Direct Aspiration Thrombectomy Technique for Acute Ischemic Stroke

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Disclosures
• Pulsar Vascular – consulting, PI ANSWER Study
• Penumbra – consulting, nonfinancial research support
• Stryker – consulting, nonfinancial research support

Question:
• How do we continue to improve/push thrombectomy techniques in the setting of overwhelmingly positive ‘Stent Retriever’ trials?
• It’s not thrombectomy vs. IV TPA anymore…
  BUT RATHER: can we get better at thrombectomy?

EVOLUTION OF THROMBECTOMY TECHNIQUES

MERCI Retrieval System (Concentric Medical)

Limitation is Traction on Vessels and Low Revascularization Rates
Merci traction on arteries

Second Generation Thrombectomy

Limitation is Downstream Emboli and Modest Revascularization Rates
Current Generation Mechanical Thrombectomy

“Solumbra” Technique (Solitaire/Penumbra)

We now have level 1a evidence supporting the role of thrombectomy for acute ischemic stroke.

But we have continued to advance the techniques in the meantime....

NEW Generation Catheters
TRACKABLE LARGE BORE ASPIRATION CATHETER

- Softer Tip
- More Flexible
- Improved Trackability
86 yo male presents with left facial droop, hemiparesis, dysarthria; NIHSS 12, LSN normal 10 pm night before. Presents to ED at 7 am.

*R MCA Stroke Syndrome*
20 Minutes from groin puncture to TICI 3 Flow

Discharged POD#4 NIHSS 1

ADAPT Technique:
A Direct Aspiration First Pass Technique
Evolution from Aspiration w/ Separator ➔
Aspiration w/ Stent Retriever ➔ Aspiration w/ Large Bore Catheter alone.

ORIGINAL RESEARCH
Initial clinical experience with the ADAPT technique: A direct aspiration first pass technique for stroke thrombectomy

Aquilina S Turk,1 Alex Spicota,2 Don Frei,2 Di Morcos,3 Blaise Baxter,4 David Finella,4 Adrian Siddiqui,2 Maxim Mokhin,5 Michael Dewan,5 Benny Woo,5 Raymond Turner,1 Harris Hawk,1 Amanda Mirzapour,1 Iman Chaudry3

11/17/2015
2 passes
10 minutes

ADAPT as Primary Method

11 MINUTES
ADAPT as Primary Method

5 MAX
45 mins

ADAPT as Primary Method

ADAPT FAST
A Direct Aspiration First Pass Technique
For Acute Stroke Thrombectomy

Table 4: Comparison of outcomes from current ADAPT (FAST, SWAT, TRICKS, N ASA, and direct cerebral embolization)

Table 5: Comparison of outcomes from current ADAPT (FAST, SWAT, TRICKS, N ASA, and direct cerebral embolization)
**ADAPT FAST**

*A Direct Aspiration First Pass Technique For Acute Stroke Thrombectomy*

**Table 4** Comparison of outcomes from current ADAPT (FAST, TICI, NASA, and direct retrieval meta-analysis)

<table>
<thead>
<tr>
<th>Procedure</th>
<th>FAST (n=33)</th>
<th>NASA (n=144)</th>
<th>ADAPT (n=200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to last normal</td>
<td>17</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>Time to last NIHSS</td>
<td>4.5</td>
<td>5.5</td>
<td>4.8</td>
</tr>
<tr>
<td>Time to last TICI 2b</td>
<td>7</td>
<td>9.5</td>
<td>9</td>
</tr>
<tr>
<td>Success TICI 2b (%)</td>
<td>90</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>Overall ADAPT TICI 2b/3</td>
<td>95%</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>90 day mRS 0-2</td>
<td>49%</td>
<td>49%</td>
<td>49%</td>
</tr>
<tr>
<td>Safety: mRS 6:</td>
<td>18%</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td>sICH 1.4% (2/140)</td>
<td></td>
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</tbody>
</table>

**FAST**

(and with stroke, fast is good!!!)

**SAFE AND EFFICACIOUS**

**ADAPT RESULTS**

- Avg time to treat from last normal: 7.5 hours
- Avg presenting NIHSS 17
- Avg discharge NIHSS 6.7

*Overall ADAPT TICI 2b/3: 95% of time; TICI 3: 52%.*

- 90 day mRS 0-2: 49%
- Safety: mRS 6: 18%; sICH 1.4% (2/140)

**Cost effective**
**Musc Procedural Cost**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penumbra Aspiration</td>
<td>$11,159</td>
</tr>
<tr>
<td>Stent Retriever</td>
<td>$16,022</td>
</tr>
<tr>
<td>ADAPT</td>
<td>$8066</td>
</tr>
</tbody>
</table>

N=444 cases

**NEW Generation**

**Trackable Large Bore Aspiration Catheter**

- Softer Tip
- More Flexible
- Improved Trackability

**Nitinol Coil**

**Advanced Polymer**

**Painless**
So, now what?

**Stent Retriever**

**Vs. Direct Aspiration?**

**COMPASS TRIAL**

(Comparison of Direct Aspiration vs. Stent Retriever as a First Approach)

- Time from symptom onset < 6hr
- LVO/Favorable CT perfusion
- NIHSS ≥ 8
- Randomize to SR vs. DA as first modality (3 attempts)
- Enrolled 13/270, 10 Centers

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**THANK YOU**