Subarachnoid Hemorrhage
"The current perspective"

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INR

وحدة قسطرة المخ
الأشعة التدخلية المخية
المستشفى التخصصي - جامعة عين شمس

Prevalence and risk of rupture of intracranial aneurysms

A Systematic Review

23 studies, in total 56,304 patients

Rinkel et al : Stroke. 1998; 29:251-256

Prevalence and risk of rupture of intracranial aneurysms

Rinkel et al : Stroke. 1998; 29:251-256

How often do aneurysms occur in the general population?

Autopsy and angiographic studies

Familial history and Polycystic kidney disease
Ages : children…extremely rare and increases with age
Size : small aneurysms are more prevalent
Gender : females

Prevalence and risk of rupture of intracranial aneurysms

Rinkel et al : Stroke. 1998; 29:251-256

-Prevalence of approximately 2 %

-Risk of rupture of approximately 0.7 % per year

Prevalence of aneurysms using MRI screening

Honkoshi et al: neurologia medico-chirurgica 2002:3;105-113

- 4518 patients undergoing MRI for variety of reasons (non aneurysm screening)

- 2.8% were identified to have aneurysms

Risk of rupture of unruptured intracranial aneurysms in relation to patient and aneurysm characteristics

An Updated Meta-analysis

4,705 patients and 6556 unruptured aneurysms
(Follow-up of 26,122 patient years)

Risk vs Patient profile….gender, descent
Risk vs aneurysm profile….size, location,symptoms

Wermer et al : Stroke. 2007; 38;1404-1410

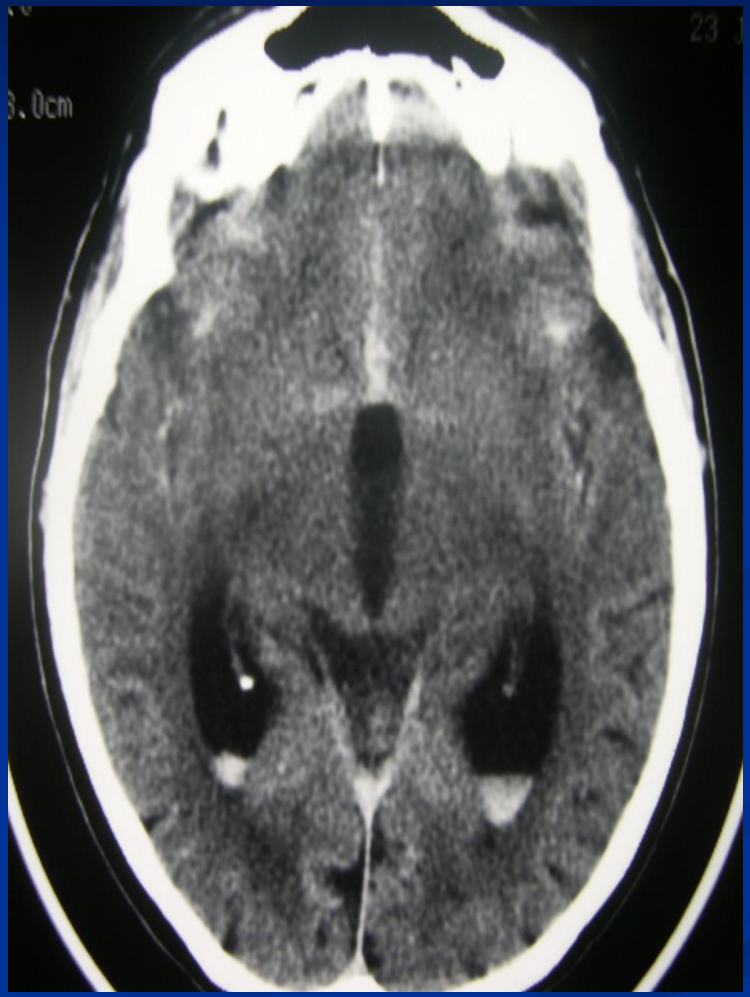
Risk of (unruptured) aneurysm rupture

Statistically significant risk factors for rupture:

- Age
- Female gender
- Japanese and Finnish descent
- Size
- Posterior circulation aneurysm
- Symptomatic aneurysm

Wermer et al : Stroke. 2007; 38;1404-1410

Hemorrhage related morbidity and mortality



Berry aneurysm

Incidence, etiology and prognosis of primary subarachnoid hemorrhage

Parkarinen S. Acta Neurol Scan 29:1-128,1967

Mortality associated with untreated ruptured aneurysm (1st bleed):

prior reaching hospital	12%
day 1	32%
day 7	43%
day 30	56%
month 6	60%

Intracranial Aneurysms: a Review

Heros R. Minn. Med, 73:27-32,1990

Meta-analysis of natural history of
untreated ruptured aneurysms

Significant morbidity/mortality after 1st bleed: 50%
Further mortality after 2nd bleed: 35%

The International Study on the Timing of aneurysms surgey

Kassell et al. J.Neurosurg 73:18-36,1990

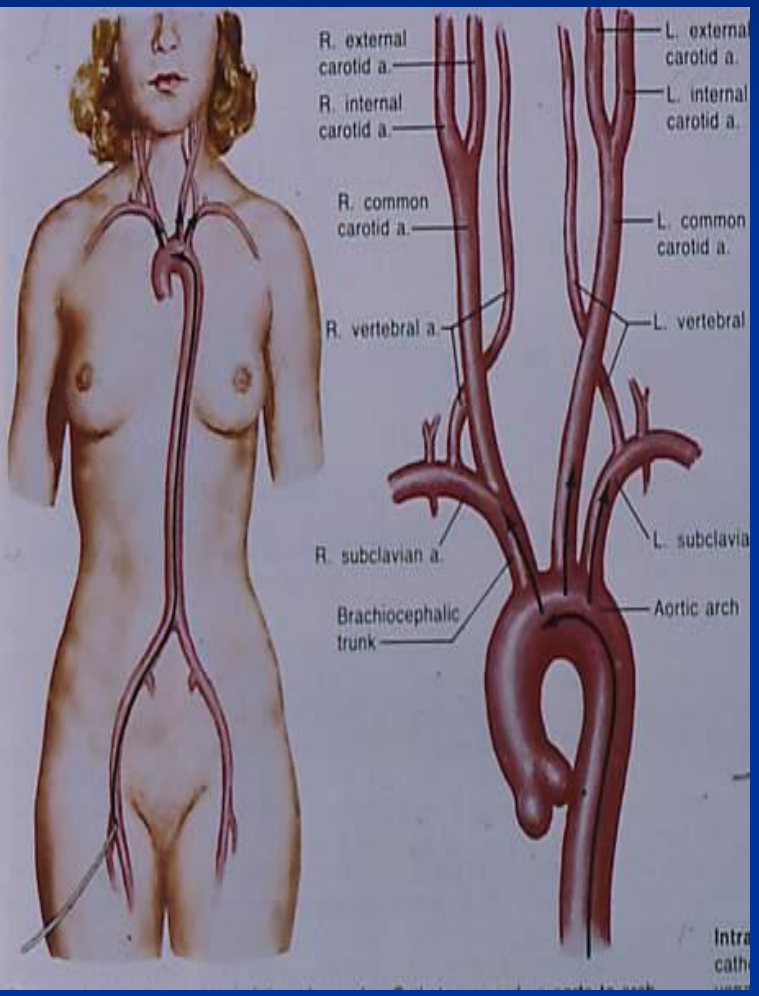
Rerupture rate of an aneurysm after 1st bleed:

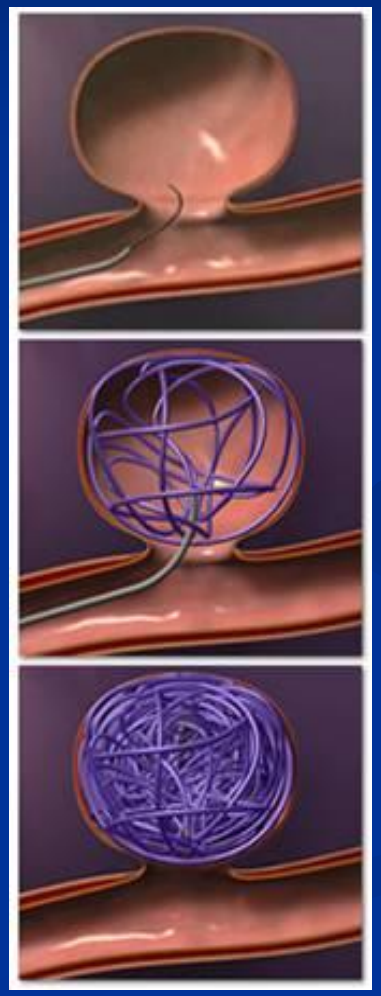
2 days: 6%
2 weeks: 24%
6 months: 40%

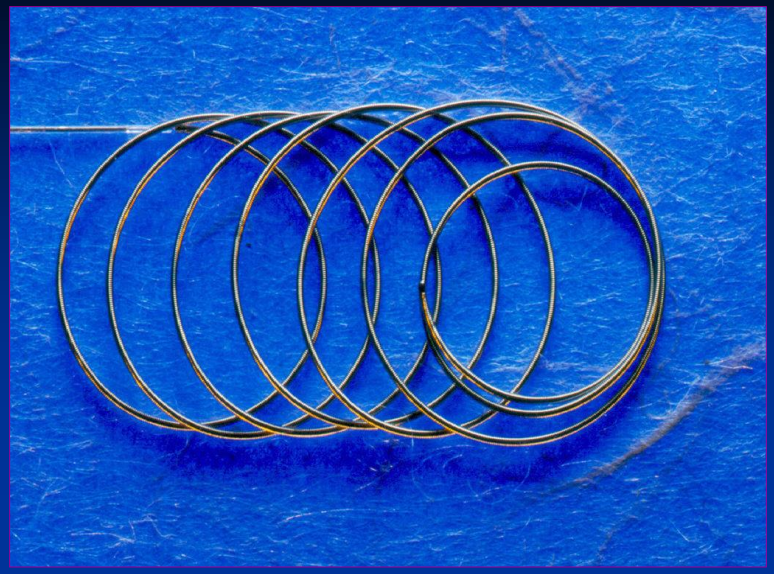
Rerupture rate is higher with Hunt&Hess III/IV

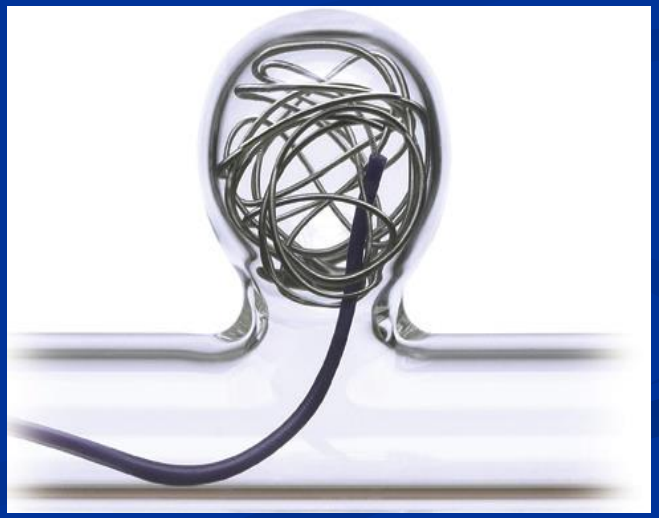
Endovascular treatment of cerebral aneurysms

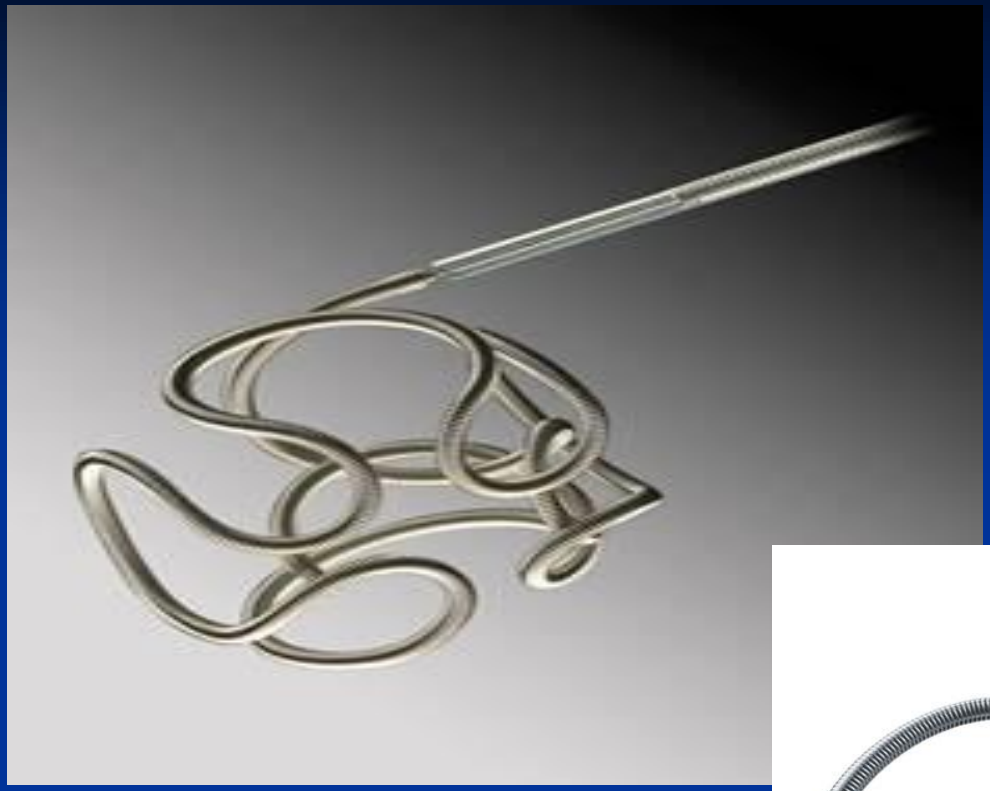
Endovascular treatment of cerebral aneurysms











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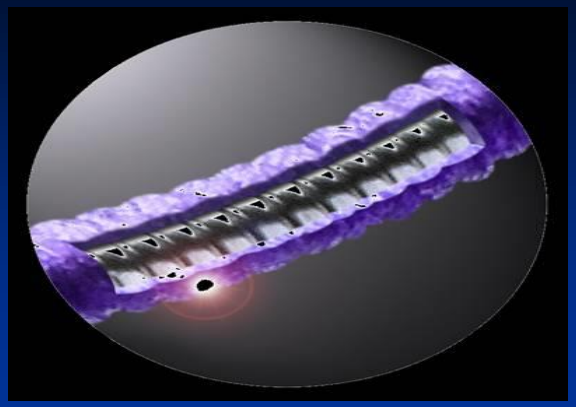
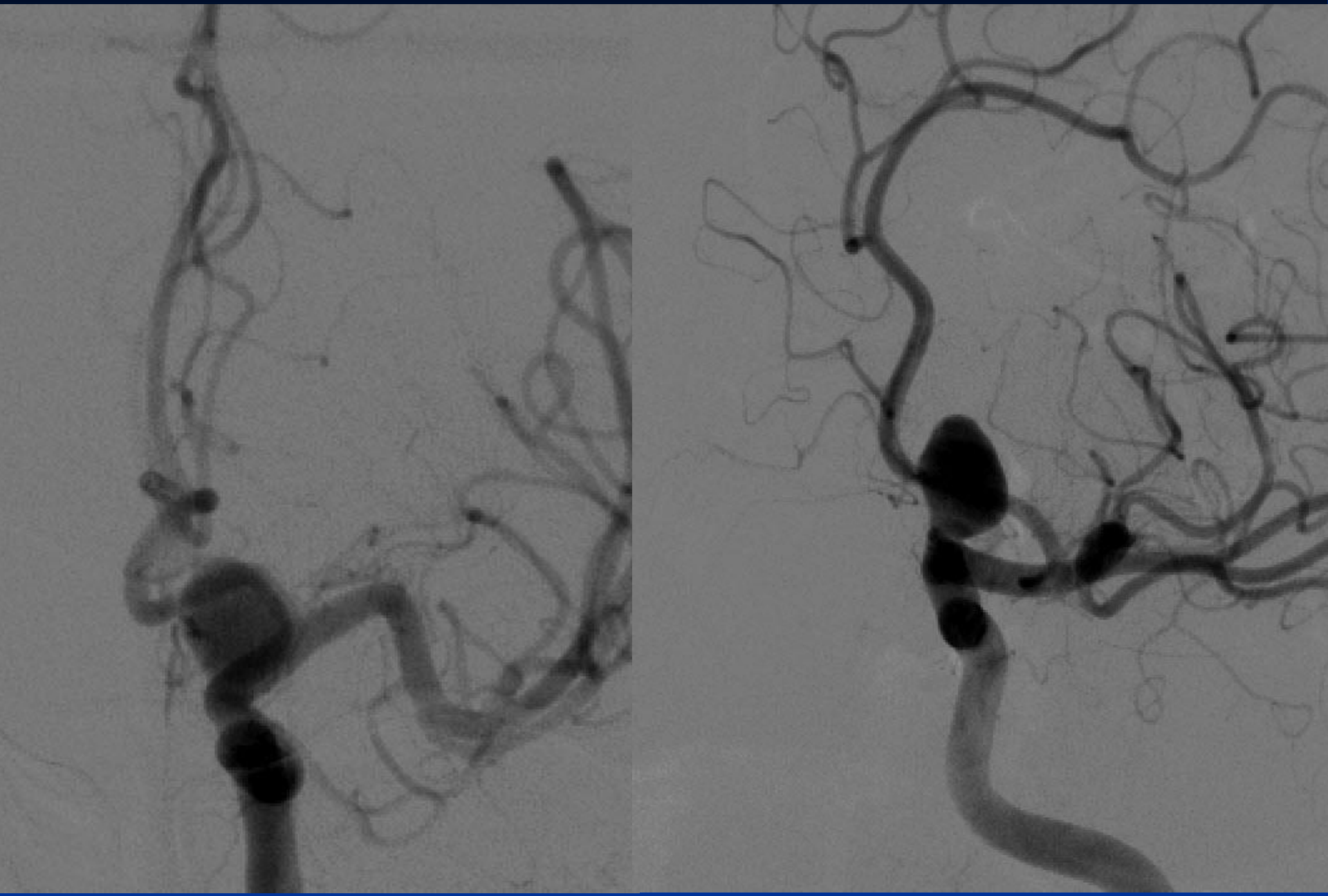
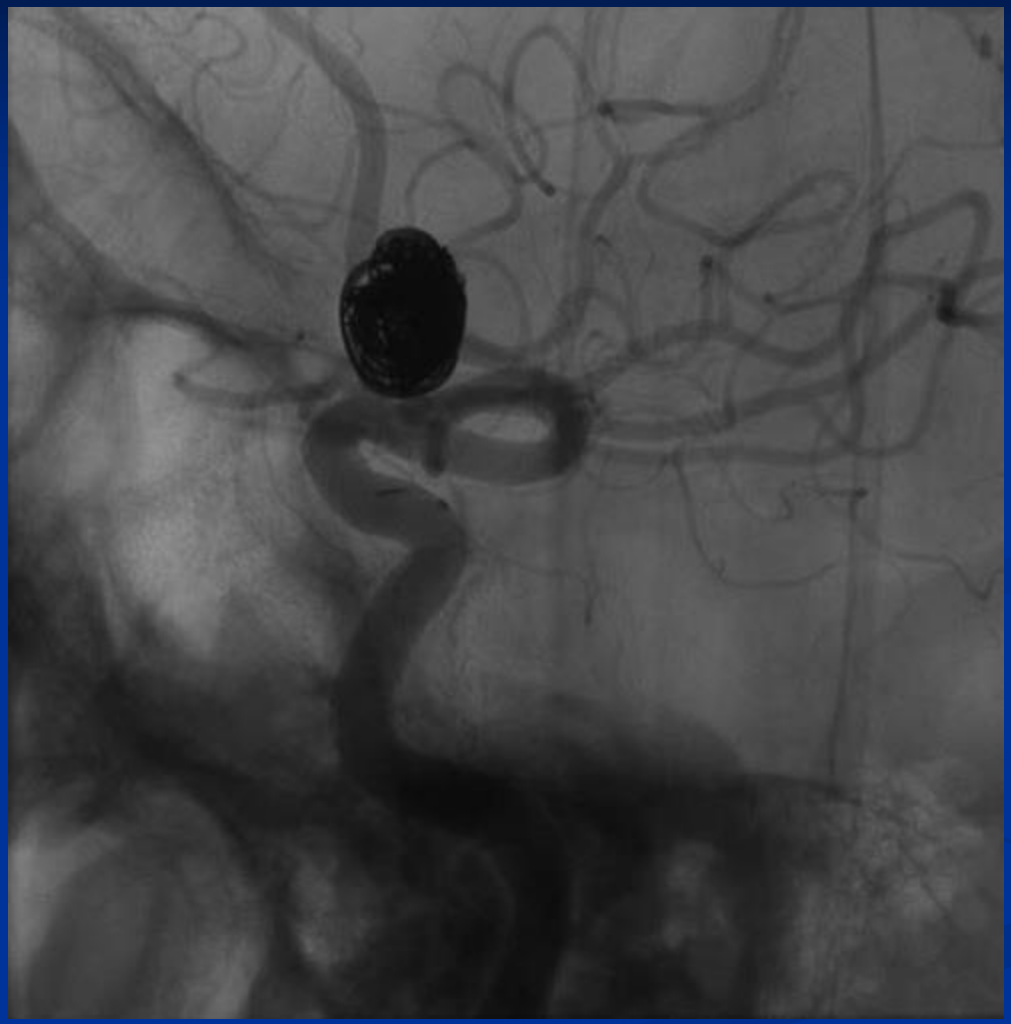
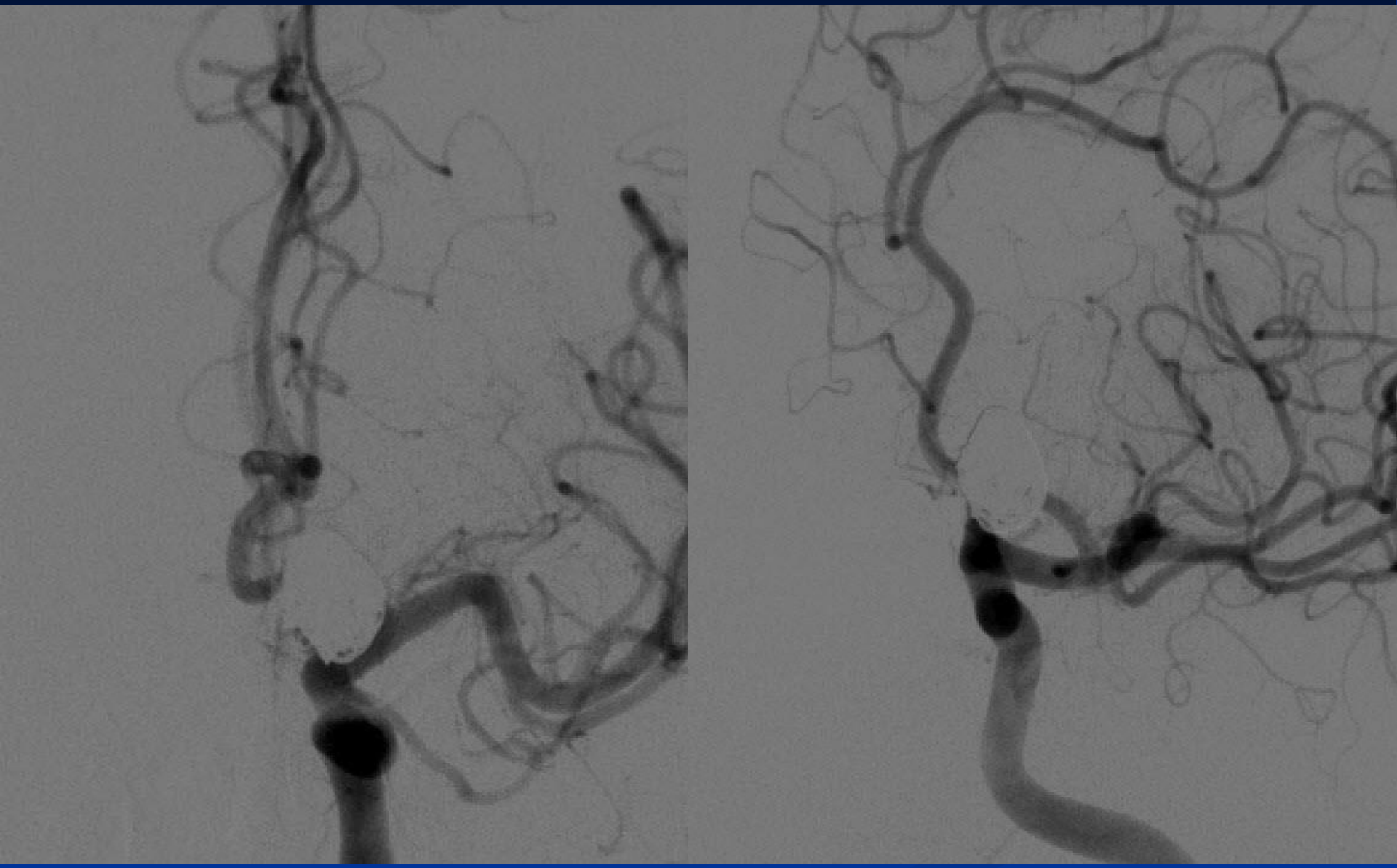


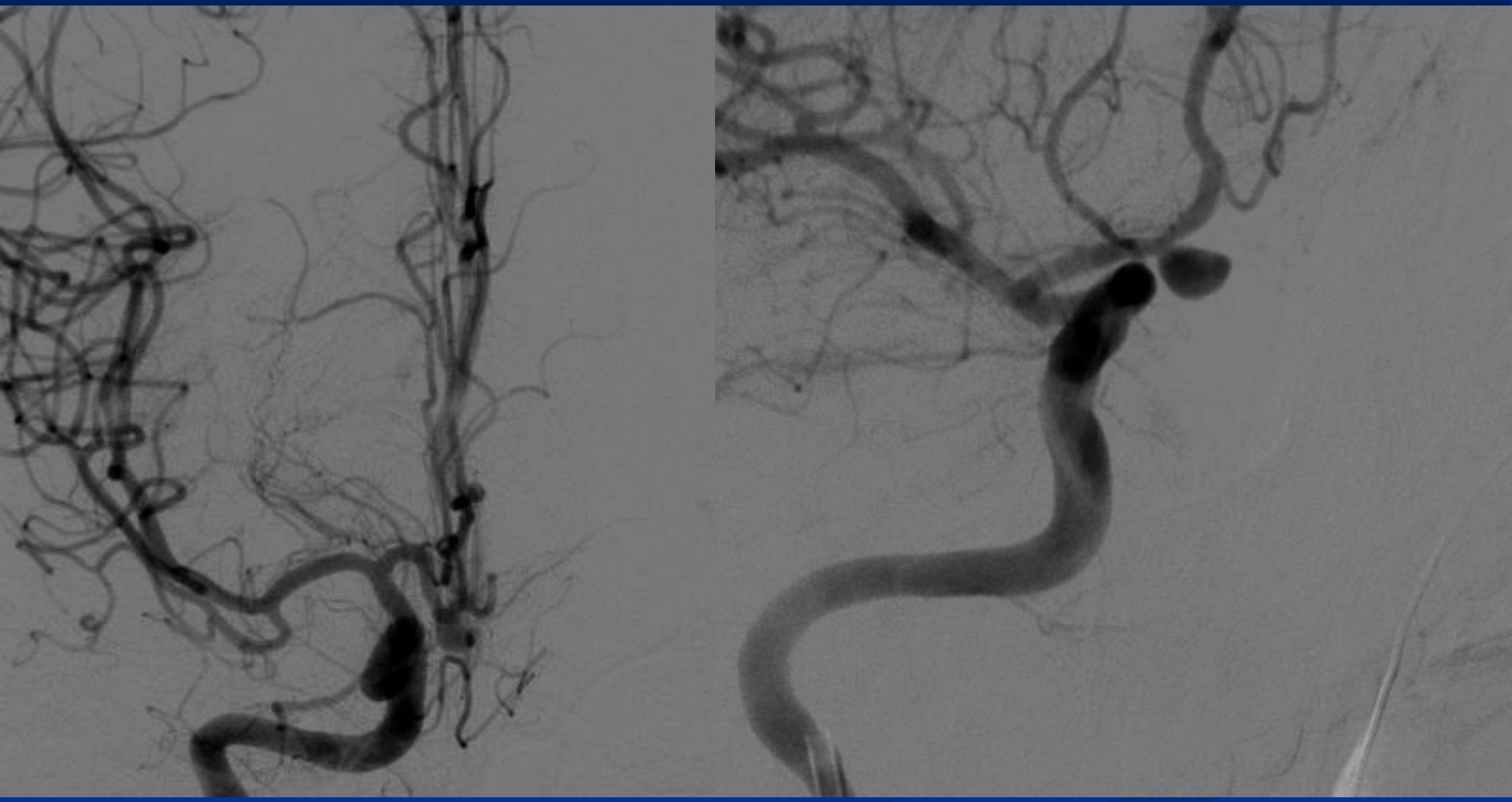
HYDROCOILS

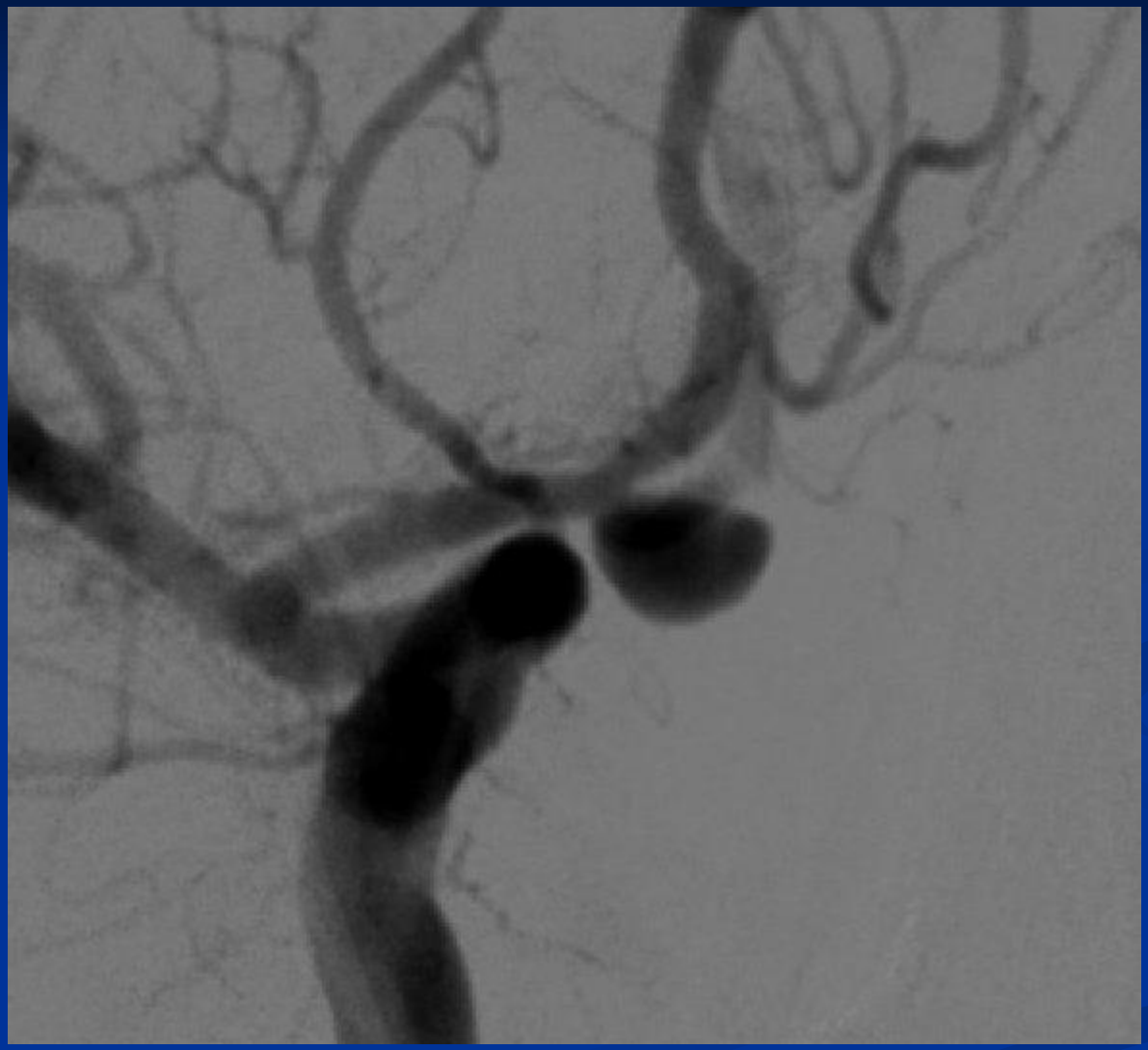
Filling rate after embolization of 40 aneurysms with hydrocoils.
R.Chapot, A.ElSerwi, A.Rogopoulos, E.Houdart
XXIX congress of the European Society of Neuroradiology and XIII advanced course.
Aachen, Germany. September 8 th -11 th ,2004

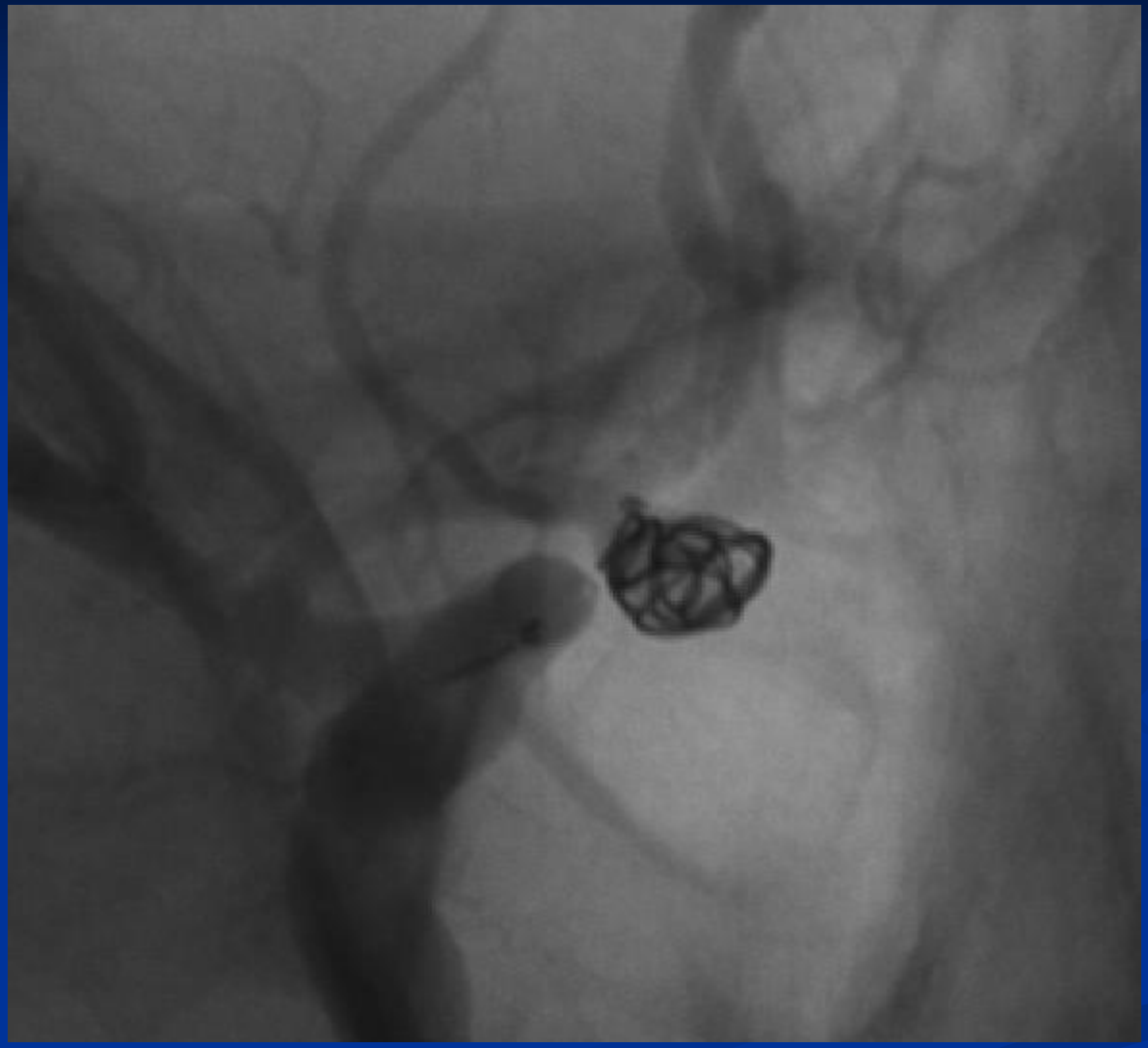


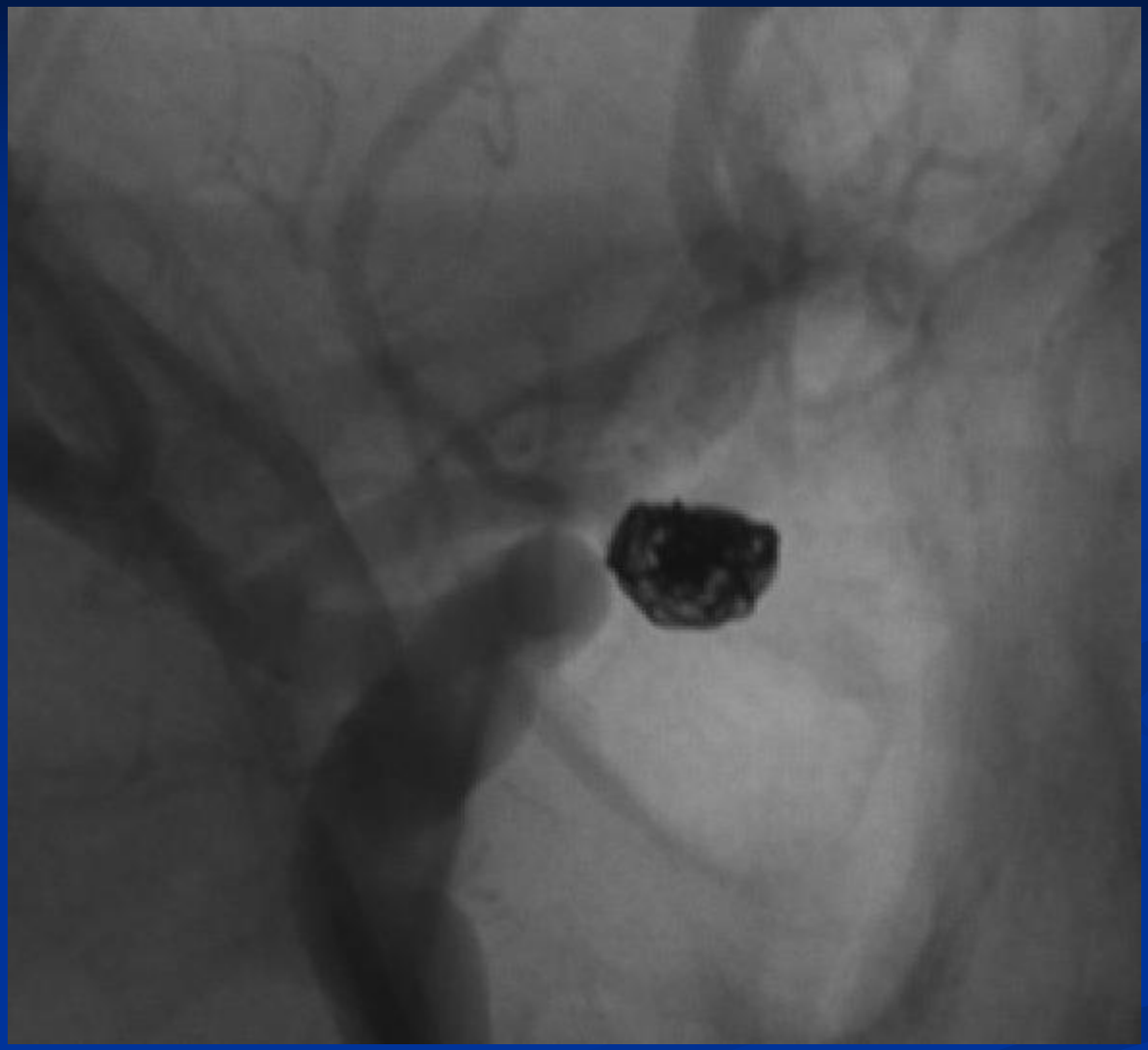


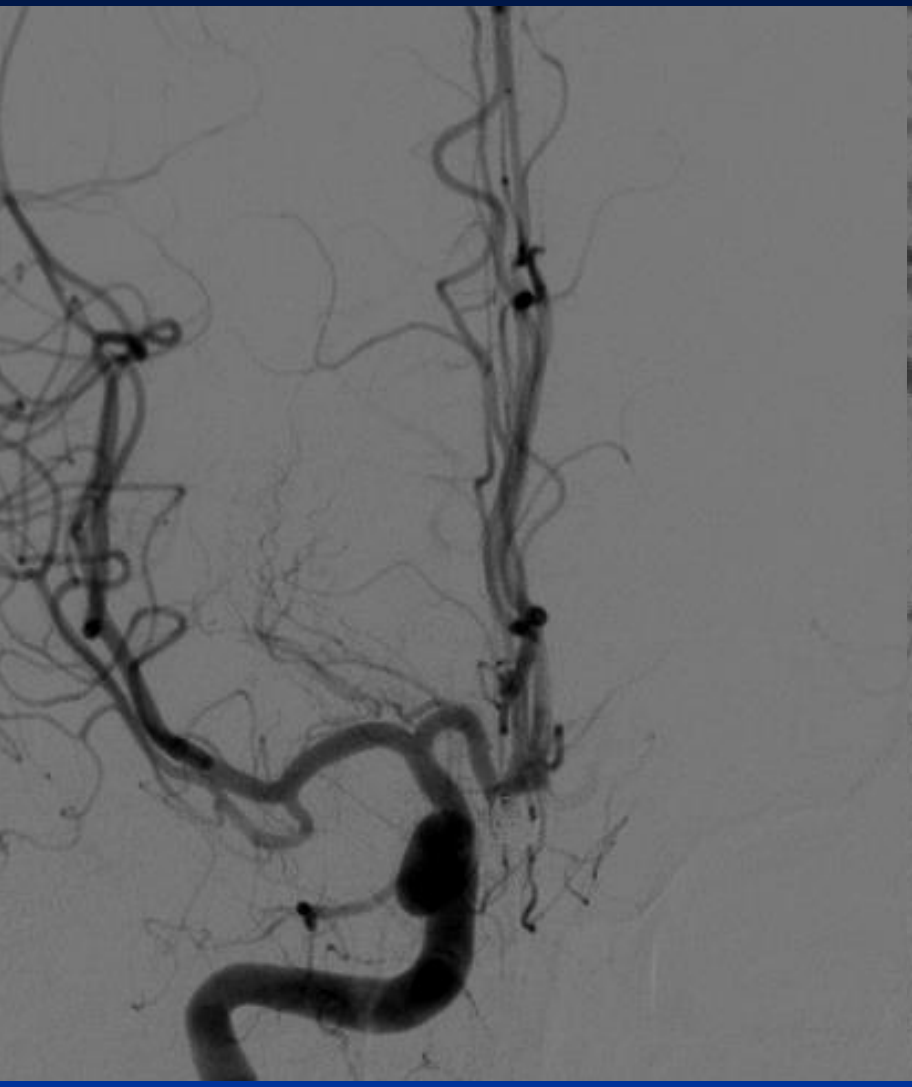




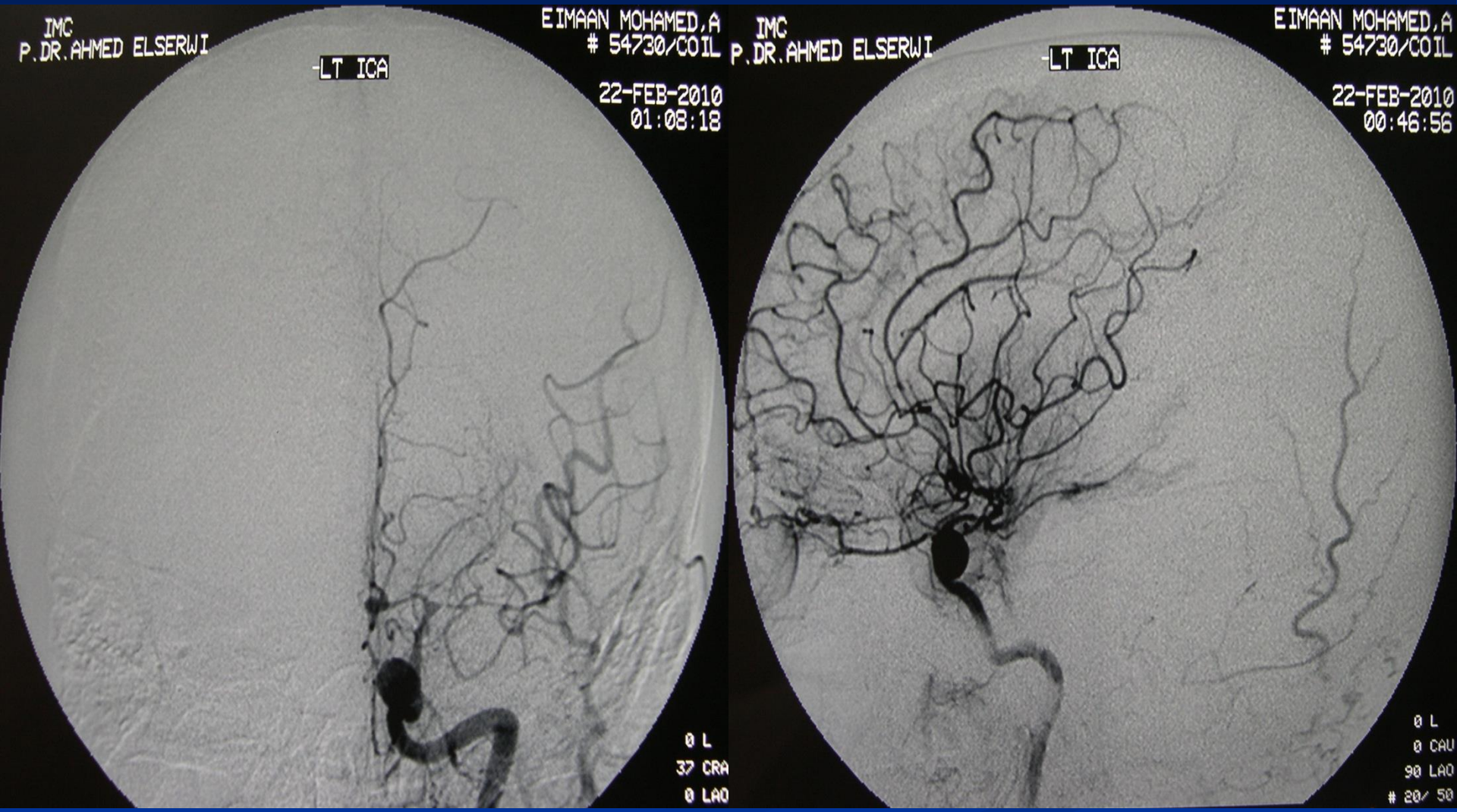








Patients in Vasospasm

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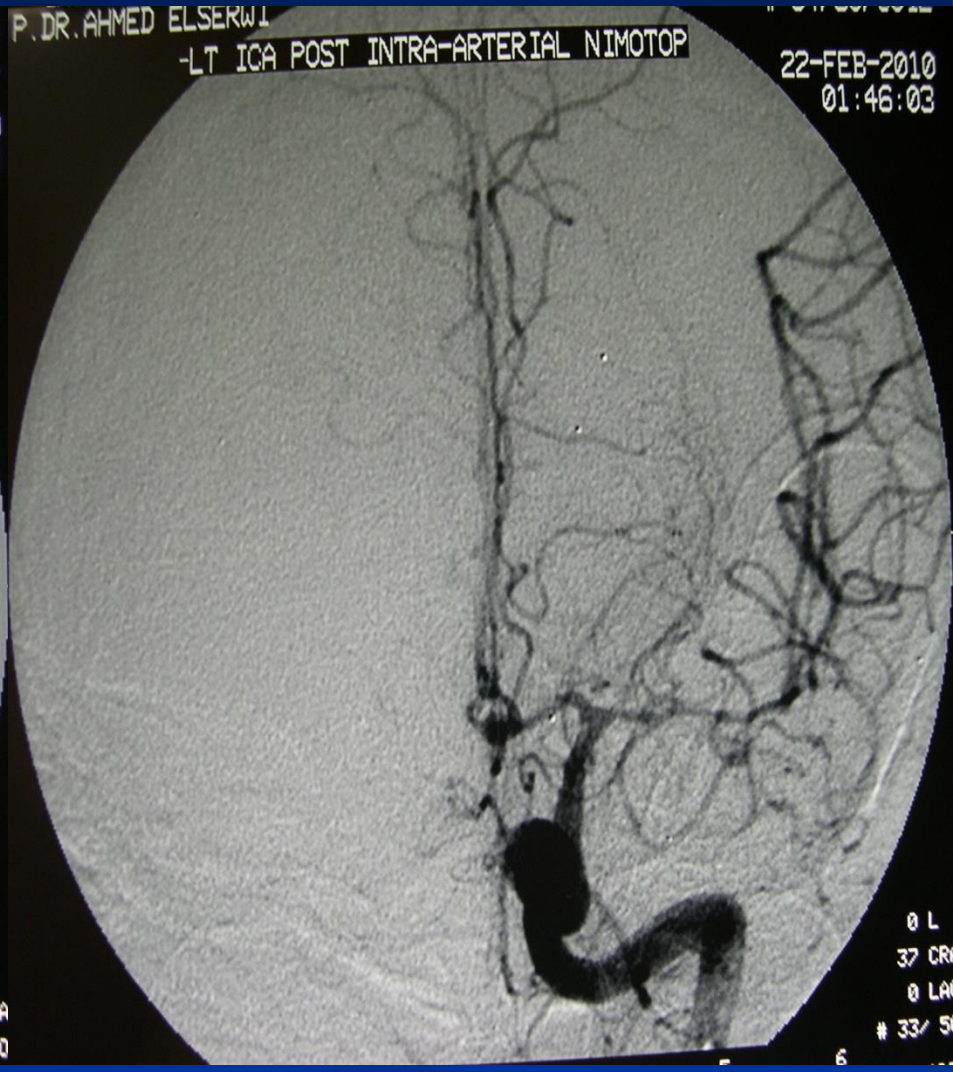
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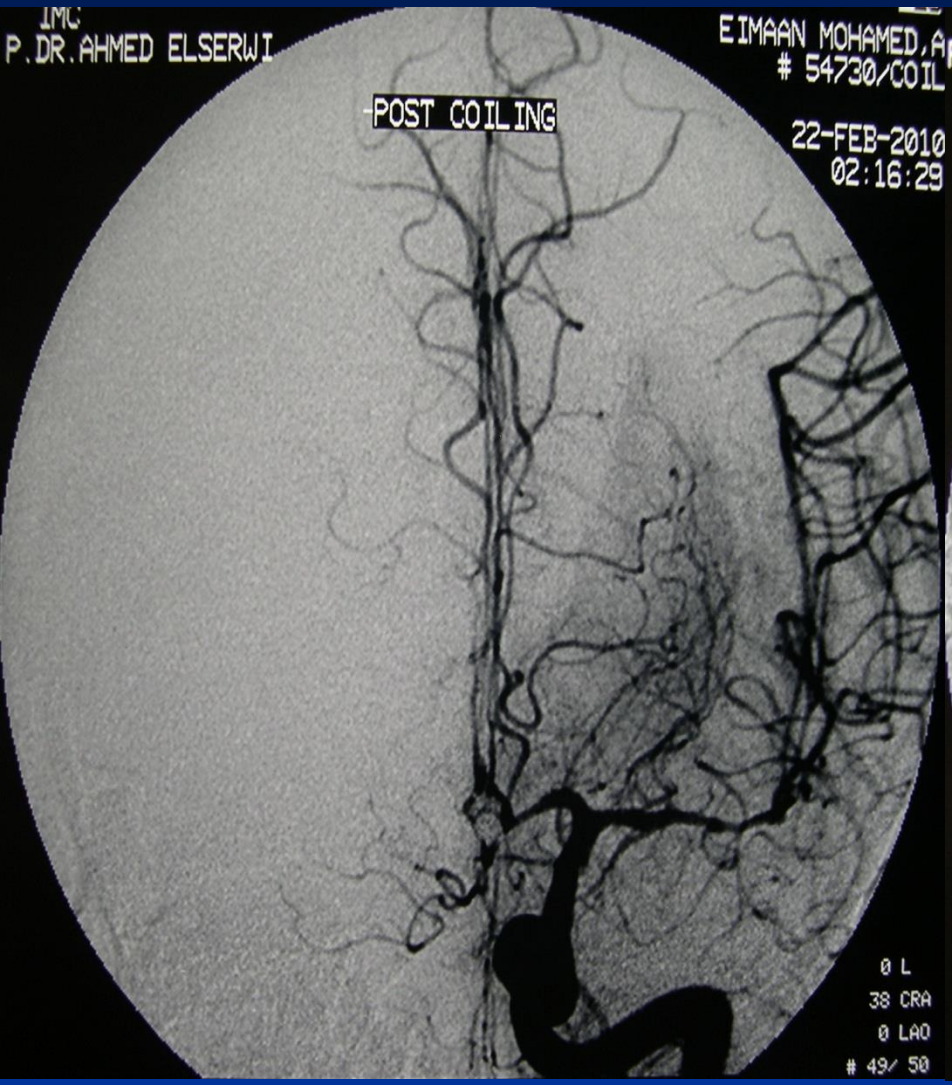
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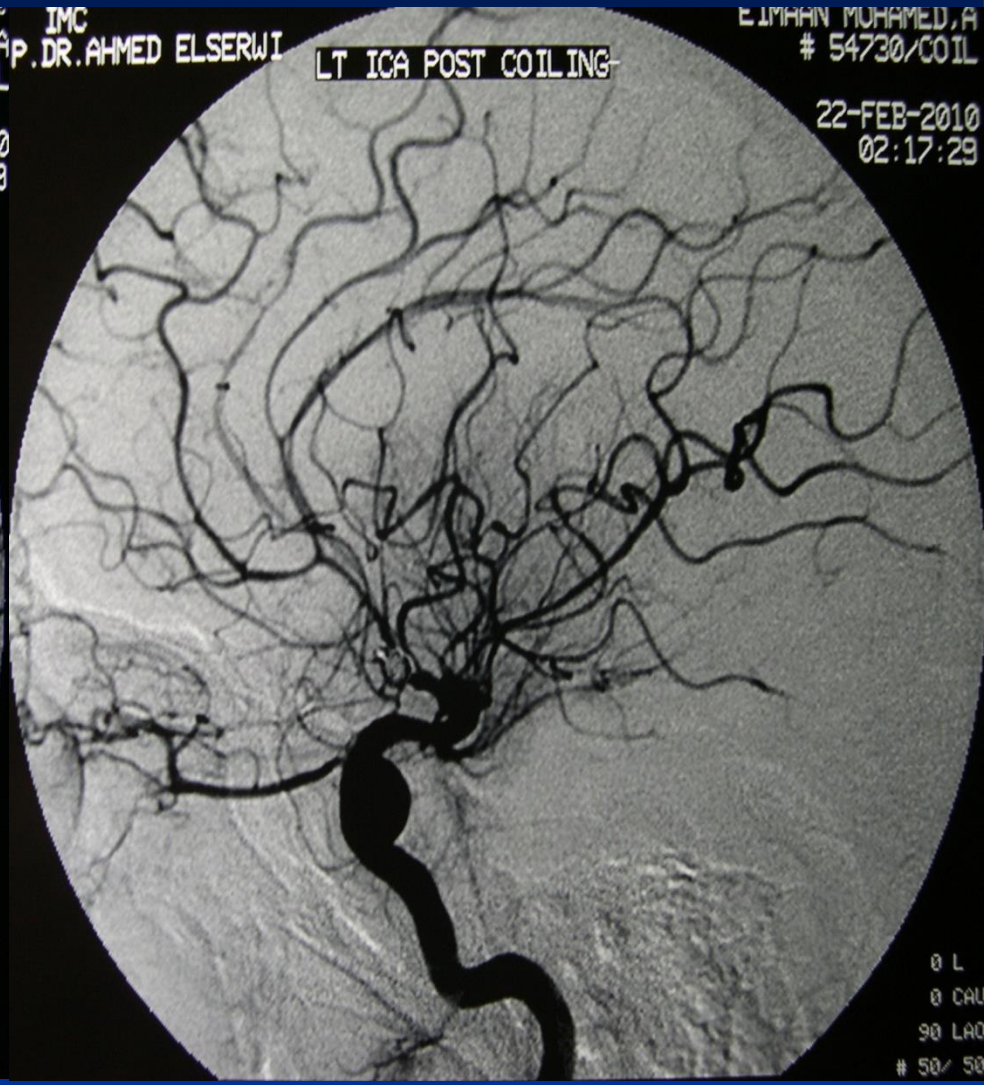
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DR.AHMED ELSERWI
DR.AHMED ELSERWI


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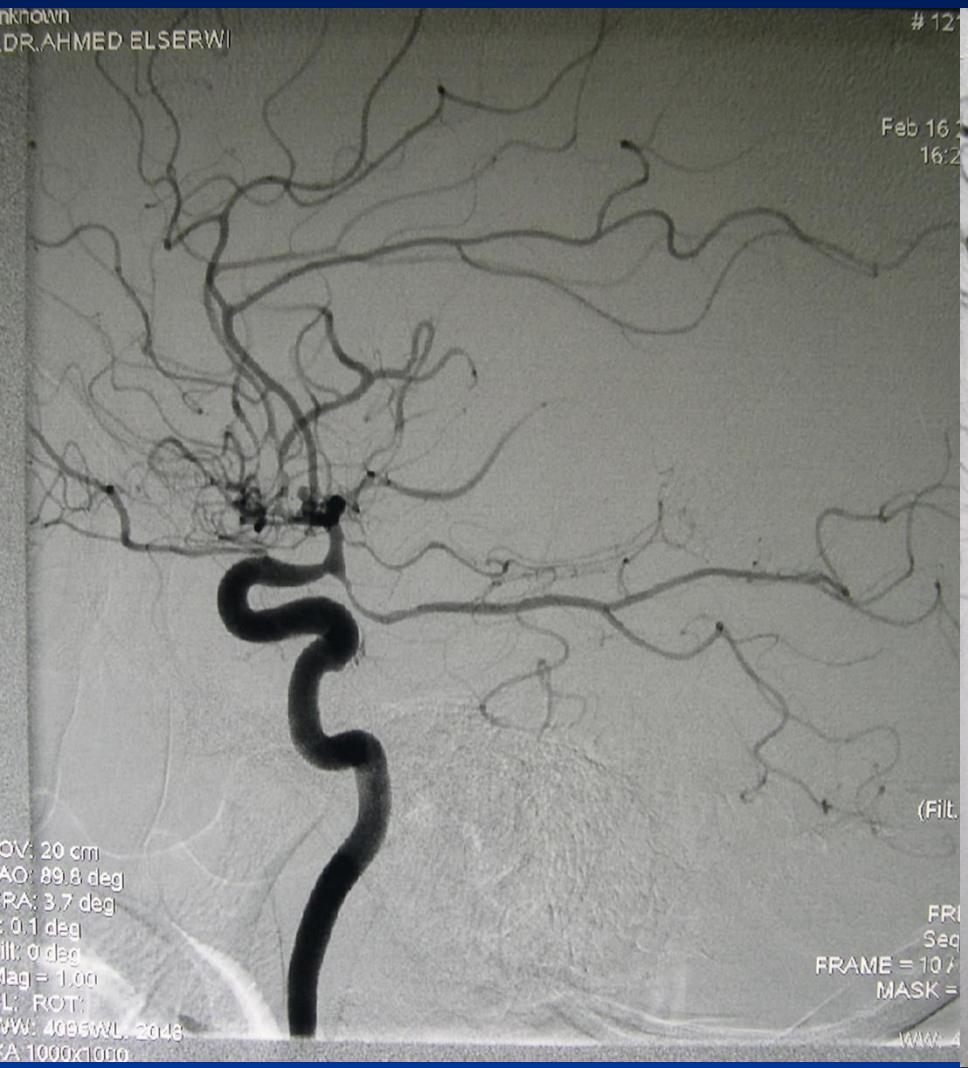
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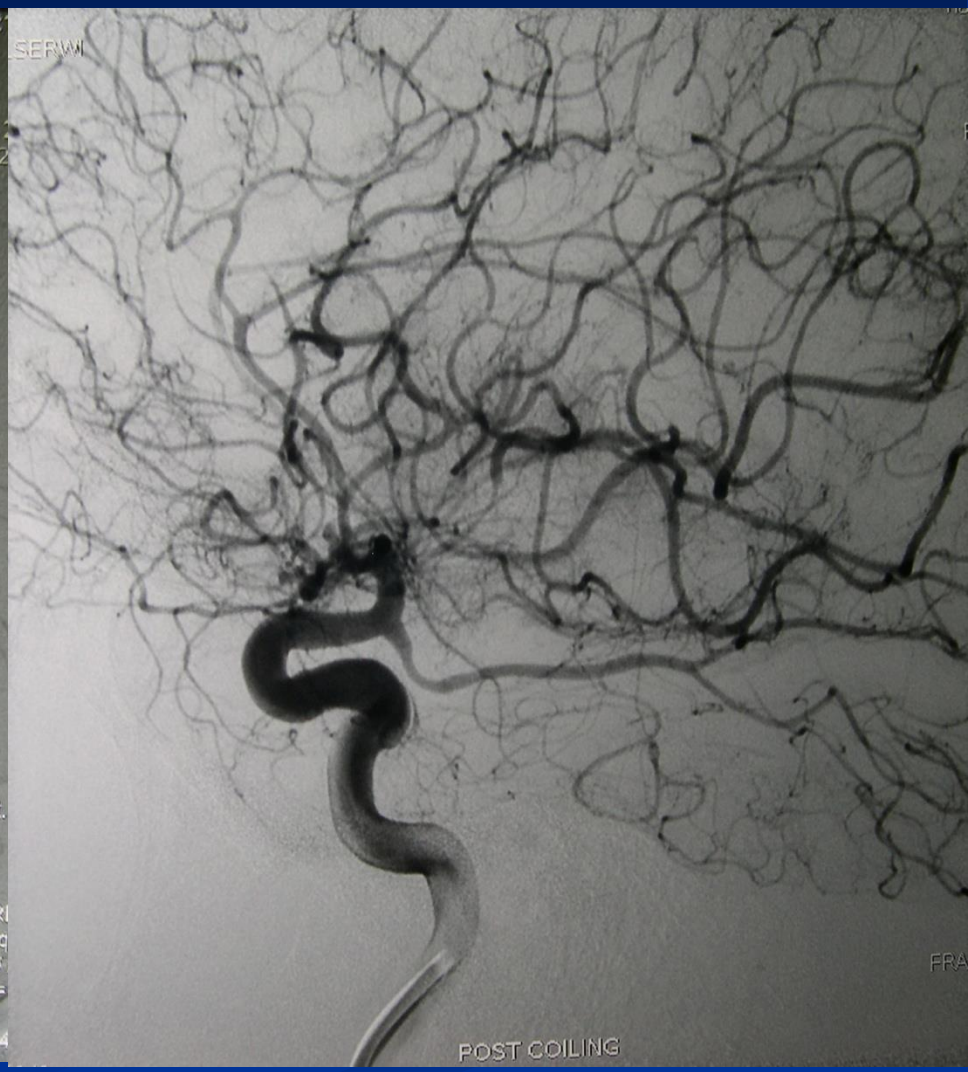
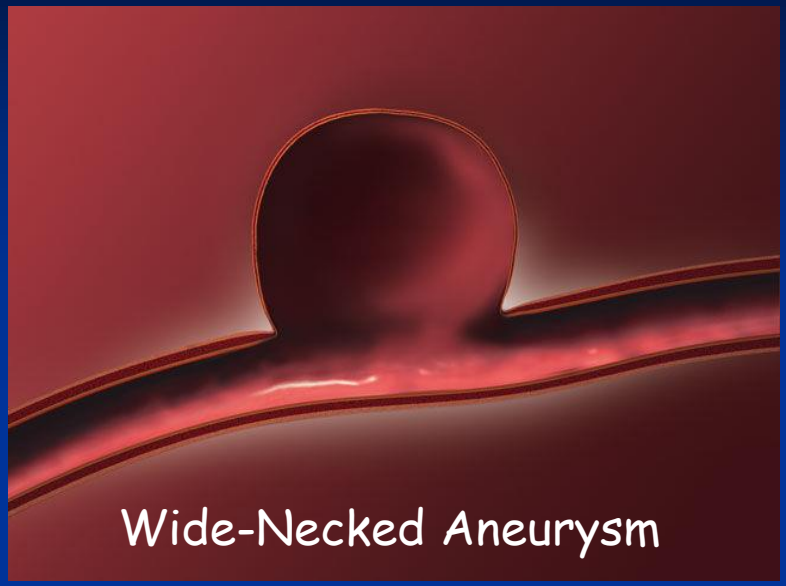
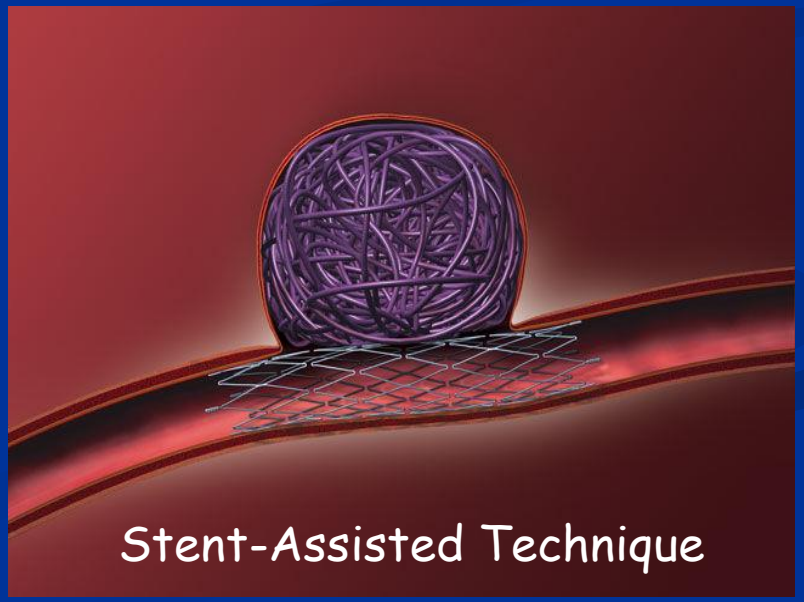

POST COILING

Wide-Necked Aneurysms



Wide-Necked Aneurysm:
- Neck > 4 mm
- Sac-Neck ratio < 1.2



Balloon-Remodeling Technique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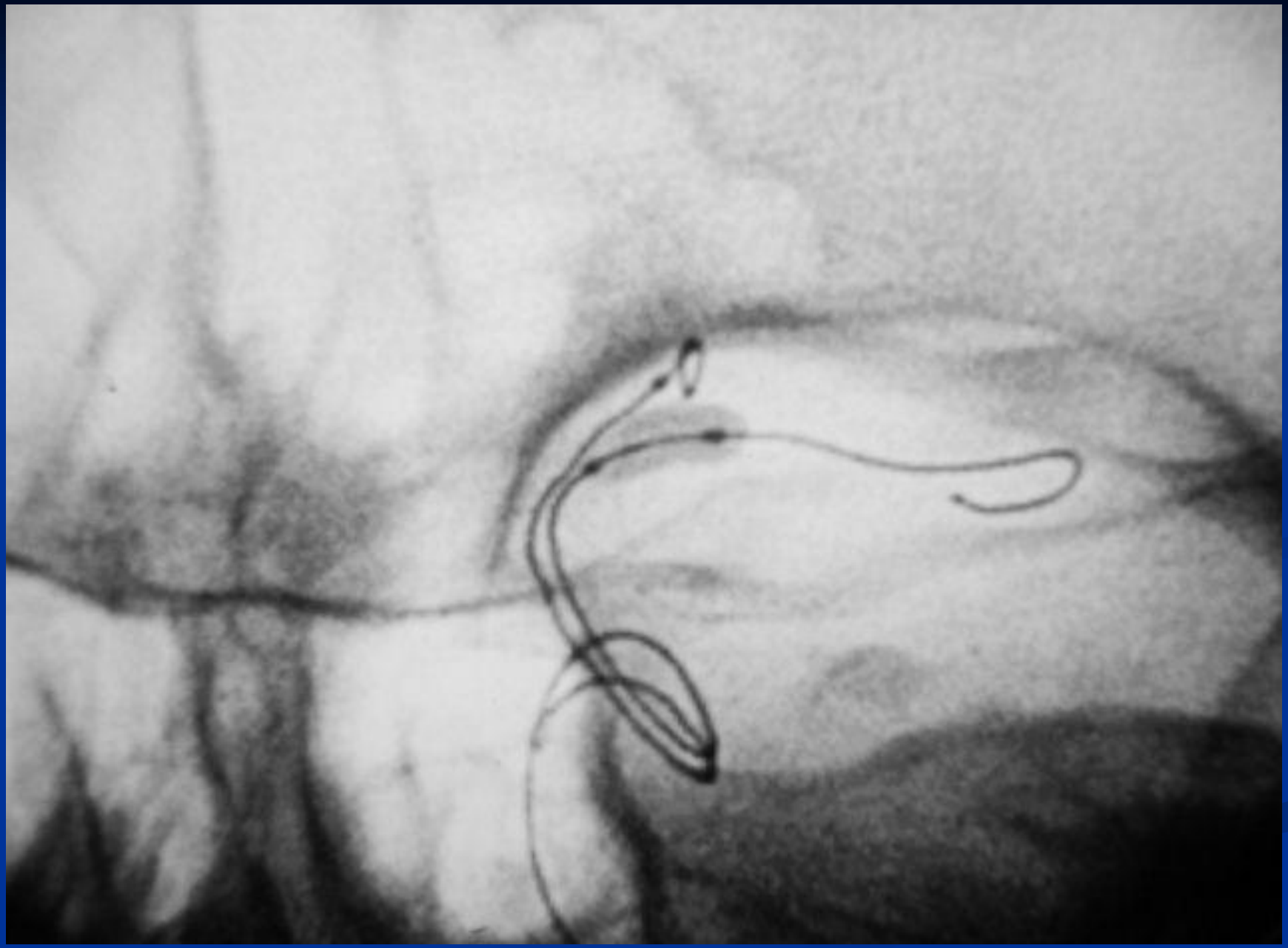

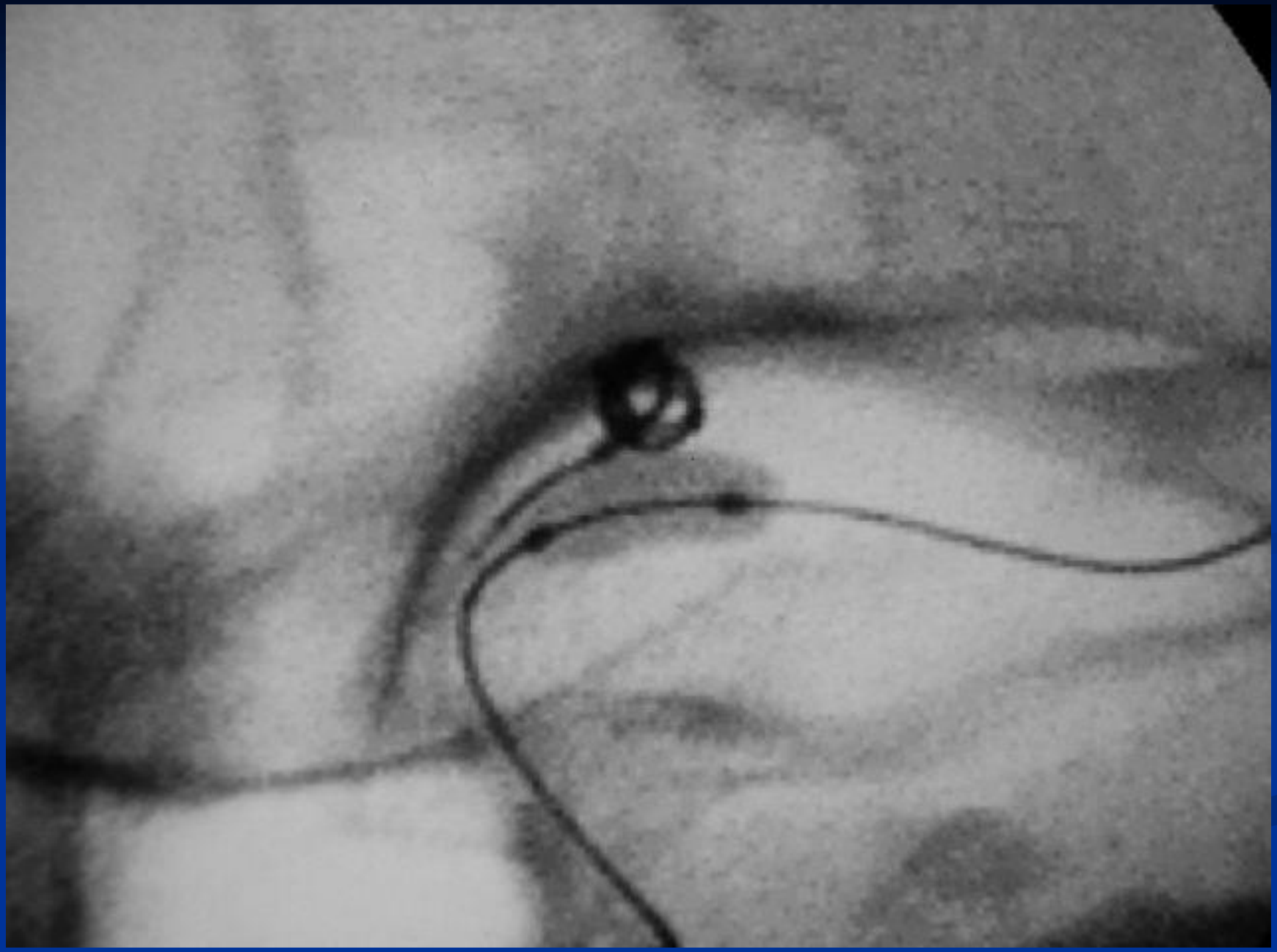

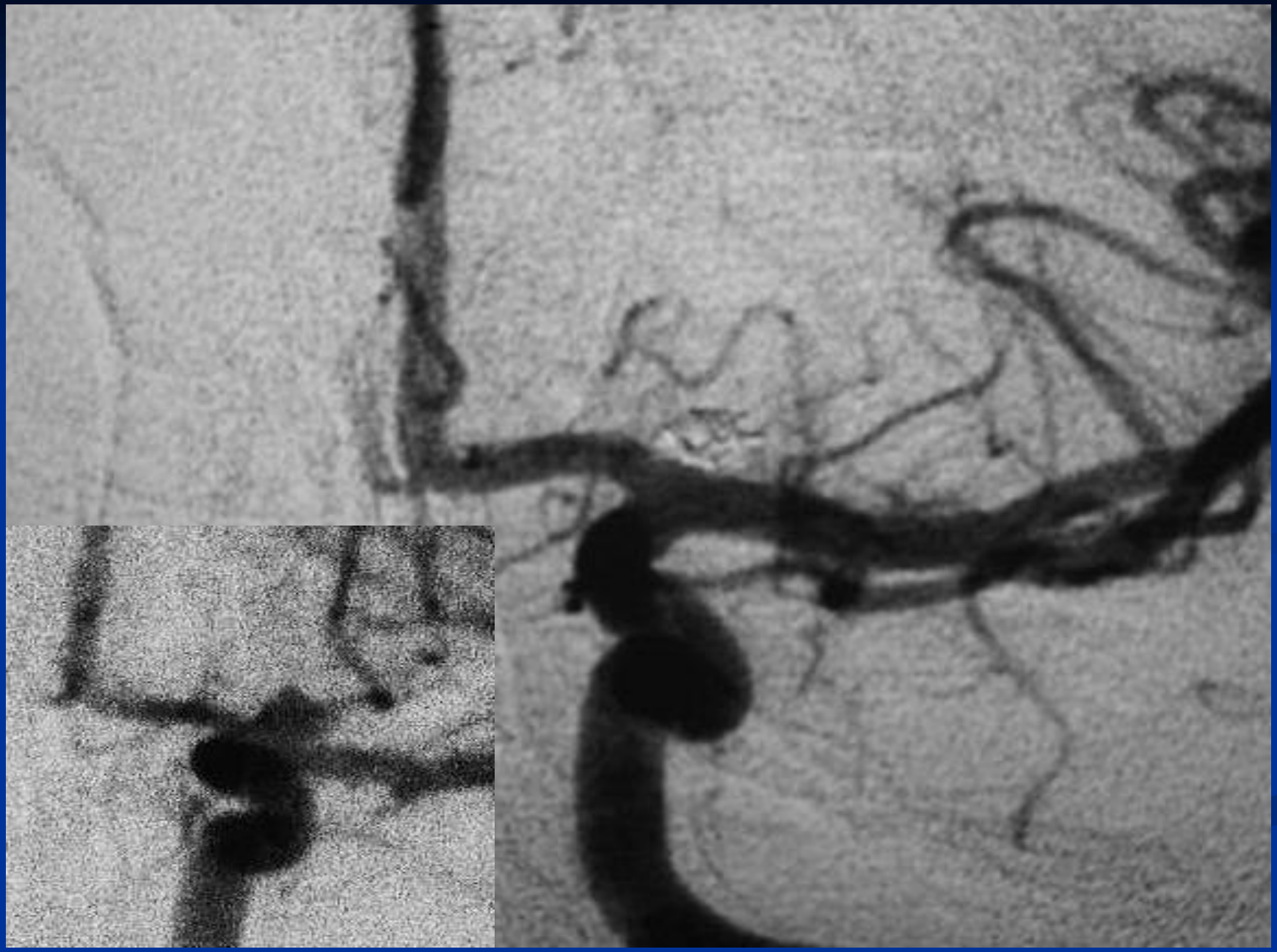

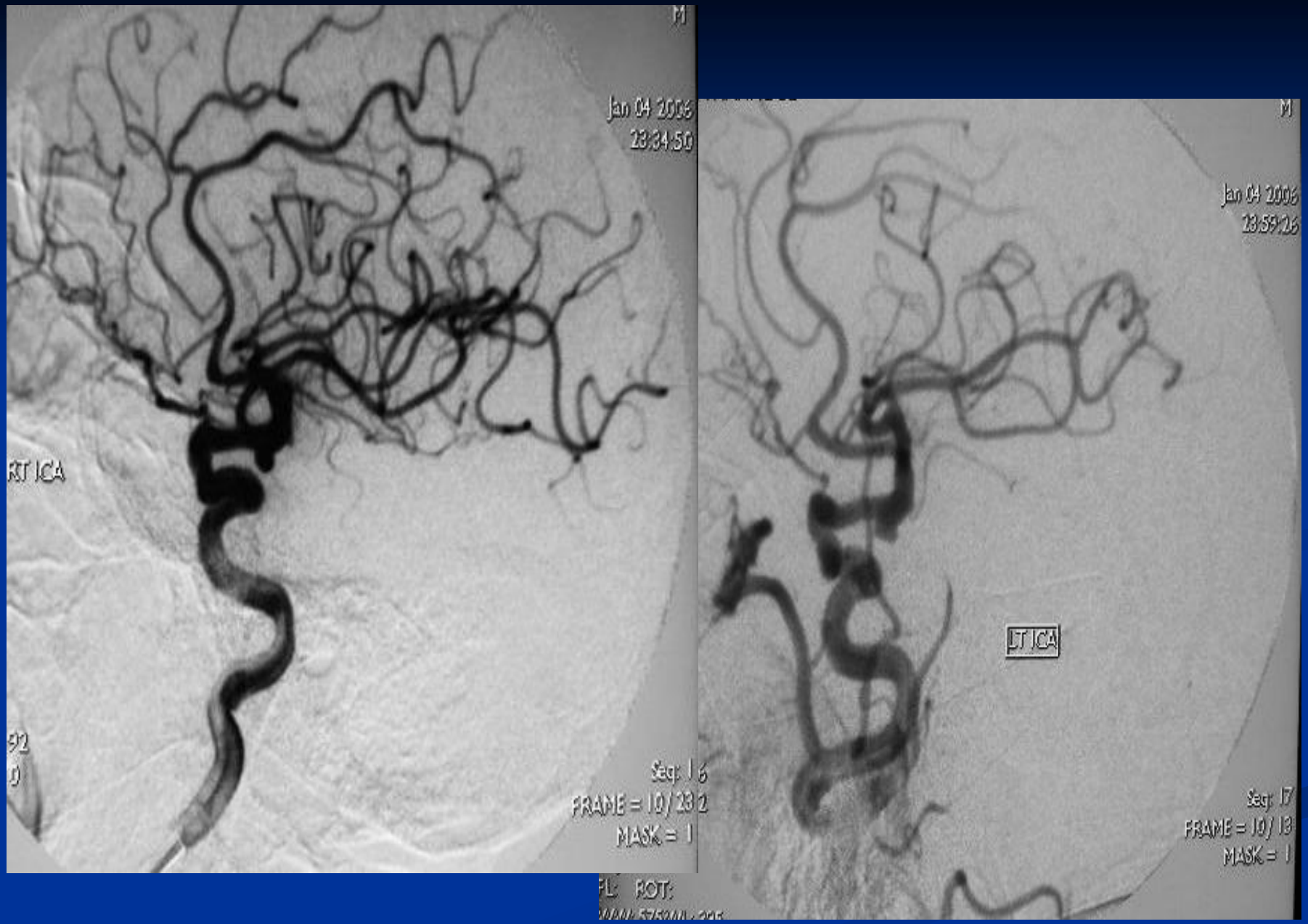
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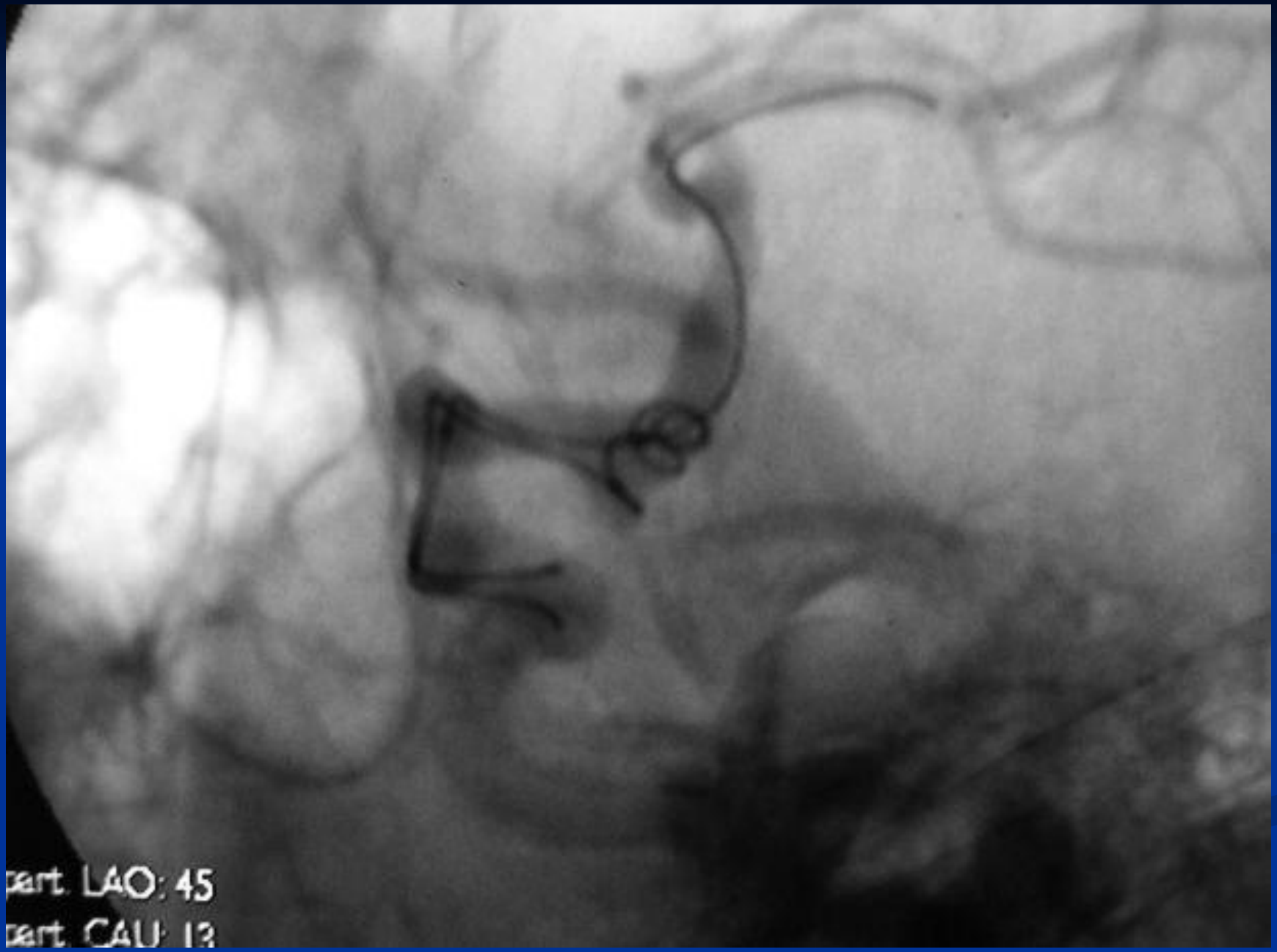
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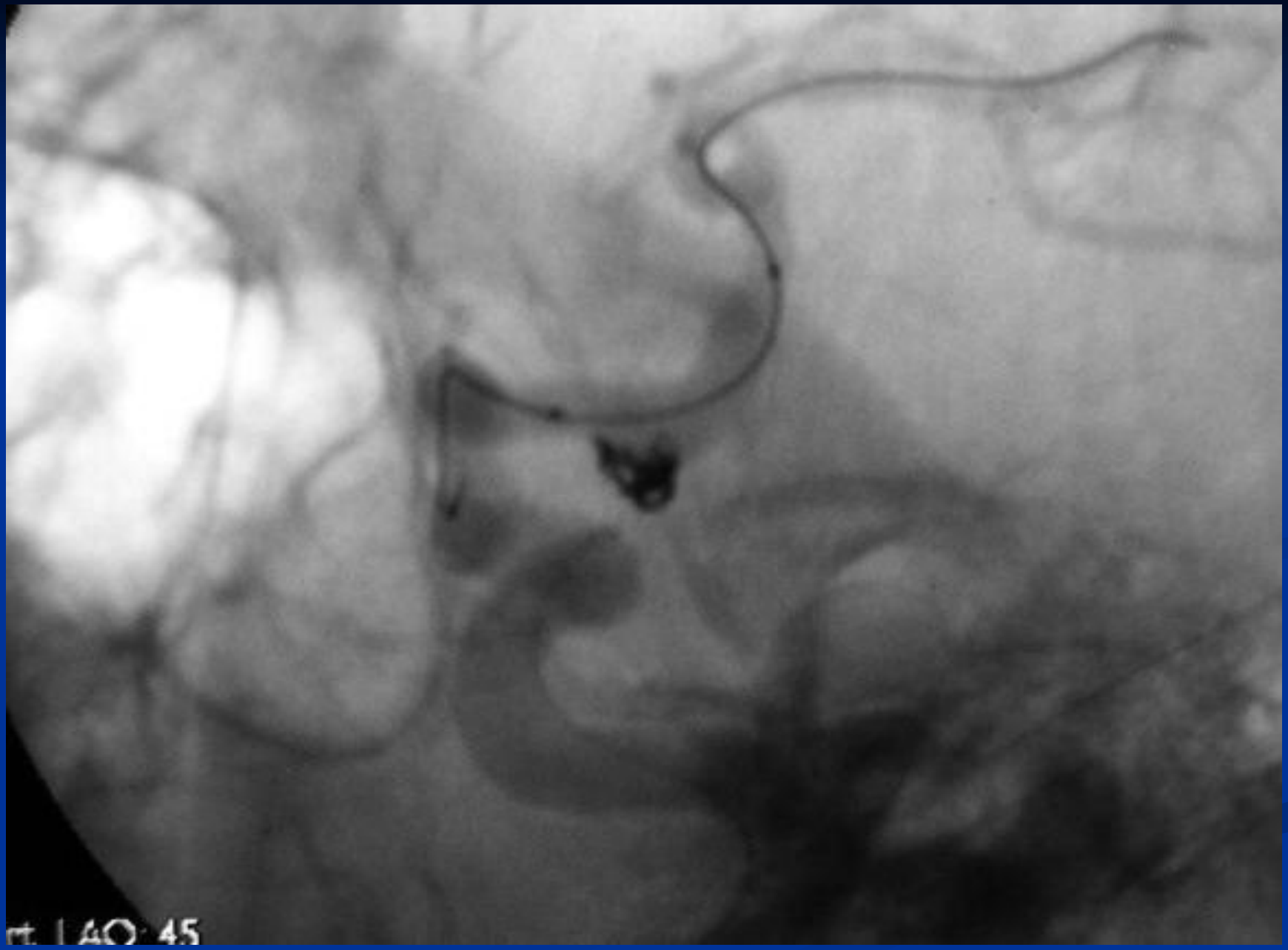
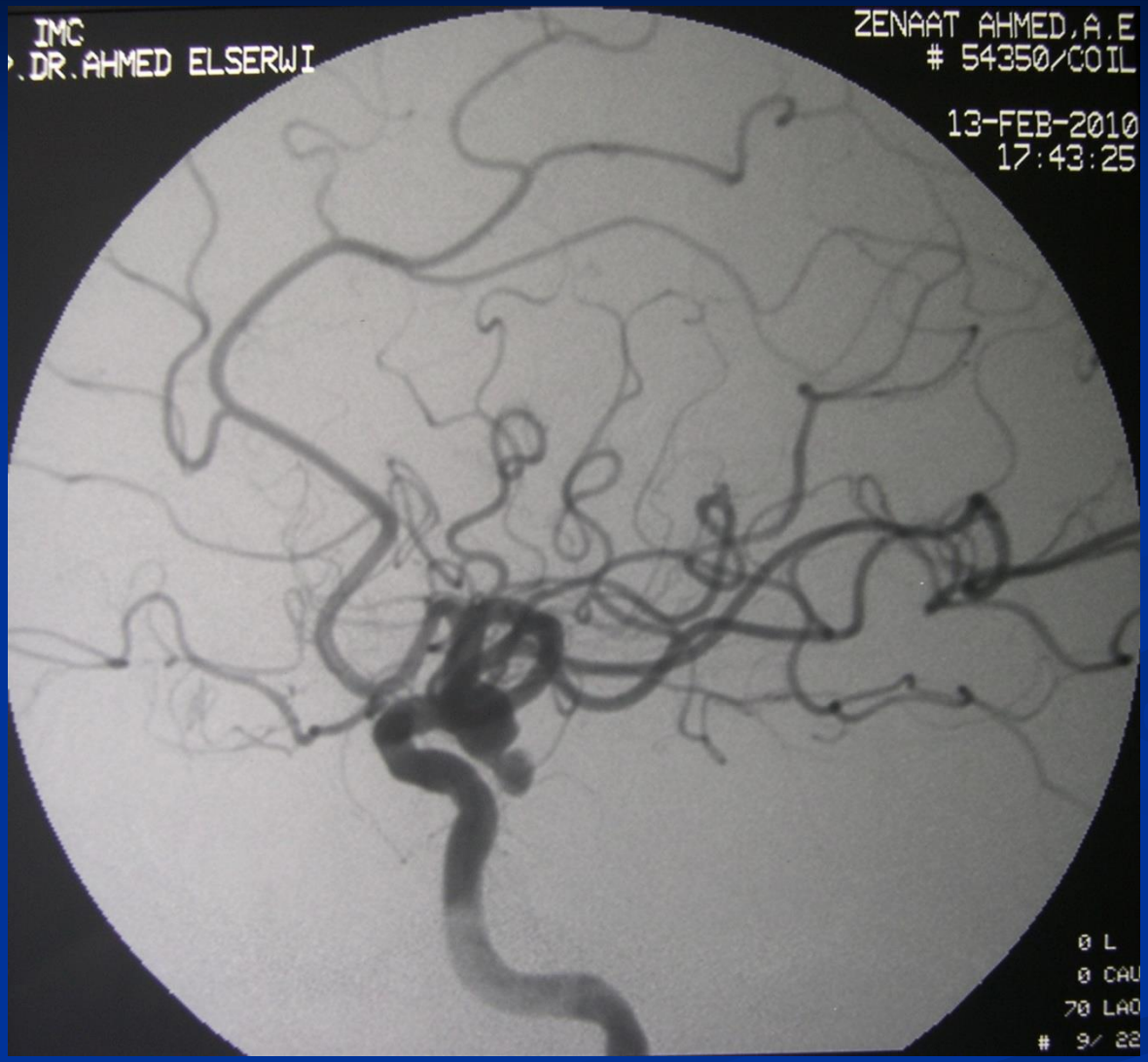



Lt pcom post coiling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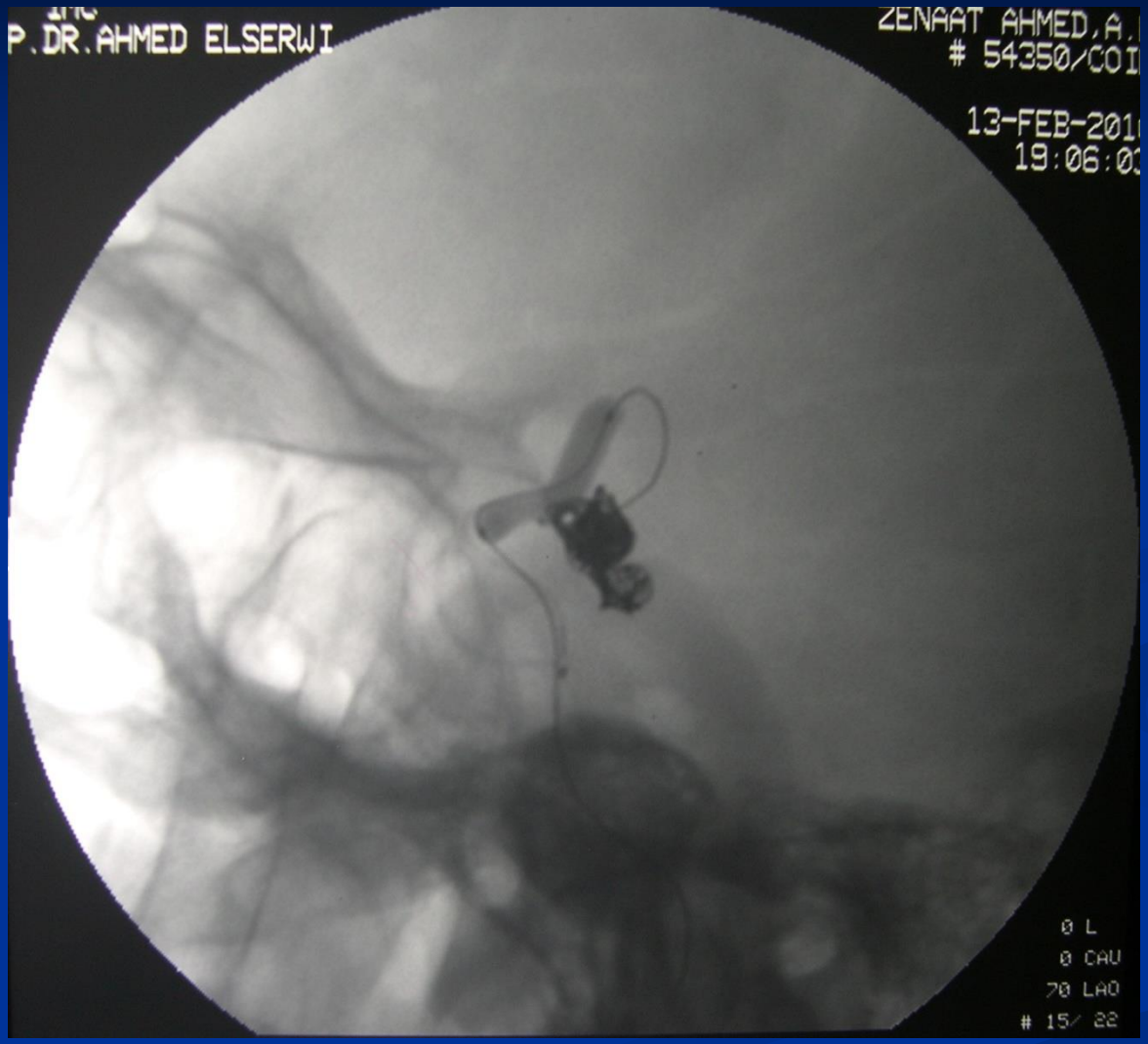
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Stent-Assisted Technique


Photo 9


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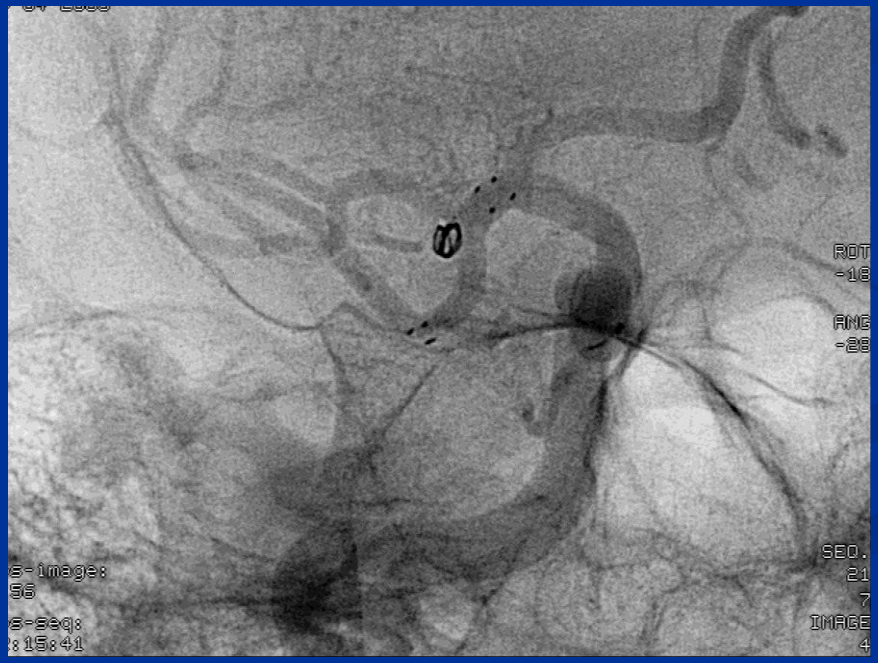
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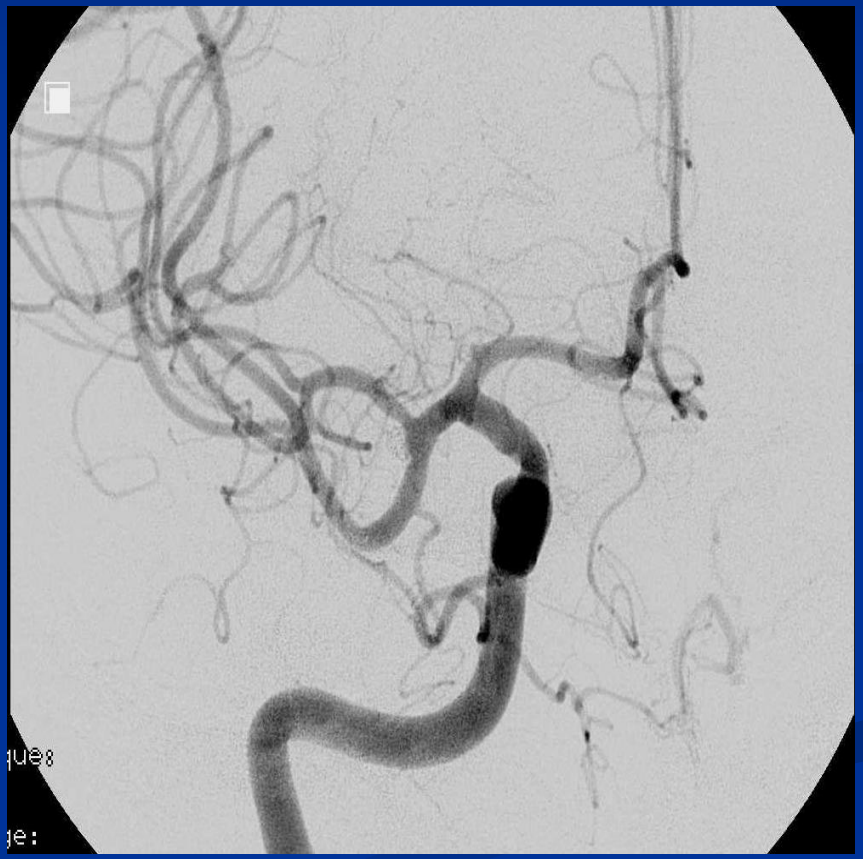


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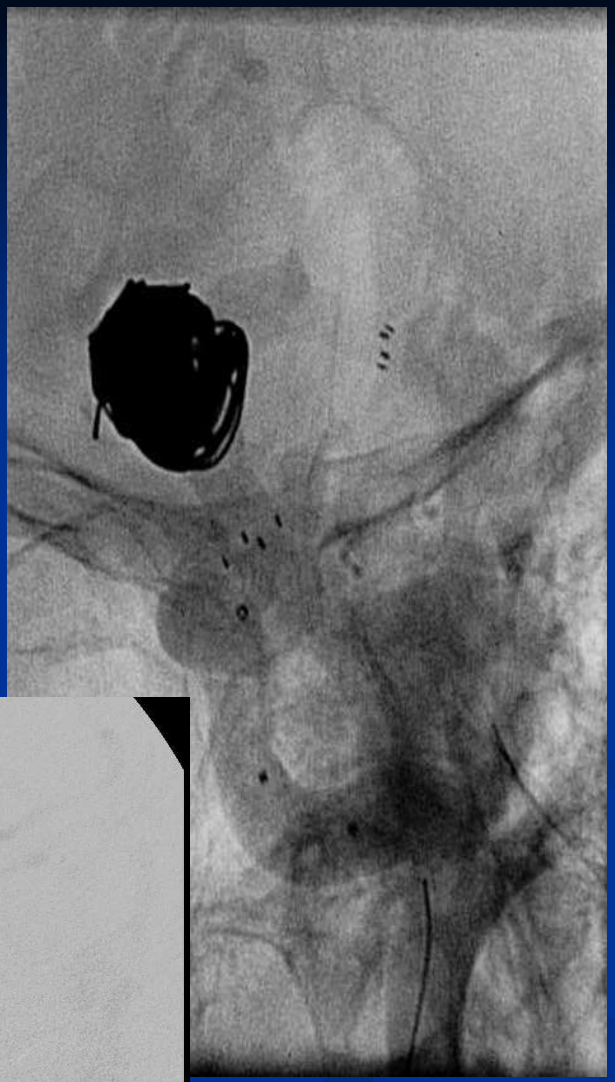
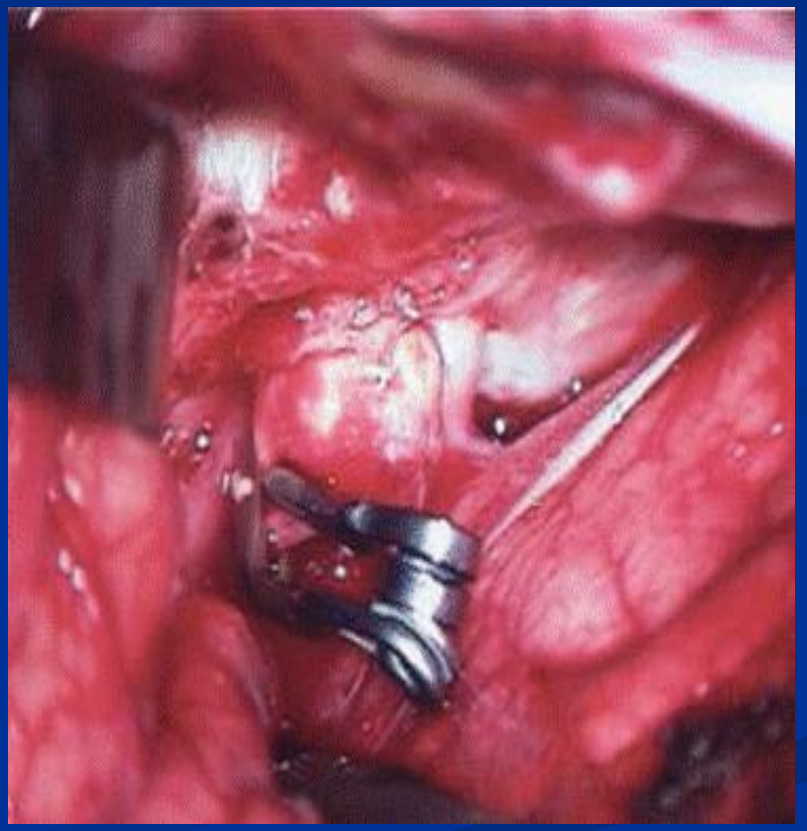


COILING Vs CLIPPING



International Subarachnoid Aneurysm Trial (ISAT) of neurosurgical clipping versus endovascular coiling in 2143 patients with ruptured intracranial aneurysms: a randomised trial.

-Good Grade SAH:
88% WFNS class I-II
-Small Aneurysms:
92% ≤ 10 mm
-Anterior Circulation:
97.3%

	Endovascular treatment (n=801)	Neurosurgery (n=793)
Modified Rankin scale		
0 No symptoms	207 (25·8%)	152 (19·2%)
1 Minor symptoms	217 (27·1%)	220 (27·7%)
2 Some restriction in lifestyle	187 (23·4%)	178 (22·4%)
(0-2 inclusive)	*611 (76·3%)*	*550 (69·4%)*
3 Significant restriction in lifestyle	80 (10·0%)	106 (13·4%)
4 Partly dependent	24 (3·0%)	32 (4·0%)
5 Fully dependent	21 (2·6%)	25 (3·2%)
6 Dead	65 (8·1%)	80 (10·1%)
(3-6 inclusive)	*190 (23·7%)*	*243 (30·6%)*

Data in Italics are primary outcome.

Table 6: **Outcome at 1 year in 1594 patients (primary outcome)**

Molyneux A et al, International Subarachnoid Aneurysm Trial (ISAT) Collaborative Group. Lancet. 2002 Oct 26;360(9342):1267-74

International subarachnoid aneurysm trial (ISAT) of neurosurgical clipping versus endovascular coiling in 2143 patients with ruptured intracranial aneurysms: a randomised comparison of effects on survival, dependency, seizures, rebleeding, subgroups, and aneurysm occlusion.

In patients with ruptured intracranial aneurysms suitable for both treatments, endovascular coiling is more likely to result in independent survival at 1 year than neurosurgical clipping; the survival benefit continues for at least 7 years.

Molyneux A et al, International Subarachnoid Aneurysm Trial (ISAT) Collaborative Group. Lancet. 2005 Sept 3-9;366(9488):783-5

Hospital Mortality and Complications of Electively Clipped or Coiled Unruptured Intracranial Aneurysm

	Clipping (3498)	Coiling (3738)
- Mortality	1.6% (60)	0.57 % (20)
- Hospital stay	4	1
- Cost	higher	lower
- Complications	higher	lower

Conclusions: Elective coiling of unruptured intracranial aneurysms is associated with fewer deaths and perioperative complications compared with elective clipping. The trend of hospital use of the coiling procedures has increased during recent years.

Alshekhlee A et al, Stroke. 2010;41:1471-1476

THANK YOU