ACCESS SITE COMPLICATIONS IN MECHANICAL THROMBECTOMY FOR ACUTE ISCHEMIC STROKE: A REVIEW OF PROSPECTIVE TRIALS

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Transfemoral access site complications have been widely reported in the field of interventional cardiology, leading to the adoption of transradial access, resulting in a 70-80% decrease in access-site complications.

Despite the evidence, neurosurgeons remain hesitant to adopt a transradial approach, continuing instead to utilize femoral access despite the possibility of a higher complication rate.

The current analysis aims to analyze prospective studies and randomized control trials to determine an accurate access-site complication rate from transfemoral procedures in neurosurgery.
METHODS

- Articles were systematically sourced from the NCBI PubMed archive using the search terminology “mechanical thrombectomy + prospective OR mechanical thrombectomy + RCT”.
- Only prospective, randomized control trials published after 2008 were included. Only articles addressing major femoral access site complications in neuro-endovascular mechanical thrombectomies were included.
- Serious transfemoral access-site complications were assessed in mechanical thrombectomies during an acute ischemic stroke. Serious adverse events (SAEs) were defined as complications which meet any of the following criteria: result in >3g Hgb or 10% HCT drop, require surgical/IR intervention, require transfusion, prolong the patient's stay in the hospital, or result in death. Minor events were defined as groin hematomas not-requiring transfusion.
RESULTS

- 10 prospective studies out of 339 total screened met inclusion criteria
- Ten studies contained 1,118 total interventions
RESULTS: ACCESS-SITE COMPLICATION RATES

- 10 studies out of 339 total screened met inclusion criteria.
- 25 major access site complications were identified, out of 1,118 total interventions, revealing a major access site complication rate of 2.24%
- This rate increases to 6.08% if ambiguous vessel dissections and procedural complications were included.

<table>
<thead>
<tr>
<th>Trial</th>
<th>Non-Major Adverse Events (AE)*</th>
<th>Serious Adverse Events (SAE)**</th>
<th>Total Adverse Events (TAE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWIFT</td>
<td>N/A</td>
<td>4-9/144 (2.78-6.25%)</td>
<td>N/A</td>
</tr>
<tr>
<td>Escape Trial</td>
<td>12/165 (7.27%)</td>
<td>2/165 (1.21%)</td>
<td>14/165 (8.48%)</td>
</tr>
<tr>
<td>Revascat</td>
<td>N/A</td>
<td>N/A</td>
<td>12/103 (11.65%)</td>
</tr>
<tr>
<td>Extend IA</td>
<td>N/A</td>
<td>1/35 (2.86%)</td>
<td>N/A</td>
</tr>
<tr>
<td>DAWN</td>
<td>N/A</td>
<td>1/107 (0.93%)</td>
<td>N/A</td>
</tr>
<tr>
<td>STAR</td>
<td>N/A</td>
<td>2-13/202 (0.99-6.43%)</td>
<td>N/A</td>
</tr>
<tr>
<td>MERCI</td>
<td>N/A</td>
<td>9-25/164 (5.49-15.20%)</td>
<td>N/A</td>
</tr>
<tr>
<td>DEFUSE</td>
<td>N/A</td>
<td>3-7/92 (3.26-7.61%)</td>
<td>N/A</td>
</tr>
<tr>
<td>MR RESCUE</td>
<td>N/A</td>
<td>0-1/64 (0-1.56%)</td>
<td>N/A</td>
</tr>
<tr>
<td>THRACE</td>
<td>N/A</td>
<td>3-9/145 (2.07-6.21%)</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Across the trials included in this review, the overall rate of major access site complications was 2.24%. We maintain that this rate is not low and poses significant risks to patients. Additionally, this rate may be greater than reported due to the multiple unspecified vessel complications mentioned in the studies. In cardiology, the standard of care has shifted to transradial access over transfemoral access given the decreased rate of complications. We suggest further investigation into the feasibility and complication rates of alternative access sites for neuro-interventional procedures.
A review of 10 prospective trials revealed a 2.24% major access site complication in neuro-interventional procedures utilizing transfemoral access.

Alternative vascular access sites, such as transradial, should be investigated as viable alternatives to transfemoral access in order to decrease the incidence of access-site complications.
REFERENCES


