Why Temporary Filters are not Removed: Clinical Predictors in more than 1000 consecutive cases

Disclosures

Abbott Laboratories
WL Gore
Endologix
Levbeth Medical

Disclosures

Strong believer in the value of temporary IVC filters

Temporary IVCF that become permanent

Temporary IVCF that become permanent

POOR LONG TERM PERFORMERS
Northwestern Experience

- Retrospective review
- Two separate prospective databases from 2008 to 2013
- Protocol:
  - Each filter is evaluated and scheduled for removal

Removal Protocol

- Local anesthesia, transjugular approach, outpatient

Removal

- Wire manipulation in case of angulation

Removal

- Endoforceps
Removal

- Excimer laser in severe attachment to caval wall

Results

- 1021 filters were implanted from 2008-2013

- Removal attempted (60%)
- Removal not attempted (40%)

- 405 Removed
- 619 Not removed
- 95% Technical success

- 40% of temporary filters were not removed despite
  - Protocols and personal dedicated to remove IVC filters
  - 95% Technical success
Literature

<table>
<thead>
<tr>
<th>Author</th>
<th>Removal %</th>
<th>Publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarosiek, et al</td>
<td>58/679 (8.5%)</td>
<td>JAMA 2013</td>
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<tr>
<td>Lucas, et al</td>
<td>61/113 (53%)</td>
<td>Am Surg 2012</td>
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<tr>
<td>Augerinos et al</td>
<td>237/401 (59.1%)</td>
<td>Eur J Endovasc Surg 2013</td>
</tr>
<tr>
<td>Current</td>
<td>588/1021 (60%)</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor/Group</th>
<th>Group A (n=619)</th>
<th>Group B (n=405)</th>
<th>Odds Ratio (95% CI)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male (%)</td>
<td>270 (44)</td>
<td>225 (62)</td>
<td>1.609 (1.25-2.070)</td>
<td>0.00002</td>
</tr>
<tr>
<td>History of VTE (%)</td>
<td>351 (57)</td>
<td>273 (67)</td>
<td>3.581 (1.224-10.048)</td>
<td>0.065</td>
</tr>
<tr>
<td>Cancer (%)</td>
<td>153 (25)</td>
<td>200 (49)</td>
<td>2.971 (2.274-3.8810)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Neurologic disease (CVA, dementia, paralysis) (%)</td>
<td>24 (4)</td>
<td>35 (8)</td>
<td>3.51 (1.377-9.017)</td>
<td>0.02</td>
</tr>
<tr>
<td>VTE + contraindication to AC (%)</td>
<td>200 (47)</td>
<td>283 (70)</td>
<td>3.665 (2.036-6.659)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>VTE + complication after AC (%)</td>
<td>21 (4)</td>
<td>49 (12)</td>
<td>1.279 (1.190-1.460)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>VTE + failure of AC (%)</td>
<td>13 (2)</td>
<td>13 (4)</td>
<td>2.251 (0.954-5.212)</td>
<td>0.06</td>
</tr>
<tr>
<td>VTE High risk (%)</td>
<td>20 (5)</td>
<td>20 (5)</td>
<td>0.173 (0.119-0.251)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Prophylactic</td>
<td>39 (10)</td>
<td>39 (10)</td>
<td></td>
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</tbody>
</table>

Conclusion

- The use of snares, endoforceps and laser allow for removal of 95% of temporary filters
- Despite this high technical success, 40% of temporary filters were never removed
- Common causes are lost to follow up and conversion to permanent
- This is associated to advanced age, cancer and neurologic diseases

• The presence of risk factors (age, cancer, neurologic disease) should alert physicians against the use of temporary filters that will never be removed and instead using a permanent one