

Impact of Access Route on TAVR in Patients with Moderate to Severe Obesity and Low and Intermediate Surgical Risk:

An STS/ACC TVT Registry Analysis

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DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS

I, Mansi Maini DO NOT have any financial relationships to disclose.

BACKGROUND

- Transcatheter aortic valve replacement (TAVR) has become the predominant strategy for aortic valve replacement across all risk groups since FDA approval in 2011.
- Transfemoral (TF) is the default route for TAVR given safety and simplicity.
- However, obesity ($\text{BMI} \geq 35$) poses challenges.
- Alternative access (AA), may mitigate some challenges but has historically been linked with higher mortality and stroke.

OBJECTIVES

To evaluate outcomes of TF versus AA among low- and intermediate-risk patients with moderate to severe obesity undergoing TAVR.

- Compare outcomes of TF vs. AA in patients with obesity (BMI ≥ 35) without Peripheral Artery Disease (PAD).
- Assess whether BMI modifies the relationship between access and outcomes.
- Explore whether there is a BMI threshold at which AA may be safer than TF.

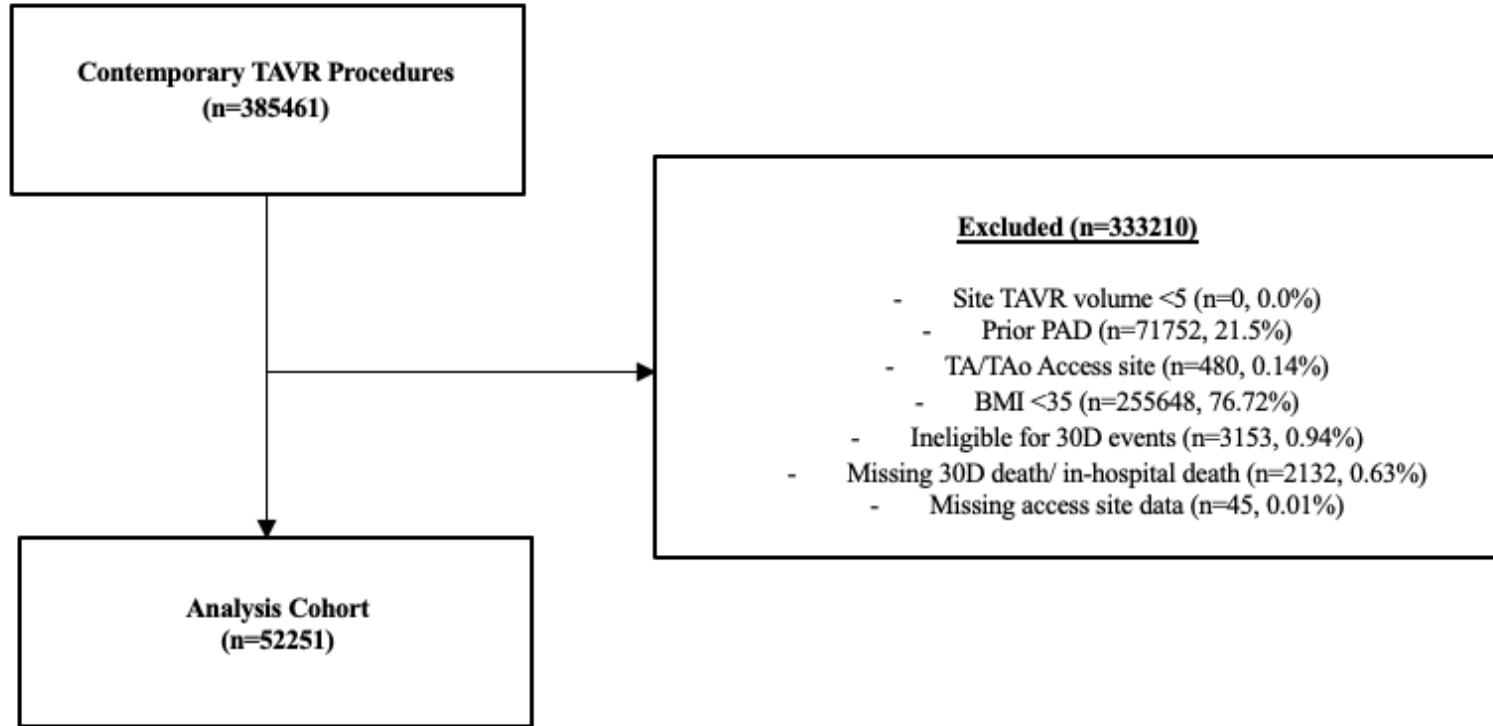
METHODS

- **Data source:** 2020-2024 STS/ACC TVT Registry
- **Inclusion:** TAVR patients with BMI ≥ 35 , no PAD, low or intermediate surgical risk.
- **Exclusion:** Transapical or transaortic access.

METHODS

- **Primary outcomes:** 30-day mortality, stroke, in-hospital vascular complications, VARC-3 major or life-threatening bleeding.
- **Propensity-matched 1:4 (AA:TF) cohort, 4,275 patients.**
 - In-hospital and 30-day outcomes assessed by logistic regression.
- **Secondary analysis** at BMI ≥ 45 ; subgroup of TC vs TF.

STUDY POPULATION



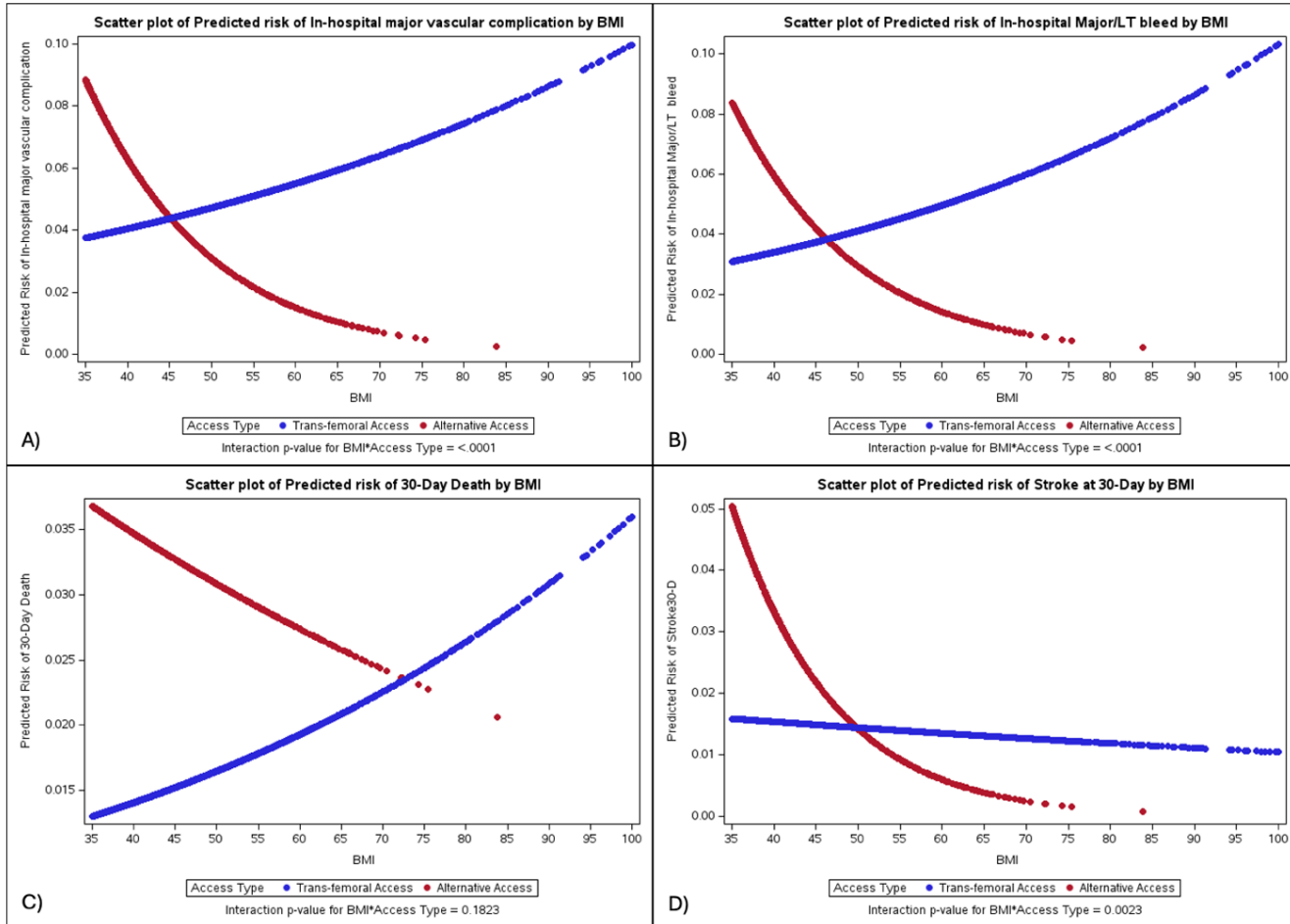
BASELINE CHARACTERISTICS

Variable	Overall (N=52,251)	TF (N=51,396)	AA (N=855)	P-value
Age, years, median (IQR)	74 (69-79)	74 (69-79)	72 (67-77)	<0.0001
Female sex, n (%)	28,318 (54.2)	27,856 (54.2)	462 (54.0)	0.923
BMI, kg/m ² , median (IQR)	39.0 (36.7-42.8)	38.9 (36.6-42.7)	42.6 (37.950.2)	<0.0001
BMI 35-40, n (%)	30,555 (58.5)	30,238 (58.8)	319 (37.3)	0.717
BMI 40-45, n (%)	13,102 (25.1)	12,919 (25.1)	183 (21.4)	0.057
BMI >45, n (%)	8,596 (16.4)	8,239 (16.0)	353 (41.3)	<0.0001
BSA, mean±SD	2.2 ± 0.2	2.2 ± 0.2	2.3 ± 0.3	<0.0001
Race				0.0056
White	48202 (92.3)	47492 (92.3)	773 (90.4)	
Black	2551 (4.9)	2491 (4.8)	60 (7.0)	
Asian	170 (0.3)	170 (0.3)	0 (0)	
Other	230 (0.4)	224 (0.4)	6 (0.7)	
Missing	1098 (2.1)	1082 (2.1)	16 (1.9)	
Ejection fraction, %, mean±SD	58.3 ± 10.4	58.3 ± 10.4	56.6 ± 11.7	<0.0001
Hemoglobin, g/dL, mean±SD	12.6 ± 2.0	12.6 ± 2.0	12.2 ± 2.0	<0.0001
Platelet count, μL, mean±SD	217435.4 ± 69497.4	217341.3 ± 69436.0	223085.9 ± 72904.0	0.0316
Current/former smoker, n (%)	2,636 (5.0)	2,565 (5.0)	71 (8.3%)	<0.0001
Prior PCI, n (%)	12377 (23.7)	12152 (23.6)	225 (26.3)	0.069
Prior CABG, n (%)	4,663 (8.9)	4,561 (8.9)	102 (11.9)	0.002
Prior aortic valve procedure, n (%)	3,713 (7.1)	3,625 (7.1)	88 (10.3)	0.0003
Prior TIA/stroke, n (%)	4,183 (8.0)	4,098 (8.0)	85 (9.9)	0.035
Carotid stenosis, n (%)	4,835 (9.3)	4,700 (9.1)	135 (15.8)	<0.0001
On dialysis, n (%)	1354 (2.6)	1331 (2.6)	23 (2.7)	0.8504
Chronic lung disease, n (%)	14,915 (28.5)	14,577 (28.4)	338 (39.5)	<0.0001
Proximal LAD ≥70%, n (%)	3,889 (7.4)	3,811 (7.4)	78 (9.1)	0.047
Atrial fibrillation/flutter, n (%)	17,351 (33.2)	17,033 (33.1)	318 (37.2)	0.013
Prior permanent pacemaker, n (%)	4222 (8.1)	4166 (8.1)	56 (6.5)	0.0976
Diabetes mellitus, n (%)	27,996 (53.6)	27,494 (53.5)	502 (58.7)	0.002

OUTCOMES: MATCHED COHORT BMI ≥ 35

Outcome	TF (N=3,420)	Alternative (N=855)	P-value
30-day Mortality, n (%)	71, (2.1)	28, (3.3)	0.0007
30-day Stroke, n (%)	45, (1.3)	23 (2.7)	0.0053
In-hospital Significant Vascular Complications, n (%)	149 (4.4)	45 (5.3)	0.190
In-hospital Major or Life-threatening Bleeding (VARC-3), n (%)	131 (3.8)	43 (5.0)	0.100
In-hospital VARC degree of Bleeding (TAVR), n (%)			0.0788
No VARC major or LT bleeding	3,289 (96.2)	810 (94.7)	
Major bleeding event, not LT	81 (2.4)	33 (3.9)	
LT or disability bleeding event	48 (1.4)	11 (1.3)	
In-hospital Minor vascular complication, n (%)	81 (2.4)	23 (2.7)	0.9621
In-hospital VARC-3 Degree of Bleeding, n (%)			0.0003
No bleeding	3,966 (92.8)	772 (90.3)	
Type I bleeding	135 (3.2)	40 (4.7)	
Type II bleeding	115 (2.7)	29 (3.4)	
Type III bleeding	56 (1.3)	13 (1.5)	
Type IV bleeding	3 (0.1)	1 (0.1)	
Composite In-hospital/30-day Mortality, n (%)	72 (2.1)	29 (3.4)	0.0004
30-day Composite TAVR Outcome, n (%)	277 (8.10)	89 (10.40)	0.0024
Fluoroscopy Time, minutes			
Mean \pm SD	16.8 \pm 12.6	20.0 \pm 13.9	<0.0001
Median (IQR)	13.0 (9.4-18.5)	16.9 (12.3-23.1)	<0.0001
Procedural Complications	274 (8.0)	84 (9.8)	0.0231
In-hospital Stroke	33 (1.0)	18 (2.1)	0.0032
In-hospital TIA	0 (0.0)	3 (0.4)	0.0059
Conversion to open surgery	11 (0.3)	6 (0.7)	0.0325
Other unplanned cardiac interventions	39 (1.1)	17 (2.0)	0.0019

BMI AND PREDICTED RISK OF ADVERSE OUTCOMES



OUTCOMES: MATCHED COHORT BMI ≥ 45

Outcome	TF (N=353)	Alternative (N=353)	P-value
30-day mortality, n (%)	6 (1.7)	10 (2.8)	0.3121
30-day stroke, n (%)	1 (0.3)	4 (1.1)	0.1785
In-hospital significant vascular complications, n (%)	20 (5.7)	10 (2.8)	0.0623
In-hospital major or LT bleeding (VARC-3), n (%)	17 (4.8)	9 (2.5)	0.1102
In-hospital VARC degree of bleeding (TAVR), n (%)			0.0425
No VARC major or LT bleeding	336 (95.2)	344 (97.5)	
Major bleeding event, not LT	6 (1.7)	6 (1.7)	
LT or disability bleeding event	11 (3.1)	2 (0.6)	
In-hospital minor vascular complication, n (%)	14 (4.0)	5 (1.4)	0.0365
In-hospital VARC-3 degree of bleeding, n (%)			0.4163
No bleeding	329 (91.5)	772 (90.3)	
Type I bleeding	13 (3.7)	40 (4.7)	
Type II bleeding	11 (3.1)	29 (3.4)	
Type III bleeding	6 (1.7)	13 (1.5)	
Type IV bleeding	-	-	
Composite in-hospital/30-day mortality, n (%)	7 (2.0)	11 (3.1)	0.3399
30-day composite TAVR outcome, n (%)	25 (7.1)	24 (6.8)	0.8302
Fluoroscopy time (minutes), mean \pm SD	16.0 \pm 8.4	19.4 \pm 10.1	<0.0001
Procedural complications, n (%)	26 (7.4)	27 (7.6)	0.9140
In-hospital Stroke	1 (0.3)	4 (1.1)	0.1785
In-hospital TIA	0 (0.0)	1 (0.3)	0.3173
Conversion to open surgery	0 (0.0)	1 (0.3)	0.3180
Other unplanned cardiac interventions	4 (1.1)	8 (2.3)	0.2445

ODDS OF OUTCOMES IN MATCHED COHORT

BMI ≥ 45

Outcome	Unadjusted Odds Ratio	P-value
30-day mortality	1.69 (0.60-4.74)	0.3221
30-day stroke	4.03 (0.45-36.46)	0.2143
In-hospital significant vascular complication	0.49 (0.22-1.07)	0.0726
In-hospital VARC-3 Major or LT bleed	0.52 (0.24-1.12)	0.0926
In-hospital minor vascular complication	0.35 (0.12-0.99)	0.0473
Fluoroscopy time	1.67 (1.22-2.29)	0.0014

Access type reference: TF Access, TC n=216, TF n=432

ODDS OF OUTCOMES IN MATCHED COHORT

TC vs. TF BMI ≥ 45

Outcome	Unadjusted Odds Ratio	P-value
30-day mortality	0.89 (0.27-2.95)	0.8445
30-day stroke	0.36 (0.08-1.64)	0.1863
In-hospital Significant Vascular Complication	0.34 (0.13-0.92)	0.0340
In-hospital VARC-3 Major or LT bleed	0.23 (0.07-0.78)	0.0180

Access type reference: TF Access; n=648

LIMITATIONS

- Retrospective registry analysis.
- Residual confounding (frailty, anatomy not captured).
- Short-term (30-day) follow-up.
- BMI does not reflect fat distribution.

CONCLUSIONS

- Overall, AA has higher risk of stroke and 30-day mortality in patients with BMI ≥ 35 relative to TF.
- At BMI ≥ 45 , the balance shifts:
 - AA, especially TC, offers vascular safety without added mortality or stroke.
- Implications:
 - Procedural planning should integrate BMI along with anatomy and comorbidity.
 - As obesity prevalence rises, tailored access strategies including increased use of TC will be critical to optimize outcomes.

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