CSC Core Requirements
Neurological Surgery

Babu G. Welch, MD FAANS
Associate Professor of Neurosurgery & Radiology
UT Southwestern Medical Center

The purpose of the Comprehensive Stroke Center (CSC) is to provide specialized treatment of the most complicated cases related to stroke

AND

produce better outcomes

Staff

+

Infrastructure

+

Training

Requirements

Certification is available only to comprehensive stroke centers in Joint Commission-accredited acute care hospitals. Organizations seeking CSC certification must meet all of the general eligibility requirements for Disease-Specific Care and Primary Stroke Center certification. In addition, CSCs are required to:

- Have dedicated neuro-intensive care unit beds for complex stroke patients that provide neuro-critical care 24 hours a day, seven days a week.
- Use advanced imaging capabilities.
- Meet minimum requirements for providing care to patients with a diagnosis of subarachnoid hemorrhage; performing endovascular coiling or surgical clipping procedures for aneurysm; and administering IV tPA. decompressive craniectomy
- Coordinate post hospital care for patients.
- Use a peer review process to evaluate and monitor the care provided to patients with ischemic stroke and subarachnoid hemorrhage.
- Participate in stroke research.

http://www.jointcommission.org/certification/advanced_certification_comprehensive_stroke_centers.aspx

Neurosurgical Availability

- Neurosurgeons with expertise in cerebrovascular surgery are available 24 hours a day, 7 days a week.
- Surgeons with expertise in carotid endarterectomy.
- Other neurosurgical personnel are to be available within 30 minutes, 24 hours a day, 7 days a week, to perform emergent neurosurgical procedures.
- One or more neurosurgeons are available within 30 minutes, 24 hours a day, 7 days a week.

Neurosurgical Training

- "Cerebrovascular specialization" is emphasized in all criteria for CSC
- There is no cerebrovascular Specialty Board for Neurological Surgery
- Many neurosurgeons are gaining more specialization in endovascular procedures than surgery
- Confirming adequate surgical and endovascular training should be a priority in the creation of a CSC

In other words surgical AND endovascular expertise is expected to address complex problems

Comprehensive Stroke Center Certification

- Interesting times
- Demonstrate that care is provided to 20 or more patients per year with a diagnosis of subarachnoid hemorrhage.
- Demonstrate that 10 or more craniotomies for aneurysm clipping procedures are performed per year.
- The Comprehensive Stroke Center demonstrates that 15 or more endovascular coiling procedures for an aneurysm are performed per year.

Comprehensive Stroke Center Certification

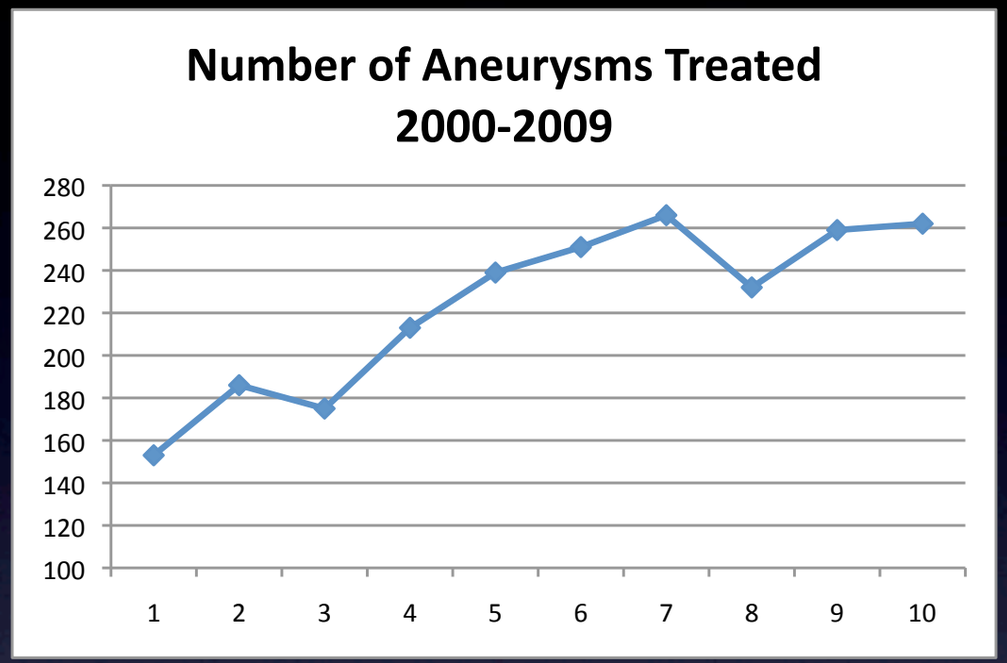
- Interesting times
- Demonstrate that care is provided to 20 or more patients per year with a diagnosis of subarachnoid hemorrhage.
- Demonstrate that 10 or more craniotomies for aneurysm clipping procedures are performed per year.
- The Comprehensive Stroke Center demonstrates that 15 or more endovascular coiling procedures for an aneurysm are performed per year.
- (NEW) The CSC demonstrates that 15 or more endovascular coiling or surgical clipping procedures for aneurysm are performed per year.

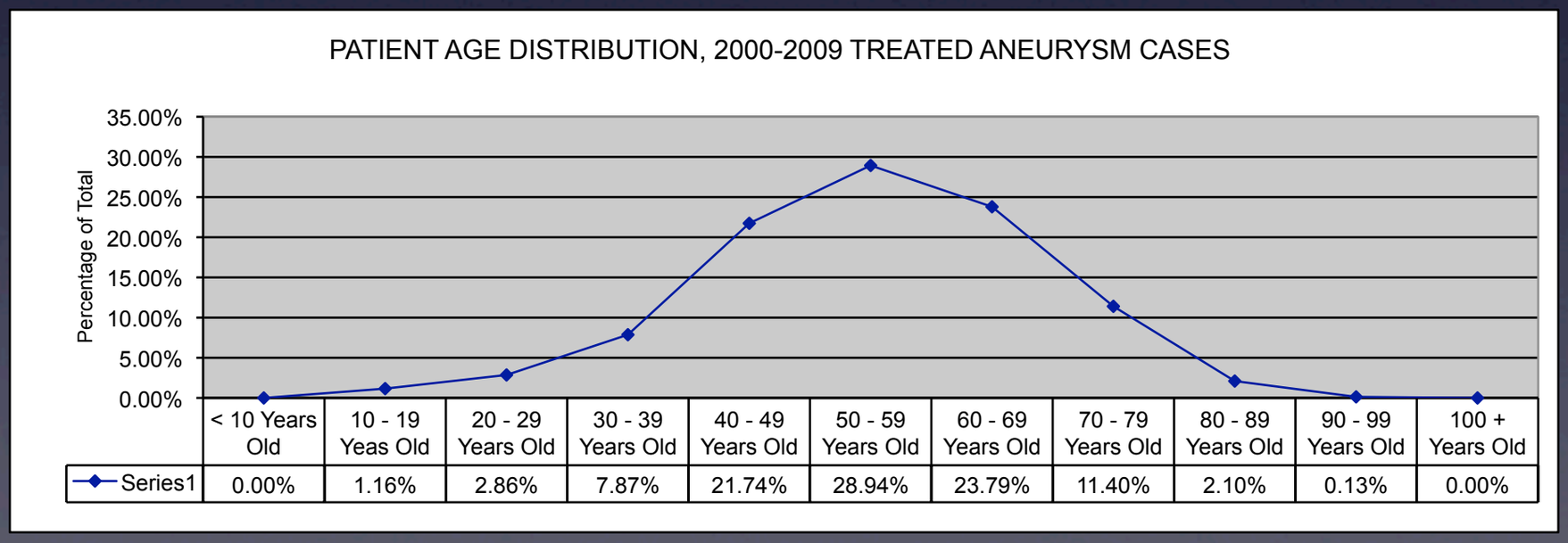
http://www.jointcommission.org/certification/advanced_certification_comprehensive_stroke_centers.aspx

They did not mention ruptured or unruptured

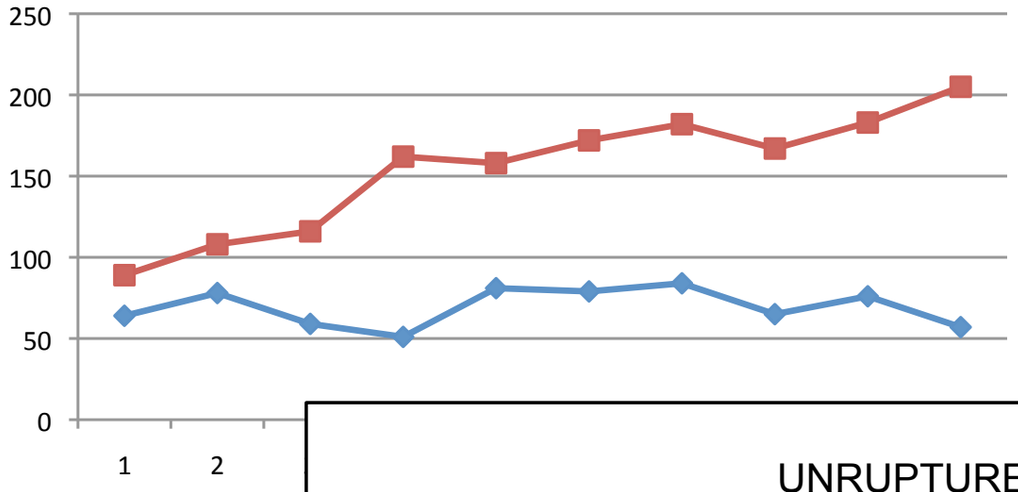
The Ruptured Aneurysm

Intracranial Aneurysms ZLUH 2000-2009

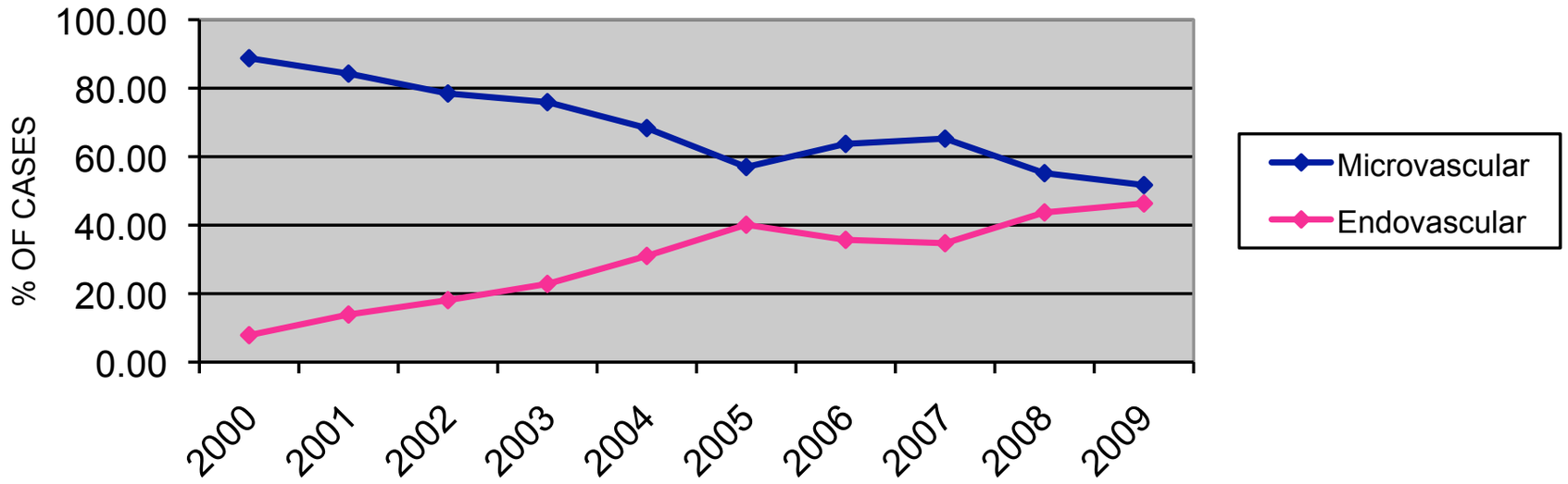




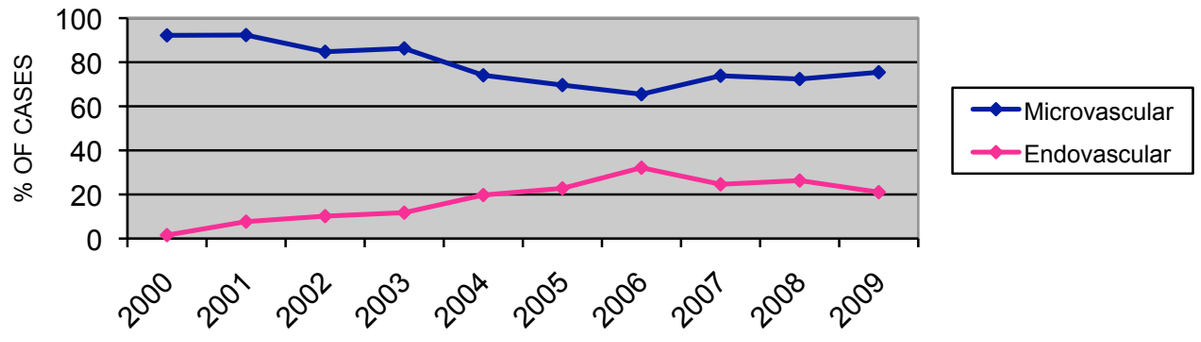
Number of Aneurysms Treated 2000-2009

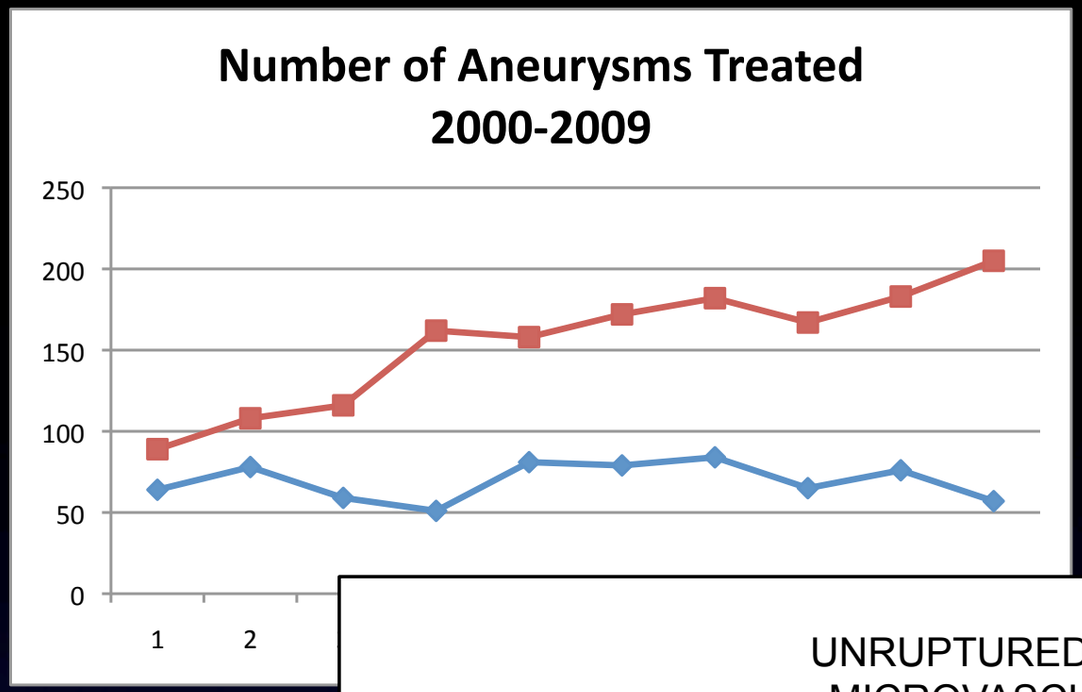


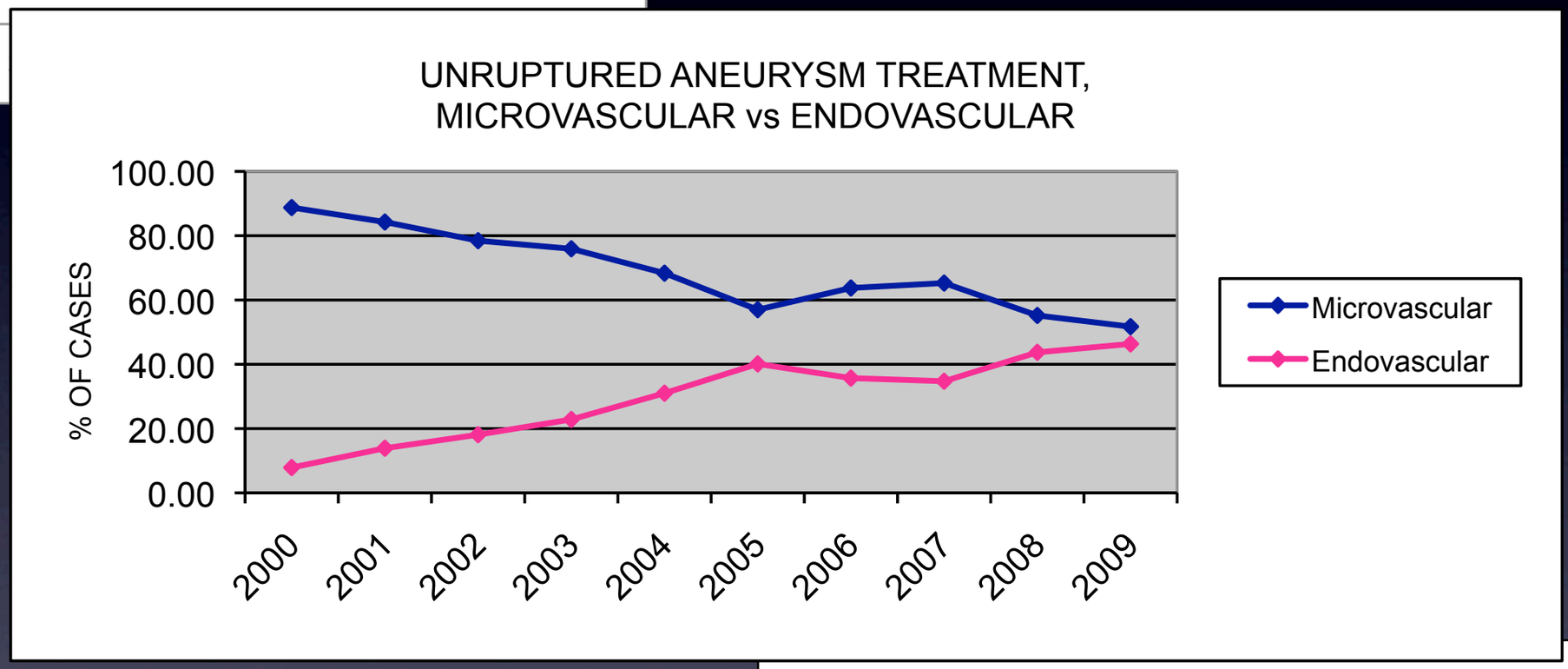
UNRUPTURED ANEURYSM TREATMENT, MICROVASCULAR vs ENDOVASCULAR



RUPTURED ANEURYSM TREATMENT, MICROVASCULAR vs ENDOVASCULAR

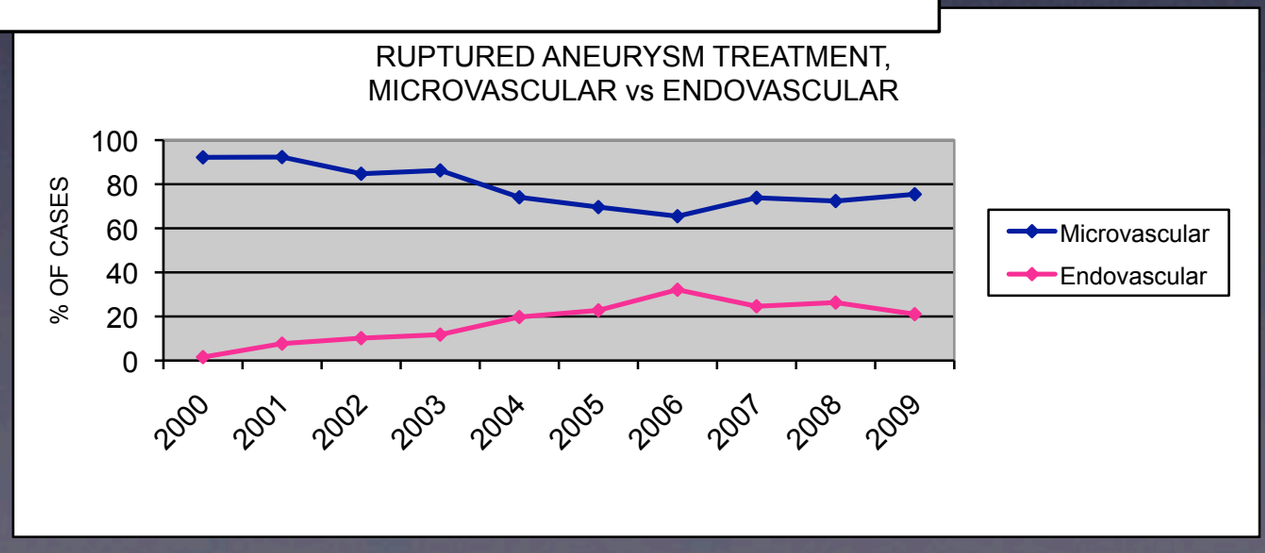


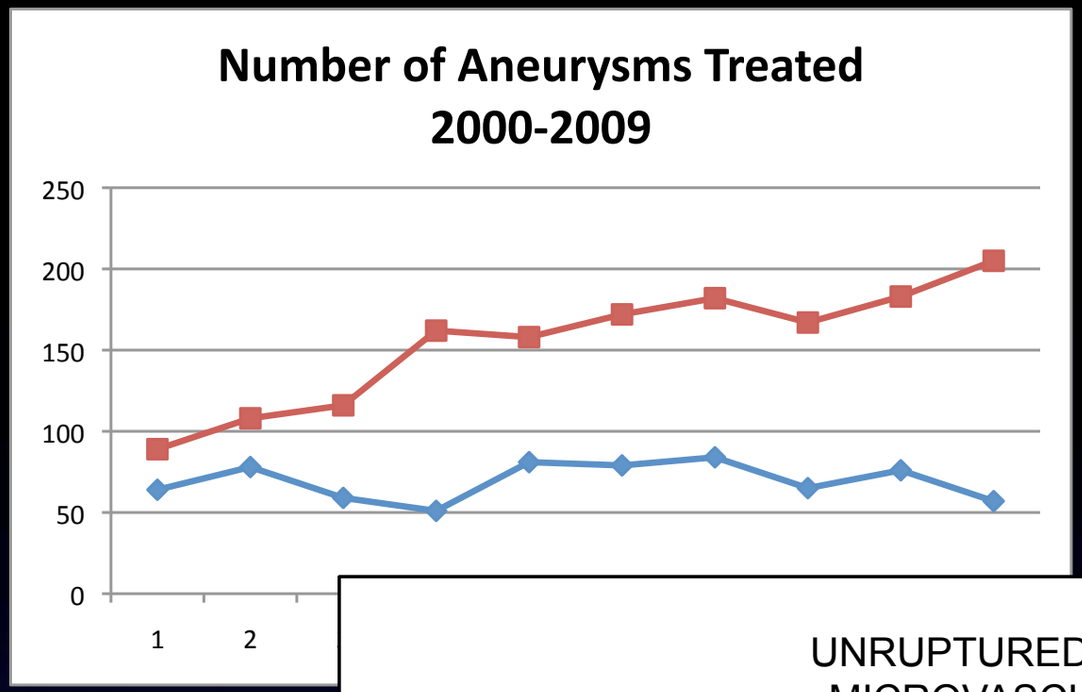


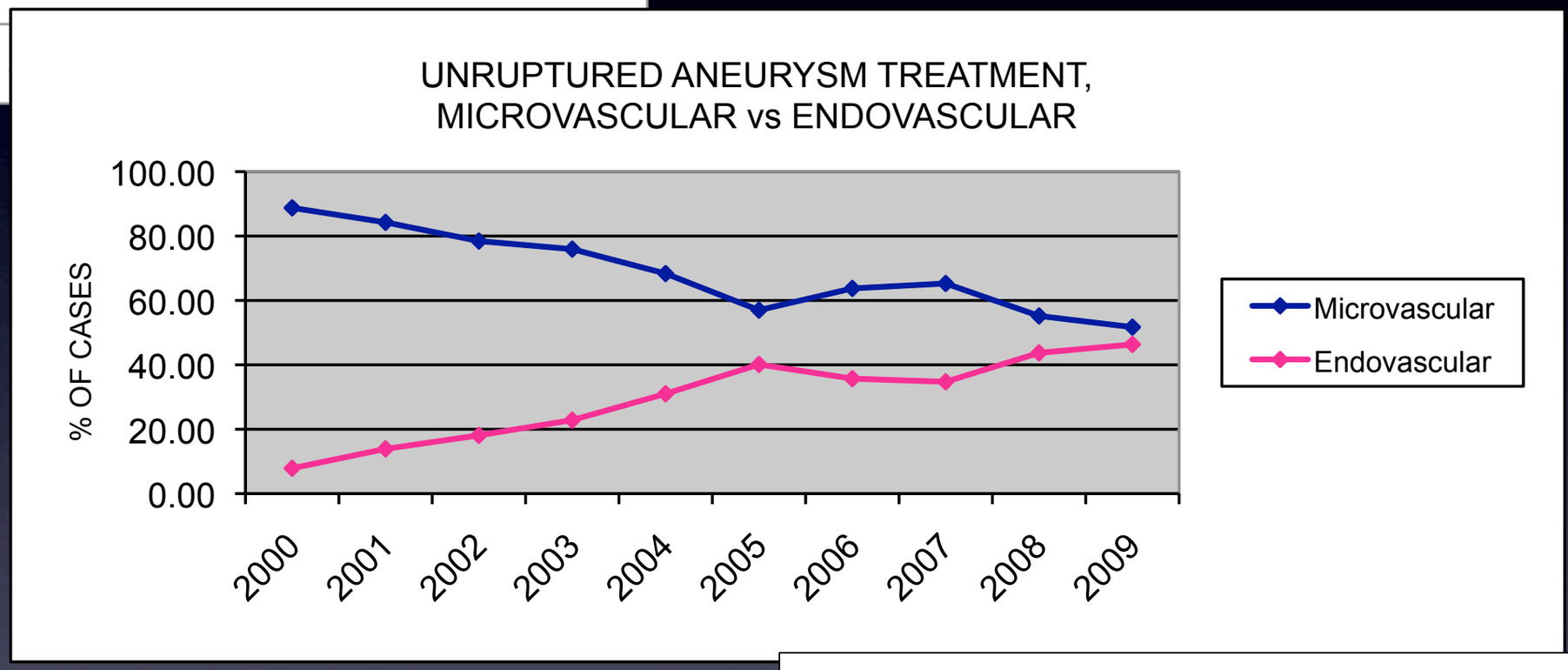


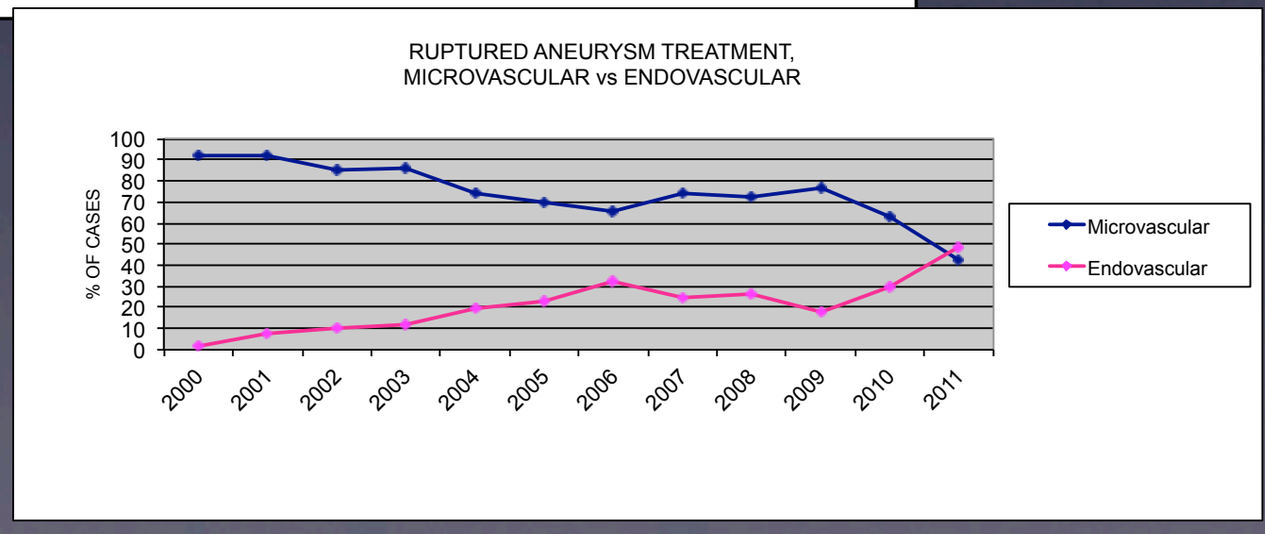
Stents?

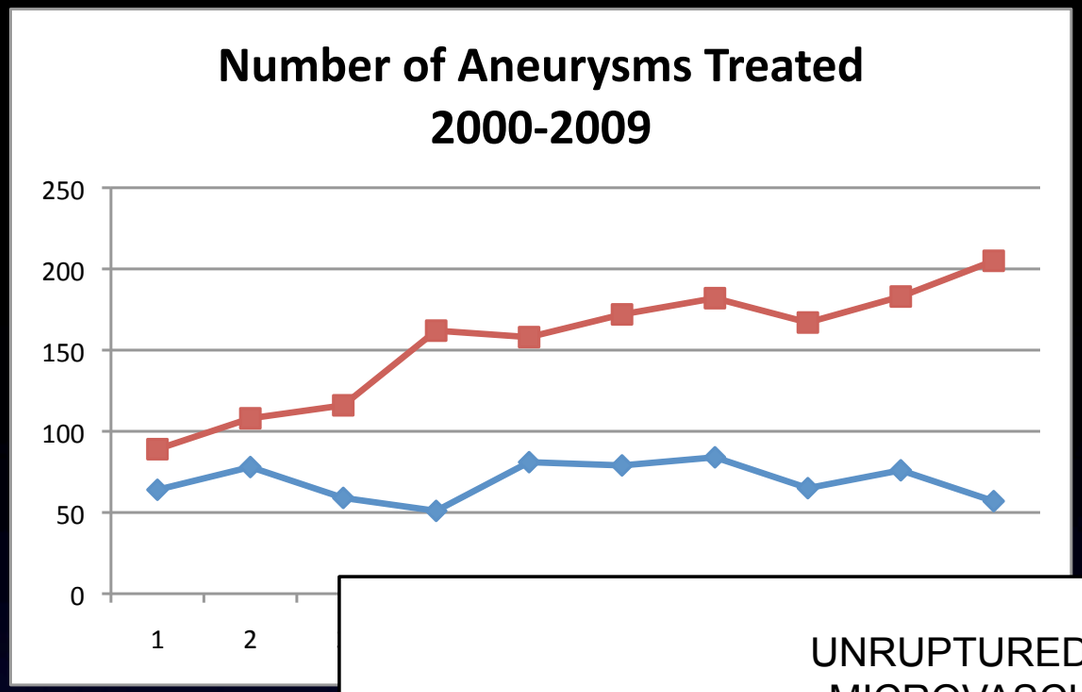
Use of antiplatelets in the ruptured setting?

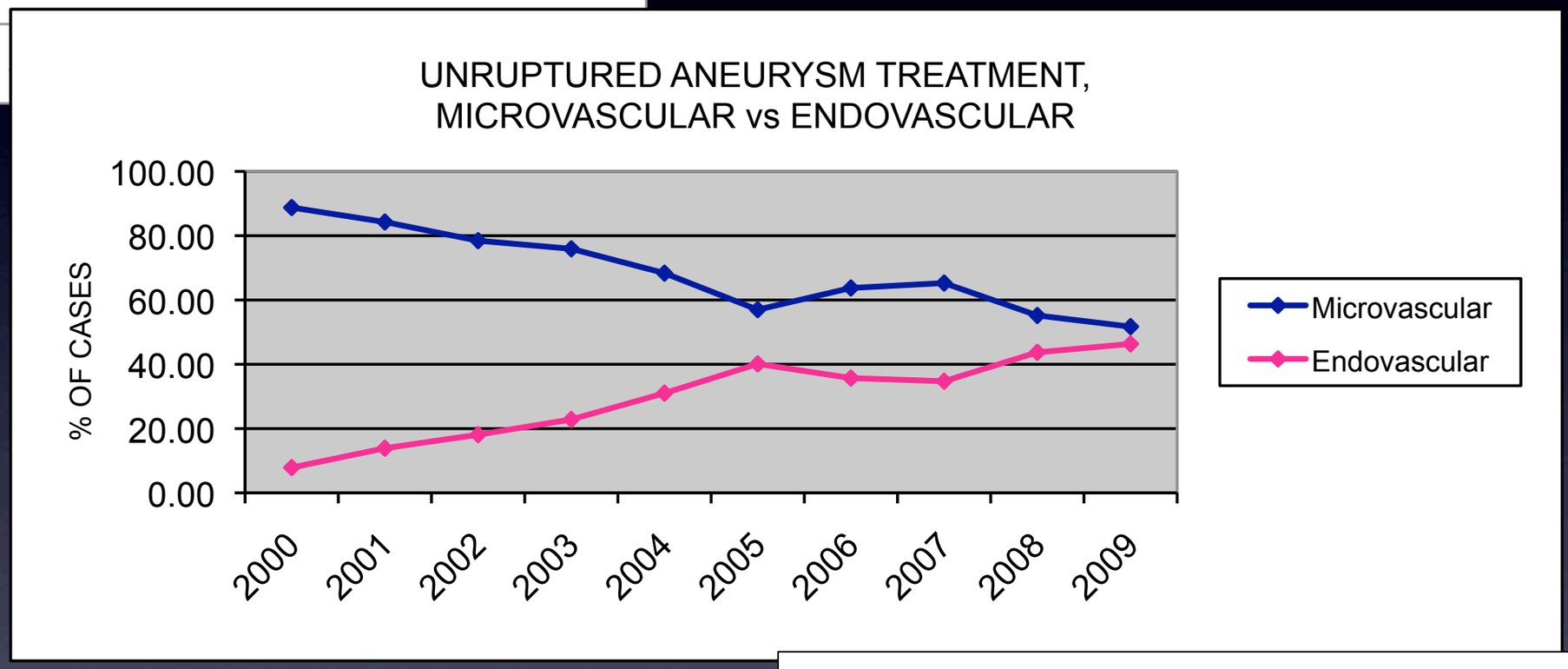



Number of Aneurysms Treated
2000-2009
250
200
150
100
50
0
1
2


UNRUPTURED ANEURYSM TREATMENT,
MICROVASCULAR vs ENDOVASCULAR
% OF CASES
100.00
80.00
60.00
40.00
20.00
0.00
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Microvascular
Endovascular


RUPTURED ANEURYSM TREATMENT,
MICROVASCULAR vs ENDOVASCULAR
% OF CASES
100
90
80
70
60
50
40
30
20
10
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Microvascular
Endovascular





Stents?
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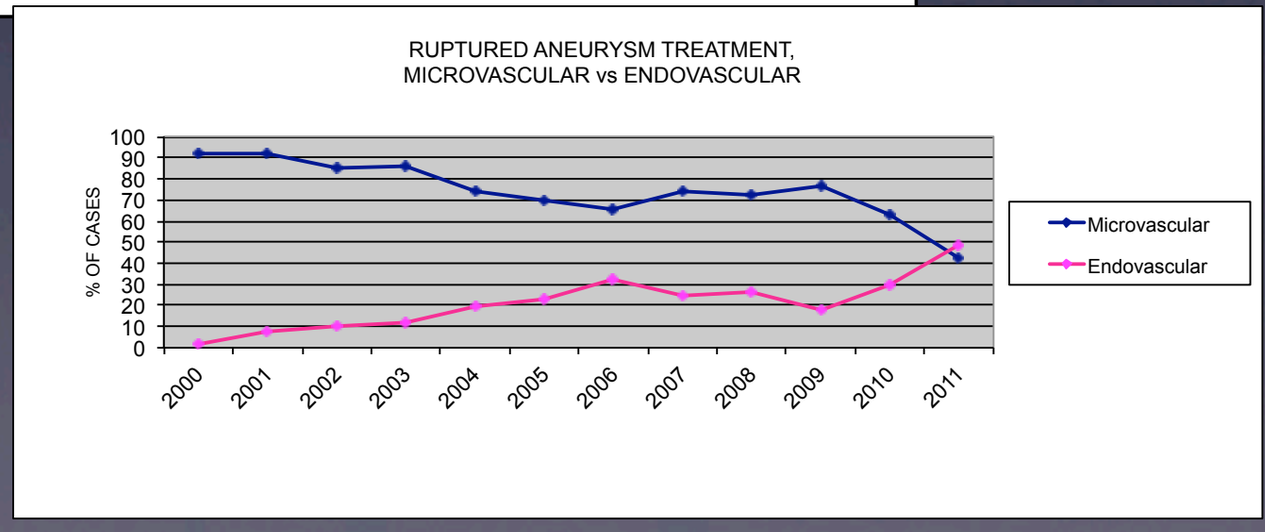
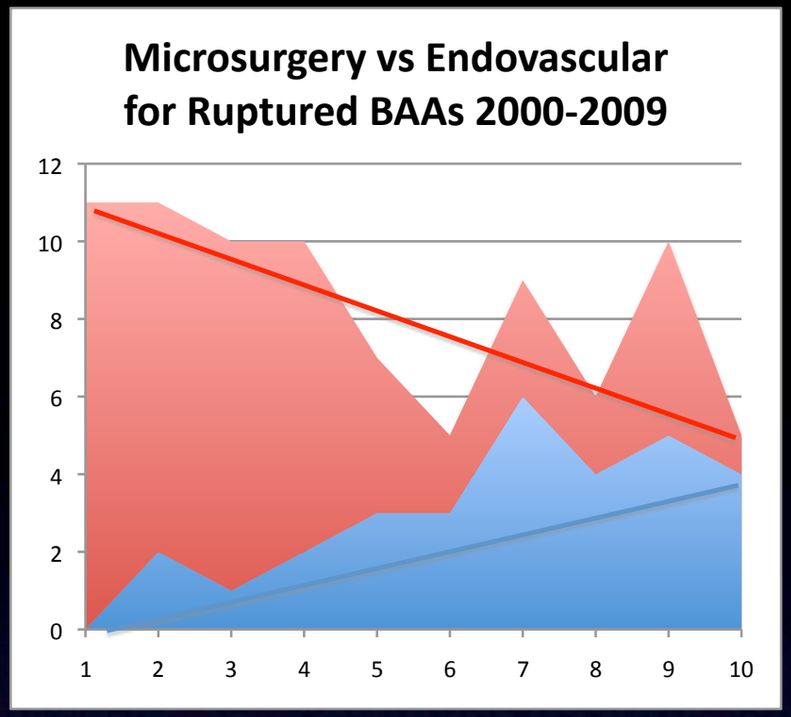
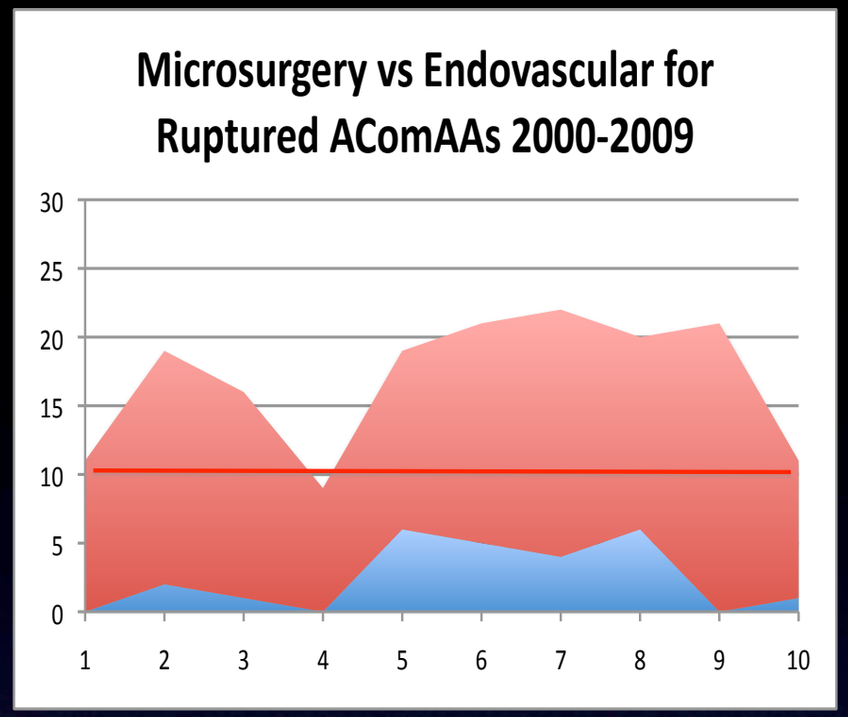
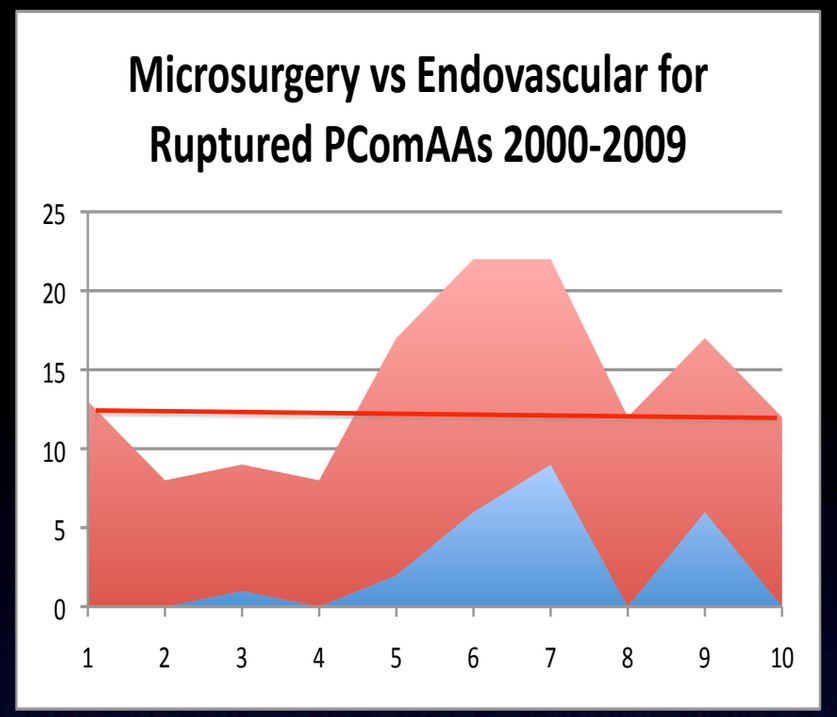
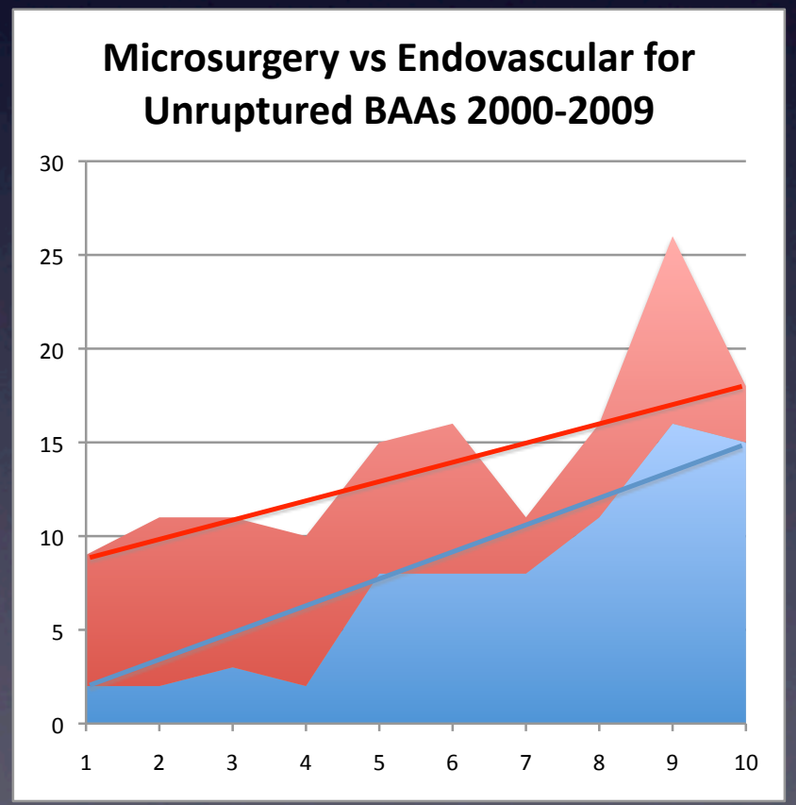
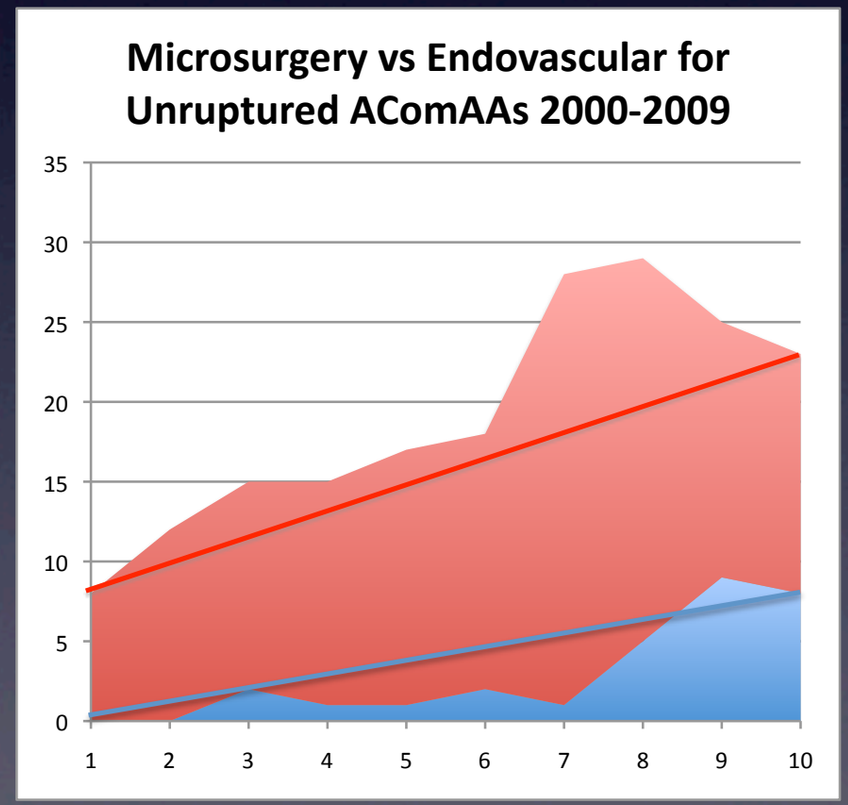


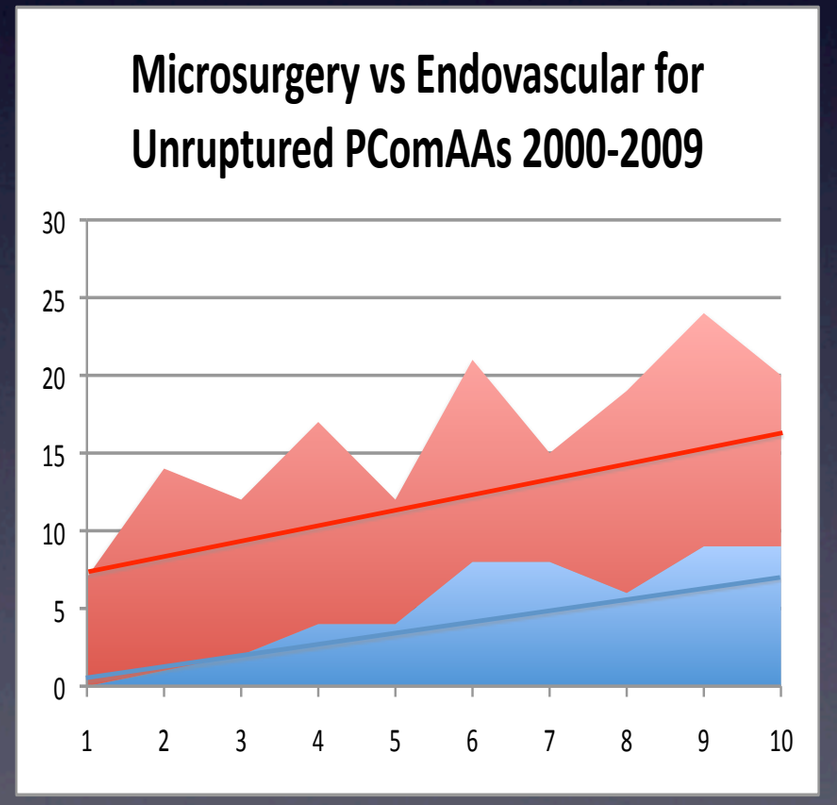












Microsurgery

Endovascular

Intracerebral Hemorrhage

Early surgery versus initial conservative treatment in patients with spontaneous supratentorial intracerebral haematomas in the International Surgical Trial in Intracerebral Haemorrhage (STICH): a randomised trial

*A David Mendelow, Barbara A Gregson, Helen M Fernandes, Gordon D Murray, Graham M Teasdale, D Terence Hope, Abbas Karimi, M Donald M Shaw, and David H Barer for the STICH investigators**

- Surgical removal may show benefit if lesion is < 1cm from cortex
- GCS < 8 and deep lesions did poorly
- Early surgery may improve the economics

Stroke 2005

Malignant Cerebral Edema

Decompressive Craniectomy

- Supratentorial surgery is highly dependent on patient selection and remains controversial on older patients and right hemispheric injury
- May overlap with ICH
- Timing is everything
- Infratentorial surgery is considered more efficacious

Kolias, et al Nat Rev Neurol 2013 DOI 10.1038/nrneurol.2013.106

CT Angiography "Spot Sign" Predicts Hematoma Expansion in Acute Intracerebral Hemorrhage

Ryan Wada, MD; Richard I. Aviv, MBChB; Allan J. Fox, MD; Demetrios J. Sahlas, MD;
David J. Gladstone, MD; George Tomlinson, PhD; Sean P. Symons, MD

- 39 patients
- near perfect correlation
- argument for a minimum of contrast enhanced CT
- good replication of data

Stroke 2007

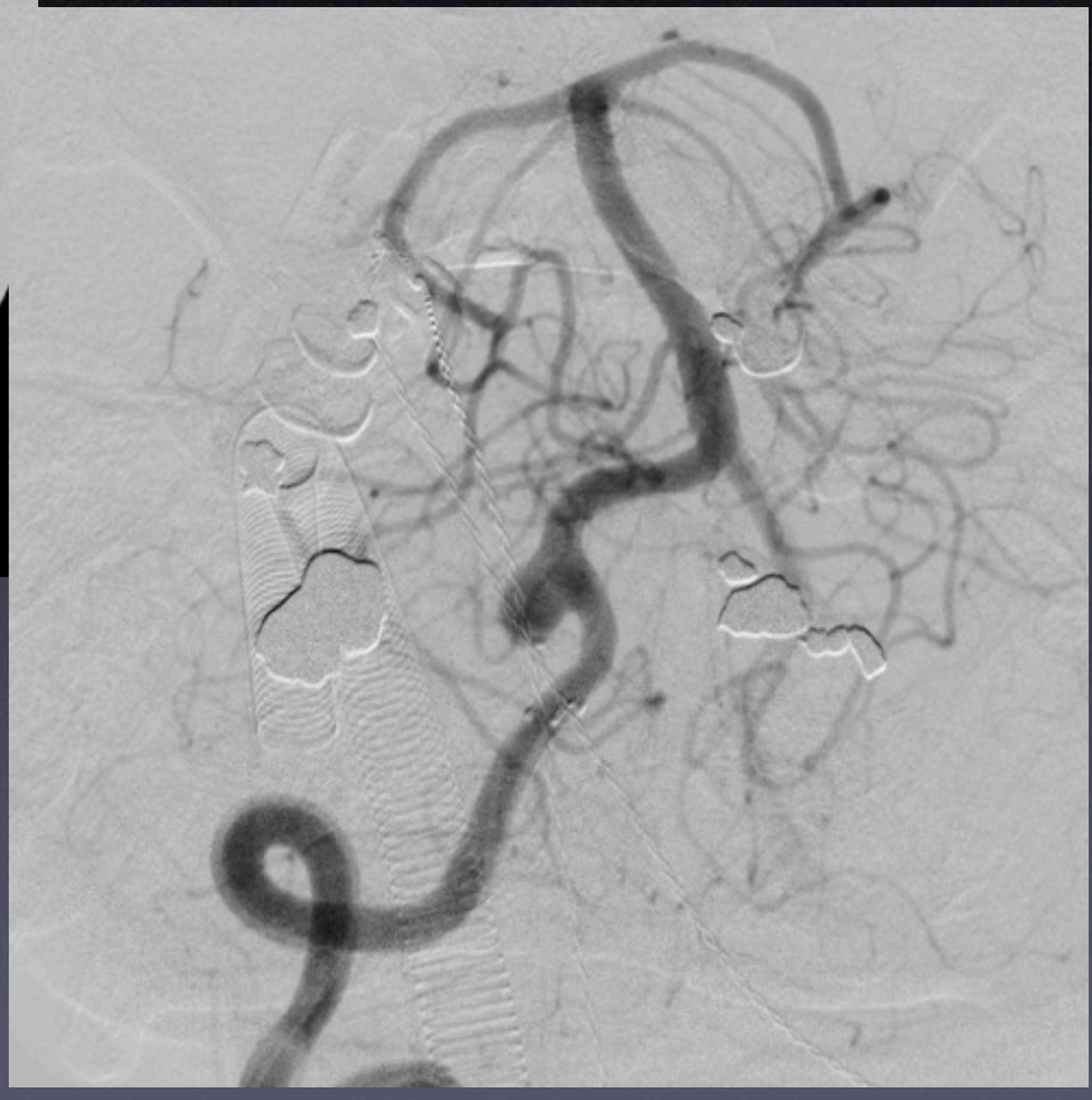
PICA Aneurysms

PICA

- The posterior inferior cerebellar artery (PICA) aneurysm occurs in 0.5-3% of all aneurysms*
- 20% of posterior circulation aneurysms
- Surgical approach may be associated with lower cranial nerve injury ... aspiration
- Endovascular approach may be associated with incomplete treatments or vessel occlusion ... follow-up sooner
- Beware of delayed HCP with tendency for thick cisternal clot
- Dissecting aneurysms frequently overlap in the literature

*Yasargil MG: Vertebrobasilar aneurysms, in *Microneurosurgery: Clinical Con*siderations, Surgery of the Intracranial Aneurysms and Results. Stuttgart, GeorgThieme, 1984, vol II, pp 232–295.


R VERT



INTERVENTIONAL NEURORADIOLOGY

Ruptured, dissecting posterior inferior cerebellar artery aneurysms: endovascular treatment without parent vessel occlusion

Martino Cellerini, Salvatore Mangiafico, Franco Ammannati, Gennaro Ambrosanio, Mario Muto, Luigi Galasso and Pasquale Mennonna

2008

Endovascularly or Surgically Treated Vertebral Artery and Posterior Inferior Cerebellar Artery Aneurysms: Clinical Analysis and Results

Endovaskulär oder operativ behandelte Aneurysmen der Arteria vertebralis und Arteria cerebelli inferior posterior: Eine klinische Analyse und Ergebnisse

I. E. Sandalcioglu[1], I. Wanke[2], B. Schoch[1], T. Gasser[1], J. P. Regel[1], A. Doerfler[2], M. Forsting[2], D. Stolke[1]

2005

INTERVENTIONAL

Posterior Inferior Cerebellar Artery Aneurysms: Incidence, Clinical Presentation, and Outcome of Endovascular Treatment

J.P. Peluso[a], W.J. van Rooij[a], M. Sluzewski[a], G.N. Beute[b] and C.B. Majoie[c]

2008

“Blister Aneurysm”

Ischemic Complications after Radial Artery Grafting and Aneurysmal Trapping for Ruptured Internal Carotid Artery Anterior Wall Aneurysm

Yasuo Murai[1], Takayuki Mizunari[2], Katsuya Umeoka[2], Kojiro Tateyama[1], Shiro Kobayashi[2], Akira Teramoto[1]

2012

Treatment of two blood blister-like aneurysms with flow diverter stenting

Arturo Consoli,[1] Sergio Nappini,[2] Leonardo Renieri,[1] Nicola Limbucci,[3] Fabrizio Ricciardi,[2] Salvatore Mangiafico[2]

2012

Rupture of symptomatic blood blister-like aneurysm of the internal carotid artery: clinical experience and management outcome

June 2012, Vol. 26, No. 3 , Pages 378-382 (doi:10.3109/02688697.2011.631617)

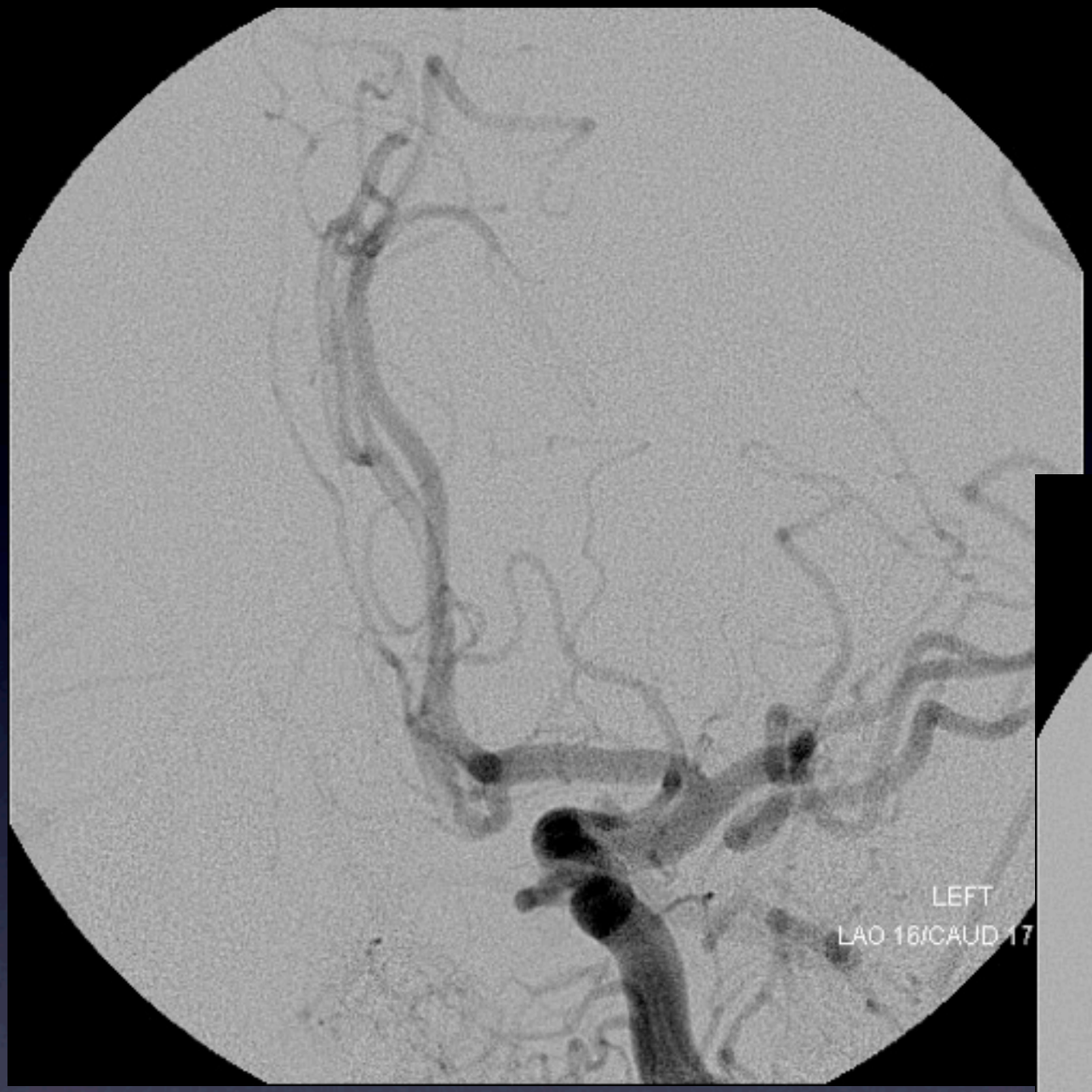
Liu Yu-Tse[1], Wong Ho-Fai[2], Lee Cheng-Chi[1], Ku Chu-Mei[3], Wang Yi-Chou[1] & Yang Tao-Chieh[1]

HTML

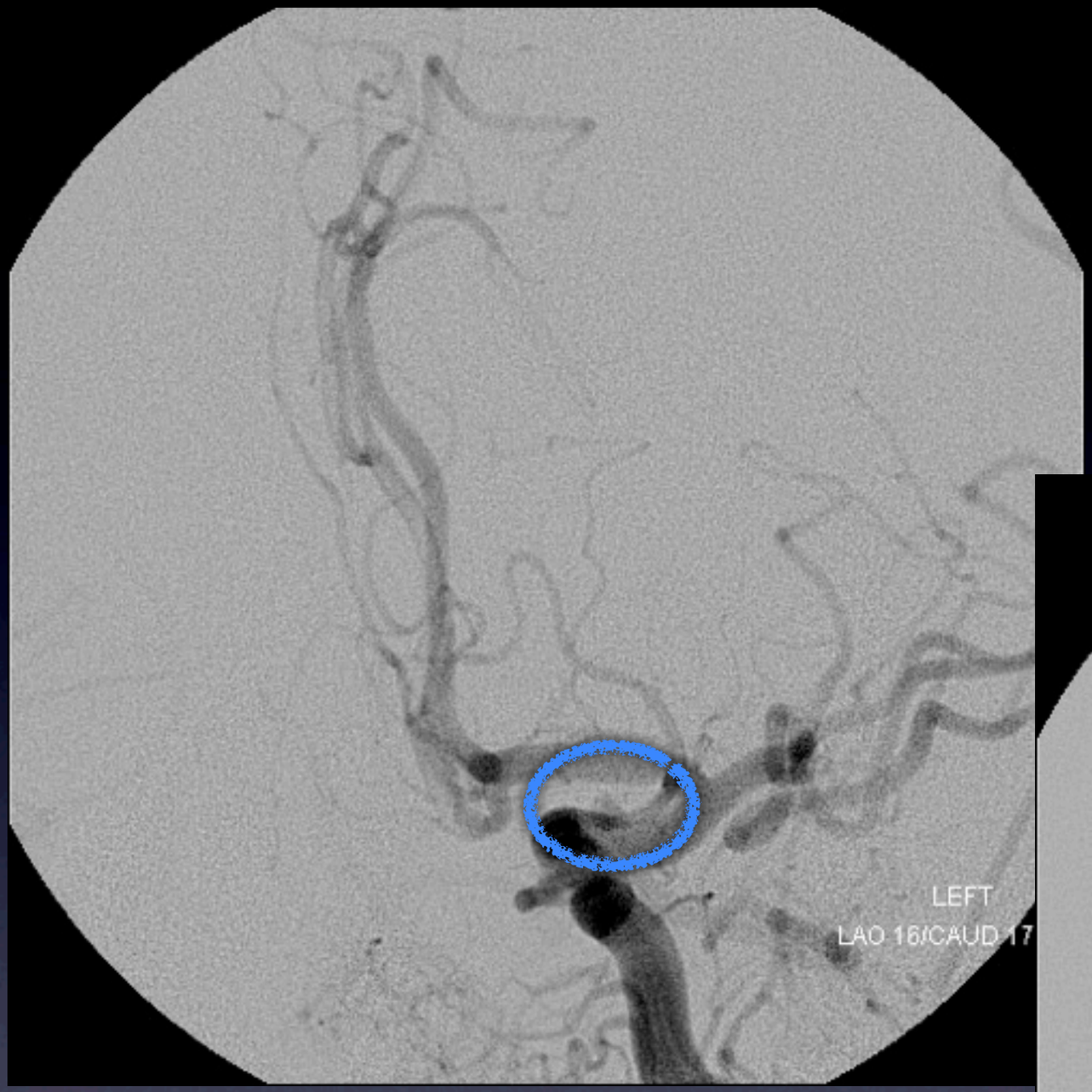
2012

“Blister” Aneurysm

- Not much discussion about coiling from my standpoint but ...
- Use of stent technology depends on the clinical presentation of the patient
- Less likely revealed by CTA
- Need to be able to employ all methods of therapy (endovascular, surgical wrapping/ bypass)



44 yo firefighter with acute onset headache and progression to obtundation



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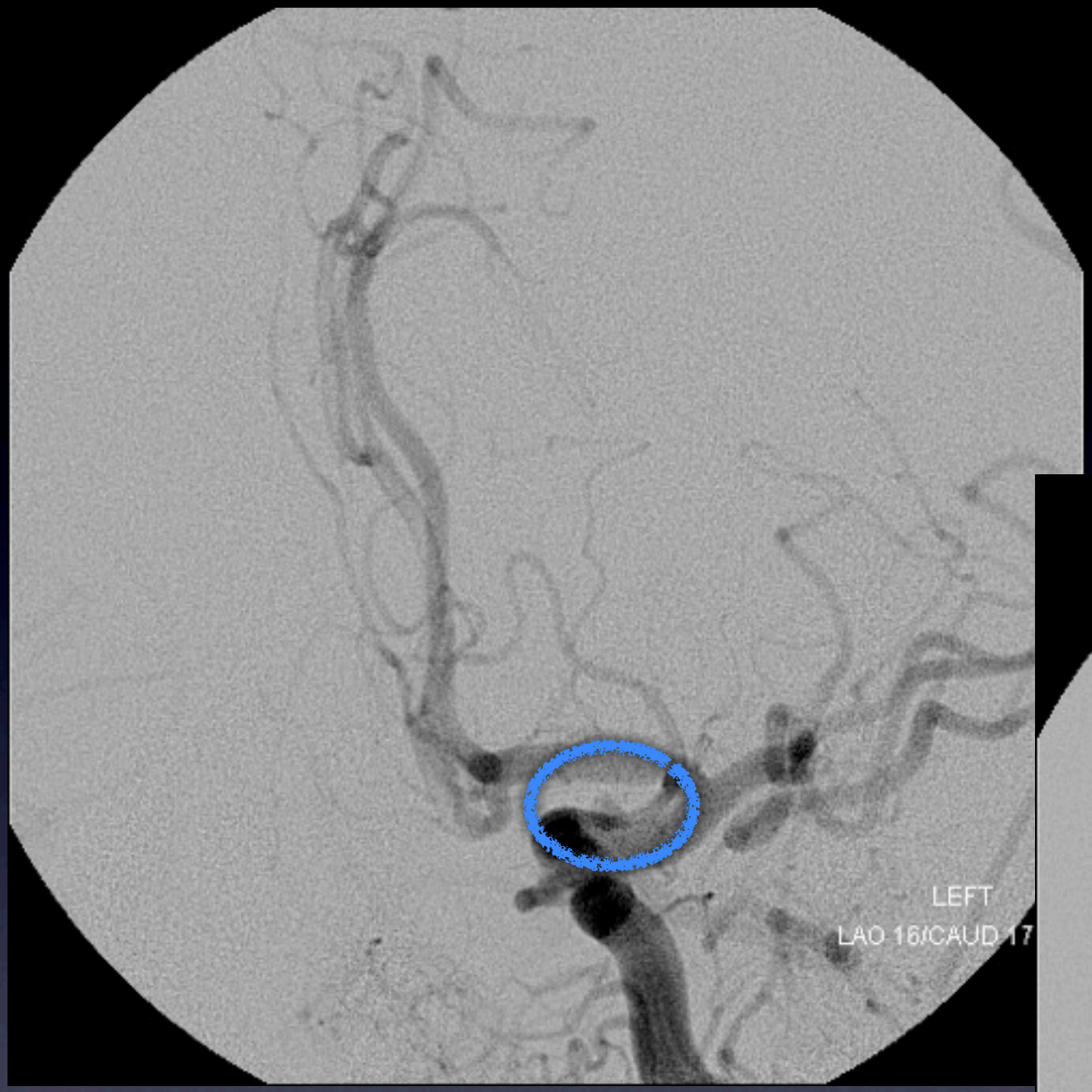

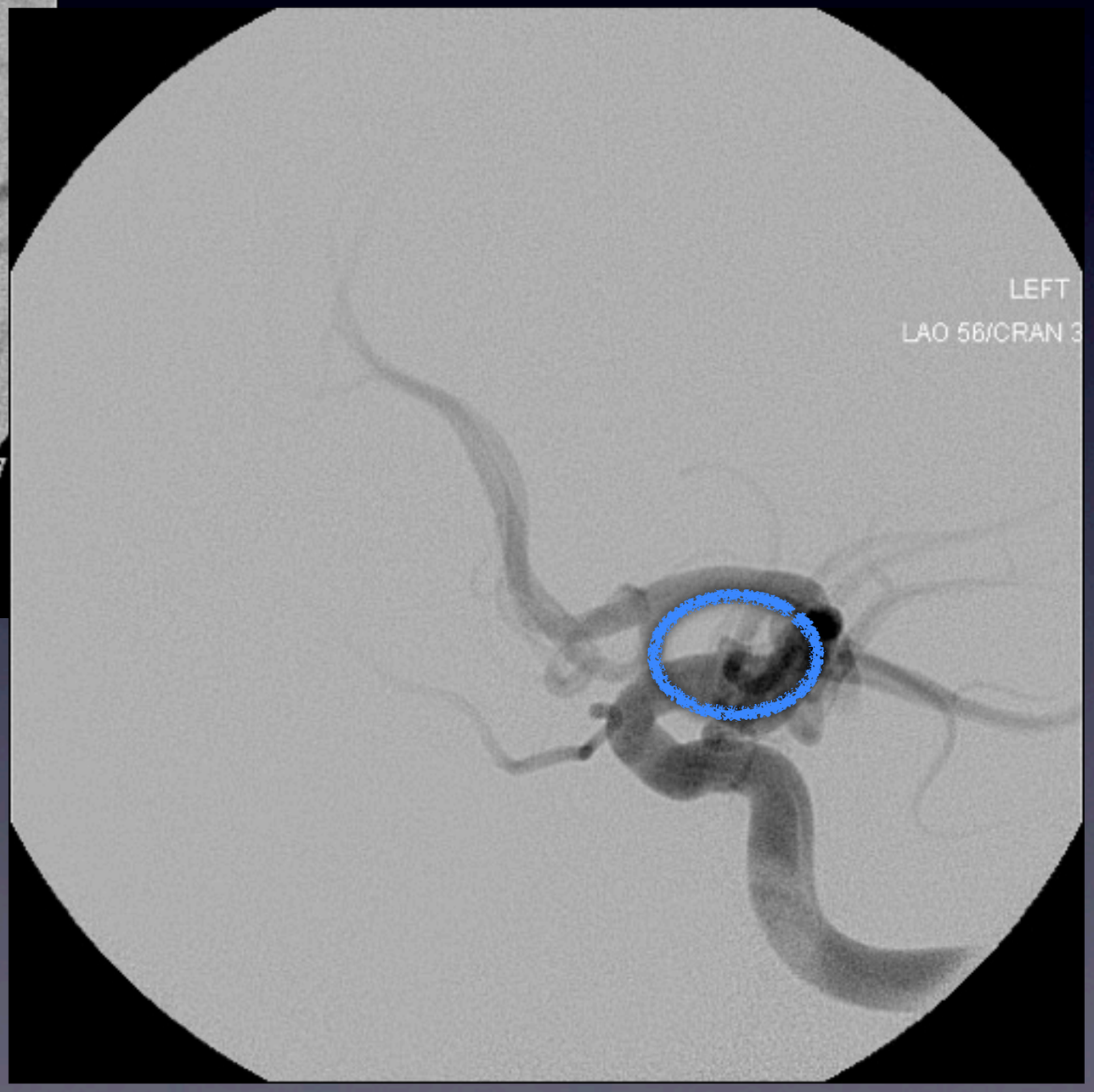

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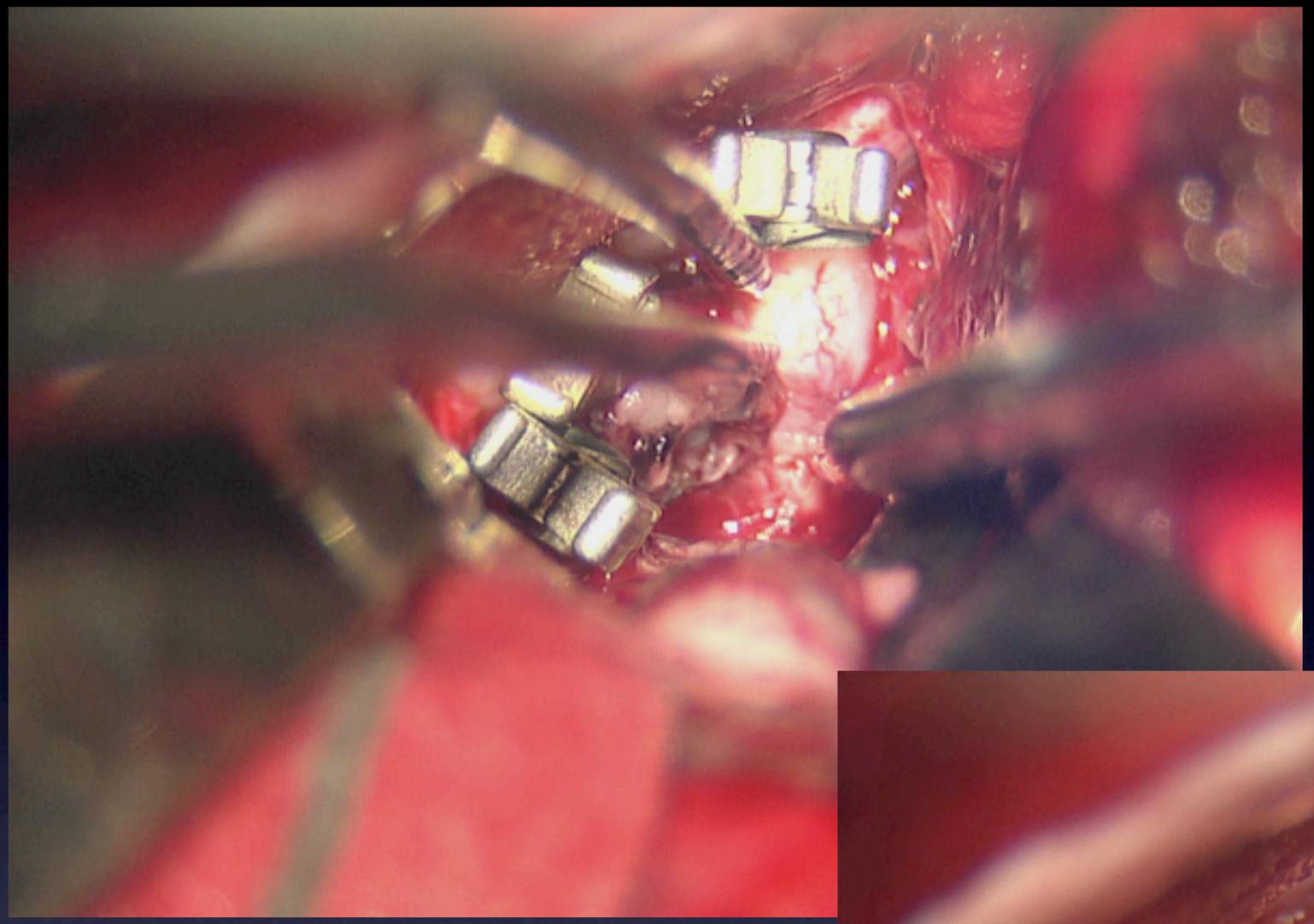
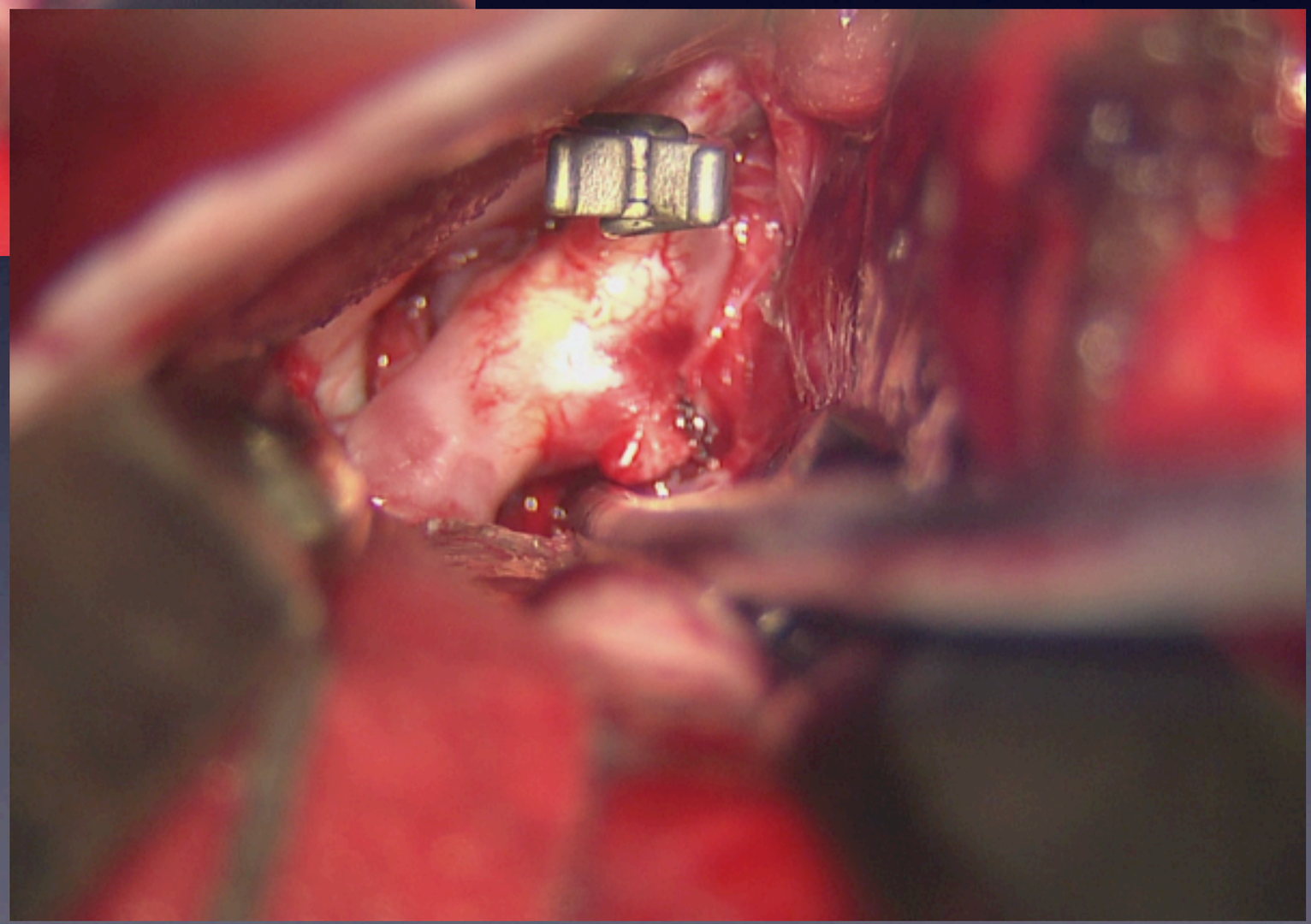
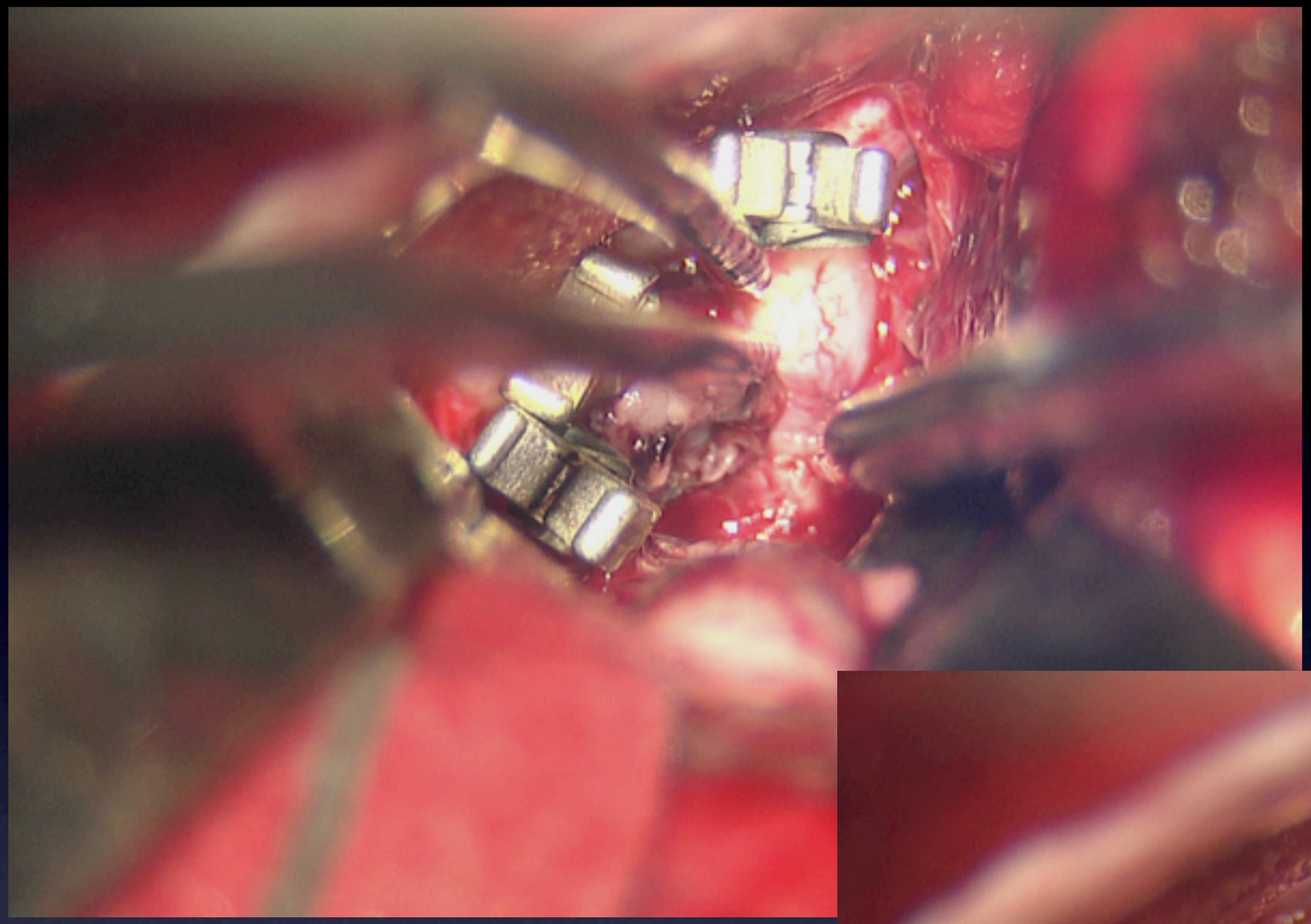
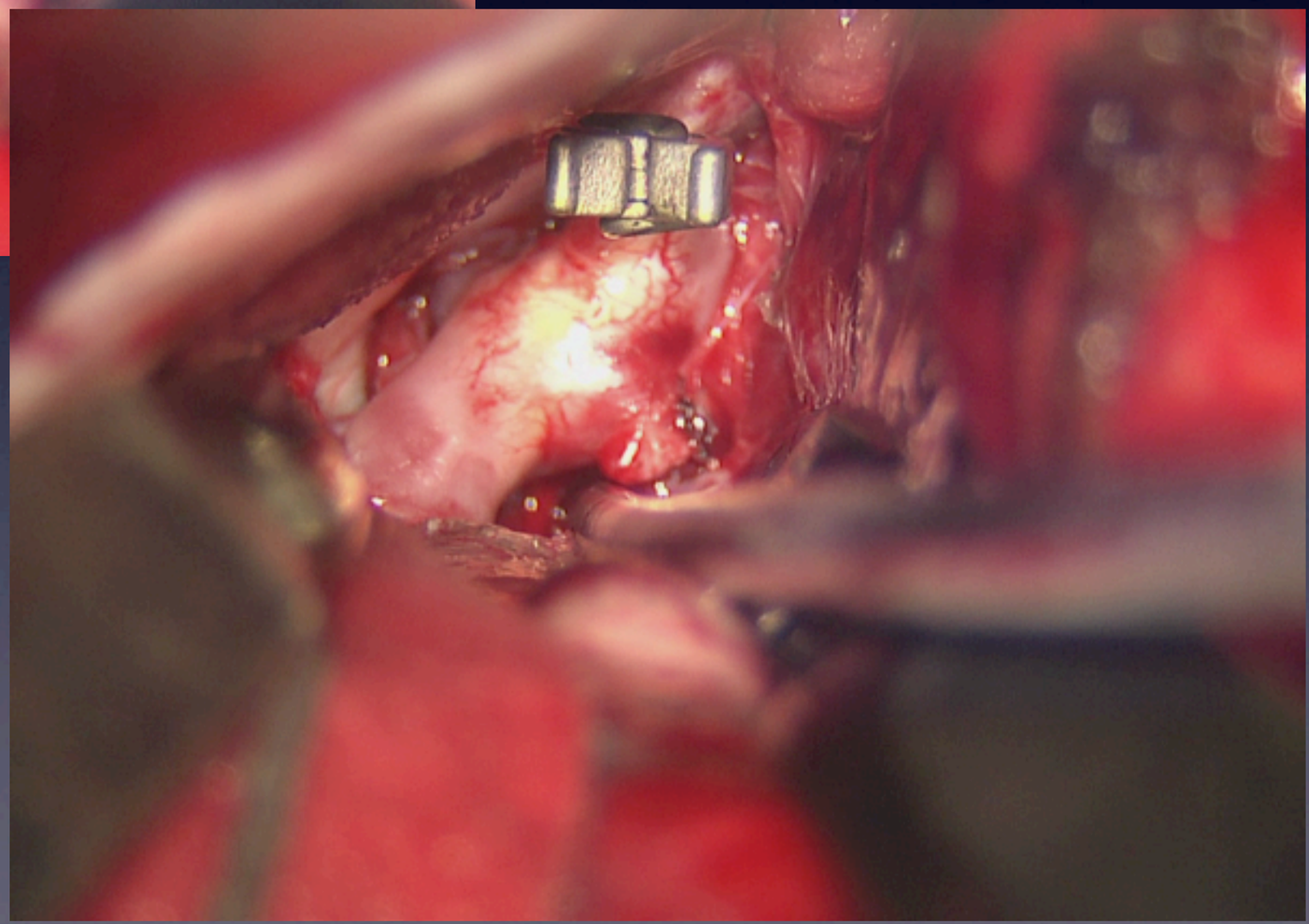






Complete control
before
removing the clot



Have to include
normal carotid

46 yo female with SAH two months prior to her presentation

Hospitalized for two weeks

Presents to clinic for management decision

Neurologically intact

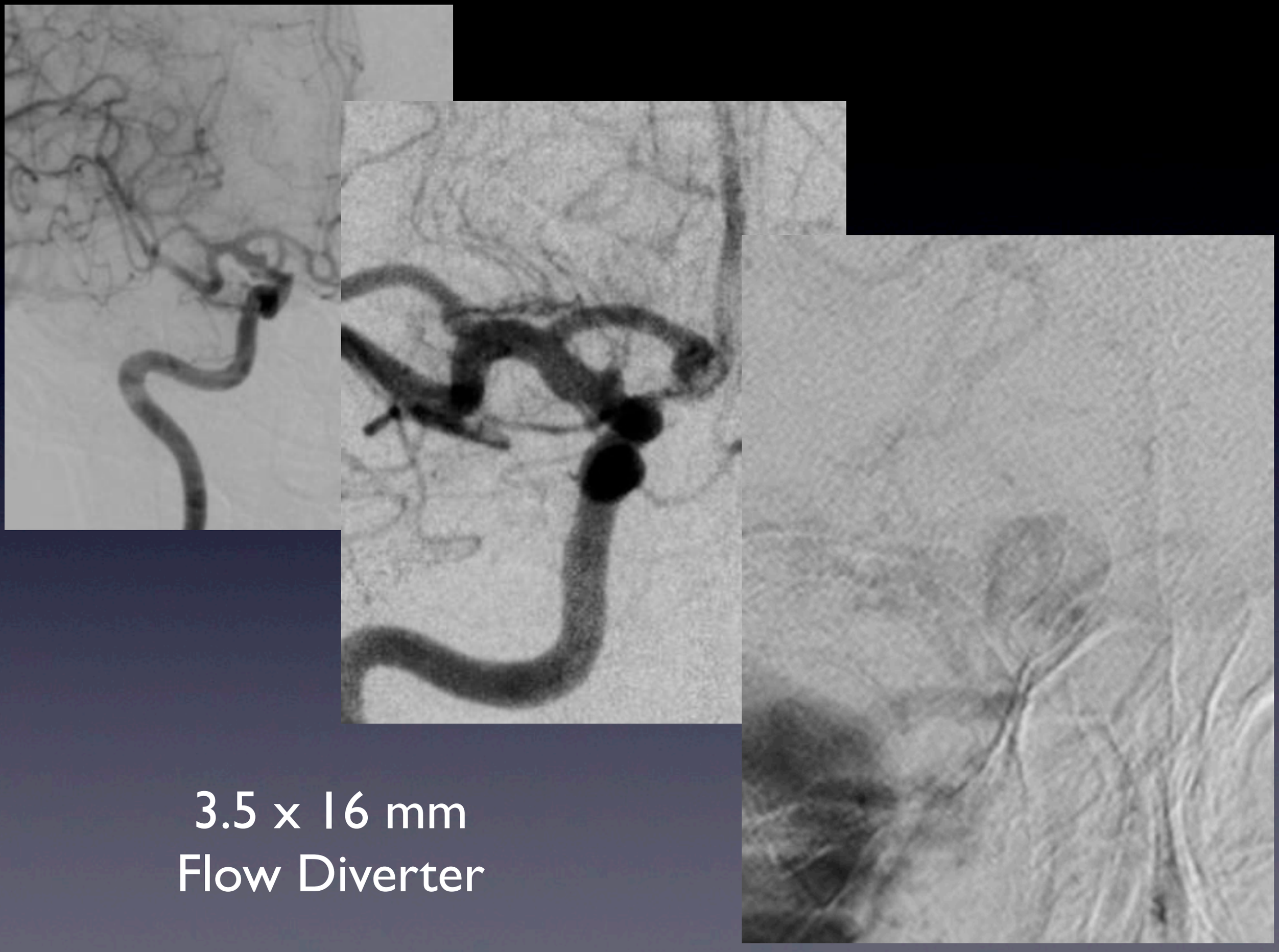
46 yo female with SAH two months prior to her presentation

Hospitalized for two weeks

Presents for managment decision

Neurologically intact

3.5 x 16 mm
Flow Diverter



3.5 x 16 mm
Flow Diverter

Distal ACA

Management of Distal Anterior Cerebral Artery Aneurysms: A Single Institution Retrospective Analysis (1997-2005)

Pandey, Aditya M.D.; Rosenwasser, Robert H. M.D.; Veznedaroglu, Erol M.D.

2007

No Long-Term Excess Mortality in 280 Patients With Ruptured Distal Anterior Cerebral Artery Aneurysms

Lehecka, Martin; Niemelä, Mika; Seppänen, Johanna; Lehto, Hanna; Koivisto, Timo; Ronkainen, Antti; Rinne, Jaakko; Sankila, Risto; Jääskeläinen, Juha; Hernesniemi, Juha

Neurosurgery. 60(2):235-241, February 2007.

doi: 10.1227/01.NEU.0000249261.95826.8F

2008

Aneurysms of the Distal Anterior Cerebral Artery: Results in 59 Consecutively Managed Patients

Steven, David A.; Lownie, Stephen P.; Ferguson, Gary G.

Neurosurgery. 60(2):227-234, February 2007.

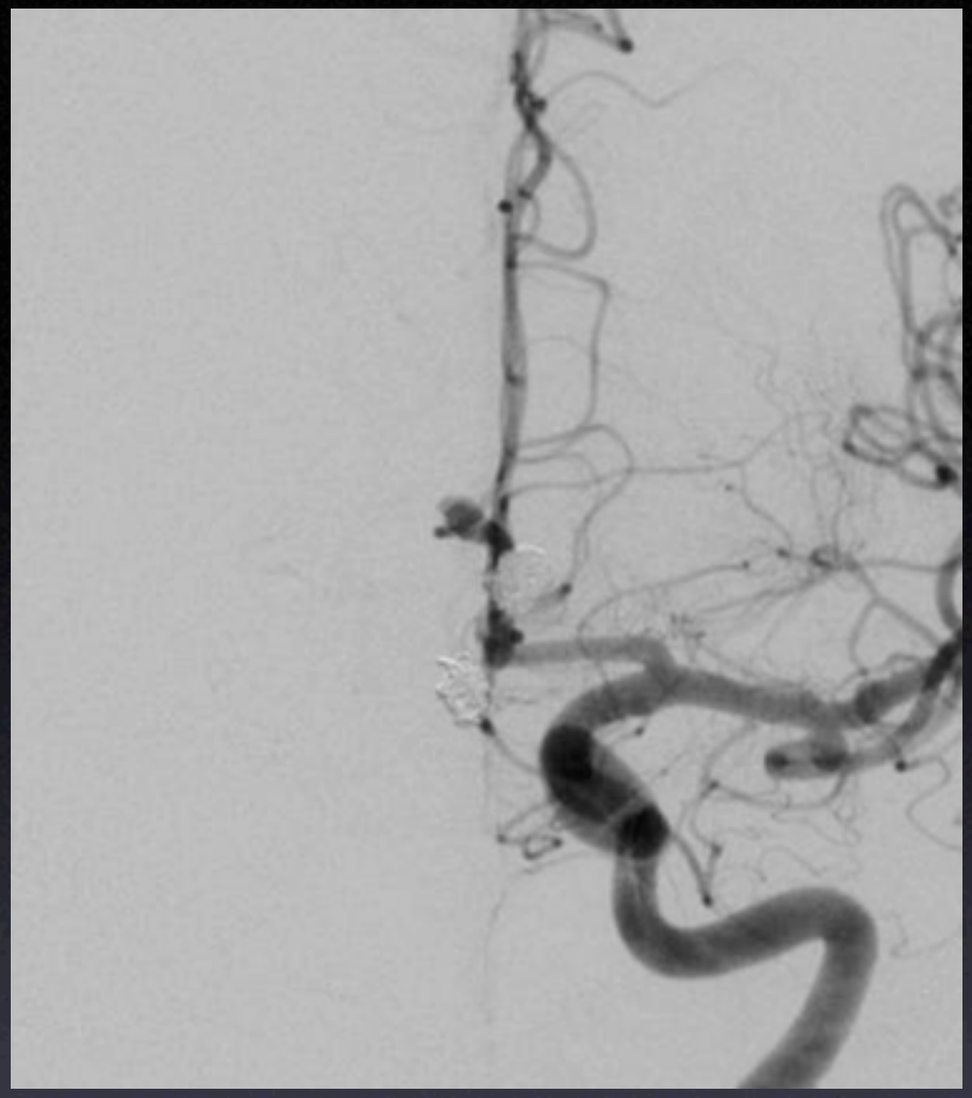
doi: 10.1227/01.NEU.0000249267.33945.E7

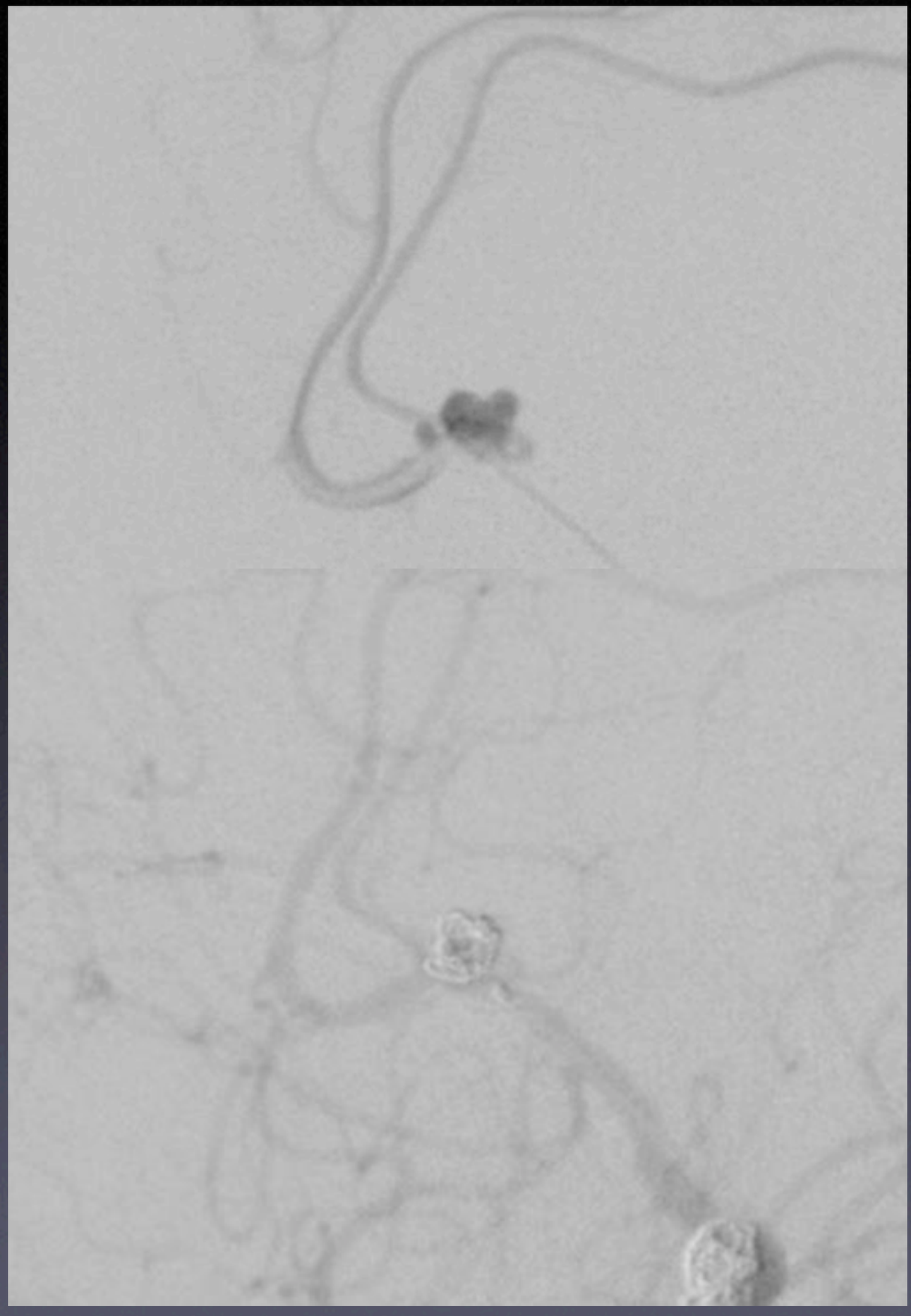
2007

Distal ACA

- Literature suggests 2-9% of all intracranial aneurysms
- Lehecka, et al noted 52% incidence of associated aneurysms and 51% of ruptured lesions < 7mm
- Somewhat more difficult to access both surgically and endovascularly (different reasons)
- Lower dome:neck ratios with less likelihood of stent utility
- Attention to side

43 yo female with previous AComm hemorrhage. Now with new hemorrhage from known distal ACA lesion





43 yo female with previous AComm hemorrhage. Now with new hemorrhage from known distal ACA lesion

Internal Carotid Artery Bifurcation

Internal carotid bifurcation aneurysms: frequency, angiographic anatomy and results of coiling in 50 aneurysms

Willem Jan van Rooij · Menno Sluzewski · Guus N. Beute

2008

Endovascular treatment of basilar and ICA termination aneurysms: effects of the use of HydroCoils on treatment stability in a subgroup of patients prone to a higher recurrence rate

Serdar Geyik · Kivilcim Yavuz · Saruhan Cekirge · Isil Saatci

2007

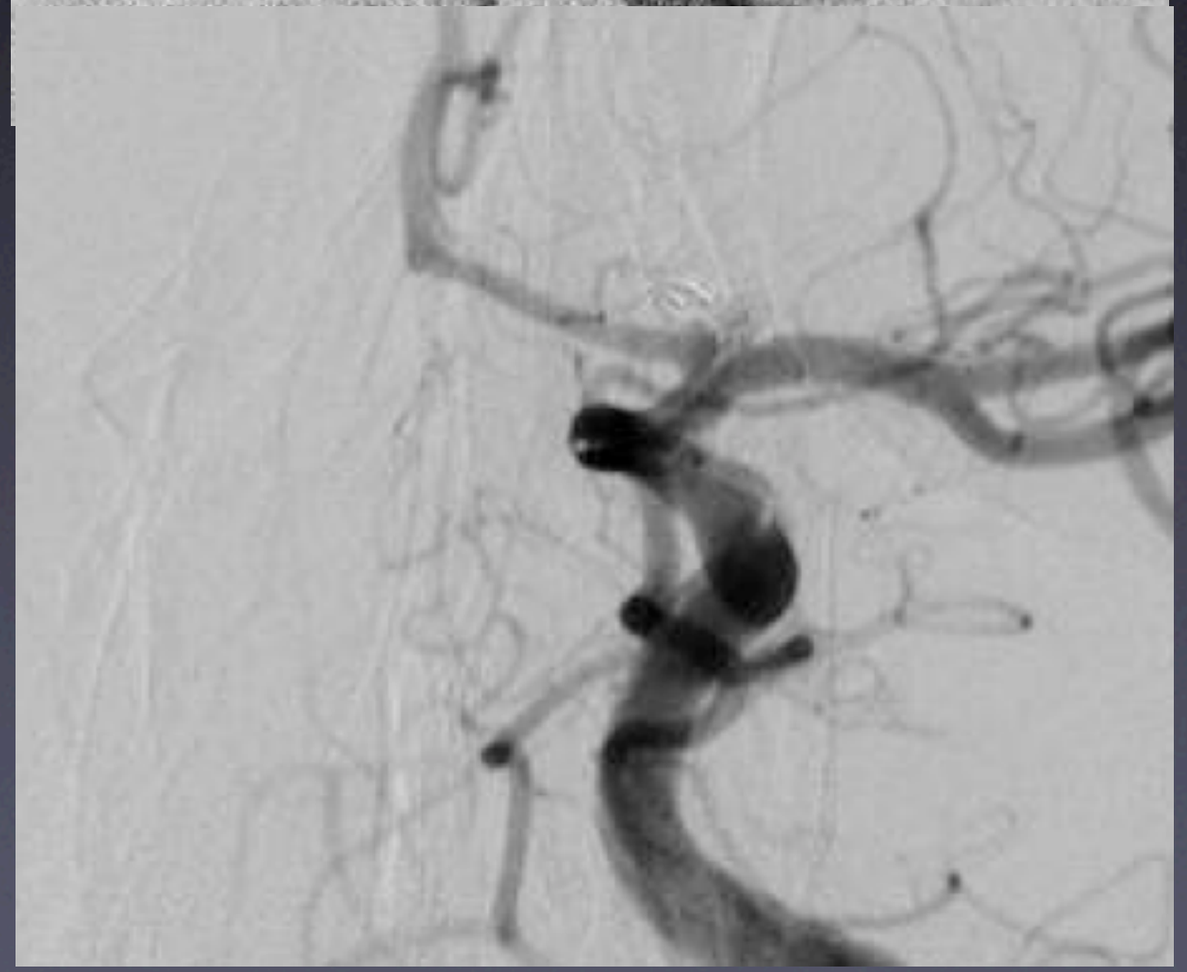
Endovascular therapy of internal carotid artery bifurcation aneurysms

Hidenori Oishi, Munetaka Yamamoto, Sensyu Nonaka, Hajime Arai

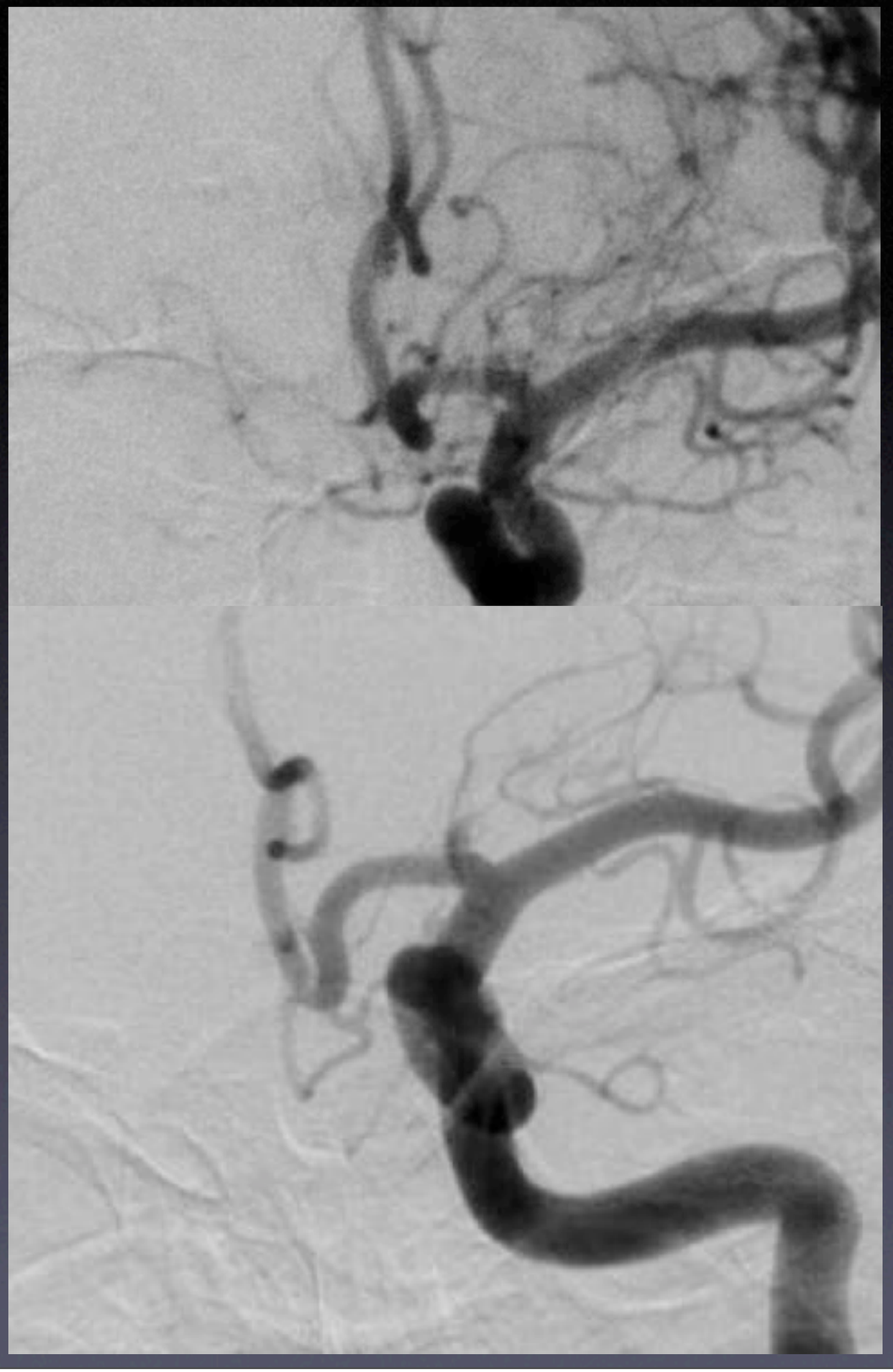
2012

IC-Bifurcation Aneurysms

- Surgically more accessible that the basilar but not much different with endovascular
- Use of stent technology depends on the clinical presentation of the patient
- Thromboembolic complications are more common despite rupture status (endovascular)
- Perforators and anterior choroidal come into play in the surgical approach

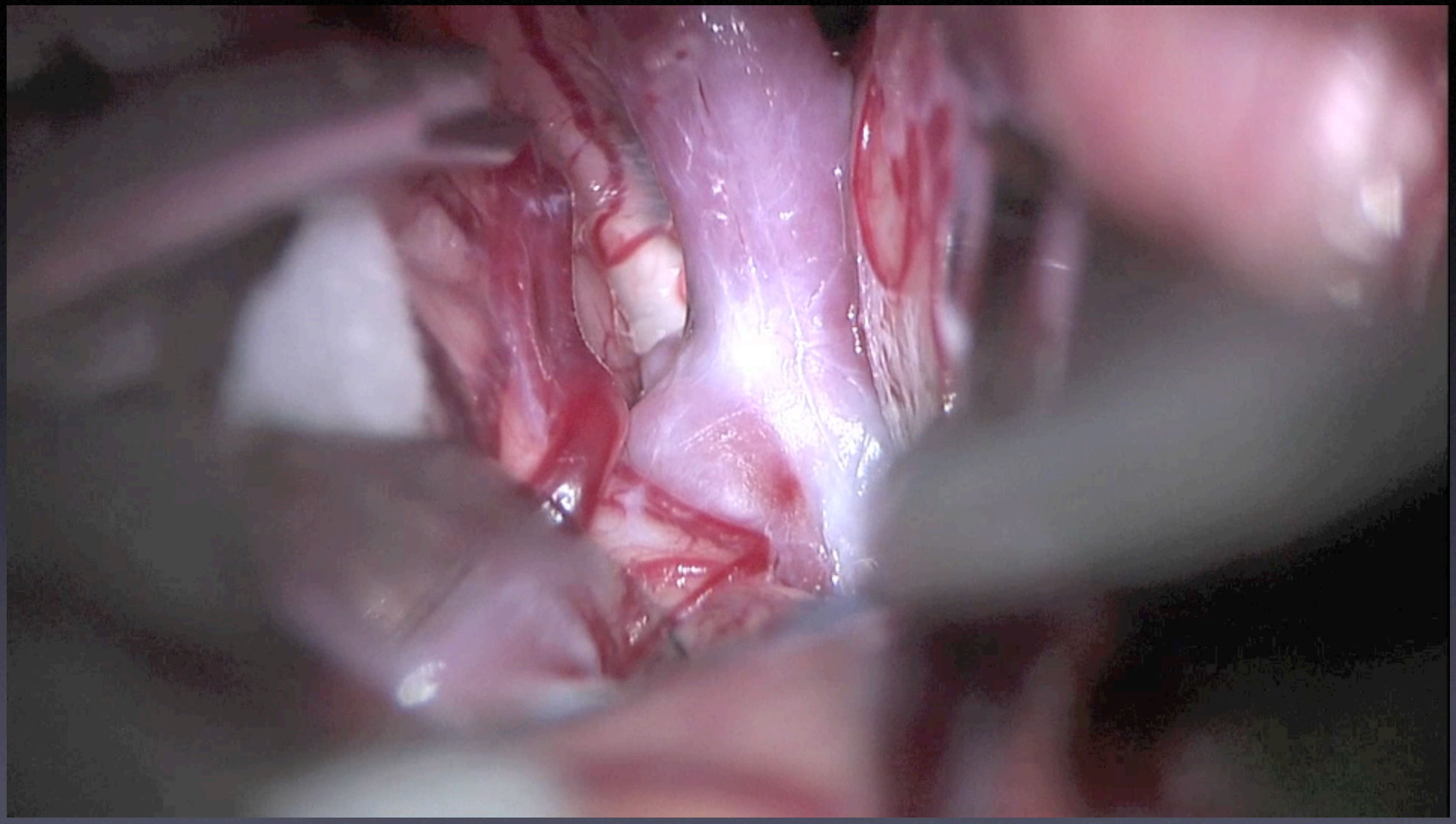


38 yo female HH4 presents 3 days following admission to outside facility



42 yo female post-bleed day 1

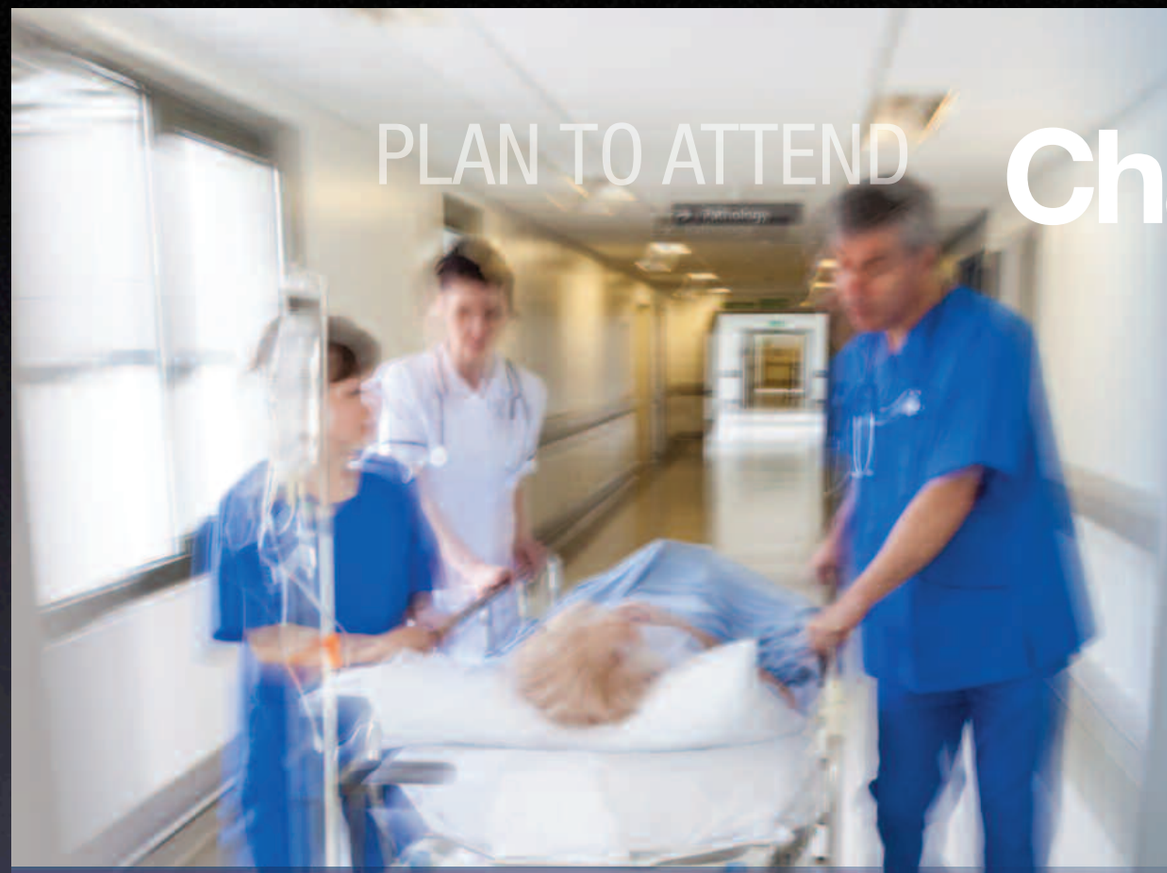
HH3



Take Home

- Despite the prevalence of endovascular therapies the Neurosurgeon remains an important and required component of the CSC
- Involvement of your neurosurgeons in the CSC certification process is crucial
- Management of the ruptured aneurysm in a Comprehensive Stroke Center needs to stay a multidisciplinary exercise


Thank You



PLAN TO ATTEND

Challenges of Stroke Systems of Care

3rd Annual Stroke Symposium

Saturday, November 2, 2013

T. Boone Pickens Biomedical Building Auditorium
UT Southwestern Medical Center
Dallas, Texas

COURSE DIRECTOR
Mark Alberts, M.D.
Professor, Department of Neurology & Neurotherapeutics
UT Southwestern Medical Center
Dallas, TX

Credit

This Live activity has been approved for ***AMA PRA Category 1 Credit™.***
This activity will be applying for CNE and Paramedic credits.

Brief Course Summary

This symposium will review for the target audience the latest in acute stroke treatment and management, including the addition of the State of Texas to the "National Stroke Belt", what this does to challenge our existing systems of care for stroke. The talks will address pre-hospital and early acute ED managment, including expert review of reversal of new novel anticoagulants in the setting of emergent care. Specialized roles will be discussed including an opportunity for a quick review of the CSRN Exam. An overview of the Stroke Ready Hospital (Level 3) per new recommendations.

utsouthwestern.edu/strokesymposium

Additional Information

For additional information, please call The Office of Continuing Medical Education, 214-648-3138, 1-800-688-8678, or email cmeregistrations@utsouthwestern.edu

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