Not So: Limited Coverage of the Thoracic Aorta is Safer and Better

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National PI for the US IDE InCraft study

Comparison of outcomes following endovascular repair of abdominal aortic aneurysms based on size threshold

TEVAR and Type B Thoracic Aortic Dissection

Debate
Pro: Treating More Acute Uncomplicated TBAD Patients with Extended TEVAR Coverage Almost to Celiac Will Improve Outcomes: Is it the Way to Go?

Con: Not So. Limited Coverage of the Thoracic Aorta is Safer and Better

Do We Really Need Extensive Coverage for TBAD?
The Answer is NO!
"These initial results suggest that stent-graft coverage of the primary entry tear may be a promising new treatment for selected patients with acute aortic dissection." (Dake)

Limited coverage recommended except in cases of Rupture!

Even in complicated TBAD patients
Limited coverage is usually enough

76 y old man with Rapidly Enlarging False Lumen

Even in complicated TBAD patients
Limited coverage is usually enough

DB 66 year old with Ruptured Dissection

Why Extensive Coverage in Uncomplicated TBAD Makes no Sense

1. Extensive aortic coverage significantly increases the risk of Spinal Cord Ischemia!
2. Extensive coverage does not improve outcomes!
3. Extensive coverage adds to the expense of a prophylactic procedure decreasing cost effectiveness!
Increased Risk of SCI with Extensive Coverage!

Risk factors, outcomes, and clinical manifestations of spinal cord ischemia following thoracic endovascular aortic repair

- Increased Risk of SCI with Extensive Coverage!
  - PENN from 2002-2010
  - 424 pts. 12 (2.8%) with Spinal Chord Ischemia (SCI)
  - 12 of 12 had coverage from subclavian to diaphragm
  - Incidence of SCI
    - 12/143 with complete coverage: 8.4%
    - 0/346 with less coverage: 0.0%

- Increased Risk of SCI with Extensive Coverage!
  - Vancouver from 2002-2012
  - 223 pts. 7(5.4%) with Spinal Cord Ischemia (SCI)
  - “Length of Aortic Coverage was found to be the sole independent predictor of SCI (Odds ratio 8.2, P=.026)”

- Increased Risk of SCI with Extensive Coverage!
  - Duke from 2002-2012
  - 390 pts. 25(6.6%) with Spinal Chord Ischemia (SCI)
  - Predictors of SCI after TEVAR
    - Univariate predictors of SCI with TEVAR were age (p=0.0005), status of hypogastric arteries (p=0.04), type of procedure (p=0.007), extent of coverage (p=0.009), preoperative CSF drain (p=0.006), intraoperative hypotension (p=0.0007), postoperative hypotension (p=0.0002), and number of stents implanted (p=0.002)

- Increased Risk of SCI with Extensive Coverage!
  - University of Florida from 2000-2008
  - 326 patients. 33 with Spinal Cord Ischemia (SCI)

- Increased Risk of SCI with Extensive Coverage!
  - University of Florida from 2002-2013
  - 741 pts. 68(9.2%) with Spinal Cord Ischemia (SCI)
  - Predictors of SCI:
    - Age: OR 1.3 for every 10 years
    - Aortic Coverage length: OR 1.3 for every 5 cm
    - COPD
    - Renal insufficiency
    - Hypertension

- Increased Risk of SCI with Extensive Coverage!
  - Protocol implementation of selective postoperative lumbar spinal drainage after thoracic aortic endograft
  - 16 SCI in 239 patients (6.7%)
  - Risk Factors for SCI:
    - Length of Aortic Coverage p=.036
Extensive Coverage does not Improve Results!

South Korea
71 patients TEVAR 1st year after TBAD

“The Extent of Stent Graft Coverage did not make a difference in terms of Survival or False Lumen Thrombosis”

Extensive Coverage does not Improve Results!

VQI
4713 patients TEVAR in cTBAD

“Extensive aortic coverage offers no benefit in inducing false lumen thrombosis and aortic remodeling”

Substantial Additional Costs for TEVAR

Favorable impact of thoracic endovascular aortic repair on survival of patients with acute uncomplicated type B aortic dissection

James C. Iannuzzi, MD, MPH,1 S. Aaron M. Stanford, MD,1 Venkata Bababekov, MD, MPH,2 David Chang, MBA, MPH,3 Robert T. Lancaster, MD, MPH,3 Mark F. Conrad, MD, MS;1,4

State Review
Costs of Medical Treatment $57,579
Costs of TEVAR $132,757
Excess costs of TEVAR $75,178

Nationwide additional costs of TEVAR for ALL UTBAD
$75,178 X ~9000/year $676,602,000
Extensive Coverage Adding one device per case $10,000 X ~9000/year $90,000,000

Summary

1. Extensive aortic coverage significantly increases the risk of Spinal Cord Ischemia!
2. Extensive coverage does not improve outcomes!
3. Extensive coverage adds to the expense of a prophylactic procedure decreasing cost effectiveness!

Limited Aortic coverage in Uncomplicated TBAD is SAFER and BETTER