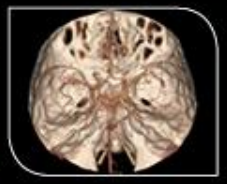
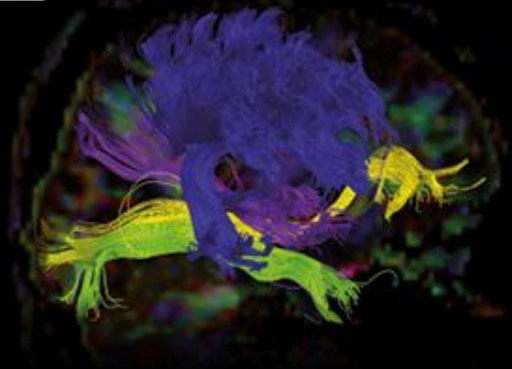
SFNR
SOCIÉTÉ FRANÇAISE DE NEURORADIOLOGIE


40ème CONGRÈS ANNUEL
de la Société Française
de NeuroRadiologie

4-6 avril 2013
Paris Centre de conférence Marriott Rive Gauche

Président du congrès
Pr Vincent Dousset
Comité d'organisation
Pr Alain Bonafé



Diversion de Flux Intra-Sacculaire pour le Traitement des Anévrimes intra-crâniens

Michel Piotin

Service de NRI

Fondation Rothschild, Paris

Conflits d'intérêts

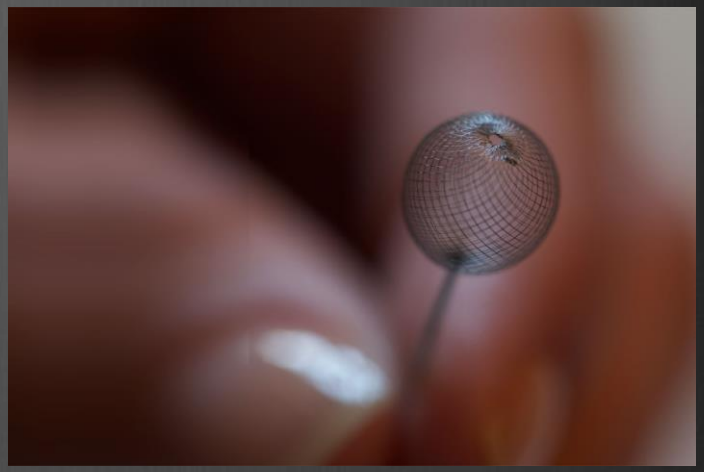
Michel PIOTIN est consultant pour les sociétés:

- Covidien
- Stryker Neurovascular
- Codman Neurovascular
- Balt
- Microvention

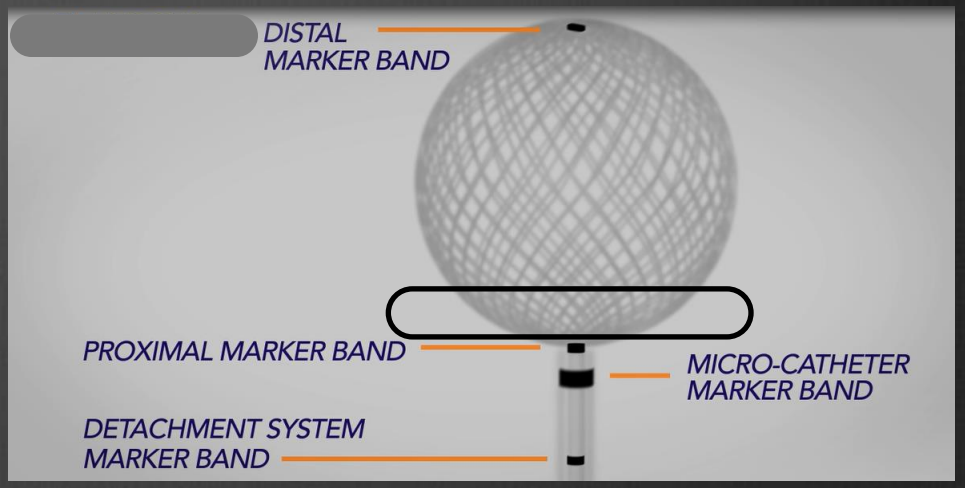
Intra-saccular flow diversion (ISFD) paradigm

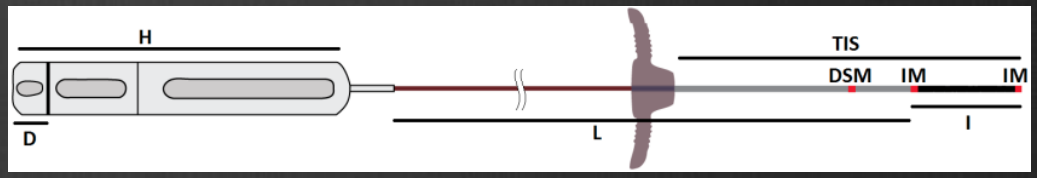
- New concept for aneurysm treatment
- Aiming to disrupt the intra aneurysmal flow and create intra aneurysmal thrombosis
- By using a device to close the aneurysm from inside the aneurysm
- 2 ISFD devices currently available:
  - LUNA (*Nfocus/Covidien*)
  - WEB (*Sequent*)

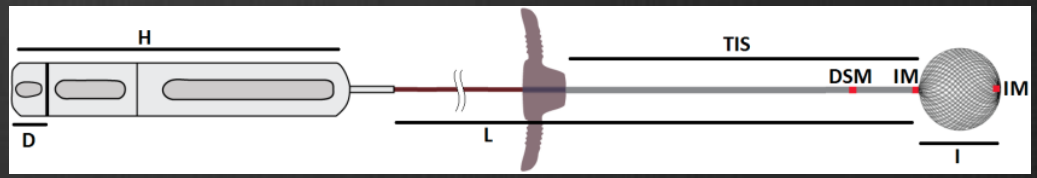
LUNA (Nfocus/Covidien) AES Concept



- The LUNA Aneurysm Embolization System (AES) is a self-expandable, round-ovoid implant with delivery system
- The implant is made from a double layer of 72 Nitinol wire 25µ. Mesh (144 wires) secured at both proximal and distal ends and clearly marked with radiopaque markers
- Available size 4.5mm (B) - 8.5mm (G)
- The delivery system provides for distal navigation through a commercially available (0.027 compatible) microcatheter
- Microcatheter shaft with detachment controlled by operator activation of delivery handle
- CE marked February 2011

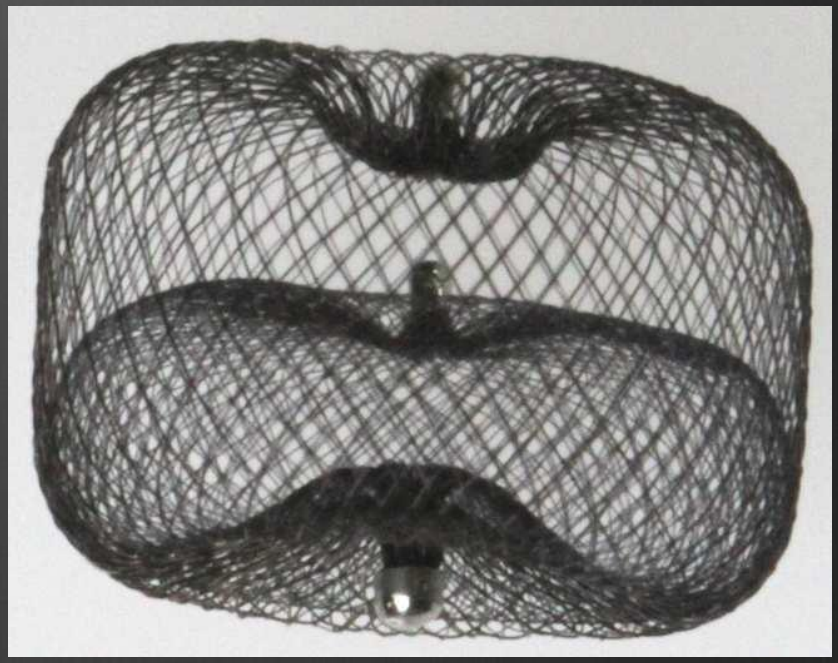


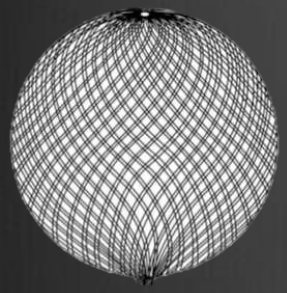




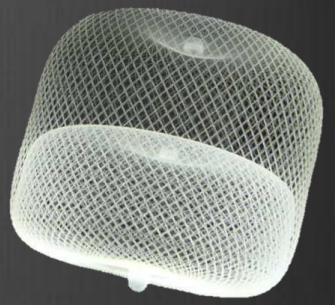
WEB (Sequent) Concept

- Intrasaccular
- Microcatheters 0.027 for device ≤ 7 mm to 0.032 compatible for device > 7 mm
- Two layers of Nitinol mesh (216 or 288 wires)
- 3 platinum markers
- Retrievable and detachable
- CE marked



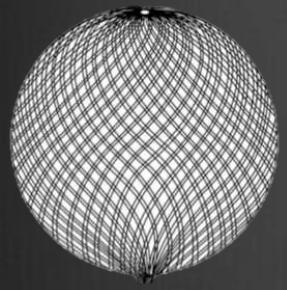


LUNA vs WEB

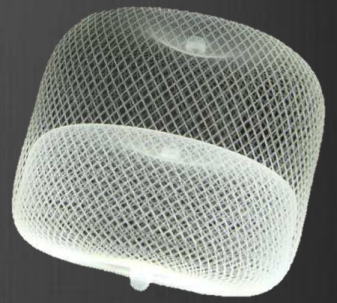


- LUNA use strictly within PMCF study after the 2 first human cases
- Smaller catheter profile
- Easier to retrieve and resheath
- Bifurcation & sidewall aneurysms
- Prospective european study (8 centers)
  - 50 patients
  - 51 untreated aneurysms
  - 4 ruptured
    - 38 bifurcation aneurysms
    - 13 sidewall aneurysms

- WEB dapted for wider neck aneurysm
- Bifurcation aneurysms
- Retrospective european study (4 centers)
  - 29 patients
  - 30 bifurcation aneurysms
    - 2 ruptured
    - 3 recan
    - 2 Tx with WEB & coils

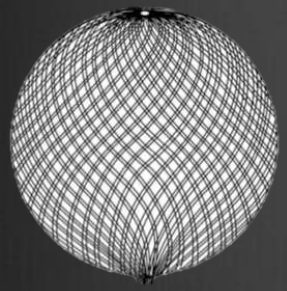


LUNA vs WEB safety profile

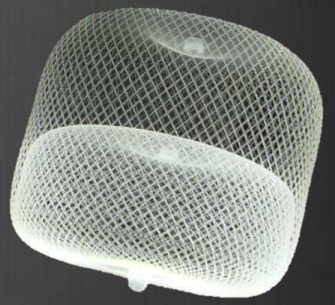


- 3 SAE
  - 1 aneurysm dome rupture with Rebar (previously ruptured aneurysm)
    - Converted in coiling with remodeling
    - mRS 1 at discharge
  - 1 SAH (rupture of controlateral MCA aneurysm)
  - 1 GI bleeding requiring BT after stenting of PV
- 4 AE
  - 1 cavernous rupture while LUNA delivering (transient CCF)
  - transient right hemiparesthesia after procedure (left MCA aneurysm, MRI inconsistent with ischemic insult)
  - 1 TIA
  - 1 embolus (clot migration from guiding KT) asymptomatic
- All patients discharged mRS 0 to 1 (ruptured cases)

- Clinical Complications
  - – TE: 2 (1 month mRS: 0 and 1)
  - – IOR: 1 (treated with coils and glue, 1 month mRS: 3)
- Clinical outcome
  - – mRS<2: 28 patients (96.6%)
  - – mRS≥2: 1 patient (3.4%)



LUNA vs WEB aneurysm occlusion

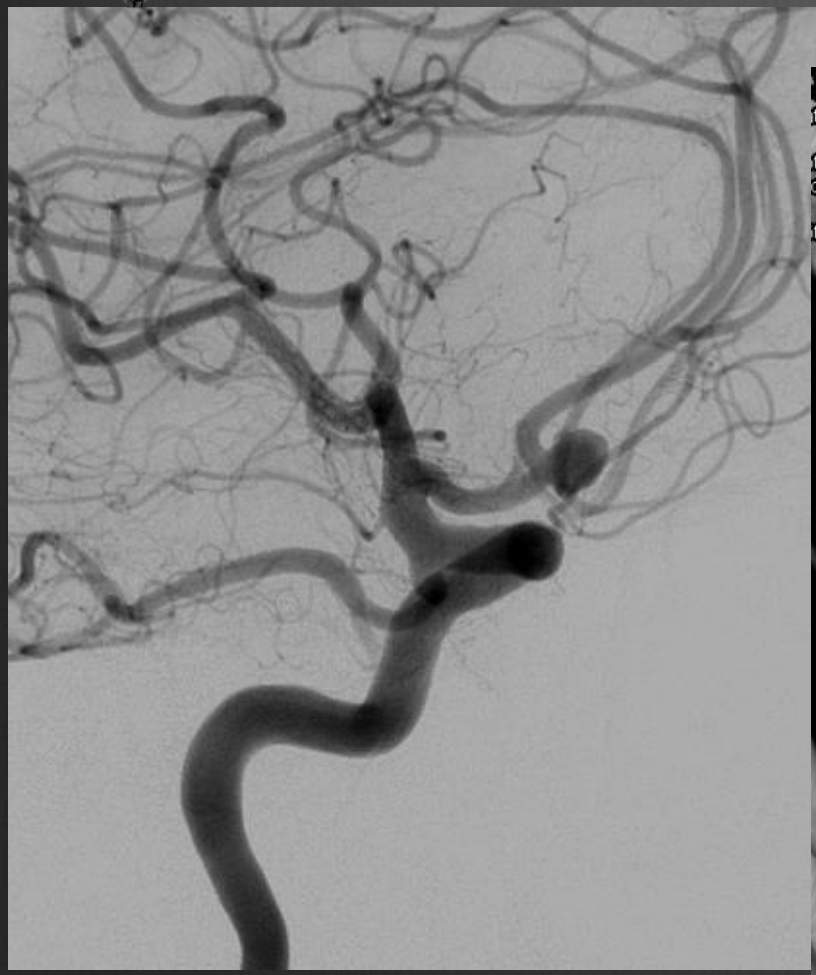


- mid-term F/U
- 6 to 12 mo
- Complete or near complete occlusion
  - 19/27 (70.4%)

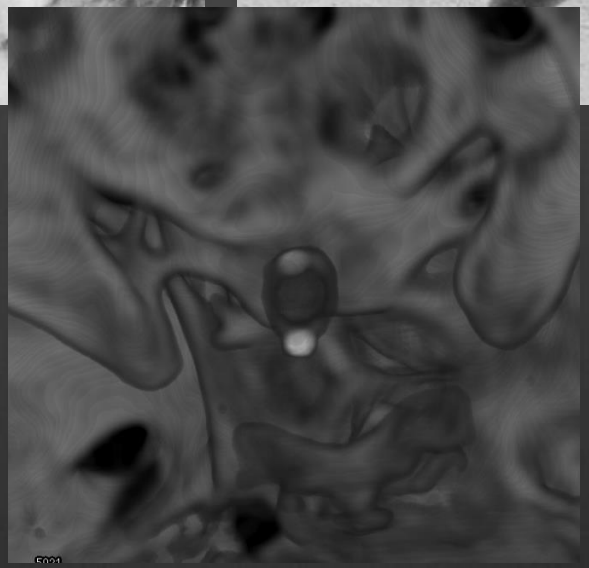
- mid-term F/U
- 2 to 12 mo
- Complete or near complete occlusion
  - 17/21 (80.9%)
  - But 2 aneurysms had additional Tx with coils

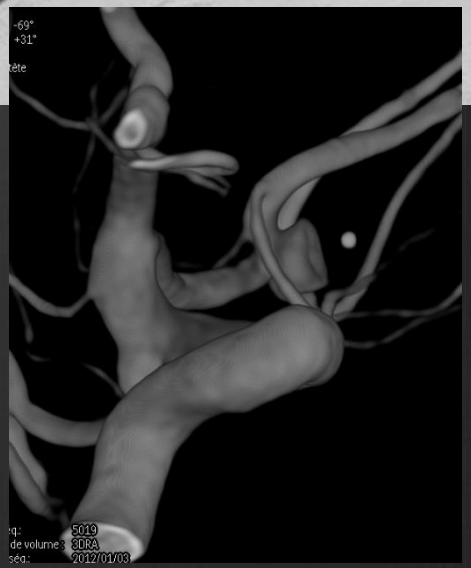
F 59, 6 mm AcoA aneurysm

5 mm Luna® device



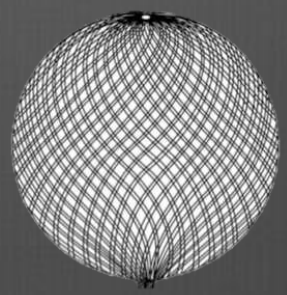
Patient **001-008**, *January 2012*

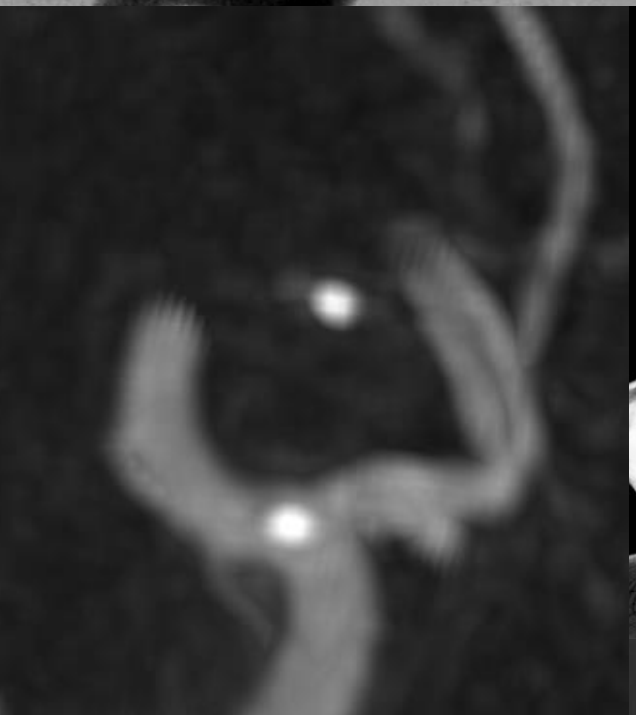


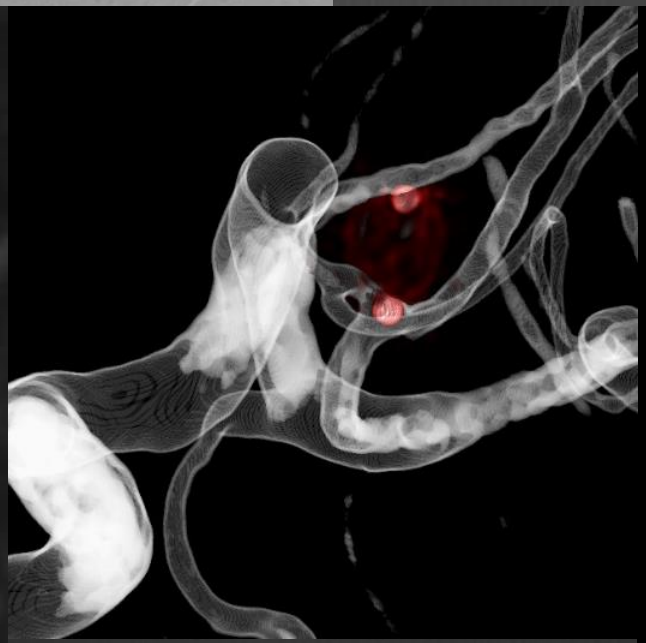


Patient **001-008**, *January 2012*

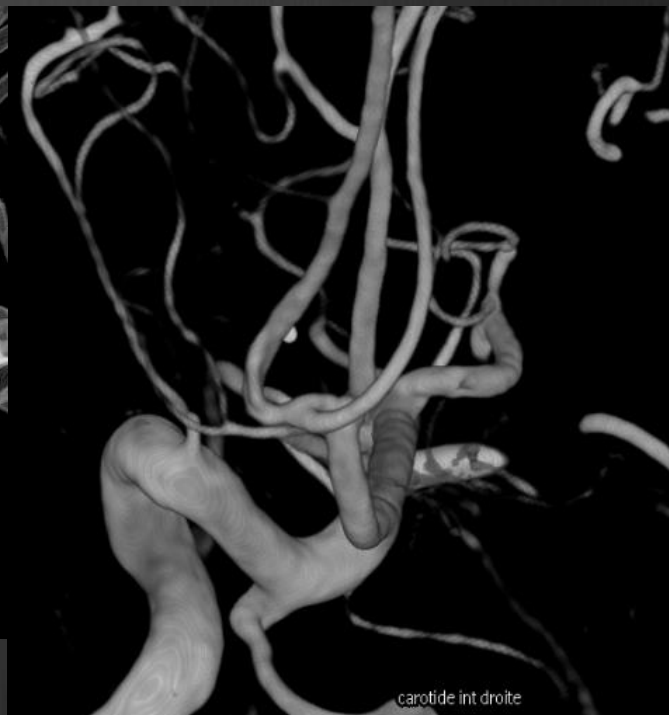
6 mo F/U

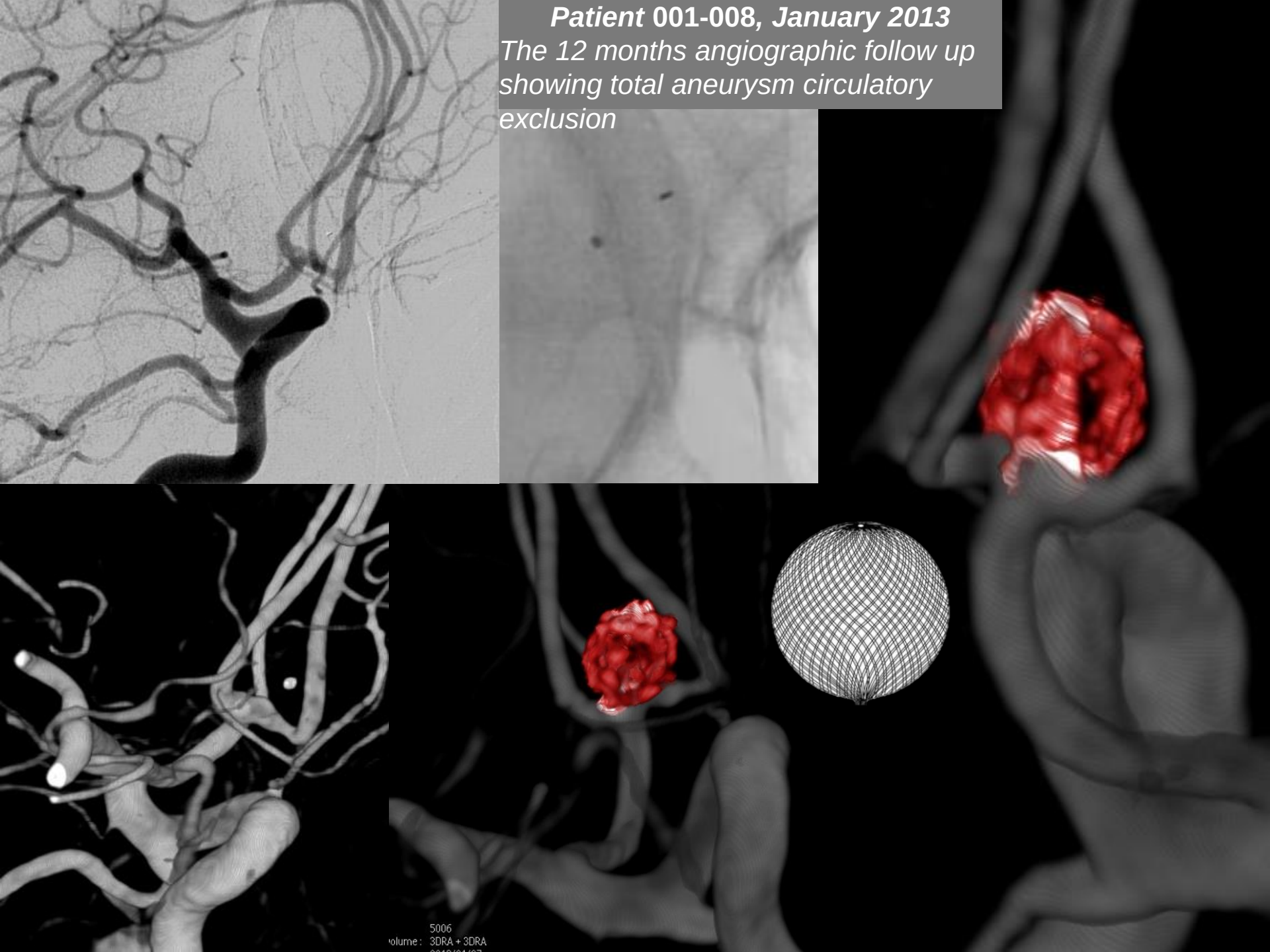






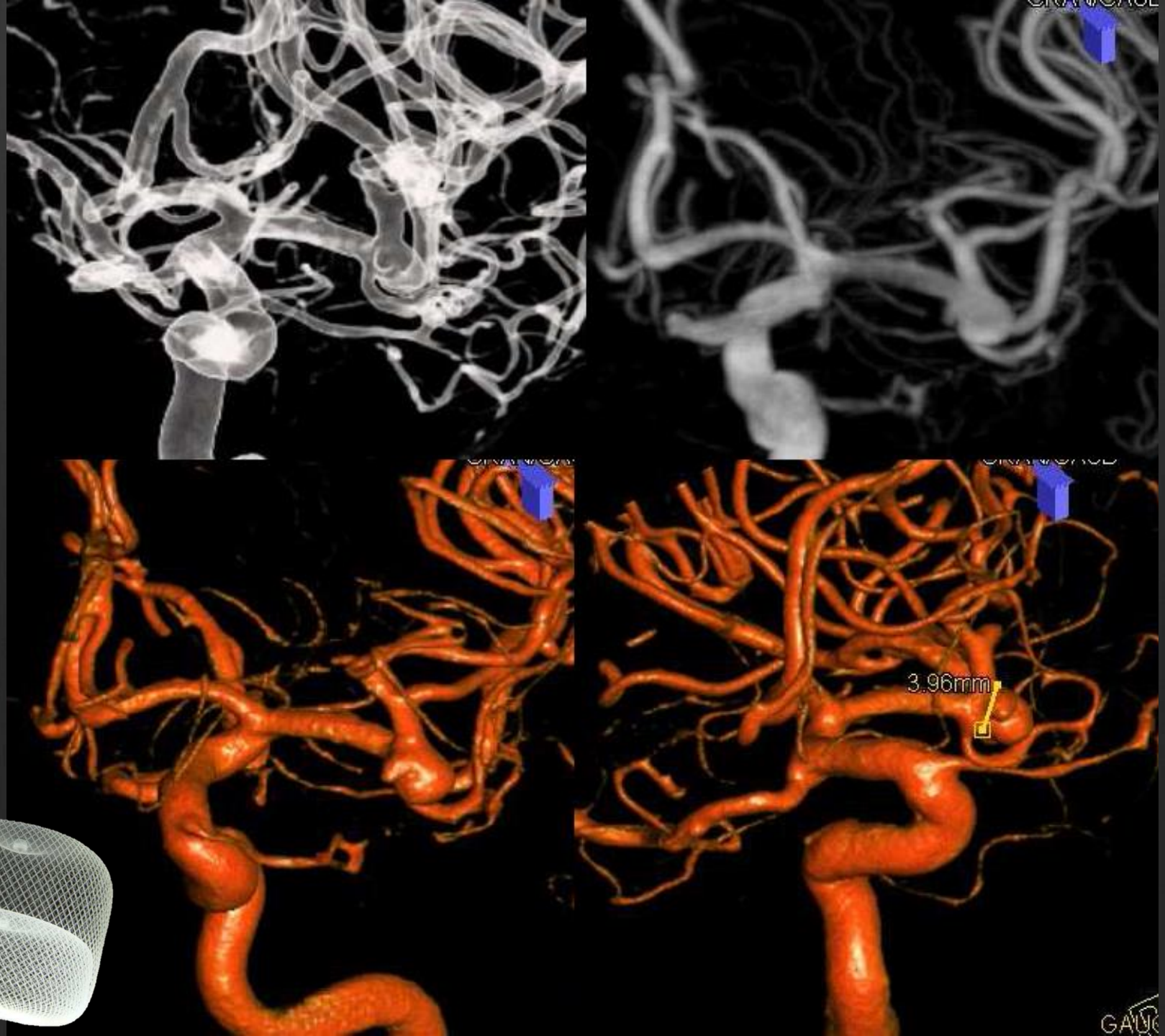
Patient **001-008**, *July*



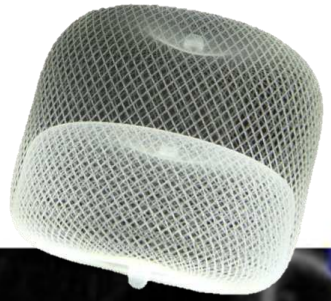


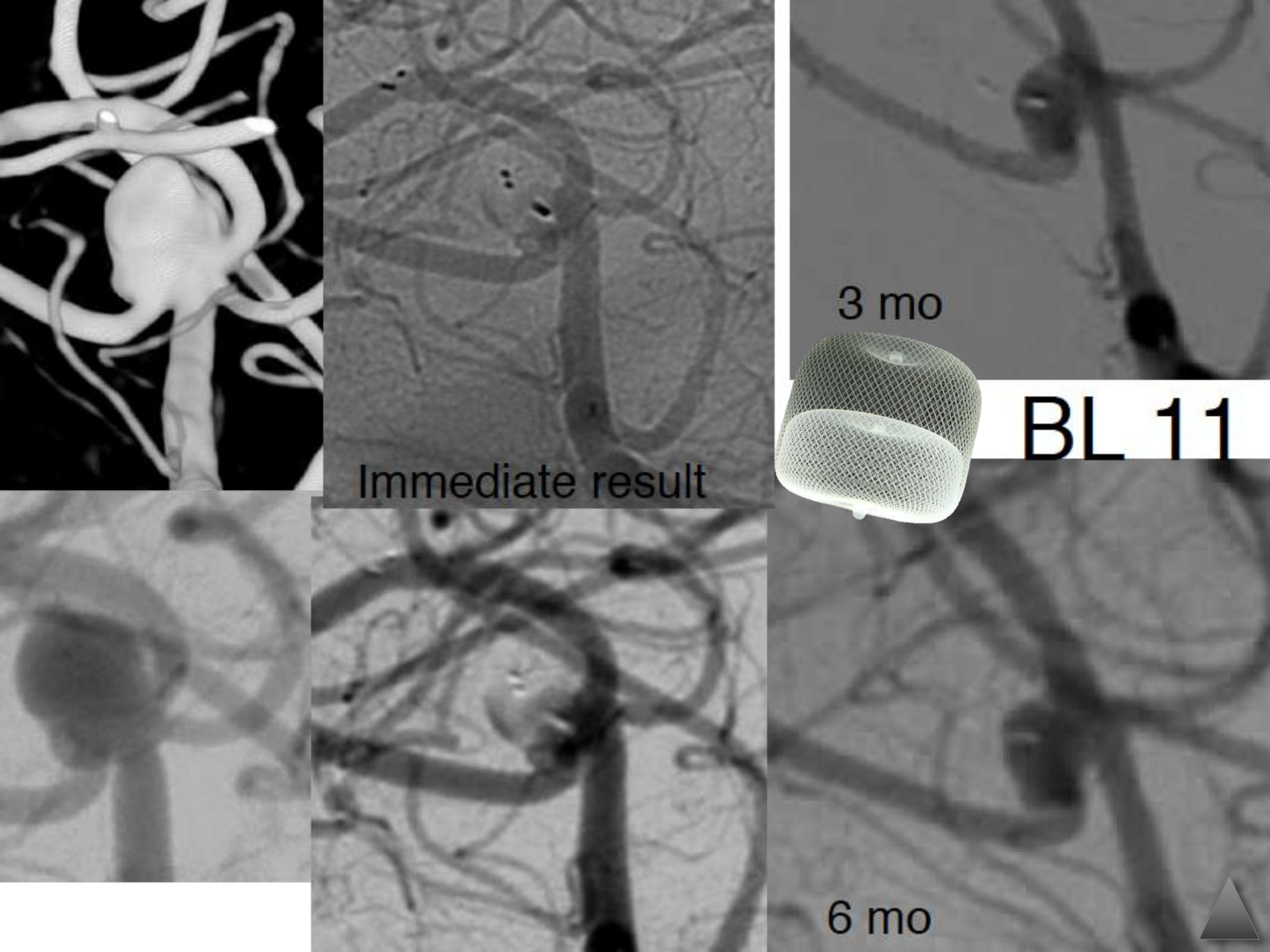
Patient* 001-008, *January 2013

The 12 months angiographic follow up showing total aneurysm circulatory exclusion


3.96mm

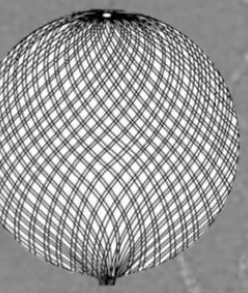
DSA 4M

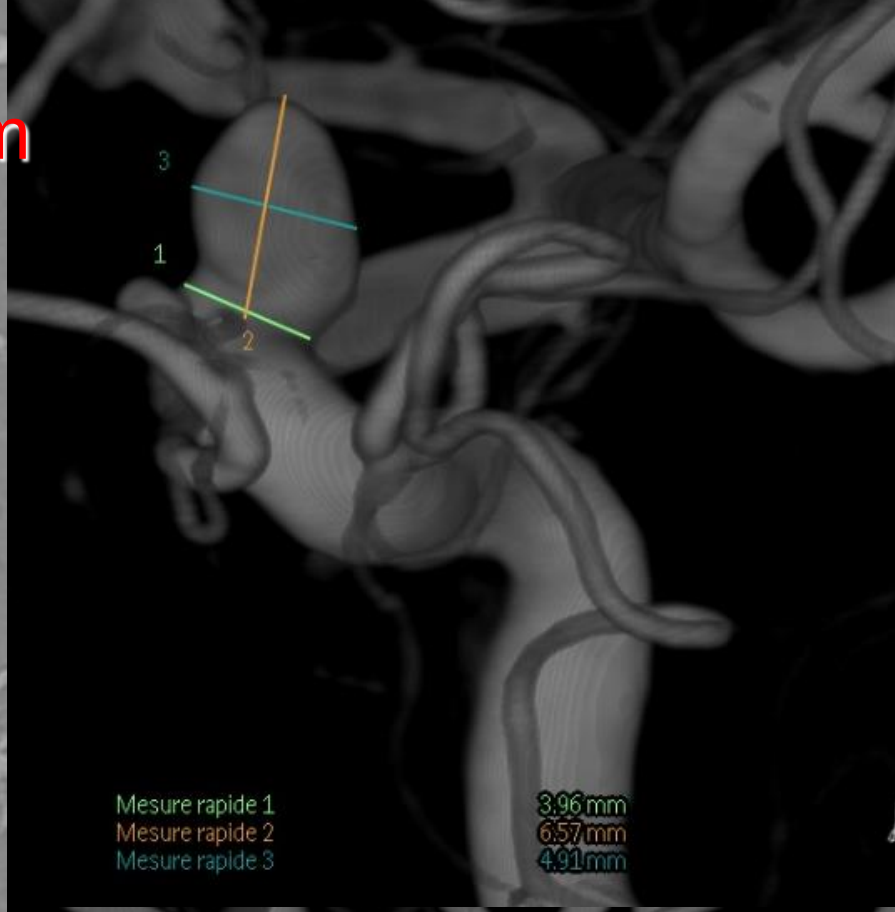



3 mo
BL 11
Immediate result
6 mo

F 48, 6.6 mm AcoA aneurysm

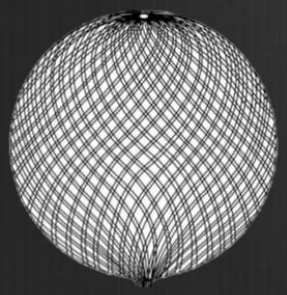
5.5 mm Luna® device

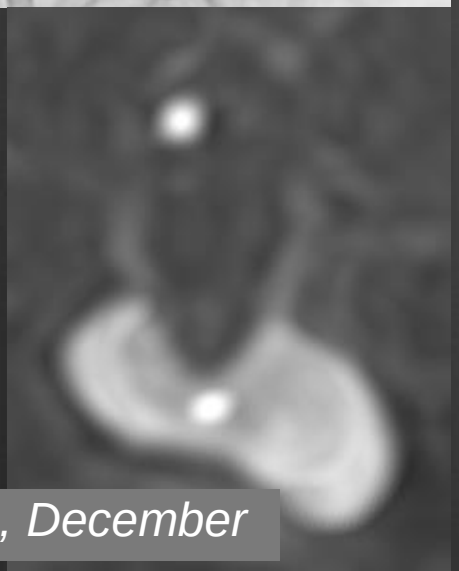




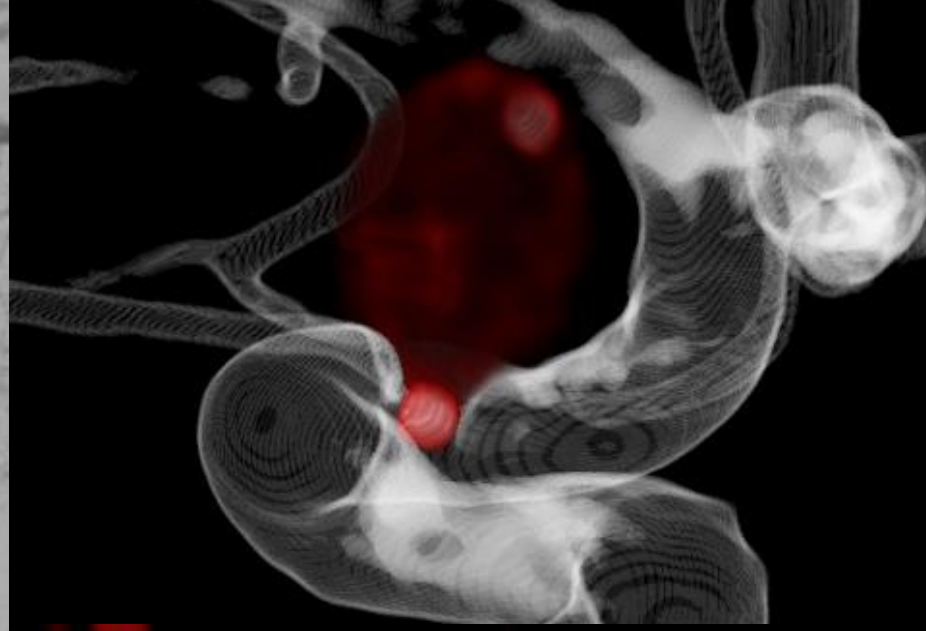
Patient **001-006**, *December 2011*

Post embo

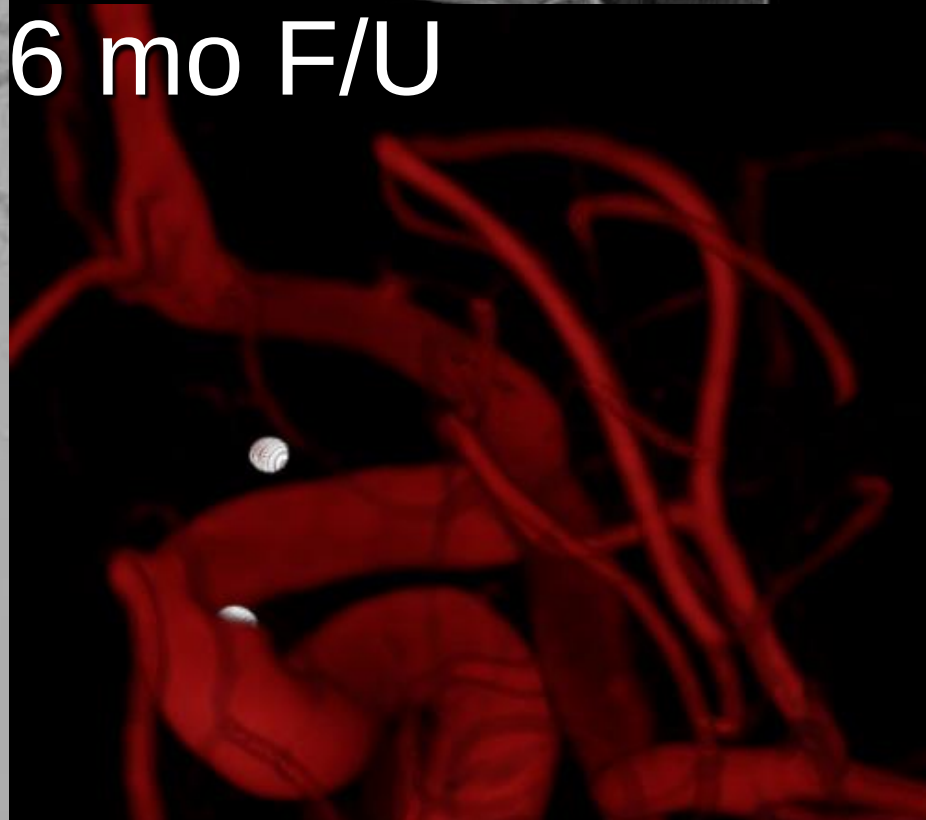




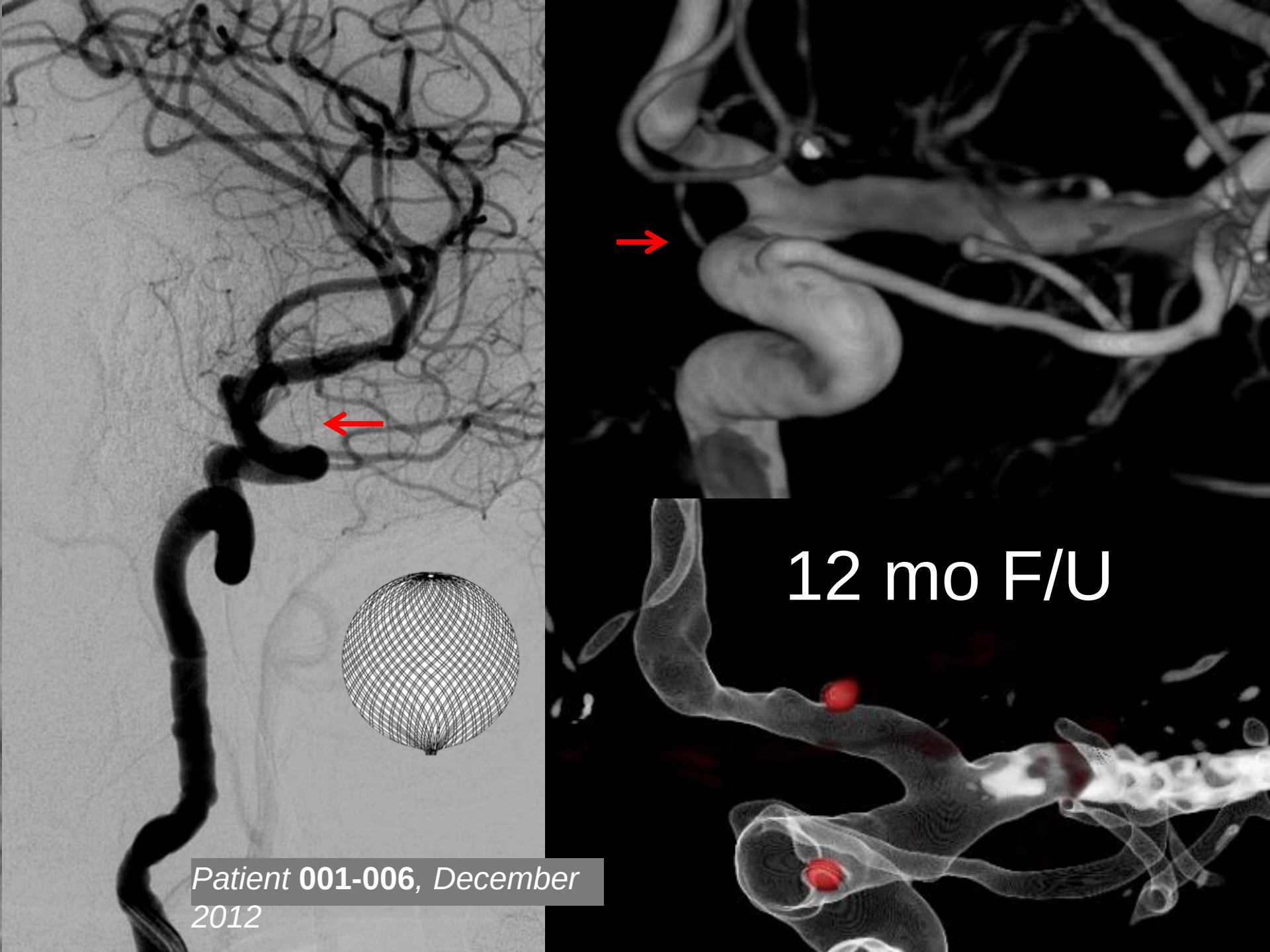
Patient **001-006**, *December*



6 mo F/U



Patient **001-006**, *June 2012*


12 mo F/U
Patient 001-006, December 2012

Strengths and Challenges of ISFD

- Devices with dense meshing :
  - Immediate flow exclusion at the aneurysm dome
  - Avoiding material (coils) compaction
- Sizing is crucial
- Catheter profile to be optimized and reduced
- More data on acutely ruptured aneurysms are needed