

ViV-TAVR with an intra-annular self-expanding THV for failed surgical bioprostheses

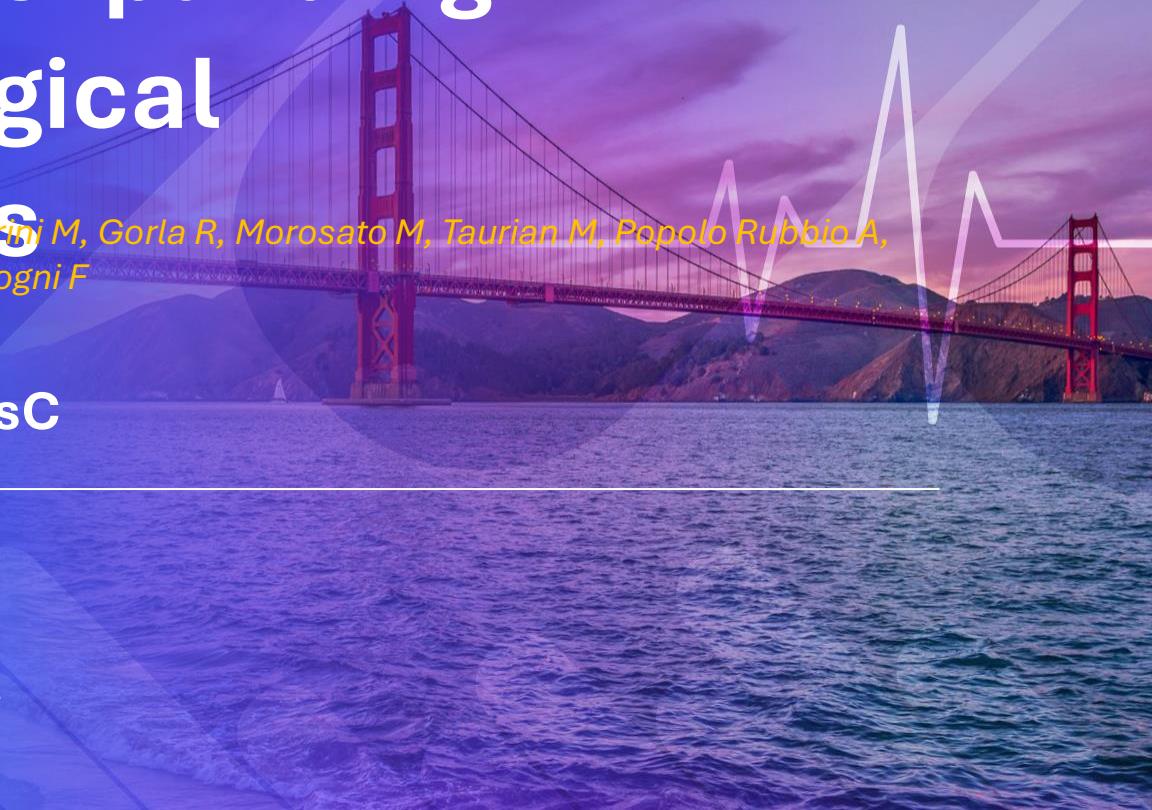
Criscione E, Testa L, Cannone G, Guerrini M, Gorla R, Morosato M, Taurian M, Papalo Rubbio A, Sisinni A, Barletta M, Brambilla N, Bedogni F

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Disclosure of Relevant Financial Relationships

I DO NOT have any financial relationships to disclose.



80% of SAVR with bioprosthetic valves



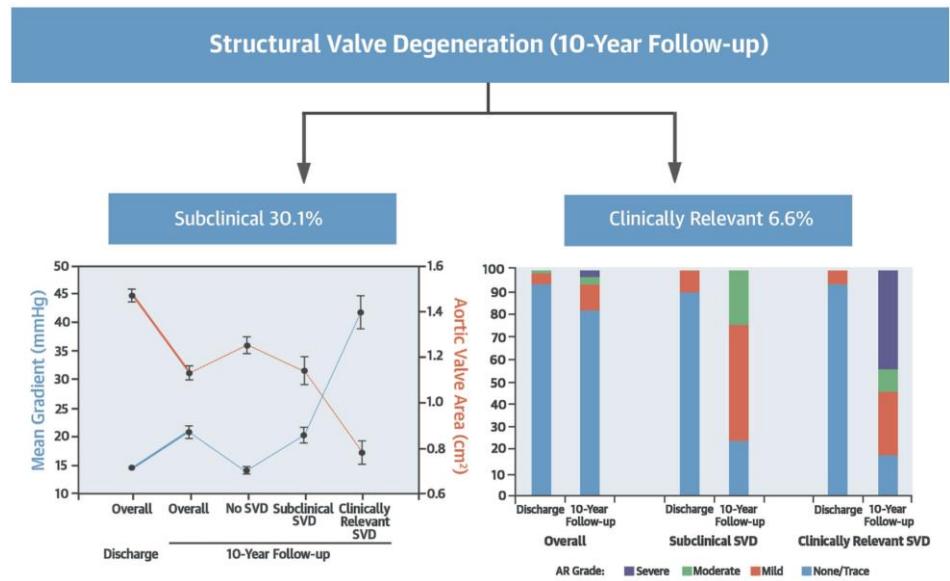
Avoid chronic anticoagulation



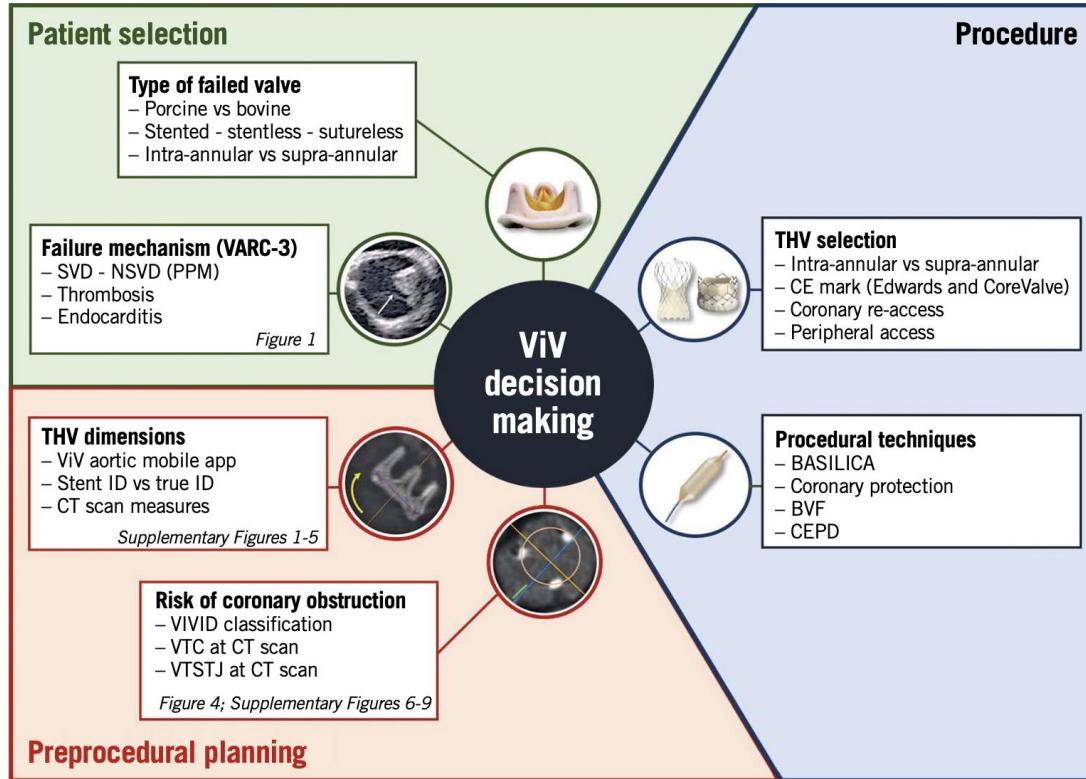
Structural Valve Deterioration (SVD)



Possibility of ViV procedures



Transcatheter aortic valve implantation in degenerated surgical aortic valves.



Methods



Evaluate procedural and mid-term outcomes of aortic ViV procedures using the PORTICO THV



Intra-annular leaflets



Low nitinol frame



Open-cell geometry

Retrospective, single-center study

117 consecutive patients enrolled from January 2016 to December 2024

Primary endpoint

1-year composite of all-cause death/stroke/hospitalization for HF

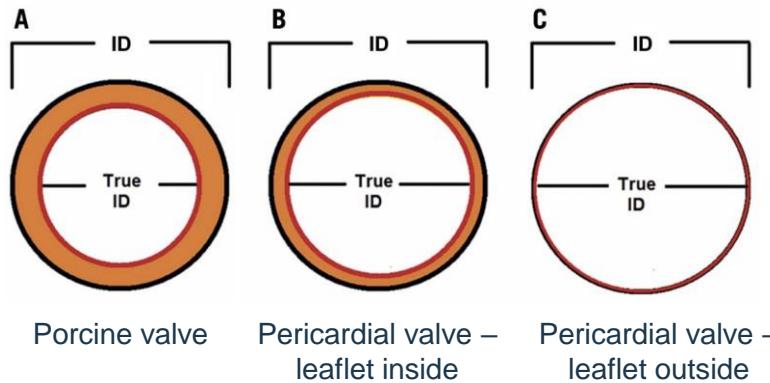
Secondary endpoint

1-year composite of all-cause death/stroke

Pre-procedural planning

CT scan:

- Sizing (**true ID** vs IFU ID)
- Risk of **coronary obstruction**:
 - Coronary height < 10 mm
 - SOV < 30 mm
 - VTC < 4 mm



Echo:

- **Severe SVD**
 - **MeanGrad \geq 40 mmHg with an increase \geq 20 mmHg from post procedure and/or new or worsening severe intra-prosthetic regurgitation**
- **BVF: severe SVD or aortic valve reintervention or valve-related death**

Patients baseline characteristics

	TOTAL	N (%) or [IQR]
Age (yrs)	117	81 [75, 84]
NYHA class III	117	98 (84%)
Type of surgical bioprosthesis	115	
Stented – pericardial leaflets outside		59 (51%)
Degeneration type	113	
Regurgitation		29 (26%)
Stenosis		56 (50%)
Combined		28 (25%)
Valve age (yrs)	111	9.0 [7.0, 12.0]
Surgical valve size	112	
≤22		54 (48%)
23		38 (34%)

Patients baseline Echo and CT

	TOTAL	N (%) or [IQR]
Baseline AR grade	112	
Moderate		22 (20)
Severe		43 (38)
Baseline MG (mmHg)	112	37.0 [23.5, 47.5]
Baseline AVA (cm ²)	90	1.0 [0.7, 1.2]
LVEF (%)	112	58.0 [48.4, 65.0]
Annulus perimeter (mm)	106	67.5 [60.1, 73.2]
Annulus area (mm ²)	106	3.6 [2.8, 4.2]
LCA height (mm)	108	9.5 [7.1, 13.0]
RCA height (mm)	110	13.2 [8.1, 16.4]
LVOT diameter (mm)	102	23.1 [20.6, 25.0]
STJ diameter (mm)	105	28.9 [25.6, 32.5]

Complexity features

Small surgical valves

Stenotic failure

Risk of coronary obstruction

Procedural Characteristics

	TOTAL	N (%) or [IQR]
THV size (mm)	117	
23		87 (74.4)
25		17 (14.5)
27		9 (7.7)
29		4 (3.4)
Pre-dilatation	117	21 (17.9)
Post-dilatation	117	87 (74.4)
Coronary protection	116	
None		68 (58.6)
Chimney		47 (40.5)
BASILICA		1 (0.9)
Bioprostheses cracking	116	17 (14.7)

In-Hospital outcomes

PROCEDURAL	TOTAL	N (%) or [IQR]
VARC-3 procedural success	117	115 (98.3)
VARC-3 device success	117	74 (63.2)
Coronay obstruction	117	0 (0)
Procedural death	116	0
Minor bleeding	116	9 (7.8)
Major bleeding	116	1 (0.9)
Vascular complications	116	
Minor		16 (13.8)
Major		3 (2.6)
New permanent pacemaker	116	9 (7.8)
Second valve implanted	116	6 (5.2)

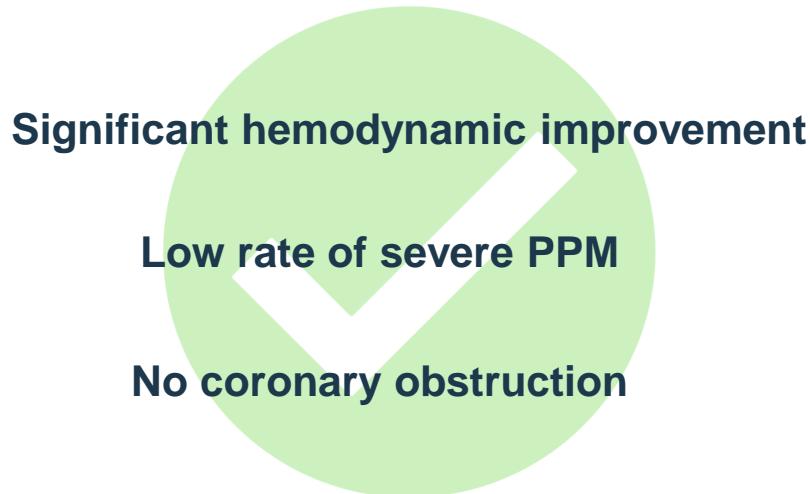
ECHO	TOTAL	N (%) or [IQR]
PVL grade	116	
None/trivial		60 (51.7)
Mild		47 (40.5)
PVL ≥ moderate	116	9 (7.8)
Mean gradient (mmHg)	114	16.0 [12.0, 21.0]
MG ≥ 20 mmHg	115	33 (28.7)
Vmax (m/s)	110	2.6 [2.3, 2.9]
Any PPM	93	32 (34.4)
Severe PPM	93	10 (10.8)
AVA (cm ²)	94	1.6 [1.3, 1.9]
AVA index (cm ² /m ²)	93	0.9 [0.7, 1.1]
LVEF (%)	116	55.0 [47.0, 64.0]

Beyond complexity features

Small surgical valves

Stenotic failure

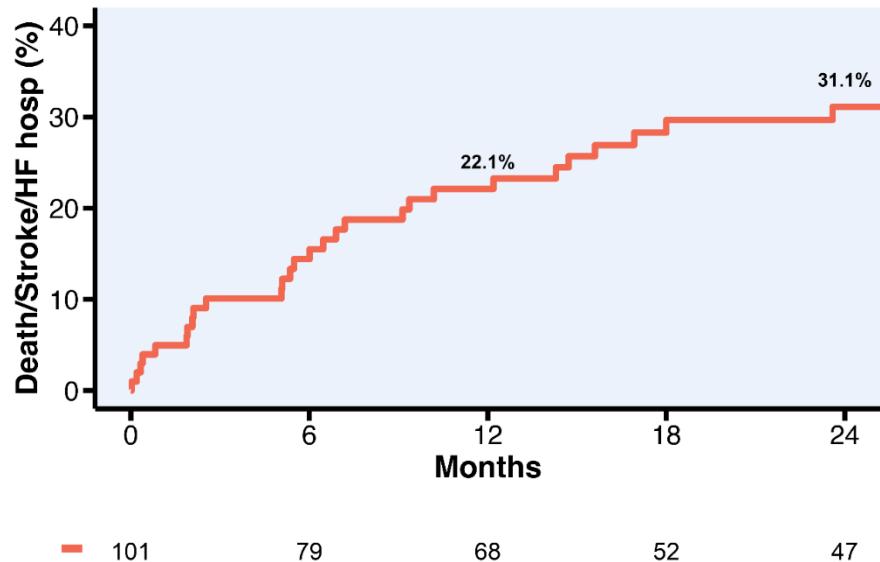
Risk of coronary obstruction



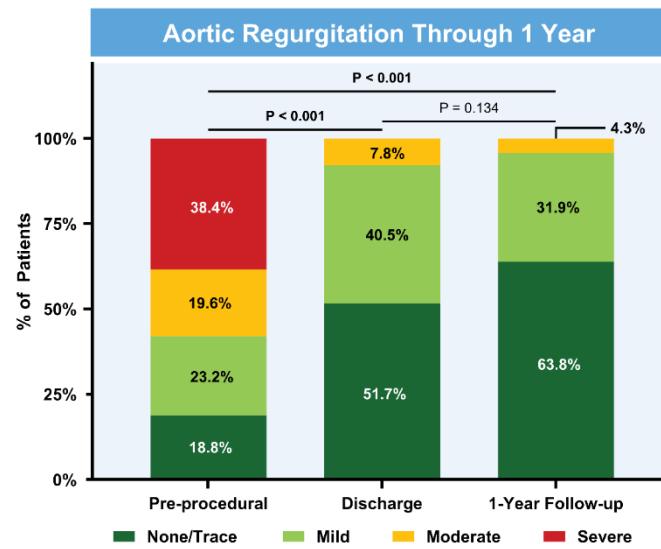
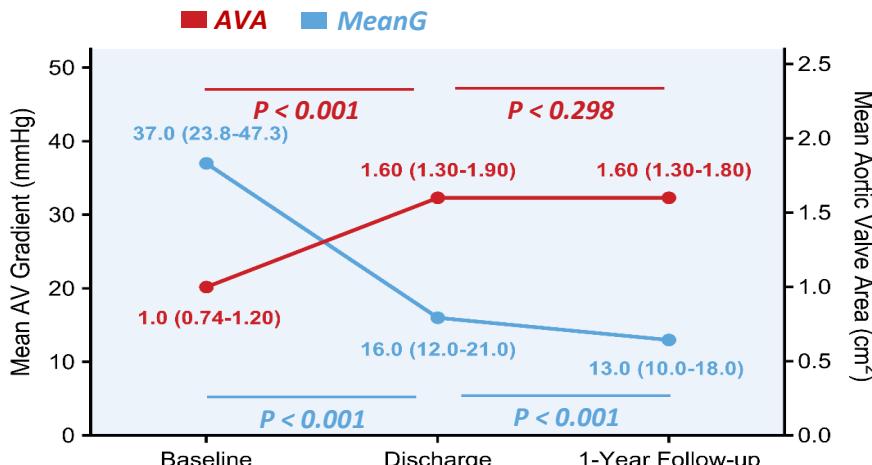
- Nitinol stent architecture
- Real position of leaflets
- Implantation depth 3-5 mm
- Predilatation
- Valve fracture

1-year clinical follow-up

	EVENTS	EVENT RATE
All-cause mortality (%)	18	19.1 %
CV mortality (%)	4	4.2%
Stroke/TIA (%)	3	3.0 %
CV hospitalization (%)	6	6.4%
NYHA class I-II	97	96%
All-cause Death/Stroke/HF hosp (%)	21	22.1%
All-cause Death/Stroke (%)	19	20%



1-year echocardiographic follow-up



In a **univariable analysis**, stented pericardial valves with **external leaflets** and **small surgical valve size (≤ 21 mm)** were associated with an **increased risk of severe PPM**.

In a **multivariable analysis**, surgical valve size ≤ 21 mm remained the only predictor of **severe PPM**.

Limitations and Conclusions

Retrospective, single-center study, with limited follow-up
Lack of independent core-lab

The Portico THV is safe and effective in the context of ViV procedures

Good hemodynamic performance, with low rate of severe PPM

A small surgical frame is a principal determinant of restricted EOA (AVA)