Thoracic Endovascular Aortic Repair Outcomes in Octogenarians and Nonagenarians, a Single Center Experience

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Our Aging Population

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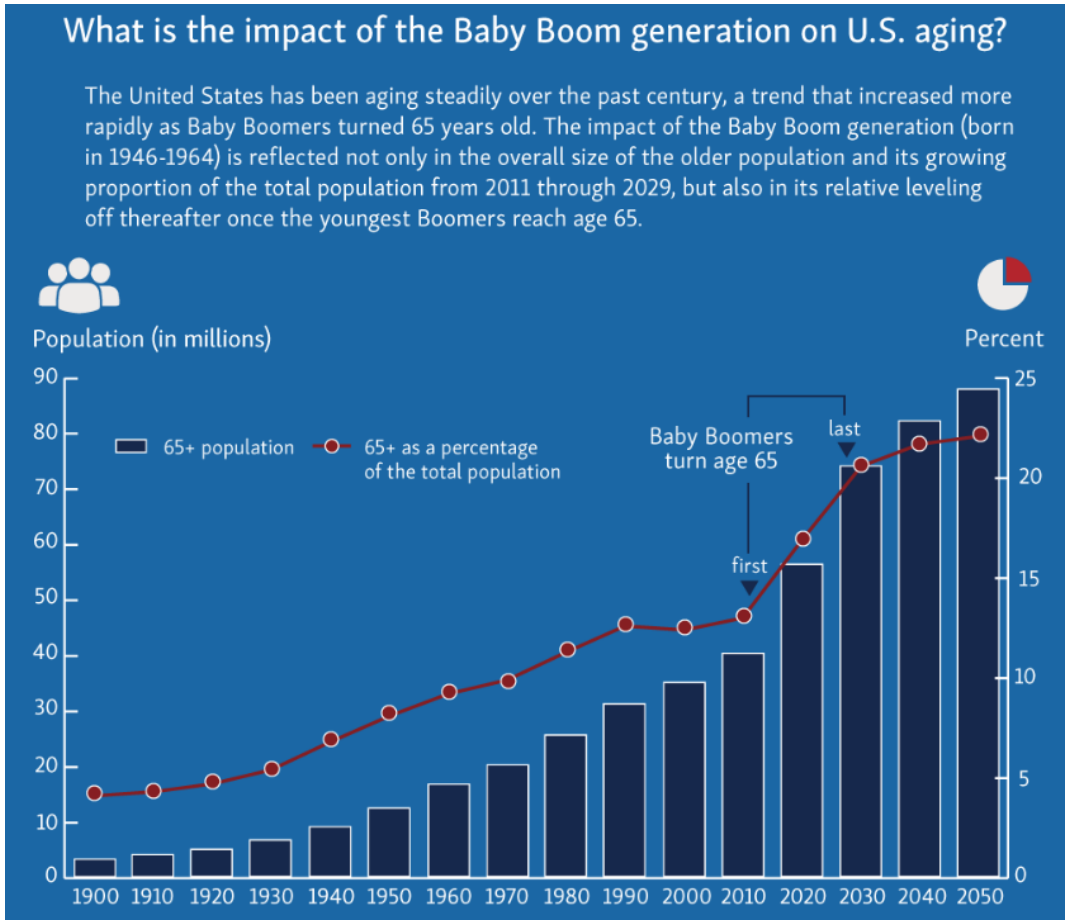
- **The American population is rapidly aging**

- **<u>Research Gap</u>: Research is needed to determine the outcomes of TEVAR on a progressively aging US population**



Adapted from Federal Interagency Forum on Aging

https://agingstats.gov/OlderAmericans_AgingPopulation.html

Study

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- Retrospective review of a prospectively maintained database at a single institution
- 506 total TEVARs in a 6 year span
- 50 patients older than 80 years old

Patient Demographics

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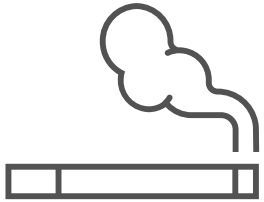
- Age
  - Average patient age was 83.6 years
- Sex
  - Male: 40.0%
  - Female: 60.0% vs 42.3% in patients <80 (p=0.02)
- Race/Ethnicity
  - White: 86.0%
  - Black: 10.0%
  - Hispanic: 2.00%
  - Asian: 2.00%
- Current smoker
  - 12.0% vs 45% in patients <80 P<0.0001



Comorbidities

	≥ 80 years old (n=50)	< 80 years old (n=456)	P value
CAD	19 (38%)	96 (21%)	0.01
CKD	8 (16%)	73 (16%)	>0.99
DM	6 (12%)	76 (17%)	0.5
COPD	17 (34%)	95 (21%)	0.05
HLD	29 (58%)	197 (43%)	0.05
HTN	42 (84%)	366 (80.3%)	0.7
PVD	7 (14%)	49 (11%)	0.5
BMI	25.13	28.46	0.0002

Other

	≥ 80 years old (n=50)	< 80 years old (n=456)	P value
Arch type			0.1
1	11 (22%)	176 (38.8%)	
2	10 (20%)	131 (28.7%)	
3	28 (56%)	141 (30.0%)	
Bovine	12 (24%)	132 (29%)	0.5
Valve Type			
Tricuspid	28 (56%)	281 (61.6%)	
Bicuspid	0 (0%)	16 (3.5%)	
Mechanical	0 (0%)	5 (1.1%)	
Bioprosthetic	4 (8%)	11 (2.4%)	
Unknown	18 (36%)	143 (31.4%)	
Aberrant Right Subclavian Artery	0 (0%)	9 (2%)	
Prior aortic intervention	11 (22%)	112 (25%)	0.9

Indications

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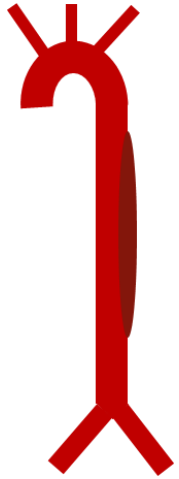
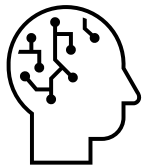
- Type-B aortic dissection 28/50 (56%)
  - Acute complicated/high risk 18/28
  - Acute uncomplicated 5/28
  - Chronic with aneurysmal degeneration 5/28
- Thoracic/thoracoabdominal aneurysm 21/50 (42%)
  - Average TAA diameter 71.5mm
  - Elective 17/21
  - Symptomatic 2/21
  - Rupture 2/21
- Tumor erosion into the thoracic aorta 1/50 (2%)





Take home message: Type-B aortic dissection and aortic aneurysm are the most frequent pathologies *we treated with TEVAR in octo- and nonagenarians.*

Preoperative status/Intraoperative Outcomes

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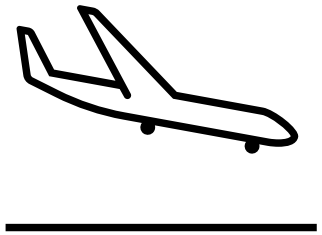
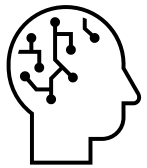
- Average blood pressure
  - $^{143.6}/_{79.72}$ mmHg
- Proximal landing zone
  - Zone 0 2/50 (4%)
  - Zone 1 4/50 (8%)
  - Zone 2 18/50 (36%)
  - Zone 3 13/50 (26%)



- Great vessel debranching 7/24
  - Carotid-caroltid 2/7
  - Carotid-carotid-LSA 2/7
  - Carotid-LSA 3/7



Take home message: *:Almost half of the patients had the LZ proximal to the LSA.*

Postoperative Outcomes

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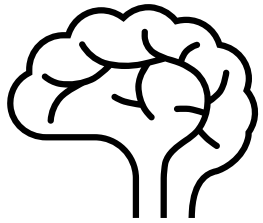
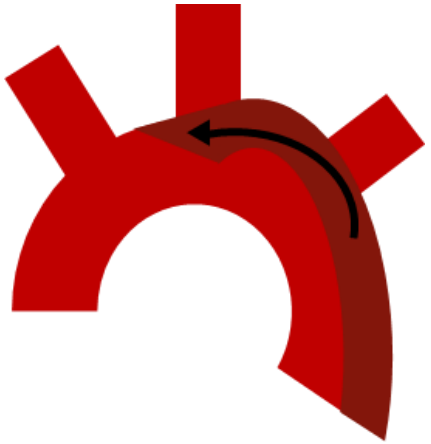
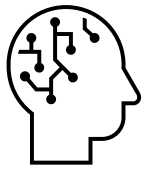
- 30-Day stroke rate
  - 2/50 (4%)



- 30-Day MI
  - 0/50
- Spinal cord ischemia
  - 0/50
- Retrograde type-A dissection
  - 3/50 (6%)





Take home message: *There was an overall* ***low rate of complication*** *with no occurrence of MI, bowel ischemia, extremity ischemia, or spinal cord ischemia to report within the first 30 days.*

Primary Outcomes

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Ahmad et al., *unpublished*

- **Kaplan Meier estimates for survival at 30 days, 1 year, 2 years, 3 years, 4 years, and 5 years were 84%, 67.4%, 55.1%, 47.7%, 40.9%, and 30.7% respectively.**
- **Aortic related mortality at 5 years (5/50, 10%)**
- **Overall Reintervention rate was 16% with an average of 1 intervention when needed**

Take home message: *high overall mortality despite low aortic-related mortality*

Scallan O, Novick T, Power AH, DeRose G, Duncan A, Dubois L. Long-term outcomes comparing endovascular and open abdominal aortic aneurysm repair in octogenarians. J Vasc Surg. 2020 Apr;71(4):1162-1168. doi: 10.1016/j.jvs.2019.06.207. Epub 2019 Sep 10. PMID: 31519509.

Conclusions

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- TEVAR can be performed safely and efficiently in patients older than 80 years of age.

- Careful consideration of all comorbidities is important to ensure the best outcomes. Case by case basis.

- Also, a clear and honest conversation with the patients and their families is crucial to set expectations given the high overall mortality over time.