

# *Long-Term Clinical Outcomes of Balloon-Expandable vs Self-Expandable Valves in Patients with Small Aortic Annulus Undergoing TAVR*

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# Disclosure of Relevant Financial Relationships

I, [Mangesh Kritya](#) DO NOT have any financial relationships to disclose.

# Background

- **Small annulus in TAVR** patients → higher risk of elevated gradients and prosthesis–patient mismatch.
- 1-year outcome comparisons between BEV and SEV have shown 1:
  - Similar clinical outcomes
  - Hemodynamic differences
- Long-term comparative outcomes remain underexplored.

# Objective

To compare **long-term clinical outcomes** between **balloon-expandable (BEV)** and **self-expanding valves (SEV)** in patients with **small aortic annulus** undergoing TAVR.

# Methods

- **Design:** Retrospective cohort study
- **Source:** Houston Methodist TAVR Registry (2016-2023)
- **Population:** Patients with **perimeter-derived annulus diameter <23 mm**
- **Outcomes**
  - **Primary:** All-cause mortality
  - **Secondary:** MI, endocarditis, Valve reintervention, Composite (Death + Stroke + HFH)
  - **Hemodynamic:** Post-TAVR mean gradients
- **Median duration of Follow-up:** 743 (254-1420) days
- **Statistical analyses:** Program R v4.4.3

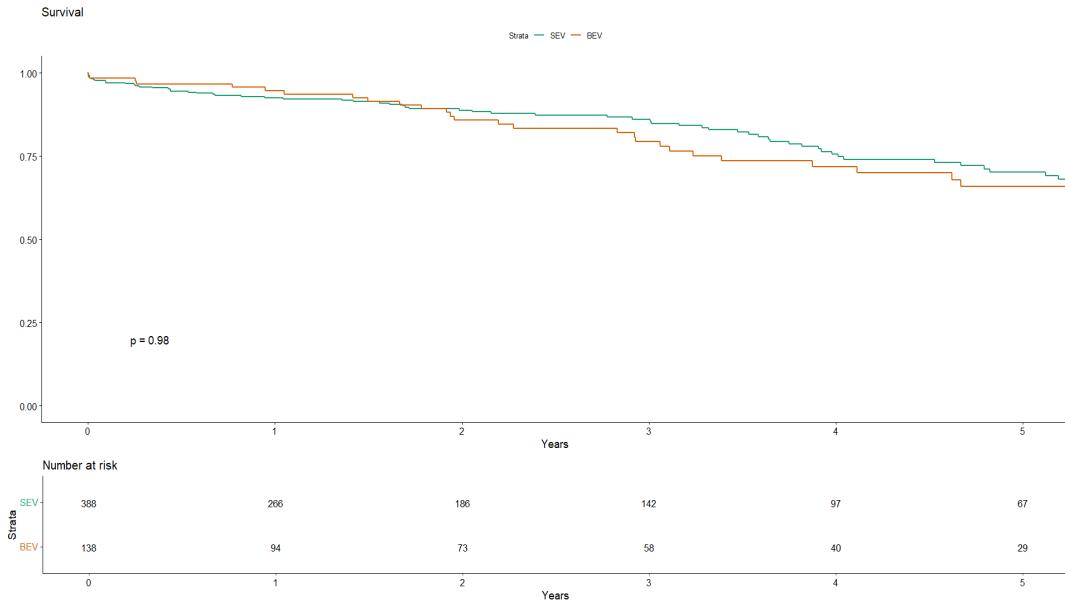
# Baseline Features

Variable	BEV (n=240)	SEV (n=707)	p-value
<b>Age</b>	$80.5 \pm 9.1$	$79.5 \pm 9.2$	0.13
<b>Sex (male)</b>	30 (12.5%)	134 (19.0%)	0.15
<b>STS Risk Score</b>	$5.46 \pm 3.84$	$5.18 \pm 3.74$	0.408
<b>Conduction Defect</b>	1 (0.4%)	11 (1.6%)	0.544
<b>AFib/Flutter</b>	2 (0.8%)	12 (1.7%)	0.397
<b>NYHA Class III/IV</b>	196 (81.7%)	517 (73.1%)	0.018
<b>PAD</b>	35 (14.6%)	96 (13.6%)	0.778
<b>Smoker</b>	1 (0.4%)	9 (1.3%)	0.079
<b>Hypertension</b>	216 (90.0%)	613 (86.7%)	0.357
<b>Diabetes</b>	87 (36.2%)	239 (33.8%)	0.254
<b>Dialysis</b>	15 (6.2%)	32 (4.5%)	0.408
<b>Prior PCI</b>	61 (25.4%)	135 (19.1%)	0.134
<b>Prior CABG</b>	33 (13.8%)	124 (17.5%)	0.292

# Aortic Valve Features

	BEV (n=240)	SEV (n=707)	p-value
<b>Bicuspid AV</b>	13 (5.4%)	55 (7.7%)	0.064
<b>Annular Calcification</b>	72 (30.0%)	270 (38.2%)	0.069
<b>Peak Velocity</b>	$3.85 \pm 0.81$	$3.90 \pm 0.78$	0.488
<b>Perimeter Derived Diameter (&lt;23 mm)</b>	$9.98 \pm 10.93$	$10.41 \pm 10.84$	0.598
<b>Degenerative Aortic Valve</b>	233 (97.1%)	680 (96.2%)	0.833

# Primary Outcome



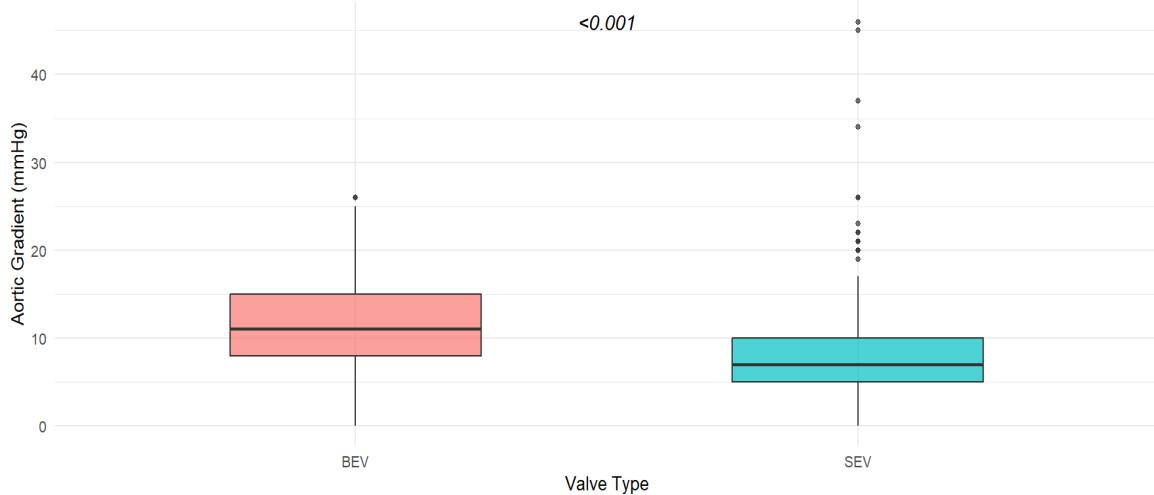
- BEV vs SEV: HR = 1.00 (95% CI: 0.66–1.52),  $p=0.984$
- No difference in **all-cause mortality** over 5 years.
- Mortality Rate: 17.6%

# Secondary Outcomes

Outcome	Rate	HR	p-value
Composite	39.3%	0.94	0.728
Myocardial Infarction	16.9%	0.87	0.984
New PPM implantation	6.9%	1.24	0.616
Endocarditis	1.3%	0.71	0.602
Valve reintervention	2.6%	1.00	0.991

# Hemodynamic Outcomes

Aortic Gradient (AOG) by Valve Type



- Mean gradient at 1 year:
  - SEV:  **$8.4 \pm 5.8$  mmHg**
  - BEV:  **$11.7 \pm 5.8$  mmHg**
- $p < 0.001$

# Summary

- **Clinical outcomes** were similar between BEV and SEV
  - **SEV** → Better hemodynamic performance (lower gradients) at 1 year
- Interesting to check the long-term gradients of both SEV and BEV

# Thank You