**Impact of Post-Procedural TIAs on Long-Term Survival after CAS And CEA:**

TIAs Are Not Innocuous

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**Background**

- **RCTs of CEA vs CAS** (EVA3S, ICSS, SPACE, CREST, ACT)
  - **Stroke** and **Death** primary outcomes
  - **Myocardial Infarction** (CREST, ACT): high debate but identified as a possible determinant of **higher long-term mortality**

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**Background**

- Analysis of **myocardial infarction biomarkers** in CREST

![Graph showing biomarkers and mortality rate](Blackshear et al. Circulation 2011)

- **Biomarkers +**
  - Higher mortality rate in the follow-up

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**Background**

- General population: **TIAs** independent predictors of long-term mortality

![Graph showing correlation](Van Wijk et al. Lancet 2005)

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**Impact of Post-Procedural TIAs**

**TIAs** have been left unreported in almost all the RCTs
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Can POST-OP TIAs influence the long-term survival after carotid revascularization?

Impact of Post-Procedural TIAs

- Evaluation of a series of 1390 pts:
  - 868 CEA and 522 CAS
- TIAs, Stroke at 30-day after revasc

Effect of TIA and Stroke on long-term survival

Impact of Post-Procedural TIAs

To evaluate the effect of TIA and stroke on long-term survival in patients submitted to carotid revascularization.

Should Post-op TIAs be included in the analysis of carotid revascularization performance?

Impact of Post-Procedural TIAs

<table>
<thead>
<tr>
<th>Postoperative results</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIA</td>
<td>38 (2.7)</td>
</tr>
<tr>
<td>Stroke</td>
<td>29 (2.0)</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>9 (0.6)</td>
</tr>
<tr>
<td>Death</td>
<td>7 (0.5)</td>
</tr>
</tbody>
</table>

(27.3% symptomatic patients)
Impact of Post-Procedural TIAs

- Mean follow-up: 52.9 ± 15.6 months
- Lost to follow-up: 126 (9.6%)

High overall survival rate

Impact of Post-Procedural TIAs

- TIA vs. No cerebral events
  - p = .001

Post-operative TIAs: higher mortality at F-U

Impact of Post-Procedural TIAs

- Stroke vs. No cerebral events
  - p = .03

Post-op Stroke: higher mortality at F-U

Impact of Post-Procedural TIAs

- TIA vs. Stroke
  - p = .61

Stroke &TIAs: similar mortality at F-U

Impact of Post-Procedural TIAs

Clinical characteristics HR CI (95%) Sig.

<table>
<thead>
<tr>
<th>Clinical characteristic</th>
<th>HR</th>
<th>CI (95%)</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.07</td>
<td>1.01-4.90</td>
<td>.01</td>
</tr>
<tr>
<td>Male gender</td>
<td>0.55</td>
<td>0.21-1.42</td>
<td>.22</td>
</tr>
<tr>
<td>Preoperative symptoms</td>
<td>1.45</td>
<td>0.63-3.32</td>
<td>.37</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>2.04</td>
<td>0.88-4.71</td>
<td>.09</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>0.87</td>
<td>0.29-2.55</td>
<td>.86</td>
</tr>
<tr>
<td>Chronic renal failure</td>
<td>2.54</td>
<td>1.04-6.10</td>
<td>.04</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>6.33</td>
<td>0.74-53.79</td>
<td>.09</td>
</tr>
<tr>
<td>Stroke</td>
<td>3.87</td>
<td>1.13-13.19</td>
<td>.03</td>
</tr>
<tr>
<td>TIA</td>
<td>3.10</td>
<td>1.01-9.72</td>
<td>.04</td>
</tr>
</tbody>
</table>

Cox model hazard ratio for risk of mortality

Impact of Post-Procedural TIAs

- Stroke &TIAs independent predictors of late mortality

CAS: 93% 98%
CEA: 96% 94%

Post-op TIA & Stroke reduce survival both in CEA and in CAS
Impact of Post-Procedural TIAs

- Post-op TIAs are associated with higher long-term mortality
- The incidence of TIA, should be carefully analyzed in the postoperative outcome of any trial evaluating the performance of carotid revascularization