When And How To Intervene For Endoleaks & False Lumen Perfusion After TEVAR for TBADs

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Faculty Disclosure

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• Grant/Research Support: Medtronic Ave., Terumo Medical Corp.
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• Founder, President & CEO: Center for Vascular Awareness.
• Founder & Director: Albany Vascular International/Academy
• Board Member: VIVA Physicians Inc.

I will be discussing products that are investigational or not labeled for use under discussion.

TAD – False Lumen Perfusion

Partial Thrombosis of the False Lumen in Patients with Acute Type B Aortic Dissection

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TEVAR Re-interventions for False Lumen Perfusion

• Multiple strategies have been described to decrease the pressure gradient and flow dynamics in the false lumen:
  1. False lumen embolization
  2. Custom designed/off the shelf plugs
  3. "Knickerbocker" technique
  4. Stentgraft coverage of septum re-entry tears
  5. Fenestrated/Branched/Parallel stentgrafts
The Candy-Plug Technique: Technical Aspects and Early Results of a New Endovascular Method of False Lumen Occlusion in Chronic Aortic Dissection
Rohlffs F, J Endovasc Ther. 2017 Aug;24(4):549

Addressing persistent false lumen flow in chronic aortic dissection: the knickerbocker technique

Outcomes after false lumen embolization with covered stent devices in chronic dissection.

• 2009 – 2013, 21 patients with thoracoabdominal aortic dissections
• Adjunctive FL embolization using covered stentgraft

Modified ‘Candy-Plug’ Technique for Chronic Type B Dissection with Aneurysmal Dilatation – A Case Report
Kotani, J Cardiothorac Surg., September 2017

A Pitfall of False Lumen Embolization in Chronic Aortic Dissection: Intimal Injury Caused By the Embolization Device Edge

Fenestrated and Branched Stent-Grafts to Treat Post-Dissection Chronic Aortic Aneurysms After Initial Treatment.
Verhoeven E, etal. J Endovasc Ther. June 2012

The Implications of False Lumen Embolization During TEVAR and EVAR on Thrombosis, Pressurization, Remodeling, and Mortality
Mehta et al, J Vasc Surg June 2014;59(6)

Purpose
• To evaluate the implications of false lumen embolization (FLE) to induce thrombosis during TEVAR for acute complicated and chronic thoracic aortic dissections.
The Implications of False Lumen Embolization During TEVAR and EVAR on Thrombosis, Pressurization, Remodeling, and Mortality
Mehta et al, J Vasc Surg June 2014;59(6)

Methods
• Since 2004, 106 patients
  – Acute complicated and chronic TBAD with TAD
  – TEVAR ± EVAR with or without false lumen embolization (FLE)
• All data was prospectively maintained

Stentgraft in true lumen
• Persistent false lumen flow
False lumen embolization

TBAD (n=106)
+ FLE
− FLE

TEVAR + FLE (n=36)
EVAR + FLE (n=4)
TEVAR (n=58)
EVAR (n=8)
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- Revisions (Embo/ Extension) 15 (37.5%) 21 (31.8%) NS
- 30-day Mortality 1 (2.5%) 11 (16.7%) <0.01
- Cumulative 5-year Survival 28 (87.5%) 50 (75.8%) <0.01

• 1/3 of patients will require secondary embolization procedures
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Mehta et al, J Vasc Surg June 2014;59(6)

- Follow-up CTA 1 year
  - FL thrombosis 25/31 (81%)
  - FL diameter reduction >5mm: 20/31 (65%)
  - FL diameter increase post thrombosis: 0

Conclusions
- Numerous strategies have been described to promote false lumen thrombosis and aortic remodeling
  - False lumen embolization, Custom designed & off the shelf plugs, “Knickbacker” technique, SG coverage of septum re-entry tears, septotomy, and Fenestrated/Branched/Parallel stentgrafts.
- As of today, most often the techniques utilized are operator preferences and there is no suggestion that one might be better than other.
- One thing is clear, false lumen pressurization impairs aortic remodeling and we need to improve our techniques and technology to optimize patient outcomes

1/3 of patients (10) required secondary embolization procedures