With Uncomplicated TBADs TEVAR Should Be Performed As Soon As Possible After Onset Of Symptoms: For These Reasons And With These Precautions

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Financial Disclosure

- Terumo Aortic, Medtronic
- Atricure, Bard, Neomend, Edwards (not relevant)

BLACK ZONE: Complicated dissection

- IRAD (n=82)¹
  - hospital mortality 29.3%
  - new neurologic deficit 23.3%
- recent study (n=76)²:
  - hospital mortality 22.4%
  - spinal cord injury 6.6%
- open repair associated with significant morbidity and mortality
- clinical challenge!

¹Trimarchi et al., Circulation 2006. ²Bozinovski et al., Ann Thorac Surg 2008

GRAY ZONE: high risk uncomplicated type B dissection

Consideration of early intervention appears reasonable in following scenarios:

- Initial aorta ≥4.0 cm with patent FL
- ≥22 mm false lumen in proximal DTA
- IMH with PAU in proximal DTA
- Recurrent/refractory pain or HTN
- Partial thrombosis of the false lumen
- Aortic Inflammation

WHITE ZONE: Uncomplicated Acute Type B Dissection:

- Is there such a thing?
- Patients continue to have complications and to die....
  - Natural history not benign!
- Can we change the outlook for these patients with concomitant medical therapy and early TEVAR treatment?

Uncomplicated Type B Dissection

ACC/AHA Evidence Guidelines:

Class II:
Conflicting evidence and/or a divergence of opinion about the usefulness/effectiveness of performing the procedure/therapy.

Class IIb:
Usefulness/effectiveness is less well established by evidence.

"In patients with uncomplicated acute type B dissection should be treated with medical therapy. At present, there is no evidence of advantage with TEVAR or open surgery."
Uncomplicated Type B Dissection

ACC/AHA Evidence Class B: Conflicting evidence and/or divergence of opinion about the usefulness/efficacy of performing the procedure/therapy.

Class IIb: Usefulness/efficacy is less well established by evidence/opinion.

“In patients with uncomplicated acute Type B aortic dissection, (medical management) constitutes a benchmark that will be difficult to surpass, or even to match, by [interventional] treatment.”

Patients with uncomplicated acute type B dissection should be treated with medical therapy. At present, there is no evidence of advantage with TEVAR or open surgery.

ESC Guidelines 2014

Poor Natural History – even for uncomplicated patients!

- Hospital mortality 8.8%¹
- Uncomplicated 1.2-3%²,³
- 3-year-survival: 77%³
- 5 & 10-year survival: 82%, 69%⁴

⁴Kwong W et al, Eur J Vasc Endovasc Surg 2006;32:549-55.

Rationale of TEVAR for all TBAD

- Prevent Rupture
- Alleviate Malperfusion
- Alleviate Pain
- Re-route the blood to TL
- Obliterate FL
- Aneurysm in 28% of pts
- Obviate early/late re-operation!
- Reverse Aortic Remodeling

Feasibility of reverse remodeling

Distribution of intimomedial tears in patients with type B aortic dissection


Intimomedial tear characteristics

- Average of 2.8±2.1 tears, surface area 0.63cm²
- 80.5% of tears above celiac artery
- Number of tears not correlated to malperfusion
- 62% of pts with tears distal to celiac artery had malperfusion
- 50% of pts with tears > 1.9cm² & 72% with > 4.8cm² had malperfusion
Endovascular classification based on location of intimomedial tears

- Type 1 and 2 had 97% reverse remodeling.


Location of tears and RAR

- Location & size of tears has ramifications on clinical malperfusion and reverse aortic remodeling (RAR).
- Number of tears don’t seem to be important.
- Proposed classification is highly predictive of RAR!

Reverse Aortic Remodeling (RAR)

Midterm results of endovascular treatment of complicated acute type B aortic dissection


Pre 1yr 2 yrs 3 yrs

TBAD: Endovascular Technique

- Dedicated team for TEVARs
- Emergency TEVAR sets
- Hybrid room with fusion imaging
- Use advanced neurologic monitoring: TCD, MEP, CSF drain
- IVUS-guided access to the true lumen
- Minimal oversizing, no balloononing
- Coverage of entire DTA
- Hyperdynamic/hypertensive postop

TEVAR Equipment

- Imaging system
- Pressure injector
- IVUS, TCD, pressure wire, MEP, CSF drain
- Nuts and bolts: needles, guidewires, dilators, sheaths, catheters, balloons, snare, coils, stents
Acute Type B Aortic Dissection: Pre & Post Angiogram

So what is the evidence?

Virtue, INSTEAD, US-IDE Medtronic Valiant trial, many smaller series, INSTEAD XL!

INSTEAD XL: Key Results

TEVAR for Aortic Dissection Prevents late expansion; encourages aortic remodeling

Upcoming Trials on Involving Uncomplicated Acute Type B Aortic Dissection

IRAD registry
NIH multi-center study

Conclusions

- Medical therapy has poor outcome for patients with uncomplicated type B aortic dissection!
- TEVAR is therapy of choice and FDA-approved in US for all patients with type B aortic dissection.
- INSTEAD XL and other series have shown improved survival with TEVAR
- In experienced hands, uncomplicated type B dissection treated within 3w-3m has great outcomes
- TEVAR may emerge as standard of care for all patients with type B aortic dissection.