What Are The Expansion Rates Of Small Thoracic Aortic Aneurysms And How Should They Influence The Threshold For Repair

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Financial Disclosure Slide
- Consultancy fees, Speakers bureau, Research funding
  - Medtronic
  - Endologix

Thoracic Aortic Aneurysms
- Systematic review growth rates
- Analysis large database
- TAA growth rates
- Implications for repair
- Implications for surveillance

Systematic Review of TAA Expansion Rates
- PRISMA guidelines - search until April 2015
- 11 studies (3 prospective / 8 retrospective)
  - 1383 patients
- Heterogenous (location / pathology / methodology)

Systematic Review of TAA Expansion / Rupture Rates

<table>
<thead>
<tr>
<th></th>
<th>Growth Rates (mm/y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All TAA</td>
<td>0.2-4.2</td>
</tr>
<tr>
<td>Ascending and arch</td>
<td>0.2-2.8</td>
</tr>
<tr>
<td>Descending / TAAA</td>
<td>1.9-3.4</td>
</tr>
<tr>
<td>Large TAA</td>
<td>Aortic dissection</td>
</tr>
<tr>
<td>Distal location</td>
<td>COPD</td>
</tr>
<tr>
<td>Marfan</td>
<td>BAV</td>
</tr>
</tbody>
</table>
Growth Rates TAA and Surveillance

- Commercial imaging database (M2S Inc)

  - 2004-2013
  - TAA > 30mm
  - 2 CT > 3 months apart
  - Annualised growth rates - time to threshold
  - Surveillance intervals

M2S Database and TAA Growth

- 995 patients
- Mean time first-last CT 758d
- Mean TAA diameter 48.3mm
- No clinical information!

TAA Expansion – Initial Diameter

<table>
<thead>
<tr>
<th>Initial Diameter (mm)</th>
<th>3 years</th>
<th>2 year</th>
<th>1 year</th>
<th>6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-39</td>
<td>44%</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>40-44</td>
<td>20%</td>
<td>5%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>45-49</td>
<td>58%</td>
<td>25%</td>
<td>5%</td>
<td>0</td>
</tr>
<tr>
<td>50-54</td>
<td>89%</td>
<td>65%</td>
<td>36%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Time to Threshold (55mm) – Starting Diameter

- Expansion rate low below 40mm
- Rapid increase in expansion after 50mm
- Bi-annual surveillance TAA < 40mm
- Annual surveillance > 40mm
- 6 monthly surveillance >50mm