ENDOVASCULAR TREATMENT OF THORACOABDOMINAL AORTIC ANEURYSMS USING MULTI-BRANCHED STENT-GRAFTS IN THE REAL WORLD

Liliana Fidalgo Domingos MD, Enrique M San Norberto García MD PhD, Diana Gutiérrez Castillo MD, Cintia Flota Ruiz MD, Miguel Martin Pedrosa MD PhD, Carlos Vaquero Puerta MD PhD

VALLADOLID UNIVERSITY HOSPITAL – VASCULAR SURGERY DEPARTMENT
Speaker name: DIANA GUTIÉRREZ CASTILLO MD

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
THORACO-ABDOMINAL AORTIC ANEURYSMS

Incidence of 3%
(of all aortic aneurysms diagnosed in USA per year)

GENERAL SURGERY INDICATIONS

- Ruptured aneurysm
- Acute aortic dissection
- Symptomatic aneurysm
- Rapid grow rate (>1cm/year)
- Diameter > 6.5cm
THORACO-ABDOMINAL AORTIC ANEURYSMS

TREATMENT

OPEN SURGERY
THORACO-ABDOMINAL AORTIC ANEURYSMS

TREATMENT

OPEN SURGERY

MULTI-BRANCHED STENT-GRAFTS

FENESTRATED STENT-GRAFTS

ENDOVASCULAR REPAIR

SURGEON MODIFIED GRAFT
THORACO-ABDOMINAL AORTIC ANEURYSMS

TREATMENT

OPEN SURGERY

ENDOVASCULAR REPAIR

MULTI-BRANCHED STENT-GRAFTS

FENESTRATED STENT-GRAFTS

SURGEON MODIFIED GRAFT
OBJECTIVE

Present our single-center experience using Multi-Branched Stent-Grafts to treat Thoracoabdominal Aortic Aneurysms (TAAA)
METHODS

- Retrospective, observational and unicenter study

- **From:** November 2013
- **To:** April 2017
METHODS

INCLUSION CRITERIA

1. TAAA treated with a multi-branched stent-graft
2. Elective procedure
3. At least 1 control CT-scan
METHODS

INCLUSION CRITERIA

1. TAAA treated with a multi-branched stent-graft
2. Elective procedure
3. At least 1 control CT-scan

EXCLUSION CRITERIA

1. TAAA treated with other endovascular technique or open surgery
2. No post-operative CT-scan
3. Urgent procedure
METHODS

PATIENTS & THEIR ANEURYSMS

• Demographic data
• Associated comorbidities
• Aneurysms:
  – Type of aneurysm
  – Maximum diameter
METHODS

INTERVENTION

• Type of intervention:
  – Thoracic extension
  – Abdominal Extension
  – Number of branches
• Operative time
• Rate of technical success
METHODS

POST-OPERATIVE PERIOD

• Post-operative complications
• Length-of-stay
  – ICU unit
  – Hospitalization
• Need for re-intervention or reconversion
• Overall survival
RESULTS

DEMOGRAPHICS

- 24 patients were included
- 100% were ASA III
- Average age 69.9 [49-81] years

<table>
<thead>
<tr>
<th>COMORBIDITIES</th>
<th>n</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>ASA III</td>
<td>24</td>
<td>100</td>
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<tr>
<td>Dyslipidemia</td>
<td>14</td>
<td>58.3</td>
</tr>
<tr>
<td>Chronic Kidney Disease</td>
<td>4</td>
<td>16.7</td>
</tr>
<tr>
<td>Ischemic Cardiopathy</td>
<td>4</td>
<td>16.7</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>2</td>
<td>8.3</td>
</tr>
<tr>
<td>Diabetes</td>
<td>2</td>
<td>8.3</td>
</tr>
<tr>
<td>Hypertension</td>
<td>2</td>
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</tbody>
</table>
RESULTS

INTERVENTION

Mean Operative Time: 401.17 ± 27.20 min

Average Aortic diameter: 66.08 ± 10.60 mm

E-xtra design, Jotec®
RESULTS

INTERVENTION

EXTENSIONS

- Abdominal Extension (n=12)
- Thoracic Extension (n=12)

50% 50%
RESULTS

INTERVENTION

BRANCHES

- 4 Branches (n=23)
- 3 Branches (n=1)
RESULTS

IMMEDIATE POST-OPERATIVE PERIOD

ICU

Average length of stay:

26.24±12.9 days

median: 2 days

HOSPITALIZATION

Average length of stay:

12.6±12.9 days

median: 8 days
RESULTS

IMMEDIATE POST-OPERATIVE PERIOD

Complications: **10 patients**

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<th>n</th>
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<tr>
<td>Acute Renal Failure</td>
<td>6</td>
<td>25</td>
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<tr>
<td>Atrial fibrillation</td>
<td>4</td>
<td>16.7</td>
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<tr>
<td>Hemorragic shock</td>
<td>3</td>
<td>12.5</td>
</tr>
<tr>
<td>Septic Shock</td>
<td>2</td>
<td>12.5</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>2</td>
<td>12.5</td>
</tr>
<tr>
<td>Limb ischemia</td>
<td>2</td>
<td>12.5</td>
</tr>
<tr>
<td>Intracranial Hemorrhage</td>
<td>1</td>
<td>4.2</td>
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</table>
RESULTS

FOLLOW-UP

Endoleaks:

16.7% (n=4)

- 1 case of type IA endoleak
- 3 cases of type III endoleak
RESULTS

IMMEDIATE POST-OPERATIVE PERIOD

Mean Follow-up Period:

24.5 ± 14.1 months

TIME FREE OF RE-INTERVENTION

<table>
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<th>Time</th>
<th>Percentage</th>
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<tr>
<td>12 Months</td>
<td>91.7%</td>
</tr>
<tr>
<td>24 Months</td>
<td>75.0%</td>
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Budtz-Lilly, J., Anders Warhainen, MD, PhD, Jacob Eriksson, MD, and Kevin Mani, MD, PhD, Uppsala, Sweden

<table>
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<th>Year</th>
<th>n</th>
<th>Follow-up (months)</th>
<th>Type</th>
<th>Mortality</th>
<th>Major Complications</th>
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**DISCUSSION**


Jacob Budtz-Lilly, MD, Anders Warhainen, MD, PhD, Jacob Eriksson, MD, and Kevin Mani, MD, PhD, Uppsala, Sweden

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Adapting to a total endovascular approach for complex aortic aneurysm repair: Outcomes after fenestrated and branched endovascular aortic repair (J Vasc Surg 2017;1-8.)

Jacob Budtz-Lilly, MD, Anders Wanhainen, MD, PhD, Jacob Eriksson, MD, and Kevin Mani, MD, PhD, Uppsala, Sweden

A branched solution was favored in TAAAs with disease in the distal descending and paravisceral aorta to increase stent graft overlap and reduce the risk of a type III endoleak.

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DISCUSSION

Endovascular repair of thoracoabdominal aortic aneurysms using fenestrated and branched endografts

Gustavo S. Oderich, MD, Mauricio Ribeiro, MD, PhD, Leonardo Reis de Souza, MD, Jan Hofer, RN, Jean Wigham, RN, and Stephen Cha, MS

(J Thorac Cardiovasc Surg 2017;153:S32-41)
CONCLUSIONS

Endovascular repair of TAAAs continues to evolve with improvements in device design, implantation techniques, and adjunctive maneuvers to decrease mortality and paraplegia. Our study shows high technical success and low mortality and morbidity, which improved in the late experience after introduction of manufactured devices. There was a high rate of reinterventions to treat type III endoleaks and branch vessel stenosis, which should be the focus of future refinements in the technique. Although this technique has major benefits in the elderly and higher-risk patients, long-term data are still needed before widespread use in lower-risk groups.
ENDOVASCULAR TREATMENT OF TAAA WITH MULTI-BRANCHED STENT-GRAFTS IS A CHALLENGING TECHNIQUE:

- SIGNIFICANT RATE OF SHORT-TERM MAJOR COMPLICATIONS
- ONCE PASSED DE IMMEDIATE POST-OPERATIVE PERIOD SEEMS TO BE A SAFE TECHNIQUE
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