Proximal vs. distal protection for carotid artery stenting: a review of the data

Prof. Eugenio Stabile, MD, PhD, FESC
Division of Cardiology, Department of Advanced Biomedical Sciences, University of Napoli “Federico II”
Disclosure

Speaker name:

Eugenio Stabile

I have the following potential conflicts of interest to report:

☐ Consulting
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)

I do not have any potential conflict of interest
Distal protection EPD (i.e. "filters")

Proximal protection EPD (proximal Balloon occlusion and flow reversal systems)
Microembolic Signals During CAS

Endovascular clamping led to a significant reduction of microscopic embolization, when compared with filter device, thus increasing safety of carotid intervention.

Table 3

<table>
<thead>
<tr>
<th>Steps</th>
<th>FilterWire EZ (n = 27)</th>
<th>MoMA (n = 26)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesion wiring</td>
<td>26 (96%)</td>
<td>19 (73%)</td>
<td>0.145</td>
</tr>
<tr>
<td>Pre-dilation*</td>
<td>6/7 (86%)</td>
<td>4/10 (40%)</td>
<td>0.578</td>
</tr>
<tr>
<td>Stent crossing of the lesion</td>
<td>27 (100%)</td>
<td>7 (27%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Stent deployment</td>
<td>27 (100%)</td>
<td>7 (27%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Stent post-dilation</td>
<td>26 (96%)</td>
<td>7 (27%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Device retrieval/deflation</td>
<td>22 (81%)</td>
<td>25 (96%)</td>
<td>0.721</td>
</tr>
</tbody>
</table>

Montorsi et al. JACC 2011

Schmidt et al. J Am Coll Cardiol Intv 2004
The PROFI Study (Prevention of Cerebral Embolization by Proximal Balloon Occlusion Compared to Filter Protection During Carotid Artery Stenting)

A Prospective Randomized Trial

Klaudija Bijuklic, MD, Andreas Wandler, MD, Fadia Hazizi, MD, Joachim Schofer, MD, PhD
Hamburg, Germany

DWMRI Subgroup

# new lesions
Filter 38
MO.MA 7

# pts with new lesions
42.8% 14.2%

Bijuklic et al. J Am Coll Cardiol 2012

Montorsi et al. J Am Coll Cardiol Intv 2011
Cerebral Embolic Lesions Detected With Diffusion-Weighted Magnetic Resonance Imaging Following Carotid Artery Stenting
A Meta-Analysis of 8 Studies Comparing Filter Cerebral Protection and Proximal Balloon Occlusion

<table>
<thead>
<tr>
<th>Study ID</th>
<th>ES</th>
<th>95% CI</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bijuklic K. et al. 2012</td>
<td>-1.05</td>
<td>-1.58, -0.52</td>
<td>62</td>
</tr>
<tr>
<td>Cano N.M. et al. 2013</td>
<td>-0.54</td>
<td>-1.06, -0.03</td>
<td>60</td>
</tr>
<tr>
<td>Castro-Afonso L.H. et al. 2013</td>
<td>0.64</td>
<td>0.00, 1.28</td>
<td>40</td>
</tr>
<tr>
<td>El-Koussy M. et al. 2007</td>
<td>-0.61</td>
<td>-1.22, -0.00</td>
<td>44</td>
</tr>
<tr>
<td>Flach Z.H. et al. 2007</td>
<td>0.37</td>
<td>-0.38, 1.11</td>
<td>33</td>
</tr>
<tr>
<td>Leal I. et al. 2012</td>
<td>-0.60</td>
<td>-1.10, -0.10</td>
<td>64</td>
</tr>
<tr>
<td>Montorsi P. et al. 2011</td>
<td>-0.52</td>
<td>-1.21, 0.17</td>
<td>35</td>
</tr>
<tr>
<td>Taha M.M. et al. 2009</td>
<td>-1.25</td>
<td>-2.42, -0.08</td>
<td>19</td>
</tr>
<tr>
<td>Overall (random-effects model)</td>
<td>-0.43</td>
<td>-0.84, -0.02</td>
<td>357</td>
</tr>
</tbody>
</table>
Carotid Wallstent Versus Roadsaver Stent and Distal Versus Proximal Protection on Cerebral Microembolization During Carotid Artery Stenting

Montorsi P. et al. J Am Coll Cardiol Intv 2020

Double layered stents for carotid angioplasty: A meta-analysis of available clinical data

Sannino A et al. Cath Cardivasc Int 2018
Transcarotid revascularization (T-CAR)¹

**DESERVE Study:** 26% of subjects with new DW-MRI lesion(s) post procedure²

---

1 Pinter et al. *J Vasc Surg* 2011
2 Stabile et al. *Int J Cardiol* 2013
Prof. Eugenio Stabile, MD, PhD

Schermehorn LM et al. JAMA 2019
The use of proximal protection for CAS in increasing, also thanks to the use of TCAR

Nevertheless we need to keep in mind that experience plays a crucial role in determining the outcomes

This is true for TF distal and Proximal protection, data on TCAR are still needed