Fenestrated and Branched Graft Treatment of Failed Open TAAA Repairs

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Disclosures

- Consultant and Advisory Board Member
  - Terumo Aortic

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Recurrent Thoracoabdominal Aortic Aneurysms

- TAAAs account for only 10% of all aortic aneurysms
- Literature reports of late failures are limited
- Redo open surgery carries worse morbidity and mortality than the index procedure
- Few centers have the technical expertise to safely undertake
- Endovascular therapies may improve outcomes

Outcomes and Performance Redo-OSR

Redo Thoracoabdominal Aortic Aneurysm
Repair: A Single-Center Experience 25 Years
Rana O. Afifi, MD,* Harleen K. Sandhu, MD, MPH,* Amy. E. Trott, PhD, Tom C. Nguyen, MD, Charles C. Miller, PhD, Anthony L. Estrera, MD, and Hazim J. Safi,MD

- From 1991 to 2014 all 1900 DTAA/TAAA's were reviewed
- 266 (14%) required redo surgery
- Redo's were associated with younger age (62.5+/-16.4 years vs. 64.6+/13.4 years, p < 0.02)
- Reasons for redo:
  - Extension of disease (86.8%)
  - Intercostal patch expansion(6.8%)
  - Visceral patch expansion(10.9%)
  - Infection(4.5%)
  - Anastomotic PSA(8.3)
  - Previous endovascular aortic repair complications(6.4%)

(Ann Thorac Surg 2017;103:1421–8)

Outcomes and Performance Redo-OSR

Redo Thoracoabdominal Aortic Aneurysm
Repair: A Single-Center Experience Over25 Years
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- From 1991 to 2014 all 1900 DTAA/TAAA's were reviewed
- Redo repairs were conducted in a similar manner to the original procedure
- Treacherous adhesions often encountered
- In HCTD, for visceral patch expansion, converted to branch graft repair
- Early mortality was 22.9%
- Long term survival between redo and non-redo
  - 5 yr 46.6% vs. 58.1%
  - 10 yr 30% vs. 43.6%
  - 15 yr 21.8% vs. 36.8%

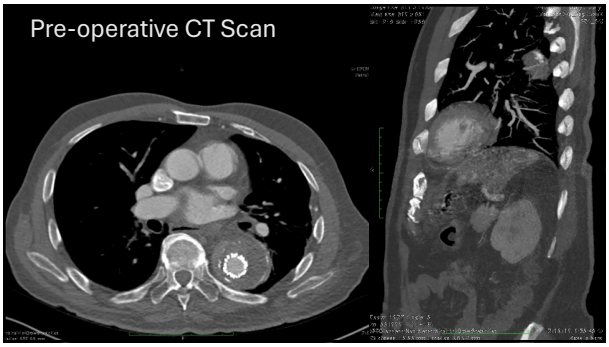
(Ann Thorac Surg 2017;103:1421–8)

Case 1 Clinical History

- 87 yo man with continued paravisceral expansion of previous open Extent III TAAA
  - 2012- Open Extent III TAAA repair w/patch of viscerals, left renal reimplantation
  - 2018 - Proximal extension of disease- Tx with TEVAR x 2
  - 2020- Development of Type 1B between TEVAR and Previous open graft- Tx with Coil Embolization -> Thoracic aorta expanded to 7.0cm
  - 2022- Referred to for eval

Extraordinarily healthy:
- EF- 65%
- Cr- 1.1
- PFT's- normal

Pre-operative CT Scan



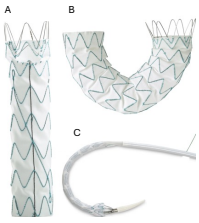
Case Considerations

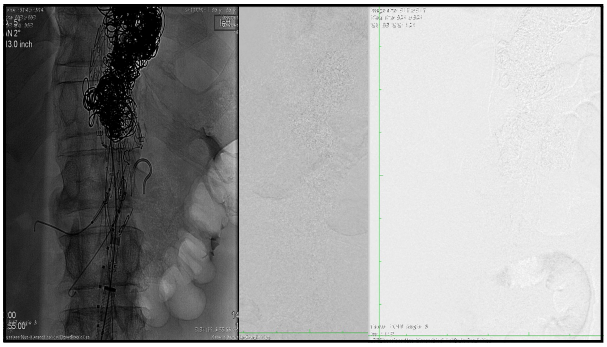
- Surgical Options
  - Redo Open TAAA Repair
  - Visceral Debranching via transperitoneal approach with distal stent graft
- PMEG/BEVAR/FEVAR
  - Technical considerations
    - Aneurysm diameter and distance to visceral ostia
    - Visceral architecture and trajectory
    - Inner-branch vs. outer-branch options
    - Preservation of intact intercostal arteries

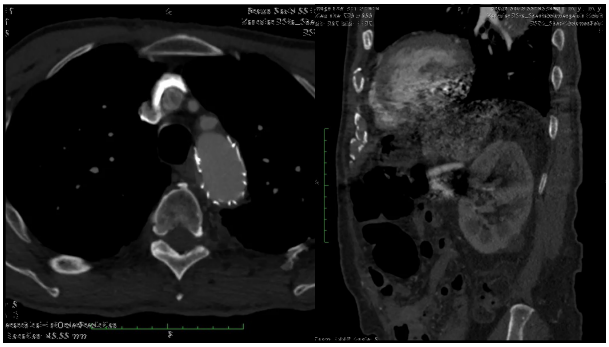
Terumo RELAY PRO TEVAR

4 Vessel PMEG with RELAY PRO

- A- Spiral Support Bar
  - Can cause excessive torque, removal often required
- B- Extended spacing between struts
  - Highly customizable
- C- Low Profile
  - 2-4 Fr size smaller than competitive grafts
  - Two stage inner sheath deployment
    - Advantageous for sequential deployment and cannulation



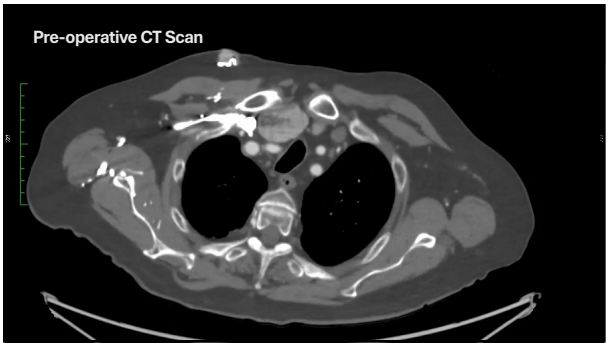




Case 2 Clinical History

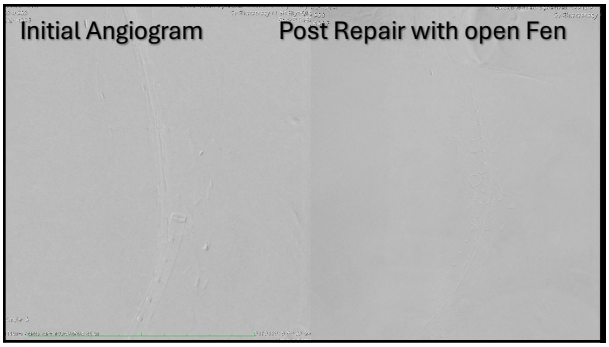
- 78 yo man with continued super celiac expansion after previous Extent IV TAAA
  - 2018- Open Extent IV TAAA repair w/ Branched Coselli Graft
  - 2020- Dx with small cell lung cancer started on chemo/radiation
  - 2021- Expansion of super celiac aorta to 5.1
  - 2022- Continued expansion to 6.0 cm and now in remission
  - 2023- Cleared by oncology for repair

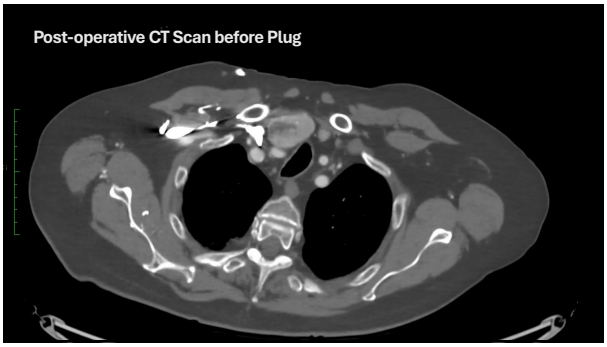
Since Repair:
- Developed large abdominal wall eventration
- Right renal graft occlusion
- Hostile iliac access
- Proximal TEVAR placed as first stage

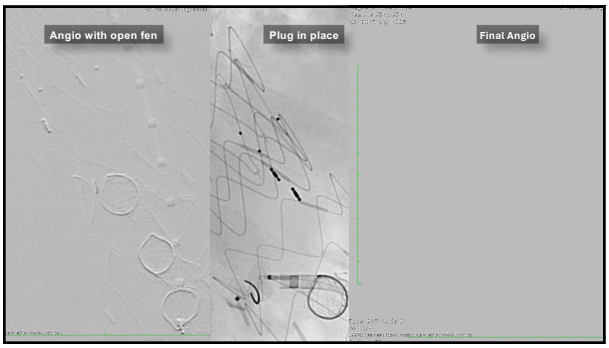


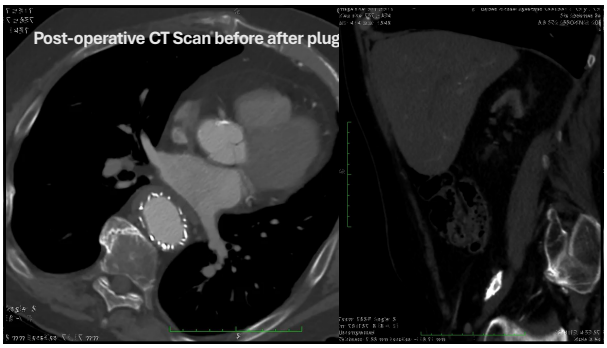
Case Considerations

- Surgical Options
  - Redo Open TAAA Repair would be hostile with the loss of domain
- PMEG/BEVAR/FEVAR
  - Technical considerations
    - Staging likely necessary to convert to Extent II/III repair
    - Visceral architecture and trajectory/main posterior left renal
    - Preservation of intercostal arteries for spinal perfusion
    - 2 Stage-> TEVAR-> 4 Vessel PMEG with plan for occlusion of perfusion fen 6-8 weeks later.









Conclusions

- Staging is critical to reduce spinal ischemia rates
- FEVAR is a viable solution but BEVAR maybe more appropriate in certain anatomies
- FEVAR can remain a total transfemoral approach for most
- Its important to ensure good life expectancy
- Early results of F/BEVAR for failed open TAAA repair are promising