Single-Center Clinical Experience with Barricade™ Coils

L. Pierot

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Disclosures

Consultant for Blockade.

Barricade Coil System

- Bare Platinum Coils / Electrolytic Detachment
- Barricade Framing Coils
    - Complex shape
    - Available in 10 and 18
- Barricade Filling Coils
    - Helical shape
    - Available in 10
- Barricade Finishing Coils
    - Helical and complex shape
    - Available in 10

Series: Inclusion/Exclusion

- All patients treated with Barricade Coils were prospectively included in this series.
- Inclusion/Exclusion criteria:
  - Multiple aneurysms treated in multiple sessions: the last treatment was analyzed.
  - Multiple aneurysms treated in the same session:
    - SAH: ruptured aneurysms analyzed
    - Unruptured aneurysms: Bigger aneurysm analyzed
  - Excluded: aneurysms with intrasaccular device (WEB)

Population

- From October 2013 to January 2015,
- 48 patients/aneurysms
- 34F (70.8%) / 14M (29.2%)
- Age:
  - 18/82 years
  - Mean: 50.8 +/- 13.8 years
  - Median: 48.5 years

Population

- Aneurysm status:
  - R: 22 (45.8%)
  - UnR: 18 (37.5%)
  - Recan: 8 (16.7%)
- Location:
  - ICA: 18 (37.5%) including 3 cavernous (6.2%)
  - Acom: 15 (31.3%)
  - MCA: 10 (20.8%)
  - PC: 5 (10.5%)

Population

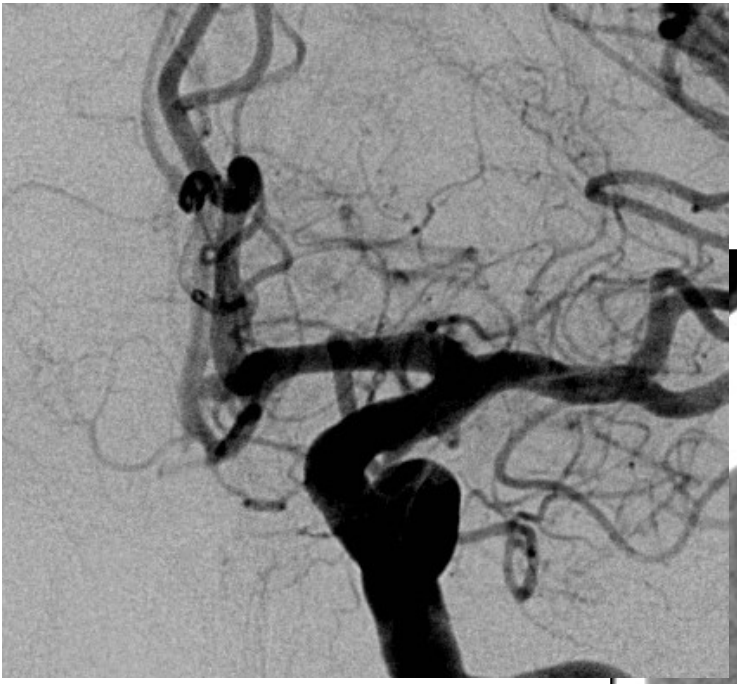
- Aneurysm size:
  - 2-29 mm
  - Mean: 8.7 +/- 5.9 mm (Median: 7.6mm)
  - Small: 36 (75.0%); Large: 10 (20.8%); Giant: 2 (4.2%)
- Neck size:
  - 1-9.5 mm
  - Mean: 3.7 +/- 1.9 mm (Median: 3.0mm)

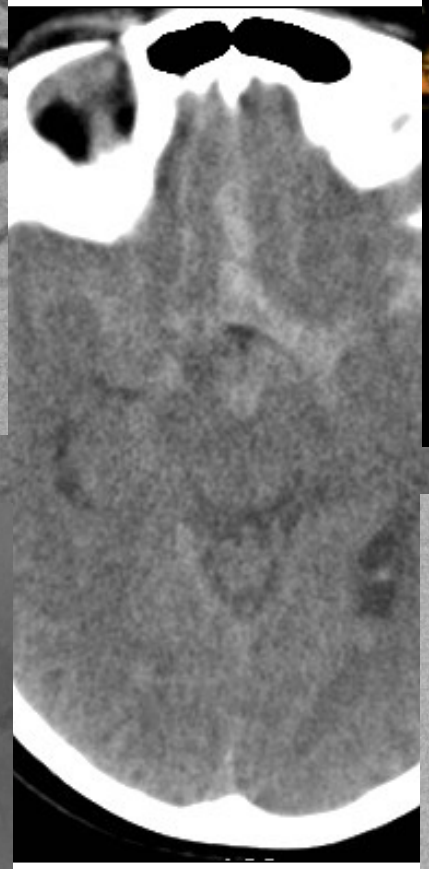
Population

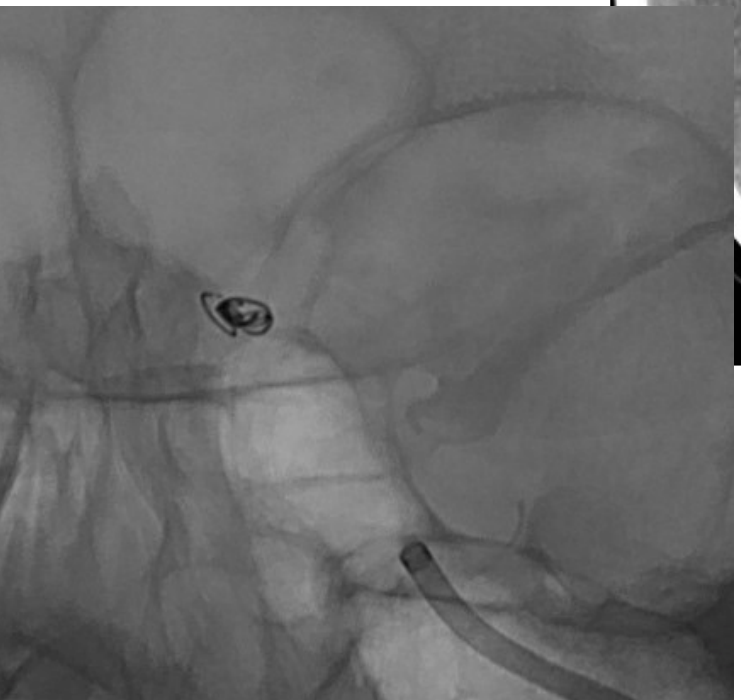
- Unruptured + Recan: Preoperative mRS
  - 0: 23 (88.5%)
  - 1: 1 (3.8%)
  - 2: 1 (3.8%)
  - 4: 1 (3.8%)
- Ruptured: WFNS
  - 1: 10 (45.5%)
  - 2: 7 (31.8%)
  - 3: 0 (0.0%)
  - 4: 4 (18.2%)
  - 5: 1 (4.5%)

Techniques

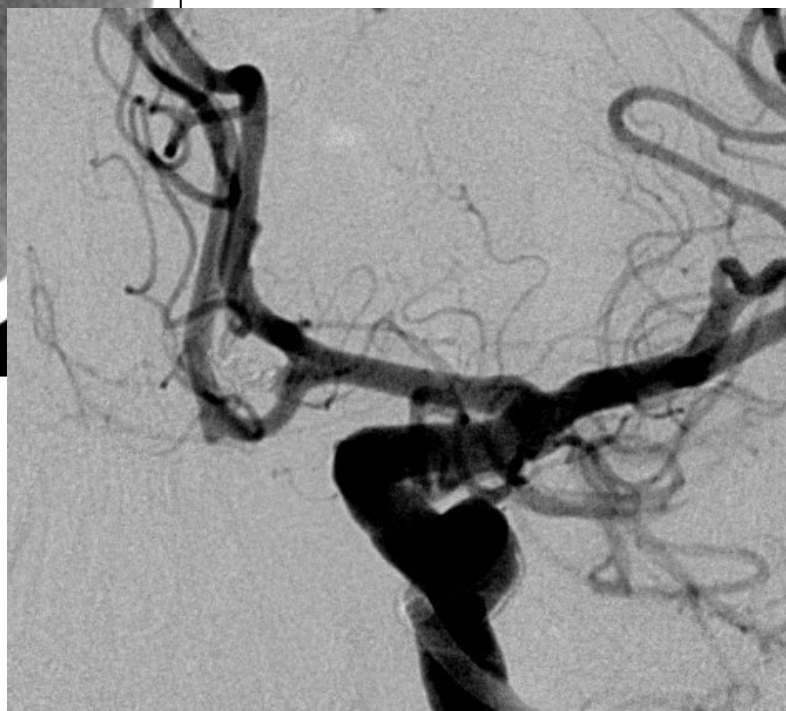
- Remodeling: 17 (35.4%)
- Stenting: 1 (2.1%)
- Flow Diverter: 7 (14.6%)



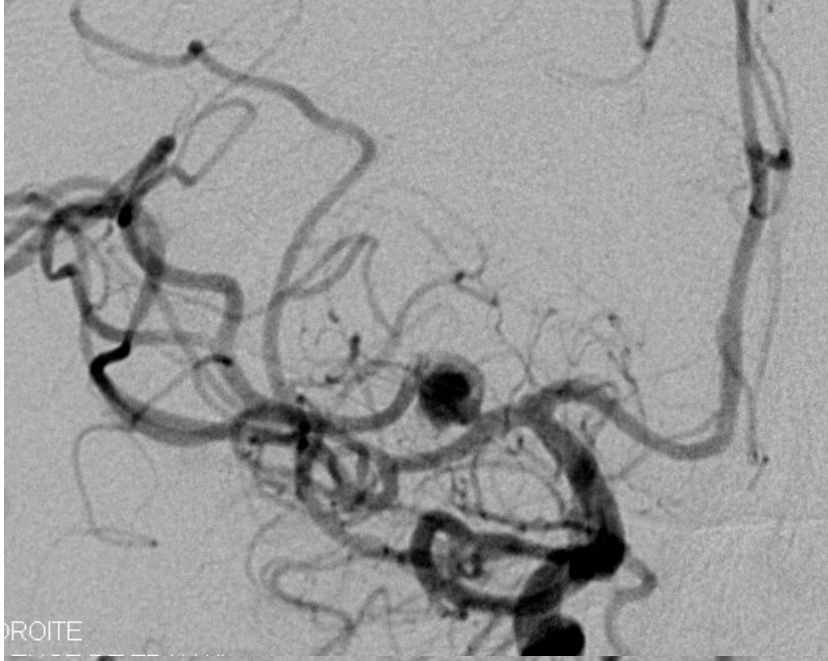




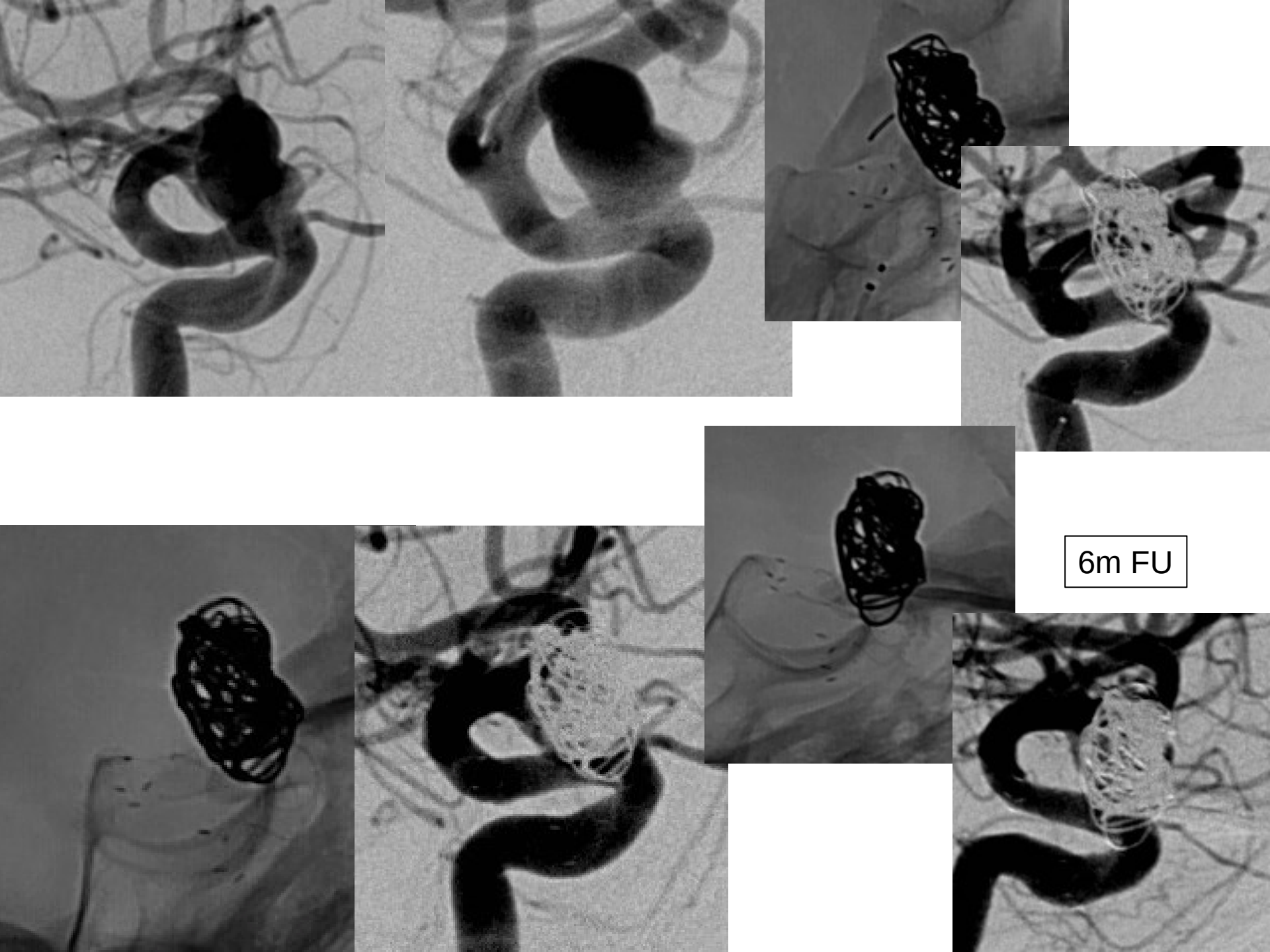
Coils Barricade




N PLACE


ROITE


N PLACE


6m FU

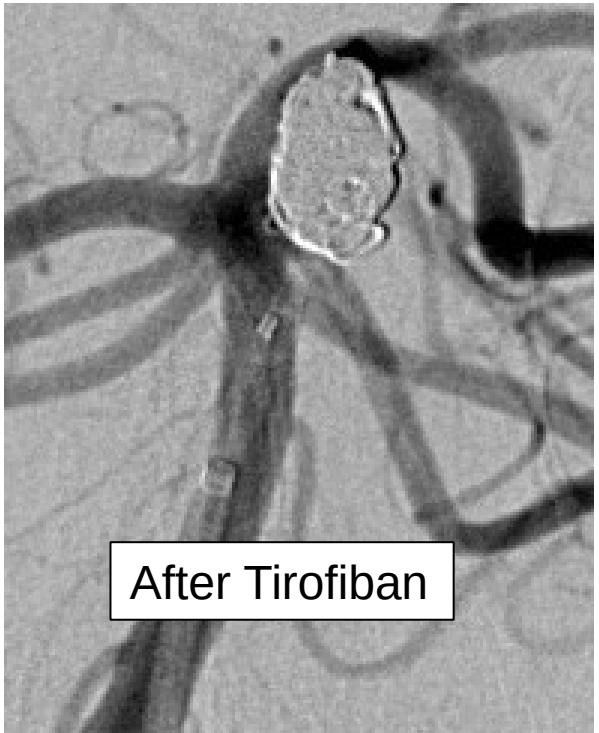
Complications

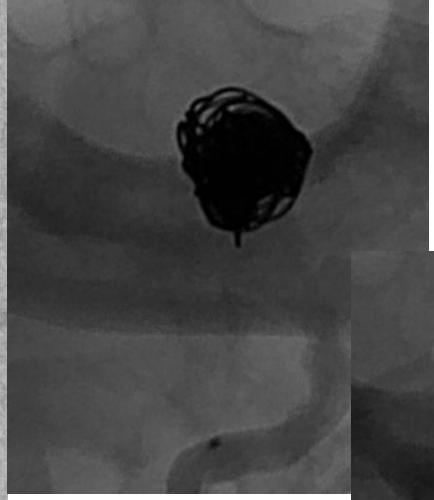
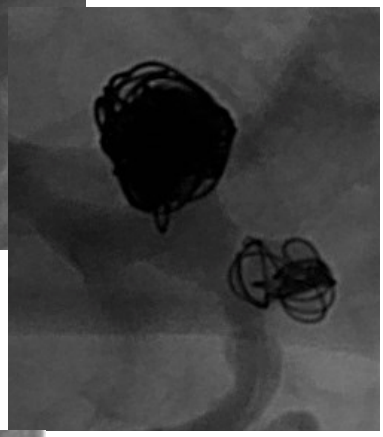
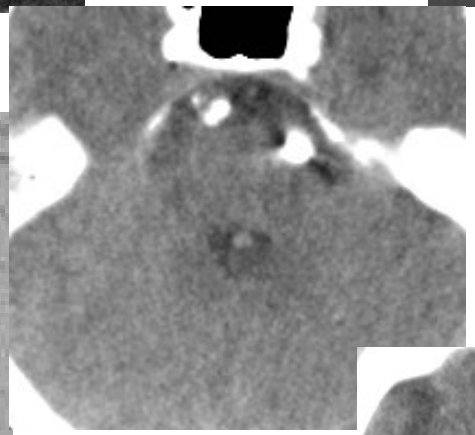
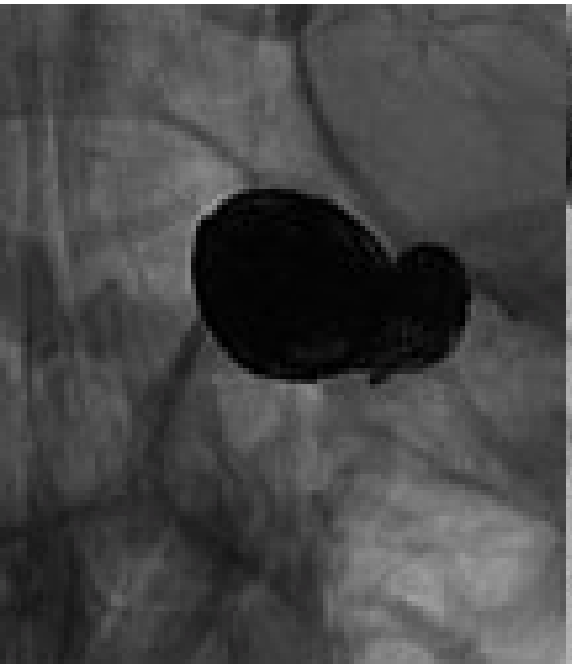
- IOR: 3 (6.25%)
  - MicroKT outside aneurysm limits: 1 (bleeding on post-operative CT)
  - Coil outside aneurysm limits: 1 (no rebleeding on post-operative CT)
  - Bleeding + Hydrocephalus (Ventricular Shunt) on post-operative CT
  - The first 2 patients has no clinical worsening.
  - The third patient has clinical worsening and complete recovery.

Complications

- TE: 6 (12.5%)
  - Clot appearance before coling: 1
  - Clot appearence during coiling: 5
    - Treatment:
      - Tirofiban: 2
      - Tirofiban + Solitaire: 2
      - Tirofiban + Stent: 1
  - Clinical outcome:
    - No clinical worsening in 5 patients
    - Clinical worsening in 1 patient (R, WFNS 4)

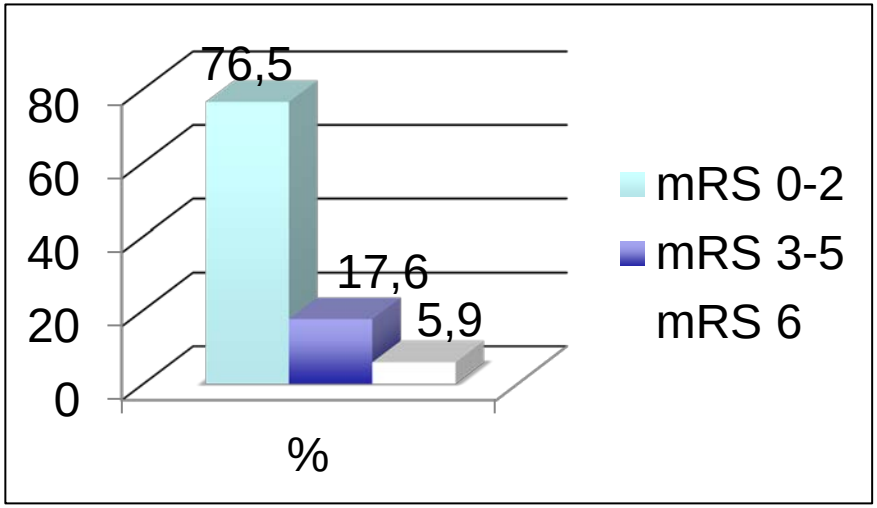

Head-0


After Tirofiban

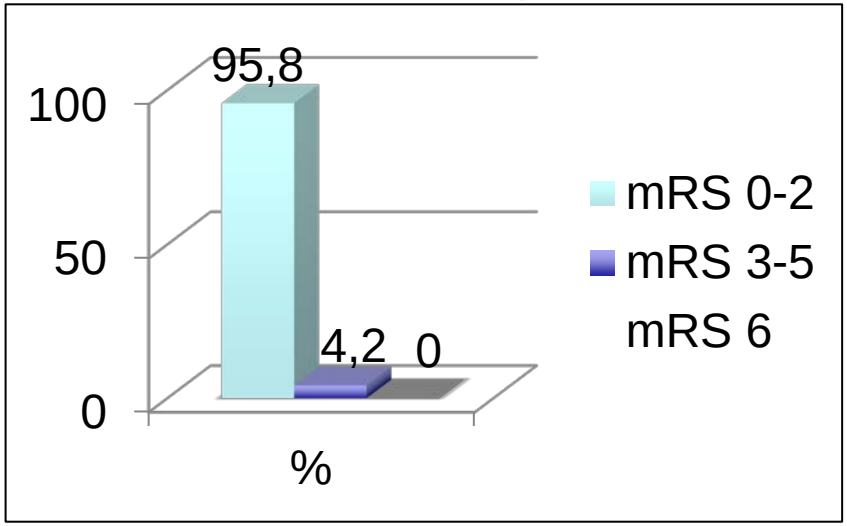
Ruptured: mRS (1 month)

- Number of patients with 1 month mRS: 17/22 (77.3%)
- 0: 9 (52.8%)
- 1: 2 (11.8%)
- 2: 2 (11.8%) (WFNS 1 and 2)
- 3: 2 (11.8%) (WFNS 2 and 4)
- 4: 1 (5.9%) (related to surgery)
- 5: 0 (0.0%)
- 6: 1 (5.9%) (WFNS 4)



UnR/Recan: mRS (1 month)

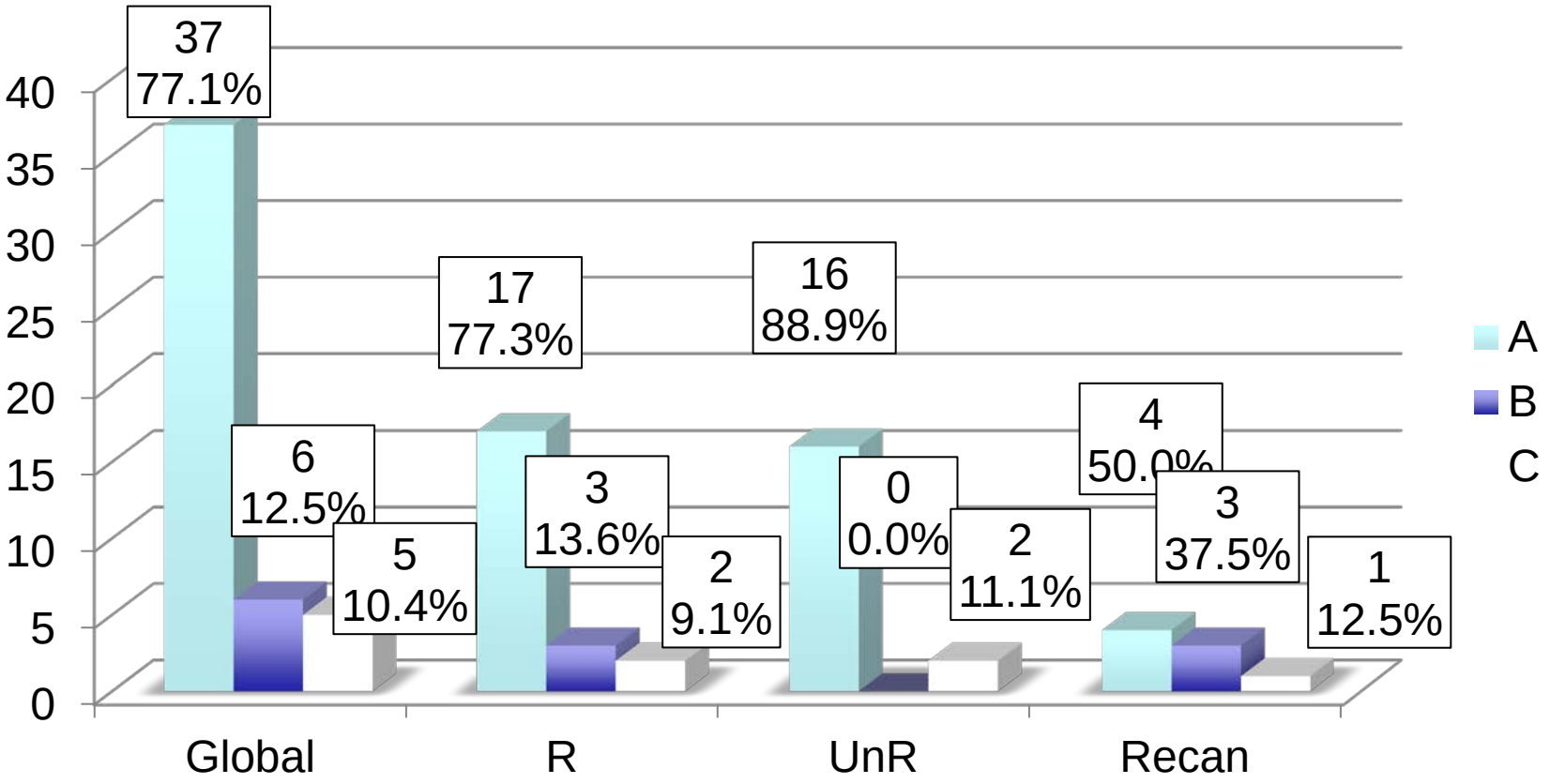
- Number of patients with 1 month mRS: 24/26 (92.3%)
- 0: 21 (87.4%)
- 1: 1 (4.2%)
- 2: 1 (4.2%) (mRS 4 before treatment – Ischemia)
- 3: 0 (0.0%)
- 4: 1 (4.2%) (mRS 4 before treatment – Ischemia)
- 5: 0 (0.0%)
- 6: 0 (0.0%)



Post-operative Anatomical results

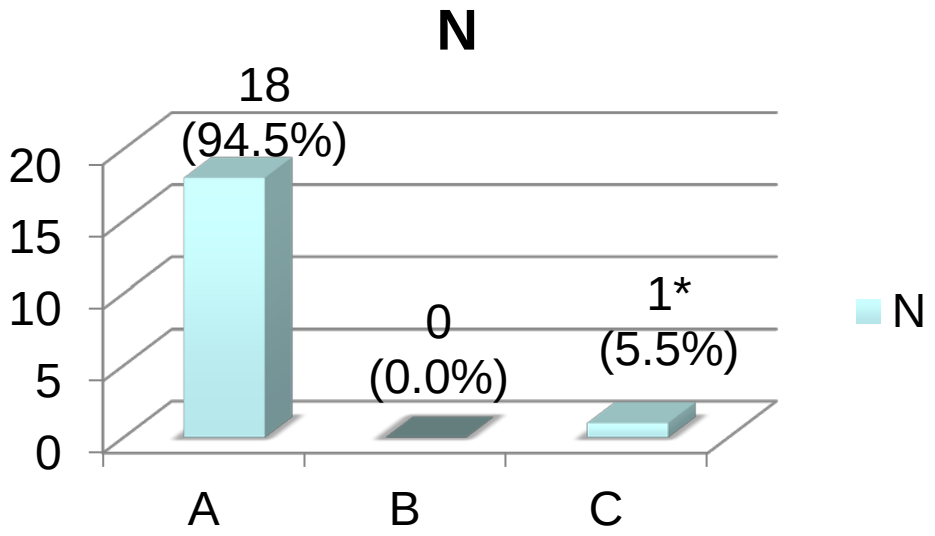
- Montreal scale:
  - A: 37 (77.1%)
  - B: 6 (12.5%)
  - C: 5 (10.4%)
- Rompus (22)
  - A: 17 (77.3%)
  - B: 3 (13.6%)
  - C: 2 (9.1%)
- Non Rompus (18)
  - A: 16 (88.9%)
  - B: 0 (0.0%)
  - C: 2 (11.1%)
- Recan (8)
  - A: 4 (50.0%)
  - B: 3 (37.5%)
  - C: 1 (12.5%)

Post-operative Anatomical results



Mid-term Anatomical results

- 19/48 (39.6%) (R: 7; UnR: 10; Recan: 2)
- 2-12 m (mean: 5.3 +/- 2.4 m; median: 6.0 m)
- Montreal scale:



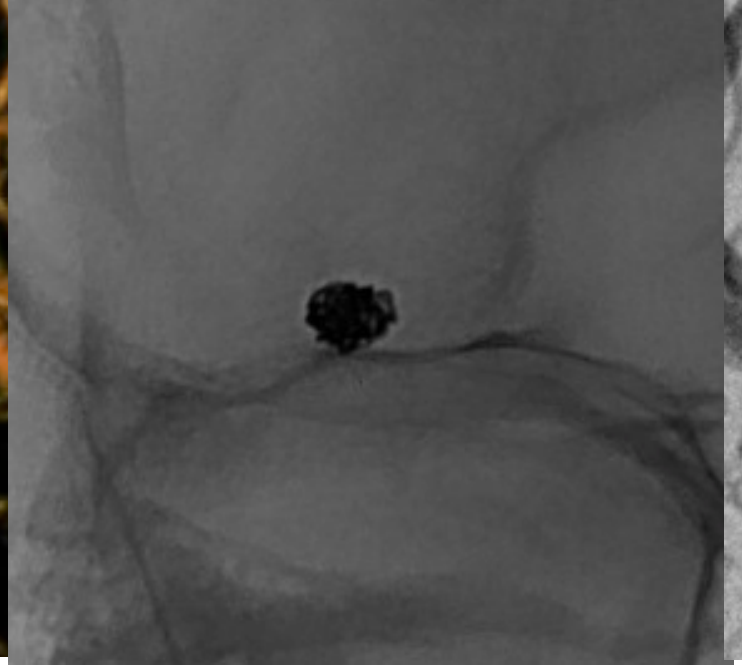
* Treated with coils and FD - was C postoperatively

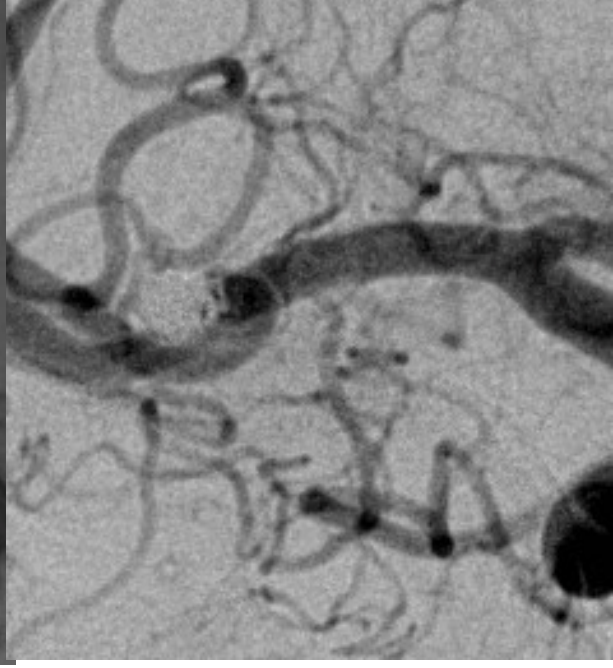
Conclusions

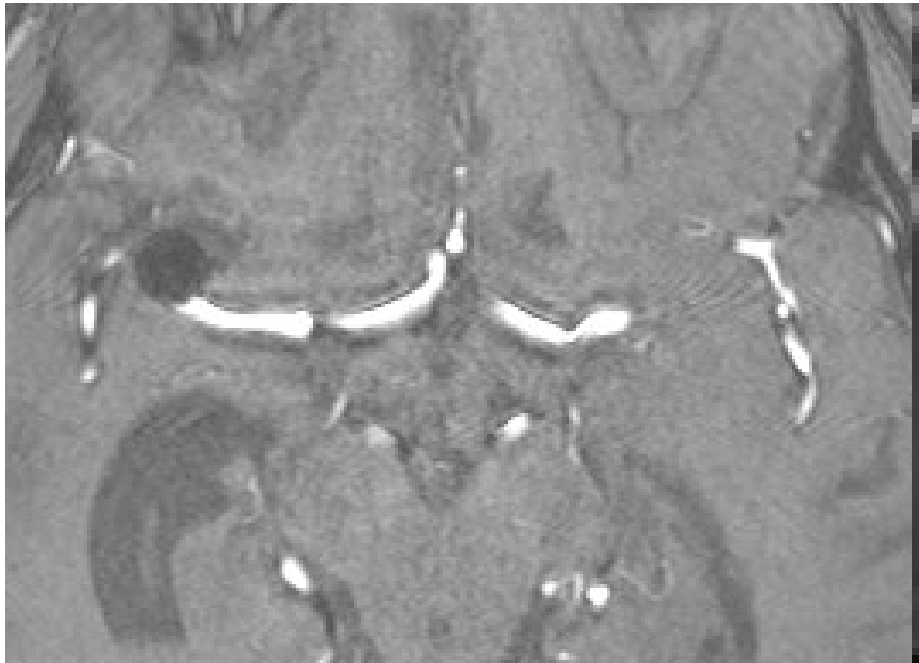
- In this preliminary experience
- Barricade coils were easy to manipulate
- Safety is similar to other coils
- Efficacy has to be evaluated in larger series

Conclusions

- Limits of Barricade coils:
  - Delivery pusher delamination: no more observed after pusher modification
  - MRI blooming effect: changes of the detachment zone are underway.
  - Detachment system with cables.

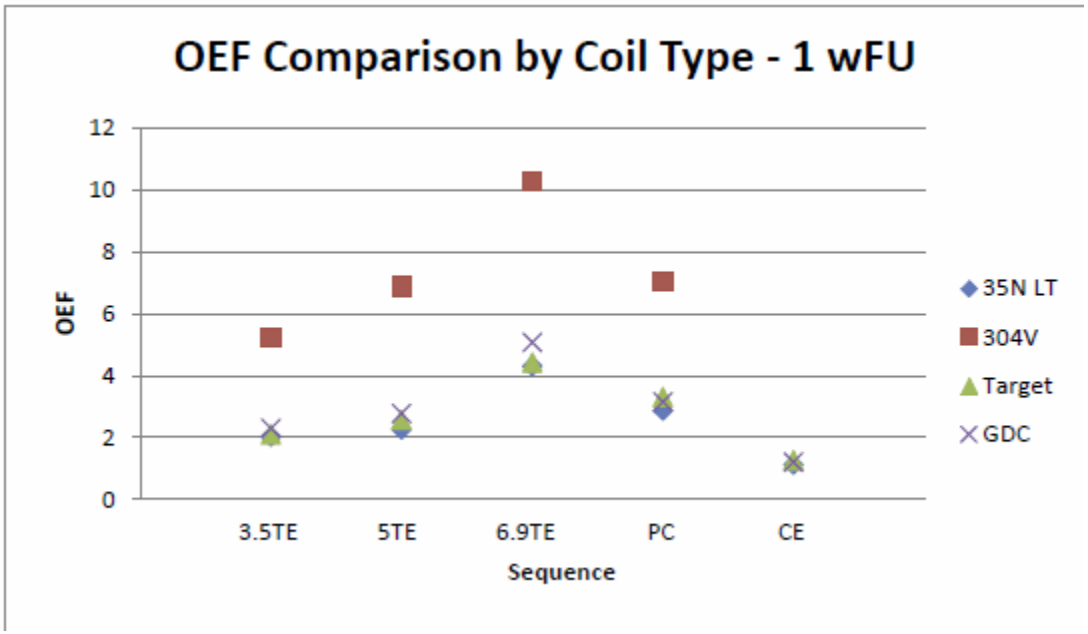


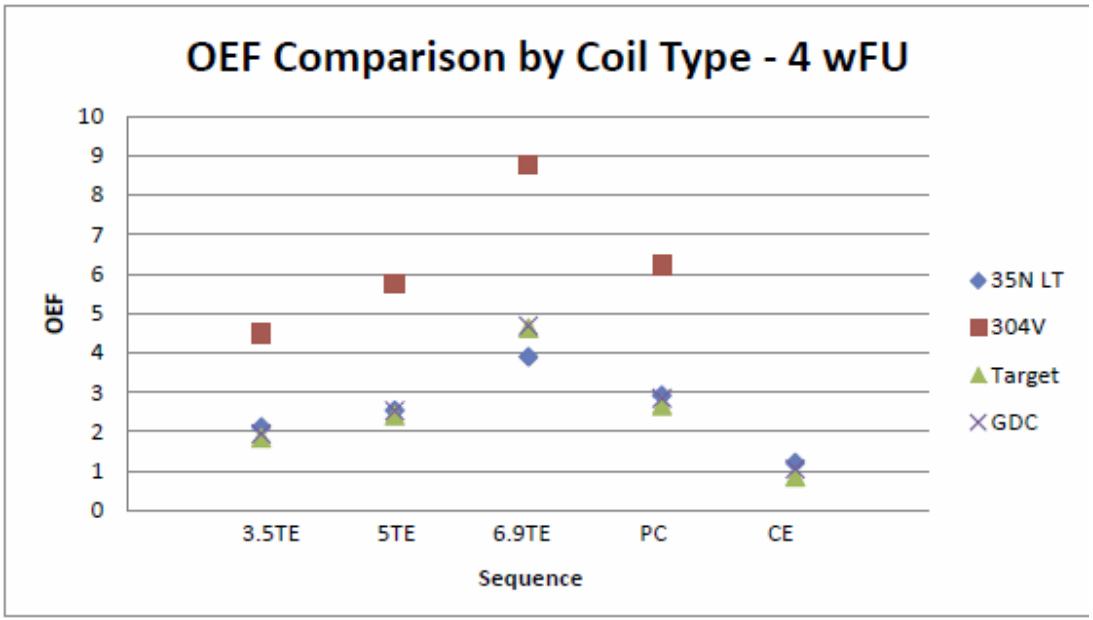




OEF: oversetimation factor

NEW ENGLAND CENTER FOR STROKE RESEARCH





OEFs were largest immediately after embolization and for the Blockade 304V system. There is a decay of OEFs at 4 weeks. Blockade 35N LT system has quanti-tatively similar amount of artifact as compared to other coil systems.

Barricade Registry

- Objective

  The primary objective of the study is to determine the safety of aneurysm embolization with Barricade coils.

- Study design

  This is a French multi-center, prospective clinical study.

- Study duration

  1 Year.

- Study population

  150 patients with ruptured and unruptured intracranial aneurysms.

- Clinical sites

  Up to 15 actively enrolling sites in France.

- Primary endpoints

  Rate and clinical outcome of complications (intra operative rupture and thromboembolic events) occurring during the procedure.

- Secondary, endpoints

  150 patients with ruptured and unruptured intracranial aneurysms.

❑ Clinical Secondary Endpoints

✓ Rate of thromboembolic events ocurring within 30 days after the procedure

✓ Rate of bleeding/rebleeding occurring within 30 days after the procedure

✓ Morbidity and mortality at hospital discharge and at one month ate of bleeding/rebleeding occurring within 30 days after the procedure (Glasgow Outcome Scale, Modified Rankin Scale).

- Anatomical Secondary, endpoints

  150 patients with ruptured and unruptured intracranial aneurysms.

  - Postoperative aneurysm occlusion will be evaluated on postoperative DSA Clinical Secondary Endpoints

    by the treating physician using the 3 grades Montreal scale (total occlusion, neck remnant, aneurysm remnant).