Sequelae of EVAR limb occlusion; a 6 year retrospective review

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Disclosure

Speaker name: Terri-Ann Russell

☐ I do not have any potential conflict of interest
Background

Endovascular Repair of AAA
Background

• Evolution
  – Tube graft (1991)
  – Aorto-uni-iliac
  – Bifurcated grafts (1994) Chuter et al
  – Fenestrated/branched stent grafts (1999)
Anatomic Criteria for EVAR

Table 1. The suitable anatomical requirements for endovascular aneurysm repair.

<table>
<thead>
<tr>
<th>Anatomical characteristics</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proximal aortic neck length</td>
<td>&gt;15 mm</td>
</tr>
<tr>
<td>Proximal aortic neck diameter</td>
<td>&lt;32 mm</td>
</tr>
<tr>
<td>Proximal aortic neck angulation</td>
<td>&lt;60 degrees</td>
</tr>
<tr>
<td>External iliac diameter</td>
<td>&gt;7 mm</td>
</tr>
<tr>
<td>Iliac bifurcation angulation</td>
<td>&lt;90 degrees</td>
</tr>
</tbody>
</table>
Factors Predisposing to Iliac Limb Occlusion

Areas of stenosis (aortic bifurcation and occlusive or tortuous iliac arteries) 1

Unsupported endograft devices or Irregularity of the endograft lumen 2

Changes in forces, such as extrinsic compression 3


AIM

• To review the incidence and consequences of iliac limb occlusion post EVAR
Method

• Data from NVR (April 2012 to August 2018) of EVAR patients at a single institution

• Data from local protocol for EVAR surveillance

• Patients post limb occlusion assessed for ischaemic symptoms
## EVAR Surveillance Protocol

<table>
<thead>
<tr>
<th>Time post EVAR (months)</th>
<th>CT (pre and post contrast to groins)</th>
<th>Plain AXR (AP + lateral)</th>
<th>Duplex Scan (VSU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (baseline)</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>12</td>
<td>Yes (post contrast)</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Annual</td>
<td></td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>
Results

• Total of 411 limbs assessed (17 AUI and 197 bifurcated grafts limbs) *Cook* : 90% *Gore* & *Lombard* 10%

• 214 patients had EVAR

• 5 limb occlusion (4 patients)
  – 2.3% patients
  – 1.2% limbs
Case 1

1/12
- CTA patent limbs
- Duplex patent limbs

4/12
CT Angio
CT Angio
Case 3

1/12
- CTA patent limbs
- Duplex patent limbs

2/12 (claudication)
CT Angio Aorta
Case 4

- CTA patent limbs
- Duplex patent limbs
## Iliac Limb Occlusion Patient Data

<table>
<thead>
<tr>
<th>Case no.</th>
<th>Age</th>
<th>Sex</th>
<th>Graft Company</th>
<th>Graft type</th>
<th>Time of Occlusion after EVAR (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>71</td>
<td>M</td>
<td>Cook</td>
<td>Bifurcated</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>73</td>
<td>M</td>
<td>Cook</td>
<td>bifurcated</td>
<td>9 &amp; 10</td>
</tr>
<tr>
<td>3</td>
<td>84</td>
<td>M</td>
<td>Cook</td>
<td>Bifurcated</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>70</td>
<td>M</td>
<td>Cook</td>
<td>Bifurcated (extended Lt.limb)</td>
<td>6</td>
</tr>
</tbody>
</table>
## Management of Occlusion

<table>
<thead>
<tr>
<th>Case no</th>
<th>Symptom</th>
<th>Treatment</th>
<th>Patency of outflow vessels</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>claudication</td>
<td>Fem-fem X-over</td>
<td>patent</td>
<td>good</td>
</tr>
<tr>
<td>2</td>
<td>claudication</td>
<td>conservative</td>
<td>patent</td>
<td>satisfactory</td>
</tr>
<tr>
<td>3</td>
<td>claudication</td>
<td>Fem-fem X-over</td>
<td>patent</td>
<td>good</td>
</tr>
<tr>
<td>4</td>
<td>claudication</td>
<td>Fem-fem X-over</td>
<td>patent</td>
<td>good</td>
</tr>
</tbody>
</table>
Conclusion

• 2.3% incidence of limb occlusion

• No acute limb ischaemia or amputation

• All limb occlusion occurred within 12 months of EVAR

• There were no predisposing factors to iliac limb occlusion in any of the cases
Conclusion

• 3 of 4 (75%) patient occluded at the interval between surveillance scans
Recommendations

• Patients with significant stenosis should have urgent intervention to prevent occlusion instead of more frequent surveillance
Acknowledgement

• I would like to acknowledge:
  – Interventional Radiologists at NGH
  – Vascular studies Unit at NGH
Thank You
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