Thoracic Endografts 2015: Limitations & Future Directions for Improvement

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Disclosure

I have no relevant financial relationships with proprietary entities producing health care goods or services related to the content of this presentation.

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2015 FDA Approved On Label Indications for Thoracic Endografts

- TAA – descending thoracic aorta between LSA & celiac
- Penetrating aortic ulcer
- Blunt trauma aortic ulcer
- Type B aortic dissection

Complications of Thoracic Endografting: Areas for Improvement*

- Aortic rupture
- Retrograde dissection*
- Endograft collapse*
- Neurologic*
  - Cerebral*
  - Spinal cord ischemic
- Endograft infection / fistula
- Endoleak*
- Access vessel injury*
- Endoprosthesis failure

Outcomes

- Used on-label all Thoracic Endograft devices produce similar outcomes
  - Perioperative mortality – 1.5 – 5%
  - Perioperative morbidity – 5 – 7%
  - Incidence of paraplegia -3-5%
Future Improvements for Thoracic Endografts

- Increased conformability, wall apposition & radial force
  - Decreases bird-beaking & stent graft collapse
  - Increases wall apposition at angulation points
  - Reduces potential for retrograde dissection
    - Minimizes over-sizing to +/- 10%
    - Reduces need for post-ballooning

- Proximal bare stent or branched endografts – single/multiple
  - Extends proximal landing zone to healthy aortic tissue
  - Increases device stabilization in arch
  - Reduces potential for Type I endoleak

- Increased endograft compliance
  - Fosters compliant motion in concert with native aorta
  - Decreases device related re-entry tears and potential for retrograde dissections

Future Improvements for Thoracic Endografts

- Delivery system profile reduction
  - Current devices 22-26fr
  - Limits vascular access applicability to 65% of patients without use of conduit
  - Future devices 20-22fr profile increases applicability without conduit to 85% of patients

- Hydrophilic delivery system coating
  - Atraumatic tracking thru diseased aorta
  - Minimizes potential for embolic events
Future Improvements for Thoracic Endografts

• Increase deployment accuracy and visibility of extent proximal fabric
  • Reduces potential for device related embolization of atherosclerotic debris
  • Reduces need for device manipulation
• Increase ergonomics and ease of use of delivery system
  • Focuses operator attention on imaging screen, not complicated deployment mechanisms

Future Improvements for Thoracic Endografts

• Develop longer (>200mm) device components, tapers and smaller device diameters
  • Reduces number of pieces required to treat pathology
  • Decreases procedural costs
  • Decreases risk for Type III endoleak
• Design device specific for use in ascending aorta
  • Potential for use in combination with TAVI – a true endovascular Bentall?

Conclusion

• Realization of projected improvements for thoracic endografts will improve outcome, durability of repair and, hopefully, decrease procedure cost