Total endovascular techniques utilization in aortic dissection radical treatment

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Disclosure of Conflicts

None.
Besides the primary tear closure of TBAD, what have been left behind.
Clinical Material in Our Department

Dissected aneurysm
SINE(stent-induced new entry)
unexpected aortic remodeling

Long-term follow-up
Post-TEVAR Outcomes

Survival After Endovascular Therapy in Patients With Type B Aortic Dissection
A Report From the International Registry of Acute Aortic Dissection (IRA)

Rossella Fattori, MD,* Daniel Montgomery, BS,† Luigi Lovato, MD,‡ Stephan Kische, N Marco Di Eusanio, MD,‡ Hüseyin Ince, MD,§ Kim A. Eagle, MD,† Eric M. Isselbacher, MD,∥ Christoph A. Nienaber, MD§

<table>
<thead>
<tr>
<th>Freedom from late intervention</th>
<th>1 yr</th>
<th>2 yrs</th>
<th>3 yrs</th>
<th>4 yrs</th>
<th>5 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>82.2 (135)</td>
<td>81.5 (128)</td>
<td>80.3 (127)</td>
<td>80.3 (126)</td>
<td>80.3 (125)</td>
</tr>
<tr>
<td>Freedom from new dissection or redissection</td>
<td>89.3 (259)</td>
<td>85.4 (86)</td>
<td>84.1 (63)</td>
<td>84.1 (40)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>79.6 (51)</td>
<td>77.1 (31)</td>
<td>69.4 (9)</td>
<td>69.4 (4)</td>
<td></td>
</tr>
<tr>
<td>Freedom from aortic growth or new aneurysm</td>
<td>86.6 (254)</td>
<td>74.9 (135)</td>
<td>65.5 (95)</td>
<td>53.4 (69)</td>
<td>26.7 (45)</td>
</tr>
<tr>
<td></td>
<td>81.5 (73)</td>
<td>72.5 (44)</td>
<td>60.0 (28)</td>
<td>56.0 (14)</td>
<td>37.3 (8)</td>
</tr>
</tbody>
</table>

- 2013 JACC-CI
- Nienaber et al.

- Post-TEVAR aortic growth and new dissection should be concerned.
- 5-Years aortic growth rates: 63.7%
- 5-Years new or Redissection rates: 12.2%
Post-TEVAR Outcomes

Partial thrombosis of the false lumen influences aortic growth in type B dissection

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BACKGROUND: Patency or thrombosis of the false lumen in type B aortic dissection has been found to predict outcomes. The extent and type of thrombosis are associated with the development of aortic growth.

Aortic growth rate
- Partially thrombosed FL >
- Complete thrombosis or Patent FL

The mean (±SD) 3-year mortality rate
patent: 13.7±7.1%
partial thrombosis: 31.6±12.4%
complete thrombosis: 22.6±22.6%
• Achieve better aortic remodeling
• Prompt false lumen thrombosis
• Advance long-term survival rates

Especially to the false lumen keep enlarge

• All entry tears should be attempted to covered
• Secondary Tears should be emphasized
Answer #2: How To Cover All Secondary Tears?

Endovascular techniques can be used with:
- Petticoat Technique
- Modified Petticoat Technique
- Chimney Technique
- Sandwich Technique
- Multi-Layer Stent Technique (MFM)

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Petticoat Technique

Proximal descending aortic stentgraft plus distal bare metal stent: The PETTICOAT Concept (Nienaber et al., 2006)
Modified Petticoat Technique

Modified Petticoat Technique with Pre-placement of a Distal Bare Stent Improves Early Aortic Remodeling after Complicated Acute Stanford Type B Aortic Dissection


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WHAT THIS STUDY ADDS

The aim of this study was to evaluate the safety and effectiveness of combined proximal endografting with distal restrictive bare stents (RBSs) in the endovascular treatment of acute complicated Stanford type B aortic dissections. Studies focusing specifically on re-dissection at the distal edge of the stent graft and the subsequent aortic remodeling are lacking. Thus, this study was initiated to explore the feasibility of using RBS and their effectiveness in preventing stent induced distal re-dissection and enhancing aortic remodeling.

Modified Petticoat can acquire better aortic remodeling
Outcomes in our study with MP

We suggest modified Petticoat in one stage with bare stent or restricted stent-graft.

Modified petticoat vs. TEVAR only: Reduced re-intervention and SINE in follow-up
Sandwich Technique in distal aorta and iliac artery pathology
Double chinemy technique in viceral arteries.

The primary entry tear was close to the right renal artery.
Intentional Celiac Artery Coverage During TEVAR

Midterm Results of Intentional Celiac Artery Coverage During TEVAR for Type B Aortic Dissection

Ming Li, MD; Chang Shu, PhD; Quan-ming Li, PhD; Tun Wang, PhD; Kun Fang, PhD; and Zhong-gao Wang, PhD

1Department of Vascular Surgery, Xiangya 2nd Hospital, and Hunan Provincial Great Vessel Medical Center, Central-South University, Chang Sha, Hunan, China. 2Department of Vascular Surgery, XuanWu Hospital, Capital Medical University, Beijing, China.
Multi-Layer Stent Technique (MFM)

Computational fluid analysis of symptomatic chronic type B aortic dissections managed with the Streamliner Multilayer Flow Modulator

Multi-Layer Stent Technique


Computational fluid analysis of symptomatic chronic type B aortic dissections managed with the Streamliner Multilayer Flow Modulator.

Multi-Layer Stent Technique

Multi-layer Stents
plus Micro-coil

Controversial
Effective in specific scenario
The patient, male, 61 years old, suffered from severe stomachache for 6 days. CT angiography indicated an aortic dissection. The false lumen in descending aorta was filled with thrombus. The primary entry tear was close to visceral arteries.
One stage treatment: just focus on entries not cover the whole length of the aortic dissection.

The site of entry tear should be located and covered with stent-grafts accurately.

After operation, all of descending and abdominal aorta recovered without any lesion.
The patient, male, 49 years old, suffered from abrupt back pain and stomachache. Emergent CT angiography indicated multiple thoracic aortic ulcer and abdominal aortic dissection, visceral aortic segment was invaded by the lesions. But the DSA shown the whole length aortic dissection, not ulcer.
One stage treatment for ascending and descending aorta
One stage to cover two tears for this location can not be waited
Total Aortic Pathologies

**TEVAR for multiple descending aortic ulcers (DSA shown whole length dissection, not ulcers)**

**2 bare stents for the aortic ulcers invaded visceral arteries (DSA shown whole length dissection, not ulcers)**

**1 straight stent-graft plus 2 iliac stent-grafts (kissing technique) for abdominal aortic dissection**
Previous problems cannot solve all problems. Expansion of the abdominal aortic should be intervened.
Endovascular all-distance therapy for aortic dissection could be used in staged procedure.
All-distance Therapy Concept

In single centered exp, We have done 35 cases of all distances therapy with staged procudure, to eliminate all the secondary tears. (It is just partial of the patients after TEVAR)
To cover all secondary tears at the same time is associated with high risk of paraplegia yet, staged procedure may reduce the spinal cord ischemia.

Under the help of the new device and techniques (Fenestration, Branched stent, Chimney, Petticoat, MFM), all-distance endovascular repair for all aortic dissections could realize in the near future.
2018 China Vascular Congress (CVC) & Annual Meeting of National Society of Vascular Surgery, China (NSVS)

Welcome You!

August 2018, Beijing, China
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