

Management and Outcomes of Primary Access Complications in TAVR

Role of Secondary Access and Protection Wire

Ottavia Cozzi, MD



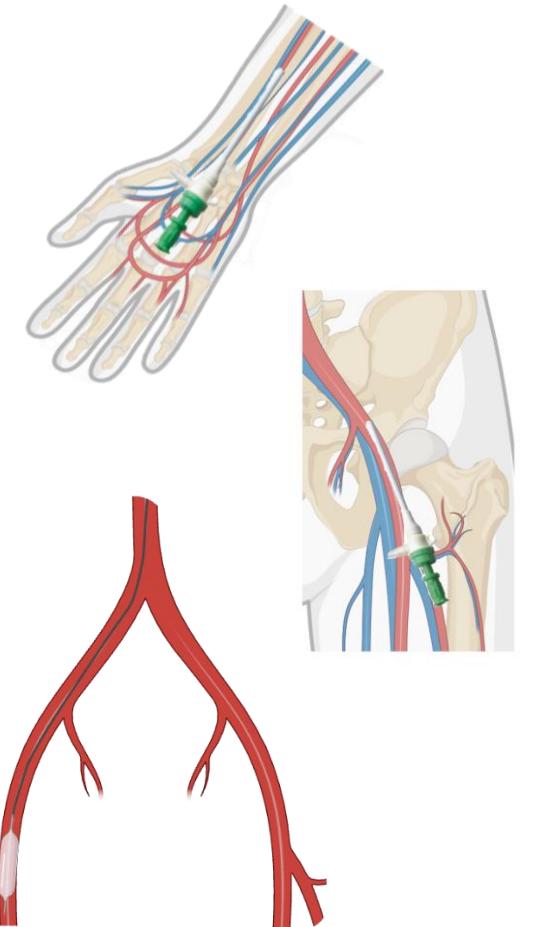
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Disclosure of Relevant Financial Relationships

I, Ottavia Cozzi DO NOT have any financial relationships to disclose.

Background

- Vascular complications remain a major TAVR concern.
- Secondary access choice (radial vs femoral) may influence management of primary access complications.
- No prior study compared outcomes according to secondary access and protection wire use.



Methods

Design: Retrospective, 2020–2023, 2 registries.

Population: Patients with primary access complications during TF-TAVR.

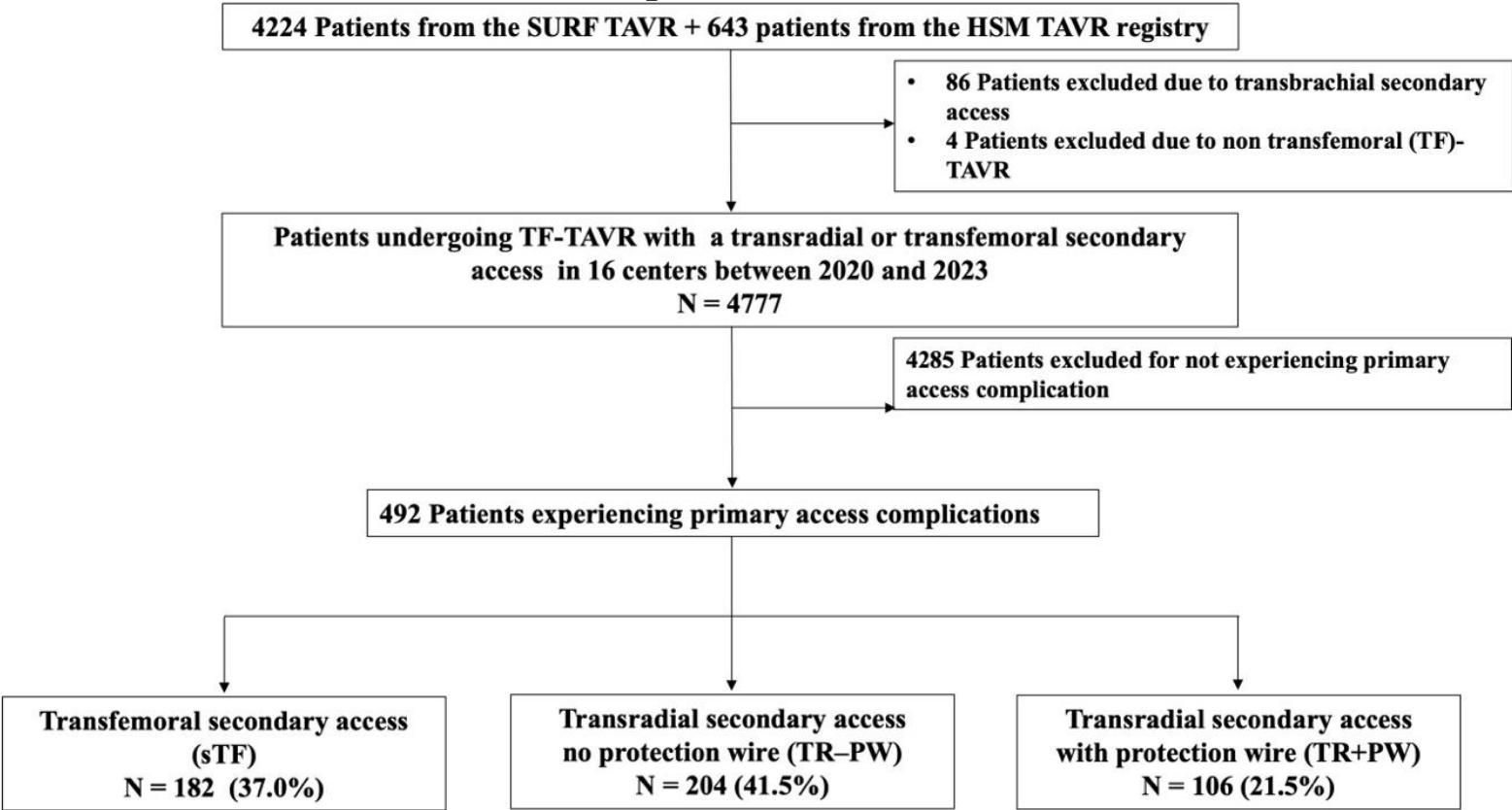
Groups:

- **sTF** (secondary transfemoral)
- **TR-PW** (transradial *without* protection wire)
- **TR+PW** (transradial *with* protection wire)

Primary outcomes: Need for vascular surgery, intrahospital death.

Secondary outcomes: Major vascular complications, transfusions, AKI, stroke.

Study flow chart



Patient population

	Overall	TF	TR - PW	TR + PW	P value
	N = 492	N = 182	N = 204	N = 106	
Age, year (median [IQR])	83.8 (79.7, 87.0)	84.2 (80.0, 87.0)	83 (79.5, 87)	84.1 (78.9, 87.3)	0.490
Male, n (%)	196 (39.8%)	61 (33.5%)	83 (40.7%)	52 (49.1%)	0.032
Body mass index, kg/m ² (median [IQR])	25.4 (23.0-28.4)	25.4 (23.1-27.9)	25.7 (22.8-28.7)	24.9 (23.4-28.1)	0.746
NYHA III or IV, n (%)	238 (48.4%)	87 (47.1%)	55 (51.9%)	46 (54.8%)	0..709
STS-PROM > 4, n (%)	242 (51.6%)	96 (54.9%)	91 (47.9%)	55 (52.9%)	0.395
Diabetes mellitus, n (%)	143 (29.1%)	52 (28.6%)	60 (29.6%)	31 (29.3%)	0.977
Coronary artery disease, n (%)	200 (41.1%)	73 (40.3%)	83 (41.5%)	44 (41.5%)	0.968
Peripheral artery disease, n (%)	89 (18.1%)	34 (18.7%)	36 (17.7%)	19 (17.9%)	0.965
CKD (eGFR < 60 ml/m ²), n (%)	323 (66.7%)	114 (73.6%)	118 (69.4%)	55 (53.9%)	0.007
LVEF < 50%, n (%)	93 (19.3%)	35 (19.9%)	32 (15.9%)	26 (24.8%)	0.031

Procedural features

	Overall N = 492	TF N = 182	TR - PW N = 204	TR + PW N = 106	P value
BEV, n (%)	335 (68.5%)	129 (71.3%)	150 (74.3%)	56 (52.8%)	<0.001
Primary access RFA, n (%)	414 (84.15%)	173 (81.9%)	173 (84.8%)	92 (86.8%)	0.514
Primary access sheath					
14 F	363 (73.8%)	151 (83.0%)	135 (66.2%)	77 (72.6%)	0.006
16 F	89 (18.1%)	18 (9.9%)	49 (24.0%)	22 (20.7%)	
≥18 F	40 (8.1%)	13 (7.1%)	20 (9.9%)	7 (6.6%)	
Protection wire, n (%)	236 (48.0%)	130 (71.4%)	0	106 (100%)	0.001
VCD primary access, n (%; N= 451)					
No VCD	14 (3.1%)	2 (1.2%)	11 (6.0%)	1 (1.0%)	0.024
Suture based only	371 (82.3%)	139 (83.7%)	144 (79.1%)	88 (85.4%)	
Suture + plug baised	58 (12.9%)	19 (11.5%)	26 (14.3%)	13 (12.6%)	
Plug-baised	8 (1.8%)	6 (3.6%)	1 (0.6%)	1 (1.0%)	

Clinical outcomes

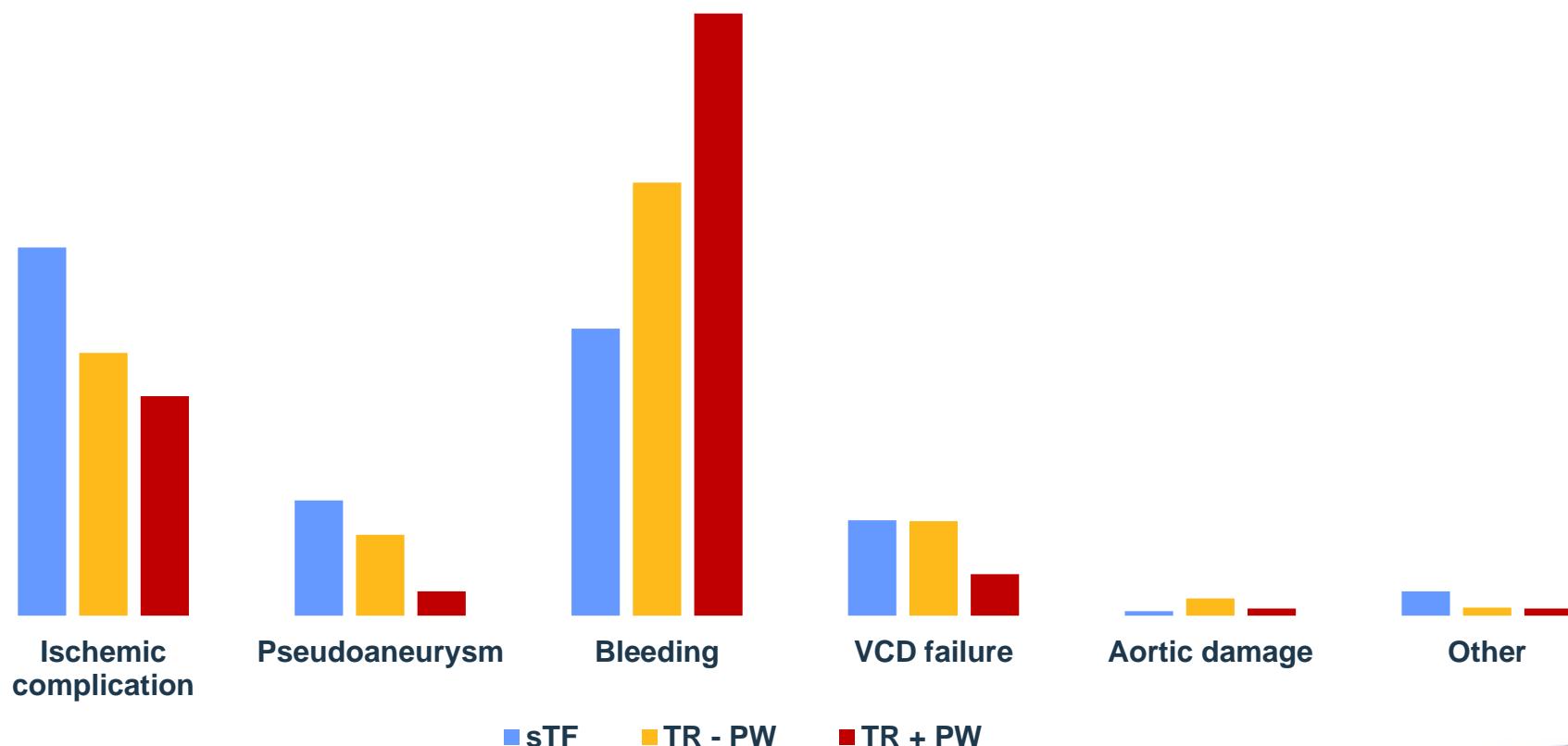
	Overall	TF	TR - PW	TR + PW	P value
	N = 492	N = 182	N = 204	N = 106	
Procedural success, n (%)	404 (82.1%)	166 (91.2%)	158 (77.5%)	80 (75.5%)	<0.001
Contrast volume, ml (median [IQR])	130 (94-180)	125 (90-180)	129 (90-180)	140 (103-180)	0.325
Intraprocedural death, n (%)	2 (0.4%)	0	2 (1.0%)	0	0.242
AKI, n (%)	59 (12.0%)	18 (9.9%)	23 (11.3%)	18 (17.0%)	0.186
Stroke, n (%)	7 (1.4%)	3 (1.7%)	4 (2.0%)	0	0.365
Intrahospital death, n (%)	12 (2.4%)	0	11 (5.4%)	1 (0.9%)	0.001

Multivariable Firth logistic regression for
intra-hospital death ADJ also for Age,
DM, CKD, Sex, LVEF, BMI, PAD, THV



	OR (95% CI)	P value
Transradial (no protection wire) vs Transfemoral	4.67 (0.28 – 79.00)	0.285
Transradial (with protection wire) vs Transfemoral	1.00 (0.01 – 76.83)	1.000
Protection wire (overall effect)	0.29 (0.01 – 14.76)	0.536

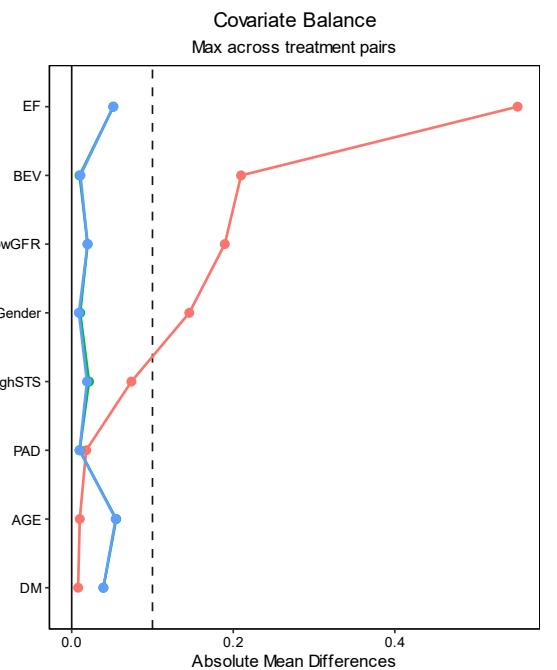
Type of primary access complication by Secondary Access Strategy



Vascular complications management

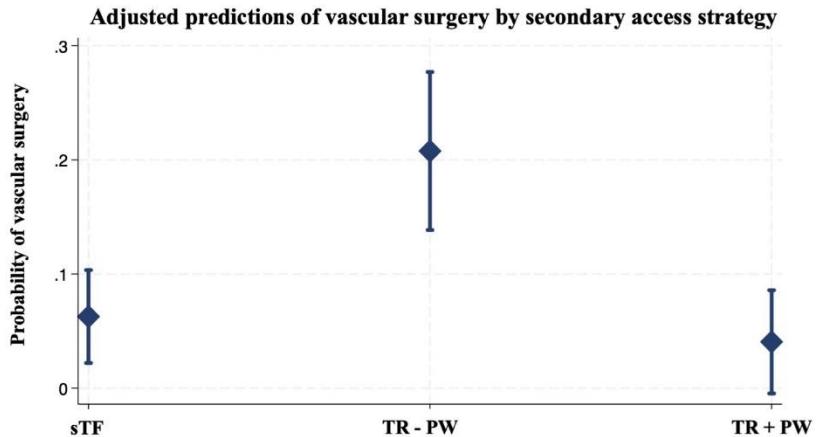
	Overall	TF	TR - PW	TR + PW	P value
	N = 492	N = 182	N = 204	N = 106	
Major vascular complication, n (%)	90 (18.3%)	22(12.1%)	59(28.9%)	9 (8.5%)	<0.001
Manual compression, n (%)	92 (18.7%)	27 (14.8%)	55 (30.0%)	10 (9.4%)	<0.001
Bailout access, n (%)	66 (13.4%)	9 (5.0%)	51 (25.0%)	6 (5.7%)	<0.001
Balloon angioplasty, n (%)	143 (29.1%)	49 (26.9%)	50 (24.5%)	44 (41.5%)	0.005
Peripheral stent implantation, n (%)	22 (4.5%)	12 (6.6%)	9 (4.4%)	1 (0.9%)	0.082
Covered stent implantation, n (%)	71 (14.4%)	34 (18.7%)	29 (14.2%)	8 (7.6%)	0.034
Need for vascular surgery, n (%)	53 (10.8%)	13 (7.1%)	37 (18.1%)	3 (2.8%)	0.024
Blood transfusion, n (%)	140 (28.5%)	61 (33.5%)	61 (29.9%)	18 (17.0%)	0.009

Weighted population



	Weighted population (N= 445; population size=35.48)			
	TF	TR - PW	TR + PW	P value
	Weighted contribution 33.4%	Weighted contribution 33.5%	Weighted contribution 33.1%	
Age, year (mean \pm SD)	83.3 \pm 7.0	83.3 \pm 6.5	82.9 \pm 4.9	0.863
Male, n (%)	41.7%	42.2%	41.5%	0.994
BMI, kg/m ² (mean \pm SD)	25.7 \pm 4.2	26.2 \pm 5.25	26.0 \pm 3.6	0.587
STS-PROM>4, n (%)	53.3%	54.5%	52.4%	0.951
Diabetes mellitus, n (%)	28.2%	31.9%	29.2%	0.801
Coronary artery disease, n (%)	35.6%	42.9%	43.1%	0.376
Peripheral artery disease, n (%)	19.1%	18.7%	18.9%	0.998
CKD (eGFR < 60 ml/m ²), n (%)	63.9%	64.6%	63.4%	0.964
LVEF < 50%, n (%)	23.5%	22.8%	18.6%	0.629
BEV, n (%)	35.3%	37.6%	36.7%	0.930
Primary access sheath, n (%)				0.006
14 F	81.6%	71.2%	71.7%	
16 F	11.2%	22.0%	19.2%	
≥ 18 F	7.1%	7.8%	9.0%	

Outcomes after weighting



*ADJ for: age, sex, DM, HPN, PAD, STS, LVEF, CKD, THV

Weighted population (N= 445; population size=35.48)				
	TF	TR – PW	TR + PW	P value
	weighted contribution 33.4%	weighted contribution 33.5%	weighted contribution 33.1%	
Procedural success, n (%)	89.7%	78.1%	73.5%	0.009
AKI, n (%)	12.9%	10.3%	15.7%	0.484
Stroke, n (%)	1.7%	2.7%	0	0.573
Intrahospital death, n (%)	0	5.0%	1.0%	0.126
Major vascular complication, n (%)	12.7%	29.7%	9.5%	<0.001
Need for vascular surgery, n (%)	6.3%	20.8%	4.1%	<0.001
Blood transfusion, n (%)	31.2%	29.1%	19.1%	0.133

Limitations

- Retrospective study
- No core lab CT assessment or event adjudication
- No longer term follow-up
- No granular data regarding the modality of puncture (echo guided vs fluoroguided)

Conclusion

- In this exploratory analysis of contemporary TAVR, secondary access strategy influenced the management of primary access complications.
- Patients with transradial secondary access *without* a protection wire had a *markedly higher risk of vascular surgery* and, in unweighted analysis, *higher intra-hospital death*.
- The *use of a protection wire neutralized this excess risk*, supporting its use during transradial secondary access.