported in 2014-2015) showed further benefit with similar safety results

ESCAPE, EXTEND-IA, SWIFT PRIM, MR CLEAN, REVASCAT

Randomized Assessment of Rapid Endovascular Treatment of Ischemic Stroke

Process times (min)

Variable	Intervention (N=165)	Control (N=150)
Process times — min**		
Stroke onset to randomization		
Median	169	172
Interquartile range	117–285	119–284
Stroke onset to study CT		
Median	134	136
Interquartile range	77–247	76–238
Stroke onset to start of IV alteplase		
Median	110	125
Interquartile range	80–142	89–183
Study CT to groin puncture		
Median	51	
Interquartile range	39–68	
Study CT to first reperfusion††		
Median	84	
Interquartile range	65–115	
Stroke onset to first reperfusion††		
Median	241	
Interquartile range	176–359	
Treatment with IV alteplase — no. (%)	120 (72.7)	118 (78.7)

Goyal M. et al. NEJM 2015; 372: 1019-30

Interventional Cardiologists may be part of the multi-disciplinary stroke team?

- CBT of the acute stroke yields better clinical outcomes in patients <65-year-old, with a door-to-balloon time <4 hr and successful reperfusion $TICI \geq 2$
- Considering the significant incidence of acute strokes which are either ineligible for intravenous thrombolytic therapy or present too late, CBT may offer an alternative treatment option
- Interventional cardiologists should play an active role in the development of endovascular stroke therapy in a multi-disciplinary team approach

Staff needed for in-Hospital "stroke rescue interventional team"

- Cardiovascular Cath Lab 24 hours, 7 days a week (24/7)
- CT & Neuro-int.radiologist 24 hours, 7 days a week (24/7)
- Neurologist 24 hours, 7 days a week (24/7)

in-Hospital "stroke rescue interventional team"

Educational requirements:

- Upgrade the expertise of PCI performers to address intravascular clot retrieval when a neuro-radiology interventional team is not present

in-Hospital “stroke rescue interventional team”

Conclusions

- Interventional cardiologists should play an active role in the development of endovascular stroke therapy in a multi-disciplinary team approach
- Procedures performed by interventional cardiologists and neurointerventionalists yielded comparable recanalization and clinical outcomes rates
- Endovascular stroke therapy is underutilized because only few hospitals offer a 24/7 neurointervention availability



IRCCS Policlinico San Donato, Milano



Thank You for your attention



Massimo Medda

Ana Neagu

Luigi Inglese

Marta Bande



Francesco Casilli



El Mehdi Ghommidh



Maria Giulia Latini



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