Stentless Thoracic Endovascular Aortic Repair For chronic DeBakey IIIb aneurysm (case report)

Ahmed Sameh Eleshra, Woon Heo, Kwang-Hun Lee, Hong Shim, Suk-Won Song.

Ahmed Sameh Eleshra
Assistant lecturer of vascular surgery, Mansoura university
Clinical and research fellow, vascular surgery and transplantation department, SNUBH
Clinical and research Aortic fellow, Hybrid Aortic Center, Severance Gangnam Hospital
Disclosure

Speaker name:
Ahmed Sameh Eleshra

I do not have any potential conflict of interest
Introduction

- The use of thoracic endovascular aortic repair (TEVAR) for CDIIIb aneurysms is controversial.

Pitfalls

- Visceral vessels and ICAs from FL
- Communicating channels below the EG
- False Lumen pressurized
- Unfavorable Aortic remodelling
Reviewing literature


Song SW1, Kim TH1, Lim SH1, Lee KH2, Yoo KJ3, Cho BK4

Abstract

OBJECTIVES: The use of thoracic endovascular aortic repair (TEVAR) for chronic DeBakey III type b (CDIIIb) aneurysms is controversial. We analyzed the potential prognostic factors affecting aorta remodeling after this procedure.

METHODS: A total of 20 patients with CDIIIb aneurysms underwent TEVAR, with full coverage of reentry tears at the descending thoracic aorta. The potential factors affecting false lumen (FL) remodeling were analyzed, including reentry tears (communicating channels visible on the computed tomography angiogram), large intimal tears below the stent graft (≥2 consecutive axial cuts on the computed tomography angiogram), visceral branches arising from the FL, and intercostal arteries (ICAs) arising from the FL.

RESULTS: All patients had uneventful in-hospital courses; 2 patients (10%) required reintervention during the follow-up period. Thirteen patients (65%) had complete thrombosis of the FL at stent graft segment. Compared with the complete thrombosis group, the partial thrombosis group had more reentry tears (1.8 vs 2.3, P = .48), large intimal tears (0.8 vs 1.7, P < .05), visceral branches arising from the FL (1.2 vs 2.3, P < .05), and ICAs arising from the FL (3.8 vs 5.1, P = .35). Reentry tears, visceral branches, and ICAs from the FL were significant negative prognostic factors for FL shrinkage (P < .05).

CONCLUSIONS: Although reentry tears above the celiac trunk were fully covered, the visceral branches and ICAs from the FL and all communicating channels below the celiac trunk kept the FL pressurized and were unfavorable prognostic factors for aorta remodeling after TEVAR for CDIIIb aneurysms.

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How to favor the aortic remodeling?

- Extension of aortic coverage by visceral debranching and hybrid repair; or by fenestrated and branched stent-grafting.

- Fenestration techniques

- Direct occlusion of the FL using coils, glues, AVPs, or visceral artery stent grafting to seal re-entry tears (FL procedure).
Effects of False Lumen Procedures on Aorta Remodeling of Chronic DeBakey IIIb Aneurysm

Tae-Hoon Kim, MD, Suk-Won Song, MD, PhD, Kwang-Hun Lee, MD, PhD, Min-Young Baek, RN, and Kyung-Jong Yoo, MD, PhD

Background. Although thoracic endovascular aortic repair is regularly used to treat chronic DeBakey type IIIb aneurysms, persistent retrograde flow into the false lumen through distal rent tear is a common cause of failure. We sought to determine the safety and efficacy of the false lumen procedure (FLP) for aortic remodeling with chronic DeBakey IIIb aneurysms.

Methods. From 2012 to 2015, 25 patients with chronic DeBakey IIIb aneurysms underwent FLP using vascular plugs, stent grafts, coils, or glue. The FLP was performed as an adjunctive procedure after initial thoracic endovascular aortic repair in 9 patients, in combination with initial thoracic endovascular aortic repair in 13 patients, and as an isolated procedure in 3 patients. All patients were followed up for a mean duration of 10 months after the FLP. Outcomes included the degree of thrombosis and diameter change in the true lumen and false lumen. Diometers were measured at three levels: left subclavian artery, pulmonary artery bifurcation, and abdomen (celiac artery).

Results. No spinal cord injury, renal failure, or 30-day mortality was observed. Complete false lumen thrombosis after FLP was observed in 20 patients (80%). Compared with before FLP, the mean false lumen diameter for each level (before 22.23 ± 10.18 mm versus after 17.56 ± 10.84 mm; p < 0.001) significantly decreased, whereas the mean true lumen diameter for each level (20.45 ± 5.33 mm versus 25.12 ± 5.60 mm, p < 0.001) increased.

Conclusions. False lumen procedures were safe, promoted complete thrombosis, and had favorable aortic remodeling in patients with chronic DeBakey IIIb aneurysms.
Preoperative CTA
Primary entry tear

12mm AVP (AGA Medical Corp.)
Communicating channels (ICA, Lumbar)

multiple 0.035-inch coils (Cook, Inc.) AVP (AGA Medical Corp.)
Visceral vessels (Coeliac axis) re-entry tears

9mm/5cm
(Viabahn®; W.L. Gore, Associates)
Visceral vessels (Renal artery) re-entry tears

7mm/5cm(Viabahn®; W.L. Gore, Associates)
Iliac Artery re-entry tear

11-mm/5-cm Viabahn®; W.L. Gore and Associates)
Isolated FL procedures
Final angiogram
### Discussion

**Impact of shear stress and atherosclerosis on entrance-tear formation in patients with acute aortic syndromes.**


<table>
<thead>
<tr>
<th></th>
<th>Pre CTA</th>
<th>1 month CTA</th>
<th>9 month CTA</th>
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<tr>
<td></td>
<td>TL</td>
<td>FL</td>
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<td>Coeliac Axis</td>
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**Development and testing of a silicone in vitro model of descending aortic dissection.**

Stent-less TEVAR
safe promising procedure
Favorable aortic remodeling
patient diagnosed as CDIIIb
aneurysm with many re-entry
tears and communicating
channels
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