Cadaveric Training Model for the Endovascular Management of Type-B Aortic Dissection

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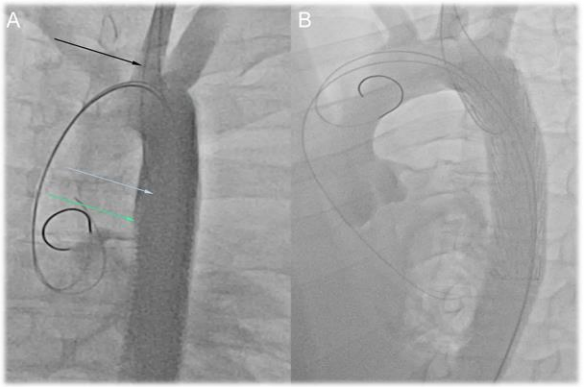
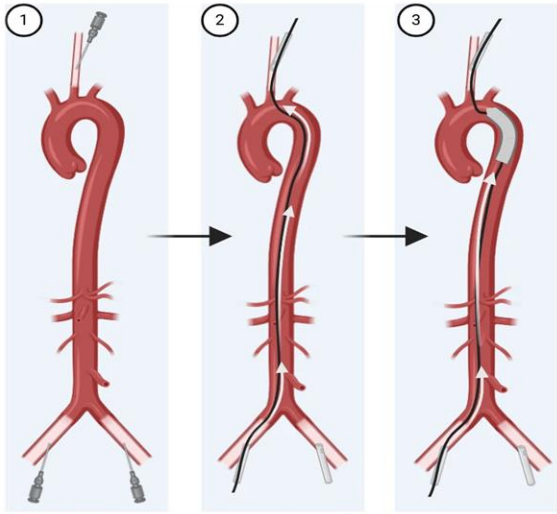
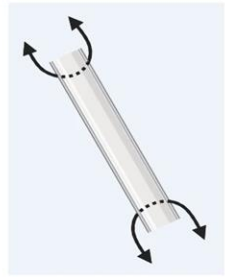
INTRODUCTION

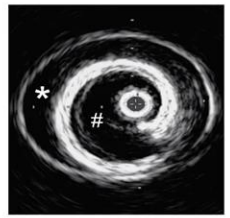
- Aortic dissection is the most common condition in Acute Aortic Syndrome
- Type-B Aortic Dissection (TBAD) endovascular repair is both challenging to treat *and challenging to teach*
- Currently, there is no well-established training model for Thoracic Endovascular Aortic Repair (TEVAR) of TBAD
- Our cadaveric TBAD model can help improve TEVAR training



(Above) **Figure 1:** (**A**) Adjusted DG position in cadaveric model (**B**) Gore CTAG stent graft







RESULTS

(Left) **Figure 2:** Dacron Graft Positioning using femoral and carotid access and glidewire loops.

IVUS Image depicts the simulated false (*) and true lumens (3) once DG is in place.

Abstract Full Text:

FEASIBILITY TEST
1. ACCESS INTERIOR of TUBE
2. FORM PROXIMAL LOOP
3. FORM DISTAL LOOP
4. POSITION DACRON GRAFT
5. VISALUZE DG within AORTA
REPLICATE in CADAVERIC MODEL

METHODS

- **Feasibility Test** was initiated with a plastic tube designed to simulate the aorta
  - To **Access the Interior of the Tube**, a 26 French (Fr) and 5 Fr sheath were inserted at each end of the plastic tube
  - Soft glidewire was used to a create a **Proximal Loop** around the proximal segment of a **Dacron Graft (DG)**
  - Another segment of glidewire was used to create a **Distal Loop** at the distal end of DG
  - **DG was fed through 26 Fr sheath** by traction on distal end of proximal loop, which extended outward from the 5 Fr sheath.
  - **IntraVascular UltraSound (IVUS)** catheter was used to **visualize DG** within aorta (Figure 1B)
- This methodology was then **replicated in a cadaveric model**

DISCUSSION

- CADAVERIC TBAD MODEL **ADVANTAGES**:
  - Lifelike experience with IVUS-guided feedback
  - Planning using Cone-Beam Computed Tomography
  - Intra-operative decision-making based on IVUS
- CADAVERIC TBAD MODEL **DISADVANTAGES**:
  - Cost and availability of cadavers
  - Infrastructure needed to create model and perform TEVAR simulation

CONCLUSION

- Existing aortic dissection models have limitations:
  - Animal models are time consuming with high failure rates
  - Vascular phantoms lack feedback on endovascular devices and don't facilitate real-life procedural steps
- The model we developed showed that creating a training model for Type-B Aortic Dissection (TBAD) is feasible and that a cadaveric TBAD can be reproduced
- This innovative educational tool is promising in terms of being able to effectively instruct trainees in the management of TBAD.