No-Repair and Open Surgical Treatment should be considered more often in the Rx of some patients with complex-anatomy large aneurysms

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DISCLOSURE:
Medtronic: consulting, sales training

79y M
"end-stage PAD": failed previous fem-fem and fem-pop bypasses.
Heavily calcified, nearly occluded iliac, femoral, and femoral arteries, and more...
Severe COPD, stable CAD
Deemed medically impossible (or risky?)
Anterior-posterior AAA gradually enlarging over the last 5 years, now up to 6.9cm
Became increasingly concerned about "time bomb" in his belly and the risk of rupture...
Kept asking about possible options... advised to go for second opinion

Once in the hands of a specialist:
It is (almost) always all about how...?
BUT seldom if ever on whether to repair an aneurysm in the face of a patient of a certain age and life expectancy (among other variables)
DEFINE "COMPLEX"

Cannot treat optimally with either

- Standard EVAR

or

- Standard Open Repair

Ch-EVAR:
- Advanta V12 bilateral chimney stents
- Proximal extension Endurant cuff to SMA
ALSO:
The aneurysm must be large enough to represent an immediate and significant threat to life.

Guidelines for the treatment of abdominal aortic aneurysms:


David L. Brown, MD, Jack C. Compton, MD, John W. Haugen, Jr, MD,
C. Wayne Johnson, MD, William C. Kratzke, MD, and Mark Matthews, MD.

Table I. Estimated annual rupture risk

<table>
<thead>
<tr>
<th>AAA diameter (cm)</th>
<th>Rupture risk (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;4</td>
<td>0</td>
</tr>
<tr>
<td>4.5-5.9</td>
<td>0.5-5.5</td>
</tr>
<tr>
<td>6-7</td>
<td>3-15</td>
</tr>
<tr>
<td>7.8</td>
<td>10-20</td>
</tr>
<tr>
<td>&gt;8</td>
<td>20-60</td>
</tr>
</tbody>
</table>

Table II. Rupture risk

<table>
<thead>
<tr>
<th></th>
<th>Low risk</th>
<th>Average risk</th>
<th>High risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>&lt;60</td>
<td>60-79</td>
<td>&gt;80</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>History</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>History</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Smoking</td>
<td>No</td>
<td>Yes</td>
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</tr>
<tr>
<td>Family history</td>
<td>No</td>
<td>Yes</td>
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</tr>
<tr>
<td>Tobacco</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>White</td>
<td>Black</td>
<td></td>
</tr>
</tbody>
</table>

Average rupture risk per year:

- 1.0% in male pts with AAA 5.0-5.9cm
- 3.9% in females with AAA of same size (4x)
- 14.1% in males with AAA 6.0cm or larger
- 22.3% in females with AAA of that size

The risk of rupture in untreated aneurysms: The impact of size, gender, and expansion rate

Peter M. Brown, JD, David T. Zelle, MD, and Bruce Schiller, PhD, Kingston, Ontario, Canada

Objective: The purpose of this study was to establish the rupture of patients as related to size of abdominal aortic aneurysm (AAA), gender, and expansion rate of the aneurysm.

Methods: Between 1975 and 2001, 446 patients with conditions consistent with AAA repair were followed with computed tomography scans every 6 months. Rupture, surgery, death, or dilation from follow-up. Surgery was performed for rupture (n = 222), improved medical condition (n = 57), or massive tear (n = 52). Patients were stratified by sex and size of AAA.

Results: The average risk of rupture and annualized rates by sex and size of AAA are presented. The average risk of rupture is highest for males with AAA >80 cm, with 15.0% per year. In patients with AAA 5.0-5.9 cm, the risk of rupture is 1.0% for males and 3.9% for females. In patients with AAA 6.0 cm or larger, the risk of rupture is 17.0% for males and 21.1% for females.

Conclusion: The risk of rupture in untreated aneurysms with AAA 5.0-5.9 cm is low. The first-time higher risk of rupture in female patients with AAA 5.0 to 5.9 cm suggests a lower threshold for surgery should be considered in 40 women. The data regarding risk of rupture in patients with AAA 6.0 cm or more may allow more appropriate surgical analysis for surgery in patients with stable conditions with large AAA. (J Vasc Surg 2003;37:390-4.)
Fifteen-year follow-up data from the landmark randomized controlled United Kingdom endovascular aneurysm repair trial 1 (EVAR 1) were published by Rajesh Patel, MD, et al online ahead of print in The Lancet. EVAR 1 was led by Chief Investigator Prof. Roger Greenhalgh, MD, and colleagues, with the Vascular Surgery Research Group at Imperial College London in London, United Kingdom. The 15-year data were first presented at the Charing Cross International Symposium in April 2016.

As detailed in The Lancet, over a mean of 12.7 years (standard deviation, 1.5 years; maximum, 15.8 years) of follow-up, the investigators recorded 9.3 deaths per 100 person-years in the EVAR group and 8.9 deaths per 100 person-years in the open repair group. Through 6 months after randomization, patients in the EVAR group had a lower mortality rate. However, beyond 8 years of follow-up, open repair had a significantly lower mortality rate (total mortality, P = .048; aneurysm-related mortality, P = .0064). The increased aneurysm-related mortality in the EVAR group after 8 years was mainly attributable to secondary aneurysm sac rupture (13 deaths [7%] in EVAR vs 2 deaths [1%] in open repair), with increased cancer mortality also observed in the EVAR group. Twenty-five patients had been lost to follow-up by June 30, 2015 (four for mortality outcome).

"Today’s EVAR results are clearly better and more durable thanks to better technologies..."
GUIDING PRINCIPLES TO TAKE HOME:

- Always weigh risks of procedure versus natural history of the untreated AAA.
- Elective repair of complex-anatomy AAA requiring complex EVAR or difficult OR reserved for aneurysms measuring 6cm+.
- OR still has much to offer when done with skills and expertise on patients who are good-risk candidates.
- Most truly inoperable patients should probably be observed and not subjected to elective aneurysm repair of any kind.