Endovascular Repair is the Best Treatment for Most TAAA’s:
Especially with the availability

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Director, Aortic Network
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Disclosures

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Cook Medical</th>
<th>WL Gore</th>
<th>Medtronic</th>
<th>Endologix</th>
<th>Centerline</th>
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Open TAAA Series in Centers of Excellence

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>30d Mortality</th>
<th>ARF</th>
<th>SCI</th>
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<tbody>
<tr>
<td>Crawford</td>
<td>1509</td>
<td>8%</td>
<td>9.0%</td>
<td>15.5%</td>
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<tr>
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<td>5%</td>
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<td>Safi</td>
<td>355</td>
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<td>2.1%</td>
<td>1.3%</td>
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Real World Comparison

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<tr>
<td>REAL World</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cowan JVS 2003</td>
<td>1542</td>
<td>22%</td>
<td>14%</td>
<td>NR</td>
</tr>
<tr>
<td>Derrow JVS 2001</td>
<td>540</td>
<td>20%</td>
<td>NR</td>
<td>NR</td>
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US IDE Experience for Branched and Fenestrated Endovascular Repair of Pararenal and Thoracoabdominal Aortic Aneurysms

Darren B. Schneider, Gustavo S. Oderich, Mark A. Farber, Andres Schanzer, Adam W. Beck, Carlos H. Timaran, Matthew P. Sweet, and Emanuel R. Tenorio
On Behalf of the United States Fenestrated and Branched Research Consortium Investigators

Presented at VAM 2018 Boston, MA

United States Fenestrated Branched Research Consortium

[Map of United States showing locations of participating institutions]
Six patients enrolled (January 1st, 2018)
All patients had implantation with >30-day follow-up

232 pararenal (36%)
221 Extent IV TAAA (33%)
208 Extent I-III TAAA (31%)

Overall n = 661
Pararenal n = 232
Extent IV n = 221
Extent I-III n = 208

<table>
<thead>
<tr>
<th>Event</th>
<th>Overall</th>
<th>Pararenal</th>
<th>Extent IV</th>
<th>Extent I-III</th>
<th>P value</th>
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<tr>
<td>Any Mortality</td>
<td>13 (2)</td>
<td>3 (1)</td>
<td>5 (2)</td>
<td>5 (2)</td>
<td>0.82</td>
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<tr>
<td>Any MAE</td>
<td>97 (15)</td>
<td>26 (11)</td>
<td>33 (15)</td>
<td>38 (18)</td>
<td>0.11</td>
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<tr>
<td>IBL &gt; 1L</td>
<td>29 (5)</td>
<td>6 (3)</td>
<td>9 (4)</td>
<td>14 (7)</td>
<td>0.18</td>
</tr>
<tr>
<td>Acute kidney injury</td>
<td>26 (2)</td>
<td>7 (3)</td>
<td>14 (6)</td>
<td>15 (7)</td>
<td>0.11</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>12 (2)</td>
<td>4 (2)</td>
<td>7 (3)</td>
<td>3 (1)</td>
<td>0.11</td>
</tr>
<tr>
<td>Respiratory failure</td>
<td>20 (3)</td>
<td>2 (1)</td>
<td>10 (4)</td>
<td>4 (2)</td>
<td>0.083</td>
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<tr>
<td>Paraplegia</td>
<td>11 (2)</td>
<td>1 (0.4)</td>
<td>1 (0.4)</td>
<td>9 (4)</td>
<td>&lt;0.001</td>
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<tr>
<td>Stroke</td>
<td>12 (2)</td>
<td>3 (1)</td>
<td>4 (2)</td>
<td>5 (2)</td>
<td>0.68</td>
</tr>
<tr>
<td>Bowel ischemia</td>
<td>22 (3)</td>
<td>5 (2)</td>
<td>10 (5)</td>
<td>7 (3)</td>
<td>0.37</td>
</tr>
</tbody>
</table>

Overall mortality was 1.9%

30-day Outcomes

Mean follow up was 15 ± 12 months (1 to 52)
One aneurysm related rupture
No conversion to open repair

30-day results

Six patients (3%) died within 30 days or hospital stay

Patient survival

240 patients with Extent I to III TAAAs
190 (79%) degenerative
50 (21%) post-dissection

Follow-up (years)

Degenerative
Post-dissection

Survival (%)

At risk (no.)  | 190 | 83 | 40 | 15
Follow-up (years) | mean | 15 | 15 | 15

Mean follow up was 14 ± 12 months
ER - older, higher comorbidities
SCI - extent related but lower for EV group
No difference in SCI and mortality

13 articles with 14,580 patients
Open cohort are younger with significantly less comorbidities

EV better peri-operative outcomes although 1 and 5 yr mortality the same

Endovascular repair is the best for most TAAAs
Associated with lower morbidity and mortality
Has similar mid-term survival
Reduces costs compared to open TAAA repair

Conclusions
### Patient Specific Fenestrations or branches

- **n = 597 (90%)**

### Follow-up (years)

- **At risk (no.)**
  - 2428
  - 1222
  - 662

### Branch Instability (%)

- **95.9±0.5**
- **94.5±0.6**

### Target artery instability – Overall

- **94.3% overall 2-year freedom from target artery instability**

### Follow-up (years)

- **At risk (no.)**
  - 2428
  - 1222
  - 662

### Branch Instability (%)

- **95.9±0.5**
- **94.5±0.6**

### Target artery instability – Fenestration vs. Branches

- **No difference in freedom from target artery instability between fenestrations and branches**

### Follow-up (years)

- **At risk (no.)**
  - Fenestration: 1701
  - Directional branches: 917
- **Follow-up (years)**
  - Fenestration: 517
  - Directional branches: 256
  - **At risk (no.)**
  - Fenestration: 631
  - Directional branches: 264
  - **Follow-up (years)**
  - Fenestration: 120
  - Directional branches: 126

### Primary Patency (%)

- **97.9±0.4**
- **97.7±0.8**

### Primary Patency – Fenestration vs. Branches

- **No difference in target artery patency between fenestrations and branches**

### Follow-up (years)

- **At risk (no.)**
  - Fenestration: 1701
  - Directional branches: 917
- **Follow-up (years)**
  - Fenestration: 517
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  - **Follow-up (years)**
  - Fenestration: 120
  - Directional branches: 126

### Target artery instability – By Vessel

- **Renal artery freedom from target artery instability was lower compared to mesenteric arteries**

### Follow-up (Years)

- **At risk (no.)**
  - Celiac: 376
  - SMA: 636
  - Renal: 319
- **Follow-up (Years)**
  - Celiac: 163
  - SMA: 175
  - Renal: 119

### Conclusions

- Endovascular repair of PRA and TAAA is safe and effective and selective use of fenestrations and directional branches for visceral artery incorporation is durable
- Risk of target artery instability is higher for renal versus mesenteric arteries
- Greater TAAA extent is associated with increased target artery instability
- Future efforts should focus on improving renal artery patency and reducing reinterventions
Outcomes of endovascular repair of chronic post-dissection and degenerative thoracoabdominal aortic aneurysms using fenestrated-branched stent-grafts

Emanuel R. Tenorio, Gustavo S. Oderich, Mark A. Farber, Darren B. Schneider, Carlos H. Timaran, Andrew Schanzer, Adam W. Beck and Matthew P. Sweet
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Disclosures
ERT: none; GSO: consulting and research grants from Cook and WL Gore paid to Mayo Clinic; MAF: consulting and research grants from Cook, WL Gore, Endologix and Medtronic; DBS: consulting and research grants from Cook, WL Gore, Endologix and Medtronic; CHT: consulting and research grants from Cook; AS: consulting and research grants from Cook; AWB: none; MPS: none

Procedure details
Technical success was 99.1%

General anesthesia
CSF drainage
Upper extremity approach
Percutaneous femoral
Contrast volume (cc)
Fluoroscopy time (min)

Procedure details

General anesthesia
CSF drainage
Upper extremity approach
Percutaneous femoral
Contrast volume (cc)
Fluoroscopy time (min)

Freedom from aortic mortality

At risk (no.) Follow-up (years) Freedom from Aortic-Related Mortality (%) 9812 (94 – 100) 9412 (92 – 99)
P=.81

Primary target vessel patency

At risk (no.) Follow-up (years) Primary Target Vessel Patency (%) 9711 (91 – 100) 9512 (95 – 98)
P=.83

Endoleaks

Type I Type II Type III Undetermined Total
Post-Dissection TAAA Degenerative 6 4 24 30 53
Degenerative TAAA 4 24 2 2 24
Post-Dissection TAAA 2 2 2 2 53

Primary target vessel patency

At risk (no.) Follow-up (years) Primary Target Vessel Patency (%) 9711 (91 – 100) 9512 (95 – 98)
P=.83

Target vessel instability

At risk (no.) Follow-up (years) Freedom from Target Vessel Instability (%) 9111 (93 – 94) 8913 (83 – 94)
P=.17

Endoleaks

Type I Type II Type III Undetermined Total
Post-Dissection TAAA Degenerative 6 4 24 30 53
Degenerative TAAA 4 24 2 2 24
Post-Dissection TAAA 2 2 2 2 53
Freedom from reintervention

| Freedom from any Secondary Intervention (%) | 77±4 (70–84) |
| Follow-up (months) | 72±8 (59–88) |
| Degenerative | Post-dissection | P=.23 |

Conclusion

- F-BEVAR is safe and effective with similar outcomes in patients treated for post-dissection and degenerative TAAAs.
- Patients with post-dissection TAAAs had more type II endoleak.
- Larger clinical experience and longer follow-up is needed to better evaluate differences in mortality, spinal cord injury, target vessel instability and secondary interventions.