A DIRECT ASPIRATION FIRST PASS TECHNIQUE (ADAPT) IN PATIENTS WITH ACUTE ISCHEMIC STROKE

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Hôpital Foch, Suresnes, France
2015:
5 POSITIVE Results of Thrombectomy Trials

>90 % of stent retrievers have been used in these trials
2015:
Rate of recanalization in the two largest thrombectomy trials

<table>
<thead>
<tr>
<th></th>
<th>MR CLEAN</th>
<th>ESCAPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TICI 2B-3 %</td>
<td>81.5</td>
<td>86</td>
</tr>
</tbody>
</table>

Can we do better in terms of recanalization?
Since 2013: other technology than Stentriever

A DIRECT ASPIRATION FIRST PASS TECHNIQUE (ADAPT)
THE ADAPT TECHNIQUE

1. Access
2. Continuous Aspiration
3. Removal of the clot
Connecting tubing
MAX™ Pump
Canister
ACE™ Access SET-Up

ACE tracks over Velocity™ or 3MAX™

Note: If a low profile, 160 cm microcatheter is desired, track ACE over Velocity.
The larger, the better

ACE™ reperfusion catheter

– **12 Transition Zones** enable outstanding force transmission and exceptional kink resistance

– **Advanced Polymer** provides flexibility for superior tracking

– **Nitinol Round Wire Reinforcement** maintains lumen integrity

And now, ACE64!
THE RIGHT device FOR THE RIGHT ARTERY

ACE 64

6F
(.080"
2.03 mm)

.068"

5.75F
(.0755" 1.92 mm)

132 cm

ACE

6F
(.080"
2.03 mm)

.068"

5.4F
(.071" 1.80 mm)

132 cm
## The Right Device for the Right Artery

### ACE 64 and ACE Comparison

<table>
<thead>
<tr>
<th></th>
<th>ACE 64</th>
<th>ACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distal ID</td>
<td>.064”</td>
<td>.060”</td>
</tr>
<tr>
<td>Distal OD</td>
<td>5.75F (1.92 mm)</td>
<td>5.4F (1.8 mm)</td>
</tr>
<tr>
<td>Proximal ID</td>
<td>Same .068”</td>
<td></td>
</tr>
<tr>
<td>Proximal OD</td>
<td>Same 6F (.080”)</td>
<td></td>
</tr>
<tr>
<td>Transitions</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Distal Shaft Design</td>
<td>Same Nitinol coil reinforcement</td>
<td></td>
</tr>
<tr>
<td>Proximal Shaft Design</td>
<td>Alternating flat and round stainless steel wire coil reinforcement</td>
<td>Flat stainless steel wire coil reinforcement</td>
</tr>
</tbody>
</table>
HYPOTHESIS:
ADAPT first line better than Stent Retriever first line
HYPOTHESIS:
Synesgistic effect of ADAPT and Stent Retriever such as SOLITAIRE® = « SOLUMBRA »

+ 

> 

alone 

or 

alone
ADAPT FAST study: a direct aspiration first pass technique for acute stroke thrombectomy

Aquilla S Turk,1 Don Frei,2 David Fiorella,3 J Mocco,4 Blaise Baxter,5 Adnan Siddiqui,6 Alex Spiotta,7 Maxim Mokin,3 Michael Dewan,8 Steve Quarfordt,5 Holly Battenhouse,9 Raymond Turner,7 Imran Chaudry1

Table 2  Baseline characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (years)</td>
<td>66.3</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Men (n (%))</td>
<td>46 (47)</td>
</tr>
<tr>
<td>Women (n (%))</td>
<td>52 (53)</td>
</tr>
<tr>
<td>NIHSS</td>
<td></td>
</tr>
<tr>
<td>Pretreatment</td>
<td>17.2/17.0*</td>
</tr>
<tr>
<td>Post-treatment</td>
<td>7.3/4.0*</td>
</tr>
<tr>
<td>IV tPA</td>
<td></td>
</tr>
<tr>
<td>Yes (n (%))</td>
<td>27 (28)</td>
</tr>
<tr>
<td>No (n (%))</td>
<td>70 (72)</td>
</tr>
<tr>
<td>Average time to groin puncture (h)</td>
<td>8.5</td>
</tr>
<tr>
<td>Average time to TICI 2b/3 recanalization (min)</td>
<td>37</td>
</tr>
<tr>
<td>Site of occlusion (n (%))</td>
<td></td>
</tr>
<tr>
<td>Right M1</td>
<td>20 (20)</td>
</tr>
<tr>
<td>Right M2</td>
<td>11 (11)</td>
</tr>
<tr>
<td>Right ICA</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Right ICA terminus</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Left M1</td>
<td>23 (23)</td>
</tr>
<tr>
<td>Left M2</td>
<td>7 (7)</td>
</tr>
<tr>
<td>Left ICA</td>
<td>6 (6)</td>
</tr>
<tr>
<td>Left ICA terminus</td>
<td>11 (11)</td>
</tr>
<tr>
<td>Basilar</td>
<td>5 (5)</td>
</tr>
<tr>
<td>Right cervical ICA–MCA</td>
<td>8 (8)</td>
</tr>
<tr>
<td>Left cervical ICA–MCA</td>
<td>3 (3)</td>
</tr>
</tbody>
</table>

N = 98 over 6 centers.
Onset to Groin: 8.5 h (mean 507 min; median 241.5 min, SD=506 min).
Successful revascularization rate (TICI 2b-3): 95%.
Groin to TICI 2b or 3 revascularization was 36.6 min (SD=26.4 min).
ADAPT technique alone was successful in achieving successful revascularization of the occluded vessel in 78% of the cases.
A successful revascularization result (mTICI ≥ 2b) was achieved in 93% of cases whereas direct aspiration alone was successful in 30/54 (56%) cases.
ADAPT first line VERSUS SOLITAIRE first line
Methods

- We analyzed consecutive patients with large intracranial artery occlusions of the anterior circulation, treated with MT, according to the use of the first-line thrombectomy device (ADAPT or Solitaire).
- Consecutive inclusion at 2 comprehensive stroke center; 2012-2014
- Patients were eligible if they were treatable by MT within 6 h of stroke onset.
- Bridging or stand alone thrombectomy.
- The interventionist could, in case of recanalization failure with the Solitaire system, used another thrombectomy device left to the operator's choice.
ADAPT first line VERSUS SOLITAIRE first line

Methods

- Primary outcome was the rate of recanalization (TICI scores of 2b-3). Secondary outcome included procedural and clinical data.
- Secondary outcome:
  - Safety issues of these strategies of thrombectomy (procedures complications)
  - Clinical outcome at 3 months: patient's disability assessed by the modified Rankin score and mortality.
  - Procedural delays between these 2 strategies recanalization thrombectomy.
Baseline Characteristics

- Study period: 2012-2014
- 244 consecutive patients in 2 centers (Rothschild Foundation, and Foch Hospital) admitted for a cerebral infarction associated with proximal occlusion were included
- This is so far the largest series of patients with ADAPT
## Results – Baseline Characteristics

<table>
<thead>
<tr>
<th></th>
<th>ADAPT (n=124)</th>
<th>SOLITAIRE (n=120)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (yr) median</strong></td>
<td>65</td>
<td>64</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Sex (% male)</strong></td>
<td>47</td>
<td>49</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Medical History</strong></td>
<td>--</td>
<td>--</td>
<td>NS</td>
</tr>
<tr>
<td><strong>HBP</strong></td>
<td>49</td>
<td>59</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>NIHSS score, median</strong></td>
<td>17 (11-21)</td>
<td>17 (12-21)</td>
<td>0.99</td>
</tr>
<tr>
<td><strong>Location of the occlusion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M1</td>
<td>69.3</td>
<td>72.5</td>
<td>0.6</td>
</tr>
<tr>
<td>ICA with involvement of the M1 segment</td>
<td>30.6</td>
<td>27.5</td>
<td>0.6</td>
</tr>
<tr>
<td>rtPA use</td>
<td>66.1</td>
<td>44.0</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Stroke Onset to IV tPA</strong></td>
<td>130 (105-172)</td>
<td>142 (120-165)</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Onset to groin puncture</strong></td>
<td>245 (205-305)</td>
<td>235 (181-300)</td>
<td>0.23</td>
</tr>
</tbody>
</table>
## Results – Characteristics of Endovascular Procedures

<table>
<thead>
<tr>
<th></th>
<th>ADAPT (n=124)</th>
<th>SOLITAIRE (n=120)</th>
<th>P</th>
<th>P adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of patients receiving general anesthesia, n (%)</td>
<td>28 (22.6)</td>
<td>96 (80)</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Final TICI 2b-3, n (%)</td>
<td>102 (83.6)</td>
<td>82 (68.3)</td>
<td><strong>0.005</strong></td>
<td><strong>OR 2.044</strong> 95% CI 1.034_4.04</td>
</tr>
<tr>
<td>Median time from groin puncture to TICI 2b-3 (min)</td>
<td>43 (27-65)</td>
<td>50 (25-80)</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>Rescue Therapy</td>
<td>38.7</td>
<td>13.3</td>
<td>&lt;0.0001</td>
<td></td>
</tr>
<tr>
<td>Symptomatic ICH</td>
<td>16(13%)</td>
<td>8(6.7%)</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>Per procedural erratic embolisms, n, %</td>
<td>7 (5.6%)</td>
<td>8* (6.8%)</td>
<td>0.71</td>
<td></td>
</tr>
</tbody>
</table>

* : 8/118. 2 missing data
ASTER TRIAL:
Adapt versus StEnt Retriever

- ADAPT versus Stent retrievers for thrombectomy revascularisation of large vessel occlusion in acute ischaemic stroke: a randomised, controlled, multicentric, blinded-end-point study.

- Study initiated in November 2015

- Planned enrollment: n = 360 in up to 6 french centers

- Primary outcome: % of TICI 2b/3 at the end of the procedure

- To date approaching 220 patients enrolled after 7 months
  - (FOR, FOCH, BORDEAUX, LYON, NANTES, MONTPELLIER, LIMOGES, NANCY, NICE)
220 patients inclus sur 380 attendus soit 58% des inclusions théoriques
BRAVO À TOUS !!!
OBJECTIF: TERMINER L'ÉTUDE FIN 2016
When and where ADAPT in Anterior Circulation Ischemic Strokes Really Works?

• Retrospective analysis of our single center experience (Foundation Rothschild) results of endovascular treatment of anterior circulation of ischemic stroke by the technique of direct aspiration (ADAPT)
Methods

- From August 2013 to October 2015, we reviewed 347 « intent to treat » large vessel occlusion ischemic strokes that were treated with ADAPT.
- Procedural and clinical data were collected for analysis.
Methods

08/2013-10/2015
Patients referred for EVT of stroke n=606

Anterior Circulation n=547
- Decision to treat=471
  - ADAPT on intent n=347
  - Other type of treatment n=124
- Decision No EVT n=76 (14%)

Posterior Circulation n=59
Results

• 347 Patients
  – 159 Female (45.8%)
  – 188 Male (54.1%)
• Age: 65±14 years (range 21-93)
• Mean admission NIHSS 17±6.4
• Sites of occlusions:
  – 200 MCA (57.6%)
  – 89 Siphon (25.6%)
  – 58 Tandem (16.7%)
• 65.1% Patients received IV Thrombolysis prior to ADAPT (162 by alteplase, 55 by tenecteplase, and 9 with both).
Table 1. Baseline characteristics, overall and according to successful reperfusion status after ADAPT.

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>No (TICI 0/1/2a)</th>
<th>Yes (TICI 2b/3)</th>
<th>P Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of patients</strong></td>
<td>347</td>
<td>154</td>
<td>193</td>
<td></td>
</tr>
<tr>
<td><strong>Age, y mean± SD</strong></td>
<td>66.4 ± 14.7</td>
<td>65.9 ± 15.1</td>
<td>66.8 ± 14.5</td>
<td>0.57</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>159 (45.8)</td>
<td>71 (46.1)</td>
<td>88 (45.6)</td>
<td>0.92</td>
</tr>
<tr>
<td><strong>Hypertension</strong></td>
<td>196 (56.7)</td>
<td>87 (56.5)</td>
<td>109 (56.8)</td>
<td>0.96</td>
</tr>
<tr>
<td><strong>Diabetes</strong></td>
<td>68 (19.7)</td>
<td>31 (20.1)</td>
<td>37 (19.3)</td>
<td>0.84</td>
</tr>
<tr>
<td><strong>Dyslipidemia</strong></td>
<td>81 (23.4)</td>
<td>20 (18.8)</td>
<td>52 (27.1)</td>
<td>0.072</td>
</tr>
<tr>
<td><strong>Current smoking</strong></td>
<td>76 (22.0)</td>
<td>38 (24.7)</td>
<td>38 (19.8)</td>
<td>0.28</td>
</tr>
<tr>
<td><strong>Antithrombotic medications</strong></td>
<td>117 (33.9)</td>
<td>47 (30.7)</td>
<td>70 (36.5)</td>
<td>0.26</td>
</tr>
<tr>
<td><strong>Admission NIHSS score, median (IQR)</strong></td>
<td>17 (11-20)</td>
<td>17 (12-20)</td>
<td>16 (11-20)</td>
<td>0.78</td>
</tr>
<tr>
<td><strong>DWI-ASPECTS&lt;7</strong></td>
<td>115 (34.7)</td>
<td>57 (39.3)</td>
<td>58 (31.2)</td>
<td>0.12</td>
</tr>
<tr>
<td><strong>Site of occlusion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCA</td>
<td>200 (57.6)</td>
<td>69 (44.8)</td>
<td>131 (67.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ICA siphon</td>
<td>89 (25.6)</td>
<td>56 (36.4)</td>
<td>33 (17.1)</td>
<td></td>
</tr>
<tr>
<td>ICA siphon and MCA</td>
<td>58 (16.7)</td>
<td>29 (18.8)</td>
<td>29 (15.0)</td>
<td></td>
</tr>
<tr>
<td>Left side occlusion</td>
<td>174 (50.1)</td>
<td>78 (50.7)</td>
<td>96 (49.7)</td>
<td>0.87</td>
</tr>
<tr>
<td><strong>Cardio-embolic stroke etiology</strong></td>
<td>181 (52.2)</td>
<td>78 (50.7)</td>
<td>103 (53.4)</td>
<td>0.61</td>
</tr>
<tr>
<td><strong>Previous use of IV thrombolysis</strong></td>
<td>226 (65.1)</td>
<td>95 (61.7)</td>
<td>131 (67.9)</td>
<td>0.23</td>
</tr>
<tr>
<td><strong>General anesthesia</strong></td>
<td>65 (18.7)</td>
<td>34 (22.1)</td>
<td>31 (16.1)</td>
<td>0.15</td>
</tr>
<tr>
<td><strong>Onset to clot contact, min, median (IQR)</strong></td>
<td>283 (234-354)</td>
<td>301 (240-377)</td>
<td>269 (232-339)</td>
<td>0.003</td>
</tr>
<tr>
<td>Onset to groin puncture</td>
<td>255 (210-324)</td>
<td>274 (217-330)</td>
<td>245 (207-315)</td>
<td>0.008</td>
</tr>
<tr>
<td>Groin puncture to clot contact</td>
<td>25 (17-33)</td>
<td>27 (18-37)</td>
<td>22 (16-30)</td>
<td>0.006</td>
</tr>
</tbody>
</table>

Values expressed as number (percentage) unless otherwise indicated. * P-values calculated using Student t test or Mann-Whitney U test or Chi-square test as appropriate.
Results

- 80.0 % of cases under local anesthesia

- Cervical angioplasty in 53 cases (29 cases with stent)

- Angioplasty at the intracranial level in 13 cases (2 cases with a stent)

- IA Thrombolysis (n=3) or clot fragmentation with guidewire in (n=3) cases
Results

• Overall ADAPT was effective in achieving a TICI2b/3 in 83.4% of 347 patients

• Aspiration Component pass was effective in 56% (193/347 patients) median 2 passes

• A rescue strategy was necessary in 138/309 patients (40.3%)
08/2013-10/2015
347 On Intent ADAPT Anterior circulation
Prior to ASTER Study

- TICI<2b
  - Unsuccessful
    - n=154

  - Rescue with ST
    - n=138

  - Success
    - TICI 2b/3
      - n=86

  - Unsuccessful
    - TICI <2b
      - n=52

- TICI 2b/3
  - Success
    - n=193 (56%)

  - Aspiration component
    - ADAPT 209

ADAPT+Rescue
297/347:85.5%
MCA Involved 200 cases
Success 178/200 89%
ADAPT First line: 132/200 66%
FP to desobstruction: 37 min

ICA Involved 89 cases
Success 69/89 77.5%
ADAPT First line: 33/89 37%
FP to desobstruction: 38 min

Tandem cases: 42
Success 42/50 84%
ADAPT First line: 29/42 69%
FP to desobstruction: 54 min
## Procedural complications

**All 21%**

| HSA Traction / Perforation/ Stent | 5 perforation (Aspiration 1st line 3/209 1.4%)  
6 Traction SHA (Aspiration 1st line 1/209 0.5%) |
|-----------------------------------|--------------------------------------------------------------------------------------------------|
| Embol Same territory (EST)  
Embol new territory (ENT) | 30 (Aspiration 1st line 16/209 7.5%)  
22 (Aspiration 1st line 12/209 5.7%) |
| Dissection | 8 (ADAPT 1st line 2) |

**Intracranial Hemorrhage H24 and delayed* >24h (273/347 available 78.7%)**

| (HI 1-2) PH1 | 116 (42%) Aspiration 1st line 72/209 34% |
| (PH 2) | 13 (4.7%) Aspiration 1st line 4 (2%) |
| Delayed H | 5 (1.8%) |

Malignant Infarct: 6% (5 patients) 2 craniectomies  
Symptomatic Hemorrhage H24: 2% (5 patients PH2)
Results

• Three factors influenced positively the success of reperfusion with Aspiration component of ADAPT as a stand alone procedure:
  – an isolated MCA occlusion (p<0.0001)
  – a shorter time from stroke onset-to-femoral puncture (p=0.0156)
  – initial NIHSS
Table 2. Multivariable regression analysis of predictors of unsuccessful reperfusion after ADAPT

<table>
<thead>
<tr>
<th>Predictors</th>
<th>OR (95%CI) *</th>
<th>P-Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission NIHSS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIHSS (per 5 point increase)</td>
<td>3.96 (1.53-10.24)</td>
<td>0.004</td>
</tr>
<tr>
<td>NIHSS squared</td>
<td>0.80 (0.68-0.94)</td>
<td>0.005</td>
</tr>
<tr>
<td>Onset to clot contact (per 1 log increase)</td>
<td>2.74 (1.37-5.45)</td>
<td>0.004</td>
</tr>
<tr>
<td>ICA occlusion (Isolated or in tandem with MCA)</td>
<td>2.47 (1.57-3.88)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

* Calculated from backward-stepwise selection logistic-model after handling missing data for candidate variables by simple imputation.

Abbreviations: ICA=internal carotid artery; CI=confidence interval; MCA=middle cerebral artery; NIHSS=National Institutes of Health Stroke Scale, OR=odds ratio.

Supplemental figure. Shape of relationship between successful reperfusion after ADAPT and admission NIHSS using restricted cubic spline function (3 knots).
Results

• Age, Gender, DWI-ASPECTS and IV thrombolysis prior to MT did not influence the success (Final TICI score) of the ADAPT procedure
Results

- 3-month mRS were available for 304/347 (88%)
- 136/304 (45%) had a good clinical outcome (mRS 0-2)
- death occurred in 69 patients (23%)
Results

• When ADAPT was the sole technique used to achieve satisfactory reperfusion, 3-month mRS\(\leq 2\) was achieved in 70% of the patients.

• When rescue therapy was used after failure of ADAPT, only 41% of mRS\(\leq 2\) at 3-months was achieved (\(p=0.0001\)).
Results

• In the anterior circulation, starting with ADAPT first is effective in 56% to achieve TICI2B/3
  – MCA: 65%
  – ICA: 36%
  – Tandem 50%

• A rescue strategy with the use of other techniques (ADAPT + stentrievers) can achieve a recanalization rate with TICI2B/3 in 83.4%
### Summary

#### ADAPT versus Stent retriever: TICI 2b-3

<table>
<thead>
<tr>
<th></th>
<th>MR CLEAN</th>
<th>ESCAPE</th>
<th>Turk A, 2013</th>
<th>Kowoll, 2015</th>
<th>Rothschild series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADAPT ±Stent Retriever</strong></td>
<td>---</td>
<td>---</td>
<td>95</td>
<td>87.5</td>
<td>83.4</td>
</tr>
<tr>
<td><strong>Stent retriever</strong></td>
<td>58.7</td>
<td>72.4</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**TICI 2b-3 %**

**MR CLEAN**

**ESCAPE**

**Turk A, 2013**

**Kowoll, 2015**

**Rothschild series**
Case 1 BA HAOUKA

- 47 YO Male
- History of stroke (complete recovery)
  October 27, 2015:
- 9:40 pm: left hemiparesis and dysarthria (NIHSS 10)
- 10:52 pm: MRI showing insular DWI restriction and right MCA occlusion
Case 1

- 47 yo man
- History of recent stroke (complete recovery October 27, 2015):
  - 9:40 pm: left hemiparesis and dysarthria (NIHSS 10)
  - 10:52 pm: MRI showing insular DWI restriction and right MCA occlusion (DWI ASPECT 8), no rt-PA
Case 1

- ADAPT
- M2 occlusion
- 3 aspirations

- TICI2B
Case 1
Case 1
Case 1
Case 1
Case 1
Case 1

- **Time from groin puncture to recanalization**: 25 min to TICI2B

- **3 months Outcome**: mRS 1
55 YO Female

History of stroke (complete recovery)

October 27, 2015:

- 7:00am: right hemiparesis and dysphasia

- 11:55am: MRI showing surface cortex DWI restriction (ASPECT 7) and left MCA occlusion
• 55 YO Female
• History of stroke (complete recovery)
October 27, 2015:
• 7:00am: right hemiparesis and aphasia (NIHSS 10)
• 11:55am: MRI showing surface cortex DWI restriction (DWI ASPECT 7) and left MCA occlusion
Case 2:

- ADAPT
- M2 superior branch occlusion
- M1 floating clot
- Neuron Max 6F/5Max ACE/Synchro 14
- 1 aspiration
- TICI 2b
Case 2
Case 2
Case 2
Case 2
Case 2:

- Time from groin puncture to recanalization: 30 min to TICI2B
- 3 months Outcome: mRS 1
Case 3: EUGENIE DAVID

- **47 YO male**
- **History of atrial fibrillation (xarelto)**

October 9, 2015:
- **2:00am:** right hemiparesis and aphasia (NIHSS 24)
- **4:43am:** CT showing left MCA occlusion (CT-ASPECT 9)
Case 3:

- 47 yo man
- History of atrial fibrillation (Xarelto) October 9, 2015:
- 2:00am: right hemiparesis and aphasia (NIHSS 24)
- 4:43am: CT showing left MCA occlusion (CT ASPECT 9)
Case 3:

- No thrombolysis
- ADAPT
- M3 occlusion
- Neuron Max 6F/5Max ACE/Velocity/Synchro14
- 1 aspiration

TICI 3
Case 3
Case 3
Case 3
Case 3
Case 3:

- Time from groin puncture to recanalization: 23 min to TICI 3
- 3 months Outcome: mRS 1
Case 4: EZZRARI LARBI

- 74 YO male
- History of atrial fibrillation (treatments unknown)

December 11, 2015:
- 10:30am: Right hemipalsy and aphasia (NIHSS 26)
- 12:00am: MRI showing superficial cortex and lenticular nucleus, caudate nucleus DWI restriction (ASPECT 4) and left MCA occlusion
Case 4:

- 74 YO male
- History of atrial fibrillation (treatments unknown)

December 11, 2015:

- 10:30am: right hemipalsy and aphasia (NIHSS 26)
- 12:00am: MRI showing superficial cortex and lenticular nucleus, caudate nucleus DWI restriction (ASPECT 4) and left MCA occlusion
Case 4:

- Thrombolysis
- ADAPT
- M1 occlusion
- Neuron Max 6F/ ACE64/
  3Max /Synchro14
- 2 aspirations

TICI 2b
Case 4:

- Thrombolysis
- ADAPT
- M1 occlusion
- Neuron Max 6F/ ACE64/ 3Max /Synchro14
- 2 aspirations

TICI 2b
Case 4:
Case 4:
Case 4:

- Time from groin puncture to recanalization: 49 min
- 3 months Outcome: mRS 2
Case 5 LOOSDREGT JEANNINE

- 82 YO male
- Medical history unknown

November 21, 2015:
- 8:30pm: right hemipalsy and aphasia (NIHSS 18)
- 9:40am: CT with angioCT showing left MCA occlusion
Case 5

- 82 YO male
- Medical history unknown

November 21, 2015:
- 8:30pm: right hemipalsy and aphasia (NIHSS 18)
- 9:40am: CT with angioCT showing left MCA occlusion (CT ASPECT 10)
Case 5

- Thrombolysis
- ADAPT
- M1 occlusion
- Neuron Max 6F/ ACE64/ 3Max /Synchro14
- 1 aspiration

TICI 3
Case 5
Case 5
Case 5:

- Time from groin puncture to recanalization: 21 min
- 3 months Outcome: mRS 3
Case 6 Mastak Mustafa Tahir

- 60 YO male
- Medical history unknown

November 118, 2015:
- 7:30am: Left hemipalsy and aphasia (NIHSS 13)
- 9:37am: MRI showing right superficial and deep DWI restriction (ASPECT 6) and right MCA occlusion
Case 6

- 60 YO male
- Medical history unknown

November 18, 2015:
- 7:30am: left hemipalsy and aphasia (NIHSS 13)
- 9:37am: MRI showing right superficial and deep DWI restriction (ASPECT 6) and right MCA occlusion
Case 6

- Thrombolysis
- ADAPT
- M1 occlusion
- Neuron Max 6F/ 5Max 64/ 3Max /Synchro14
- 2 aspirations

TICI 3
Case 6
Case 6
Case 6
Case 6
Case 6:

- Time from groin puncture to recanalization: 37 min
- 3 months Outcome: mRS 0
Case 7 Mellas Ouerdia

- 79 YO female
- History of atrial fibrillation (pradaxa)

December 1st, 2015:
- 9:00am: right hemipalsy and aphasia (NIHSS 22)
- 10:57am: CT showing left MCA occlusion and deep nucleus hypodensity (CT ASPECT 8)
Case 7

- 79 YO female
- History of atrial fibrillation (pradaxa)

December 1st, 2015:
- 9:00am: right hemipalsy and aphasia (NIHSS 22)
- 10:57am: CT showing left MCA occlusion and deep nucleus hypodensity (CT ASPECT 8)
Case 7:

- No thrombolysis
- ADAPT
- M1 occlusion (then M2-3 occlusion)
- Neuron Max 6F/5Max ACE/3 Max /Synchro14
- 2 aspirations

TICI 2B
Case 7
Case 7
Case 7
Case 7
Case 7
Case 7
Case 7
Case 7

- Post endovascular treatment CT:
  - left SAH
  - Oedema
  - Mass effet
Case 7:

- Time from groin puncture to recanalization: 15 min
- 3 months Outcome: mRS 0
Case 8 : ( dufosse ) Meunier Monique

- 66 YO female
- History of High BP, dyslipidemia, obesity, diabetes

October 13, 2015 :
- 3:40pm: left hemipalsy and dysarthria
- 5:18pm : MRI showing right superficial and deep DWI restriction ( ASPECT 3 ) and right MCA occlusion
Case 8:

- 66 yo woman
- HTN, dyslipidemia, obesity, diabetes

October 13, 2015:
- 3:40pm: left hemiparesis and dysarthria (NIHSS 14)
- 5:18pm: MRI showing right superficial and deep DWI restriction (ASPECT 3) and right M1 occlusion
Case 8:

- Thrombolysis
- ADAPT
- M1 occlusion
- Neuron Max 6F/ 5Max ACE/
  3 Max/Synchro14
1 aspiration in M1
2 aspirations in M2
1 Trevo 3x20mm in distal M2

TICI 3
Case 8 :
Case 8:
Case 8 : after 1st aspiration
Case 8 : 2\textsuperscript{nd} aspiration
Case 8: after 2\textsuperscript{nd} aspiration
Case 8: 3rd aspiration
Case 8 : after 3rd aspiration
Case 8: after 3rd aspiration
SWITCH to TREVO
Case 8:
TREVO 1st
Case 8 : after 1st TREVO
Case 8:
TREVO 2\textsuperscript{nd}
Case 8:
TREVO 2nd control
Case 8:
after 2\textsuperscript{nd} TREVO
Case 8:

- Time from groin puncture to TICI 3 recanalization: 47 min
- 3 months Outcome: mRS 5
ADAPT take Home Message

- ADAPT alone provide TICI 2b/3 revascularization in 60% of cases

- ADAPT + other techniques (Stent retrievers) provide TICI 2b/3 revascularization in 83% of cases

- An isolated MCA occlusion is the most favorable situation for ADAPT in anterior circulation strokes