Endovascular aortic aneurysm repair in patients with narrow aortic bifurcation

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Disclosure

Speaker name:
Veera Suwanruangsri

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
The problems of narrow aortic bifurcation and narrow aorta

- Arterial dissection and disruption
- Stent graft compression and collapse
- Iliac limb occlusion
- Difficulty for cannulation of the contralateral gate

**Current recommendations**: 20 mm at the aortic bifurcation.

*J Vas Surg* 2015;62:1140-7
Three options

• Open repair
• Aortouniiliac stent graft (AUI)
• Bifurcated stent graft (off-label technique)
• 231 AUI-EVAR patients
• Patency@3 yr : 91%
• Patency@5 yr : 83%
• Wound complications : 11%
  \( \text{(groin hematoma4%, seroma3%, superficial wound infection3%)} \)
• Fem-fem bypass graft occlusion : 4%

\( J \text{ Vas Surg} 2003;38:498-503 \)
Aortic bifurcation diameter < 18mm
Early mortality rate =1.8%, morbidity rate =11%
Bifurcated stent grafts(106) : diameter : 16±3mm
Stent graft primary patency@1,5 yr : 99%, 96%
Aortouniiliac stent grafts : diameter : 14±2mm
Stent graft primary patency@1,5 yr : 100%, 83%
Up and over technique
compression
Case-3
angioplasty
Objectives:

• The aim of this study was to compare the early outcomes of endovascular aortic aneurysm repair (EVAR) in patients with narrow aortic bifurcation and standard bifurcation.
Methods:

• 136 EVAR; Nov 2012-Jun 2016
• Inclusion criteria
  1. Asymptomatic AAA; size >5cm
  2. Symptomatic AAA
  3. Conceal ruptured AAA
• 109 pt. : EVAR with Endurant stent graft
• 80 patients in standard group (SA group) : ≥ 18mm
• 29 patients in narrow group (NA group) : < 18mm
• Early outcomes were evaluated in these patients in terms of postoperative mortality, morbidity and the rate of graft occlusion.
<table>
<thead>
<tr>
<th></th>
<th>SA group (80)</th>
<th>NA group (29)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>male</td>
<td>64(80%)</td>
<td>23(79.3%)</td>
<td>0.93</td>
</tr>
<tr>
<td>hypertension</td>
<td>53(66.3%)</td>
<td>22(75.9%)</td>
<td>0.33</td>
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<tr>
<td>diabetes</td>
<td>8(10%)</td>
<td>5(17.2%)</td>
<td>0.30</td>
</tr>
<tr>
<td>dyslipidemia</td>
<td>21(26.3%)</td>
<td>8(27.6%)</td>
<td>0.88</td>
</tr>
<tr>
<td>CAD</td>
<td>17(21.3%)</td>
<td>3(10.3%)</td>
<td>0.19</td>
</tr>
<tr>
<td>COPD</td>
<td>9(11.3%)</td>
<td>1(3.4%)</td>
<td>0.21</td>
</tr>
<tr>
<td>CVA</td>
<td>3(3.8%)</td>
<td>2(6.9%)</td>
<td>0.48</td>
</tr>
</tbody>
</table>
Results:

Mean aortic bifurcation diameter
37.4 mm (20-75) in SA group
16.4 mm (12-18) in NA group

Overall mortality rate = 7.34%
SA group = 8.75%
NA group = 3.45%
p = 0.11
<table>
<thead>
<tr>
<th>Results</th>
<th>SA group (80)</th>
<th>NA group (29)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endoleak Type I, II</td>
<td>11(13.75%) 10, 1</td>
<td>4(13.79%) 0, 4</td>
<td>0.99</td>
</tr>
<tr>
<td>Increase Cr</td>
<td>16(20%)</td>
<td>3(10.3%)</td>
<td>0.24</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>8(10%)</td>
<td>2(6.9%)</td>
<td>0.61</td>
</tr>
<tr>
<td>Brachial art. thrombosis</td>
<td>0(0%)</td>
<td>1(3.4%)</td>
<td>0.09</td>
</tr>
<tr>
<td>Groin hematoma</td>
<td>1(1.25%)</td>
<td>1(3.4%)</td>
<td>0.44</td>
</tr>
<tr>
<td>MI</td>
<td>2(2.5%)</td>
<td>0(0%)</td>
<td>0.41</td>
</tr>
</tbody>
</table>
Stent graft occlusion

- 1 in 80 (1.25%) in SA group
  - follow-up time 10.8 month (0-37)
- 0 in 29 in NA group
  - follow-up time 13.2 month (0-49)
<table>
<thead>
<tr>
<th>NA group (29)</th>
<th>AUI-EVAR (17)</th>
<th>Bifurcated-EVAR (12) 6pta , 6kissing stents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow-up time (month)</td>
<td>13.5</td>
<td>12.7</td>
</tr>
<tr>
<td>Mean diameter (mm)</td>
<td>16.1</td>
<td>16.7</td>
</tr>
<tr>
<td>Fem-fem bypass graft occlusion/infection</td>
<td>1 / 1</td>
<td>0</td>
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<tr>
<td>Rising Cr level</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Pneumonia</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Brachial artery thrombosis</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Groin hematoma</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
• Data from Nov.2007-Aug.2014
• 87 pt (10.6%) with narrow aortic bifurcation : ≤ 20mm (mean:18.5mm) : NA group
• 730 pt (89.4%) with standard aortic bifurcation : SA group

Midterm outcomes (3 years)
• Mean follow-up time : 16.3 month(1-73)
• 3 year survival rate : similar (87.2% in NA gr , 80.8% in SA gr)
• 3 year freedom from graft thrombosis : 96.9% in NA gr , 94.8% in SA gr ; p=.79

J Vas Surg 2016;63:1135-40
Conclusion

• EVAR with a bifurcated stent graft can be performed in patients with narrow aortic bifurcation with acceptable mid-term outcomes.
Thank you for your attention
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