

CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE

CONTROVERSIES & UPDATES IN VASCULAR SURGERY

JANUARY 25-27 2018



MARRIOTT RIVE GAUCHE & CONFERENCE CENTER, PARIS, FRANCE

**Why duplex or angiography MUST
be performed after CEA?**

H.-H. Eckstein, Department for Vascular and Endovascular Surgery, Technical University Munich, Germany



Disclosure

Speaker name:

HH Eckstein.....

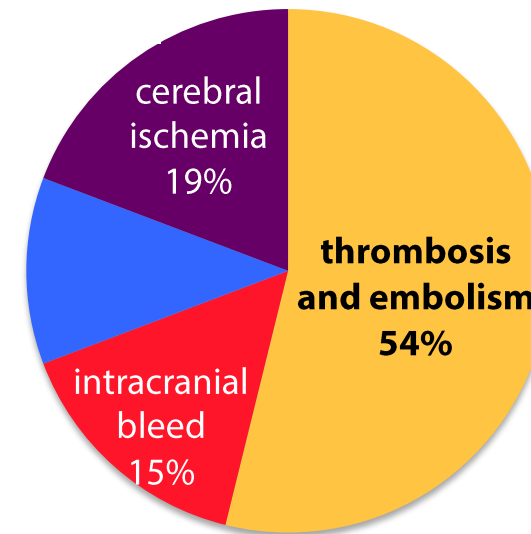
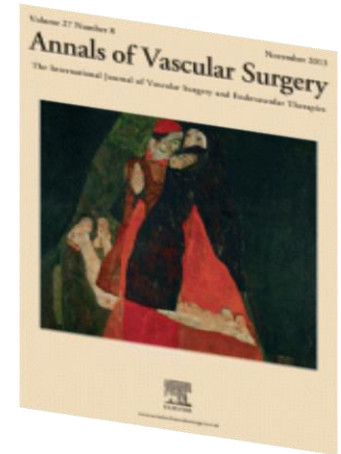
- I have the following potential conflicts of interest to report:
- Consulting
- Employment in industry
- Shareholder in a healthcare company
- Owner of a healthcare company
- financial support by MEDISTIM
- I do not have any potential conflict of interest



Causes of Perioperative Stroke after Carotid Endarterectomy: Special Considerations in Symptomatic Patients

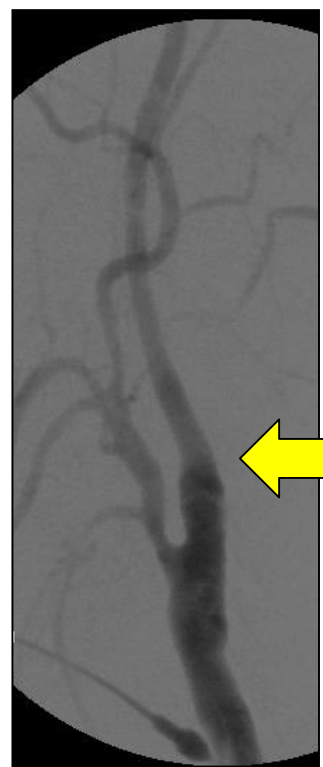
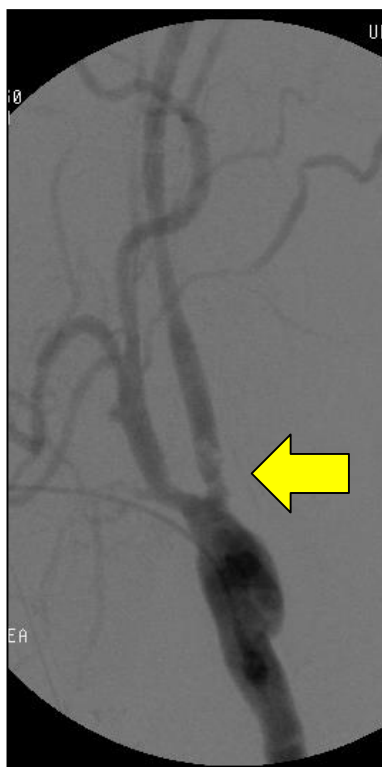
Glenn R. Jacobowitz, MD, Caron B. Rockman, MD, Patrick J. Lamparello, MD,
Mark A. Adelman, MD, Andres Schanzer, BS, David Woo, BS, Ronnie Landis, RN,
Paul J. Gagne, MD, Thomas S. Riles, MD, and Anthony M. Imparato, MD,
New York, New York

2001

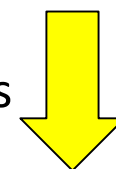


....technical errors are still the most common cause of perioperative stroke....

Rationale of intraoperative carotid imaging



- ✓ Perfect morphological result = small risk of any thrombosis/embolism
- ✓ Early detection of residual plaque/clot + immediate correction = periop strokes
- ✓ Tools: intraoperative angiography and Duplex Ultrasound (DUS)



Management of Atherosclerotic Carotid and Vertebral Artery Disease: 2017 Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)

Writing Group ^a, A.R. Naylor, J.-B. Ricco, G.J. de Borst, S. Debus, J. de Haro, A. Halliday, G. Hamilton, J. Kakisis, S. Kakkos, S. Lepidi, H.S. Markus, D.J. McCabe, J. Roy, H. Sillesen, J.C. van den Berg, F. Vermassen,

Quality control techniques aim to.... to prevent technical error..., to identify residual luminal thrombus..., to diagnose intimal flaps, residual stenoses etc

Recommendation 59	Class	Level
Targeted monitoring and quality control strategies may be considered to reduce the risk of perioperative stroke	IIb	C

Transatlantic debate 2013 about completion angiography



European Journal of Vascular and
Endovascular Surgery
Volume 45, Issue 5, May 2013, Pages 416–419



Part One: For the Motion. Completion Angiography Should be
Used Routinely Following Carotid Endarterectomy

J.-B. Ricco^a, F. Schneider^a, G. Illuminati^b



This review give some arguments in favor of completion angiography.... It is however unlikely that the effectiveness of intraop assessment can be proven by a RCT.




European Journal of Vascular and
Endovascular Surgery
Volume 45, Issue 5, May 2013, Pages 420–422



Part Two: Against the Motion. Completion Angiography is
Unnecessary Following Carotid Endarterectomy

R.H. Samson

There is no guarantee, that re-exploration will correct the problem.... Reexploration may often result in the very complications that the surgeon is trying to avoid...



Patient characteristics and outcomes of carotid endarterectomy and carotid artery stenting: Analysis of the German mandatory national quality assurance registry - 2003 to 2014

M. A. KALLMAYER ¹, P. TSANTILAS ¹, C. KNAPPICH ¹, B. HALLER ², M. STORCK ^{3,4}, T. STADLBAUER ¹, A. KÜHNL ¹, A. ZIMMERMANN ¹, H.-H. ECKSTEIN ¹



Recent developments in journal and extra-illuminations

- ✓ The number of intraoperative control exams **increased** over time
- ✓ The in-hospital stroke/death rates **decreased** over time

Patients (2009-2014) and Methods

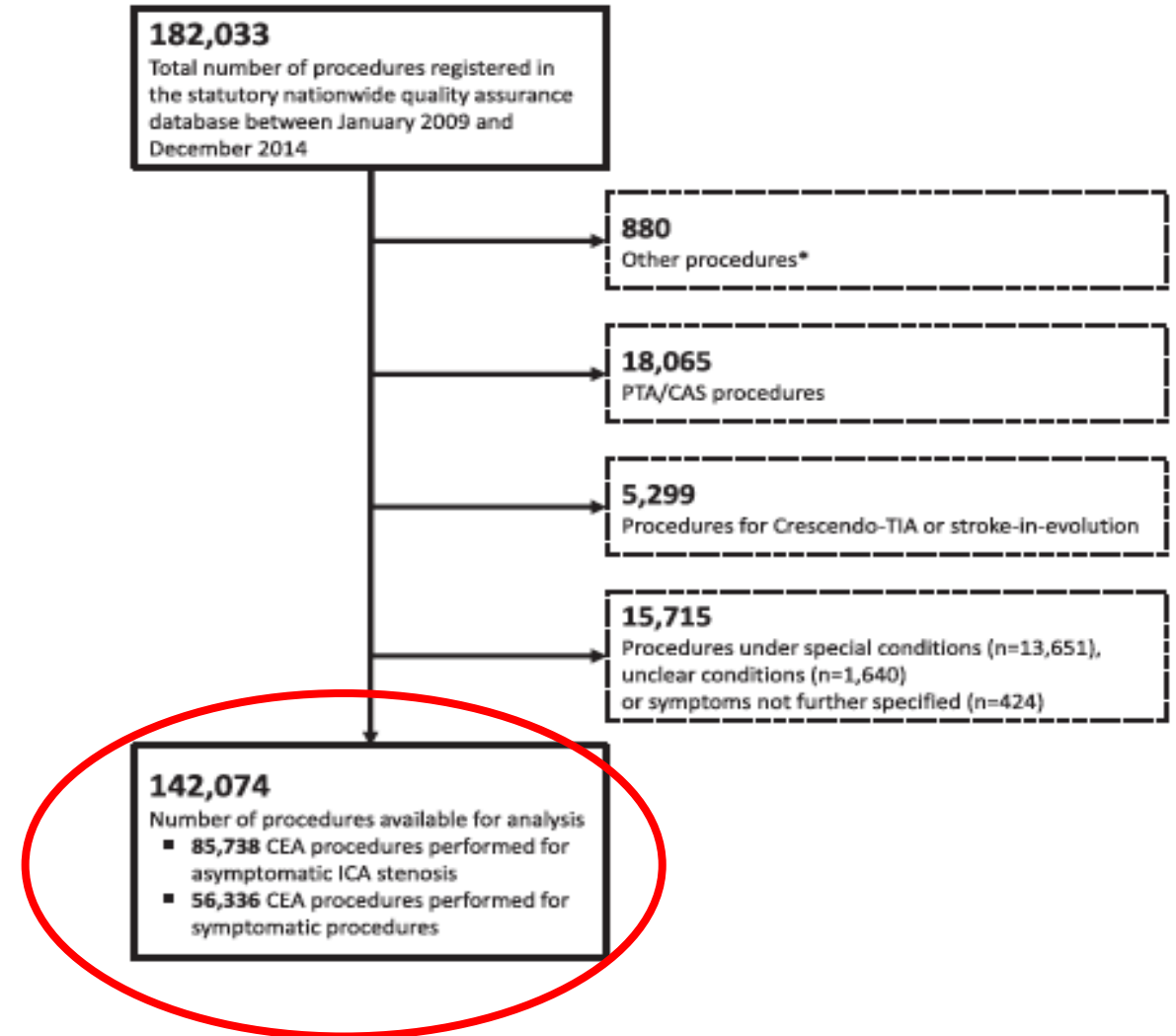
Knappich et al., STROKE 2017; 48: 955-963

Intraoperative Completion Studies, Local Anesthesia, and Antiplatelet Medication Are Associated With Lower Risk in Carotid Endarterectomy

Christoph Knappich, MD; Andreas Kuehnl, MD, Sofie Schmid, MD; Thorben Breitkreuz; M Alexander Zimmermann, MD, MHBA; Hans-Henning Eckstein,

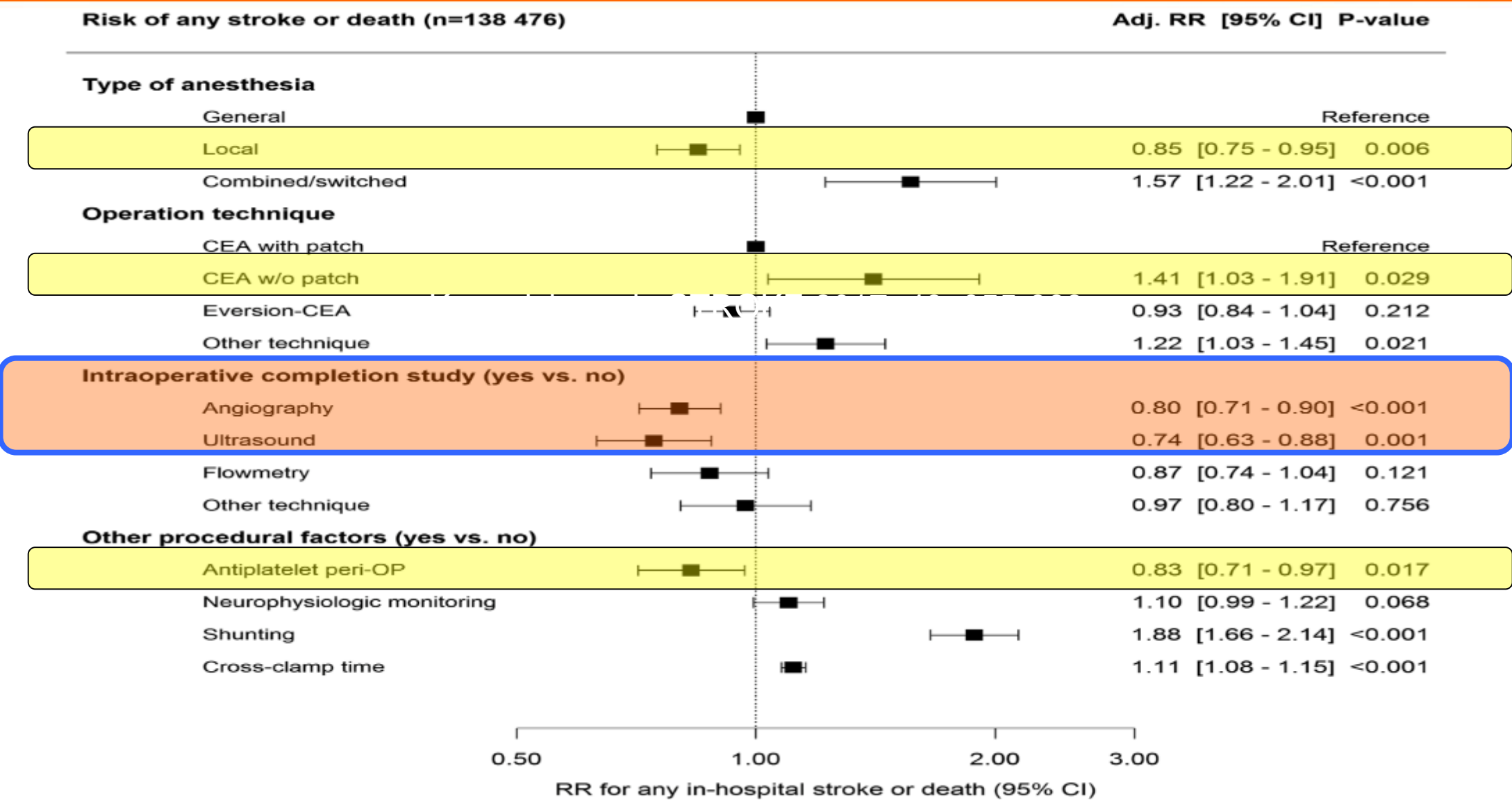


- Secondary data analysis based on German nationwide quality assurance databank
- Elective CEA for (a)symptomatic car sten
- Intraop imaging in 67% of cases
- **Any in-hospital stroke or death 1.8%**
- Uni- and multivariable regression analyses

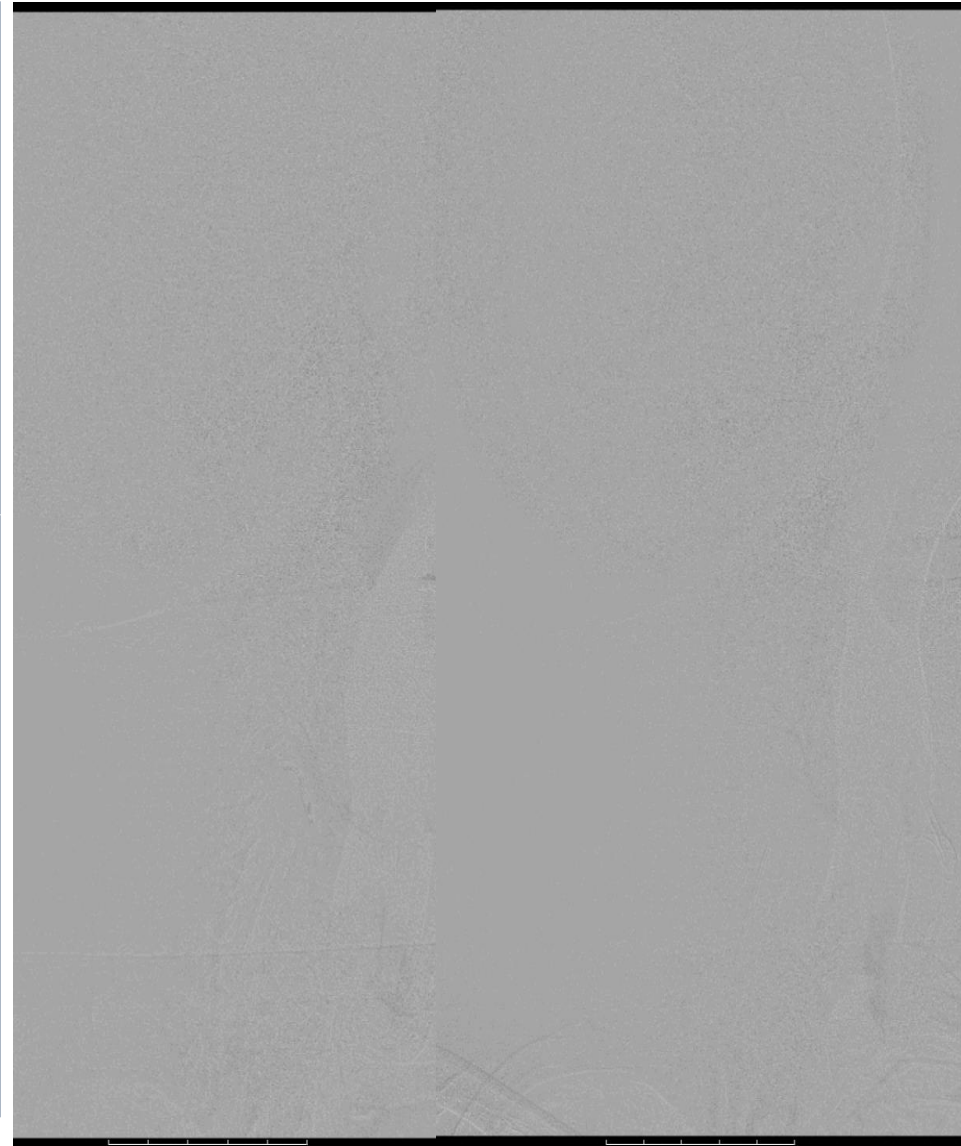
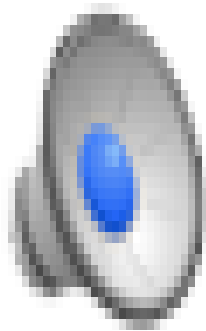
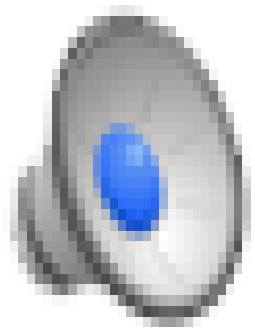
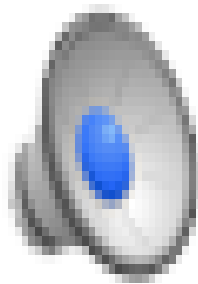
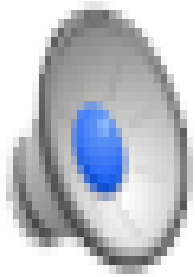


Independent perioperative variables and associated risks

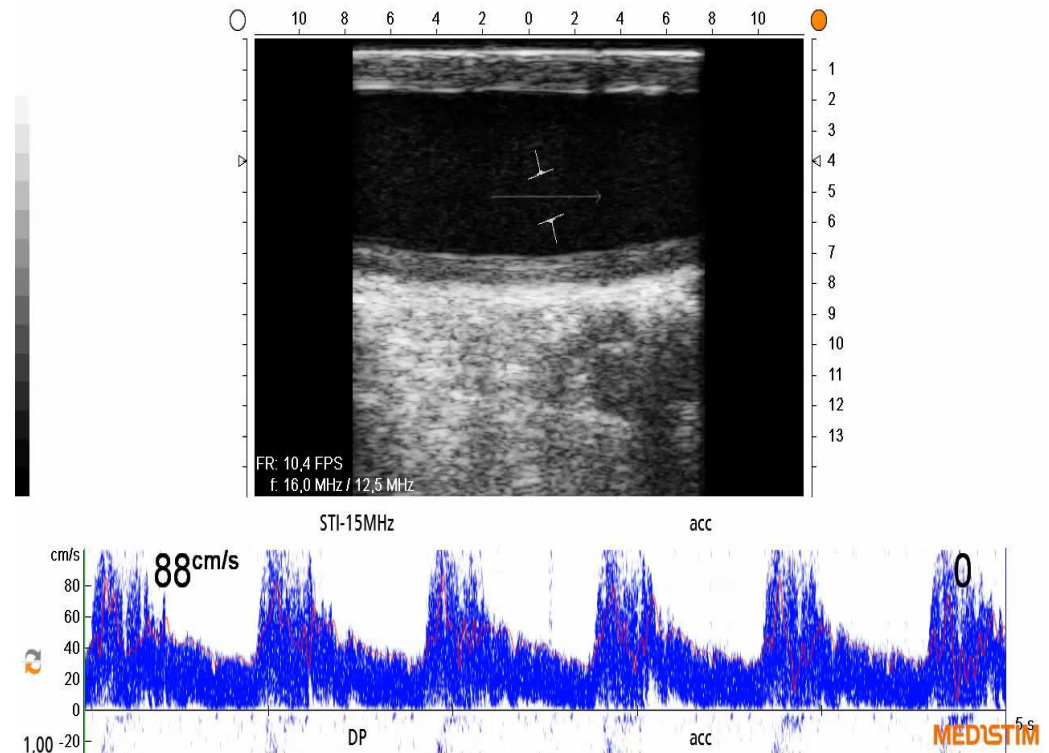
Knappich et al., STROKE 2017; 48: 955-963



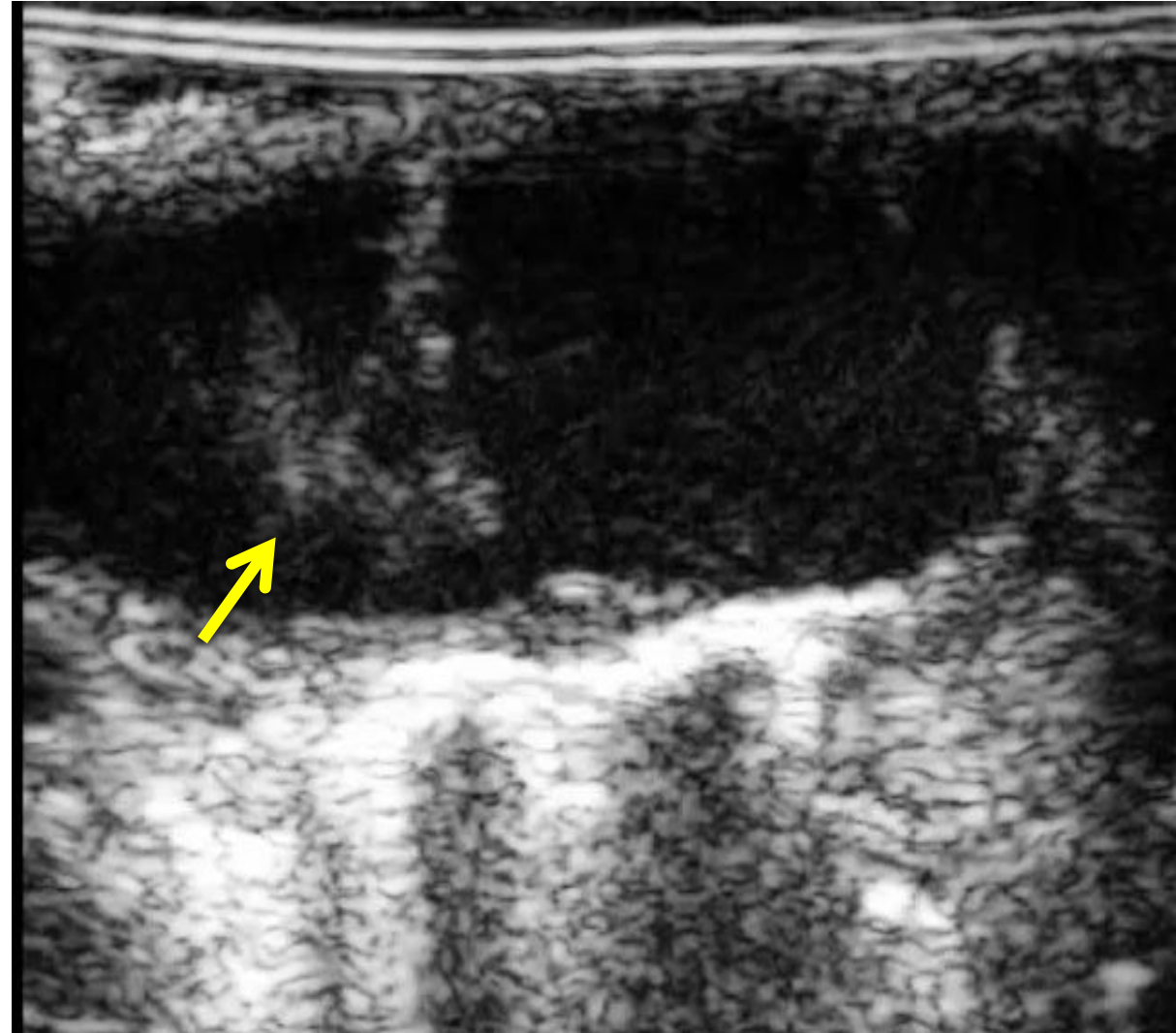
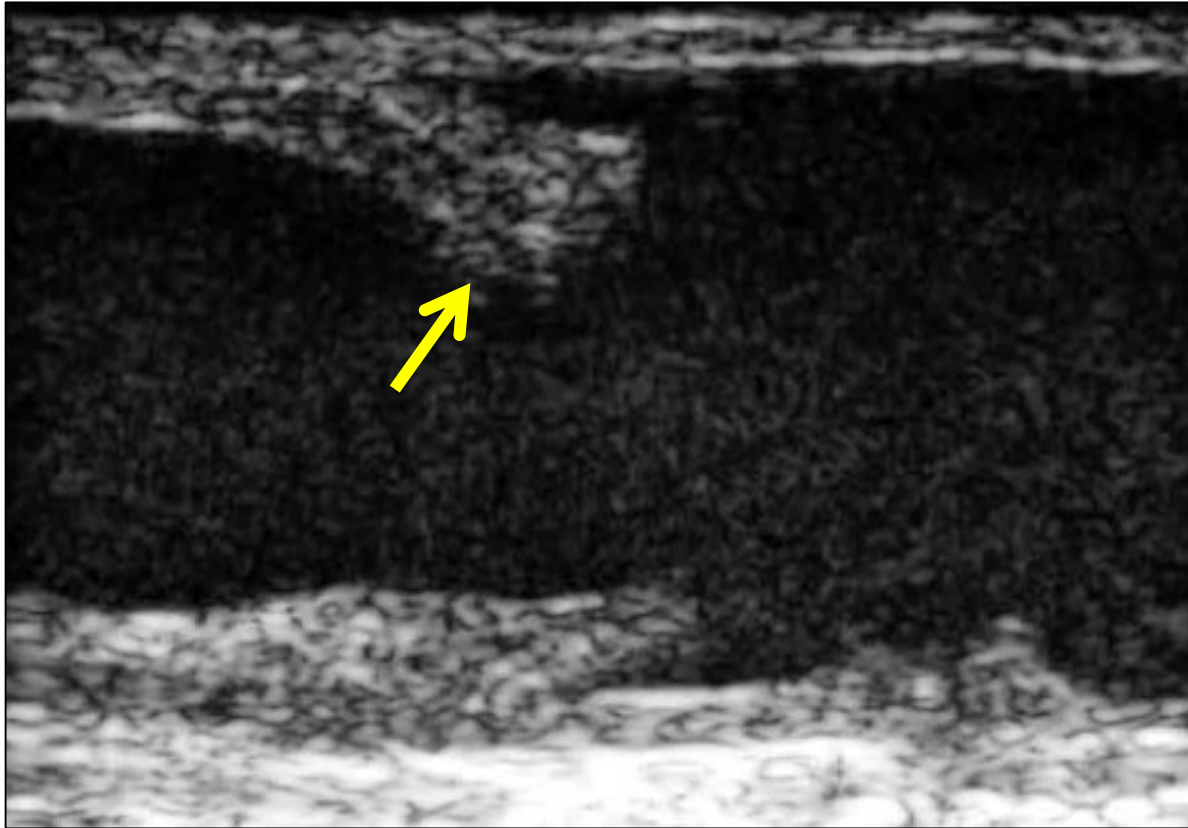
How to perform intraoperative angiography



Our equipment: VeriQ c (MEDISTIM)



intimal flap (E-CEA) - thrombi in the prox ICA (C-CEA)



Interim results from the CIDAC trial

Comparison of Intraop DUS and Angio after CEA (CIDAC)

Grade	Definition	Implication	Morphologic Criteria		Hemodynamic Criteria	
			Angiography	Sonography	Angiography	Sonography
1	no defect	no operative revision	<ul style="list-style-type: none"> smooth vessel wall no narrowing no angulation no false lumen no contrast filling defect no vasospasm 	<ul style="list-style-type: none"> smooth vessel wall no narrowing no angulation no false lumen 	<ul style="list-style-type: none"> fast continuous contrast runoff 	<ul style="list-style-type: none"> no aliasing phenomenon PSV < 100 cm/sec
2	minor defect	consider operative revision	<ul style="list-style-type: none"> irregularity of vessel wall no significant narrowing distal intimal step or intimal flap without significant narrowing and non-mobile vasospasm of ICA 	<ul style="list-style-type: none"> irregularity of vessel wall narrowing < 30% intimal flap in ICA < 2 mm intimal flap in CCA < 3 mm 	<ul style="list-style-type: none"> dynamic but pulsatile runoff 	<ul style="list-style-type: none"> aliasing phenomenon without morphologic defect PSV < 150 cm/sec
3	major defect	operative revision recommended	<ul style="list-style-type: none"> significant narrowing of CCA or ICA intimal flap with significant narrowing or mobile dissection occlusion of ECA 	<ul style="list-style-type: none"> narrowing > 30% intimal flap in ICA > 2mm intimal flap in CCA > 3 mm dissection occlusion of ECA 	<ul style="list-style-type: none"> delayed and pulsatile runoff 	<ul style="list-style-type: none"> aliasing phenomenon with morphologic defect PSV > 150 cm/sec
4	severe lesion	operative revision mandatory	<ul style="list-style-type: none"> high grade stenosis intraluminal contrast filling defect occlusion 	<ul style="list-style-type: none"> high grade stenosis valve mechanism occlusion 	<ul style="list-style-type: none"> slow and pulsatile runoff no runoff 	<ul style="list-style-type: none"> PSV > 300 cm/sec no flow

Interim results from the CIDAC trial

Comparison of Intraop DUS and Angio after CEA (CIDAC)

- Morphological assessment (angio, DUS) in 100 consecutive CEA, stroke/death rate 1%
- Incidence of technical defects (angio, DUS) was 11% (8% were confirmed)
- Assessment by senior consultants and trainees
 - defects are rated significantly higher with IDUS compared to angiography ($P = 0.001$)
 - IDUS more frequently leads to intraoperative revision compared to angiography
 - Interrater reliability of DUS is higher than with angiography
- Interobserver reliability
- Final results and publication asap

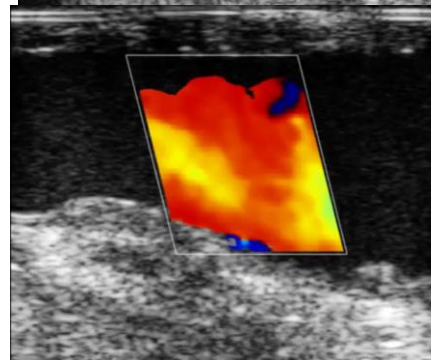
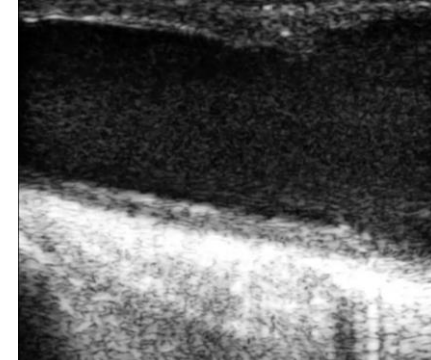
Routine intraop imaging is a MUST

- ✓ Reduction of stroke/death rates (GER) by correcting technical errors
- ✓ valid documentation of the technical result (trainees, patients, referring physicians)
- ✓ By the way: in endovascular therapy a final look at the end result is essential



✓ *„Trust, but verify - doveryai, no proveryai“*

President Ronald Reagan in the context of nuclear disarmament





06-08 December, 2018

SAVE
THE DATE

8th **M**UNICH
VASCULAR
CONFERENCE **2018**
... where doctors meet science

CONFERENCE 2018

Thank you very much

H.-H. Eckstein

Department for Vascular and Endovascular Surgery, Klinikum rechts der Isar, Technical University Munich, Germany