Reliable Performance of Advanta V12 in Complex Cases as Renal Stent

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Disclosures

• Cook: Consultant, Speaker, Research Grants
• Maquet Getinge: Consultant, Speaker
• Bentley: Consultant, Speaker
Lay-Out

• Literature: Patency of branches
  – Open surgery?
  – F&B grafts

• Our experience with Advanta V12
Open Surgery

**Branch graft patency after open repair of thoracoabdominal aortic aneurysms**

Nicholas T. Kouchoukos, MD, Alexander Kulik, MD, MPH, and Catherine Castner, RN, BSN

(J Thorac Cardiovasc Surg 2017;153:S14-9)

- **Justification**: The long-term function of branch grafts after open thoracoabdominal aneurysm repair is unknown’
- **This represents the largest series of patients with extended angiographic follow-up**
- **... in 34 patients (with 74 grafts)**
Cleveland Clinic Experience

- 650 pts with FEVAR/BEVAR
  - Mean F/U: 3 ± 2.3 years (range: 1-9 years)
- Reintervention for
  - CA: 0.6%, SMA: 4%, Renal arteries: 5.5%
- Branch related mortality: n=3 (0.46%)
  - All three due to mesenteric ischemia
Cleveland Clinic Experience

Durability of branches in branched and fenestrated endografts

Tara M. Mastracci, MD, Roy K. Greenberg, MD, Matthew J. Eagleton, MD, and Adrian V. Hernandez, PhD, Cleveland, Ohio

→ Branches of FEVAR/BEVAR are Durable and Rarely the Cause of Patient Death
Fenestrations or Branches for Renal Arteries in TAAAB grafting?

• 449 pts (235 BEVAR, 214 FEVAR)
Fenestrations or Branches for Renal Arteries in TAAAB grafting?

Fenestrations significantly better patency rates!

Branches significantly higher instability (occlusion/reintervention)
Balloon- or Self-Expandable Stent?

- No Difference between BE & SE Stents

- Renal Branches fail more often than Visceral Branches
  - Smaller vessel diameter?
  - Material fatigue due to respiratory movements?
  - Kidney: High-resistance end organ?
Atrium Advanta V12

- Covered Stent

- Indication: restoring and improving the patency of iliac and renal arteries
• Combined Experience Gro/Nue (166 pts)

• Target vessels: N=600
  – Advanta V12: N=553 (92.2%)

• Mean follow-up: 29.2 ± 21 months
Estimated Target Vessel Patency

98 ± 0.6% at 1 year
94.2 ± 1.5% at 5 years

*Advanta V12 (92.2%)
Freedom from Reintervention

88.3 ± 2.7% at 1 year
78.4 ± 4.5% at 3 years
### Late (>30d) Reinterventions

**N=36**

<table>
<thead>
<tr>
<th>Reintervention</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Branch relining/extension</strong></td>
<td>18 (50%)</td>
</tr>
<tr>
<td>For Endoleak</td>
<td>11</td>
</tr>
<tr>
<td>For Stenosis</td>
<td>7</td>
</tr>
<tr>
<td>Distal stent-graft extension</td>
<td>4</td>
</tr>
<tr>
<td>Proximal stent-graft extension</td>
<td>3</td>
</tr>
<tr>
<td>Coil embolization for endoleak</td>
<td>3</td>
</tr>
<tr>
<td>Thoracic bridging stent-graft for disconnection</td>
<td>2</td>
</tr>
<tr>
<td>Target vessel thrombolysis</td>
<td>1</td>
</tr>
<tr>
<td>Fem-fem crossover bypass</td>
<td>2</td>
</tr>
<tr>
<td>Groin drainage due to seroma infection</td>
<td>1</td>
</tr>
<tr>
<td>Laparotomy-lavage due to stent-graft infection</td>
<td>1</td>
</tr>
<tr>
<td>Ilio-renal bypass</td>
<td>1</td>
</tr>
</tbody>
</table>
Branches’ Potential Problems

Mastracci et al. JVS 2013
• 281 pts (Nuremberg, No Learning curve)

• Target vessels: N=667 (excluding scallops)
  – Advanta V12: N=665 (99.7%)

• Mean follow-up: 21.0 ± 15.9 months
Estimated Target Vessel Patency

98.6 ± 0.5% at 1 year
98.1 ± 0.6% at 3 years

*Advanta V12 (99.7%)
## Reinterventions (N=15)

<table>
<thead>
<tr>
<th>Reintervention</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target vessel relining/extension</td>
<td>5</td>
</tr>
<tr>
<td>Coil embolization (Type II Endoleak)</td>
<td>3</td>
</tr>
<tr>
<td>Iliac PTA</td>
<td>1</td>
</tr>
<tr>
<td>Distal stent-graft extension (Type Ib Endoleak)</td>
<td>1</td>
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<tr>
<td>Groin drainage due to seroma infection</td>
<td>1</td>
</tr>
<tr>
<td>Cuff + Chimney + Endoanchors (Type III Endoleak)</td>
<td>1</td>
</tr>
<tr>
<td>Laparotomy for lumbar ligation (Type II Endoleak)</td>
<td>1</td>
</tr>
<tr>
<td>Conversion (Type Ib Endoleak)</td>
<td>1</td>
</tr>
<tr>
<td>Fem TEA</td>
<td>1</td>
</tr>
</tbody>
</table>
Nuremberg Experience
(Patients with FU in Nuremberg)

• TAAA: N= 211
  – Advanta V12: N=696 (83.7%)
• Pararenal: N= 299
  – Advanta V12: N= 689 (92.0%)
• IBD: N= 94 (122 IBDs)
  – Advanta V12: N=104 (85.2%)

Total Advanta V12: 1489/1703 (87.4%)
Target Vessel Patency
(N=1703)*

98.6 ± 0.3% at 1 year
95.7 ± 0.9% at 5 years

*Advanta V12 (87.4%)
Target Vessel Patency (N=1703)

- Fenestrations
  - 99.5 ± 0.2% at 1 year
  - 98.7 ± 0.6% at 5 years

- Branches
  - 96.4 ± 1.0% at 1 year
  - 89.0 ± 2.4% at 5 years

P<0.001*
Target Vessel Patency
(N=1581, IBDs excluded)

- **Renal Arteries**
  - $95.6 \pm 1.1\%$ at 5 years

- **SMA***
  - $99.1 \pm 0.9\%$ at 5 years

- **CT**
  - $96.4 \pm 2.0\%$ at 5 years

$P=0.04*$
Freedom from Reintervention (N=1703)*

98.3 ± 0.4% at 1 year
95.7 ± 0.8% at 5 years

*Advanta V12 (87.4%)
Freedom from Reintervention (N=1703)

- **Fenestrations**
  - $98.4 \pm 0.4\%$ at 1 year
  - $96.6 \pm 0.7\%$ at 5 years

- **Branches**
  - $98.0 \pm 0.8\%$ at 1 year
  - $93.4 \pm 1.9\%$ at 5 years

$P<0.174$, NS
Advanta V12 Patency
(N=1489)

98.3 ± 0.5% at 1 year
95.3 ± 1% at 5 years

*Advanta V12 (100%)
Advanta V12 Patency
(N=1489)

- Fenestrations
  - 98.7 ± 0.5% at 1 year
  - 97.0 ± 0.9% at 5 years

- Branches
  - 97.2 ± 1.2% at 1 year
  - 90.2 ± 3.1% at 5 years

P=0.003*
Advanta V12 Patency
(N=1385, IBDs excluded)

- **Renal Arteries**
  - 95.7 ± 1.1% at 5 years

- **SMA**
  - 98.6 ± 1.4% at 5 years

- **CT**
  - 95.5 ± 3.5% at 5 years

\[P=0.18, \text{ NS}\]
Discussion

• Atrium V12 used as Bridging stent-graft
  – High Durability
    • Fenestrations better than branches?
  – Our „Working horse“...
    • Excellent patency rates!
    • Excellent handling and flaring!

• To do List: Reasons for Occlusion...
Conclusions

• Bridging stent-grafts in FEVAR/BEVAR
  – Still the most common reason for reintervention...
  – But very low event rates!
    • Restricted room for improvement...
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