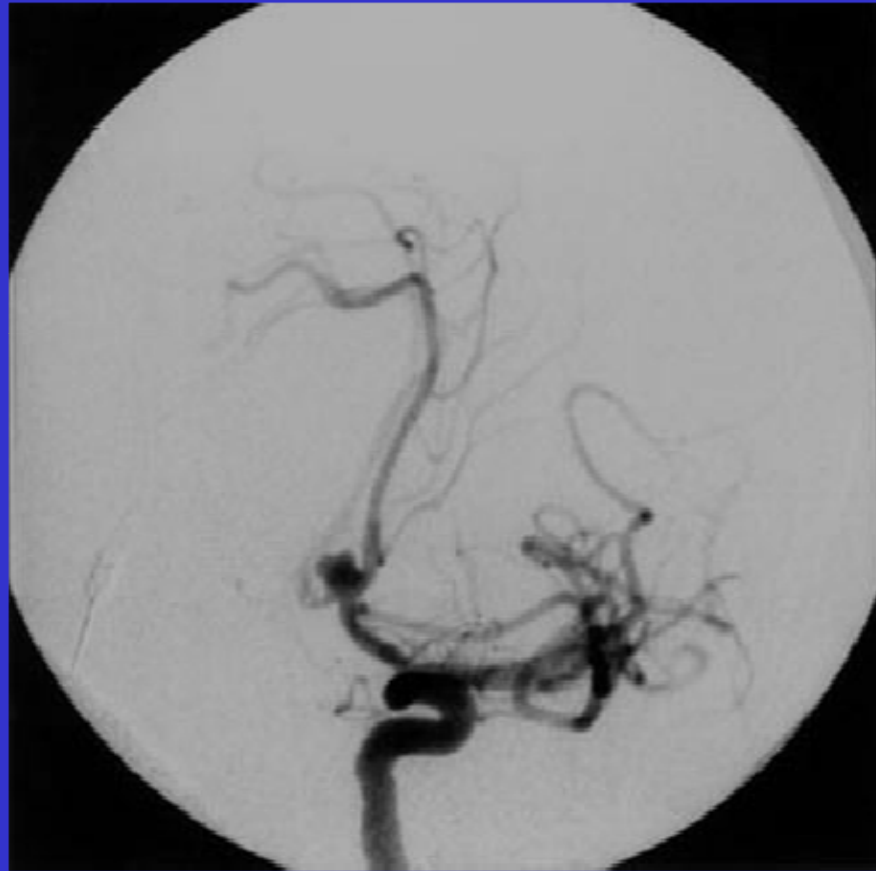


Aneurysm Rupture During Coiling:
Utility of Neurophysiologic
Monitoring and Early
Ventriculostomy Placement

Michael Horowitz, M.D

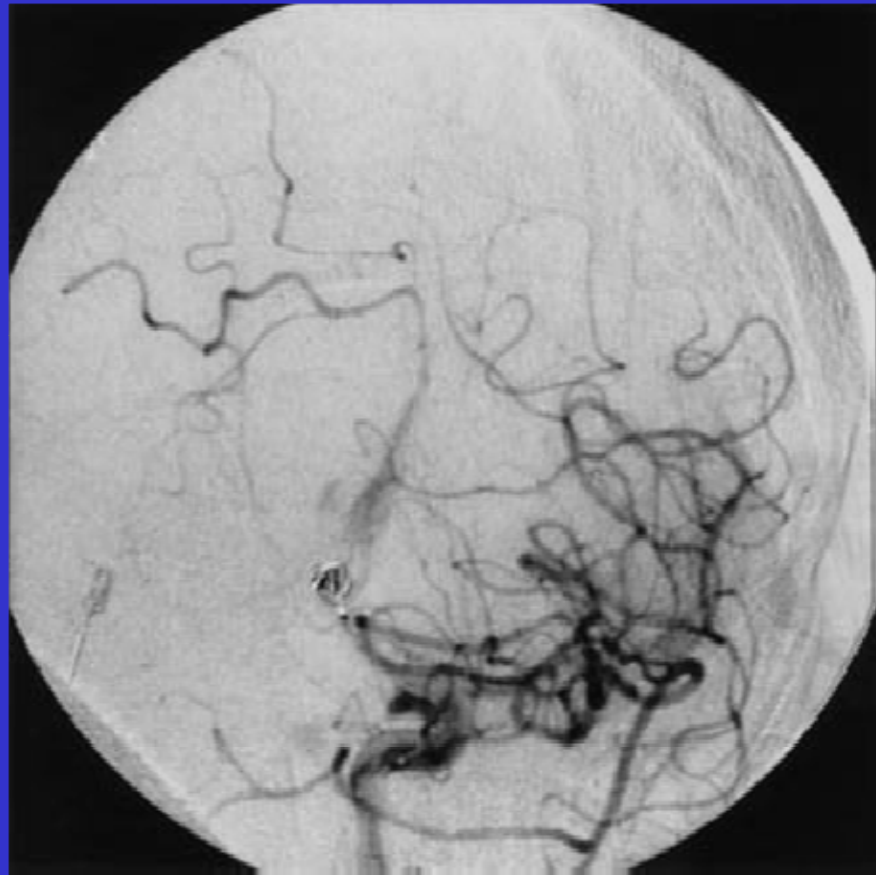
Case Report

- 42 year old man with SAH
- Hunt and Hess I
- Fisher I
- 6 mm Acomm. aneurysm



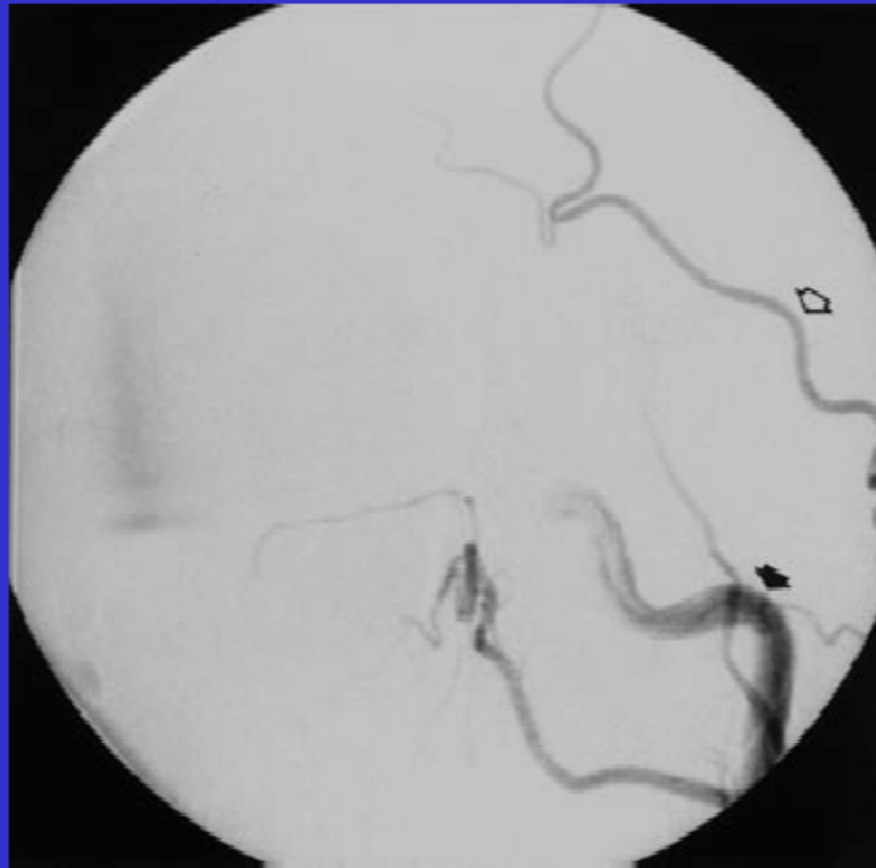
Relevant Data

- Patient intubated
- SBP maintained 90-100 mm Hg
- Baseline images showed 0.34 second transit time from ICA to A2 opacification
- Heparinized 3000 units
- T10 5 mm x 10 cm coil deposited
- Aneurysm fundus breached by coil



Relevant Data

- 100 mg Proteamine administered
- Coil drawn into aneurysm and deposited
- Arteriogram shows extravasation with 1.67s transit time
- SBP rises 33 mm Hg
- EEG flattens within 5s of rupture
- Median and posterior tibial SSEP begin to flatten within 30s of rupture and are lost within 2.5 minutes of rupture



Relevant Data

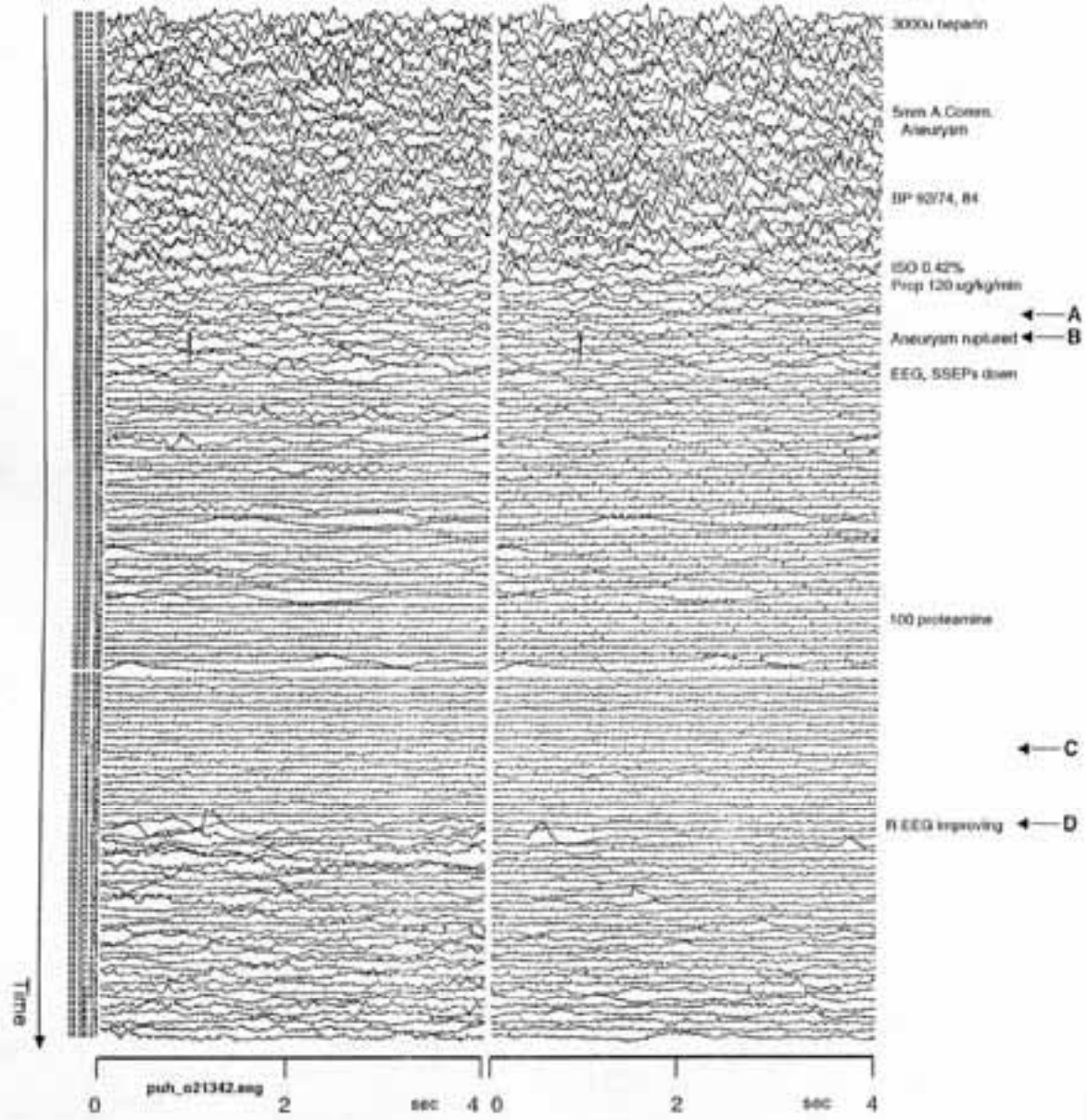
- 23 minutes after documented rupture and loss of all EEG and SSEP activity a ventriculostomy was inserted in the angiogram suite
- OP 700 mm water
- Repeat ICA angiogram shows transit time $<0.05s$
- The patient awoke with a normal examination and was discharged 14 days later



A. Comm. Aneurysm - EEG

Right Cortex (P4/F4)

Left cortex (P3/F3)



A. Comm. Aneurysm – LE SSEPs

Midline Parietal Cortex (Pz/Fz)

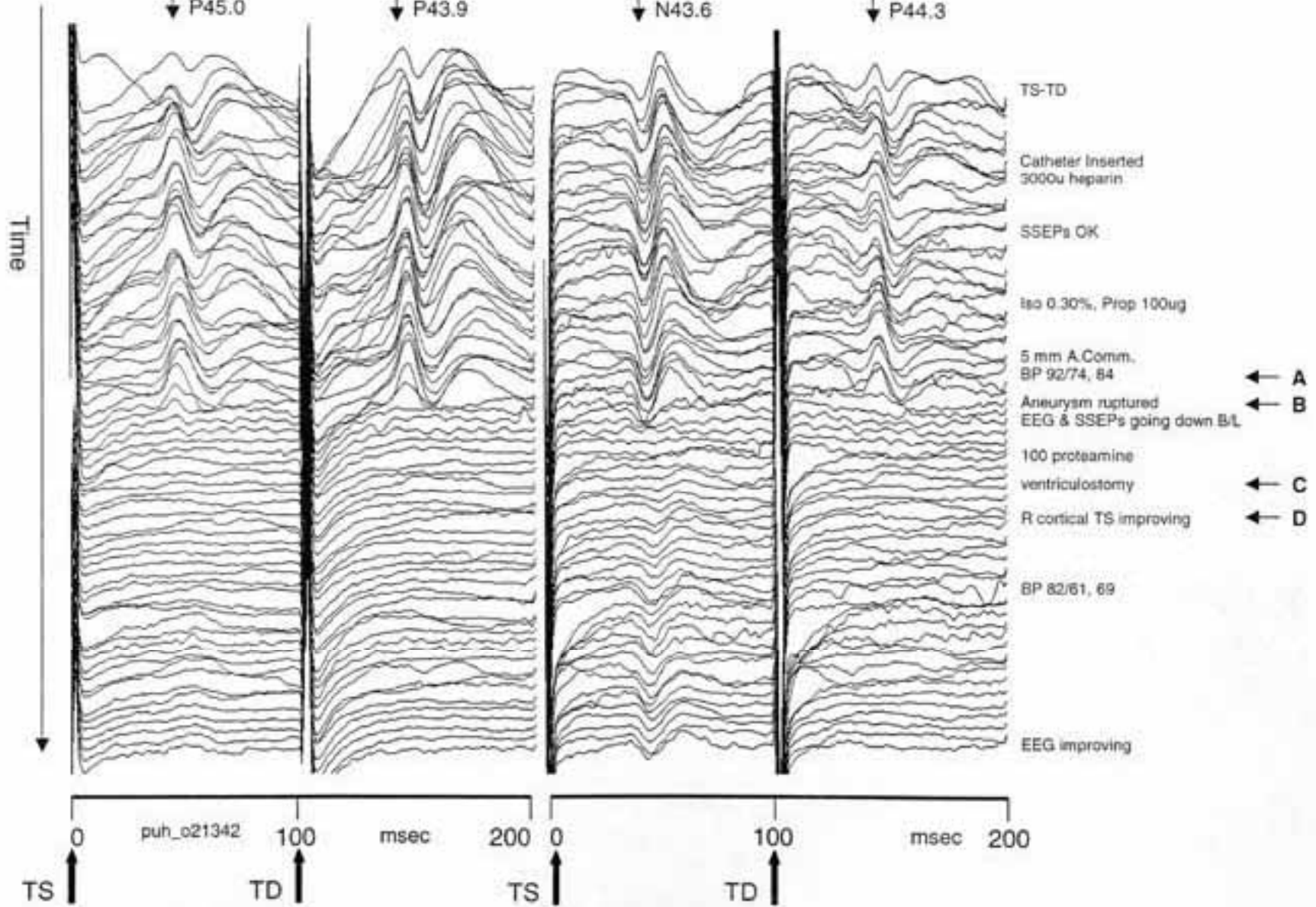
Bilateral Parietal Cortex (P3/P4)

↓ P45.0

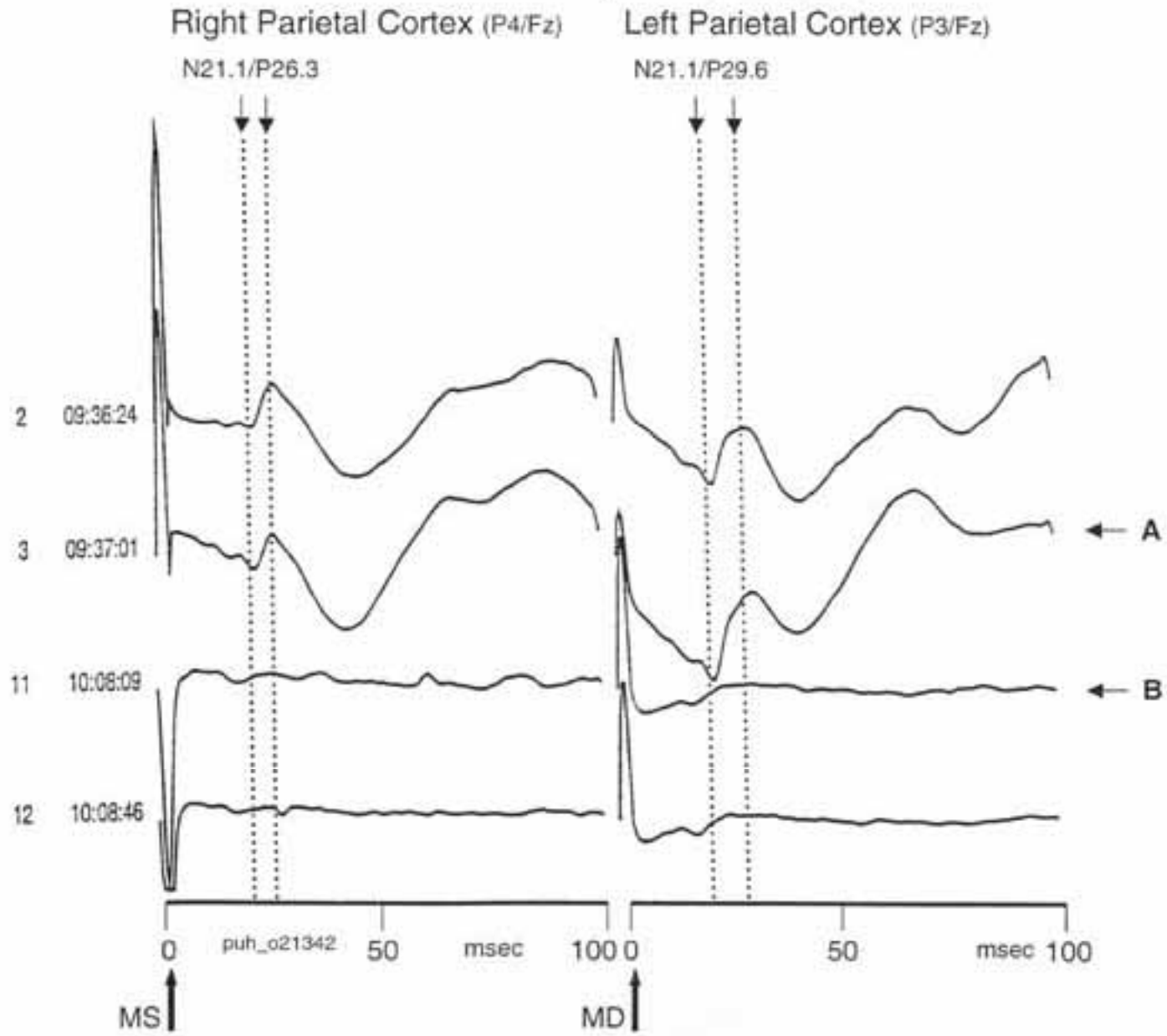
↓ P43.9

↓ N43.6

↓ P44.3



A. Comm. Aneurysm – UE SSEPs



Ruptures

- UPMC and UTSW: 274 consecutive patients reviewed
- 6 intra-procedural ruptures (2%)
- 5/6 presented with SAH
- Literature rate is 2-4%

– Levy E, Koebe CJ, Horowitz M, Jungreis CL, Purdy PD, *et al.* Neurosurgery 49(4): October 2001

TABLE 2. Patient Management and Clinical Outcomes*

| Patient No. | Coiling (Postbleed Day) | Rupture Etiology | Management | Hunt-Hess Grade | GOS at Discharge | GOS at Last Follow-up | Follow-up (mo) |
|-------------|-------------------------|---|--------------------------------------|-----------------|------------------|-----------------------|----------------|
| 1 | 3 | Catheter before detachment of last coil | Detach last coil, supportive care | II | 4 | 5 | 1 |
| 2 | 1 | Last coil | Reposition, detach last coil | IV | 3 | 2 | 25 |
| 3 | Unruptured | First coil | Reverse heparin, clipping 10 d later | 0 | 1 | 1 | 12 |
| 4 | 1 | Last coil | Reposition, detach last coil | V | 5 | 5 | 0 |
| 5 | 0 | Last coil | Right vertebral artery sacrifice | IV | 3 | 2 | 2 |
| 6 | 0 | 3rd of 4 coils | Insert 1 more coil | III | 3 | 1 | 7 |

* GOS, Glasgow Outcome Scale score.