Optimizing TEVAR outcomes in acute and subacute Type B aortic dissections, what is the right amount of radial force?

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Disclosure

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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
Acute/Subacute TBAD

A WIDE RANGE OF CLINICAL AND ANATOMICAL SIGNS
TEVAR + BMT vs BMT

**INSTEAD RCT**

Randomized Comparison of Strategies for Type B Aortic Dissection
The Investigation of StEnt Grads in Aortic Dissection (INSTEAD) Trial

Subacute

Acute

**ADSORB RCT**

Endovascular Repair of Acute Uncomplicated Aortic Type B Dissection Promotes Aortic Remodeling: 1 Year Results of the ADSORB Trial

Acute + Subacute

**REVIEW**

Endovascular vs. Medical Management for Uncomplicated Acute and Subacute Type B Aortic Dissection: A Meta-analysis

NO clear findings
ATBD: TEVAR

- Complicated
  - Rupture
  - Malperfusion
- Uncomplicated
  - Signs of high risk
- Timing
  - Waiting if possible
- Endograft
  - Which Type?
  - Why C-TAG?
- Sizing
  - Length
  - Which Radial Force?
2013: First Device with FDA for Aortic Dissection

Real-World* Treatment of Dissection through 2-year follow-up

100% SURVIVAL
97% Dissection-related survival

Adverse events:
- 1.1% Retrograde Type A Dissection
- 1.5% Stroke
- 2.2% Type IA endoleaks**
- 0.0% Device compression
- 1.9% Paraparesis / Paralysis
- 2.2% Conversion

GREAT
Tjaden et al, J Vasc Surg. 2018

SURPASS
(CTAG with Active Control)
Torsello et al, JEVT, 2020

ZERO

- 100% Successful deployment
- 98.4% With no device-related issues
- 97.2% Freedom from serious access complications

Aortic pathology treated:
- Treatment of Type B dissection
- Fractures
- Device compressions
- Ruptures

1.6% X 1.1%
4.7%
32.3%
31.4%
1.38 Devices per procedure
98.4%
No rapid pacing used

Performance over time
ATBD: CTAG with Active Control

Cardiac pacing (=precise deployment)
Trauma (50%>100% from outer curve)

Angulation control
At intermediate diameter
At full diameter

ATBD: Landing Zone 2 or 3

Conformability
Bird Beak
ATBD: CTAG with Active Control

Unparalleled device conformability for long-term durability in Aortic Dissections

1. Low spring-back force
2. Wall apposition in highly angulated anatomy
3. Customized oversizing based on patient anatomy
4. Designed to decrease risk of septum perforation

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<th>TERUMO AORTIC</th>
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*31-26,26-21 mm only
ATBD: TEVAR & Radial Fit

ATBD: Low Radial Force

Which is the right choice?

Extended Oversizing
Radial Fit
Conformability
Radial force

Only 8 diameters
ATBD: TEVAR & Radial Force

Conformability = Forces Balances

Continuous Design
- Distribution 3D
- Continuous distrib. Forces
- Low punctual Forces
- Radial and Longitudinal Forces

Modular Design
- Distribution 2D
- Irregular distrib. Forces
- Increased Local Forces
- Only Radial Forces

Other Grafts
ATBD: TEVAR & Radial Force

Radial Force

Acute

Subacute

Radial Force

Very Low

0-5%

Low

5-10%

Customized Oversizing

6-33%, The device conforms to the anatomy

Other Grafts

Choice of adequate sizing and tapered devices

J Am Coll Cardiol 2016;68:1054-65
CASE:
Men, 48 yrs
BMI 44
Type B
Dissection = IMH
(Thrombosis from LSA to iliacs)

ATBD: TEVAR & Radial Force

Pain/Hyp
Not visible ET
Thrombosis/ Very Low Flow
Uncomplicated
ATBD: TEVAR & Radial Force

Day 0
Day 1
UNCOMPLICATED

Day 10
Day 14
HIGH RISK

Day 21
ATBD: TEVAR & Radial Force

CTAG 34 x 150

Prox LZ
32 mm
Oversizing 6%

Dist LZ
28 mm
Oversizing 21%

Very Low Oversizing Proximal Segment
ATBD: TEVAR & Radial Force

BP LCCA-LSA Plug
TEVAR CTAG 34 x 150

IVUS (Pre)  Angio (Pre)  Deploym. 50%

LZ 2
ATBD: TEVAR & Radial Force

Pre-TEVAR

Post-TEVAR
ATBD: TEVAR & Radial Force
Take Home Message

Planning **lower oversizing (0-10%)** for Acute/Subacute Type B Aortic Dissection, in particular for proximal landing zone

Larger device **oversizing windows** engineered, tested, and proven to accommodate differences in proximal and distal landing zone diameters

Easy and very precise **two stages deployment with Active Control**

Unique sutureless design and stent-graft construction facilitates consistent **conformability** throughout the device for uniform arch support