Off-The-Shelf (OTS) Endografts To Treat Ruptured TAAAs: How Often Are They Applicable Technical Tips And Results

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Disclosure

Prof. Mauro Gargiulo

have the following potential conflicts of interest to report:

- Consulting: Cook Medical
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

State of the art: Endovascular Treatment of Thoraco-Abdominal Aortic Rupture

LITERATURE REVIEW* (< September 2017) | 24 papers, 96 cases

- Zenith t-Branch
  - 4 branches
    - at 1:00 (S), 12:00 (SMA), 3:00 (RA) and 10:00 (RA)
  - 4 abdominal visceral arteries
    - CT, 6 mm
    - 8 Fr
  - 22 Fr, 60 cm Flexor® introducer
Zenith T-Branch
one size and one configuration to simplify device selection

- SMA Branch
  - Diameter: 8 mm
  - Length: 20 mm
  - Distance from proximal end of graft to distal end of branch: 107 mm
  - Clock: 3:15

- Celiac Branch
  - Diameter: 8 mm
  - Length: 21 mm
  - Distance from proximal end of graft to distal end of branch: 99 mm
  - Clock: 1:00

- Right Renal Branch
  - Diameter: 6 mm
  - Length: 18 mm
  - Distance from proximal end of graft to distal end of branch: 135 mm
  - Clock: 10:00

- Left Renal Branch
  - Diameter: 6 mm
  - Length: 18 mm
  - Distance from proximal end of graft to distal end of branch: 135 mm
  - Clock: 3:00

Zenith t-Branch

Case # 1

Case # 2

Off-The-Shelf (OTS) Endografts
To Treat Ruptured TAAAs

- Anatomic suitability of T-Branch stent-graft
- Results

A standardized Multi-branched Thoracoabdominal Stent-graft for Endovascular Aneurysms Repair

Eligibility criteria 88%
Mid-term Outcomes of Endovascular Repair of Ruptured Thoraco-abdominal Aortic Aneurysms with Off the Shelf Branched Stent grafts

2011-2016: 11 patients

22.2% Violation of Zenith T-branch device
5% Pre-operative occlusion of Target vessels
2% Small diameter of Target vessel

September 2012 – November 2015: 39 patients

33% Target visceral vessels

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Endovascular Treatment of ThoracoAbdominal Aortic Rupture

Bologna Experience

<table>
<thead>
<tr>
<th>Case</th>
<th>TAAA Classification</th>
<th>Target Visceral Vessels</th>
<th>Aortic Dissection</th>
<th>Endovascular Technique</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>I</td>
<td>0</td>
<td>T-branch</td>
<td>One Kidney patient</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>II</td>
<td>3</td>
<td>T-branch</td>
<td>Pre-operative occlusion of Celiac trunk</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>III</td>
<td>3</td>
<td>T-branch</td>
<td>Surgical Iliac conduit</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>IV</td>
<td>0</td>
<td>T-branch</td>
<td>Saccular Aortic Dissection</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>V</td>
<td>0</td>
<td>Custom made FB-EVAR</td>
<td>Asymptomatic patient unfit for T-branch and parallel graft - Manufacturing delayed of 5 weeks. Patient signed dedicated informed consent</td>
<td></td>
</tr>
</tbody>
</table>

Off-The-Shelf (OTS) Endografts To Treat Ruptured TAAAs

- Anatomic suitability of T-Branch stent-graft
- Results

TAAA Endovascular Repair with T-Branch

Bologna Experience

<table>
<thead>
<tr>
<th>Indication (n=17):</th>
</tr>
</thead>
<tbody>
<tr>
<td>contained TAAA rupture:</td>
</tr>
<tr>
<td>symptomatic:</td>
</tr>
<tr>
<td>TAAA diameter ≥ 8 cm:</td>
</tr>
</tbody>
</table>

* Only 1 patient died during operation, all others were discharged with no complications.

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Ruptured TAAAs

- Technical Success: 75%
- Intraoperative mortality: 0%
- 30 days mortality: 25%

<table>
<thead>
<tr>
<th>Primary Endovascular Technique</th>
<th>Cause</th>
<th>Timing</th>
<th>Solution</th>
<th>Adjunctive Complication</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-branch</td>
<td>Renal Bleeding</td>
<td>1 po day</td>
<td>Embolization</td>
<td>-</td>
</tr>
<tr>
<td>T-branch</td>
<td>Colon ischemia</td>
<td>10 po day</td>
<td>Colon Resection</td>
<td>Paraplegia</td>
</tr>
<tr>
<td>T-branch</td>
<td>Wound Dehiscence</td>
<td>20 po day</td>
<td>Surgical repair</td>
<td>-</td>
</tr>
</tbody>
</table>

Conclusion

- Emergency bEVAR of rTAAA with T-branch is technically feasible in many instances
- A number of anatomic obstacles (aorta, visceral vessels) can violate the suitability of T-branch in rTAAA if compared with intact TAAA
- Adjuvant devices and the team experience can allow the use of this off-the-shelf endograft even in pts with unfavorable anatomic conditions
Mid-term Outcomes of Endovascular Repair of Ruptured Thoraco-abdominal Aortic Aneurysms with Off the Shelf Branched Stent-Grafts

Late results:

- Follow-up (median): 15 months
- Type I-III EL: 0
- 24-month freedom from branch occlusion: 72.2 ± 12%
- 24-month clinical success: 62.5 ± 17.1%

<table>
<thead>
<tr>
<th>Event</th>
<th>Freedom from branch occlusion (%)</th>
<th>Clinical success (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>72.2 ± 12%</td>
<td>62.5 ± 17.1%</td>
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